LEADERSHIP IN MEDICAL WARD ROUNDS

PHD THESIS

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Leadership in Medical Ward Rounds

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Declaration of Originality

I declare that this thesis is all my own work with appropriate referencing where appropriate.

S Pomfret

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Leadership in Medical Ward Rounds: Summary

Medical ward rounds are an under researched area. The medical post take ward round has been cited as being a source of anxiety for new consultants. The non-technical skills involved may well be those that new consultants feel underprepared for in contrast to clinical skills. Ward rounds historically have been a principal vehicle for teaching junior doctors. There have been many changes in how junior doctors work which has potentially impacted their training and preparation towards being a consultant.

The overarching aims of this thesis are firstly to expand our current understanding of the incorporation of training into medical ward rounds, and secondly to translate this understanding into an instrument that evaluates senior trainees or consultants skills in leading a ward round. Ultimately, improved training and assessment of the ward round process should enhance patient safety and effectiveness of care on medical wards.

This thesis incorporates a narrative review on training and ward rounds. There is also a literature review on non-technical skills tools used in hospital medicine, how they were developed and their psychometric evaluation. The second review of non-technical skills tools leads to a choice of tool on which to base the development of a ward round leadership tool. The review on training and ward rounds, provides background to the thesis but also some of the findings are used for the instrument development. A post take ward round simulation was developed alongside the ward round leadership tool, which serves 2 purposes. One is to develop a training program by which to train senior medical registrars to lead post take ward rounds, and secondly, it is used to psychometrically evaluate the developed medical ward round leadership tool. There is also a chapter reporting an interview study of medical consultants and patients about training and post take ward rounds. The findings from this chapter feed directly into the tool and simulation development. The development of the simulation and tool are described and evaluated in detail. The tool is evaluated in terms of reliability and validity.

Academic Awards for Project

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Chapter 1

Introduction

Ward rounds are the cornerstone of medical training within hospitals. Traditionally, consultant led training concerning in-patients occurred primarily on ward rounds, when patients are reviewed, given information and management plans are set in motion; the majority of clinical decisions are made on the ward round. A ward round does not only deal with clinical decisions; it combines many elements. It covers management of social care and continuing care, including discharge planning. It is the primary interface between patients and clinical staff and so is integral to developing a relationship between clinicians, patients and their carers. It also is an interface between the clinical team and the other members of the multi-disciplinary team. It governs ongoing management including the day to day jobs for the junior staff to enable timely and effective organised management. It provides an opportunity for an interface of all doctors within the team and therefore has elements of team building. A ward round also has a governance responsibility looking at Trust and National objectives. Ward rounds will be discussed and described in greater detail later in this chapter and in Chapter 2. A post take ward round (PTWR) is the first consultant led ward round of a patient's admission.

Training happens on the ward in many guises and can be peer to peer, senior to junior, nurse to doctor or vice versa but these are often opportunistic. Traditionally, a ward round provides a more formal senior to junior training, and on a post take ward round, the senior is a consultant. It provides clinical teaching but also encompasses many non-technical skills in order for the ward round to run smoothly but also for the working day and week to move a patient's journey forward efficiently and effectively. It serves to prioritise day to day jobs for the clinical and nursing team and provides structure to a patient's stay as well as a doctor's working day.

It is a two-way communication for the patient to the clinical team to give information and answer any questions. It does all this while maintaining the General Medical Council's (GMC) 4 domains of clinical practice (1):

1. Knowledge, skills and performance
    - Make the care of your patient the first concern
    - Provide a good standard of practice and care
2. Safety and quality
    - Take prompt action if you think that patient safety, dignity or comfort is being compromised

- Protect and promote the health of the patients and the public

3. Communication, partnership and teamwork
    - Treat patients as individuals and respect their dignity
    - Work in partnership with patients
    - Work with colleagues in the ways that best serve patients' interests
4. Maintaining trust
    - Be honest, open and act with integrity
    - Never discriminate unfairly against patients or colleagues
    - Never abuse your patients trust in you, or the public's trust in the profession

Ward rounds are very varied between specialities, hospitals, Trusts, regions and countries but exist in some form in all hospitals. They should be a focus for patient safety initiatives, as they not only act to make plans but also to check on progress. Many healthcare providers are involved and lack of time is always an issue in any aspect of medicine. The focus, for patient safety researchers, is slowly turning from the so-called 'high risk' domains of surgery and obstetrics and the operating theatre to ward rounds and ward care (2,3). Safety is about making processes as robust as possible to stop errors or catch them before they do harm, and one of the most complex processes within hospital ward care is the ward round.

The following paragraphs describe a medical ward. This description is included to help understand the setting of this thesis. A medical ward is a busy, noisy environment full of patients and many different members of staff. As a person walks into a ward, a ward clerk or receptionist welcomes you and directs you to who you would like to see. The domestic staff are busy cleaning as well as providing meals and coffee and tea rounds. Porters come and go delivering patients to new beds, investigations, procedures or appointments, as well as delivering important samples to the lab, redirecting wheelchairs and beds, or simply waiting for their patient or sample to be ready. Healthcare assistants help with patient care, washing, feeding, support, bed changing, helping patients urinate and defecate, and taking observations of patients – blood pressure, pulse, respiratory rates, oxygen saturations and temperature. Nurses support healthcare assistants but also need to tend to patient's needs, the needs of the many support staff and members of the inter-disciplinary team, the friends, family and carers of the patients, liaising with other departments for timings of events throughout the day for the many patients in their care, deliver medications, dressing changes, observations for pressure ulcers, belongings checks, patient monitoring to name only some of their many roles. There are many therapists – physiotherapists, occupational therapists, social workers, speech and language therapists – who all visit the ward and the patients,

monitoring progress, reporting findings and writing reports. Pharmacists come to the ward daily to monitor medication prescriptions, support doctors and nurses as well as patients, help facilitate discharges and supply and demand of medications. Each ward often has more than one medical doctor team comprising of doctors of different seniority, led by the team consultant. There is usually a nurse in charge, a ward sister and maybe a manager or ward matron. Security usually visit the ward for monitoring but sometimes on request. Visiting medical teams come to the wards for reviews and referrals. In short, they are full of people, and very busy, with various different levels of all forms of communication. They can be chaotic and confusing, and are rarely calm and serene. Emergencies happen and are attended to, and then much of the action is interrupted, and recommenced once the emergency is dealt with.

Every ward also has the unseen influences. It is bound by National and Trust policies. The action is led by guidance, protocols and guidelines. Much of the action within the ward is constantly monitored usually by technology or tracking systems, but also by staff members and observation. The care is beholden to national targets and external pressures which often incur financial penalties. There are friends and family tests and other point of care testing to monitor quality of care. There are always people around, coming and going, usually in search of information. Various people within the ward are responsible for helping to collect or give information but everyone is responsible for ensuring that the information is as good quality as possible, confidentiality isupheld, and that the various targets are met. Communication systems go from non-verbal face to face, to verbal, to written, to information technology driven communications. Much of what happens is recorded or should be recorded, but also a lot is not.

Research aims

The overarching aims of this thesis are firstly to expand our current understanding of the incorporation of training into medical ward rounds, and secondly to translate this understanding into an instrument that evaluates senior trainees or consultants' skills in leading a ward round. Ultimately, improved training and assessment of the ward round process should enhance patient safety and effectiveness of care on medical wards.

To achieve the above aims, the specific objectives of this thesis are as follows:

1. To explore the current literature on training and hospital ward rounds (Chapter 2)
2. To explore the current literature on non-technical skills tools used within hospital settings (Chapter 3)

3. To explore the perspectives of key stakeholders on the training and ward rounds (Chapter 4)
4. To develop (or refine, based on objectives 2 and 3) a tool for assessing leadership on post take ward rounds (Chapters 5 and 6)
5. To develop a simulation-based training module that enhances medical trainees' skills in conducting wards rounds (Chapter 5)

Defining terms

The following list defines terms frequently used throughout this thesis for clarity. This list is not exhaustive; other terms requiring clarity will be explained in the relevant section. There is also a list of abbreviations in Appendix 1.1.

- Ward round: A complex clinical process during which the clinical and social/ continuing care of hospital inpatients is reviewed (4). It is a team-based activity, and, in the UK, also reviews a patient's social and continuing care.
- Post Take Ward Round (PTWR): The first consultant led ward round that reviews each patient, usually within 24 hours of admission. The current Royal College of Physicians (RCP) guidance, and accepted rule of acute admissions, is that the consultant review should be within 12 hours of admission (4). This is also a requirement from the commissioners of healthcare in the United Kingdom, including NHS England, NICE (National Institute for Health and Care Excellence) and NCEPOD (National Confidential Enquiry into Patient Outcome and Death (5–7).
- Medical registrar: a middle grade doctor, one level of hierarchy down from consultants (UK) or attending doctor (US); in the current UK training scheme, Grade ST3 to ST7 in medical specialities, who are dual accrediting in a specialty and General Internal Medicine or accrediting in Acute Internal Medicine.
- Junior doctor: any grade of doctor junior to a consultant/attending i.e. any doctor who is not a consultant/attending. This includes all doctors who are 'in training', and excludes Trust grade doctors and locum appointments for service (LAS) posts.
- Non-technical skills (NTS): 'Cognitive and social skills underpinning medical knowledge and technical skills needed to contribute to safe and efficient performance'(8).

Ward rounds – an introduction

The complex process of a ward round will be explored in greater detail in this section. The second chapter will subsequently examine ward rounds and training in greater detail in the form of a

narrative review of the literature. They provide the opportunity for diagnostic, investigative and treatment decisions, as well as follow-up on these decisions. The decision cycle on a ward round is similar to that used in management: review of current problems and patient's response to management, identification of risks, identification of changes to management required, and communication of this to the patient and team. The cycle is then repeated either for the same issues or for other clinical or non-clinical problems for the same patient or for a new patient. They are an opportunity to bring the many different threads of a patient's management together, for example physiotherapy reports and occupational therapy reports with the clinical progress of a patient. They have become a clinical and operational priority for researchers, clinicians and educators (4,9–11), but most of the research to date has been for surgical or intensive care ward rounds. The medical ward round is a complex, very variable, multi-faceted process that is very difficult to study, and hence there is a paucity of good research on ward rounds in this setting. Medical ward rounds are long (12), with multiple team members and need to focus on many different aspects, both clinical and social. There is significant variation in how ward rounds are conducted. They tend to be spread over multiple locations with a changing team structure depending on availability and need. The number of patients on the round can be very variable and unpredictable which means planning and timing is also varied and unpredictable. There are often board rounds prior to a ward round when you briefly discuss all patients on the ward patient board with a wider multi-disciplinary team. From personal experience, medical ward rounds are for patients with a wide range of pathologies, multiple co-morbidities, multiple medications, often with complicated social situations which all impact on their admission and discharge (4). A surgical operating theatre, where there has been a burst of literature on patient safety, is a limited geographical space, with a standard team structure, more predictable timings, and the team are focussed on one or a group of physical problems at that time, with other factors dealt with at another time. Surgical ward rounds are shorter, more succinct, more focussed and timing and resources are usually more predictable. This comparison has not been made directly in the literature except in editorials and opinion pieces (for example, (13)).

Admission of acutely unwell patients happens 24 hours a day, and as such the process of admission is a 24-hour continual process. A morning in an acute Trust usually starts with handover from the night team, and prioritisation of any patients waiting to be seen by the medical team. For the junior members of the team (registrar level down) this is often the start of their 'on call' shift or 'take' shift (admitting emergency medical patients). Accident and Emergency doctors and General Practitioners refer patients that they are concerned about and believe require admission to an acute hospital ward for emergency treatment, investigations, or occasionally for social reasons. 'Admitting' a

patient requires patient clerking, which means talking to a patient about why they are in hospital, their symptoms and medical history and medications. Clerking also involves a thorough examination; looking at any investigations done in Accident and Emergency or relevant past investigations or notes on previous admissions; talking to any relevant third party in order to clarify the reason for admission (e.g. collateral history from a carer or nurse in a nursing home); making a diagnosis or differential diagnoses; the instigation of initial management; a further management plan; and any consideration of any relevant social issues. The probable diagnosis and management plan are explained to the patient and friends/family/carers with the patient's permission and addressing any questions and concerns that they may have. At any point a junior may need to discuss with a specialist or senior as appropriate.

The 'clerking' is carefully documented on paper or digitally. Once the patient has been seen and documented, the doctor will be assigned another patient to 'clerk'. This continues until the consultant reviews the patients on the medical PTWR.

Patients may subsequently require review following improvement or deterioration. The PTWR typically happens at a predetermined time in the morning, with a full team of juniors and multi-disciplinary team (including a pharmacist) to initiate any changes to management decided by the consultant. There is a second post take ward round later in the day, referred to as the intra-take ward round. This is for patients admitted during the day. This may be a formal ward round similar to the morning one or may be completed on a more ad hoc basis, due to other priorities that arise during the day.

Ward rounds are expensive processes. From data in 2011, there are about 120,000 acute inpatients in NHS Hospitals. Each patient takes between 10 and 15 minutes a day for review on a round, equating to 1,200,000 to 1,800,000 minutes of work a day. Rounds cost between £5 and £10 per minute on staff alone, meaning the direct staffing cost is between £6 million and £18 million a day (14).

Ward rounds are subject to interruptions, but intuitively the longer the ward round is, the more likely it is that interruptions will occur. Such interruptions can lead to delayed interventions, decision making and patient discharge. One of the principal interruptions are medical emergencies which often leaves a ward round deplete of key team members (15). The most regular interruptions to ward work are bleeps and telephones (16).

There is significant discussion and opinion on whether teaching on ward rounds has changed, and the near unanimous decision in experience based commentaries is that the teaching on ward rounds

has dramatically decreased and ward round quality has to be researched and improved (11,13,17–27). There is minimal data to support this near universal belief and the way that teaching and bedside encounters are measured is variable (28,29). A recent commentary in the British Medical Journey followed a Twitter conversation on whether the ward round is dead (30). This commentary echoes some of the themes of this thesis: the constantly changing clinical teams and consequent lack of team cohesion, increased senior early review with less independent decision making for juniors, lack of continuity of clinicians for patients, and a desire to speed up all processes including discharges, treating the unstable patients and the way juniors work.

Non-technical skills and ward round training

Ward rounds rely on clinical acumen but also on non-technical skills to educate, reassure, impart information and supervise. Non-technical skills (NTS) are 'Cognitive and social skills underpinning medical knowledge and technical skills needed to contribute to safe and efficient performance'(8). They can be divided into 2 groups. Firstly, cognitive skills (e.g. decision making and situational awareness), and secondly, interpersonal skills (e.g. team working, communication and leadership)(31). There is also a third element of personal resource management, including stress management and fatigue management.

Non-technical skills have been shown to be critical for patient safety (32). In surgery, failures in non-technical skills are regularly implicated in adverse events (33–35), and good teamwork leads to fewer errors (36). Better clinical supervision leads to better outcomes (37,38). Ward rounds provide the opportunity for supervision of junior medical staff.

One of the key skills for a ward round is communication. One study of staff on an intensive care unit showed that participants averaged 75% of their time in communication (39). Structured interdisciplinary rounds on medical units, akin to board rounds, with emphasis on communication, have been shown to decrease the adjusted rate of adverse events in a medical teaching unit (40) and perceptions of collaboration and teamwork (41). Explicit communication, often involving checklists, facilitates behaviours that are associated with enhanced patient safety (42).

One of the key effects of recent changes within medicine is the diminished continuity of care. The traditional 'firm' structure of care where one team cared for a patient from their admission to their discharge, is rarely seen today both in UK and internationally. Changes in the organisation of postgraduate education has resulted in increased shift working (43,44), consultant roles changing (43), increased movement of patients between wards, departments and teams (45). These have led

to the ward round not only being more critical but also harder to manage and supervise, both complicated non-technical skills.

In the UK, the Royal College of Physicians (RCP) highlighted the importance of ward rounds in a formal College report (4). In the RCP Acute Care Toolkit 2:

'All consultants involved in the acute medical care should recognise their educational responsibilities and ensure that teaching is prioritised. Consultants have a critical role in leading and motivating the team throughout the hospital and ensuring that the next generation of physicians is equipped to provide care of the highest quality.' (46).

In Acute Care Toolkit 5, they state in the 'Explicitly facilitate work-based learning' section that a technique consultants should use to facilitate work based learning is 'swapping roles with the registrar for part of the ward round' (47). In Toolkit 8, it explicitly states that registrar training will be improved by 'consultants directly observing ward rounds led by registrars' (48). Internationally, at the time of writing, it is difficult to see any formal guidance on ward rounds or equivalent processes. In the USA, they use the term hospitalists and internists but it is difficult to find a generic definition of these roles and how their role may be similar or different to that of a general internal physician in UK. It is my understanding that ward rounds have similar roles in both USA and Australia but the terminology may be different to include attending rounds (consultant rounds) and they also use bedside rounds in USA which seem to have a more explicit training role than a usual ward round.

The tradition of ward rounds is steeped in the apprenticeship style of learning. This pedagogical approach of medicine dates back to classical times and a ward round was first recorded in 1660. The pedagogical manner of medical learning lends itself towards 'progressive independence'. This is a traditional premise of clinical training. As a doctor gets more senior, they show more independence in their decisions and the way they act. Progressive independence is akin to the transition from competence to capability. A person moves from being competent at a series of identified skills needed to practice to the integration of those skills into a unified clinical approach. A practitioner moves from conscious to subconscious competence for any skill or task. This transition from competence to capability is based on work done by Miller (1990) (49). He hypothesised a pyramid to show the different levels of competence which has formed the basis of many forms of assessment.

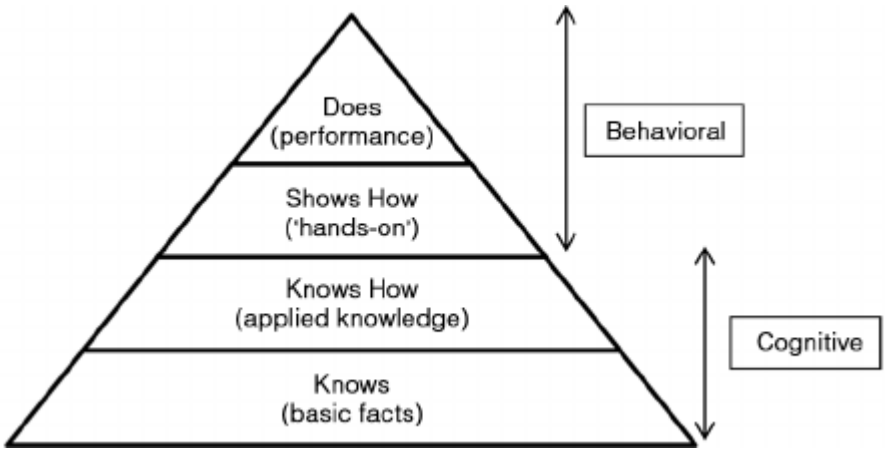


Figure 1.1: Miller's pyramid of clinical competence (49)

How one 'performs' as a doctor is very different to knowing all the facts or being competent at several individual interconnected skills. It is the innate performance of the combination of these elements that constitutes capability. The development of capability moves from the cognitive to the behavioural domains. As a doctor becomes more senior and becomes 'progressively more independent', you can map this onto Miller's pyramid from competence to capability. A senior experienced doctor is likely to much more capable then a junior colleague even though they both may have the same competence levels at individual skills involved in being a doctor. Miller's hierarchical performance model also emphasises that it is important to recognise that, no matter how realistic the simulation, it is still a simulation and participants do not necessarily behave as they would in real life.

The concept of cognitive load will be explained here briefly because it is a clear and relevant framework on which to base the leading of a ward round. It extends Miller's descriptions of competence and capability. Another phrase used for doctors training is the attainment of progressive independence (38,50) and both this and cognitive load theory can be loosely mapped onto Miller's pyramid in so far as they all distinguish between cognitive competence and behavioural or innate competence, which is acquired as you become progressively independent. Cognitive load theory (CLT) describes working memory as a 'bottleneck' for learning (51). It has been primarily used so far in the literature to try to understand cognition in procedural tasks (52). It is suitable for studying complex procedural tasks (52), such as leading a ward round. The theory explains that a person can only process 4-7 units of information at any given moment and that this is our cognitive load. Therefore, when the number of informational elements exceeds the working memory available, any new information cannot be processed, which limits both performance and learning. The theory has three distinct 'loads'.

1. Intrinsic load (IL) – this refers to the complexity of any given task, or portions of a learning task, or information in an informative processing task, for any given person. IL is heavily influenced by prior experience and knowledge.
2. Extraneous Load (EL) – This refers to the external factors to any given task that impact on the task in hand, and are not essential to the task, for example, distractions, environment, and ineffectual instructional techniques.
3. Germane Load (GL) – This refers to the deliberate cognitive processes activated by the person in order to carry out a given task, work put into creating a permanent store of knowledge so that tasks can be carried out somewhat 'automatically' or 'subconsciously' (e.g. driving a car 'automatically' while having a conversation and not directly thinking about clutch, gear, accelerator etc.). It results from being taught in slightly different ways by different teachers, effectively improving learning progression by encouraging analysis of differing approaches.

Sewell et al (2016) developed a way of measuring cognitive load using a self-reported instrument for colonoscopy. This gives many opportunities for examining complex tasks, for example ward rounds. A consultant with many years of experience has built up the germane load for ward rounds, so manages to deal with the extraneous load (the environment, different teams, levels of ability and competency of his or her junior team, operational factors, time pressures, interruptions etc.) and the intrinsic load (new patient information, investigations, treatment plans etc.), better than a new consultant or a registrar who is still developing their own germane load. The method of developing the germane load may differ as we all work differently, but experience brings better coping mechanisms, and the cognitive load theory explains this. This theory will form a basis of this thesis to help understand the leadership on a ward round, including the interview studies, tool development and training development.

In an era of renewed focus on error and subsequently patient safety, various studies and government reports have heralded the need for increased supervision (4,53–56) with substantial changes to rotas and ways of working. There have been studies that document that increased supervision results in improvements of care in the form of increased guidelines compliance (57), changes in treatment plans (58) and better patient outcomes (59). As consultant presence increases, registrars' progressive independence may be affected, in line with autonomous patient reviews and decision making (43), affecting their training to be a consultant. Senior registrars need to be prepared for their supervisory role which requires progressive independence and exposure to supervisory tasks during speciality training (60).

Feedback is important in learning. Chatham discusses the benefits of feedback being identified as part of the Top Gun program in the military. The strength of personal and guided feedback was reflected in a six-fold drop in combat losses compared to those who did not participate in the training (61). We know that doctors are poor at self-assessment (62), and medicine puts in place formal feedback mechanisms such as re-certification and requirements for continuing medical education (CME). There is also some regular practical feedback within medicine in the form of the data collected regarding patients i.e. deaths, length of stay, readmission rates etc. These have marginal effectiveness at improving performance and the feedback usually relates to situations about which individuals have very limited control (62). Personal feedback needs to be bi-directional as described by Bransford and Schwartz with their colourful examples involving blindfolds (63) and preferably immediate (62) to maximise learning. Ericsson reinforces this by explaining how the lack of early feedback on clinical decisions reduces diagnostic accuracy in juniors (64). This is relevant in this project because we are not only discussing the training of junior doctors to be consultants but they also need to develop feedback skills themselves in order to continue to train others. Davis describes the triangulation of professional competence involving professional self-assessment/self - directed learning, competency assessment, and performance assessment with the central thesis being data collection and the feedback loop highlighting the central role of feedback (62).

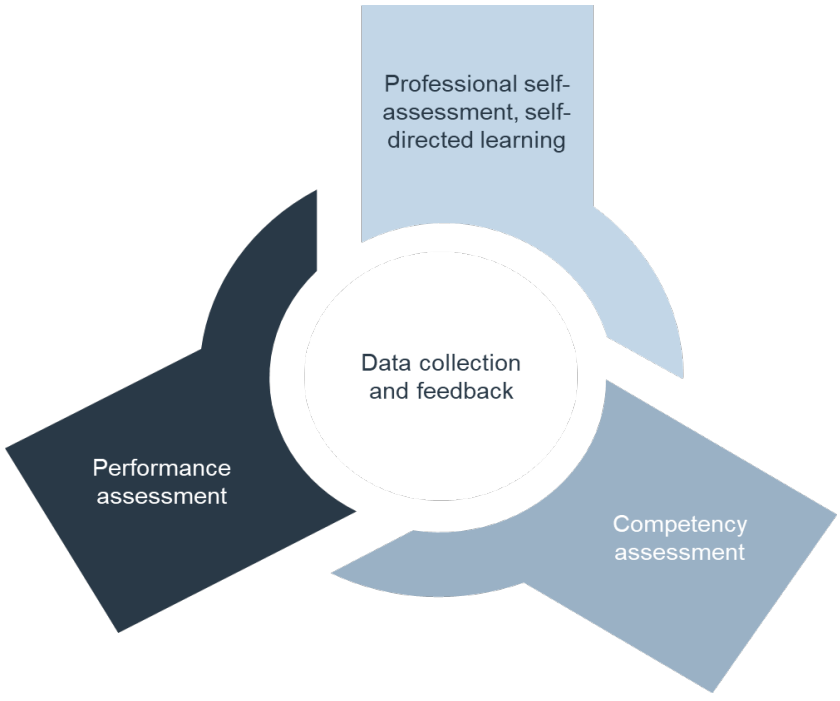


Figure 1.2: Triangulation the competence of individuals (adapted from 62)

The digital e-portfolio, which doctors collate to reflect their training progression with assessment of supervised learning events (SLEs) and overview reports from supervisors, maps onto this concept with the current General Internal Curriculum (2010) being based on competency-based assessments. There is a move to align this curriculum with the GMC guidance for a updated curriculum involving 'capabilities in practice' (65). This will be discussed in greater detail later in the thesis, primarily Chapter 4 and the final discussion chapter.

A shift in medical training

Error can occur anywhere; safety is about making processes as robust as possible to stop errors or catch them before they cause harm. There is a growing emphasis within the NHS to empower all members of staff, no matter their role or level of seniority, to speak up about failings or possible improvements that could be made. This emphasis is echoed internationally, and education initiatives have been put in place to highlight this, for example (66). There have been recent changes to protect staff who decide to raise concerns, so-called 'whistle-blowers'. These changes came about after the publication of Francis' Freedom to Speak Up report, which aims at fostering an open and honest reporting culture in the NHS (67). New policies were written for both primary and secondary care and a pilot scheme has been run to support whistleblowers, the Whistleblowers Support Scheme 2017-18 (68). Another key emphasis to reduce error is by focussed training and education initiatives (66). A medical ward round is one such opportunity when staff from a multi-disciplinary team should be encouraged to be as engaged in patient care as possible to improve it by speaking up in front of their peers. This encouragement has to be led from the top, and it is the ward round leader that has to use the supervisory and team building skills within his or her leadership profile to bring about an open multi-level communication platform to help staff speak up.

The interdisciplinary round is one such initiative which has seen an improved perception in collaboration, teamwork and safety (69). Patient safety initiatives aimed at improving communication and reporting are being introduced (3). Checklists for clinical care are becoming more commonplace after the success of the surgical WHO checklist (11). These initiatives are focussed on improving teamwork on the ward, communication and leadership of all workers not just the most senior. Non-technical skills training is another area of growth. Training in non-technical skills has been shown to be effective in enhancing communication and surgical team collaboration or teamwork (70), reducing technical errors (36,71) and reducing surgical associated mortality (72). Postgraduate medical training is being reviewed and amended to ensure that there are enough doctors of the correct skillset to manage the patients who arrive in hospital, both in UK and abroad (54,73,74). This means that there is a renewed emphasis on general internal medicine training for

the majority of medical doctors to ensure the needs of patients are being met (54,55,74). Patients are getting older and have complex chronic conditions and polypharmacy. Each patient is entitled to be treated by a doctor who is appropriate to treat their one condition or myriad of conditions.

The way hospitals work is changing. There is more shift work and working with unfamiliar teams and an increased consultant presence on the ward (43,75). There are challenges in recruiting an effective medical workforce with some parts of the country struggling to recruit medical registrars, the backbone of any general internal medical service, leaving gaps in the rota (76). In 2018, consultants reported gaps in trainees' rotas frequently: daily (10%), weekly (30%) and monthly (19%) (77), with 74% stating that gaps could potentially cause patient safety problems. In this most recent census, higher speciality trainees report that rota gaps occur on a daily or weekly basis and 55% stated that they felt pressure to cover these gaps. Twenty-six percent said that they were encouraged to take on the work of more than one doctor almost always or most of the time in order to cover a gap (77).

The UK population grew to 64.6 million in 2014 which is the highest it has ever been, with a growth of over half a million from 2013 (78). The population growth rate doubled from 1990s to 2000s from 02.28% to 0.64% (78). The growth partly comes from the fact that we live longer. Ours is an ageing population and a health service needs to adapt to accommodate this. Worldwide, the number of people over 60 will double from 11 to 22% by 2050 (79). In the UK, the number of people over 65 in 2010 was 10 million, and this is predicted to rise to 19 million by 2050, nearly twice as many (80) The number of people over 85 is 2010 was 3 million and this is expected to nearly double by 2030, and reach 8 million by 2050 (80). This means that the population that the NHS is caring for is changing and so the care given needs to adapt. Further analysis has to be done in this area in order to work out what is required from medical services but it is clear that the NHS needs to readily adapt in order to be as effective as possible for its patients. One of these possible changes is an increase in geriatric and general medical services. This focus on general internal medicine training and development has not only been within the UK, as seen by government and professional body backed reports (54,55,81), but also internationally, for example the Garling Report from New South Wales, Australia (82).

The changes in shift patterns and hours worked as well as changes in traditional team working, with the introduction of the European Working Time Directive, has had a substantial, but unmeasured effect on doctors' training. Training must fit within shorter working hours, and service provision has to be maintained. The tension between the two elements – training and service provision - is a theme of this thesis. One of the challenges facing today's medical educators is break this tension

and rebalance both together perhaps by combining them within day to day practice in a more 'crossover' model as opposed to treating them as two separate entities. Medical educators must find methods to train doctors effectively while maintaining service provision within the same resource and time constraints. A ward round is one of many opportunities within hospital practice to try and combine the two.

The training and service provision elements of the ward round will be discussed in detail in this thesis, and the leader of the ward round's role in trying to provide both elements within the constraints of the ongoing ward round. It has to ensure that trainees are adequately equipped with all the skills they require for future consultant roles and these future roles may be quite different to the consultant roles with which we are familiar. Training on ward rounds is one such opportunity. Ward rounds are a necessity for service provision and also provide an excellent opportunity for training, both formal and informal. They are an opportunity to train while providing an effective service. There has been a huge increase in acute medicine consultant roles (76,77), and potential for all trainees to dual accredit in GIM and their speciality, in keeping with medical workforce planning, and priorities for the Royal College of Physicians and Society of Acute Medicine (74,83). Postgraduate training has changed a lot since the early 1990s with the Calman report (84), Donaldson's 'Unfinished business report (85), and then Modernising Medical Careers (86). There has been a shift towards competency-based curricula, more structured training grades, and within these frameworks a drive to recruit more acute physicians. The next stage looks set to be capability based curricula, as reflected in the GMC's annual report in 2016 (87). This curriculum for general internal medicine will prioritise 'capabilities in practice', reducing the number of outcomes and hopefully making assessment more realistic and meaningful for both trainees and trainers (65).

The changes in training are to help with rota gaps for consultants and trainees; 40% of appointments for consultant posts, including a General Internal Medicine (GIM) component, could not be made in 2014-5, and overall trainees' posts have been reduced (76). In the most recent census 43% of advertised consultant posts were unfilled due to lack of suitable candidates, or a complete lack of candidates applying and 33% less posts were advertised (77). The biggest growth of consultant posts has been within acute internal medicine and geriatrics and this is where there are the most gaps; both of these specialities make up a large proportion of the acute general internal medicine service provision. Interestingly, as the number of consultant posts increases in geriatrics, and with that gaps in the consultant workforce, the number of trainee posts in geriatrics has recently been reduced (76). Twenty-one percent of consultants reported that trainee rota gaps were 'frequent, such that they cause significant problems for patient safety'(76). Five of the six specialities that consultants report the most rota gaps for, trainees make up the majority of the acute medical

service – geriatrics, respiratory, gastroenterology, endocrinology and diabetes, and acute internal medicine (76). In combination with these rota gaps, there is a high rate of dissatisfaction with GIM training (73% of trainees felt that their speciality training was 'good or excellent'; 26% for GIM (76)); these are reflected very similarly in the most recent census (77).

The number of patients requiring treatment is increasing and these patients have more co-morbidity and require increased social input. From 2004/5-8/9 there was an increase in approximately 1.35 million admissions (11.8%) (88). There are more patients and treating them has become more complicated with cross speciality care required in a large number of cases.

Operationally, these changes have led to a predominant shift-based method of working and a move away from team-based care. This has impacted on learning opportunities on ward rounds (43). An increased consultant presence with associated increased in consultant patient reviews, in keeping with policy change and College reports (53,55), has led to a concomitant decreased in registrar reviews and autonomous decision making (43). Progressive independence is a term used to describe the need for a doctor to become more autonomous as their training continues to prepare them for a consultant post (50). There is concern that as a registrar's progressive independence decreases with increased consultant presence on the ward, their preparation for a consultant role also diminishes.

Work based learning

Postgraduate medical education is predominantly experiential; the learning takes place 'on the job'. There are various speciality specific exams and formal lectures, plus courses, and simulation-based training but these make up a very small proportion of the learning that takes place day to day on the wards, in clinic, and in surgery. Medical education is a continuous process that lasts the length of any doctor's career.

Training was shortened following the publication of the Calman Report in mid 1990s (84) and then The Gold Report in 2007 (89). Both will be briefly introduced here. The Calman Report limited the duration of training building a clear training structure for junior doctors, with the goal of a Certificate of Completion of Training (CCT). It embedded regular appraisal for trainees, the Record of In Training Assessment (RITAs) (84). Few medical specialities distinguish between junior and senior registrar; the majority use the term speciality registrar for all grades of registrar and the label speciality trainee (ST) 2/4/5/6/7/8 refers to the year of training. The Gold report stated that while working hours fell significantly with the introduction of the European Working Time Directive, the increased work intensity, improvements in training systems and monitoring meant that overall there

was an increased exposure to experiential learning. It also introduced the competency led curricula (89) governed by a digital portfolio of training that the trainees are responsible for updating. Following the Gold Report, the RITAs are now called Annual Review of Competency Progression (ARCPs) (89). As mentioned previously there is a move to align the internal medicine curriculum with GMC priorities with a more capability overview but this is not in common use at the time of writing(65).

With the introduction of the European Working Time Directive, and despite the Gold report, came a major concern that trainees lacked the clinical experience needed to hold the consultant posts of the future. Rotas and shift patterns changed and team-based learning started to disappear. Doctors were working with superiors they were unfamiliar with and vice versa at all stages of training. This proved problematic for assessment in a progressively more competency-based era.

In 2003, the Department of Health published Modernising Medical Careers which called for more structured and organised learning programmes accompanied by timely, valid and reliable assessments for all doctors. This further developed a more competency-based outlook for postgraduate education and subsequently undergraduate medical education. Within this, there was a focus on development of skills including teaching and supervision (86).

The methods by which medical professionals learn are varied and can be broadly categorised into formal and informal. The informal learning is difficult to assess. Medical learning has traditionally been seen as a cognitive process but in today's medicine, a wider variety of influences on one professional are acknowledged, and more encompassing views such as socio-cultural are being discussed, where the environment and social practices are believed to impact on the learning that takes place on the job (90).

Assessment within postgraduate medical education is challenging because the composition of the junior medical team changes continuously, so seniors cannot develop a deep insight into the ability of an individual. This may reduce the quality and depth of feedback, but can allow for a more objective evaluation of a clinical skill based on a single event rather than a general opinion based on a long period of observation. However, feedback to an individual observer over a period of time 'averages' the 'score', and can fail to feedback on very good or very poor performances. A spot assessment tends to be more objective, although it does allow for the hawk/dove differences in marking or in other terms the innate stringency or leniency of examiners; one could argue that this can still be the case for those assessed over a longer period. Assessment of single events by multiple examiners may help to avoid the hawk/dove issue where a longitudinal assessment falls short. In 2007, a study of paediatric trainee views on workplace-based assessments showed that there was

ambivalence about the assessments being a true representation of their capabilities, and feasibility was difficult with difficulty finding assessors and nearly 50% of assessments being done retrospectively (91). There is a perception of them as a tick box exercise rather than a learning tool and assessment (92,93) and a call for more formative feedback (93,94). Any new tool development needs to consider this in its development as there are many work-place assessments, or supervised learning events, and trainees may discourage more. At the time of writing, the proposed new general internal medicine curriculum is trying to address some of these concerns (65).

Work place-based assessments (WBPAs) or supervised learning events (SLEs) were bought in in response to the competency-based curricula. They have been questioned, amended, discussed, modified over the last 8 years (95). Crossley and Jolly (2012) observed that judgements should be sought and not objective observations, and it is important to find assessors best placed to make judgements (95). In real life, on a busy ward, this can be very difficult, and conversely for the assessor, it can be difficult to assess a person in a tight timeframe with only a small window for assessment.

The rise in popularity and clear importance of inter-professional education is crucial to any new development within education and patient safety. Learning is not within a vacuum and in medicine we are constantly surrounded by people. The definition of inter-professional education is an occasion when 2 or more professions learn with or from and about each other to improve collaboration and patient care (96). This definition embodies ward round practice; the ward round team often includes doctors, nurses and a pharmacist. Role modelling is one such area of informal learning. Kenny (2003) states that it remains one crucial area where standards are elusive and where repeated negative learning experiences may adversely impact the development of professionalism in medical students and doctors (97).

The purpose of this thesis is not to debate different ways of learning or even describing learning on the job in medicine but to examine one of the principal learning experiences that all doctors and patients experience – the ward round.

The literature on the transition from registrar to consultant, or equivalent, is not substantial. New consultants feel prepared clinically but not for the non-clinical aspects of their jobs, namely supervision, leadership, management and handling financial issues (98–101). These align with non-technical skills considered so important in current patient safety research (32–36). This feeling of lack of preparedness in the generic competencies is associated with burnout (98). Increasing the amount of independency during the training was found to be essential for a smooth transition (98). More specifically, the supervision of registrars, especially during on call shifts, is stated as one of the

major stressors for new consultants (102,103). The majority of training programmes do not specifically prepare registrars for this role so this leads to on-the-job training (60,104–106). The doctors that they are supervising when they are on call is often unfamiliar to them and this adds to the struggle as well as seeing and taking responsibility for patients who they know little about (102). Also, enhanced supervision of trainees had been associated with improved patient- and education-related outcomes (107). Formal guidance has been published on supervision and the need for a holistic outlook with clinical and pastoral supervision (108).

Patient safety

Patient safety is a primary focus of current research within clinical medicine, but the focus of this research has been within the surgical specialities. This section will serve as an introduction to relevant patient safety policy on hospital wards.

Education and training are the key mechanisms to drive patient safety messages and initiatives forward. High profile reports, for example The Francis Report (53) and the Berwick report (56), have further highlighted the need for change in focus towards patient safety. The Berwick report highlights the main problems affecting patient safety in NHS and makes 8 key recommendations to address them. This report states that patient safety has to be the foremost consideration for anyone working in healthcare. The Francis report aims to improve the experience of healthcare after examining the failings in Mid Staffordshire Foundation Trust between 2005-2009. The Francis report states this, but also highlights the breakdown in communication, trust and teamwork of the clinical teams, as well as managerial teams, that led to the breakdown in patient care; these are all key non-technical skills as will be explained in depth in later chapters. It highlights the need for compassion and dignity to be considered not only for patients but also for staff, and the need for a morale boost to further enhance teamwork. The National Confidentiality Enquiry into Maternal Deaths stated that a lack of teamwork and communication are leading causes of substandard obstetric care (109).

The Care Quality Commission was formed in 2009 to regulate and inspect health and social care services in England. The safety section of the inspection process concentrates on quantifiable measures which are mainly outcome and clinically based. This section included reference to 'Never Events' and adverse events and their analysis and this analysis has shown the importance of non-technical skills (33–35,110). The most recent report of the quality of hospitals (2015-16) found that 1 in 10 hospitals (13%) were inadequate for safety (111). As far as leadership goes, the summary explicitly states that 9/10 (94%) of services that were rated as good/outstanding overall were also good or outstanding for their leadership (111). Similarly, 84% of services rated as inadequate overall

were also inadequate for leadership (111). Leadership is implicit in all consultant roles. The CQC Report states,

'In our inspections, we see that where leadership is strong, then safe, effective, caring and responsive care tends to follow.' (111)

The number of preventable deaths in acute Trusts in England remains uncertain but estimates range from 840 to 40000 per year, and these estimates were calculated from studies that identified adverse events but not whether they contributed to death or shortened life expectancy of those affected (112). A retrospective analysis of 1000 deaths in 2009 in 10 acute Trusts in England judged that 5.2% of these deaths had a 50% chance or greater of being preventable. Extrapolation of these figures suggests that 11859 adult deaths in hospitals in England were preventable (112). An older study of consecutive patients admitted to a general medical ward in 1981, showed that 36% of the 815 patients admitted had an iatrogenic illness and for 2% of the 815 patients this iatrogenic illness was believed to have contributed to the patient's death. It is reasonable to hypothesise that an effective and well-led PTWR is a key factor in delivering the high-quality leadership that has been identified as the foundation of safe patient care.

There has been little done within medicine and in particular medical ward care (113). GIM and medical specialities make up the majority of hospital admissions and in-patients. Medical ward care remains a source of error and mistakes. A large observational study in eight Dutch hospitals found that during the 5-14 week observation period, 625 unintended events occurred (114). Of these, more than half reached the patient, with suboptimal care being the most frequently occurring consequence.

A retrospective study looked at error rates of a stratified random sample of 621 patients (115). The most common error was an act of omission as opposed to an iatrogenic error. Inadequate care for patients with chronic diseases was found to be a particular concern (115). A retrospective study looked at implementation rates of 17 known effective patient safety interventions on medical wards. The sample size was 150 patients, and it showed a large proportion of underuse of proven interventions for unclear reasons (116). The authors highlight that further research is needed in this area in order to highlight why interventions are not implemented.

In the large observational Dutch study, human behaviour was found to be the most common root cause from standardised root cause analysis, as it was implicated in over 80% of the unintended events (114). A small study of 20 medical and surgical middle grade doctors were interviewed about their communication with nurses (117); the findings suggest that the doctor's communication was

influenced by their perceptions of a nurse's competence and cooperation. Nineteen out of twenty doctors interviewed reported that occasions of poor communication and relationships with nurses, however, most believed that this was not a threat to patient safety as the nurses role was one of 'simply following orders' (117). There is growing support for inter-professional collaboration, including inter-professional education. A large Canadian observational study (155 hours with 47 follow up interviews) found both formal and informal inter-professional interactions between doctors and other health professionals was 'terse' and 'unidirectional'. Interactions between health professionals that did not include doctors were richer and full of negotiation for both clinical and social elements of care (118). Two parallel studies on medical wards looked at the impact of an interdisciplinary round for enhancing communication and patient safety. The intervention arms showed increased collaboration with doctors, and perceived improved teamwork and safety scores (41,69).

Medical post take ward rounds lead on patient care, patient experience and most importantly safety from the outset of a patient's admission and hospital stay. The non-technical skills needed to lead this ward round include leadership, teamwork and communication, all of which have been highlighted as fundamental for safe patient care, and a good, safe functioning hospital. An effective, well-led medical post take ward round would be a key element in delivering high quality leadership that has been identified as integral to delivering safe patient care, and also maintaining a happy, cohesive effective workforce.

The various sections in this chapter are merely an introduction to the topic of ward rounds, patient safety and non-technical skills, especially leadership. It has introduced the medical ward and the medical ward round, given an overview of the difficulties facing physicians in today's clinical practice, and the emphasis from policy and national reports on patient safety and training within the continued delivery of effective service provision. It has introduced how junior doctors are currently trained for consultant practice including their appraisal process and continual assessment within a digital portfolio. It has also introduced the idea of non-technical skills and their importance within patient safety but also within a ward round.

Chapters 2 and 3 will examine the literature around training and ward rounds, and then the existing non-technical skills tools used within hospital medicine. The findings from these chapters and Chapter 4, an interview study of consultants and patients, will be used to help develop a formative leadership tool for medical PTWRs. The tool will be tested within a PTWR simulation which was simultaneously developed for this reason but also for onward training of senior registrars within

general medical specialities. The development of the tool and simulation and the appraisal of the tool form the latter chapters of this thesis. The thesis will conclude with a discussion.

Conceptual and methodological approach of this thesis

A need for further patient safety initiatives within medicine, more focus on GIM, improved training in GIM and in particular generic non-technical skills, is the background for this thesis. The focus is the medical post take ward round (PTWR) which is the core of GIM admissions and a key aspect of GIM training, requiring a variety of non-technical skills to lead. No training exists for this ward round for any healthcare professional, and there is no validated tool to measure individual performance.

This thesis and the projects within it focus on our current knowledge of medical ward rounds. It examines ward round leadership within medicine, in particular that of the post take ward round, how this can be assessed, and subsequently how medical trainees could be trained appropriately in ward round leadership.

The aim of my doctoral research is to highlight an area that is currently overlooked within patient safety and medical education research, namely ward rounds, post take or otherwise, and the medical specialities as a whole.

The mixed method approach used within this thesis is mainly qualitative. The approach is a constructivist one; knowledge is continually updated and subjective. Learning on ward rounds is influenced by its context, people involved including patients, operational pressures, and each element affects the others and vice versa. It is a fluid multifactorial process involving different people, in different roles. Govaerts and van der Vleuten convincingly argue for a constructivist approach towards work-place based assessments (119), and the tool developed within this thesis, although principally formative and self-reflective, has much in common with workplace based assessments.

The thesis will start with two literature reviews. The first is a narrative review on training on and training for ward rounds. The second is a systematic review on non-technical skills tools developed within medicine for doctors. Both of these will be useful for the subsequent chapters on the development of a non-technical skills tool for leadership on a medical post take ward round, and for developing training for leading a ward round, which also served to psychometrically test the tool. The fourth chapter will be a report on an interview study with consultants and patients about the medical post take ward round.

The whole project uses grounded theory methodology. It is inductive as there is little literature on the subject of ward rounds and training. Each element of this thesis feeds into the next, ultimately informing the development of the ward round tool. The process is iterative, and the tool and the simulation training for ward rounds were developed in parallel.

The tool evaluation does have a more positivist element. To show evidence of reliability and validity, statistical analyses is explained. The tool needs to be accepted by doctors, and doctors intuitively respond to a more positivist outlook by training.

Chapter 2

Ward rounds and training: a narrative review of hospital ward rounds and medical postgraduate training

Introduction

Chapter 1 described the importance of ward rounds for patient care and also for training of junior doctors. This chapter will explore ward rounds and medical training in more detail examining the literature on the subject.

'Ward rounds need to be restored to a position of central importance in how we collectively care for and communicate with patients'(4).

In 2012, the Royal College of Physicians (RCP) and the Royal College of Nursing (RCN) in the UK joint wrote a joint report on ward rounds to draw doctors' attention to this process as a focus for patient safety and training, responding to the clear variability in both purpose and conduct of ward rounds, as well as the fact that nurses are often completely invisible in the process. It sets out guidelines and examples of best practice (4). In the foreword to the report, they state,

'Despite being a key component of daily hospital activity, ward rounds remain a much neglected part of the planning and organisation of inpatient care.'

It is primarily a guidance document, setting out recommendations and principles for best practice, reflecting best available current knowledge of multi-professional working. They define ward rounds as 'a complex clinical process during which the clinical care of hospital inpatients is reviewed', but this neglects the additional role of a ward round to review social and continuing care. It acknowledges that the traditional ward round structure may need to adapt to suit the 'continually evolving, complex system' within which a ward round operates. Training and education are key features in the report. A brief search of the American Medical Association (AMA) and associated websites showed no equivalent report or associated report on ward rounds at the time of writing. However, there are studies conducted in USA that acknowledge the need for ward rounds to be given a renewed focus for improving patient care and these will be discussed later in this review. Jon C Nelson, a former president of AMA (2004-2005) stated:

'The greatest importance of education, formal and informal, lies not primarily in the intrinsic value of activity to the physicians, but in how these activities benefit patients.'(62)

All efforts regarding research, medical education, improving safety are all for the same final aim – improving patient care.

In the previous chapter, patient safety was highlighted as an important focus for research and quality improvement. Much published data to date has been within the interventional specialities, and while medical wards are still areas of risk and omission of care, very little research has been conducted on ward rounds in hospitals. Surgeons have clearer defined quality markers for surgical care, but these are yet to be fully agreed upon and reported in medicine.

Changes in postgraduate medical education have led to a competency based and increasingly time restricted training program, so all opportunities for training need to be maximised. Ward rounds rely on clinical acumen but also on a milieu of non-technical skills for all team members. A patient's safety is one of the aims of the ward round, but patient experience and involvement are also important. The RCP/RCN report highlights the role that ward rounds have on clinical outcomes but also on emotional outcomes for patients (4). The RCP/RCN list processes involved in ward rounds:

1. *establishing, refining or changing the clinical diagnoses*
2. *reviewing the patient's progress against the anticipated trajectory on the basis of history, examination, NEWS (national early warning score)* (120) *and other observations, and results of investigations*
3. *making decisions about future investigations and options for treatment, including DNAR (do not attempt resuscitation) and any ceilings of care*
4. *formulating arrangements for discharge*
5. *communicating all of the above with the multidisciplinary team, patient, relatives and carers*
6. *active safety checking to mitigate against avoidable harm*
7. *training and development of healthcare professionals.*

The final point on this list of processes is key to this thesis about the training and leadership on ward rounds. Ward rounds have been evaluated as inefficient by non-healthcare industries (121). They have not been formally evaluated by healthcare researchers, but the inefficiencies of ward work are often discussed anecdotally by those who work within it. The previous chapter saw a description of medical wards and the chaotic atmosphere which is created and currently serves the needs of patients and staff as effectively as possible, while maintaining the 4 domains of clinical practice as set out by the GMC (1).

Ward rounds in hospital medicine

The working practices of hospital doctors are changing; these changes are multifactorial both in cause and consequence. They have changed over the last decade with the introduction of the European Working Time Directive, real terms funding cuts, and changes to the workforce. It is set to continue to change with the introduction of 7 day working. These changes in working practice may affect both patient and educational outcomes, and there is an urgent need to assess quality in current practice, in order to see how practices are changing and the impact on patient care and experience. An exhaustive list of potential factors that may impact both patient care and also ward round practice is impossible to write with guidance from published data at present. However, factors that have or will possibly impact patient care could include:

- Changes to nurses' and allied health professionals' rotas, responsibilities and duties
- The changes to shift patterns for all allied healthcare professionals
- Changes in continuity of care, with a patient moving location and clinical teams usually at least once in their hospital stay. In addition, ward-based teams change frequently depending on 'on call' responsibilities so even within the same ward a patient will receive care from different doctors during their stay
- The 4 hour Accident and Emergency targets
- The development of Ambulatory, Acute Medical and Clinical Decision Units
- Rota gaps and staff shortages
- Bed pressures
- Pressures on social community beds and support
- NHS staff morale

Current practice continues to develop as we adapt to external changes, although medical ward rounds are still the cornerstone of physician practice, but we have little evidence that they are fit for purpose.

A study in 1989 of a survey of 608 doctors, which showed that 58% of SHOs and 84% of consultants regarded the consultant led ward rounds as the learning method upon which SHOs rely the most (122). This study is pre-Calman (123), the Gold Guide (89), and European Working Time Directive. The articles in this narrative review will focus on the changes in practice, training and attitudes since the changes discussed here and in the first chapter have come into practice.

A review of the published literature and formal reports reveals that there is a paucity of evidence for ward round quality indicators or best practice. There is considerable variability in practice within

each hospital, region, or nationwide. This variability comes from differences in organisation, finances, patient numbers and types of hospital with different services offered, but also comes from each individual consultant who has their own style, developed from experience but also from learning from others. There is also the need for a doctor to adapt to change as the environment both physical and also operational changes in response to many factors already cited but also to the change in patients including age, co-morbidities, frailty, and knowledge and interest in their health including access to knowledge, both accurate and, at times, inaccurate, online. Multiple other related factors also affect processes of ward round care. Diagnostic tests are more readily available in some areas, there is more choice of investigations, and patients may be better informed about healthcare and have rapid access to healthcare information on the internet. There are various calls for further research on ward rounds (4,20,124) and nearly all the articles in this review also expressed the need for further research.

It is important to provide a distinction between different types of ward round and the terminology used differs from country to country and continent to continent. Much of the ward round training literature was carried out in the USA. The nomenclature there includes attending rounds (implying that the senior physician is present), ward rounds or morning rounds and bedside rounds. Bedside rounds are for teaching or training more than service provision.

There have been studies conducted to try and change the structure of ward rounds, observe operational practice, improve service with measurable outputs such as readmission rates and length of stay with mortality. Pharmacist presence on ward rounds has been shown to be beneficial in reducing drug errors and providing a renewed focus on antibiotic prescribing (125,126). Consultant of the week practices with daily consultant ward rounds have also been shown to be effective at reducing length of stay, mortality and re-admissions rates (127). The research done on ward rounds tends to be small single centre studies. Results may still be valuable but there is clearly more work to be done.

Training on and for ward rounds is another area of literature. In the introduction to this thesis, ward rounds were described as being one of many vehicles for postgraduate and undergraduate medical training. The discussion that occurs on a ward round, and the possibility for a ward round leader to impart some knowledge or explain his or her decision-making processes means that it is a process that provides the possibility of training. It also provides an opportunity for 2-way communication, with participants being able to ask questions for clarity or even to improve knowledge or understanding. In addition to the training that can occur during the ward round, there is also the education that a doctor or medical student can receive in order to help prepare for their role on a

ward round or understand how a ward round works and its aim in greater detail. This training does not necessarily happen during the actual ward round process.

The following diagram (Figure 2.1) demonstrates a medical patient's journey from arrival into a hospital to the PTWR. This was briefly described in the Chapter 1 - Introduction.

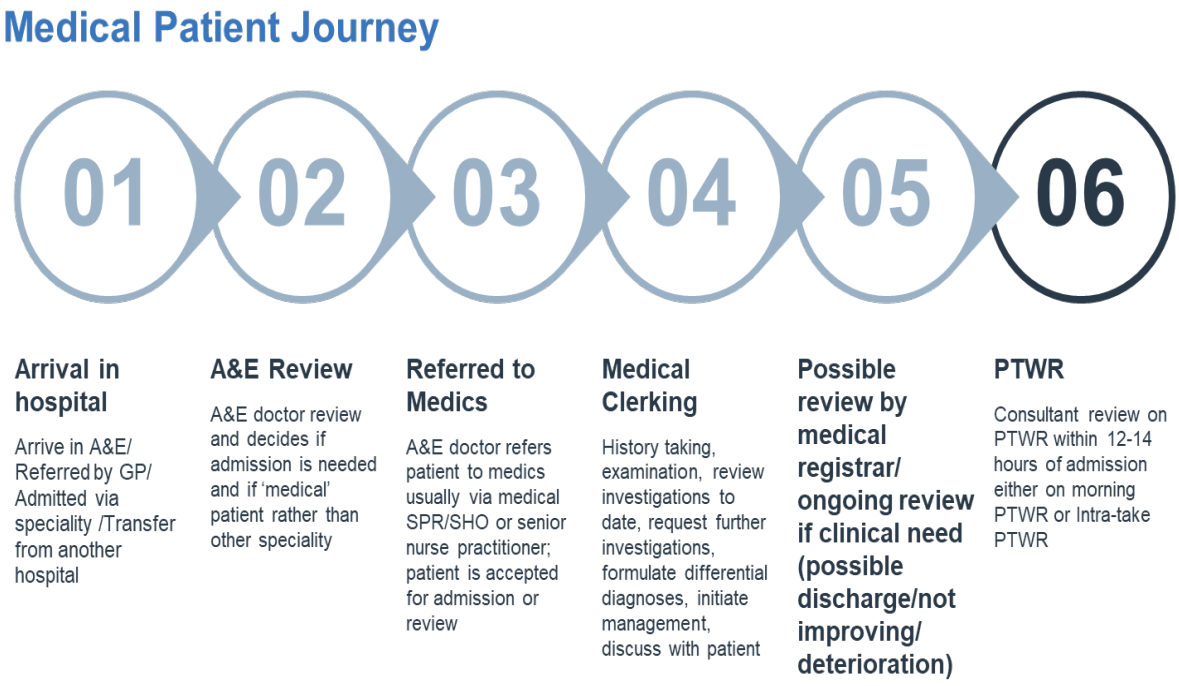


Figure 2.1 A flowchart of a medical patient's journey to the PTWR

Most admitting shifts, called 'take shifts' run over 12 hours. The following diagram (Figure 2.2) shoes how part of this shift runs for a junior doctor. The registrar oversees a team of doctors doing this process. They clerk as many patients as they can during the shift as there is rarely no one waiting to be seen. The process is continuous and relies on communication with other members of the ward team especially the nurse caring for a patient, and seniors, and for facilitating a smooth and safe handover to the next clinical team to come on shift.

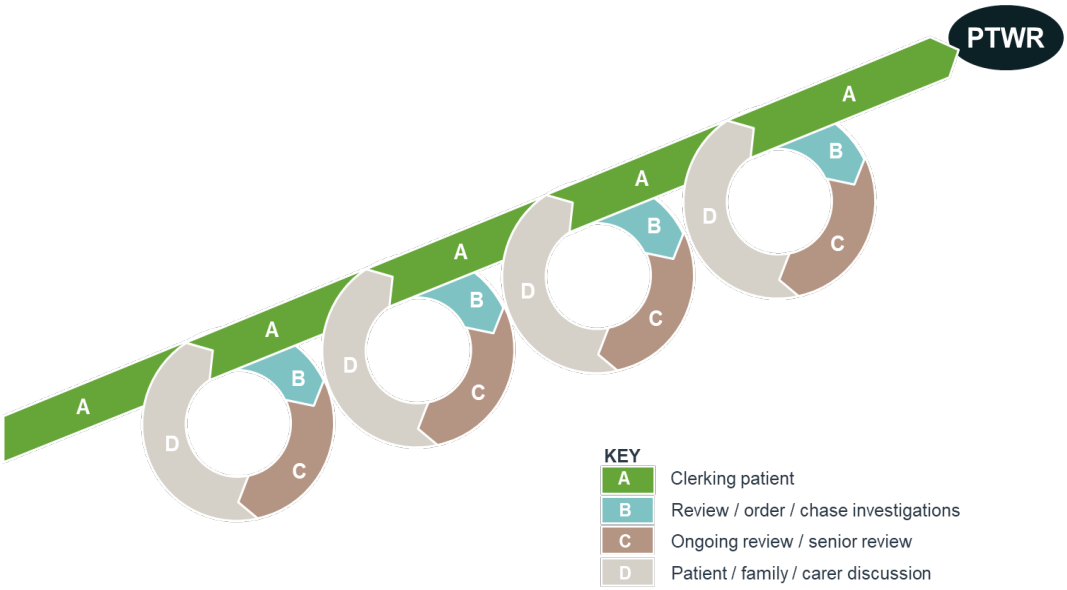


Figure 2.2 A snapshot of a junior doctors' responsibilities during a 'take' shift

Ward rounds are traditionally associated with training but the pressures of service provision are such today that the tension between training versus service provision is particularly relevant to ward rounds. The lack of clarity on markers of quality for ward rounds and ward care means that the study of ward rounds and training is difficult both in terms of measurement and evaluation.

This review will concentrate on ward rounds as an environment for postgraduate medical training. It will review and synthesise evidence for training on ward rounds and training for ward rounds. Training on ward rounds is what team members may experience of benefit to their training while taking part in a ward round, and training for ward rounds is the training that a doctor may or may not receive about how to conduct themselves as part of a ward round team and what is expected from them.

Aim

The aim of this chapter is formulated using the PICO (Population, Intervention, Comparison, Outcome) framework, which is used for clinical reviews. This is a narrative review of predominantly qualitative studies but our population is doctors, junior doctors as trainees and consultants as trainers on PTWRs, and these doctors are not limited to the United Kingdom. The intervention is the PTWR itself. The comparison is with ward rounds in general and ward rounds in the past (clinicians' experience). The outcome is training of junior doctors for consultant posts in keeping with the current General Internal Medicine curriculum (128). The aim of this narrative review is:

- What are doctors' experiences of training on or for ward rounds and are there any interventions for improving this?

Method

Literature search

An initial scoping search identified key terms for a ward round literature review. One previous review was found which discusses some of the articles in this review; its methodology was not systematic, and minimal synthesis of evidence was provided (129).

A systematic search was then carried out on Medline and Embase using the following terms:

- Ward rounds
- Attending rounds
- Daily Rounds
- Work rounds
- Bedside rounds
- Walk rounds

The databases were searched from 1995 to June 2016 (*time of writing the review*). Prior to 1995 there were very few articles on ward rounds written so it was decided that at least a 10-year period was a good frame for this narrative review. 712 English language articles were found; there were no repetitions. The following inclusion/exclusion criteria were applied during an abstract review.

Inclusion/exclusion:

- Articles pertaining to postgraduate medical education for doctors, not undergraduate (i.e. not medical students) on ward rounds
- Wards rounds including doctors and patients (i.e. not board rounds or nursing rounds)
- Adult hospital inpatient ward rounds (i.e. not paediatrics)
- Not psychiatry (psychiatric ward rounds are conducted very differently and lack the physical examination element)
- Articles excluded that describe technological interventions
- Articles pertaining to training on ward rounds or training for ward rounds
- Exclusion of editorials, letters, opinion and personal reflection pieces.

There were 42 articles that met the inclusion/exclusion criteria after abstract review *(Appendix 2.1);* 15% (107/712 articles) were co-reviewed by a medical registrar (Dr Zoe Brown) with an interest in educational research (kappa=0.95) *(Appendix 2.2).* Of these 42 articles, 33 are on the subject of training on ward rounds and 9 on the subject of training for ward rounds. Further full text review and a hand-search of relevant articles in each full text review article references led to a further 24 articles on training on ward rounds, and 10 articles on training for ward rounds being included (*Figure 2.*3).

The review will be separated into 2 parts with these sub-headings. Under each sub-heading there will be further division of subject material for the synthesis of the articles in question. The review is a narrative review and the articles will be reported within cohesive themes of subject material within the overarching theme of training and ward rounds. Particular reference will be made to the timing of studies as this is relevant considering the timeline of changes in policy, operational factors and training within medicine as discussed in Chapter 1 - Introduction.

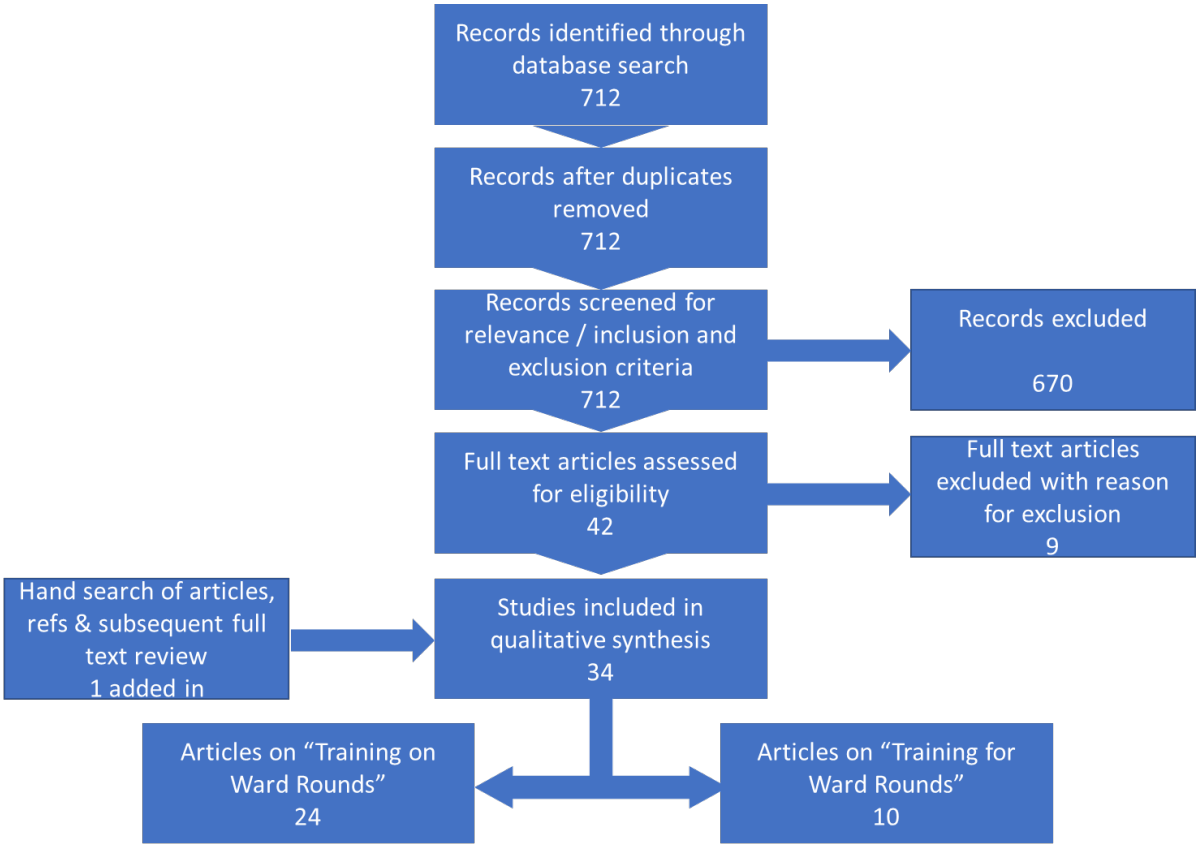


Figure 2.3: A flowchart of systematic review methodology

Difficulties with qualitative synthesis for ward round research

This search strategy maximised the sensitivity of the review's search for relevant articles in keeping with the methodology explained in Brown et al article (2012) on reviewing subjects with disparate literature within patient safety (130). Quality markers of ward rounds do not exist in the literature. A few specialities have tried to ascertain various quality markers for the clinical side of ward rounds (9,131) and checklists have been put together (11,42,132,133). The RCP/RCH guide on ward rounds also has some initial indication of quality for ward rounds (4). However, these few articles all speciality specific and single centre checklists, which poses a problem for the qualitative synthesis of this review.

Therefore, in keeping with the methodology explained by Brown et al (2012) on reviewing subjects with disparate literature, this review will be a narrative one. I did not undertake quantitative synthesis of the literature as the study methodologies and interventions are varied, and the studies described mostly small and single centre.

Evaluation framework of training interventions

Assessing training interventions is easier as the established Kirkpatrick pyramid is embedded in the literature for assessing educational interventions; it uses 4 levels of evaluation – reaction, learning, behaviour and results (134). However, many of these articles would fall short of this evaluation method as will be described later. The articles that make up this review are varied in speciality, focus and methodology. Each article will be critiqued with a reference to Kirkpatrick where appropriate; a broad overview of each article will be discussed with its strengths and weaknesses. Phillips added a fifth level onto Kirkpatrick's model which was 'Return of Investment' (135). This will be considered where appropriate.

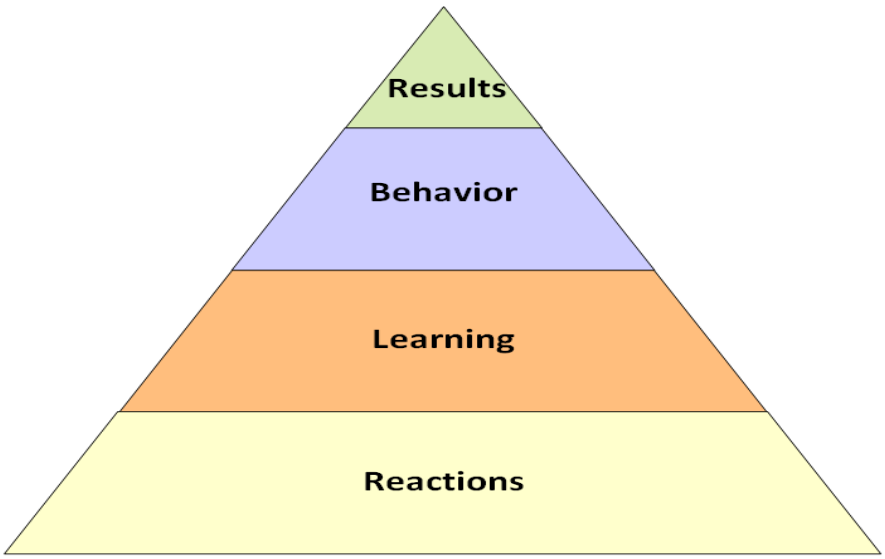


Figure 2.4: Kirkpatrick's Pyramid of 4 levels of evaluation of training

Results

Training on ward rounds

This first section will focus on the 24 articles found that focus on training on ward rounds. The section will be split into the following headings:

- Ward round observation
- Attitudes to ward rounds
- Operational factors

The Kirkpatrick model is not relevant to many of the articles included in this section as the majority are observational studies or questionnaire-based studies.

The results section will present the findings of the article and a brief description of methodology. There will be a brief critique where relevant. The articles from this section and the following section will be discussed in detail in the Discussion section, and the major themes of this review will be presented as a way of presenting the data from this review.

Ward round observation

Many of the studies written on the subject of ward rounds are observational studies. The methods differ in terms of how the ward rounds are observed but they provide a rich source of data especially in terms of the heterogeneity of ward rounds.

An observational study including ninety ward rounds (care of the elderly, general medicine and paediatric/ special care baby unit) led by 24 trainers (2/3 attendings/consultants, and 1/3 fellow/registrar grade) was carried out in Canada in 1998 (136). The observations concentrated on ward round structure, routines and the contributions made by trainers and trainees. Follow up questions were asked for clarification where possible. Analysis was carried out according to ward round structure. Teaching on the ward round was a theme common to all the ward rounds; there was no distinction made between business rounds and teaching rounds. Different types of ward rounds were valued for different reasons. The post take ward round was valued for the opportunity to review diagnostic and management skills with a senior, and registrar ward rounds were valued because of their approachability, their closeness in terms of seniority and higher levels of clinical experience and skill. As regards structure, they report 4 categories (136):

1. Ward round only (teaching or business)
2. Pre-ward round meeting followed by the ward round
3. Ward round followed-up with post ward round meeting
4. Pre-ward round meeting, ward round, followed by post ward round meeting

The majority of the ward round leaders conducted Type 1 ward rounds (136). The choice of structure was preference of ward round leader. They found the practice of either pre- or post-ward round meetings was variable with those where the trainee role was more active than passive providing more opportunities for on-the-job training than the opposite. They conclude that structuring discussion time into the ward round at some point maximises on-the-job training (136).

This study concludes that ward rounds provide a powerful opportunity for work-based learning but that the rounds may not always live up to their educational potential. Their value is under appreciated and also under-utilised. It also highlights clearly the variety of ward rounds and how they are conducted. The decision on how they are conducted is ultimately the decision of the ward round leader. The utility of the post take ward round was highlighted for providing the opportunity for a doctor to review diagnostic and management skills with a senior.

The need to maximise learning on a ward round is a theme of a very small study of 7 doctors in 1997, which examined the question asking of junior doctors on ward rounds and found that this was limited with only one ‘high-level question’ (demonstration of conceptual understanding, problem solving, evaluation) per 4.4 patients reviewed (137). This study is so small that it is difficult to make any generalisable comments. It does however show within the limits of the study that the opportunity for learning on a ward round is not maximised, if the engagement of juniors with questions is infrequent. This may also affect feedback from seniors to juniors.

In addition to the two studies reported so far, one study highlights the need for a greater emphasis on teaching on ward rounds; it explains that the training for ward rounds may not be good enough. Junior doctors and first year doctors (n=35) observed ward rounds in 2009, as participating observers, over 23 week days, and reported via email the time spent with their consultant on the round, the time spent within a patient room and whether a physical examination technique or finding was demonstrated (29). The inter-rater reliability was significant but no methodology for calculating this was included. Bedside teaching was provided on 38% on the rounds, with 17 minutes on average being spent with the patients (29). This study was conducted in the USA and although current guidelines recommend 15 minutes per patient in UK, some observation studies of real ward rounds report less time per patient: examples include: examples include 7.5 minutes (138), 12 minutes (12), and 16 minutes (29) . This study was accompanied by a follow-up survey of consultants and junior doctors, with 89% (n=16) reporting that greater emphasis on bedside teaching was required. 67% (n=11) reported that they did not feel prepared by their training in US to do bedside teaching. 82% (n=15) thought that more emphasis should be placed on bedside rounds (29). This observational study clearly shows that more work needs to be done to prepare doctors for ward rounds and that a greater emphasis on teaching is required.

One American study attempted to make the observation and measurement of teaching more objective. They developed an OSCE-style checklist of discrete teaching behaviours and evaluated it on 9 ward rounds (paediatric and general internal medicine); they call the study preliminary. The study was small with only two observers (139). The checklist had good internal consistency but demonstrated varied inter-rater reliability. They carried out a G study which refers to generalisability theory, which is used to determine the reliability or reproducibility of measurements under specific conditions; it is useful for assessing the reliability of performance assessments. Here it is used to determine the number of raters required to ensure adequate generalisability (i.e. the number of raters required to reproduce the results in terms of statistics; they determined that there had to be at least 3 observers to ensure acceptable generalisability (i.e. >0.7). The study is small and the checklist has not been thoroughly tested. If it was further developed to be an objective measure of teaching on ward rounds, its psychometric properties would need to be improved as 3 assessors would not be realistic in real life observations. There would also need to be an improvement in inter-rater reliability and further evidence of validity. It is good that there is a move to provide a more objective measure of ward round quality, especially in terms of educational benefit, but this study shows how difficult this is to do. It does not necessarily add much to the body of literature on ward rounds but shows the beginnings of a move to try and measure ward round performance.

Following on from this, a small prospective observational study conducted on surgical post take ward rounds in a local hospital in UK looked at 52 consecutive patients admitted by 7 general surgery juniors (140). Instead of looking at teaching behaviours on a ward round, the outcomes of the ward were examined. They examined the accuracy of clerking diagnosis, and management plan including investigations ordered. Twenty-seven percent of diagnoses were changed on the PTWR, and 35 % of patients had further investigations ordered (140). This is a small study in one centre but it does highlight the importance of the 'missed learning opportunities' if the clerking or admitting doctor is not present on the PTWR. However, the data on how many times the admitting doctor was present on the PTWR for the 52 patients is not reported; this would have been a useful guide. The main conclusion from this study is that in order to optimise the benefit of a post take ward round in educational terms, a junior needs to receive feedback on his or her 'clerking' of a patient – the assessment, differential diagnosis, planned investigations, management plan instigated and ongoing plan. If this doctor is not present on the round then this educational opportunity is missed and feedback potential is diminished.

The theme of feedback is central to a report in 1998 which showcases the use of video recording and analysis for feedback on UK ward rounds (141). The trial was very small and numbers or analysis of content were not reported so it serves mores an example of an example of method that can be used rather than a firm description of it as a methodology. These videos were analysed by an educationalist using a Content Analysis System according to a strict protocol rather than inductive analysis examining the dynamics of ward rounds or teaching methods used (141).

Attitudes to ward rounds

This next section follows the observational reports on ward rounds and reports the articles on medical professional's attitudes to training on ward rounds. The majority of these are questionnaire-based studies.

The first of these was in 1996; 62 interns (first year doctors) and 74 junior doctors from 5 hospitals completed a questionnaire on ward rounds (142); 100% response rate was achieved. The results showed that they thought 17% of ward round time was spent on teaching compared to 33% of case presentations and 34% on management problems. The teaching component of ward rounds was rated as 'highly effective' by 13% of participants (142). Attending rounds were ranked highest as regards educational value of activities, with general ward rounds featuring lower on the list. The respondents thought that the most effective teaching practices were a question and answer format, prompt starts and finishes, concise presentations and a formulation of a daily plan (142).

Another survey study (2005) had a 75% response rate with 102 students and 51 residents completing an email survey (143). This study highlights the need to present one's one admission clerking to maximise learning on a ward round, a recurring theme of this thesis. Residents reported that 28.2% of their time on attending rounds was spent by the bedside. 62% of junior doctors reported that they presented the case of a patient in patient's presence at the bedside less than 25% of the time (143). There was no convincing position for a preference for bedside presentations or presentations away from the bedside, with concern that presentations by the bedside restricts freedom of discussion. The majority of respondents (students and junior doctors) reported that bedside rounds were important or very important for learning clinical skills (143).

The opinion that ward rounds have poor educational value is echoed in a small study conducted in Wales, looked at obstetric and gynaecological trainee's attitudes on the educational value of ward rounds. The questionnaire comprised of 6 statements about medical education and overall ward round experience. 46 completed questionnaires were received; 8 consultants, 28 SPRs and 10 SHOs (144). It is unclear how many questionnaires were distributed hence the response rate cannot be calculated. 70% disagreed or were uncertain that they learnt something new onward rounds each day; the crucial word here is 'new', and 74% agreed or agreed strongly that they were not given the opportunity to lead a ward round in the presence of a consultant (144). The study is small and the pilot of the questionnaire was of 2 people. A focus group discussion was used to explore the findings. The focus group findings are explained but the analysis method used or number of participants is not noted. They report that the group considered the reasons for ward rounds not being a good learning experience were:

- lack of organisation
- interruptions (e.g. bleeps)
- time and lack of interest
- combined with an element of 'completing the formality' from senior colleagues.

They recommended more structure and the use of bleep free ward rounds, as well as the opportunity for senior trainees to lead a ward round under supervision (144). This last point links to the following results section on training for ward rounds. This study is not robust and provides no data from which to extrapolate but does provide insight into thematic context.

The subject of ward rounds and non-technical skills is introduced by a questionnaire study in Pakistan which had 134 respondents (68 postgraduate) of increasing seniority from students to registrars (145). The lowest satisfaction score was for teaching of clinical skills and bedside teaching,

and this was more apparent for postgraduate trainees. Postgraduates also requested an increased focus on communication skills, counselling and medical ethics (145).

Certain et al (2010) has a more positive outlook for the educational value of ward rounds, and more specific guidance as to how this can be achieved with an 'audience' of different seniority levels. They surveyed consultants and juniors about the teaching of different levels of seniority on ward rounds. All the doctors were from within internal medicine. The survey has a response rate of 53% (66/124). Ninety percent of consultants surveyed stated that multi-level teaching (i.e. teaching different levels of seniority of doctors) was the best aim on ward rounds, and the consultants questionned were split on whether this was difficult to achieve or not. Trainees reported that 86.5% +/- 1.7% (standard error) of the teaching received on ward rounds was useful and appropriate to their level of training. The most effective methods for teaching doctors of a range of seniority included broadening the question i.e. asking 'what if' questions, targeting i.e. asking specific questions of specific team members and novelty i.e. teaching newly published information (146).

Following the internal medicine trend, a telephone interview study of general medical attending physicians (consultants; n-34) from 10 US Institutions asked about strategies employed by bedside teachers (note: bedside rounds in USA are more selective of patients than traditional ward rounds in UK). Consultants reported organising rounds that were patient specific, trainee-specific or disease-specific. They wanted trainee buy-in and a review of learning objectives and expectations to ensure that these are realistic. The patient selection information from the interview study is not relevant to UK rounds (147). The participant selection was incentivised (small value gift certificate). The main aim in participant selection was to get a cross section from different institutions. As with all qualitative studies, the results pertain to the participants studied and any generalizable conclusions have to be taken with care.

A more general analysis by the same team with the same cohort of consultants found 6 main themes for the value of ward rounds: skill development for learners (e.g. physical examination), observation and feedback, role-modelling, team building among clinical team and patient, improved patient care through combined decision making and team consensus and the culture of medicine as patient-centred care (148). The 6 themes and their inter-relatedness is depicted in Figure 2.2 'The motivations for performing bedside rounds' (Note from authors: The sixth theme: The culture of medicine as patient-centred care is embodied in the listed 5 themes) (148). These themes are bought out in the common threads for this chapter and also the thesis in general. In particular, the emphasis on role modelling, the power of observation as a learning mechanism, and the need for feedback.

The same data was also analysed looking at content and timing of feedback as well as team-based reflection. The consultants interviewed reported giving a wide range of feedback either immediately, during the bedside round or in a one-to-one after the round. The also reported initiating team reflection (149). This study looks at consultant views on feedback.

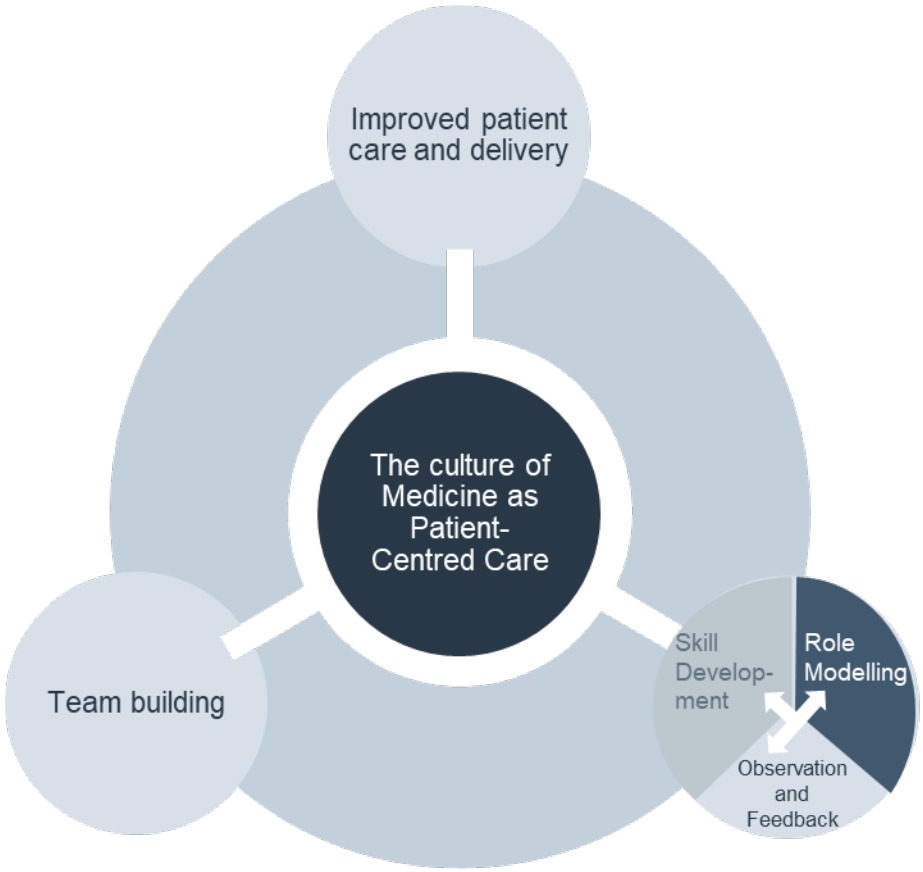


Figure 2.5: An adaptation of 'The motivations for performing bedside rounds' (Note from authors: The sixth theme: The culture of medicine as patient-centred care is embodied in the listed 5 themes) (148).

These themes share similarities with another small focus group study on training on PTWRs. There were 3 focus groups divided by grade or seniority of doctor (75). The general themes were:

- the pressure of time
- the lack of preparation for being on ward rounds and understanding one's role
- the limit of trainee autonomy with more readily available consultant reviews
- the importance but lack of feedback
- the advantages of a senior thinking out loud
- the importance of presenting the patients that you clerked

- clarity of roles
- the varied consultant styles
- the value of role modelling

Questions to or from trainees revealed some interesting contrasts. Being asked questions was stressful and almost conversely, the lack of questions can be interpreted negatively by a trainee as a reflection of the consultant's judgement of their competency. More junior trainees were concerned about being 'pests' by asking questions of seniors (75). The general themes of this small study again echo the value of role modelling and feedback. It also highlights the importance of presenting your own admission clerking on a ward round in order to get immediate feedback both explicit and implicit. It begins a conversation on the impact of increased consultant presence on junior's autonomy and decision-making skills development.

A theme not touched on by either of the preceding studies is that of time and length of ward round and the impact that this has on learning. A questionnaire-based survey was carried out in UK of doctors in their first 2 years of training (trainees) and their trainers (registrars in this case). The questionnaire was followed up by small group discussions. Sixty-two percent of the Foundation doctors (n=33) returned the questionnaire; 52% of medical registrars also responded (n=14) (150). Foundation doctors spent an average of 10.5 hours (+/- 5.4 s.d.) per week on ward rounds. The more frequent the ward rounds, the faster they were and consequently they felt more rushed. Educational opportunities focussed on interpretation of results and diagnosis management rather than examination findings and symptom management. As ward rounds become longer, the learning becomes more prolonged and less fruitful. These foundation doctors report a median of 18% (0-50%) of their learning takes place on ward rounds but also that a median of 9% (0-20%) of a ward round is spent on teaching. The registrars report a similar amount or foundation doctor learning is on ward rounds but report a higher percentage of the ward round is devoted to teaching (20%). The follow up discussion showed that much of the learning may not be recognised as such. The attitude of a senior doctor to a patient is unrecognised by the learner and poorly acknowledged by the teacher but a source of 'unrecognised teaching'. This is role modelling and can be negative or positive. Ninety percent of foundation doctors thought that the ward road could be made into a better teaching opportunity but no suggestions were given. Time was considered the biggest obstacle to learning on ward rounds and number of patients for service provision considered the second biggest obstacle. The power of 'observation' on a ward round has been noted in preceding studies but here this is explained as 'unrecognised teaching'. By being present on a ward round and observing your colleagues, is educational even if the teaching is not explicit. This is a theme throughout this thesis.

'Unrecognised' learning opportunities were also found in an ethnographic study of ward rounds. Sixty-three bedside episodes within 18 ward rounds on 4 different wards over 8 weeks were recorded and there was a follow up semi-structured interviews with students and clinicians (151). Every bedside episode on a ward round provided opportunities for learning clinical communication but this was not always recognised as it was not labelled as such. Interestingly, the consultant was the only clinician that knew the patients on 4 of the 18 ward rounds but this observation was not the purpose of the study.

The practical aspects of a ward round and their impact on training are central to a questionnaire study of doctors in their first 2 years of training was carried out in a large teaching hospital. There was a 45% response rate (40/95) (152). Most of these doctors participated in 5 registrar or consultant led ward rounds a week which had an average duration of 134 minutes (15-300minutes). Forty-three percent of respondents felt that ward rounds were service led and had no teaching content. Seniors rarely asked questions or provided feedback. Opportunities to ask questions, present patients or learn new information were limited. Ward rounds came fourth in a ranking exercise of educational value, after textbooks, online resources, and lectures but before journals and conferences. The main obstacles to ward rounds were time pressures, interruptions, number of patients and lack of interest from seniors. There were a few suggestions for improvement which included changing ward round structure, having protected teaching time, and changes to junior and senior roles on the ward round.

A similar study was carried out by the same authors but for senior trainees. There was a smaller number of participants (n=14) and again the was a questionnaire followed up by interviews (purposive sampling n=4) (153). 79% of respondents felt that the focus for PTWRs was service provision with little time devoted to teaching. They reported receiving rare feedback (71%). The value of observing consultant behaviour was noted (153). The main obstacles were similar to before: time pressures, workload, interruptions, lack of follow-up of cases and lack of feedback. Improvements suggested included a return of the firm structure of on-call shifts, asking and providing of more feedback, and that trainees should be more proactive in following up cases (153).

Operational factors

The final studies focussed on the more practical aspects of ward rounds and their impact on training – length of ward rounds, other time pressures and interruptions such as pagers. This section concentrates on the operational aspects of ward rounds, and how this impacts on training; for example, the impact of changes in junior doctor's hours. It starts with a prospective audit style study that looked at the impact of the changes in junior doctors working hours. The following studies also

touch on this theme but also look at how much a management plan and differential diagnosis is changed on the ward round, and whether the doctor who clerked the patient was present, providing a possible example of missed feedback and a missed learning opportunity.

A prospective study of the impact in changes to junior doctors working hours and hospital waiting time initiatives on teaching and learning opportunities for junior doctors. An audit of post take ward rounds was conducted during two 7 day periods in 2006 and 2008 of 317 and 354 patients admitted (43). Within these 2 years, various operational changes were made which resulted in an increase in consultant reviews within 24 hours of admission (154,155).

The study was conducted in Liverpool where there was a full shift system in operation in 2008 with 2 consultant ward rounds a day. The study was conducted by ward round observers. Potential learning opportunities were characterised if the admitting doctor was present for the senior review, changes in diagnoses sufficient to alter management, and documentation of review of investigation results by admitting doctor. Between the two time periods, there was a substantial increase in consultant reviews but a concomitant decrease in patients being seen by a registrar prior to consultant review. The figures from the study are shown in the table below (43).

Consultant and SPR review		**Consultant only review**		**SPR only review**	
2006	*2008*	*2006*	*2008*	*2006*	*2008*
48.2%	**44.3%**	**24.7%**	**45.4%**	**26.2%**	**6.8%**

Table 2.1: A table showing the results of an audit of PTWRs conducted in 2006 and 2008.

In both instances, a very small percentage of PTWRs were conducted in the presence of the admitting doctors (3% in 2006 and 8% in 2008); this increased if ward rounds were conducted earlier, i.e. before 9am (OR 6.3, CI 1.3-31, p=0.003) (43). In about half of the cases for both time periods, the admitting doctor had not recorded reviewing the results. On review of the results and with the benefit of hindsight, diagnoses were amended in 25% of admissions (43). This study has a simple workable design that could be replicated in other studies today.

This study shows the potential for the impact of changes in junior doctors' hours on training during wards rounds. As consultant reviews increase, registrar reviews decrease. The effect on registrars' training is not analysed but the information shows that this impact needs to be measured. It also shows that results were not reviewed by admitting doctors meaning the possibility of a missed

learning opportunity and also that diagnoses were amended in 25% of admissions, showing that if the admitting doctor had been present then there would have either been direct or indirect feedback on his differential diagnosis.

The need to be present in order to see changes made to diagnoses and management plans is echoed in the following study. The findings of the small prospective observational study of surgical PTWRs in UK which found a high proportion of diagnoses and investigation plans changed on the PTWR is also relevant in this section (140). It does not inform us the percentage of the admitting doctors who missed the PTWR to learn of the changes and why the changes were made.

On this theme, a large study (297 first year doctors from 36 UK hospitals) conducted in UK found that junior doctors knowledge of patients was greatly increased when they had the opportunity to perform he admission clerking and attend the PTWR (156). The study had large numbers and consequently good power calculations ($p<0.001$). The questions asked in an interview pertained to a specific patient's history and admission, who was presently under their care. A very small percentage had clerked this patient in (8.4).

This section has shown that there has been an impact on changes in junior doctor's hours and their ability to be present on the PTWR to present the patients who they clerked and thereby receive either direct or indirect feedback. It has also shown that the increased consultant presence does seem to have had an impact on independent registrar reviews. However, the educational impact of both of these has not been analysed.

Training for ward rounds

This second result section concentrates on training specifically for ward rounds. This section is divided into the following sections:

- Assessment tools
- Curriculum/ Checklists for ward round training
- Simulation training
- Other ward round training interventions

As with the previous section, the articles will be presented with critique where relevant, and the results will be discussed in the Discussion section with an aim of drawing out some key themes from the literature on training and ward rounds.

Assessment tools

Only one ward round 'tool' was found in this literature review. It relates to the practical elements on a ward round such as reviewing the observation chart to check on a patient's vital signs and reviewing a patient's current medication by way of the drug chart. The tool, reported below, pertains to the running of a ward round and has only had initial testing so it is unclear how it could be used for training for ward rounds but it may have potential in this regard.

The Surgical Ward Round Assessment Tool (SWAT) tool was developed in 2015 (157). It was developed following modified Healthcare Failure Mode and Effects Analysis which identified ward rounds steps. 30 ward round steps were identified. The content validity evidence comes from this method of development but there was no expert or literature review. More senior surgeons scored higher with the tool than junior ones in simulated ward rounds, which gives an element of construct validity. This evidence was added to in real world ward rounds, where again more senior surgeons scored higher. Inter-rater reliability was above acceptable levels using intra-class correlation coefficients. The tool itself worked similar to a checklist and had no elements concerned with non-technical skills or leadership (157). There was no internal consistency analysis which would have benefitted the psychometric work up of this tool.

This tool could potentially be used to guide ward round practice and therefore also guide training for wad rounds. It was developed as an assessment tool for performance on ward rounds. It is not clear how it could be used to develop a person's ward round performance. This article highlights the lack of preparation for ward rounds that doctors receive, and their tool is one possible answer to this. It is primarily concerned with the clinical aspects of a ward round and we have seen elsewhere that the non-technical aspects of a ward round are equally important for safety and also for training, and these are unacknowledged in this study. As it stands, this tool is in its infancy of development and does not even examine the 'reactions' level of Kirkpatrick's pyramid.

This tool does add to the knowledge of ward rounds in general as it includes important aspects of ward round conduct for patient care akin to a check list. Further checklists are discussed in the next section.

Curriculum / checklist for ward round training

Following on from the discussion of the one tool developed for ward rounds, several checklists or curricula exist.

A 'considerative' checklist was introduced by one consultant in one hospital for use on medical PTWRs (158). It is used as a clinical checklist but also as a training guide with feedback administered

at the end of each ward round to participants. It is not validated. The formative assessment process was evaluated by means of a questionnaire sent out electronically and via social media (100/300 respondents and 40/69 respondents respectively) with 10 follow up interviews (158). The findings are that the formative assessment process was preferred to case based discussions because they are driven by the supervisor as opposed to the trainee. The findings also suggested that there were self-reported changes in behaviour with improved note keeping and safer prescribing. This evaluation process is led by one clinician and has not undergone psychometric testing but the feedback received is positive. This relates to level one of Kirkpatrick's pyramid. This study again explains the need for more work to be done in this area. It also describes a possible way to combine education, assessment and service provision albeit in a small single centre study led by one physician. Its strength is that it provides a clear avenue for timely feedback on ward round, an area that is in need of improvement. Feedback is required for improved, safer practice.

The next study follows from the introduction of the 'considerative' checklist. A small questionnaire based study looked at the opinions of medical registrars on learning on PTWRs and also the use of the 'considerative' checklist (159). This checklist had been designed and used previously buy one of the authors but has had no formal psychometric testing. Eighteen out of twenty-five registrars responded (72% response rate). None of the registrars asked had had formal training in PTWRs; this is an interesting finding as they will all be leading PTWRs as a consultant. Ninety-four percent reported that exposure to the checklist has changed their thinking and 88% reported a change in practice; it is unclear whether this has been sustained (159). It is also unclear what 'exposure' to the checklist meant for all trainees, although the range of ward rounds attended which were led by the developer was given. Additional factors such as role modelling may well have had an effect as well as the checklist as the experience of working with a consultant interested in developing registrar skills is likely to have had an impact. This last point is useful in discussion on the influence of an interested party in your training and development. Training is influenced by the person who delivers it, and so an engaged interested trainer is a bonus. This study and the previous one again show that there is a need for improvement in the educational aspect of a ward round, and training both on and for a ward round. The checklist could serve as a guide to further ideas on a curriculum for ward round teaching or considerations in ward practice.

The following study explains the development of one such curricula but within a simulation environment. However, it focused on expert input for the content followed by questionnaire feedback from trainees. A modular, simulation-based curriculum was developed according to validated methods (160). They used an expert consensus framework – a 3 step process of predevelopment analysis, curricular development and curricular validation. A questionnaire was

given to selected trainees (18/20 responses) to identify quality markers and desired points for improvement for ward rounds. The questionnaire responses were analysed into emergent themes and these were combined with existing surgical curricula to determine cognitive, team-based and psychomotor learning objectives. It focussed on the non-clinical aspects of a ward round. This was then used to determine a modular design, and this was accompanied by a literature review to find validated training and assessment tools. The following were deemed to be factors critical to ward round quality by the questionnaire responses; the sample size here was small and limited to one surgical centre (160):

- Staffing
- Documentation
- Time management
- Communication at handover/debriefing
- Systematic approach
- Team approach
- Workload
- Patient location

These were condensed into 3 themes: patient assessment and management, communication skills and teamwork. A half day training course was developed with a pre-test confidence assessment, a didactic session, simulated WR, debriefing and feedback and a post-test knowledge and confidence assessment (160). The assessment tool for the WR was the surgical ward care assessment tool (SWAT) (157). The non-technical skills involved were assessed using the Non-technical Skills Scale as it had been previously validated for ward rounds (160). The validation of the training and tool use are not presented in this article.

This article shows a method of development similar to that presented in the following chapter for non-technical skills assessment tools. It focuses on the importance of the non-clinical aspects of the ward round including the importance of team work. It touches on feedback and the need for further preparation for ward round practice. It also touches on the difficulties involved in conducting a ward round with a variable workload, patient location and time constraints. These are all themes mentioned in Chapter 4, the interview study of both consultants and patients.

Simulation

The previous study described the development of the curriculum for a simulation half day on ward rounds. One further study describes a personal experience of setting up a ward simulator within an education centre (161); it is accompanied by a small non-systematic review of the literature. It is

very much a discussion piece and excluded from further analysis but it is part of group of articles by Pucher *et al* who looked at simulation and ward round care. The article continues this research groups clear drive to add to the literature for ward rounds because there is so little ward round research. The aim of the group is to provide a structure for conducting ward rounds and is primarily for research purposes rather than assessment of real-world ward rounds. They emphasise non-technical skills as well as clinical practice and their research is conducted for surgical ward rounds.

Consequently, this research team, based in London, presented their validation of the simulated ward for assessment of ward-based care, concentrating on a simulated ward round. The simulated 3 patient ward rounds were assessed using a checklist and modified NOTECHS score as well as a fidelity questionnaire (162). Nine senior and nine junior trainees were assessed. Senior trainees performed significantly more assessment tasks (73% +/- 2.8% vs 63% +/- 2.5%, P=0.016) and management tasks (73% +/-4.5% vs 59.4% +/- 5%, P=0.058); note is taken of the p values here. Senior trainees committed 8 adverse events and junior trainees committed 15 (P<0.001). Senior trainees scored higher on nontechnical ability (NOTECHS score 21.8 +/-0.61 vs 18.1 +/- 1.12, P=0.017) (162). The feedback of realism was positive. These results show evidence of construct validity for the training and also tool use with small numbers of participants although the p values are variable. No other psychometric testing was performed. Feedback was positive for the realism of the training (162) but no data is provided as to how they felt the training had impacted them, what they had learnt, or whether the training may lead to a change in behaviour in keeping with Kirkpatrick's pyramid.

The simulation was further evaluated using a randomised controlled trial approach. Junior surgical trainees were randomised into a control group (standard practice) (n=15) and an intervention group (receiving a half-day educational simulation-based intervention with lectures, structured feedback and debriefing – as previously described) (n=14) (163). All the trainees then took part in a simulated ward round of 3 patients and were assessed using the W-NOTECHS (NOTECHS tool modified for ward round use), and the surgical ward care assessment tool (SWAT). All participants completed a pre- and post- test confidence questionnaire and feedback forms. The intervention group achieved better patient management, assessment and non-technical skills scores (163). All participants in the intervention arm felt that the intervention had improved their practice; no significant difference was found in self-assessed confidence levels between the two groups (163). This is a well-designed study with clear results despite the small number of participants. The evidence is far greater for evaluation of this training intervention than for the previous study. Reactions were good to the training with a potential improved performance as measured against the control group as opposed

to themselves. It is unclear whether behaviour has been changed as this would require longer term follow up. For this reason, this study only relates to the first stage of Kirkpatrick's pyramid.

A smaller simulation study was conducted with junior surgical trainees looking at their level of preparedness for their ward round roles (164). An audit had highlighted concerns from juniors about inadequate training on surgical ward rounds and preparedness for their role (6/13 replies to a questionnaire). Consultant feedback also suggested that ward rounds were of poor quality, led to delays which potentially affects patient care, and limited teaching time (164). As a result, a near-peer led induction was introduced which included simulated ward rounds, and an updated survival guide. Self-perceived levels of preparedness improved from 5.8/10 to 8.75/10 and satisfaction with the placement was high. Consultant feedback demonstrated an 83% improvement in their ward rounds (questionnaire given after the introduction of the induction with 6/8 responses) (164). The numbers in this study are small and the feedback is positive. The questionnaire free text responses after the intervention are clear as to the personal benefit experienced (164), but it is unclear how much this intervention plays a part in the later reported overall 'improved' experience of the firm as there is no direct comparison. The consultant feedback is useful, but bias may account for some of the results and the numbers are too small for rigorous statistical analysis. It is also unclear how much the survival guide impacts any change and how much was the simulation – both useful interventions. The study achieves elements of the first stage of Kirkpatrick's pyramid of evaluation of training.

Lack of ward round training led to another simulation training intervention. This was a larger study with over 100 participants (students and first year doctors) (165). The ward round simulation development is not described. Pre and post course voluntary surveys found that few participants had had ward round directed training previously. Self-rated confidence levels were shown to improve for leading and documenting ward rounds, and over 90% of both groups believed such training should be included in the undergraduate curriculum (165). A 6-month post training questionnaire had 17 responses and 65% felt that the training had been useful in preparing them for ward rounds. The authors believed these should be consolidated in postgraduate training (165). Again, the evaluation does not include validity or reliability analysis and there is only reference to confidence levels – Kirkpatrick level 1 – and no reference to other training evaluation.

Other ward round training interventions

A team in USA introduced a novel approach to training on ward rounds. The developed a so-called 'Gatoround', named after their college mascot. The study had a pilot phase and second implementation stage. It involved applying athletic principles to ward rounds, supplying each

member with an orientation explaining Toyota production principles (TPS) to ward rounds, which have been shown to improve quality and efficiency in manufacturing, and has been applied to health care with success (166). Resistance was experienced as 'patients are not like cars', and so they changed the focus of TPS recasting the principles as athletic analogies (166):

1. Playbooks – describing in detail the role of each player; TPS uses protocols
2. Understanding who is passing and receiving (e.g. quarterback playing football); TPS emphasises effective customer-supplier relationships
3. Game films – allowing coaches to examine and review performance; TPS encourages scientific enquiry to encourage hypothesis-based improvement

Experimental groups of ward round teams were provided with 'playbooks' i.e. role descriptions, key customer-supplier relationships i.e. caregiver-patient, doctor-nurse, and finally the concept of the game film mentality i.e. continuous feedback and focus on improvement. There was a control group team as well. The principal investigator observed ward rounds weekly making suggestions for improvement. He and the 'case manager' for the ward round graded the consultant leader and this led to the second phase exclusion of some teams as they found that consultants with low performance scores had longer lengths of stay and higher readmission rates. All clinical staff were asked to complete an anonymous survey plus patients who were capable (166).

The intervention resulted in a 30% reduction in 30 day readmission and an 18% shorter length of stay (relative length of stay) (166). The anonymous surveys documented higher satisfaction with the rounds and that teaching had improved. The experimental team also saw a reduction in length of ward round. There was one experimental and one control team so several compounding factors could have been at play of these results, although they each had more than one attending conducting rounds. There were no differences in patient satisfaction between the 2 groups (166). The group report that a larger study is now being conducted. This study was conducted over 2 time periods as resistance to change experienced led the principal investigator to do a leadership fellowship to help facilitate change. Presently, the information reported does lend itself to criticism for bias, small numbers and possible confounding factors but the results are interesting, promising and novel. However, the strength of this study is that is provides juniors with relevant feedback on which they can base their professional development. It also does provide a possible level 4 Kirkpatrick outcome as length of stay was reduced in the experimental team.

Direct teaching on ward rounds is also explored in one study but in a very different way. The effect of a bedside rounding workshop midway through a rotation was examined. There were 44 participants (middle grade doctors), and after the workshop the number of bedside rounds

increased from <1% to 41% (167). The authors found that the time spent to deliver a bedside round was similar to alternative forms of rounding and that patient preferred bedside rounds and many first-year doctors reporting that bedside rounds were better for patient care. However, the middle grade doctors performing the rounds were less likely to believe that they were more educational (167). Ward rounds are delivered differently in the States than in UK where bedside rounds occur most days. It is unclear what the situation of rounds was prior to the intervention, although they do report an increase in bedside rounds and a decrease in ward rounds, for readers unfamiliar with the differences between their own country and mode of practice and that in the States, it would have been useful for these to have made implicit. The inclusion of the workshop may have been directly responsible for the increase in rounds but no one can say this for certain.

A small study describing a novel approach to improving teaching on ward rounds was reported in 2010 (168). It involved designing a new teaching tool that was not psychometrically evaluated but at certain points on the ward round or in reference to certain cases, members of the ward round team left the ward round in pairs of a senior and a junior trainee to research a particular point or question. The senior ensures that the junior has learnt 5 key points before returning to the ward round to report back (168). The evaluation method was a survey and focus groups and detailed methodology is not explained but ward round leaders report that this novel approach led to less bedside crowding, and alleviated concerns about meeting multiple needs of doctors and patient on the ward round. Trainees felt 'less in the way' and found it easier to ask questions (168). It is a method that appeals to the teaching of different hierarchies of learning which is relevant when you have a team of doctors of different levels of seniority and experience as well as other members of the inter-professional team. However, the approach needs a formal pilot and testing phase with robust evaluation and feasibility assessment. This study does demonstrate the need for an open dialogue within a ward round in order for training to be maximised. This involves not only feedback, but the need to ask for explanation or questions regarding clinical practice. It is a novel approach to combining service delivery with on-the-job training.

Discussion

The themes found in this review are summarised in Box 2.1 below:

1. **Poor educational value of ward rounds**
2. **The importance of 'unacknowledged learning'**
3. **The importance of learning through 'role modelling'**
4. **The importance of feedback**
5. **The importance of having the opportunity to present one's patients to a senior on a ward round**
6. **Poor preparation for ward round practice at the beginning and end of training as a junior doctor**
7. **The possible effect of an increased consultant presence on registrar's autonomy and decision-making skills**

Box 2.1 A summary of the themes found in the review of literature on ward round and training

The literature found on ward rounds and training is not extensive. Most of it consists of observational or questionnaire/survey-based studies of small single centre populations. In the section on training for ward rounds, there are 3 simulation ward round training programs developed for trainees within surgery, in particular junior trainees (10,164,165). There is no information on the sustainability of these projects and all have evaluation data that falls mainly within the first stage of Kirkpatrick's pyramid. The second or third stages of the Kirkpatrick pyramid are not achieved by any study in this review as no study showed a sustained difference in learning or behaviour that is not self-reported. Much of medical education research does rely on the first stage of Kirkpatrick's pyramid and there is an over reliance on self-reporting questionnaires because other methods are hard to employ within the medical milieu of a hospital. It is acknowledged that fully evaluating educational programs within medicine and proving that there have been changes in information or knowledge or any return of investment is very difficult. However, these training programs remain local. There is a need to share successful ideas nationally or globally in order to improve training and also improving numbers for evaluation processes.

There are various themes emerging from this review. In general, the educational value of ward rounds is considered to be poor. This has been shown throughout the articles reviewed and stands in contrast to the 1989 survey of 608 doctors which reported that 58% of SHOs and 84% of consultant regarded the consultant-led ward round as the learning method on which SHOs most relied (122). The objective evidence is not present in the literature but the subjective opinions of large groups of doctors of various grades of seniority is hard to ignore. This was the driving force behind many of the articles which are either trying to measure this attitude by asking doctors directly or assessing ward rounds using observational methods, but also those that have led to training being developed to improve training on ward rounds to increase their educational benefit.

There have been examples that at each stage of training there is minimal preparation for the ward round element of one's job whether that be as in the first few years of life as a doctor (164,165) or as a new consultant (142,144,159). There is a reliance on 'on-the-job' training. As a doctor gets more senior, the lack of training becomes more of an issue as supervision becomes less and ultimately these doctors will be the supervisors themselves. In order to maximise patient safety, and the various initiatives that exist for this aim, they need to be monitored clinically especially on a ward round, the role of training for ward rounds as consultants is essential.

Much learning on ward rounds may be unacknowledged. This is a theme throughout this narrative review (150,151). Observation of practice and how senior doctors act and behave is learning but may not be perceived as explicit teaching by trainees especially junior ones. Senior trainees seem to have more of an insight into this than junior trainees (150,153). Within this theme, an important subtheme emerged – role modelling. Role modelling is crucial to ward round learning; the practise of observing seniors and their individual styles in order to determine your own is learning (75,148,150). It is not didactic clinical learning but development of one's own non-technical skills. Role modelling happens throughout medicine, but ward rounds rely on patient interaction and the communication that this should involve. It is these patient interactions that juniors observe and look at particular seniors as role models, or even just parts of a senior doctor's behaviour or communication skills that they admire as oppose to the whole behaviour. Juniors and peers then use this observation to develop personally. Role modelling is especially useful in the development of non-technical skills used in every doctor-patient interaction, especially on ward rounds. Most of the clinicians surveyed in these articles who talk of role-modelling report that it is an effective mode of learning these important skills.

On a more clinical note, there were frequent references to the importance of being able to present patients that a doctor admits, to a senior on a ward round, i.e. being present on a PTWR to present your patients. This is considered crucial for learning and feedback (43,75,140,142,143,156). Apart from the general theme of the poor educational value of ward rounds, this was the most frequently noted theme in this review. If diagnoses or management plans are changed without the original doctor's involvement or awareness, then the feedback process is lost and learning is wasted. This is very difficult within the shift-based system but is something that has to be considered in the future for any rota or shift schedule developers so that learning is maximised. In order for these presentations to lead to learning or development, feedback is required. Feedback is another theme (75,149) and its importance is highlighted for learning to occur and currently the business non-educational style of ward rounds does not seem to include much feedback to enable learning.

This provides an opportunity to look for other possibilities of giving educational feedback to trainees. A trainee can follow up a patient and their clinical journey in order to maximise his or her learning. This is sometimes practically difficult in a large hospital with complicated patient tracking systems that often doctors do not have access to, but its main constraint is time. There is little time available for such self-directed feedback except in a doctor's own time. Computer systems that allow you to mark a patient as someone who you would like to track progress of remotely may be possible in the future with the introduction of a completely digital clinical record. In the meantime, some establishments have introduced the idea of morning report meetings, where interesting or difficult cases are discussed in detail with a senior so that all present can learn from the case (169). Journals also regularly feature case reports which have a clear learning point.

A smaller but important theme is the concern that as consultant presence increases, the autonomy and decision making skills of juniors may be diminishing (43,144,159). The number of standalone registrar reviews has decreased as consultant reviews have increased (43) in response the policy change and now consultants see all patients admitted to hospital within 12 hours of admission.

Gonzalo et al's (2013) diagram shown in Figure 2.3 of 'The motivations of performing bedside rounds' summarises the themes found in the review in the same way as it does the findings of this study. It demonstrates the interplay between service provision and education while also emphasising 'Team-Building'. Within the education circle, there is skills development, role modelling and observation and feedback. The last two of these themes - role modelling and observation and feedback have been central themes drawn from this review. The illustration of this dynamic with the patient at the top is a clear depiction of the relationships between the different priorities on a ward round and useful for any further research project. This review has added to the content validity of this model.

The attempts to improve training on or for ward rounds have shown that these issues are being acknowledged and that work is beginning to try and improve the status quo. Simulation, however, however seems to be an under explored area for preparing clinicians for taking part in ward rounds in a variety of roles.

There are few interventions for improving training on or for ward rounds that have been studied in a robust large study. Checklists have been explored a little both for practical ward round measures and consideration of teaching. There is limited evidence from these studies to support their use. The need to be present on a PTWR to present your own patients for training has been highlighted as this has been found in a few studies. The same is true for the need for more opportunities to lead a

ward round under supervision. There has been a small simulation pilot study for students to prepare them for ward rounds (165).

Ward rounds and the themes above need to be considered for safety and training to improve. The tension between service provision and training is central to all new developments in medicine. It exists everywhere within medicine including primary care. There are some examples in this review of how training and service provision can maybe coexist without too much more pressure of time (166–168). The other possibility is to try and improve ward round practice away from the real environment and service provision and hence in turn improve real life practice and training – simulation. In situ simulation where a simulation is run in a real ward environment with a real inter professional team like in surgery, obstetrics and accident and emergency is an under explored area for ward rounds and difficult to perform but is a possibility for the future. The combination of training within the limits of service provision is where the crux of ward round and postgraduate education research has to be focussed. Any training for ward rounds and especially on ward rounds needs to be possible within the current environment of financial and time pressures.

Limitations of this study

This study has the strength of being a novel review demonstrating a gap in the literature and a need for further good quality studies in an area that needs to be a focus both for patient safety and experience but also for medical educationalists for combining both service provision and training within day to day practice.

The disparate nature of the data collected this also poses several limitations to this study. The review itself may not be exhaustive. The scoping search did aim to find all terminology used to describe a ward round but it is clear that a ward round is a different process depending on the leader, the hospital, country, location of patients and time available. It is also dependent on who is present on the ward round. For this reason, it is easy to assume that some articles may have not been found if different terminology is used.

This review is limited by only using English language articles. This has led to the exclusion of articles from many countries which may be a rich resource going forward.

This review was limited to postgraduate training and undergraduate education on a ward round is equally important and should be an area of future research. In the same vein, paediatric ward rounds were not included and these may provide further insight that this review will not contain. Paediatric rounds involve not only a patient but in the vast majority of cases also a parent or carer and hence are very different to adult ward rounds; this is why they were excluded. However, as we

have seen that the ward round literature is not extensive, any articles on paediatric ward rounds may provide insights to training and ward rounds that is relevant to adult ward rounds.

Technology is a new growth area within medicine. For example, documentation in hospitals may be electronic and this clearly impacts a ward round, where the whole interaction is documented. Technology interventions were not included as the aim of this review was to find information that could be used and shared by individuals or Trusts going forward and many hospitals are limited by budget. However, there is clearly a need to look at these articles and focus future research on technological interventions. Within this area, there needs to a consideration of cost effectiveness or evidence for Phillips' fifth level of the Kirkpatrick framework model 'Return of investment'.(135).

This review used a narrative method of synthesis (130) on account of the nature of the data involved. A more systematic approach was not possible and with this there was no clear framework for evaluating data. The Kirkpatrick model is a very good framework for evaluating educational interventions. However, it is clear from this data that the research to date does not go beyond the first stage of this model. This highlights the need for further research but meant that the framework could not be applied for evaluation purposes except to say that those articles pertaining to an intervention did not manage to show results beyond level 1 – reactions. The narrative model of synthesis is useful for this data set but it means that the conclusions are narrative and only as strong as the data they describe. The themes drawn from the data, akin to thematic analysis used in qualitative research, are useful for this project and will be instrumental in the development of the tool in later chapters, but are merely descriptive for utility beyond the scope of this project.

In the light of this review, in Chapter 3, I will go on to review the non-technical skills tools used for assessment in hospital medicine. Both of these chapters will be integral in the development of the PTWR training and assessment tool described in Chapters 5 and 6.

Chapter 3

A review of non-technical skills tools used for assessment in hospital medicine

Introduction

Chapter 2 has shown that there is scant meaningful research on ward rounds and training. Hospital in-patient care remains risky and hazardous (170) and high profile reports have raised the need for more research into patient safety (53,56). Approximately 10% of hospital inpatients are likely to suffer from an adverse event and half of these are considered preventable (171). Patient safety and healthcare education are completely interdependent, a true symbiotic relationship, as safety is improved if training is successful, and any research into patient safety gives us a new focus for medical training and education. In order for research to continue, we need robust evaluation tools for both education and patient safety. The Patient Safety Group at the WHO highlight the need for these tools for further research and training in their review 'Human Factors in Patient Safety: review of Topics and Tools' (2009) (172). Patient safety literature has, thus far, mainly focussed on the high-risk areas of hospital care such as the surgical specialities, operating theatres and teams, intensive care units and obstetric care. However, medical wards are also an area of high risk, error and omissions (114–116).

Non-technical skills (NTS) are defined as,

> 'Cognitive and social skills underpinning medical knowledge and technical skills needed to contribute to safe and efficient performance.' (18)

They can be divided into 2 groups (173):

1. Cognitive skills (e.g. decision making, situational awareness)
2. Interpersonal skills (e.g. team working, communication, leadership)

The definition should also include a third element:

3. Personal resource skills (e.g. stress management, fatigue management)

Non-technical skills have been shown to be crucial in successful clinical practice and failures in them are often cited in analysis of adverse events within healthcare and other industries. Adaptation of aviation Crew Resource Management style training has highlighted further the need for a method of measuring non-technical as well as technical performance. Research within the surgical and emergency specialities has shown that poor non-technical skills have been linked to error and untoward incidents in hospitals (32,33). They are fundamental to safety and effectiveness as has been shown in surgical specialities (35,36,174,175). Prospective studies have shown an increased risk of complications with infrequent information sharing (176) and procedural errors have been caused by failures in communication(34). The National Confidentiality Enquiry into Maternal Deaths stated that a lack of teamwork and communication are leading causes of substandard obstetric care (109).

Training in non-technical skills has been shown to be effective in enhancing communication and surgical team collaboration or teamwork (70), reducing technical errors (36,71) and reducing surgical associated mortality (72). With the focus on non-technical skills came the slow emergence of evaluation tools for measuring non-technical performance in real life, simulation and for evaluating training courses. To date, most of the research and development of NTS assessment instruments has focused on the interventional specialities, like anaesthesia and surgery. To the best of my knowledge, no instrument exists for assessing NTS within medical specialities. At the time of writing, there is no review of the NTS instruments developed for clinical practice.

Medical wards are very different environments to surgical wards, operating theatres and intensive care. Teamwork is complicated in any setting, but it is often less defined on a medical ward as processes take longer, are less discrete and more open-ended, and these processes are multi-faceted and involve different multi-disciplinary team members. A medical ward round is one such process. They are led or overseen by the most senior doctor present and rely not only on clinical acumen but also a myriad of non-technical skills. To date, little is known about what these skills for leading a ward round are, and also how anyone is trained for this role.

There has been a shift in focus towards competency and assessment in postgraduate medical education. These assessments or work-place based assessments continue to be the main means by which a doctor can show that they are competent. The NHS, like most multifaceted systems (for example the aviation industry and military worldwide), is dependent upon good assessment processes as it is dependent on doctors proceeding through their training (177). The Tooke report (2008) emphasized the need for excellence as well as competence (178). Clinical performance in one environment does not necessarily correlate to another one. Good performance in a controlled

environment does not necessarily predict good performance in a real workplace (179). The difference between competence and capability were discussed in the introductory chapter to this thesis (49). Competence in a controlled environment is very different to between capability in a real world one. The cognitive load in a controlled environment is very different to that in a real world one, and a person's NTS suffer as their cognitive load increases. A person who is experienced in completing a complex task, such as a ward round, has developed their 'germane load' so that they have more capacity for both intrinsic and extraneous load (52). During a ward round, a ward round leader's intrinsic load is computing the new information about patients and team members, and the extraneous load involves the other pressures, such as staffing, time limits, bed pressures etc. Anyone's, experienced or otherwise, performance will suffer as these two elements increase because, as described within cognitive load theory, working memory is the bottleneck for learning and doing. A person can only process 4-7 units of information at any particular moment. On a ward round, this performance, capable or competent, is both clinical and non-clinical, i.e. non-technical skills. It is important to build up a practitioner's germane load in their training, and this development of skills needs to be assessed. The cognitive processes used in developing one's germane load for any given task will be different as people work in different ways but the outcome of any particular task, for example, leading a ward round, needs to have the same effectiveness no matter the cognitive processes an individual employs. There are several work-place based assessments currently in use, but within them, there is minimal assessment of non-technical skills.

Ward round leadership involves non-technical skills and non-technical skills are implicated in medical error (32,33). The manner in which a ward round is led is varied but different approaches can incorporate the same skills just in a different manner. Miller emphasised the difference between competence and capability, an individual's cognitive processes and their performance, their behaviour, as shown by his pyramid (Chapter 1, Figure 1.1) (49). Assessment of ward round leadership as with any complex clinical task that involves a myriad of NTS needs to incorporate the individual elements whilst allowing for different approaches to the task in hand. The aim of this review is to see what tools have been developed to evaluate non-technical skills within medicine and a discussion of how robust they are. The content of these tools is instrumental in the development of the tool in this thesis, as well as the evaluation process.

Aim

- To investigate current non-technical skills assessment tools for individuals or teams within a hospital setting for doctors or teams involving doctors.

By the end of this chapter, I aim to have produced a clear picture of the most robust tools in the literature for the assessment of doctors' non-technical skills in a hospital setting for teams and individuals, but also an explanation of the psychometric evaluation methods and statistical methods most commonly effectively used to guide any reader embarking on a scale development for medical education, or research purposes for education or patient safety.

Method

An initial scoping search was done to find the main current tools in the literature, and the terms used to describe them. A search was carried out on Medline, Ovid and EMBASE using the following search terms:

1. Non-technical skills, behavioural markers systems, or human factors

AND

2. Tool, rating, assessment or index

The search was limited to English language articles and those published between 1995 and June 2015. The search revealed 634 articles. Further exclusion criteria were applied after exclusion of editorials, commentaries, reviews and opinion pieces. The articles had to be primarily about a non-technical skills tool development and psychometric testing or feasibility testing, not about the testing of simulation training using a tool. The tool had to be used for evaluation of individuals or teams within hospital medicine that includes doctors. The tool has to be a predominantly non-technical skills tool, not a technical assessment tool or checklist with a minority of domains assigned to NTS (157,180), and needs to evaluate a range of NTS not just one (181). These exclusion criteria were applied using abstracts and 15% of the abstracts were reviewed by a second reviewer to check that article selection was reliable with 100% agreement on inclusion for full text review.

This resulted in 44 articles which underwent full text review and a further 11 articles excluded. After review of the remaining 33 articles, further literature searches were carried out for each tool to find any further articles to ensure each tool, its development and evaluation were represented entirely. Therefore, a final 42 articles were reviewed covering 21 tools (see Figure 3.1). There was one smaller review of non-technical skills tools found (182), as well as the WHO report on Human Factors in Patient Safety: Review of topics and tools (172); neither of these include all published tools and their evaluation.

Psychometric testing

Each tool will be discussed with reference to the review articles to give a complete picture of its development and evaluation. The 'Utility Index' framework is used to assess each tool and it has five components (183):

1. Reliability
2. Validity
3. Educational Impact
4. Cost Efficiency
5. Acceptability

This is a useful conceptual framework for tool development and testing. The last three parts of this framework will be grouped into a feasibility assessment including acceptability, feasibility, educational impact and any reference to cost effectiveness. Not all of these have been evaluated for all tools. Educational impact or consequential validity, of each of these tools, is very under researched. A table summarising the work done to evaluate each tool and its development will be included to accompany the discussion.

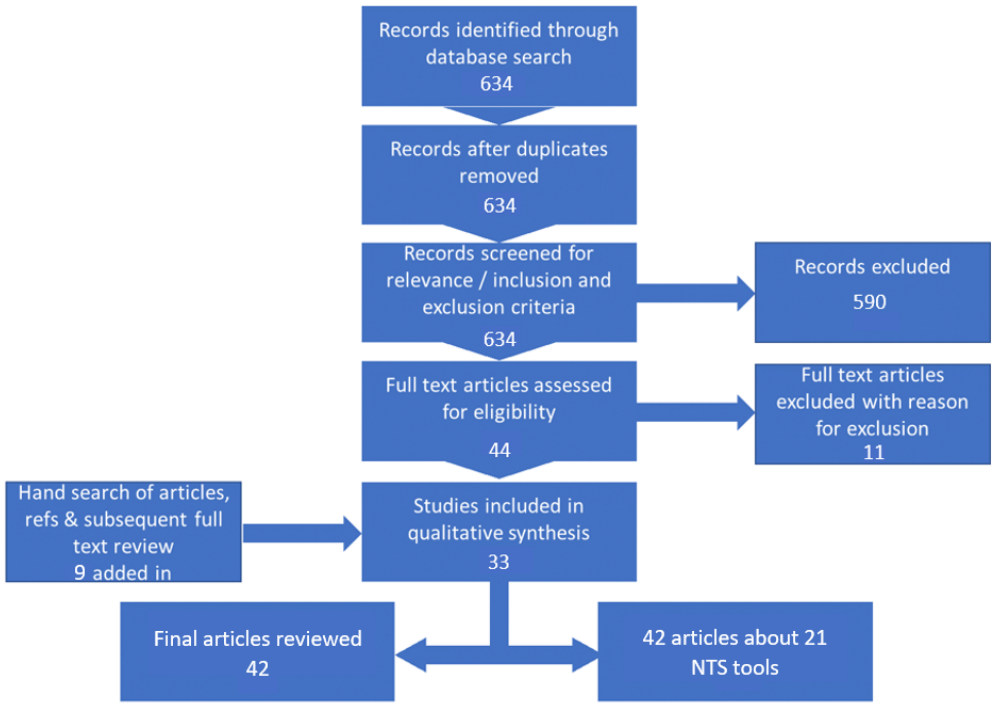


Figure 3.1: Flowchart of systematic literature review methodology

The following 'formula' helps to consider all elements but any future choice needs to be determined by balancing all these conflicting considerations to try and fit the purpose of the particular assessment or training (183).

Utility = $\text{Validity}_{\text{weighted}}$ x $\text{Reliability}_{\text{weighted}}$ x $\text{Acceptability}_{\text{weighted}}$ x $\text{Educational}_{\text{weighted}}$ x $\text{Cost}_{\text{weighted}}$ (183)

Validity

Validity describes whether the tool in question does actually measure what it purports to measure. The tool needs to be assessing the correct things in the correct way. Discussions of validity and what counts for evidence of validity are throughout literature and textbooks. There are various different dimensions of validity described in the literature. The principal ones are explained below:

1. **Face validity** – this is from the perspective of the interested lay observer and is related to content validity. If this interested lay observer feels that the correct elements are being observed or assessed then the tool can be said to have face validity (184).
2. **Content validity** – if the elements of the tool reflect the abilities that it is designed to measure then it has content validity (184)
3. **Construct validity** – the extent to which the tool, and the individual components of the assessment, test the professional components on which they are based (184)
4. **Concurrent validity** – often referred to as predictive or criterion validity – whether a tool has an empirical association with some criterion or putative gold standard (185)
5. **Consequential validity** (educational impact) – the effect the assessment has on learning (184)

Downing (2003) states that all validity in contemporary use is construct validity, but construct validity is multi-faceted (186–188). He explains that validity is always approached as hypothesis, and that the conclusion is not that the research is valid or not valid but that there is or there is not enough evidence to support the hypothesis at that particular time when the evidence for validity was collected (187). Downing explains that there are 5 sources for construct validity, with some possible sources for evidence in each category, which map onto the more traditional validity subtypes:

- Content – representativeness of test blueprint to achievement domain, match of item content to test specifications, representativeness of items to domain, item writer qualifications (content validity)
- Response Process – integrity of data, i.e. reduction of bias (internal validity)

- Internal structure – the statistical and psychometric properties of the instrument (construct validity)
- Relationship to other variables – the ability to discriminate between levels of training/ experience (construct validity), generalizability of evidence (external validity); relationship to another validated tool (concurrent validity)
- Consequences – less important for formative instruments but concerned with impact of instrument results on participant population (consequential validity) (187).

This chapter will look at content, construct and concurrent validity where possible, following Downing's approach, summarising the evidence for these tools, leading to the umbrella all-encompassing construct validity and its different components. Each piece of evidence for a tool will be heralded as adding to the evidence for a particular type of validity, keeping the usual terms as well as construct validity, in order to aid understanding and personal critique for the reader. Lengthy discussions of hypotheses involved will not be included as many articles do not report the evidence this way. Methodology of evaluation of the tools will be explained to support the validity evidence where appropriate.

A few studies look at the observability or accuracy of elements of the tool in real or simulated scenarios which adds to the evidence of content validity. Cohen's kappa (κ) is used in some studies to assess the observer agreement and its values can range from -1 to 1. Higher values indicate better agreement and a value of 0.40 upwards signifies moderate agreement or greater (189). Kappa results can be artificially deflated by extremes or frequency observed. The level of agreement was also measured, within the studies as a percentage of agreement with differing author stated levels of significance.

Reliability

Cohen's kappa is also used at times to analyse a tool's reliability, in particular the inter-rater reliability or agreement, and occasionally the test-retest reliability. Reliability is the extent to which an assessment score reflects all possible measurements of the same construct; it is a measure of consistency (185). Reliability evaluations of the tools focus on inter-rater reliability, internal consistency and test-retest reliability. A variety of statistical methods are used and these will be discussed. Cronbach's alpha is used to analyse the internal consistency of the tool, sometimes referred to as internal structure, and often the Cronbach alpha analysis is referred to as the intra-class coefficient (ICC) in this context. For the purposes of this review, Cronbach's alpha of >0.7 is considered significant (190). Redundancy of elements may be implied by values >0.9 as it could show that each element of the domain is too similar and not testing something significantly different

within an individual domain. There are lower values sometimes considered acceptable in the literature. Cronbach alpha is also occasionally used to analyse inter-rater reliability or agreement. The mean values of within group agreement (r_{wg}) are significant if >0.7-0.8 (190,191) and are used to measure inter-rater agreement.

The G study is a measure of generalisability and involves regression modelling to estimate how much each and every factor in the assessment, and their interactions, has influenced the observed scores. A G coefficient of ≥0.8 shows an acceptable level of reliability. The D study is the effect of the number of raters on the generalisability coefficient; usually the reliability of the assessments increases with the number of procedures observed. It explains the number of raters needed to achieve a significant G coefficient.

Considerations for statistical analysis and methodology

Care will be taken at looking at power calculations, although the sample size is often influential for these calculations and hence a higher power may not necessarily discredit an evaluation but does need to be considered for further evaluation or instrument use. For this review, p values <0.05 will be considered significant.

It is also important to note that each tool uses observation as its method of assessment and there are some limitations to observational methods (8):

1. Classification of behaviour can never capture every aspect of performance
2. Important but infrequent behaviours are hard to measure once they do occur
3. To err is human and this also applies to observers.

There is also the limitation of the testing environment. Not all tools have been assessed in real life as testing has focussed on simulation scenarios. The more frequently a work-place assessment is integrated into routine practice, the better the validity of the tool (192).

Results

Each tool will be presented with its development, and evaluation for validity and reliability and any feasibility or acceptability work in turn. There is a summary of results at the end of the Results section and Table 3.1 gives an overview of the main tools discussed and their psychometric evaluation. Educational impact and cost effectiveness were not evaluated for any tool discussed at the time of writing this review. A table of all the tools and their domains is found in Appendix 3.1. A more detailed table summarising the tool and its psychometric evidence is found in Appendix 3.2, and the text explains the development and evaluation processes for each tool in more detail.

Table 3.1: An overview of NTS tools and their domains

Tool Name	Who?	Domains	Validity			Reliability				Feasibility and acceptability
			Content	Concurrent	Construct	Inter-rater	Test-retest	Internal consistency	Generalisability	
OTAS: Observational Teamwork Assessment for Surgery (193–199)	Team	Leadership, Team Work, Communication, Situational Awareness, Coordination, Co-operation	•		•	•		•		•
ANTS: Anaesthetists' Non-Technical Skills taxonomy and behaviour rating scale (173,200–204)	Individual	Team Work, Situational Awareness, Decision Making, Task Management (dk version: Leadership included)	•	•		•		•		•
Oxford NOTECHS II: Oxford Non-Technical Skills Scale (205–209)	Team	Leadership, Team Work, Situational Awareness, Cooperation, Decision Making (Revised/Trauma: Communication included		•	•	•	•	• (Revised and Trauma version)		
NOTSS: Non-Technical Skills for Surgeons (191,210–215)	Individual	Leadership, Team Work, Communication, Situational Awareness, Decision Management (dk version: Team Management excluded)	•	•	•	•		•	•	•
TEAM: Team Emergency Assessment Measure (216,217)	Team	Leadership, Team Work, Decision Making	•	•	•	•	•	•		•

IPETT: Imperial Paediatric Emergency Training Toolkit (218)	Team	Leadership, Communication, Cooperation, Decision Making, *Technical skill score also*	•	•						
OSCAR: Observational Skill-based Clinical Assessment tool for Resuscitation (219)	Team	Leadership, Communication, Situational Awareness, Coordination, Cooperation, Decision Making	•			•		•		

ANTS

Development

The Anaesthetists' non-technical skills (ANTS) tool was the first of these tools to be developed. It measures individual performance of anaesthetists in the operating theatre. In 1999 ANTS was born after reviewing the literature, observation work, interviews, surveys and incident analysis (173,201,203); it was released for free non-commercial use by anaesthetists in 2004. It has 4 domains:

- Situation awareness
- Decision making
- Task management
- Team working

It has 15 elements underpinning all of the domains. There is a 4-point scale and space for qualitative remarks. Its behaviour rating scale emphasises its links to patient safety. The ANTS tool was customised for Danish anaesthetists using group interviews which resulted in a few changes (204). 'Task Management' was renamed Leadership, and half the behavioural markers were new, reflecting that being aware of and communicating one's own abilities to a team; working systematically; and speaking up to avoid adverse events were important skills (204). No articles about further evaluation of ANTSdk were found within the timeframe for the review.

The ANTS system is not formally used in UK anaesthetic training but has been used in New Zealand and Australia.

Validity

The development of the tool adds to its content validity, whereby an interview study, literature review, critical incident analysis, observations, survey were conducted (173,201,203). Rater's scoring when compared to a reference score for the simulated videos showed good accuracy (>88% accuracy to 1 scale point) (31); this is evidence supporting concurrent validity. However, the mean absolute deviation from reference i.e. the error score, was 0.49-0.84 which, while showing significant variation between elements, indicates only minor differences between boundaries (31).

Reliability

The intra-class coefficient was significant in the initial testing of the ANTS tool with a range of 0.79-0.86 , all above the significance level but not so high to imply redundancy (31). Fletcher et al (2003)

used the mean within-group agreement (r_{wg}) to assess inter-rater reliability and achieved values that did not fall above the required significance level.

Graham et al (2010) looked at the intra-class coefficients of the ANTS tool using specialist anaesthetists as raters who had only 8 hours of training. The ICC calculated for each element was 0.11-0.62 and therefore falls below the >0.7 significance level (202).

A small study of teams within simulated in-situ operating theatre with a multi-disciplinary assessor team did not show significance (<0.7) in inter-rater agreement (ICC=0.17-0.57 with no p value) (220).

The reliability testing reported here is not significant, but it remains one of the most widely used tools.

Feasibility and acceptability

The initial testing of ANTS in 2003 involved training 50 consultants to use the system and they rated behaviour of a target anaesthetists in 8 videos of simulated anaesthetic scenarios (203). The results of a survey of all consultants taking part was very positive as to its contents and usability (203). It is reportedly the most widely used of the tools in the UK and outside

NOTSS

Development

The Non-Technical Skills for Surgeons tool (NOTSS) was developed by a team in Scotland in 2006. Initially, an interview study was carried out using critical incident technique with surgeons (n=27) from various surgical specialities. Additional information was obtained from a literature review, attitude surveys of operating room staff, analysis of mortality reports and observations of operating rooms (221). The findings from these interviews was combined with a systematic program design already used in anaesthesia (31) and in European civil aviation to develop NOTSS (222).

The five categories of the NOTSS tool are and there are 14 elements across these 5 domains:

- Situation awareness
- Decision making
- Leadership
- Communication and Teamwork.

There was a further study to develop behavioural markers to guide assessors (221).

NOTSS is not currently part of the UK surgical training programme but various trails of use have been held. It has been used to create a surgical performance framework for assessment purposes in Australia (223).

Validity

Again, the development of this tool adds to its content validity. An interview study with critical incident technique, review of the relevant literature, attitude surveys, observation work within the operating theatre, and analysis of mortality reports (221). A questionnaire completed by 56 assessors after completing NOTSS assessments showed that 75% agreed NOTSS provided a common language for assessing NTS (212); further evidence of content validity.

Crossley et al (2011) also looked at the internal structure of the NOTSS tool using the domain and element scores for a rotated factor component matrix. The internal structure of the instrument matched the 4 domain structure without exception with only one element 'setting and maintaining standards' loaded on to a second factor as strongly as its own domain, suggesting that it is an element of situation awareness as well as leadership (212). This provides supporting evidence of construct validity. In addition, Crossley et al had a mix of 4 measures of experience and they explain that across all 4 NOTSS domains, there was a positive correlation with experience as determined by ST level and years of UK training (however, significance threshold was adjusted to 0.0125) (212).

NOTSS was correlated with the Cannon-Bowers Scale as part of a gap analysis (210). The Cannon-Bowers scale was chosen as it includes elements that are not commonplace in other tools including affect and attitude management, motivation building and adaptability. The numbers involved were small (11 teams of surgical residents n=33) and the study took place within a simulated environment. 4 out of 5 items had significant correlation with Cannon-Bowers Scale (0.9-1.0, $P<0.05$) (210) adding to the concurrent validity evidence for the NOTSS tool. The gaps noted in comparison with the Cannon-Bowers Scale highlighted areas for focus in further assessment tool development - critical team errors, individual team member contributions, task performance, overall team performance (210).

Crossley et al (2011) evaluated NOTSS as part of a larger assessment evaluation project including Objective Structured Assessment of Technical Skills (OSATS) and Procedure based assessments (PBAs) (212). Therefore, correlation studies were carried out with these tools in order to support the concurrent validity of the tool. All 4 domain scores were significantly positively correlated with the PBA global summary score - Pearson's coefficient was 0.43-0.55 ($P<0.001$); all 4 domains

significantly positively correlated with the generic part of the OSATS score - Pearson's coefficients 0.4-0.58 (P<0.001). Decision making most strongly correlated with technical performance (212). Good correlation with experience and level of training was also found giving further construct validity evidence (184).

Reliability

A study during an experimental session involved 44 consultant surgeons from 5 Trusts in Scotland. There were trained to use NOTSS and then evaluated surgeons in 6 simulated operating theatre scenarios using video. Each of these scenarios had been 'expertly' rated and a comparison was made for 'accuracy' assessment. The rating by the assessors had above 60% accuracy for all categories with a mean of 0.67 scale points difference from the expert/reference ratings implying a consistent internal structure (191). This study was carried out using videos of simulations with the ability to pause and rewind, and this is very different from an ongoing real-life operation.

Assessment of videos of simulated operations after training in NOTSS was assessed for inter-rater agreement using mean within group agreement. Within group agreement (r_{wg}) for the domains was acceptable for Communication and Teamwork (0.70), and Leadership (0.72) (191). There was a low inter-rater reliability for Task Management (r_{wg} =0.66) and was removed from tool. Situation awareness also scored a low r_{wg} value of 0.51 (191). The ICC was used with the mean within-group agreement (r_{wg}) within this same study to assess inter-rater agreement. The ICC was worked out based on absolute agreement using coefficients for both single-rater and average-ratings. The values were significant (i.e. >0.7) 0.95-0.99 (191) but no power values are reported. When examining the ICC for a single measure, no category reached the required significance level although decision making, leadership and communication and teamwork were all >0.6 (191). The internal consistency was tested using the mean absolute difference between rater's element ratings and their rating for the corresponding category. Lower scores indicate a better agreement and the tool was found to be very consistent, evidence for reliability but also construct validity (M<0.25) (191). Again, these values are for assessment on video which is far removed from the real-time assessments in the operating theatres.

Inter-rater reliability calculated using Spearman rho was calculated between 2 expert raters assessing 25 surgeons in a simulated environment. The value was above 0.5 but just below significance at ρ=0.684, P<0.05 (224).

A small study of 5 teams within simulated in-situ operating theatre with a multi-disciplinary assessor team did not show significance (majority <0.7) in inter-rater agreement (ICC=0.12-0.83 with no p value) (220).

Crossley et al (2011) carried out a G study as part of their prospective analysis which involved 715 assessments of 404 operations by 56 anaesthetists, 39 scrub nurses, 2 surgical care practitioners and 3 independent assessors who performed the vast majority of the assessments(212). This showed that the ability of the trainee being assessed had the greatest impact on score (30.9% of score variance); the stringency or leniency of assessor and subjectivity of assessors (partiality) contributed significantly (27.0% and 20.1% of score variance respectively) (212). The D study shows that reliability of trainers scores increased when they were based on several cases or several assessors' scores; 8 assessors, each assessing a single case, would be required to achieve a G coefficient of 0.8 or more (212). However, it should be noted that the consultant surgeons who were supervising the operations were not assessors as they were involved in another part of the project testing the OSATS and PBAs. It remains unclear how their assessments would have impacted these statistics. This was part of a larger study (184).

A small study was conducted comparing self with expert assessment of both technical (OSATS) and non-technical skills (NOTSS). The scores correlated well for technical performance but not for non-technical skills implying the need for formal assessment by faculty members or supervisors, as there may be a lack of insight into these behaviours (224). There was also a comparison of expert versus novice raters using 44 novice consultant raters assessing videos of simulated operations. The mode rating from the novice group was the same as the expert group in 50% of the ratings and where there was inconsistency, the novices rated lower (213). This shows the training that is needed to provide reliable scores.

Feasibility and acceptability

The NOTSS tool was adapted by removing the rankings to be used in a pilot study to look at the usability of the tool in Obstetrics (225). It was used as a formative feedback tool. 25 trainer and 26 trainee evaluations were completed after 55 assessments. The authors were disappointed with the number of assessments and evaluations completed but from the feedback obtained, satisfaction with the tool was high (average score of 4.5 on a scale 1-5) (225). The form took an average of 10 minutes (range 5-20mins) to complete including feedback time, and both trainees and trainers considered it acceptable and straightforward to deliver (225). They conclude that while the tool was appreciated, there were challenges to its implementation. Another study found that the mean time for completion was 10.1+/-6.7 mins (220).

A questionnaire completed by 56 assessors after completion of NOTSS evaluations; the majority thought that NOTSS was useful for supporting insight and providing feedback. 70% thought that it was a useful adjunct to surgical skills assessments, and 45% thought the use of NOTSS would enhance patient safety (212).

NOTSSdk

Development

NOTSS has been adapted for use in Denmark. A small group interview study was conducted at 2 general hospitals with consultant general surgeons, and a prototype NOTSSdk was developed. This was discussed with a panel of experts (n=12) to ensure face validity (214). It comprises of 4 categories like the original NOTSS, with 13 underlying elements (214):

- Leadership
- Communication and Teamwork
- Situation Awareness
- Decision Making

Behavioural examples were also written. There were a few distinct themes that were more prominent than in the Scottish NOTSS. These are: regarding respect, discussing options and creating a good working environment (214). There is a 5-point rating scale with an additional global score.

Validity

As we saw in the tool development, the prototype tool was discussed by an expert panel (n=12) giving evidence for face and content validity (214). The internal consistency of the tool was tested with Pearson's correlation coefficient and found to be 0.95 in one study (226), and 0.95 in another (215); evidence for construct validity. No confidence interval or power calculations are given for either study, but the first study had 12 assessing supervisors of 13 trainees in 48 procedures (226), and the second had 15 general surgeons rating nontechnical skills in 9 video recordings of operations (215).

The formative feedback from a small study of audio tapes of 6 trainees and their 6 supervisors for 8 feedback sessions facilitated by NOTSSdk, showed that the supervisors did use the tool structure within their feedback conversations (227). This adds to the evidence for content validity of the tool but the study was small, however the analysis was carried out until saturation was reached.

Reliability

The study looked at 15 general surgeons' assessments of non-technical skills in 9 video recordings of simulated operations in Denmark. There were 2 sessions divided by a 4 hour training session. Cronbach alpha values for inter-rater reliability were 0.97 (pre-training) and 0.98 (post-training) (215).

In the study of 12 assessing consultants of 13 trainees in 48 procedures, the G study showed that overall reliability for this study was 0.71 based on a mean 2.8 procedures performed by the trainees (n=13). This is just short of the usual accepted level for significance of >0.8. However, the D study found that assessment of 5 procedures were sufficient to gain reliable ratings of trainees' NTS, i.e. generalisabilty coefficient >0.80 (226). In the study using 15 surgeons assessing 9 video recordings, the D study showed that 2 untrained raters or 1 trained rater were needed to obtain generalizability coefficients >0.8 (215).

Feasibility and acceptability

A small study analysing the use of the NOTSS tool for facilitating feedback using audio-tapes of 8 feedback sessions found that ratings for usefulness and comprehensiveness of feedback was above average/high for both trainees and supervisors (227). However, ratings varied more for contextual factors such as 'time pressure involved in the feedback' and 'difficulty of the operation'. The qualitative feedback on the questionnaire indicated that NOTSSdk directed their attention to issues not usually covered in feedback and gave occasion and structure for a neutral and systematic approach (227).

NOTECHS

Development

The Non-Technical Skills tool was developed within the aviation industry for Crew Resource Management training (200,228). It has been adapted within medicine for surgery and trauma (206,208,228,229). It has 4 categories with a 5-point rating scale. The developers of NOTECHS did acknowledge the importance of communication skills; however, they saw communication as the means by which the other 5 domains were achieved or not achieved and therefore did not consider it as a fifth domain. The first revision was for surgery and a fifth domain was added (229):

- Leadership and management
- Teamwork and cooperation

- Problem solving and decision making
- Situational awareness
- Communication and interaction

These five domains were subsequently grounded in a theoretical framework of real operating rooms (230) but this framework ultimately led to the development of the teamwork measure tool for operating theatres, OTAS. The scale was revised to a 6 point scale (229). The Oxford NOTECHS System was also developed which has the 4 domains without 'Communication and Interaction'; it has a 8 point scale (behavioural markers), assigning all teams a baseline of 6 from which to deviate up or down (205). The validity of both of these will be discussed as well as T-NOTECHS for trauma resuscitation teams. The T-NOTECHS tool has 23 elements for 5 domains (208).

Validity

The Oxford NOTECHS tool is based on the aviation tool providing some evidence for content validity. There is an inverse correlation between NOTECHS score and surgical errors ρ=-0.267, n=65, p=0.045, and strong correlation with OTAS scores (n=5, r+0.886, p=0.046) (205). The correlation with 'glitch count' was weak 0.26 (95% CI-0.36 to -0.15) but good with WHO checklist compliance (206). Both of these give some evidence towards concurrent validity. There is also some evidence of improvement post NTS training giving evidence for construct validity (t=-3.019, p=0.005) (205).

The T-NOTECHS (Trauma) was correlated against speed of completion of resuscitations. The better the T-NOTECHS score, the faster the time to disposition (231); p values were 0.46 for these calculations. There was also a study conducted with real life trauma calls and simulated ones. Again, in video review, better T-NOTECHS scores were correlated with more resuscitations completed (ρ=0.5, P<0.01) (208), and in real life, better scores correlated with faster resuscitations (ρ=-0.13, P<0.5); the r value is not considered significant here as the correlation is weak (208). The T-NOTECHS score improved after training, as evidenced by an increase in mean scores. These are all evidence of construct validity for T-NOTECHS. It was developed using the original tool with review of the literature and discussion by an expert panel, adding to the evidence of content validity (208).

Reliability

The Oxford NOTECHS has good reliability evidence. The r_{wg}=0.99 with two observers rating 65 procedures (205). Across the 4 domains, there was good inter-rater agreement shown graphically between human factors and clinical observers for the 297 operations assessed (206). The inter-rater agreement was analysed for intra-class correlation coefficients for each speciality team who rated the operations with a range of values and only the surgical team achieving significant values across all 4 domains (206).

The test-retest reliability was analysed for 65 procedures with 2 observers. It was acceptable with no difference in mean NOTECHS scores during 3 pre-intervention periods (ANOVA F(2,1)=1.341, p=0.281) or in 3 post-intervention sessions (ANOVA F(2,1)=1.028, p=0.386) (205).

There was no generalisability study found for Oxford NOTECHS.

The revised NOTECHS achieved good internal consistency with all scores across all domains >0.7 (207). The ODPs (Operating department practitioners fell short of significant values for situation awareness and vigilance and cooperation and team skills (0.66 and 0.59 respectively) (207). There was no generalizability study for revised NOTECHS found.

The ICC for T-NOTECHS was not significant for either real or simulated resuscitations (208). IRR for small teams was good (ICC=0.6) but not significant, and for large teams was poor (0.29) (209).

Feasibility and acceptability

There was no feasibility study found for Oxford NOTECHS, revised NOTECHS or T-NOTECHS.

OTAS

Development

The Observational Teamwork Assessment for Surgery tool was developed in 2006 in London. It looks at the multiple elements that affect a patient undergoing surgery including the pre-operative, intra-operative and post-operative periods. This included looking at the operating theatre as a whole rather than the individuals within it. It is based on a basic input-output model of team performance, and the theoretical framework of real operating theatres previously discussed (230). Further input came from an interview study (197,230) and examination of the ANTS tool already established in anaesthesia (31). It uses 7-point scales. This evaluates the following 5 domains, with Teamwork being assessed overall:

- Leadership
- Communication
- Cooperation
- Coordination
- Team monitoring/situational awareness

It distinguishes between different sub-teams in the operating theatre (surgeons, anaesthetists, nurses). Exemplar behaviours were developed to guide rating. There are 114 underlying elements to the whole tool for all subgroups (please see validity analysis for further information on

methodology and validation). There has been some refinement of the tool for urological surgery but less reliability and validity testing (195).

The OTAS tool has also need adapted for use in German (OTAS-D) using a 3 stage process of translation, interviews and testing (199). There is also a Spanish adaptation for use in Latin America (OTAS-S) using a 3 stage process on translation and back translation, expert panel and then tool testing (198).

Validity

In an observation study of 30 general surgical cases, 130 exemplars were assessed by 2 blinded raters. The inter-observer agreement was high (i.e. $\kappa \geq 0.41$ and percentage agreement ≥70% for 109 out of 130 exemplar behaviours (232). A combined approach was judged an appropriate way for this study to balance out the fact that kappa can be affected by extremes or frequency; the 70% cut off was author stated (232). 30 exemplars were identified as not meeting the observability criteria i.e. not seen or not applicable in >50% of the cases (232). An additional 5 new exemplars were also noted by observers and so these, plus the 30 exemplars that did not meet the observability criteria and the 21 which did not meet the inter-observer agreement criteria were submitted for further review by a panel of patient safety experts (n=3) that also considered all the ratings these exemplars had received so far in the study. 7 remained unchanged, the 5 new exemplars remained and 21 were removed leaving a total of 114 exemplars (232).

The German OTAS tool was tested in a similar way with observations of 11 procedures by 2 blinded raters. Inter-observer agreement was analysed with kappa and 7 exemplars >0.8 and 20 exemplars 0.6-0.79 (199). For the Spanish tool, 98 operations were observed in real life. They used weighted kappa analysis and the inter-observer agreement was substantial, $\kappa_w=0.60$, but not statistically significant at <0.7 (198).

As further evidence of construct validity of the tool, a small study of 12 elective procedures showed that pairs of raters had scoring inconsistency 2% (expert/expert) and 15% (expert/novice) (197). The construct validity of a tool is heightened if expert scores are more consistent than novice ones.

Reliability

In an initial study of OTAS looking at tool validation and subsequent tool refinement, 2 blinded observers rated 30 general surgical operations, reliability was analysed with intra-class coefficients. There were correlations (intra-class correlations) between all 5 domains; 3 domains – leadership, communication and coordination – were >0.7 and significant and coordination and team monitoring

were 0.67 and 0.64 respectively (p<0.001) (232). The inter-rater agreement was also high, analysed for each subgroup scores, surgeons 0.91, anaesthetists 0.91, and nurses 0.87 (p<0.001) (232).

Inter-rater agreement (intra-class correlation coefficient) was also high ≥0.68, but not >0.7, in a study of 10 surgical cases with one expert rater and 4 novices (194). Further analysis with Pearson ρ correlation, transformation to scores and submitted to ANOVA testing showed that that for communication, cooperation, leadership and monitoring there was a significant degree of learning (194).

The OTAS-D tool was tested inn 11 operations by 2 blinded expert raters. The intra-class correlation coefficients were acceptable at >0.72, with global ICC between raters of 0.8, p=<0.001 (199). The OTAS-S did not calculate any ICC values (198).

A small study of 5 teams within simulated in-situ operating theatre with a multi-disciplinary assessor team showed some significance in inter-rater agreement (ICC=0.42-0.90 with no p value) (220).

Feasibility and acceptability

There has been some feasibility testing within both general and urological surgery (195,233). The mean taken to complete OTAS assessments was 22.54+/-22.1min; the longest assessment out of those with were timings have been researched (220).

Other instruments

There have been several other tools developed, usually based on one of the above. These will be discussed individually as it is usually only one or 2 studies per tool.

OSCAR

The observational skill-based clinical assessment tool for resuscitation (OSCAR) was developed after a review of other tools and relevant literature. It is based on OTAS, ANTS and NOTECHS (219). It has 6 domains, and these are evaluated for 3 core team-members in the resuscitation team (anaesthetist, general internal medical doctor and senior nurse):

- Communication
- Cooperation
- Coordination
- Monitoring and situation awareness
- Leadership
- Decision making

As with other tools, exemplar behaviours were also designed. The face and content validity evidence comes from its development and also a subsequent expert panel including rating of exemplars which led to 18 changes being made. Cronbach alpha to evaluate the internal consistency of the tool was 0.736-0.965, significant with perhaps an element of redundancy in the tool. Intra-class correlation coefficients were good (0.625-0.911) showing good inter-rater agreement (219). It is unclear what the power calculations were for these values. There was no other psychometric testing reported.

The 'Flowerdew' tool

This tool was developed to assess emergency physicians non-technical skills and assessed in real life in a large multi-centre observation study over a 3 month period (234), and I have referred to it by the name of its principal author. The assessment was of registrar grade doctors within the emergency department. The development of the tool is not explained in detail but included triangulation of sources including literature review, review of relevant curricula and interviews with staff as well as observational work. It evaluates 4 domains with 12 underpinning elements:

- Management and supervision
- Teamwork and cooperation
- Decision making
- Situational awareness

It has a 9 point scale. Its content validity derives from its development method and also scores of frequency of observation of the elements - all skills observed more than 50% of time (author quoted level of acceptability for observability). The ICC evaluated the inter-rater reliability and the mean scores range was 0.519-0.824 but the confidence intervals were large because of the small study and so it is difficult to interpret. The Spearman's rho (individual skills 0.26, mean scores 0.7) calculations were used to observe the test-retest reliability (234). No further psychometric testing was reported.

Multisource feedback for ward rounds

Lakshminarayana et al (2015) describe the development and testing of their multi-source feedback tool for ward rounds in paediatrics in 2 articles. The researchers used interviews and a questionnaire to aid development of the tool and give it content validity. Their interviewees were experts in the field, and 81 consultants, nurses and trainees responded to the questionnaire from one large hospital. The tool has 5 domains for assessing ward rounds (235):

- Communication
- Preparation and organisation

- Teaching and enthusiasm
- Team working
- Punctuality

It has a 4 point scale. There was good internal consistency for the 30 questions in the questionnaire adding to the validity of the tool (Cronbach alpha > 0.9) (236).

However, no difference in scores correlated with experience of trainee (ST3-4 v ST5-8) was found by both Mann-Whitney or a general linear mixed model (236). Qualitative remarks showed some improvement in performance over time. Trainees scored themselves much lower than the raters. Good internal consistency was shown with a Cronbach alpha score of 0.84 (236). A G study showed that reliable scores could be obtained with 3 assessors (i.e G >0.8) (236). P values for both of these were $P<0.05$. The tool was valued but there was some concern about time taken to give the feedback, and some confusion about the tool use and the paediatric assessment strategy.

Imperial Paediatric Emergency Training Toolkit

The Imperial Paediatric Emergency Training Toolkit (IPETT) was developed for assessment and feedback in paediatric emergencies in critical care. It was developed after a review of the literature and the current evidence base and input from experts. It assesses technical and non-technical skills. The non-technical component assesses and is based on the NOTECHS tool:

- Communication and Interaction
- Cooperation and Team Skills
- Leadership and Managerial Skills
- Decision-making

It has a 7-point scale. The tool was evaluated prospectively in 45 simulated paediatric emergencies with anaesthetic and paediatric trainees. Cronbach alpha ranged from 0.701-0.899 for the non-technical part, giving significant internal consistency evaluation. The inter-skill evaluation for the technical and non-technical parts were not significant at $\rho=0.564$ and $\rho=0.549$ respectively indicating good construct validity (218).

Temporal Rating of Emergency Non-Technical skills tool

The Temporal rating of emergency non-technical skills (TRENT) was developed in 2014 and it is the only tool reviewed to consider salient emotional components e.g. anxiety. They explored the validity of the emotional components using a questionnaire of emotions before and after being in the stressful simulated scenarios. The tool was developed from observation, and further discussion

with faculty staff. The theoretical literature on social support and anxiety along with other published tools was reviewed. The tool has 5 domains and 27 elements:

- Introduces and interacts with patient
- Focuses on colleagues rather than self
- Attends and reacts to the environment
- Avoids taking the lead
- Offers social support

The rating scale was 0 to 3. The testing took place in a simulation training for first year doctors. The tool was used for self and peer assessments. The inter-rater reliability analysis was globally not significant. The study also showed that the lead doctor's pre-simulation emotions are associated with their self-assessed performance but not their peer assessed performance, again showing poor agreement between these two groups scores.

There is no further validity and reliability evidence for this tool.

Behavioural Marker System for assessing Neurosurgical Non-Technical Skills

The behavioural marker system for assessing neurosurgical non-technical skills (BMS-NNTS) was developed in 3 stages (237). A literature review was completed including a review of other tools for surgery. A tool was developed and the tested using videos of operations to ensure no domains or elements were missing. A further 5 videos were used to identify behavioural markers of non-technical skills in verbal communications. It has 6 domains:

- Cooperation and teamwork
- Situation awareness
- Explicit coordination
- Decision making
- Leadership
- Other (including teaching)

It is unclear what the scoring scale involves. There is evidence of content validity from its development methodology but further evidence of validity is unavailable. The ICC was calculated for inter-rater agreement: ICC 0.72 (CI 0.38-0.89, P<0.001)/ 0.70 (CI 0.33-0.87, P<0.001); very poor ICC for decision making 0.16 (first operation), 0.68 (second operation testing) (237). This shows variable significance. There was no further psychometric testing for this tool.

Explicit Professional Oral Communication Tool

The explicit professional oral communication tool (EPOC) was based on an aviation tool and was developed in an iterative process (238). It is for use in emergency departments and intensive care. It has 6 domains:

- Assertiveness
- Working with others
- Task-orientated leadership
- People-orientated leadership
- Situation awareness
- Planning and anticipation

The EPOC underwent a large evaluation study in 4 emergency departments and 6 intensive care units (238). It only looks at verbal communication and uses a tally system. Nods of head were also included in the tally. Social talk, and conversations with patients or family were not included. Each observation lasted 30 minutes. The study was very large with over 1500 observations. All the EPOC dimensions occurred frequently apart from assertiveness. Intra-class correlation coefficients for the overall scores were between 0.85 and 0.91 showing good internal consistency with perhaps a level of redundancy (238). No further psychometric testing was reported.

The 'Crossingham' tool

Crossingham et al (2012) developed an instrument based on a tool designed to assess non-technical skills in a recruitment centre for anaesthetic trainees (239). They looked at the same 5 domains and used the same 4-point scoring system but further detail on development was not described. The 4 domains are:

- Communication
- Organisation and planning
- Situational awareness and decision making
- Team working and working under pressure

They also designed a set of behavioural markers matched to the 4 levels of performance. The global score was calculated from the sum of the other scores. They introduced training after poor inter-rater agreement was noted (Cohen's κ=0.2) and low generalisability coefficient (G=0.5). After training the inter-rater agreement improved (κ=0.79) during the training, but in second round of testing, it was poor again (κ=0.14, G=0.42) (239). No further evidence for validity, reliability or feasibility noted.

Team Emergency Assessment Measure

The Team Emergency Assessment Measure (TEAM) is used to rate emergency resuscitation team performance. It has only been tested with nursing teams but is developed for doctors as well as nurses. It was developed in 2009 using literature review, expert input, further international expert panel discussion, and then testing of the tool with 56 video-recorded hospital and simulated resuscitation events. A final feasibility study of 15 video scenarios was performed. It assesses 3 domains:

- Leadership
- Teamwork
- Task Management

The content validity was enhanced by the calculation of the content validity index (CVI) for the expert panel responses to an independent 'rating' of the relevance of 12 TEAM items using a 5-point Likert scale. All items had a CVI of >0.83 (217). The construct validity was calculated with a principal component factor analysis using Varimax rotation based on an expert scoring of the videos. The factor analysis generated a single factor solution which explained 80.27% of the total variance, with item loadings ranging from 0.64 to 0.88(217). The uni-dimensional validity was high with each of the 11 items inter-correlated (ρ=0.621-1.0; $p<0.01$), adding to its construct validity(217). There was also a strong correlation with use of the OSCAR tool (ρ=0.74; $p<0.0001$) adding to content and construct and concurrent validity (240).

The Cronbach alpha calculation demonstrates the internal consistency of the tool as very good, although there may be some redundant elements (α=0.97). A further 2 studies in simulation with 97 and 44 nursing student teams showed Cronbach's alpha values of 0.91 and 0.92 respectively (241,242). Inter-rater agreement was calculated with Cohen's κ on 10% of the scores. The value was not significant at 0.55, and the ICC also for inter-rater agreement was 0.6, again just below the significance value of 0.7 (217).

The raters evaluation of the form was positive. It was judged as being complete, acceptable and adequately designed, and the behaviours tested were observable. Some elements were harder to assess like 'team morale' (217). They found that the form could be completed in less than a minute (217).

Teamwork-Skills Assessment for Ward Care

The Teamwork Skills Assessment for Ward Care (T-SAW-C) was developed with a review of the literature, and expert input. It is based on OTAS, the revised NOTECHS and OSCAR. It has 6 domains (243):

- Communication
- Cooperation/Back-up behaviour
- Coordination
- Leadership
- Team monitoring/situation awareness
- Decision making

The assessment scale is 1-5 and behaviourally anchored, with a global score consequentially ranging from 6-30. As with other tools, 'exemplar behaviours' are described. It is used in combination with Clinical Skills Assessment for Ward Care (C-SAW-C). 38 video scenarios involving 185 first year doctors for a wide range of surgical procedures were observed and assessed using the C-SAW-C, T-SAW-C and Physician-Patient Interaction Global rating scale by 2 assessors (243).

As evidence of content validity, there was a review of the literature, the use of previous tools in the development, and expert panel review. Correlation with C-SAW-C and Physician-patient interaction global rating scale was found (Pearson correlation coefficients ρ=0.73-0.92, P<0.001) giving construct validity (243). Only the Physician-Patient Interaction Global rating scale had been used before so this is not evidence of concurrent validity.

The ICC was used to measure inter-rater reliability and was significant at >0.9 across all domains (P<0.001). Internal consistency was demonstrated with Cronbach alpha coefficients across all domains (0.865-0.951) and all were significant.

The Mayo High Performance Teamwork Scale (MHPTS)

The Mayo High performance teamwork scale was developed for simulation and not real life, and to guide self-reflection and assessment. It was analysed using Rasch analysis, which examines an assumed one-dimensional underlying structure to the construct of interest and how items fit into the hierarchy within this structure; this analysis led to tool refinement. It has no particular domains but a 16-statement list which the rater needs to agree or disagree with according to a 4-point scale. It is unclear how the tool was initially developed as it is not described. There was a statistically significant improvement in score for pre-training and post-training scores adding to construct

validity and a Cronbach alpha value of 0.83 on field testing showing significant internal consistency (244).

Clinical Teamwork Scale (CTS)

The Clinical teamwork scale (CTS) was developed from looking at the clinical teamwork components in crew resource management. It has 5 domains and 15 underpinning elements (245):

- Communication
- Situational awareness/ Resource management
- Decision making
- Role Responsibility (Leader/Helper)
- Patient Friendliness

In all elements, except one, a 0-10 scale is used. 'Target fixation' alone has a binary yes or no response. 3 raters assessed standardised videos of obstetric scenarios to evaluate the tool psychometrically. There was good correlation between the raters scores and the predetermined scores for the scenarios. This gives the tool evidence of construct validity. The score was deemed accurate if it fell within one point of the predetermined score, and 12/15 elements had a 100% accuracy score, and 3 items had accuracy of 66.7% to 88.9% (245). The tool was completed in full every time, giving a moderate guide to feasibility of use.

The inter-rater agreement was analysed using Cohen's kappa (κ=0.78) and was significant. The intra-class correlation coefficient was 0.98 (95% CI=0.97-0.99). The Pearson correlation coefficient was between 0.94 and 0.96 (245). All these are significant showing good inter-rater reliability.

However, there is minimal evidence for tool validity and further reliability testing apart from inter-rater reliability.

Summary

Table 3.1 summarises the key points of the main tools discussed in this Chapter.

The OTAS tool has acceptable inter-observer agreement, and internal consistency giving good evidence of reliability. The evidence for content validity is strong and there is some evidence supporting construct validity. The German and Spanish versions of OTAS are lacking evidence to support reliability and validity.

The ANTS tool has good evidence for content validity. Concurrent validity was displayed by comparison of scores with reference scoring for simulated videos, and the evidence is moderate. It has unacceptable inter-observer agreement, and two studies gave varying degrees of internal consistency. There is good content validity of the Danish ANTS tool but no reliability data.

The Oxford NOTECHS is based on the original NOTECHS tool which gives it an element of content validity. It shows good concurrent validity through a variety of methods. There is some evidence for construct validity as scores improved after specific training. It has good inter-observer agreement and internal consistency. The revised NOTECHS shows some evidence for generalisability.

NOTSS has evidence for content, concurrent and construct validity. It has moderate evidence for inter-rater agreement and good internal consistency evidence. There is some evidence in support of generalisability. However, there is mixed evidence for the feasibility and the acceptability. General feedback is positive that it helps support insight and feedback, but it is difficult to use and implement. There were similar findings for the Danish equivalent of the NOTSS tool.

The TEAM tool has evidence for content, construct and concurrent validity. It has borderline acceptable reliability evidence for inter-observer agreement and test-retest but good internal consistency.

The IPETT tool has evidence for content and concurrent validity and acceptable internal consistency. It has not been assessed for inter-observer agreement. The same is true for OSCAR but there is additional evidence for inter-rater agreement.

Discussion

The tools all examine a different combination of non-technical skills. These are the tool's domains. Table 3.2 clearly displays what is evaluated by each tool and as can be seen, the NOTECHS tool examines the greatest number of domains, followed by the IPETT and BMS-NNTS, and then NOTSS and OSCAR tools.. The BMS-NNTS is the only tool discussed that examines teaching.

Of the tools reviewed within this chapter, the OTAS (teams), ANTS, NOTSS and various revisions of the NOTECHS tools have most evidence behind them for assessing non-technical skills. However, the volume of evidence for these tools may be more a product of longevity, i.e. they have been used and tested more than more recently developed tools. These 4 assessment tools, their development and evaluation are more widely reported in the literature. They each show satisfactory reliability and validity when taken as a whole picture, although ANTS reliability evidence is weak, and each have been studied to the point where feasibility of tool use has to be assumed within the research

domain. There is still limited evidence of their use and evaluation in real world situations, and hence also their impact on real world training. Most of the evidence still comes from simulation training or video observations. The OSCAR tool used for resuscitation has good evidence supporting content validity and reliability.

Table 3.2 An overview of NTS tools and their domains

	ANTS	NOTSS	NOTECHS	OTAS	OSCAR	Flowerdew Tool	MSF for Ward Rounds	IPETT	BMS-NNTS	Crossingham Tool	TEAM	CTS
Leadership		•	•	•	•			•	•		•	
Teamwork	•	•	•	OVERALL		•	•	•	•	•	•	
Communication		•	•	•	•		•	•		•		•
Situational Awareness	•	•	•	•	•	•			•	•		•
Coordination				•	•				•			
Cooperation/ Back-up behaviour			•	•	•	•		•	•			
Decision making	•	•	•		•	•		•	•	•		•
Task management	•	•*	•			•		•			•	
Other			Interaction	Team monitoring		Supervision	Preparation and organisation, teaching and	Interaction	Other including teaching	Working under pressure, organisation and planning		Resource management, role responsibility (Leader/helper),

							enthusiasm, punctuality					patient friendliness

The use of Cronbach alpha as a measure of internal consistency is clear as it is used in the majority of the studies included. Validity is broken down to face and content validity, with additional evidence being provided in some cases for construct validity. Concurrent validity is provided in places by comparison with another tool but whether the tool chosen for comparison is a 'gold standard' tool has yet to be shown in the current literature. However, it does serve a purpose if there is an association with a more established tool. This is usually made clear in the discussions of the relevant papers.

There is a difficulty in making a direct comparison of these tools because of the different methodology used. Each tool is speciality specific and has been mainly tested in different simulations. Each have been tested by experts and have been principally developed and used for research purposes. Their utility within large-scale medical education settings has not been tested to my knowledge.

The majority of the tools are measuring performance in interventional specialities or emergency teams for example resuscitation. There are no tools for general medicine and only 2 tools looking at ward work (235,243). This should be a focus of future work. Medical wards are an area of high risk, error and omissions (114–116). Tools need to be developed to measure ward care within all specialities, and medical specialities need to develop tools to look at medical teams NTS is different scenarios, including ward care, ward rounds, and other processes such as out-patient clinics, endoscopy or bronchoscopy, and emergency calls, to name a few.

This is the first systematic review of these tools, to my knowledge. It is, therefore, novel and should be useful to researchers new to the area to give them an introduction to non-technical skills assessment tools and their psychometric evaluation. It is useful for the development of my NTS tool for ward rounds in Chapter 6. One of the major limitations of this study is that it did not include a literature search for individual non-technical skills, for example communication and situational awareness. This study was conducted early in the thesis trajectory. The skills learnt and developed within the process of this study change as more work gets done, and the limitations of the study become more apparent as you become more experienced. If this study was to be repeated, then each individual non-technical skills should have its own literature search and this would help to evaluate the elements that make up each NTS domain in the tools of the past and also those of the future.

The review was limited to English language publications, and therefore useful tools throughout the world may have been excluded. NTS and their evaluation is a worldwide topic and not limited to the English-speaking population. Cultural impacts on professional NTS would be an interesting area for future research.

This chapter demonstrates the methodology of development and evaluation of these tools in accordance with the utility index, especially for statistical analysis. There is less evidence for tool feasibility and acceptability across the articles reviewed and no evidence for educational impact. These should be priorities for future work. However, this review will hopefully provide a starting point to shape future tool development methodologies, or subsequent reliability analysis for future or existing tools. More real-life tool validation and reliability testing is needed to see if simulation or video-based analysis is enough to draw robust conclusions about the tool.

In the next chapter, I explore consultant and patient perspectives of PTWRs using interviews. The data from this chapter will be used with the findings of Chapter 2 and the following chapter, Chapter 4, to develop the PTWR training and assessment tool.

Chapter 4

Consultant and patient's perspectives on medical post take ward rounds: an interview study

Introduction

In chapter 3, I have presented a review of the NTS tools used and their evaluation. These findings with those form Chapter 2 will be combined with the findings from this chapter to develop the training and assessment tool for PTWRs. This chapter will report the results of an interview study with both patients and consultants on ward rounds. The review of literature on ward rounds and training (Chapter 2), found seven themes emerging from the existing literature, summarised in Box 2.1.

So far in this thesis I have described ward rounds and some of the factors affecting them today. They are a complex process for both patients and clinical staff. The PTWR is the first ward round a patient experiences on admission and is led by a consultant. Guidance mandates that this ward round occurs within 12-14 hours of admission. The perspectives of the consultants are important to understand how to examine and appraise the leader of a ward round It would be very wrong to investigate the ward round leaders without considering the ward round from the perspective of the most important stakeholders – the patients.

This chapter also includes discussion of the 'intra-take' ward round within the main discussion on PTWRs. The intra-take ward round is the PTWR that takes place at some point between afternoon and early evening. It came about because the government stipulated that all patients had to be seen by a consultant within 12 hours of admission. They run differently from Trust to Trust and also from consultant to consultant. Some are very formal and run like a proper formal ward round with all members of the admitting team present including the registrar in charge while others tend to take place on a more ad hoc basis and often only involve the junior doctor who clerked (admitted) the patient.

During an 'on call' on 'take', a junior doctor will be assigned a patient referred from Accident and Emergency or via a GP or even by a doctor within the Trust. The patient has been referred because the referring doctor believes that this patient requires admission to hospital because they are so sick

that they need hospital monitoring and investigations and management that only a hospital can administer, or because for whatever reason they are not safe to be at home, i.e. need to have an independently or even they are not able to live independently anymore and may need to be assessed for a residential home or nursing home, or require input from either occupational therapy or physiotherapy..

Chapter 3 highlighted important non-technical skills from a review of current tools, including communication, situational awareness, team work, supervision and decision making. None of the tools assessed have taken into account the patient perspective in their development. For tools used in operating theatre where patients are anaesthetised or in a cardiac arrests, where the patient is unaware, the patient perspective is not relevant. However, for physicians, patient communication and understanding are crucial. Patients may struggle to discuss some aspects of the technical side of their care but they can discuss the non-technical aspects.

Aim

The aim of this chapter is to explore consultant's and patient's views of ward rounds – specifically the non-technical skills required of physicians in order to conduct them effectively and the educational value of these rounds.

The findings will feed into the development of a non-technical skills tool. The purpose of this tool is to appraise PTWR leader and their non-technical skills.

Research questions

i) What are Consultant's perspectives of medical post take ward rounds and its educational value?

ii) What are patient's expectations and perspectives of medical post take ward rounds?

Method

Interview methodology was chosen for this study as a good method to get rich detailed data from which to further understand ward rounds. The literature on perspectives of ward rounds is sparse as shown in chapter 2. Within these articles, observation and surveys or questionnaires are the principal methodology employed. Interviews are rarely used to understand ward round stakeholder's perspectives. Interviews and focus groups have been historically used by qualitative researchers for many different subject areas. The literature review found only one study that used focus groups primarily to obtain its results (246). 11 studies were found in the scoping search for the ward round literature review relating to people's perspectives on ward rounds, and 2 of these were small interview studies (247,248).

Qualitative methodology is appropriate for an inductive study. A deductive study usually tests a hypothesis, but for this subject, where we have little evidence to date as shown in Chapter 2, there is no hypothesis and so the information and data needs to be inductive, i.e. contrived from the data. Theory arises from the data. We have seen that the knowledge in this area is little and so this study is primarily exploratory. Qualitative methods provide the flexibility for exploration that quantitative methods do not. I decided to use interviews rather than a survey or questionnaire to get the best understanding of the participant's perspectives. It is a more flexible methodology with the possibility of asking for clarification or exploring an issue or point in further depth which is not provided by either a survey or questionnaire. Interviews are more time consuming both in terms of data collection and in analysis, but it seemed that this was justified by the possibility of the data collected being more detailed and explanatory than a remote paper or digital method. Interviews give the opportunity of a face to face discussion to help both put participants at ease, and emphasise the confidential elements of this study, but also provide an opportunity to react to non-verbal cues; this is not possible with the more rigid options of questionnaires and surveys.

The interviewers (SP and ZB) are medical registrars with significant experience of medical ward rounds, including PTWRs. We are reflexive interviewers, and this has potential benefits as well as risks which will be explored further in the 'Discussion' section of this chapter. Britten, in her article 'Qualitative Interviews in medical research' discusses the importance of an interviewer monitoring his or her own interviewing techniques (249). She explains that interviewers need to note how directive they are being, whether leading questions are being asked, whether cues are being picked up on or ignored, and whether interviewees are given enough time to explain what they mean. She explains that the question of directives of questioning depends on context. Non-directiveness is not always best; the amount has to be appropriate for the context.

The consultant and patient interview studies took place within Imperial College Healthcare NHS Trust, London, UK. Within this Trust, St Mary's Hospital and Charing Cross Hospital admit the general medical take (i.e. general medical patients admitted during a prescribed period). The duty consultant for medical admissions will be a speciality consultant but will also be skilled in the care of general internal medicine patients. Several models for acute medical admitting teams exist. St Mary's Hospital utilises a rotating on-call team drawn from a single specialty on any given day, resulting in a group of staff who consistently work together taking on the responsibility for emergency admissions and their on-going care. At Charing Cross Hospital the rotating duty Consultant is drawn from a Medical Specialty and works with a junior team who are continuously based in the Medical Admissions unit and therefore may not have worked with any of that team before.

Ethics

This study was determined to be a service evaluation project by Imperial NHS Ethics Research Committee, and therefore full ethics approval was not needed [REF SE85](Appendix 4.1).

This study's primary ethical consideration is one of confidentiality. Any study involving patients needs to emphasise the confidential safeguards put in place in order to maintain confidentiality. The other important consideration was valid consent. Full information sheets were given to both sets of participants; this information sheet emphasised the confidential aspect of the study (Appendix 4.2). This was reiterated verbally at both the start of the interview and at the close. Consent was given with a formal consent form (Appendix 4.2) and again was reviewed at the close of the interview verbally.

i) CONSULTANT INTERVIEW STUDY

Participants

The study took place in 2 hospitals within the Imperial NHS Trusts in London, UK – St Mary's Hospital and Charing Cross Hospital. The sample was purposive. An invitation to participate was emailed to all medical consultants at these Trusts, who participate in the Acute General Internal Medicine take. The email was set on behalf of the investigator by the 2 clinical supervisors, as it was presumed that fellow consultants would be more likely to get a positive response.

Data Collection

The interviews were semi-structured using a pre-designed interview schedule. The protocol underwent expert review (2 medical consultants) prior to the pilot interview. Written and verbal consent was acquired, and this was rechecked at the end of each interview. Each interviewee was given an information sheet about the project. The aim was to conduct interviews until saturation of themes was reached or a maximum of 10 interviews reached (whichever came first). A pilot interview was carried out by ZB. No questions were changed after the pilot interview. Further interviews were conducted by ZB across both sites until saturation of themes was noted. The interviews were recorded using a digital Dictaphone. The interviews were conducted in a variety of locations, principally the respective consultant offices; at a time and location convenient for the interviewees .

Each interview was transcribed verbatim and all interviewee details were anonymised. Any patient details or other names were also anonymised.

ii) PATIENT INTERVIEW STUDY

Participants

The study took place within 2 of the Imperial College Healthcare NHS Trusts in London, UK – St Mary's Hospital and Charing Cross Hospital. The sample was purposive. The aim was to conduct interviews with patients until a saturation of themes was noted or a maximum of 20 patient interviews was reached (whichever came first). After initial pilot testing, patients were willing to be interviewed and it was apparent that conducting the interviews at the weekend was beneficial. The wards were quieter, there were fewer people on the wards and less disturbance, which made the interview process easier to carry out and record. The aim was to conduct an interview before and after the medical PTWR. The interviewer, SP, asked permission of the medical consultants leading the 'take' (the admission of the patients and hence the ward round) to carry out the interviews; this means that the PTWR leads were aware of the interview study taking place prior to the ward round itself. Certain weekends were allocated solely on account of convenience, avoiding bank holidays. One day of each weekend the interviews were conducted at St Mary's and then the other at Charing Cross. The interviews took place over 4 weekends in total.

The interviewer arrived on the ward at 6.45 am and met the night medical team. From a list of the patients admitted overnight who were yet to see a consultant, suitable patients were identified after a discussion with the night medical registrar. Patients were excluded if they were too unwell, confused or did not speak English. Patients had to have capacity to consent to participation. The patients were then chosen from the list at random as well as on availability, i.e. present at the bedside and not eating breakfast.

Data Collection

The interviews were semi-structured, and they followed a similar structure before and after the ward round. The interview protocol was reviewed by 2 clinicians, and an expert in patient interview studies. The questions and language used were also reviewed by a patient who acts as a patient representative for the Patient Safety Translational Research Centre at Imperial College London. The language was amended but no questions were changed during the review process. Any medical questions asked of the interviewer were deferred to after the interview and resolved by informing the medical team of the question where appropriate.

Consent was acquired in writing as well as verbally and it was always verified at the end of each recording. Each patient was given an information sheet. The interviews were recorded using a digital Dictaphone. The interviews were conducted at the bedside.

Each interview was transcribed verbatim and all interviewee details were anonymised. Patient details and names of medical staff or other names were also anonymised.

An interviewer's reflexive log was kept and is summarised in Appendix 4.2.

Analysis of both studies – Consultants and Patients

Inductive thematic analysis was carried out by SP (principal researcher) as detailed below (250). Thematic analysis is compatible with both constructivist and essentialist paradigms. It is a method with theoretical freedom that is both flexible and useful. This method identifies, analyses and reports on patterns or themes within a particular data set. These themes serve to describe the data giving it a level of organisation to aid understanding.

Thematic analysis is an active process. It involves looking for themes that will represent each participant groups' perspectives. The approach used in this chapter is a semantic one as opposed to a latent one; the themes will be identified within the explicit and literal meaning of the spoken words. This is particularly true when the interviewer/researcher is immersed in the same world as the participants. Thematic analysis research defines the process has to be active when the role of researcher is active. The theoretical position of the researcher and his or her own values do impact on the analysis process. This could be seen as interpretation on the part of the researcher and this is why presenting and discussing the data and findings to a multi-disciplinary group of experts to ensure agreement in crucial to the methodology.

The creation of themes from the data in thematic analysis predisposes that the researcher is aware of what a theme should be. A theme is not a restrictive definition; a theme captures something that is important and provides an insight into the research question. It represents a patterned response within the data set. The themes need to provide a rich description of the entire data set. How often a theme is referred to, i.e. its prevalence, is not a crucial part of the analysis as a theme that is referred to many times, i.e. is more prevalent, does not necessarily mean that this particular theme is more important. Similarly how many times the theme is referred to by different participants does not necessarily imply greater importance. This aspect of thematic analysis may be challenging for positivist readers with a background in quantitative research.

The stepwise method of thematic semantic analysis used here is the same as that proposed by Braun and Clarke (2006) (250,251) (see Box 4.2). The multi-disciplinary discussion is relevant to stages 4 and 5.

1. **Becoming familiar with the text.** This is achieve by repeated readings of the texts in an active manner as oppose to passive, making some notes on ideas for coding.
2. **Generation of initial codes**. This is the first step in organising the data to enhance description at a later stage. This is done inductively for this data set as little was known about the subject at the time of analysis.
3. **Searching for themes.** This step re-focuses the data into broader themes by grouping the codes. This is the start of the process of thinking about the relationship between codes, themes and between different levels of themes, i.e. main themes and sub-themes.
4. **Refinement of themes**. This involves reviewing themes at the level of the coded extracts, and also whether they form a coherent pattern. This involves beginning to formulate a 'thematic map or template'.
5. **Defining and naming themes.** This involves ensuring that the theme title and sub-themes are named appropriately, accurately representing the data that they are referring to and also that the 'thematic template' works as a whole.
6. **Producing the report.**

Box 4.2: Adaptation of Braun and Clarke's stepwise method of thematic analysis (250)

NVIVO 10 (QSR International, Australia) was used to manage the analysis process. From the initial analysis a large number of codes were labelled. The analysis continued inductively as there is minimal literature to explore the data and inform the interpretation. The transcripts were then re-coded, adjusting inductively once more as the second stage of analysis was carried out. These codes were then arranged into themes *(part of the process is shown in a photograph in Appendix 4)* and these themes were represented pictorially in a thematic map. These emerging themes and template were discussed at a multi-disciplinary research meeting (2 clinical consultants, 2 medical registrars, the lead investigator and an academic pharmacist who was conducting ward round research). The codes were checked once more following this meeting. The final thematic map was re-discussed with members of the multi-disciplinary team to ensure agreement and no new categories of meaning were derived. The thematic map (shown below) gives an overview of findings, and there is an accompanying table of results with themes, subthemes and illustrative quotations from the original interviews (Appendix 4.3).

The first multi-disciplinary meeting was recorded purely for reference purposes for analysis. It was discarded for confidentiality reasons once the analysis process was completed. Field notes were kept of the various iterations in analysis.

The findings of each interview study will be discussed, along with the findings of the registrar interview study conducted previously and compared in the discussion.

Results

The results from each group will be discussed separately first and then synthesised. For each group, the themes and subthemes will be described and illustrated using quotations from the text. These will be displayed in Figures 4.1 and 4.2.

The consultant interviews are labelled by letter, A-I. The patient interviews are labelled by number 1-15. Ellipsis (…) is used to show were text has been edited.

CONSULTANT INTERVIEW STUDY

Interviews were carried out in total until saturation of themes was noted. There were 9 interviews (A-I) including the pilot interview and the characteristics of the interviewees are displayed below in Table 4.1. The interviews were between 20 and 45 minutes in duration.

Table 4.1: Characteristics of consultant participants

	Sex		Speciality (all dual accredited with general internal medicine)					Hospital	
	Male	Female	Geriatrics	Endocrine	Gastroenterology	Respiratory	Hepatology	St Mary's	Charing Cross
Participants	7	2	2	3	1	2	1	7	2

The themes and sub-themes have been summarised in Figure 4.1, which gives an overview of the themes and divides them into themes with a positive perception of the educational value of ward rounds and those with a negative perception.

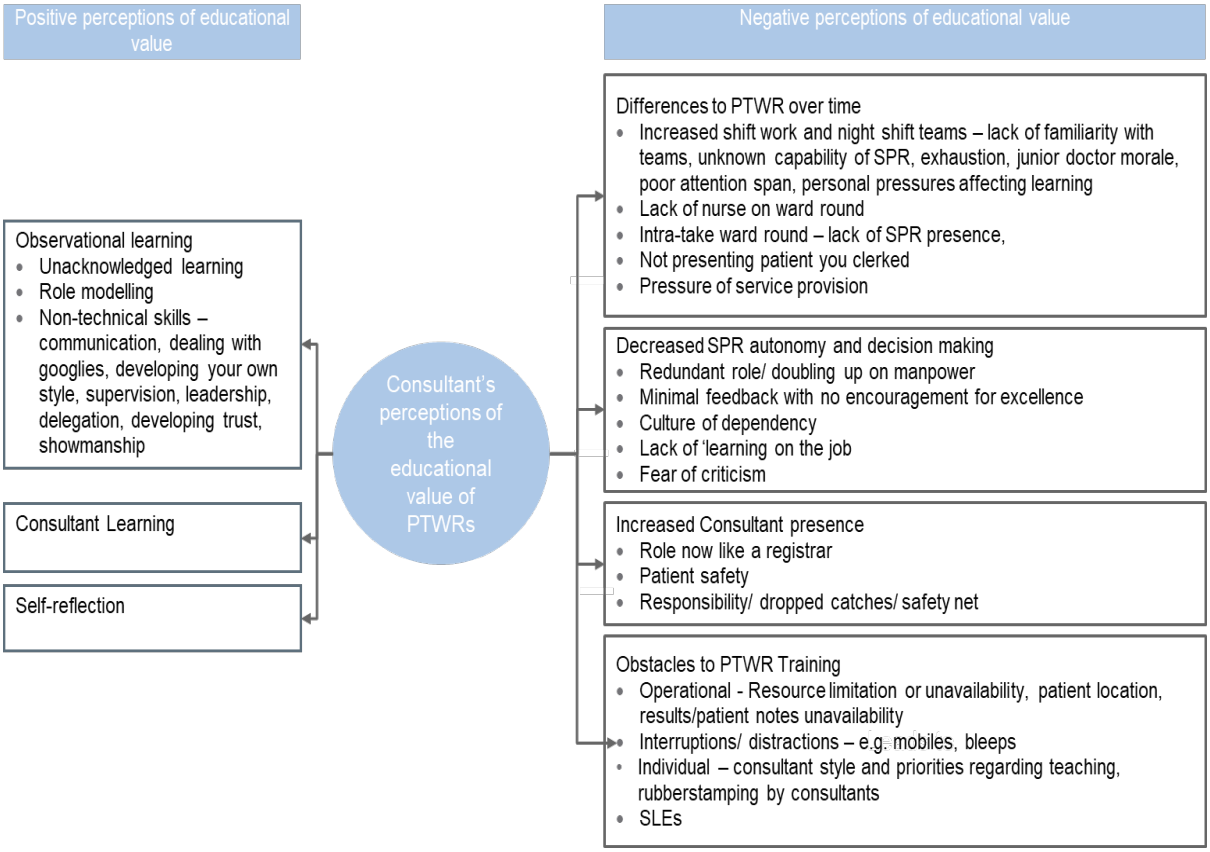


Figure 4.1: Consultant's perceptions of the educational value of PTWRs

Themes and sub-themes

The themes and sub-themes are divided into positive and negative perceptions on the educational value of ward rounds, as illustrated by the thematic map shown in Figure 4.1.

Positive perceptions on the educational value of ward rounds

This section is made up of observational learning, consultant learning and self-reflection.

Observational Learning

The theme of observational learning incorporates the sub-themes of unacknowledged learning, role modelling and non-technical skills. Much of the ward round training does not take the form of didactic teaching. All three sub-themes are examples of observational learning. Just by being present of a ward round, a trainee absorbs information, but this is especially true for non-technical skills. By looking at the consultant leading the ward round, there is an appreciation for certain elements of his practice i.e. the way he breaks bad news or addresses junior colleagues, and in the same vein, a trainee learns which elements of a certain consultant's practice they appreciate less, and hence may not incorporate into their own practice. One needs to be able to observe many different consultants and their styles of leading a ward round in order to appreciate which elements

a particular trainee relates to and tries to incorporate into their own practice, helping to shape the type of consultant that you want to be.

i. Unacknowledged learning

Unacknowledged learning, or unconscious or 'invisible' learning, refers to the learning that happens by virtue of the fact that a person is present on the ward round. The observation of the ward round leader and how he or she conducts the round and himself or herself leads to learning through personal development and a lot of this is not conscious. It relies on the fact that you get to see a variety of consultants, with their own individual styles, leading a ward round.

'…I think some of the learning that takes place… is invisible. So I think you do learn by osmosis and experience and interacting with people without necessarily the formality of a training process, er, but it's all a bit invisible.' (Participant G, Consultant)

It likely involves some reflection on the proceedings but even without this there is an element of learning for both clinical and non-clinical aspects by '*osmosis*'. Consultants refer to this learning in the interviews and it is one of the major themes in analysis. Unacknowledged learning always takes place and, therefore, a PTWR is 'always' a training opportunity even in the absence of formal explicit teaching. This training relates to the non-technical aspects of the ward round, for example delegation. Delegation is seen and not explained explicitly.

I think that's largely observational because it's unusual to stand the Registrar aside and say, "… what I've just done is send the House Officer to do the death certificate and told this House Officer that they have to stay and write in the notes …". I mean that is observational isn't it? (Participant C, Consultant)

Observational learning means that a ward round always has some value because it happens even in the absence of any other training. The opportunity is present even without explicit reference to teaching.

I think it's always been a training opportunity. Whether or not training has always occurred is a different matter, but the opportunity is definitely there… just the process of being on a post take ward round, even if no specific intention of training is being done, is I suppose training. (Participant C, Consultant)

ii. Role modelling

Role modelling is an example of observational learning. Some of this is conscious, requiring reflection, and some unconscious for the trainee.

I do think it's a valuable training opportunity and I think um really it's about – at that stage it's about the Registrar modelling themselves on the Consultant or seeing – you know they're about to become a Consultant so it's about learning how to do things, taking the good and not so good things from that Consultant that they're with …. because it's all about developing your own way of doing it. (Participant A, Consultant)

Role modelling is about personal development of non-technical skills.

'… they will see um different styles of different consultants, of how to approach the patient, err both from just the rapport point of view err but also how they approach the acute medical problem as well.' (Participant F, Consultant)

This observational learning is key to learning on a ward round and making a decision about the type of doctor that a person wants to be. 'Role-modelling', observing an individual and acknowledging the aspects that you like or dislike, is a valuable process for the trainee.

'I think whenever you see another doctor interacting with patients, even if we're not deliberately consciously taking note of how they interact with them, subconsciously you're absorbing their behaviour and registering parts of it that you are useful and might carry into your own practice or the parts you think perhaps, … you would do differently, so I think … it is valuable. (Participant I, Consultant)

iii. **Non-technical skills**

Non-technical skills (NTS) is an all-encompassing phrase and refers to the social, cognitive and personal skills that can enhance the way a clinician carries out his or her job. It is a sub-theme closely linked to 'Role-modelling' and within a ward round and primarily developed by observing the consultant. The skills a crucial to the running of the ward round and it is these skills that can be honed through ward round participation.

I think that what is beneficial is to see a consultant integrate information quickly, effectively, efficiently, and pick out the key salient points and prioritise them, and to look at the clerking that has been done and to ensure that actually those are the key points, and they have been prioritised, that they have been actioned. (Participant E, Consultant)

The development of these skills is fluid and occurs over time and some of it is conscious and some unconscious. The skills discussed in the interviews are sometimes not obvious ones to juniors but relevant to life as a consultant. These skills therefore are often learned in an 'unacknowledged' fashion, and they are often 'unacknowledged' skills themselves. A registrar may not realise the

importance of such a skill until he or she becomes a consultant. For example, the ability of a consultant to act as part of the Trust in which he or she works, to see a bigger picture as well as care for the individual in front of them.

'… to see how consultants are very much also um part of a bigger picture of working within a trust, which has core values and strategies, and targets perhaps to meet. And that consultants perhaps, because they are permanent members of staff, know those and are linked in with those core values a little bit better than … err juniors that turn around a lot, so they may see that that is how that ward round is being run, and I think that is quite useful for them…' (Participant E, Consultant)

This sense of responsibility beyond patient care is not one that is regularly practised as a junior so valuing it through observation on a ward round is a learning experience. In a similar vein, dealing with whatever a ward round throws up – the unexpected – is another non-technical skill. A trainee may be unaware of the importance of such an attribute until it is seen in practise on a ward round. Consultant H uses the cricket analogy of '*dealing with googlies'* which means dealing with the unexpected. It is a very good analogy for leadership on a ward round when you are facing so much that is unknown and beyond one's own control.

'… the way you approach the patient, the way you approach questions and the patient, the way you approach conflict, the way... if you have somebody who is not willing to give you much information or somebody who is a bit verbal or something who is hostile or... you know, just those kind of googlies that are sometime bowled at you on a post-take ward round which are non-medical.' (Participant H, Consultant)

'Dealing with googlies' also explains the ability to behave against one's own intuition or emotion and this is definitely a NTS required when dealing with uncooperative patients on ward rounds when time is limited. It involves both communication but also self-control and intuition. NTS development for leading a ward round means developing an arsenal of skills that means you are as well-equipped as possible for any possible eventuality.

'You know, if you've got somebody who has sought medical help and then doesn't want to take your advice and... yeah, your hackles might be somewhat raised, but actually my experience tells me that there's no point in meeting hostility with hostility. ... we're all human and I think, you know, it... Particularly … if you're doing this after a long post-take ward round and you come against somebody who you're thinking, "Oh for God's sake, just go and boil your head," you know, (laughs) you might think that but actually that would be completely the wrong way to do it. (Participant H, Consultant)

The following quotation explains the difficulties of decision making and delegation – both NTS. The sense of responsibility that you have as a consultant is hard to appreciate before a person is a consultant. On a ward round, you can appreciate this responsibility and how different people have learned to deal with it through appropriate delegation by observing behaviours.

And when I was a Registrar I used to think, "Well things are pretty black and white, clearly this is not for Resus, clearly this person needs to be thrombolysed because that PE is really big" or whatever, but actually when it's you who is going to be at the end of the complaint letter or summoned to court … that actually it's my name above the patient really hit me when I first became a Consultant and learning to delegate was very difficult … it just took me a while to just (laughs) – to delegate appropriately. (Participant C, Consultant)

Consultant H explains are slightly different use of NTS. He explains that much of the feeling of difficulty that comes with leading a PTWR is because you need to develop your own 'showmanship' in order to keep everyone interested. You also have to develop the skill of filtering facts and information received but also those that you give back – a two way process.

'(Leading a PTWR) Boy, that was harder than I thought it was going to be. I didn't think it was gonna be easy but I just..." You know. It's just because, you know... It's, it's, it's, it's like, it's putting on a show, it's a... it's that kind of showmanship and it's the kind of... the act that is actually the thing that is not intuitive necessarily so that actually it's no good just going to give a whole load of, you know, facts to a patient, you have to be able to filter the information that you've been given. (Participant H, Consultant)

Consultant learning

So aside from observational learning and trainee learning, there is another stakeholder in PTWRs that learns on PTWRs according to this data – the consultant themselves. This theme refers to the knowledge that they get from speciality registrars during a ward round to ensure their own knowledge is up to date.

'*So if I'm – I'm a hepatologist and if I'm doing a post-take ward round and it's a complex um… cystic fibrosis patient and the Registrar happens to be a final year Respiratory Reg who's done a year at Brompton on the Cystic Units that Registrar is going to know more about the clinical management of complex cystic fibrosis lung infection than me and in which case it actually is a potential learning opportunity for the Consultant.' (Participant C, Consultant)*

The data makes very clear that all consultants do not know everything and they are keen to make that clear. Consultants look forward to continually learning both clinical and non-clinical aspects of care from colleagues.

'I definitely learn things probably every ward round about medicine, erm, I think there's a lay belief that we erm, consultants know everything and we certainly don't, we don't know the most recent things and I learn from it, especially my registrars, er, things about other specialities and that this is how we erm, er, now asthma or whatever.' (Participant B, Consultant)

Nurses have a specialist knowledge which is very different from doctors and their expertise on a ward round is not only complimentary but necessary. It means that consultants benefit from their expertise if present on a ward round, and vice versa. Some of the participants mentioned that this is also true of pharmacists' presence on the ward rounds.

So having nurses on the post-take ward round is a learning opportunity for the nurses, it's also a learning opportunity for the doctors. I mean I have learnt lots of things from senior nurses in terms of wound dressing, when to use TPN [total parenteral nutrition], different types of nutritional feeds, so if you've got a good senior nurse, … it's a learning opportunity for the doctors, it's a learning opportunity for the nurse and it makes for far better clinical communication and ultimately patient care surely? (Participant F, Consultant)

Self-reflection

This last theme in the positive perceptions on the educational value of PTWRs explains how we can assimilate the information observed. Part of what is involved in 'self-reflection' is the different elements explained within observational learning. There is, however, another element for self-reflection. The direct feedback that you get from being present on the ward round on your management plans and differential diagnoses. There will also be reflection on any didactic teaching that you get on the ward round, if any. The word 'reflection' refers to both a formal and informal process of organising our thoughts, and learning.

I suppose encouraging trainees to think about what learning they get from ward rounds that isn't made explicit to them um and getting them to feel more confident, to ask questions and to reflect on the fact that they are learning. (Participant A, Consultant).

A consultant's role on a ward round is to encourage this process, and help build confidence, and be open to questions to promote reflection and learning.

Negative perceptions on the educational value of ward rounds

This section is made up of a theme for differences to PTWRs over time, decreased SPR autonomy and decision making, increased consultant presence and obstacles to PTWR training.

Differences to PTWR over time

This is the first of the 'negative perception' themes on the educational value of ward rounds. Many of the differences that have happened to a PTWR have come about because of a move towards an Acute care model with the introduction of the Acute Care Unit or similar. With this there has been an increase in shift pattern working. The 'old' system refers to the time that a doctor was 'on call' with their own team, who you knew well including their strengths and weaknesses. A patient was also cared for by this team from admission to discharge with no handing over of care to another team unless clear speciality input was required.

This section will deal with the themes within this set of data. Many of the interviewees have had experience of both the old and new style. The new style of 'on calls' in the majority of Trusts in UK involves being on call with different colleagues each time including seniors and juniors and you admit a patient and rarely look after the patient from admission to discharge. It is often the case that you do not care for that patient again during their admission. The participants of this study were from the two Trusts within Imperial that admit acute medical patients – Charing Cross and St Mary's. Charing Cross is an example of the 'new' style of ding on calls and St Mary's has tried to retain elements of the team-based approach so that you are on call with your team.

I think er, we were able in the past to give a more erm, a thoughtful time on the past take ward round. (Participant A, Consultant)

Aside from the PTWR being less 'thoughtful', there is also the effect on training. In summary, there is an unbalanced tension between service provision and training - a tension that exists in various aspects of today's medicine.

I feel that it has swung a little bit towards patient care and delivery. I am not for a minute saying that is wrong, but I feel sorry for the trainees, that are not having that met with an alternative way of helping them, because they need … they need the training and we need to deliver it. I don't think it has been delivered in this setting (PTWRs) particularly well. Participant E, Consultant)

The following are the separate sub-themes of the 'Differences to PTWRs' over time.

Increased shift work and night shift teams

This sub-theme explains that today's junior doctors tend to work a pattern of shifts with different teams each time, including night shifts. This is different from the working patterns of previous generations. The following sub-titles help to explain the data on this topic.

i. Shift work

Junior doctors work more shifts these days and seniors have to be more 'mindful' of the fact that juniors should not work beyond these hours and that they have to get home after night shifts. Previously juniors would be present for the day after the night shift and so there was no additional pressure to get them home to bed. The consultants feel an added pressure today to get juniors home to bed.

And I'm certainly conscious that I do less teaching on post-take ward rounds than I used to because we have a night team now who need to be got home... 'Cos when I, when I first started of course there was no... we had an on-call team who were here 24 hours and, umm, they were here the next day irrespective so there's no... there was no urgency to get the night team home. So I'm... I am conscious that we probably do less teaching now on post-take ward rounds because of that change, that split between the day and night teams. (Participant H, Consultant)

Working nights impacts greatly on the way a person performs on a ward round in particular because of exhaustion (a sub-heading itself in this section). It not only affects their performance but also impacts on the training on a ward round.

Because even though you have 12 hours off, actually you don't really sleep very well and – and I know that. A Registrar on their third or fourth post-take ward rounds having done three or four nights, that's not a conducive time for them to learn, they just need to – patients need to be managed and need to – even if you try and teach it's not the best mental environment for them to learn. (Participant C, Consultant)

ii. Familiarity with team

The pattern of shifts for today's medicine usually involves working with fellow doctors who are not known to them. For a consultant, this often means that he or she is on with a registrar who is not familiar to them and vice versa. Trust is built over time between a registrar and consultant and so often that trust, which consultants rely on, is not present.

So, in the old days, then the take was structured you worked with one particular registrar, you learned what his or her weaknesses or strengths were, um, you interacted in a more comfortable way

with them because you knew they were… er, now I find that I'm on the post-take ward round and the first thing I'm thinking is, 'is this somebody I can trust or not?' Um… (laugh) and if I can't trust them then the last thing I'm interested in doing, I'm afraid, is teaching them; it's trying to spot any mistakes they've made and my first concern, er, first and foremost on the post-take ward round is actually, er… making sure there aren't any dropped catches and making sure the patients are okay. (Participant G, Consultant)

If there is no trust then the priority is patient care and safety, which impacts on training for all members of the team. Trust and familiarity in your team also impacts on how a ward round is run because there is less repetition from the consultant, because he trusts what he is being told. The following quotations are included because they each help to explain a different element of the difficulties with working with a team that are unfamiliar to you.

But, I mean, I'm a, I'm a big fan of... I mean, I think things you do wrong on post-take ward rounds as a consultant is to re-clerk every patient and re-examine every patient, umm, because, provided you... And that's why you need to know the people you're working with and you need to trust them 'cos as soon as you don't, then effectively you do have to do that. (Participant D, Consultant)

Familiarity with the team is also crucial for junior doctors. The following quotation talks about how miserable junior doctors are and how this is impacted with the lack of familiarity with those who you are working with.

… junior doctors are really, really miserable and, … one of the biggest problems that we have is that we no longer work in teams. The day the managers invented the words, 'team working,' we lost our firm structure. Er… and so … you just work with, er, a random selection of doctors that er, generally you'll never have met before and, er…. Th- th- the junior doctors feel uncomfortable that, 'is that somebody that I can ring up in the middle of the night because I'm concerned or is it somebody that will give me short shrift?' Er, er, I'm uncomfortable because I'm- is this somebody that I can trust? Or have they just er spun me a story and invented a diagnosis? Er… and I- I don't think human beings, human beings don't like strangers. … it's awfully nice to be working with people you know even if you know they're bad. It's better than… not knowing they're bad (laugh). (Participant G, Consultant)

iii. Exhaustion/ Stamina

Exhaustion is relevant to shift work and in particular working night shifts has already been mentioned. In addition, a consultant will be working with juniors he is unfamiliar with, reviewing patients who he has never met before, many of whom will be presenting with problems outside his

usual speciality interest, travelling throughout the hospital and not sitting down; it is an exhausting process.

Most of us don't regard ourselves as acute medicine consultants. (Laugh) We're- I'm a-, I, I'm a highly specialised chest physician who occasionally gets rostered in to do the take. It's the chore that nobody wants to do anymore, if I want to be honest, because it's very burdensome and it's a hot potato, er, and it's exhausting. It's draining. It's not- I'm 64 and (laugh) it's not just people of my age that find it exhausting; the youngsters do as well. (Participant G, Consultant)

iv. Poor attention span/ right frame of mind

Juniors may not be in the right '*frame of mind*' to learn. This could be on account of tiredness but also perhaps because of a possible myriad of other personal and professional reasons which are unknown to the rest of the team.

I think almost all aspects are beneficial in some way, assuming that people are in a frame of mind to realise that it's a learning experience. Um… and that they're not – that they don't have too many other pressures that they're not taking in the learning experience. (Participant A, Consultant)

There may be something about present day junior doctors that involves a shorter attention span, that allows them to be easily distracted, including the distraction of mobile phones. Older consultants will easily remember a time when no one on the ward round had a mobile phone. If a junior is not in the 'right frame of mind' and does not have a conducive attention span, then learning will be limited.

… the post take ward round has changed immensely over time, um so there is a lot of distraction, and I don't know whether there is a bit of attention deficit from trainees, … I was taught to write essays and short time answer questions, and they to do MCQs on a screen, and I think their attention span is extremely short err so it is very difficult to keep their attention on the ward rounds. You will have um people just chatting or answering mobile phones, so attitude increasingly I find it an extreme obstacle. (Participant F, Consultant)

Nurse presence on the ward round

A nurse present on a ward round can be very helpful to all clinical members of the team and also to the patient. It can help with communication and information, as well as being educationally beneficial as we saw in the 'Consultant Learning' theme. The main concern about a lack of nurse on a ward round, is the impact on patient care.

The presence of nurses … I think that's a key issue, not just from a clinical management point of view but in terms of learning. … I think it's a learning opportunity for the doctors, it's a learning opportunity for the nurse and it makes for far better clinical communication and ultimately patient care surely? (Participant C, Consultant)

Intra-take ward round – lack of SPR presence

The intra-take ward round is the afternoon ward round and is run very differently in different hospitals but is mostly arranged on an ad hoc basis, as explained in Chapter 1. The expected pre-requisite that the registrar will have reviewed all the patients prior to the consultants round does not necessarily happen, in comparison to the past, as consultants are more present and the 'takes' are busier. This means that the consultants are reviewing patients that have not been reviewed by the registrar. A registrar is often not present for these consultant reviews because their job of running the take is ongoing.

Certainly my experience on take is that um if err time is ticking on, and we want to complete the intra-take, and maybe an FY1 has seen the patient or even a CT1 has seen the patient, and the registrar hasn't seen the patient, then I end up seeing the patient, and so that then stops the um … registrar also seeing the patient, reducing their acute experience. (Participant E, Consultant)

The registrar's role is changing as the consultant is more present, and this impacts on their experience of the 'acute' take, thereby affecting their training.

Not presenting the patient you clerked

Every admission clerking is extra experience for a doctor and adds to their training portfolio, from the very unwell patients, to the well patients who require social input. This experience and clerking is supervised, and the mainstay of supervision in a hospital is via a ward round; for patients who have just been admitted, this ward round is the PTWR. If the experience of presenting your admission clerking including differential diagnosis and management plan, is no longer available, then there is no 'supervision' and feedback either implicit or explicit on your 'clerking', and this impacts your learning for that clinical scenario. It also impacts the running of the ward round and patient care.

… and also the other way, just because of how we're working now, is, er, a minority of patients on the post-take ward round you haven't got the doctor with you that saw them the day before - … But I have worked in hospitals, … where there'd be the majority of the patients on the post-take round, the doctor who'd seen them the night before wasn't there, and that's clearly, er, you know,

bad for... it's not just bad for training, it's bad for, bad for medicine and bad for patients. And usually what's bad for training is bad for medicine. (Participant D, Consultant)

Pressure of service provision

Time is a huge factor is everything that we do. The NHS is the same. There is never enough time according to the participants. They say that the time for training is less; there is just not enough time. The needs of the patients and the hospital take priority, and it is difficult to find the correct balance between training and service provision. Lack of time leads to an increase in pressure to provide the service that patients and staff expect for patient care. An emphasis on service provision has an inverse effect on training.

Well I think it's a problem for training as you can't spend the time but I think it's a reality of modern medicine so I don't... I think you have to try and balance the two, quite truthfully. I mean, I, I, I think there has... I mean, if I'm honest, I think there's been a ch... a shift in the emphasis of what a post-take ward round is about. Certainly when I was a senior registrar it was very much about... the focus was much more about training than, than service provision, … and now any training that can be done is a bit of a bonus. (Participant H, Consultant)

There is always a tension between service provision and training. Lack of time means that the balance tips towards service provision over training. The interviewees talk of 'business' rounds where the focus is purely patient care and Trust expectations and not teaching.

I have to say I don't really regard the post-take ward round as a training... you know, it's business, it's not training. (Participant D, Consultant)

Service provision also includes the Trusts targets and standards, the factors by which a hospital is measured which is something that junior doctors often do not concern themselves with. A consultant has a different role and it includes ensuring standards and targets are attained.

They [the Trust] have to maintain standards, they are constantly striving to increase standards, meet targets, and deliver um excellent patient care, which is why they want consultants hands-on. I can understand that, um and therefore it is the age-old um paradigm of wanting to train and wanting to deliver and how to meet … in the middle… in the old days, you would examine something and then say to somebody 'come and have a listen to this', 'come and examine that', or 'tell me what you think the differential diagnoses might be?' I feel … there is less time for bedside … um teaching on a working business round, they have become very much business rounds, rather than the hybrid of teaching and business … (Participant E, Consultant)

Decreased registrar autonomy and decision making

Consultants are reviewing patients before a registrar has an opportunity to review. This theme is directly related to the following theme on 'increased consultant presence', and the strength of feeling on both themes is clear from the data. In today's medicine, consultants tend to be more available for advice and for making key decisions. All registrars are aiming to become consultants, and will one day be leading ward rounds themselves. Registrars are thought to be becoming less autonomous and are making less decisions regarding patient care; this clearly impacts their training and experience.

Consultants would do a ward round once a week and whatever patients there were on that day they would see them and if the patient was having a scan or whatever they wouldn't get seen. So – and every other day until the next Consultant ward round, the Registrar was responsible and made all the decisions; yes you can go and talk to your Consultant about the case if they were free or around but it was once a week. And so you got used to decision making um and I think that we've really lost that and I think one of the problems with having daily Consultant ward rounds is I do think it's not good for training because actually until you have to make the decision without an immediate safety net, you don't – you just don't know what it's like. (Participant C, Consultant)

The reasons for 'decreased SPR autonomy and decision making' and some of the stated consequences of this according to this group of consultants are discussed below.

Redundant role/ doubling up on manpower

The changing in the role and responsibilities of a registrar has led to a perception that the registrar role is almost 'redundant' because consultants are around to review patients and make the decisions. As we have seen discussed, autonomous registrar decision making is rare without a safety net of a consultant review. The feeling of 'redundancy' may also lead to less engagement with the process by the registrar.

…they often I think feel well you are going around, what is the point, I might as well go and do something else, and certainly it has been said on the acute medical model by our err leads, that um you know well if you are going round twice, why don't you release them to go to clinic? Or to go and do procedures? So that means on their acute block, they actually feel a bit redundant, and that is evident ---… the only time that they can actually go off and do clinics and ward … interventions is on the acute block, exemplifies what I am saying in that there is redundancy --- a redundancy feeling! Because you would think on the acute block, that is the only time they can't go off. (Participant E, Consultant)

It seems that a registrar and a consultant are doing elements of the same job but ultimately the consultant is responsible.

I feel that the training opportunity for the registrar is somewhat diminished in their um ability to see and assess patients and deal with problems that come up within that acute period. … Which is a sadness, and especially for the senior ones, who I feel are chomping at the bit to (laughing) you know take the responsibility and go with it, um it is … it is sort of almost wasted, and … the other thing is - it is doubling up of um manpower. (Participant E, Consultant)

Minimal feedback with no encouragement for excellence

There is a clear message that excellence in practice is not encouraged and this is mainly on account of the Eportfolio assessments by which doctors are assessed. The competency-based curricula by which junior doctors are now assessed relies heavily on electronic assessments which use to be called workplace based assessments (WBPAs) and are now called Supervised learning events (SLEs). The interviewees explain that their purpose is almost to make sure that all training doctors attain an average yet safe ability level. SLEs are discussed within the theme 'Obstacles to PTWR training'.

[SLEs]… it does not account for excellence, and it just makes people I think … it is almost as if a purpose is to make everybody average and safe and let them out into the world to do an average job, that we know is just about safe, and it doesn't um encourage err people to become really really good, exceptionally good, and they know that even if they are exceptionally good, they are not going to score many more points on this. (Participant F, Consultant)

Feedback on performance is limited on account of time. It is a '*terrible indictment*' of today's medicine that we have to rely on a pro-forma instead of independent thinking. Training of juniors has become so diluted that we have to rely on such measures because doctors are not as good as they used to be. There is no time to give the feedback and training to encourage good practice.

We've got pro-forma on the acute, within acute medicine because the doctors weren't able to write out a history and an examination. That's a terrible indictment of our training, er, and there are some that, you know, have qualified but who actually can't do the job. Now how do you put that right when somebody's become an SHO? … I've lost the ability to train them to take a history and examine the patient, in full. … I don't know. They've missed the boat…. I don't take much time out to tell people that. I don't have time. (Participant G, Consultant)

Culture of dependency

The 'culture of dependency' is a direct quote from the first quotation below and it refers to the main theme that as the consultants are present more, there is decreased registrar autonomy and decision making. It refers to the fact that trainees have become dependent on consultant presence to make decisions; this is the new culture not one of 'learning'. The impact on the educational value of PTWRs is clear.

I- I- to be honest I slightly think it's created a culture- I date back to pre-post-take ward rounds so I think it's slightly created a culture of dependency rather than learning. (Participant G, Consultant)

A culture of dependency is detrimental to training – a junior never gets the experience of making decisions without an immediate safety net i.e. an imminent consultant review. This is part of a quotation used earlier but explains the effect of this culture of dependency very aptly.

[In the past] *you got used to decision making um and I think that we've really lost that and I think one of the problems with having daily Consultant ward rounds is I do think it's not good for training because actually until you have to make the decision without an immediate safety net, you don't – you just don't know what it's like. (Participant C, Consultant)*

Lack of 'learning on the job' and less supervision

There is a concern that many registrars may do something for the first time when they are already a consultant and that perhaps it would be better to have experience prior to this point, like in the 'old system'. There is no learning on the job anymore as a registrar but there is as a consultant. The reason for this can be attributed to some of the previous sub-themes but also because of the fact that the government, and therefore the hospitals, want consultants to see patients more frequently, and this limits the opportunity for training under supervision.

… then the day they become a consultant, the, the great risk of becoming a consultant is some of the things you do for the first time when you become a consultant. I mean, that's crazy. What kind of madness is that? But, of course, the hospital doesn't like consultants, you know, doesn't like registrars doing the consultants' work because then the patient hasn't seen a consultant so there isn't that tick in the box (Participant G, Consultant)

There is very limited opportunity for registrars to show consultants what they are capable of because they watch consultants interacting with patients rather than a consultant watching a junior interacting with patients. There is less on the job learning but also less supervision as a consequence.

… interaction with patients, I don't see them interacting with patients ever now (laughing) because it is very hard to see them interacting with patients, all they do is watch me. They do interact with patients, I just never get to see them. … I just feel … in this current acute medical model … I don't see them showing me what they can do. (Participant E, Consultant)

Fear of criticism

The fear of criticism is also a factor leading to decreased registrar autonomy and decision making. It is influenced by the previous sub-theme of familiarity with the team, i.e. knowing the people that you are working with is a '*real enabler*' to training because it takes away some of the fear of criticism. A 'fear of criticism' can lead to feeling like an outsider and impacts on training especially if it limits dialogue and questions.

[Knowing your consultant]… that's a real enabler to training generally because I think if you have some consistency and… you know when it's a stranger it's really difficult, because I – when I was a Registrar here I used to do my on-calls with a different team um and they were not perhaps the most friendly or helpful team err and I used to just feel terrified on the ward rounds that I was just going to get criticised and … I didn't feel sort of treated as a partner in the process if that makes sense? (Participant A, Consultant)

Increased consultant presence

This theme is coupled to the previous one as we have seen. Consultants have to see all patients admitted within 12 hours and they are more present on the wards then they used; their role has changed. The 'patient safety' elements of their jobs have always been there, but the sub-theme referring to '*responsibility/dropped catches/safety net*' is both a key aspect of their role as well as being a key aspect of the PTWR. It is the first sub-theme that really explains the effect on 'increased consultant presence'.

Role now like a registrar

Consultants seem to do more ward rounds, and board rounds (discussing the patients on the ward with members of the multi-disciplinary team rather than at their bedside) and attend bed meetings compared to previous practice. They are more present and this is reflected in the literature (43). This means that they are often the mainstay of continuity of care or information about a particular patient.

I literally knew every patient, I did the board… I did the 12 o'clock meeting, whereas the registrar unfortunately was too busy mopping up all the jobs … I felt like I was a registrar again. When I just did this acute block, err the experience for me um sort of brought back the past, really. I … I was

seeing patients, sometimes I was having to see patients pretty much afresh. I deal with things coming up, so it was … clinically … a new --- not a new experience but a … you know a different experience for a consultant. (Participant E, Consultant)

This quotation also explains that the registrar role has changed moving them away from the ward rounds for the smooth running of the 'take'. This ties in with the previous theme.

Patient safety

The following two sub-themes are related. The primary role of the consultant on the ward round is patient safety, ensuring that mistakes or omissions are picked up on and corrected. It is thought to affect training because the 'new' consultant role impacts on a registrars' experience of this patient safety responsibility. Perceptions of patient safety and its importance are clear and following this what the repercussions can be. Memories of past mistakes help to guide you in your present practice. These memories are key in development for a consultant role and the changes in PTWR practice are impacting the experience of juniors. Concerns for patient safety are prioritised over training.

Er, if we were better supported, you know, it wouldn't be people like me have to pick up those dropped catches. … one I remember from… er, the olden days when the patient ended up deaf having not been given, er… any antibiotics for meningococcal, meningitis for a while. So the stakes are very high and in that situation, to be honest, that last thing I'm worrying about is the quality of the training. (Participant G, Consultant)

Responsibility/ dropped catches/ safety net

This theme concerns patient safety but concentrates on the feeling of responsibility that the consultant has. It touches on the 'familiarity with the team' sub-theme discussed earlier, and the need for trust. The theme actually includes the phrases used by the participants in the discussion – '*dropped catches'* (Participant G, Consultant) and '*safety net'* (Participant C, Consultant). These phrases really echo the responsibility felt by the consultants during the PTWR – '*you have to be absolutely on it because you are absolutely responsible'* (Participant C, Consultant). The other phrase used to describe this theme is '*buck stops with you'* (Participant C, Consultant). The need to trust and learn to delegate appropriately is discussed because the feeling of responsibility is so '*absolute*' (Participant C, Consultant).

The consequence of this responsibility and need to be a '*safety net*' and spot the '*dropped catches'* is that teaching is not a priority – '*the last thing I'm interested in doing, I'm afraid, is teaching them*'

(Participant G, Consultant). The acknowledgement and realisation of the responsibility of the consultant is not felt until you are a consultant.

I remember going on the post-take ward round many times and all the patients their names were on the board with the Consultant next to it and I'd done hundreds of post-take rounds and then the first time I did a post-take round as a Consultant I went there and I saw the name, "C, C, C …" and I looked at the board and I thought, "Who is C? There's no Consultant here C" and then I thought, "Bloody hell! That's me!" And suddenly the um – the level of responsibility really hits you because as a Registrar or SHO or F1 you can actually drift in and out of the ward round.

Obstacles to PTWR training

The final theme for the consultant's data is 'Obstacles to PTWR training'; it covers other aspects that affect training that have not been discussed previously. These sub-themes are more intuitive to non-medics; they are easier to understand and relate less to any apparent or discussed changes to how PTWRs run today compared to years gone by. These themes are important as they affect training on PTWRs but perhaps the effect may not be as large as the themes discussed so far.

Operational

Operational refers to how the hospital runs. Operational obstacles include resources and patient location. Resources refers to what a clinician needs in order to carry out his or her job and patient location is self-explanatory. These are 'obstacles' to the PTWR is because they affect the smooth running of a ward round and the time involved.

Resources is a wide-ranging term referring to what is available or not available to the ward round team in order to make it efficient and effective. For example, computers are used by one of the participating Trusts for electronic documentation. There is a need to 'accommodate' with the resources available i.e. the need to have 2 computers that are working – one for documentation and one to look things up on. Information technology is increasingly relied upon in clinical medicine, but it is only beneficial if it works and is available. It can have a positive or negative influence on the ward round and Consultant A explains one such example.

… for example the first ward round I did um with electronic documentation and I just had – brought one computer with the ward round because I'm actually – it was just impossible to try and look everything up and write at the same time, so now I make sure there are two and then there aren't enough computers that are working and it's all really difficult. (Participant A, Consultant)

Consultant C discusses the need for accurate and 'easy to access' clinical information. Decisions need to be made on the ward round but you have to work with the information available, and rely

on the accuracy of it in order to proceed. The availability of resources to aid the running of the ward round affects time, and the people on the ward round.

… have they had melaena? There's some vague rumour going round of melaena or coffee ground vomiting and you have no idea – or someone's got a drain and you have no idea when it was last drained, so it's really important, has it drained – that litre that's in the drain, was that accumulated in the last half an hour or the last 12 hours? It's – you know or the urine bag, you know? There's 100 mls in there, if that's in the last hour that's great but if that's after 12 hours, that's really not great (laughs). (Participant C, Consultant)

Patient location is another operational obstacle. The acute care model focuses on the acute care admitting ward but often patients have to be placed on other wards with bed pressures, and this can lead to a long, circuitous ward round trying to find patients around the hospital which impacts time.

There are all sorts of obstacles. … I went from 8.00-11.00 and we still had, er, you know, a dozen patients left to see. Er, we were going up and down this block in random order because I had to do first the night patients and then the day patients. Er… we, we had- there's no ward we could call our own because, I mean, there is one we call our own but the patients are everywhere. (Participant G, Consultant)

The consultants do not directly link these obstacles to the educational value of ward rounds but the consequence is implicit: anything that affects the running of the ward round and in particular the time available, will affect the training involved because the previous themes have shown that priorities will always consider patient care first and foremost.

Interruptions/ distractions

Distractions and interruptions on ward rounds are an intuitive obstacle to the running of a ward round. The team are often not paying attention (referring back to the previous sub-theme on 'attention span') and are 'chatting' or 'answering mobile phones'. These distractions impact on the running of the ward round and also on the leader of the ward round, the consultant.

… my observation has been that the post take ward round has changed immensely over time, um so there is a lot of distraction, and I don't know whether there is a bit of attention deficit from trainees. … I think their attention span is extremely short err so it is very difficult to keep their attention on the ward rounds. You will have um people just chatting or answering mobile phones, so attitude increasingly I find it an extreme obstacle, and I find myself telling people 'ssh' on the ward round. (Participant F, Consultant)

Individual – consultant style and priorities regarding teaching, rubberstamping by consultants

This theme explains that aside form everything so far discussed, another influence on the training on PTWRs is the consultant themselves and their priorities for the ward round. There has to be an 'inclination' towards training in order to consider that it is a priority for a ward round. It explains that at present it is difficult to train even with it is a personal priority, and suggests maybe there should be another consultant present who can teach alongside the PTWR who is '*focussed on the job'* i.e. of teaching (Participant G, Consultant).

(training)…is really hard and I think a lot of consultants perhaps don't really think about that so much, you know you're either somebody who is concerned about that or not and some people aren't and they just go in you know make decisions and leave very quickly (laughs). I think it's a really difficult balance, I don't think I've got it right at all. (Participant A, Consultant)

Often the ward round involves 'rubber stamping' of the current junior doctor plan and not much else, and that is the consultant's priority; … *mostly I'm doing a rubber-stamping thing. (Participant G, Consultant)*

Supervised Learning Events

Supervised Learning Events (SLEs) have been discussed in a previous theme but this is a theme dedicated to SLEs as the strength of feeling on the subject is apparent and the quotations included will illustrate this. The interview schedule was amended to include a specific question on SLEs following the first few interviews because the subject kept being discussed. SLEs are not repsected educational tools: *[SLEs] I'm sorry I've not found them very valuable* (Participant B, Consultant); *I find them an almost useless tool….* (Participant F, Consultant); *I don't find them particularly useful as educational tools, they're just things that have to be done. (Participant D, Consultant).*

There is a clear strength of feeling on SLEs. Firstly, they are seen as 'purely' a '*tick-box exercise'* (Participant C, Consultant). The value in them as a learning or training tool is diminished. The practicalities in doing the SLEs properly are difficult as they require finding a mutual time for a sit down and discussion.

I'm Educational Supervisor to two SHOs and two House Officers, but actually trying to nail down a time when they're not on nights, not immediately post-take, not on a zero… and at a time when I'm also not in clinic or in endoscopy or giving a lecture or doing something else or at a MDT or at a Radiology meeting or a Histology meeting, actually is very, very difficult. … makes a proper sit down leisurely discussion about a SLE very difficult. (Participant C, Consultant).

They are described as '*not educational*,' just '*ticking a box*.' *(Participant D, Consultant).* Giving feedback to a trainee who is 'below par' via a particular SLE is difficult. This is best done face to face and there is minimal time for this. In such a situation, it is also important to be able to follow up the trainee and reassess, which is almost impossible.

… it is very difficult for me to get an assessment where I think somebody is below par and tick the boxes 'below expected'. That has to be done in person, err because you need to make sure that you say this is below par and … I want to reassess you because I know that you will do better, and that is very difficult to relay remotely! (Participant F, Consultant)

SLEs are often requested by trainees retrospectively and it is unclear why this is the case. This shows that trainees are viewing them mandated necessity rather than a component of structured training.

So these are people I've never met before, er, and then after the- the- the rounds are over they suddenly say can I appraise them. Why didn't they ask before? Was it because they wanted to see whether I was somebody that they could trust; that I was going to (laugh), did they wait until the end to see if they thought they'd got a good relationship with me? Er… or was it just that just that they hadn't thought of it until then? (Participant F, Consultant)

This subject does relate to the 'familiarity with the team' sub-theme. The assessments are often completed remotely and without much memory of the trainee in person.

And then, I think to this day, none of the requests have come through so by the time I'm filling in the online appraisal or work-based assessment thingummy er, my memory of any of the cases they have seen will have completely evaporated. Er, not only that, I don't really kn- know these people, er, I will struggle to remember which one was which when loads of surnames come through. Er, so I think that the whole structure is badly wrong. (Participant G, Consultant)

Therefore, according to the data, we have a way of assessing trainees that has a poor structure, limited educational value on account of it being a '*box-ticking*' exercise, reliant on '*evaporated*' memories and an assessment method that is difficult to complete practically face to face.

Summary of results

The results of this study of consultant's perspectives on the educational value of PTWRs show that there is always some educational value to the ward round, but various elements limit its potential value. Most of these elements are a consequence of the changes to how acute medicine and the 'admitting take' are run. Figure 4.1 summarises the themes and sub-themes reported in this section. It has been clear from the results discussion that although the themes are treated separately,

several of them impact on each other. The inter-dependency of the various elements of the PTWR is one of the reasons that it is a difficult process to study.

PATIENT INTERVIEW STUDY

In this section, the results of the data analysis for the patient interview study will be presented in a similar format to the Consultant study.

15 patients were interviewed. Only 1 other person declined participation. 14 of the 15 were analysed but a 15th was not included as it had to be stopped as the patient felt unwell. One of the interviews was stopped prior to a natural conclusion because of pain; this interview is included as the majority of the interview had taken place. One of the interviewees was difficult to understand and so the interviewer repeated a lot of what was said for the sake of the tape and to check understanding. Interview 14 was conducted with a patient but her mother and sister were present and so also contributed to the interview. All but one of the patients were interviewed before and after the ward round. This patient was interviewed before the ward round and then the medical team arrived during the interview, cutting it short, so the majority of the interview was conducted after the ward round. There were occasional interruptions such as for breakfast, hot drink orders or nursing staff activities.

Table 4.2: Characteristics of patient participants

	Sex		**Hospital**	
	Male	**Female**	**St Mary's**	**Charing Cross**
Participants	5	9	6	8

The participants' age range was 19 to 87 years. The first interview length ranged from 15-35mins in total and the second from 7-15 minutes.

The theme or sub-theme will be discussed briefly and then illustrative quotations will be included to explain the theme.

The research question for this study is:

What are patient's expectations and perspectives of medical post take ward rounds?

The main themes from the data are Communication, Trust and Respect with Lack of Time being an umbrella theme relevant to all other themes. These are represented in the following thematic map.

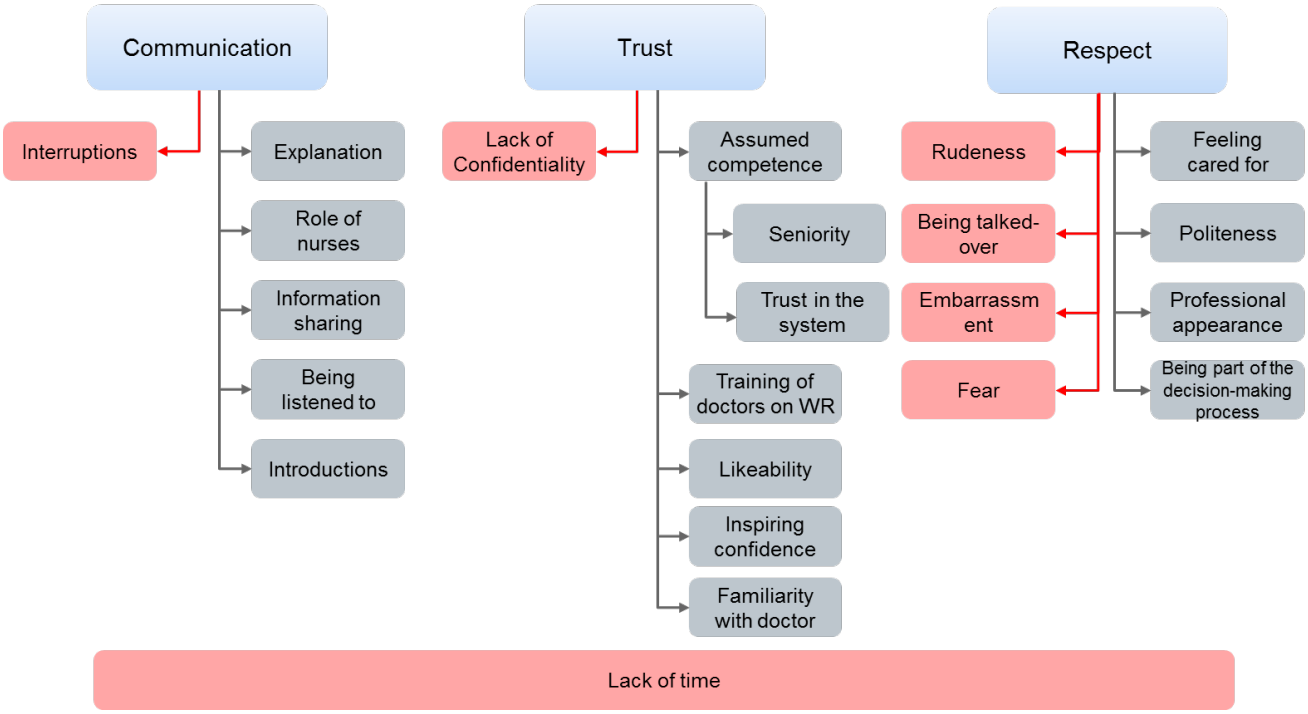


Figure 4.2: A thematic map illustrating the themes and sub-themes from the patient interview data

Patients have a far simpler view of ward rounds than clinicians, and this is evident throughout this section. Each of the themes will be discussed in turn with their sub-themes and illustrative quotations will be included within this section and also in a summary table (Table 2) in Appendix 4.4. The results of this section and the previous section will then be discussed in the Discussion section.

Communication

Communication is vital for patients, and preferably this should be good communication. Patients see the ward round as a vehicle for communication. The communication is closely linked with trust and respect as it only seems to be effective if it promotes trust and is respectful. The themes are closely related yet have individual importance. The following sub-themes explain the different fcets of communication that make it so important to patients.

a. Explanation

Communication exists for patients for explanation. It is a 2 way process and 'being listened to' is discussed separately. For patients, 'explanation' is referring to the medical staff explaining things to them. The art of 'explanation' is ensuring patient understanding.

Respondent: The perfect doctor's just someone that's, I suppose kind, understanding, consideration and can erm, relay the information in a reasonable fashion that's easy to understand. [Participant 10, Patient]

Explanation assumes an ease of understanding; information needs to be presented in a clear and easy to understand way without jargon. It is a key feature of the participants 'ideal doctor' that they have the ability to explain appropriately.

b. Role of nurses

A nurse on a ward round or even outside of a ward round is considered a conduit for doctor's communication. With this comes the assumption from the participants that nurses are better communicators than doctors or communicate in a manner that is easier for a patient to relate to.

If, if I tell the nurse everything if she will in with doctor she then nurse will tell the doctor. [Participant 2, Patient]

A nurse almost acts as an interpreter for the patient. She can explain what a patient wants to tell the doctor and what a doctor wants to tell a patient. The presence of a nurse on the ward round is therefore reassuring and comforting to a patient because they have that ability to ask and 'be explained to'.

Well, I think a nurse should accompany them and then she can let me know when they've gone what's going on, she can let the people… [Participant 4, Patient]

c. Information sharing

'Information sharing', according to these patients, is being told what is wrong and what is going to happen, and what the management plan is etc. 'Explanation' is making sure that the patient understands what is being said. 'Information sharing' is connected to one of the sub-themes in the theme of 'Respect' – 'Being part of the decision-making process' because 'information sharing' makes a patient feel more included. There is a clear need for patients for information; a need to be spoken to in a relevant and easy to understand manner.

Well, they could speak more. … [Interviewer: About …?] … Well, everything in general. … I want to know what is going on. [Participant 2, Patient]

There is no such thing as too much information for most patients in hospitals. If they want to know, then they want to know as much as possible

… and informative back to me, umm, giving me as much information as they possibly can at that time. … Mm, I think in my case it's all about knowing what's going on and if it's related to my particular problem, mm. [Participant 3, Patient]

d. Being listened to

The art of listening is just as important to patients - the feeling of 'being listened to.' It makes a patient feel that they are being included in the process, and that the conversation is personal rather than 'reading it off a piece of paper'.

I want them to, umm, know exactly what has happened that's got me to where I am here and, umm, the steps, you know, that I've been through, umm. … sometimes it's better for them to hear it rather than just read it off a piece of paper. [Participant 3, Patient]

Another aspect of this theme is how a patient feels if they are not listened to. It is about more than just imparting information; it is about feeling involved and not ignored.

I don't see the doctor, doctor just come three minutes, four minutes he has come. … I'm not happy with them. … the doctor has to check me but what's wrong with you? He did not ask me any question, he just go, he just stand over there with three people, yeah three... checks your blood test, that's alright, your temperature is a... not going down. We will send you home as soon as possible. [Participant 6, Patient]

Following from this, 'being listened to' makes you feel more respected – it means that they (the doctors) are '*not treating you like the complete ninny that you probably are. …[because] … There are some Doctors who think that all patients are ninnies.'* [Participant 7, Patient]. 'Being listened to' implies that a doctor respects what you have to tell them and your input into the communication process and makes a patient feel valued. It can also show that a doctor is treating a patient as an individual.

it's important to be treated as an individual, not as a package that- … a uniformed package; that everyone is treated the same, and you recognise that everyone has different needs and feelings. [Mother of Participant 14, Patient's Mother]

e. Introductions

The question of 'Introductions' came up in many interviews. Introductions was discussed both in relation to the ward round leader but also to the ward round team. The unscientific consensus from this cohort is that the leader should introduce themselves and not necessarily the team although

some patients would like to know that they were relevant to their ongoing care. Such introductions are thought to be information but obviously also have an inference of politeness and respect for individuals. It is a vehicle for helping to build a rapport. Knowing an individual's name produces *'a little more personal bond with them'* [Participant 14, Patient].

However, knowledge of the team accompanying the ward round leader is not as necessary beyond knowing that they have a relevant role.

[On the subject of knowing who the accompanying ward round team were] I don't need to know, not particularly. I mean I'll never see them again, so what does it matter? (laughter) [Participant 1, Patient]

f. Interruptions (-)

Interruptions have a negative impact on a ward round according to these participants. The disruptions mentioned were emergencies – '*some extreme emergency*' [Participant 3, Patient] and teaching students – '*the doctors trying to explain to medical students something as they're going …*' [Participant 14, Patient]. Training of doctors on ward rounds was acknowledged in the interviews but was not mentioned in connection to 'interruptions or disruptions' unlike teaching of medical students.

Trust

Communication helps to build trust – the second main theme of the analysis. Trust has many different facets for the patient. It is not only trust in the clinical staff but also trust in the system, and the process. The sub-themes break down the main theme of trust so that it is easier to understand what patients mean by 'trust'.

a. Assumed competence – seniority and trust in the system

The participants trust the clinical staff because they assume that they are competent at performing their roles. This feeds into a discussion on seniority. Most of the participants felt that 'a doctor is a doctor is a doctor' and that seniority is not necessarily desired from some patient's points of view.

The doctors is doctors, you know? I am happy any doctor to see me. The doctor are the same, all the doctor are the same, I don't mind. [Participant 6, Patient]

This response was unexpected and seems to be born out of a feeling that a doctor would not be allowed to be a doctor unless they were good enough. This implies a trust in the system that doctors are only practising if they are deemed good enough to work - *Oh... if he's a Doctor, he's a Doctor* [Participant 5, Patient]. If a patient thinks that a clinician is competent then they trust them.

…. when they are safe enough to work here. You have to have confidence in them. [Participant 1, Patient]

The idea of differences in doctors of any grade was described in relation to differences in skin colour,

… it is, like, all the same, if it's white or black, or whatever... it's the same as a doctor. [Participant 12, Patient]

The assumption of competence also seems to be present despite the acknowledgement that doctors are learning on ward rounds and need to learn for their own personal development. Qualifications were mentioned in relation to this 'uniform' trust in doctors. A trust in a doctor's qualifications means that they are trusted to look after patients. For some patients being 'well qualified' implies competence.

… because if it was not – a – a – very well qualified – they would not put him; they would not put him in the position to check on patients. Participant 13, Patient]

For a few interviewees, they firmly wanted to be seen by a doctor with experience (not necessarily a senior doctor) - *any experience is good* [Participant 9, Patient], as they would have more trust in them.

Somebody with some experience, yeah. … Well, I don't know any (laughs), this is awkward because I should imagine some of them could be quite good. … Yeah, trusted, somebody I trusted. [Participant 4, Patient]

One patient does refer to seniority explicitly – they would like to be seen by a '*someone quite high up'* [Participant 14, Patient]. Seniority implies experience and this leads to more trust in their clinical decisions. Experience is almost explained by an increase in knowledge which in turn means more trust. This trust is extended to a trust in the system. They trust in supervision that occurs behind the scenes. There is an unparalleled trust in the 'they' who deem the doctors good enough to practice.

[I] don't mind if it's a top dog or the youngest pup because basically he will be on a team that leads to the top dog and will be supervised ultimately one way or another. Erm, and I don't think they really let them loose on you unless, you know (Laughs) They trust them to practice, really. [Participant 7, Patient]

b. Training doctors on ward rounds

Despite an acknowledgement of the differing grades of seniority of doctors, and the perspectives on a doctor's seniority or experience, there is a clear acknowledgement that training needs to happen and should happen. All doctors need to learn.

… to me they're all learning. … Well, yeah, because everybody's got to learn something. [The ward round] gets them to talk to them properly. [Participant 4, Patient]

The training doctors receive on ward rounds is holistic; it is important '*in every aspect*' [Participant 2, Patient]. This holistic learning is explained further. Learning includes the 'clinical side of things' because they see more cases, but there is also training on the non-technical skills e.g. bedside manner. There is also an acknowledgement of the psychological side of illness. The training in all these aspects contribute to a doctor and thus a patient being able to trust them and their experience.

Respondent: *[Others being on a ward round] well it's knowledge and it's, umm, it's how I suppose that they get a variety of cases and learn. ... I think it's, umm, bedside manner and all that sort of... you know, how the patient is sort of coping and stuff like that. … I think it's more than, er, just the medical, … maybe it can be mental as well as physical how they would deal with the patient and...* [Participant 3, Patient]

c. Likeability

Trust also seems to involve whether a doctor is liked or not. There seems to be a preference for 'liking' your doctor. A doctor needs to be 'pleasant [Participant 4, Patient] and there needs to be a rapport to build a relationship of trust. Sadly, this rapport or connection is 'rare'.

One would expect… a sort of rapport between the patient and the doctor. And… establish a contact that is rare – I believe is rare … from past experience. [Participant 2, Patient]

A few patients do not think that it is important to like your doctor – '*doctors can be mean bastards, and it won't matter'* [Participant 1, Patient]. Liking your doctor is preferable but for some trusting your doctor outweighs likeability.

Well, I suppose to a certain degree, you want to like him, but you don't have to like a doctor.

d. Inspiring confidence

Inspiring confidence involves making a person feel confident in you and your abilities and this is an important element of trust in a doctor. It goes hand in hand with trust. If they are confident in their own abilities then they inspire trust.

The best doctor… I've decided that what I like in a doctor. Knows [what he is talking about] and I have confidence in him. … You, to a certain degree you could say well okay he knows what he's talking about. He's confident. [Participant 1, Patient]

e. Familiarity with doctor

This sub-theme is about whether you need to know a doctor to trust them. The question of 'knowing a doctor can be simply knowing who a doctor is as discussed in the 'Introduction' sub-theme, or it could be knowing them prior to coming into hospital. It does not seem to matter either way to patients - *Whatever, it don't make no difference* [Participant 8, Patient]

f. Lack of confidentiality (-)

Confidentiality is a medical principle that people agree on. However, in this theme of trust, any discussions that are felt to break or threaten someone's privacy or confidentiality, especially when diagnoses are sensitive, are a definite negative impact on trust. Privacy is a crucial part of confidentiality. On a busy ward round with lots of people and fellow patients nearby, it has to be considered as an important part of promoting trust and an environment that patients trust.

Respondent: Well… it might be nice if the curtains were drawn and there's a… um… an air of conspiracy if you like… well confidentiality rather.

Another consideration for confidentiality is the number of people at the bedside. There is a need for privacy. This can impact on someone's trust in the confidentiality of their situation, and also can lead to embarrassment.

[People on the ward round] It's been, in the past it's been a few people, between sort of four to five…. it's okay, it's just the, it's just my, my thing is the privacy issue. … I've had medical students before, and I think... I think depending on the, just depending on the subject, I do get a bit sometimes sad and sort of embarrassed with my medical issues and granted when there's more, the more people there. [Participant 10, Patient]

Respect

Respect is the third theme. This theme describes how patients want to be treated with respect. They want to be felt cared for, included in decision making process, treated politely and part of this is the respect shown by being looked after by someone who has taken care in their appearance. Respect works both ways.

a. Feeling cared for

'Feeling cared for' is a sub-theme. The interviewees explained that they wanted to be felt cared for and shown the respect that this entails. It seems very simple for patients that a doctor on a ward round should demonstrate that they are looking after them while they are unwell. There seems to a difference between caring for someone in a physical and psychological sense – aiding their activities including washing, feeding and supporting their emotional wellbeing, and simply looking after their physical health. It is one thing knowing that you are in hospital and that clinical staff are trying to diagnose and treat you, and another one to be felt cared for.

> *Well you know, as long as you've got somebody looking after you is okay I think.* [Participant 1, Patient]

Part of this, involves information sharing and communication and trust but it also means more than just this – it is the feeling of 'being looked after'. How this feeling of 'being cared for' is elicited is not wholly clear from this data, except that it is important and ties in with the other sub-themes of respect. However, smiling is one way of making a person feel better and this is part of feeling looked after.

Smiling, because patients sometimes – some – it depends for what their sickness, what their illness; if you – if you come in sad, they will think, "Wow, what's wrong?" You give them – you give them ideas like, "Am I so sick?" or so on. When you come in smiling, smiles make other person smiles automatically, makes you feel better, looked after. [Participant 13, Patient]

b. Politeness

Politeness is a way of showing respect for patients according to this cohort and is considered important for communication and behaviour on ward rounds. The simple act of offering a cup of tea shows a patient that you are respecting how they are feeling on their admission to hospital.

> *No one was helping you, no one was paying... Yeah. I just come in from dialysis, you know, I was tired, I was hungry, nobody did ask me for a cup of tea or anything there... [The clinical staff] should be polite with the patient.* [Participant 6, Patient]

He felt alone and that no one was helping him (the quotation leads from an earlier discussion). Politeness can help dissipate negative feelings in a patient. Polite behaviour shows respect for a person and also for the situation that they are in – admission to an acute hospital ward unwell. A doctor should '*… not treat(ing) you like the complete ninny that you probably are, … well, they think*

that everybody is, you know. … There are some Doctors who think that all patients are ninnies.' [Participant 7, Patient]

c. Professional appearance

Professional appearance was discussed in some interviews. A person who is dressed and turned out appropriately shows respect for those that he or she is looking after. One patient describes herself as 'old-fashioned' with her views on appearance but for her it is very important and shows respect for the situation, and helps her to feel at ease.

I sound very old-fashioned here but well presented, neat. It doesn't matter if the hair is long, it should be in a ponytail, you know? They should certainly look clean. I'm not over-mad if they're male, with the three day stubble look but other than that. [Participant 7, Patient]

It is also important for a doctor to look like a doctor with a stethoscope. A professional looking like a professional helps command the respect of the patients. Here respect works both ways.

[Do you know who the doctors are?] … Er... from the way they both look – that is this thing is around the neck [stethoscope]. [Participant 13, Patient]

d. Being part of the decision –making process

This sub-theme has been alluded to in the 'Communication' theme section. Here the being involved in the decisions regarding one's own care shows respect for that person. The participants wanted to be involved in their own care. Patients want to be given the option, the choice, to feel involved in their own care. The doctor's knowledge is what they trust but the option to be involved is desirable.

> *I want to be given, I suppose, I want to feel that I've been given a choice and that the, a choice is available, but then I understand that I don't have the medical knowledge and that clearly the, you know, the knowledge lies with the, the doctors, that's where I trust.* [Participant 10, Patient]

Patients do not want to feel like a bystander in their care. They feel a lack of respect if this is not the case. They respect the doctor's greater knowledge but this respect is shown back to a patient by a discussion on options and choices rather than a list of instructions.

e. Rudeness (-)

Rudeness has a negative impact on a feeling of respect. The earlier quotation about not wanting to feel or be thought of as a 'ninny' alludes to this sub-theme. There is an acknowledgement that doctors can be 'mean bastards' but he states that this does not matter as long as they inspire

confidence. He explains that you do not need to like your doctor '*as long as they know what they are doing'* and that they are not rude. This is an absolute.

And their manner is… Doesn't have to be an amazing bed side manner. But they can't be rude. [Participant 1, Patient]

However, it is also important for a patient to feel respected and this means that it is important to respect a patient's feelings and thoughts – they do not want to be made a fool of.

As long as they don't try to make a fool out of me, yeah. [Participant 4, Patient]

Rudeness counteracts all other facets of respect. Respect is loss where there is rude behaviour, and respect is essential. Rudeness is disrespectful to your patient and breaks down all trust.

f. Being talked over (-)

An important follow-on from rudeness is the negative connotation of 'being talked over'; it has a negative impact on feeling of respect. The following quotation explains how they would prefer to be spoken to rather than over.

I prefer to be spoken to rather than over, yeah. [Participant 4, Patient]

g. Embarrassment (-)

Embarrassment was alluded to in the confidentiality theme, and the same quotation is included. In the same way that a patient wants to feel looked after, they do not want to feel embarrassed. If they feel embarrassed then the relationship and feeling of respect and being respected is lost.

I think depending on the, just depending on the subject, I do get a bit sometimes sad and sort of embarrassed with my medical issues and granted when there's more, the more people there. [Participant 10, Patient]

h. Fear (-)

If a patient is feeling cared for, then any feelings of fear should be minimised or acknowledged. The following quotation explains how sometimes explanations can make you frightened, and you are fearful of what information you might be told. The previous themes and sub-themes have emphasised the importance of information sharing and explaining, but this can be frightening to patients. Doctors need to be mindful of this.

[Doctors giving you information] Yeah in some ways, I suppose, love. Yeah. You get a bit frightened, don't you, at my age? (Laughter) You wonder what they're going to tell you! (Laughter)

Not really scared, but erm... it's just to explain things to you and what you've got to go through like, you know? [Participant 8, Patient]

Lack of time

The pressure of time on a ward round is discussed by patients. The pressure is not theirs and it is assumed for the doctors on account of the feeling on the ward round that there is a lack of time. The lack of time is almost always discussed in connection to a lack of information being transferred, and a feeling of being rushed. It is for this reason that this theme is an umbrella theme across the 3 main themes of communication, trust and respect.

They didn't explain anything. They just stay only three minutes, two or three minutes, not more than that. … Should be more time, just to explain me, or you everything. [Participant 1, Patient]

Overall, there is a wish for more time and the time should be spent in communicating with a patient and also listening to a patient. Lack of time is the excuse that they provide for doctors shortcomings. There is some acknowledgement that the shortcomings may be present despite lack of time but in general time is perceived as the greatest obstruction to an ideal ward round.

Summary of Results

The results of the patient interview study show that patients value time, communication, trust and respect on a ward rounds. They appreciate that doctors need to train but also have a faith in a doctor and the system that is present regardless of experience or seniority. They believe that a doctor is a doctor and would not be allowed to practice by his or her hospital unless they were previously considered good enough. The hospital decides this and this is a crucial for practising medicine but so also is listening, including a patient in the decision making process, explaining at all opportunities and avoiding rude or disrespectful behaviour. Respect for confidentiality and avoiding embarrassment of a patient has to be maintained throughout all interactions.

The last theme is lack of time. This is the key to all of the other themes because patients seem to think that more time would mean improved performance in all other elements. This may not be the case but patients do seem to blame time and the pressure associated with it for many of the shortcomings they have experienced.

Figure 4.2 summarises the themes found from the patient interviews.

The findings of this study and the consultant study will now be discussed in the next section – Discussion.

Discussion

This section will discuss the findings of each section. It will compare the findings from each study and also compare to relevant literature on the subject. There will also be a discussion on the limitations of the study including the role of a reflexive interviewer.

Discussion of findings of both interview studies

The consultant study revealed some key themes. The idea that most post take ward rounds have some educational value for both clinical and non-technical skills is clear but there is a very clear acknowledgement that much of this is observational and therefore unacknowledged. Role modelling and reflection are important facilitators of this observed learning. Consultants do learn from those around them on a ward round. The changes in shift patterns and night shifts has meant an increased consultant presence and this has affected registrars opportunities for autonomous action and decision making. It is almost like consultants are now doing the jobs that registrars historically did. There is a grave concern that this has impacted registrars training; they have become dependent on the ease of availability of consultants. The changes in the way the rota works has also affected the clinical team dynamic. Consultants and juniors alike are now having to work with unfamiliar colleagues with whom they have no relationship or trust. Various obstacles exist for a ward round including time pressures. The result is that training is no longer prioritised. Provision of a good and safe service is now the priority as consultants feel the pressure of their role within patient safety.

Consultants explain the need to present one's own patients on a PTWR as this can be a learning tool even if no direct feedback is given. A study of surgical PTWRs found that 27% of diagnoses were changed from the initial clerking on the surgical PTWR, and 35% of patients had further investigations ordered (140). This is a study of surgical diagnoses but there are no equivalent figures for medical PTWRs. Observing these changes even without an educational discussion provides a learning opportunity and therefore missing the PTWR, or not being able to present, is a missed learning opportunity.

One of the most emotive themes from the analysis concerns SLEs or E-portfolio assessments. The strength of feeling about these and the perception of them as a 'tick boxing' exercise as opposed to an educational tool resonates in the quotations included. They are not seen as a facilitator for general ward round training even though the ACAT tool was designed to assess performance on a acute take or on a ward round.

Patients have a more straightforward perspective of ward rounds. This perspective involves what they would like in an ideal world. There are 3 distinct themes which are related and influence each other: communication, trust and respect. All of these are affected by a perceived lack of time. The trust and respect does stem from a presumption or assumption of competence, a belief in the system. This shows that they consider a bigger picture beyond the ward round.

I led a previous study on registrar perspectives on the educational value of PTWRs (252). There is an overlap with the themes found here. The main themes from this study are shown in Figure 4.3.

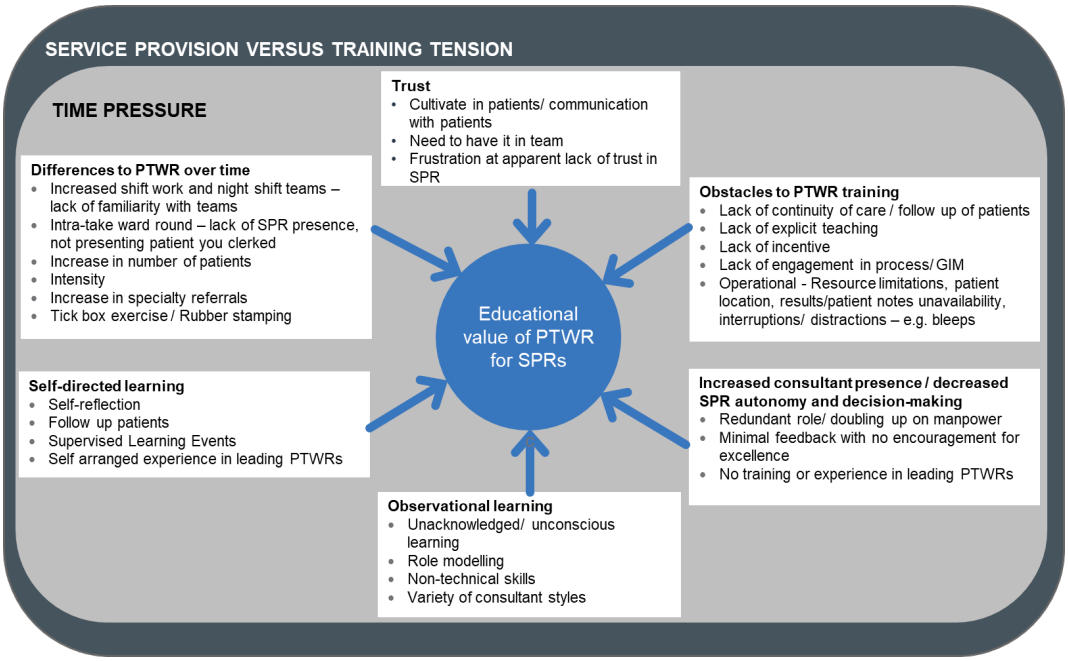


Figure 4.3: A thematic map illustrating the medical registrar's perspectives on the educational value of PTWRs

The tension between service provision and training is highlighted in this study as an overarching theme, and there are themes relating to the differences in the way shifts work, observational learning, the increased consultant presence and concomitant decrease in registrar autonomy and decision making. There is also a theme on trust which emphasises the need to cultivate trust in your patients. This parallels the patient interview study.

Comparison with literature

There is also overlap with the themes from the review of the literature in Chapter 2. These themes are shown in Box 2.1.

This gives validity to the findings of this study as there is clear overlap of themes. The description of the poor educational value of post take ward rounds may not be as clear in this study's findings as

the consultants and the patients clearly acknowledge that the ward round is still used for training and that this should be the case. Both groups of participants highlight that this learning is for both clinical and non-technical training. Consultants and registrars, when studied(252), explain that the observational learning may not be acknowledged (Point 2 in Box 4.1), but that this 'unacknowledged' learning means that there is always some value to a PTWR. Both of the staff groups interviewed in this study and my previous study (252) also explain that there has to be some onus on the trainee to facilitate their own training and use reflection as well as following up patients in their own time. The literature to date concentrates on the training directly related to ward rounds and perhaps has not considered the role of reflection before. In this study, the participants clearly see a role for self–reflection. In the registrar study, reflection is included in self-directed learning theme alluded to previously. Self-reflection according to the consultants is a part of the unacknowledged learning that takes place just by being present on a ward round – the need to 'reflect on the fact that they are learning' [Participant A, Consultant].

Two of the main themes in this study of consultant's perspectives is the increased consultant presence with concomitant decreased SPR autonomy and decision making. This is a theme that is echoed in the previous study of registrar's perspectives (252). It is also a theme that was found in the literature review on training and ward rounds. A study conducted in Liverpool showed that consultant reviews had increased from 2006 to 2008, and registrar reviews had decreased (43). This study also showed that 3% (2006) and 8% (2008) of PTWR reviews were taken in the presence of the junior admitting/ clerking doctor. There is no data showing a definitive impact on registrar training but the perspectives of medical registrars studied previously (252) and consultants in this study is a concern about a growing dependency on the increased consultant presence for decision making. There is a concern that this means that the level of responsibility and decision making required to be a consultant is only being experienced when you become a consultant. The data in this study clearly shows that the registrar role is viewed as a redundant' one and that consultants are having to act more like registrars now than previously.

The RCP report 'Being a Junior Doctor' echoes these findings(253). Its central themes are lack of continuity, the gradual erosion of the traditional firm (a term used to describe the clinical team under a specific consultant) structure and consequently the team ethos, a lack of opportunity for teaching, learning and reflection, and less opportunity for autonomous responsibility.

There is minimal data from this study on the preparation for participation in a ward round or leading a ward round. This is a theme from the literature reviewed in Chapter 2. It was mentioned by a few participants but on analysis did not seem to feature as a major theme. This was agreed in the

subsequent MDT meeting discussing the findings of the primary analysis. The interview study of registrar's acknowledges that at present any experience in leading a PTWR under supervision is self-generated (252).

There is little research on patient's perspectives of ward rounds. The patient study themes seem intuitive and blend with expectations of what is thought patients want. There are various guidelines on patient care including the GMC's 4 domains of clinical practice (1). Within this guidance are the following points: a clinician should:

- provide a good standard of care and practice,
- treat patients as individuals and respect their dignity,
- work in partnership with patients, and
- maintain trust with patients.

All of these are echoed in the findings of this interview study. All 3 themes – communication, trust and respect - are given prominent position in the GMC's domains of clinical practice and also within the RCP's ward round guidance.

To my knowledge, there has been one interview study of a similar size to this one (14 interviews) conducted asking patient's about cardiology ward rounds (254). The themes are similar to the sub-themes found in the analysis from this study. The following themes overlap with this study: time, taking comfort in staff competency, the ability to choose to participate in the decision-making process, nurses acting as a communication conduit for doctors, and allowing patients to communicate.

There are a further 10 studies found during the scoping search for the literature review reported in chapter 2. These are mainly survey based or observational small studies and include family or parent perspectives on either paediatric, medical or surgical rounds (247,248,255–262). The surveys asked varied questions, but informal general themes include information provision and giving, and the need for non-medical jargon. There are a few themes specific to American rounds concerning conference presentations versus bedside presentations, but these do not relate to the current UK system.

One of these studies is a systematic review of literature on ICU rounds and the conclusions are more practical then this study. It explains the need for explicitly defined roles, standardised structure with a goal orientated approach including a checklist, and that barriers to patient care rounds include poor communication including information retrieval and documentation, and the perceptions of allied health professionals not being valued (259).

The surprising finding within the patient data was that concerning seniority of doctor and assumed competence. The results cannot be generalised or quantified but a proportion of the participants were very clear that they did not need to see the most senior doctor. Guidelines at present explain that a patient must be reviewed by a consultant within 12-14 hours of admission (4–7). There seems to be an understanding that doctors are only allowed to practice if they have been deemed competent and one could argue that that is the role of medical school and Foundation year training. There was, however, also an understanding from participants that doctors need to continue to train and build on their experience. The phrase 'a doctor is a doctor is a doctor' was repeated in similar guises throughout the data. This is an original finding and is no parallel has been found in the literature. It provides a very interesting avenue for further study.

There is not much overlap between the findings of the patient study and the consultant study except for the importance of non-technical skills. The majority of the themes and sub-themes for patients are non-technical skills. Patients also realise the importance of learning these non-technical skills on the ward round by observation. Consultants, and registrars in the previous study (252), believe that one of the greatest learning opportunities on a ward round is that of observational learning and that the majority of this involves non-technical skills. It is also interesting to note that there is minimal reference to patients within the consultant data except in relation to the goal of ward rounds being patient safety. However, the questions were regarding the educational value of ward rounds and there was not a question about patients specifically.

One theme that is key in both the consultant, registrar and patient study is that of time. The lack of time is key to the findings of each study. There is minimal data to support this from the literature as often time is referred to implicitly as opposed to explicitly. A slightly different take on time is seen in the Report on Payment Reform in the States (263). This equates time to cost of healthcare. There is a concern that compared to procedure orientated tasks, fee-for-service payment incentivise time spent on evaluation and management services to reflect the cognitive expertise and skills that clinicians employ. This might therefore affect patient engagement as time pressures may restrict this process. The report calls for newer models to make patient engagement in their own diagnosis a greater priority. This would be endorsed by the data in this study.

Key findings from both studies

To summarise, this study has highlighted the importance of observational learning including non-technical skills from both the perspective of patients and consultants. Role modelling is an element of this observational learning and is referred to by patients when they explain that junior doctors learn how to speak to patients and behave by watching their seniors on ward rounds. This is the

main overlap theme from both studies and it will be this element that will feed into the NTS tool development for leading PTWRs.

This point is an extension of the clear importance on non-technical skills for both study groups. The majority of themes in both studies, and also the study of registrar perspectives (252), concern non-technical skills. Patients and consultants emphasise the need to have effective non-technical skills, and there is a clear concern that registrars training in non-technical skills is being affected by recent changes in the way the acute take is run.

Another clear finding from both studies is the importance of the role of the nurse. Patients see them as almost an interpreter or a stop gap for doctor's communication and information sharing. Consultants rely on them for communication but also information including learning from them. The pattern of doctors' shifts has changed and so also has nursing shift patterns. Sadly, in reality from my experience, this means that it is very difficult for a nurse to be present on a PTWR which stands against the clear wish from consultants and patients. This has to be an area for consideration for research but also operational managers and clinicians in the future.

The emphasis on non-technical skills is echoed in the literature to date. Studies have been discussed and the findings of the narrative review presented in Chapter 2 which give the majority of findings in this study validity. However, the patient perspective concerning doctor's experience and seniority is a new conclusion. This study should act as a stepping stone to further research on the subject of ward rounds.

The findings of this study will be used to develop a non-technical skills tool for leading a PTWR. Communication, eliciting trust and being respectful need to be incorporated into the tool. The difficulties in decision making, and supervision of both trainees who you are familiar with and those that you are not familiar with have to be included in such a tool. The particular non-technical skills discussed by the consultants should be considered including the need to put on a show and keep the team's interest. An awareness of the need to teach is clearly ideal in a ward round leader even if sometimes this is difficult to carry through. Within this awareness, role modelling and its importance has to be acknowledged by a current or future leader of the medical PTWR. One's behaviour on a ward round is indeed training in itself even if it is not acknowledged as such. It is part of the need to develop one's own style in leading a ward round. The variety of styles is discussed in both the registrar (252) and here in the consultant study. A tool to evaluate a leader of a ward round therefore needs to be generic enough to allow for different styles of leadership and ward round work because it is important that these individual approaches remain in order to help trainees determine their own style in leadership. A robotic uniform approach to leading a ward

round would not be encouraged by these study consultant participants or by the patient participants. Patients do not have a uniform idea of what a doctor should be like in an ideal world while leading a ward round except that they must communicate, elicit trust and be respectful. This study has provided a clear platform from which to develop the non-technical skills tool discussed in the following chapters.

Limitations of the study

This study has shown some interesting valid findings and some original conclusions, but there are some limitations. It is a small study but with both groups the studies were continued until saturation was achieved. However, the study was based in a large inner city, London, and its participants for both studies were from 2 hospitals in the same Trust that operate their acute take system differently. It is always difficult to make any findings from a small qualitative study generalizable. The findings here have shown a strength of feeling on this subject and the literature has shown a true gap that needs further exploration. This exploration should include further interview or cohort studies and these should be based in different locations and hospital Trusts. There is also scope for further studies in different specialities.

The interviews were not co-coded by a second analyst. However, the inclusion of the MDT discussions for both data sets was invaluable and enabled further opinions to ensure the reliability of the data. The first MDT discussion on the patient interview data showed that the thematic analysis could be simplified and therefore was of great benefit to the primary researcher.

For the patient study, the patients were selected purposively. Those patients admitted overnight who were too unwell or cognitively impaired or who did not speak English, were excluded from the study and the other patients were asked at random. The 'randomness' of the sample selection was also restricted by availability of patients who may have been eating, having their nursing observations done or equivalent. Due to the nature of the acute admissions to hospital, it is hard to see how this could be done differently within the time available. Perhaps patients could be asked retrospectively about ward rounds in general and agree to the study and then be selected purely randomly. However, within this study the interviews were continued until saturation of themes was achieved. Additionally, the consultants who were conducting the ward rounds were aware of the study on the particular day that they were conducting their PTWR and this may have influenced their behaviour.

The consultant participants were also selected purposively by email. A possible criticism of this method is that volunteers for the study could represent a self-selected sample - those with an interest on education on ward rounds were more likely to respond positively and agree to take part.

However, it is unclear whether an interest in medical education would make them more positive or negative in their perceptions of PTWRs and training benefit.

There is the possibility of the Hawthorne effect within this study that participants answer differently than they would in casual conversation, thereby biasing their responses. They might be either overly negative because they have been given an opportunity to feedback on an area they do not usually discuss in a formal setting. Patients may be concerned that their responses may affect their onward care. The interviews were informal and it was emphasised through both written and verbal information that the interviews were in no way connected to patients care. Every effort was made to make the participant feel at ease. The benefit of thematic inductive coding is that the analysis comes from the data and the coding is strengthened as the analysis goes on if saturation of themes is reached. This happened with this data this minimising the chances of a Hawthorne effect. In addition, the majority of the interviews where possible were conducted prospectively and the retrospectively of the PTWR in question providing both perspectives for the participants, and their views did not change.

The main limitation of this study is the role of the interviewer. In both studies the interviewer was a medical registrar and therefore has an insider knowledge of the subject matter. The analysis was also done the principal researcher (SP) and again her role as a medical registrar may have biased findings. The researcher's role in the construction of the meaning of the themes inductively derived from the data has to be considered. Reflexivity is integral to qualitative research; it is a subjective process. In this study, the personal reflexivity (264) of the researcher is clear as she shares a great understanding of the PTWR and has her own opinions on their educational value. Her role is likely more reflexive in the consultant study than the patient study as she is a clinician. Many qualitative researchers embrace reflexivity and see it as integral to the research process which is difficult for those clinicians with quantitative backgrounds to understand (251,264). A summary of the researcher's reflexive diary is included in Appendix 4.2.

CONCLUSION

This study adds to the existing literature as both stakeholders in PTWRs views have not been examined in depth. The methodology was effective and limitations have been discussed including the use of a reflexive interviewer. This study gains validity from some of the previous studies on the subject but it also gives validity to the some of the findings from previous studies. It offers up some original conclusions from the patient perspective regarding doctors and seniority and an absolute faith in the system.

The findings from this study will be used to feed into the development of a NTS tool for leading a ward round – I report this in chapter 5. The development will be based on triangulation of sources including the findings from this chapter. Some of findings of this chapter are also found in the literature adding to their validity but the subsequent triangulation of resources explained in the next chapter will support the validity of the findings in this chapter.

Chapter 5: Simulation training development

Introduction

Simulation training has been established within medical education for over 2 decades. It is a mainstay of training for students and doctors within their first few years of training. The evidence is growing that health care simulation leads to improved skills training and team training, resulting in increased quality of care and survival. This will be discussed further within this chapter. Simulation training for non-technical skills (NTS) for critical events has been shown to possibly improve patient safety (265–267) but this evidence is limited to within the simulated environment. It is usually linked to a particular small intervention within simulation such as specific leadership instruction training (265) or teamwork and communication multidisciplinary training within simulation (266). Robust figures for improved patient survival, reduced error or improved patient experience are not available. Therefore, the exact cause and effect for the possible benefits of simulation for participants and possibly their patients is difficult to explain. Examples from the literature will be discussed within this introduction.

This chapter will describe the development of a simulation training initiative to train senior medical registrars to lead a Post Take Ward Round (PTWR). The introduction to this thesis (Chapter 1) outlined the renewed emphasis on General Internal Medicine training. The simulation developed within this study concentrates on NTS. The NTS training is closely mapped to the generic skills within the UK General Internal Medicine (GIM) curriculum for ST3+ (128) and also within the relevant speciality curricula for medical specialities.

The simulation was developed simultaneously with the NTS assessment tool; the tool development is described in the next chapter (Chapter 6). The simultaneous development of both the simulation and the tool are integral to each other but the descriptions of each methodology will be described separately in this and the following chapter. The simulation was developed as a training programme for senior registrars but it also acts as the method by which the NTS tool was psychometrically evaluated – a so-called 'proof of concept'. This chapter will give a further introduction to simulation and NTS, the methods used to develop the simulation training, and the iterative development. The results section will focus on the quantitative and qualitative evaluation of the simulation - the feasibility and acceptability of the simulation training. The chapter will finish with a discussion including a discussion of the limitations of the simulation development and evaluation.

Simulation and non-technical skills

Simulation has been used for training for many years. It is increasingly used for surgical training within the patient safety arena (268). It is mainly used for technical skills, clinical scenarios and procedural skills.

Studies show that medical error and avoidable adverse events in hospital may be experienced by up to 1 in 10 patients (269,270). Much of the patient safety focus has been on the high risk areas of surgery and intensive care but in-patient care on a medical ward is also high risk and remains an area of error and omissions (114–116,271). Poor non-technical skills have been implicated in medical error (32,33). Within the surgical specialities, non-technical skills have been shown to be influential on technical performance, safety and effectiveness (35,36,174,175,272). Non-technical skills have been found to be worse at times of crisis within a simulated environment (272). Up to 78% of malpractice claims in USA highlight poor NTS, in particular communication skills (273,274). A prospective study of communication within surgical specialities showed that infrequent information sharing within a team has been linked with an increased risk of surgical complications (275) and procedural errors have been linked to failures in communication (34). Simulation training has not had a prominent place in the training of senior clinical staff. There are only a few examples for training for registrars or more senior doctors in the literature(276). It has an emerging role for training of teams.

Using simulation to train clinicians in non-technical skills is becoming more commonplace. There has been adaptation of the Crew Resource Management training from the aviation industry (222,277) into team and NTS training for particular specialities, for example, anaesthesia and surgery. These have mainly taken the form of simulation training. The need to train clinicians in non-technical skills has been emphasised in various reports including, for example, the joint Royal College of Physicians and Royal College of Nursing (RCP/RCN) report on ward rounds (4); the National Confidential Enquiry into Maternal Deaths USA (109); and the Patient Safety Group at the World Health Organisation (WHO) in their report 'Human factors in patient safety: review of topics and tools' (172).

Research shows that trainees value simulation and appreciate the simulation-based learning environment as a safe arena for training that facilitates learning without affecting patient safety (278–280). The literature also highlights the importance of simulation for increasing confidence, for feedback with direct observation and appreciating the 'realism' of the simulation (278–282).

Simulation training has been shown to improve quality of care and survival in a few small studies but the evidence remains scant (283–285). The studies that exist are focussed on simulation within a

specialised simulated environment and not for *in situ* simulation within a real life clinical environment.

The importance of NTS is career long, and training in NTS remains as important. A study of 40 surgical trainees and 30 experienced surgeons showed that for most elements of the chosen NTS assessment tool (NOTSS) the scores decreased roughly linearly over time. This trend was most apparent for the following NTS: considering options, implementing and reviewing decisions, establishing a shared understanding, setting and maintaining standards, supporting others and coping with pressure (286). This shows that even experienced surgeons may have NTS deficiencies, and therefore continued professional education programmes are required as well as training for trainees.

The Department of Health reported that simulation offers an important route to safer care for patients, and should be more fully integrated into the health service (287). In 2008, the Department of Health produced a report called 'A High Quality Workforce' which emphasised the importance of modern education techniques, such as high-fidelity simulation, and the appropriate use of e-learning, simulation and clinical skills facilities (288). The Department of Health framework for technology-enhanced learning is outlined in Figure 5.1 (289).

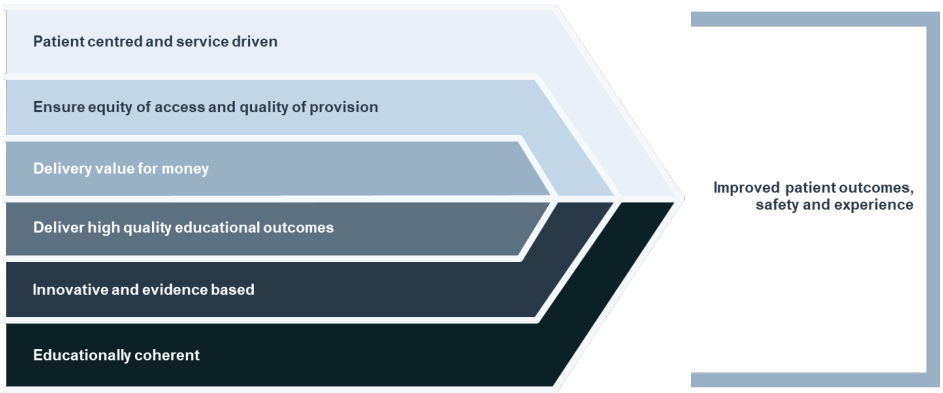


Figure 5.1: Framework for Technology Enhanced Learning (2011) (adapted from 40)

This framework is useful for setting up a new simulation training initiative. Further considerations for setting up a simulation initiative will be discussed later.

Simulation and NTS

The use of simulation training in developing non-technical skills is becoming more established but good evidence of its efficacy in the literature is limited. There are various simulation interventions directed at particular grades of doctors from particular specialities but their efficacy is usually

demonstrated at Kirkpatrick Level 1 or 2, and the results reported are all short-term. Lasting effects of simulation training is an under researched area. The Kirkpatrick level of grading the effect of educational outcomes has is a generally accepted approach for measuring educational intervention effects and was discussed in Chapter 2. A few studies from the literature are discussed here prior to discussing the methodology of this simulation training development. Studies focussing on leadership are reported after some more general NTS studies.

A small study looked at a pilot of an *in-situ* high-fidelity, multidisciplinary simulation training course whereby core medical trainees practised the role of a medical registrar within challenging crisis scenarios (290), focussing on NTS as well as clinical skills. The study sample was small (21 participants) and was a pilot study. It was also self-assessed so there was no objective measurement methodology employed. Trainees agreed that the course improved their clinical skills and knowledge and looked at key NTS needed in crisis management. They reported that the course would change their practice and improve patient safety but data showing whether this is the case is not presented. This is a Kirkpatrick Level 1/2 result.

A review of 13 studies explored whether simulation-based trauma team training of non-technical skills have effect on reaction, learning, behaviour or patient outcome (291) It looked at educational interventions and the effects of these, graded according to the Kirkpatrick levels. None of the studies were randomised or blinded or controlled (291). The reactions were positive to simulation-based training of non-technical skills. Knowledge and skills improved in all studies evaluating the effect on learning. Three of the studies discussed reported changes in team performance (behaviour) but one of these explained that it was difficult to maintain these changes. There are two studies that looked at effects on patient outcome and there were no changes to mortality, complication rate or duration of hospitalisation. Additionally, a further study (2015) showed that 'coaching' of NTS using a standardised curriculum with 5 simulated scenarios improved NTS of participants compared to a control group (292).

Various successful pilot simulation education interventions have been developed (293,294) but their success is usually only measured at Level 1 of Kirkpatrick's hierarchy, and further articles of sustained benefits to trainees or patient care are not reported.

Simulation training for NTS is a developing area of research and medical education. In particular, there are a number of examples of simulation training and leadership in the literature.

A small team-based study of trauma resuscitation showed that the NTS of both trauma teams and leaders does deteriorate as clinical scenarios progress, and additionally showed that the team

performance in NTS and the leader's own performance were highly correlated (295). This was a study of 20 trauma teams and performance was assessed using simulation. Performance was analysed and scored from video recordings of the team. It was small study but may suggest that the performance of a team leader in NTS is key to the performance of the team that they are leading. It also may be the case that the leader may communicate more effectively if the team communicates well – the lead mimics the team as much as the team follows the lead. This suggestion is relevant although not transferable to ward rounds. Ward rounds are very different to trauma clinical scenarios as has been shown in previous chapters, but the impact of the leader on the team as a whole, and vice versa, is an important consideration for the development of the simulation described in this chapter. For example, a team that asks questions may initiate a 'teaching' environment, and subjectively this may result in improved communication and a stronger 'teaching' component. The association between technical skills and NTS is apparent in this study and this again is important for the subsequent development of the simulation training and tool.

Importantly, Gjeraa *et al* did not show that NTS and technical skills of anaesthetists were correlated but did explain how intertwined they are after qualitative analysis (296). This was a study of 25 videos of second year anaesthetic trainees using validated scoring mechanisms.

Another study demonstrating the association between technical and NTS (Doumouras *et al* (2017)), and the possible impact of one on the other according to the situation, showed that a higher level of NTS led to quicker crisis resolution in a simulated operating theatre environment (272). This conclusion followed the assessment of 13 different surgical teams. It also showed that NTS were weaker during the crisis phase of the scenarios then those NTS assessed before the crisis for both anaesthetists and surgeons. This shows that there is an association between a clinical crisis situation and less effective NTS. It shows that there needs to be more research in to the effects of pressure and stress on NTS in medicine.

Ward rounds and simulation

Ward rounds are a crucial part of day to day clinical life for staff and patients in hospitals but are not currently subject to formal training. Chapter 2 showed that the literature on training for ward rounds is limited. How a ward round is run operationally and clinically, and led, is not based in literature but has been developed heuristically and this has led to a wide variety in current practice. The paucity of research on which to draw best practice means that ward rounds have developed without any formal guidelines to shape them. The RCP/RCN joint report on ward rounds has given some guidance on ward round practice in recent years (4). This report highlighted the need for training for ward rounds. There are only a few small studies on ward rounds and simulation.

A pilot study looked at whether a simulated ward round is a realistic developmental learning experience for assisting final-year medical students to become aware of the importance of NTS (297). A total of 217 final year medical students completed a 30 minute simulated PTWR with a real consultant, registrar, charge nurse, staff nurse and 4 F1 doctors. The tasks expected of the students acting up as F1s in the simulation were documentation, arranging investigations and prescribing medication. Within the groups half of the students acted as patients and the other half as F1 doctors. There was a debrief session afterwards led by an experienced debriefer. After the debrief, the groups swapped so that all participants had a chance to act as F1s. The participants completed anonymous feedback with quantitative and qualitative feedback. The vast majority of students self-reported the value of gaining an insight in ward round processes, and the perceived ability to work efficiently as team member. They analysed non-technical skills deemed important to students concurrently in this study and there was a shift in opinions pre and post simulation. Interestingly, all the learning points that the students identified were non-technical. The following graph illustrates the shift in thinking from before and after the ward round simulation. Concern about dealing with sick patients and making clinical decisions decreased significantly but the non-technical skills of job delegation and dealing with phone calls, along with prescribing increased.

Pucher *et al* (2014) validated the simulated ward environment for assessment of ward-based surgical care (162). The validation was primarily for research purposes as opposed to educational ones. They assessed the feasibility of developing a simulated ward environment in which to assess the ward-based care of surgical in-patients by doctors of varying levels of expertise. Validating the use of the simulated ward in this manner relates to construct validity. They assessed junior (n=9) and senior doctors (n=9) using a standardised checklist of assessment and management processes, a modified NOTECHS score (one of the NTS tools explained in Chapter 3) and a fidelity questionnaire. The senior trainees performed more assessment processes, completed more management tasks, had less adverse events, and score higher on non-technical ability.

The same simulated ward environment was used in a randomised study of 29 trainees in total (14 on intervention arm; 15 on control) (163) exploring the efficacy of a half-day educational intervention with lectures, structured feedback, and debriefing. All participants conducted a simulated ward round of 3 patients; the participants were assessed using a surgical ward care assessment tool and W-NOTECHS (an adaptation of NOTECHS tool for surgical ward rounds), for technical skills and non-technical skills respectively. This study does not include analysis on effects on patient care but suggested that improved ward round performance may lead to improved patient care.

Simulation design

Experiential learning is a process by which knowledge is created through the transformation of experience. Experiential learning was reviewed in the previous chapter, in the context of the power of observational learning on a ward round. The main model for experiential learning that is used within simulation training is Kolb's model of experiential learning. Kolb's model defines 4 stages:

- The concrete experience: the learner's involvement in a particular experience (feeling/doing)
- Reflective observation: the learner reflects on the experience from different perspectives (examining/watching)
- Abstract conceptualisation: the learner integrates their observations into more abstract models, create generalisations and principles and draw conclusions (explaining or thinking)
- Active experimentation: the learner uses these principles and observations to guide subsequent decisions and actions (applying or doing), and this leads to a new 'concrete experience'.

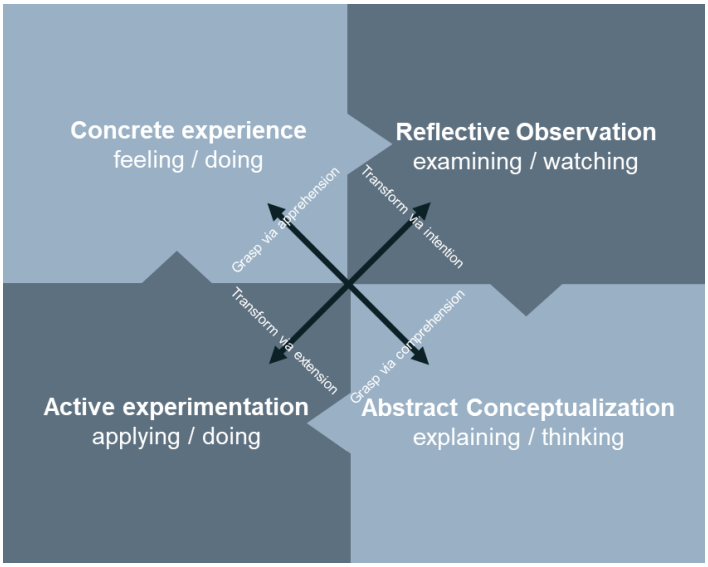


Figure 5.3: An adaptation of Kolb's model of experiential learning (298)

Within simulation, this model equates to a simulated scenario, a debriefing with reflexive observation and abstract conceptualisation phase, and ideally a second scenario for active experimentation or indeed further active experimentation within real life.

Various recommendations have been suggested in designing simulation training. A consensus group of international experts found five topics that should be the main focus for simulation within a patient safety curricula and one of these is NTS (299). The five topics are summarised below:

- Technical skills
- Non-technical skills
- System probing
- Assessment
- Effectiveness

They agreed that the topics could not ranked in order of priority. However, they did agree that 2 of the topics, assessment and effectiveness, did influence the other 3 topics as shown by the picture below. One could argue, however, that designing an assessment, carrying out an assessment and perhaps being subjected to an assessment, may indeed improve effectiveness at the task in hand. The separation of assessment and effectiveness may be an artificial one and may not necessarily relates to real life. However, for the purposes of this chapter, the similar emphasis on technical and non-technical skills is crucial and the need to assess as well as show effectiveness of the training. Formative assessment and not summative assessment is the focus of this simulation training.

The consensus discussion explores non-technical skills further. The report explains that non-technical skills and the labels used are similar across specialities and different areas and are therefore generic but how they are used is very much context specific. This influence of context is crucial to training programs. As simulated ward rounds is such a new area, and it is unclear which NTS are particularly relevant, then the effect of the context of ward rounds on NTS is as yet unknown. However, the first study reported above was for a students and in this thesis the simulation training is aimed at senior trainees, and the Pucher *et al* studies (162,300) are for surgical ward rounds, so the influence of these examples for this thesis is limited in terms of context.

A large systematic review of literature from 1993-2003 (109 articles) explored the features and uses of high-fidelity medical simulations that lead to most effective learning (301). The conclusions included that the quality of published literature on simulation is generally weak. They summarise the best available evidence to suggest that high fidelity simulation training facilitates learning under the correct conditions – see Box 5.1.

- **Providing feedback** – importance of feedback was the most cited 'condition' to facilitate learning
- **Repetitive performance** – the need to repeat one's actions is a basic crucial feature of simulation training
- **Curriculum integration** - i.e. into standard medical school or postgraduate training curriculum
- **Range of difficulty** – to take into account individual learner's different learning curves
- **Multiple learning strategies** – for example, instructor-centered education involving either large groups or small groups, or individual, independent learning
- **Capture clinical variation** – to increase the learning opportunities for learners
- **Controlled environment** – learners can make, detect, and correct patient care errors without any adverse consequences, and trainers can concentrate on learners and not patients
- **Individualised learning** – concentrating on the active learning experience not passive, and learners can take responsibility for their own learning goals
- **Defined outcomes** – need to plain goals to direct the learning, and these need to be appropriate to their level of training
- **Simulator validity** – this refers to the level of realism or fidelity that the simulation provides during the learning experience

Box 5.1: A box summarising the best available evidence suggesting how high fidelity simulation facilitates learning under the correct conditions (301)

The role of debriefing within simulation training is universally considered important to maximise benefit to the participant. A literature review (2015) found 7 studies that showed, in general, that performance improved after debriefing by a skilled debriefer and only one study which showed that debriefing by novice debriefers had an impact (302).

The above list can be supplemented with some more recent data. A simple study (2016) hypothesised that higher levels of fidelity may increase task complexity to a point at which novices' cognitive resources become overloaded (303). This relates to the cognitive load theory explained in the introductory chapter. In a simple simulation study involving both simple and complex lumbar punctures, they found that reduced task complexity was associated with better lumbar puncture performance and lower cognitive load during skill acquisition and retention. These results indicate that task complexity is an important factor that may mediate (via cognitive overload) the relationship between instructional design elements (e.g. fidelity) and simulation-based learning outcomes. Therefore, in addition to the list above, appropriate consideration of complexity for the participants is equally important. Leading a ward round is appropriate complexity for senior registrars. They lead ward rounds regularly of in-patients, some of whom are new to them, but leading a PTWR, where all the patients are unfamiliar and often with an unfamiliar team, is a new task and much more complex. Germane load is built up with experience, and therefore there is more cognitive load for the extraneous and intrinsic load explained by Sewell in relation to

endoscopy (52). The experience of leading this particular ward round is currently limited for registrars, and this needs to change for an individual to develop their own cognitive load for leading complex ward rounds.

A Delphi study found quality indicator statements for the design and implementation of simulation experiences (304) that overlap with the summary above. The pedagogical principles highlight the need for alignment with a curriculum. This curriculum needs to allow a 'scaffolding' of learning experiences to promote the development of skills prior to the simulation experience. It also highlights the need for learning objectives to guide structure. Fidelity principles included the need for fidelity to match the learning objectives and highlight that there is limited evidence to show that a higher fidelity and technology driven simulation experience leads to greater learning gains. The staff preparation and training principles from the Delphi method emphasise the need for clear planning and structure aligned with the learning objectives, and ensuring good staff training. The debriefing principles explain the need for immediate debriefing and need to include trainee reflection time. They emphasise the need for discussion on NTS in the debriefing session.

An interview study of residents (junior doctors) (n=12) showed that they felt that simulation serves a pragmatic purpose, provides a safe place and needs to involve integration and tension for optimum design (305). The students also had a limited perception on simulation's capacity to support NTS development.

Kneebone states that he thinks that trainers need to understand a trainee's perspective because the views of the experts responsible for designing simulation-based training may be vastly different from the learner's views (306). The training must align with trainees' needs and wishes in order to be successful.

In summary, and in keeping with Kolb's model of experiential learning, a newly designed simulation should include feedback and a debrief preferably by an experienced debriefer, the ability to repeat the experience, alignment with a curriculum, scenarios that vary in difficulty and involve diverse relevant clinical scenarios. The simulation should be of an appropriate fidelity for the subject matter and provide a controlled environment in which to learn taking into account individualised learning, aligning with a participant's needs and wishes.

In addition to the points in this summary, The Department of Health framework for technology enhanced learning (289) explains that any new initiative should consider the following more genral and practical elements. These elements are listed in the following table, including a brief context for this simulation development.

Table 5.1: A table explaining the context for this study of the Department of Health's key elements for a new technology enhanced initiative

Department of Health Framework elements	**Context for this study**
Patient-centred and service driven	*Ward rounds are one of the main interfaces between clinicians and patients during an in-patient stay. Their aim is patient safety including diagnosis, investigation and management as well as consideration of social issues especially in relation to a safe discharge from hospital. Training for ward rounds should include all of the above.*
Innovative and evidence based	*Chapters 2 and 3 have reviewed the relevant literature and explained that lack of current training and also the lack of a validated NTS appraisal tool within medical specialities. A simulated ward round for senior trainees has not been developed before. The development of both the simulation and tool is based on a triangulation of resources included in this study.*
Deliver high quality educational outcomes	*The learning objectives for this simulation training are clear and individual learning priorities are considered with structured and focussed multi-disciplinary feedback.*
Ensure equity of access and equality of provision	*This simulation was piloted within the North West Thames postgraduate training sector of London and was offered to all senior medical registrars in this area free of charge.*
Educationally coherent	*The development and learning objectives have been closely linked to current general internal medicine and speciality curricula, and has been developed iteratively taking in account feedback as the pilot progressed.*

The following will need to be analysed in a future study:

Value for money	*The cost of the simulation will be discussed but the value for money analysis of this initiative will not be assessed within this study; it is a possible area for future research.*
Improve patient outcomes, safety and experience	*The feasibility and acceptability of the training will be analysed as well as the psychometric evaluation of the NTS tool but implementation of the tool in real life is an area for future research to look at the impact on patient care.*

From the literature reported above, other important considerations in the development of this simulation are as follows:

- Provision of a safe arena (305)
- Provision of clinical variation (301)
- Repetition of performance (301)
- Range of difficulty (301)
- Clear learning objectives both general and individually focussed (301,304)
- An apparent scaffolding that exists around the simulation training within the curricula to provide opportunities for training NTS both prior and also after the simulation training (301,304,305)
- Focussed expert led debriefing session with feedback (302,304)
- Staff training (304)
- Illusion of tension (305)

This simulation training will be inter-professional. It will include a real team of juniors and other members of the MDT. Inter-professional education is an occasion when 2 or more professions learn with, from and about each other to improve collaboration and patient care (96). It can be asynchronous. The key underlying principles are that the training is:

- Collaborative

- Learner-led
- Group/team orientated
- Non-hierarchical
- Addresses real life problems

The simulation training development within this chapter will be an example of a collaborative, leaner-led initiative. It is team orientated and addresses real life problems. The feedback sessions will not be hierarchical and all members of the team will be encouraged to give feedback to senior trainees.

Aims

1. To design a simulation training initiative for senior medical registrars to develop their leadership skills and associated non-technical skills in leading a medical PTWR, aligned to their generic curriculum and individual needs
2. To develop a simulation to psychometrically evaluate the newly developed NTS tool for leading a medical PTWR

Method

Simulation design

A mixed method approach was taken. The approach to the development of the tool and validation of the tool as well as the development of this simulation training continues to rest on a constructivist paradigm – knowledge is subjective and continually updated. Simulation training is supported by a constructivist approach as it aims to develop higher order thinking, clinical judgement and NTS (307). This fits with an iterative methodology where the development process is reassessed at each stage, and amended accordingly. The inductive methodology used previously in this study is continued here. Kolb's model of experiential learning will be used as a point of reference.

The learning objectives of the ward round simulation were:

- **To demonstrate appropriate NTS in leading a medical PTWR (as measured by the W-NOTECHs tool described in Chapter 6)**
- **To demonstrate reflection on one's own performance and NTS**

Chapter 2 provided a review of the literature for ward round training to date and the discussion gives a summary of the general themes regarding ward rounds and training. These are discussed in relation to the thematic findings of the interview study and the previous chapter has shown that

there is overlap of themes. Chapter 3 reviews the literature on NTS tools used within a hospital setting, and this will be an important element of the NTS tool development. The simulation training needs to be developed to include an array of scenarios in order to test the relevant NTS.

This triangulation of resources all feed into the development of the simulation – the 2 literature reviews and the ward round interview study findings. In addition to this, the experience of the primary researcher did play a part. An informal ethnographic study of 10 medical post take ward rounds was also carried out. In addition, there were informal interviews with further key stakeholders of medical PTWRS – junior doctors including 2 Foundation Year 1 doctors, 2 senior house officers, a pharmacist who is part of the medical PTWR team and a senior nurse on a medical admitting ward.

The content was specifically formulated to test the relevant non-technical skills that are encompassed in the ward round tool, and were closely mapped to the General Internal Medicine (GIM) curriculum 2010 (128).

Each ward round, in each simulation, targeted different areas to test the participant's non-technical abilities and professionalism. These included:

1. Difficult communication issues – angry patient/relative, breaking bad news with little time
2. Dealing with medical error
3. Patient or investigation identification issues
4. Dealing with management pressures – e.g. bed pressures
5. Diagnostic uncertainty
6. Dealing with team issues/ supervision – e.g. unprofessional team member, illness, confidentiality, incompetence, stressed juniors
7. Duty of candour
8. End of life issues

The scenarios were written, and each had a correlating learning focus that was further refined after the first few training days. The clinical aspects of the cases, although not the focus of the training, needed to involve realistic cases and be based on true case studies to reflect a 'typical' medical take. Each scenario and the simulation learning objectives were discussed with 2 medical consultants for an expert review. The scenarios and professional actor notes are included in Appendix 5.1, and the patients' clinical notes in Appendix 5.2.

For organisational and administration purposes, the ward rounds were labelled red, yellow, blue and green, and are summarised in Table 5.2 below. The emphasis of the green ward round was shifted towards management issues after the 2 pilot days.

Table 5.2: The simulated ward rounds and summary of their learning points and content

Ward round colour	Summary of the learning points and content of each ward
Green	Management issues for discharge pressures and need for a team member to be dispatched to write discharge summaries, consultant shown wrong radiology possibly leading to a patient given a wrong cancer diagnosis, difficult risk decisions with bleeding versus need to treat a myocardial infarction, difficult communication regarding a patient wanting to self-discharge and fly with a pneumothorax
Blue	Very busy shift post nights, main issue is a very enthusiastic (perhaps over enthusiastic) F1, mix up with patients and ID leading to possible communications difficulties, missed pregnancy with patient given medications not safe in pregnancy
Red	Patient issues, very angry upset relative, medical error with lack of candour from team, end of life issues, difficult discharge for elderly, lonely and under-confident patient, unclear diagnoses
Yellow	Team issue in that SPR is a locum behaving very unprofessionally, unwell SHO (morning sickness but trying to hide pregnancy) and often left with no juniors, drug error and lack of candour, patient with poor compliance who is very unwell but has capacity

The following is a picture showing the set-up of the simulation suite. It is 'still' from one of simulation videos (reproduced with permission by participants).



Figure 5.5: A photo of the simulated ward round

Study design

Each participant was asked prior to taking part on their simulated ward round if they had any individual objectives (non-technical skills) that were a priority for them. There were individual GoPro cameras available for recording particular interactions at close range. Depending on a participant's individual learning priorities, the GoPro cameras were worn by the participant and a chosen relevant patient or 'team member' to give targeted feedback. The participant had an individualised video of those interactions emailed to them, in order to reflect after the training day on those chosen objectives.

The day began with a short introduction. This consisted of a Powerpoint® guided informal introduction to the learning aims, fire and safety information and a timetable. It also gave a run through of how the simulation day would run including an introduction to the simulation suite or area in the hall respectively. The day consisted of 4 simulated ward rounds with 4 patients (professional actors with experience in training in non-technical skills) and one of the patients had a friend or family member in each ward round (a fifth professional actor). The ward round team consisted of the principal researcher playing the medical registrar on call, a real medical SHO and a real Foundation year 1 doctor. A nurse was present for the first few pilot days but this team member was not present for the subsequent days. A pharmacist was present on all the simulated

ward rounds. There was a faculty of at least one experienced medical consultant who led the feedback and debrief sessions.

In keeping with RCP guidance, each participant was given 1 hour for the 4 patient ward round, a guide of 15 minutes per patient. After 60 minutes, the simulation was stopped and this was followed with an immediate feedback session that lasted 45 minutes. Feedback was facilitated by one of the faculty consultants using the SHARP method developed by Simulation and Technology-enhanced Learning Initiative (STeLI) (308). The feedback was given by faculty, all members of the ward round team, and fellow participants as well as the simulation participant themselves. The 'patients' were bought in to give feedback at the end of the feedback session. Their feedback was limited to feedback on communication with patients and communication with team members, using a simple 5 point scale, including a 'non-applicable' option, if the ward round was not completed and a patient missed being reviewed, on account of the hour time limit for 4 patients.

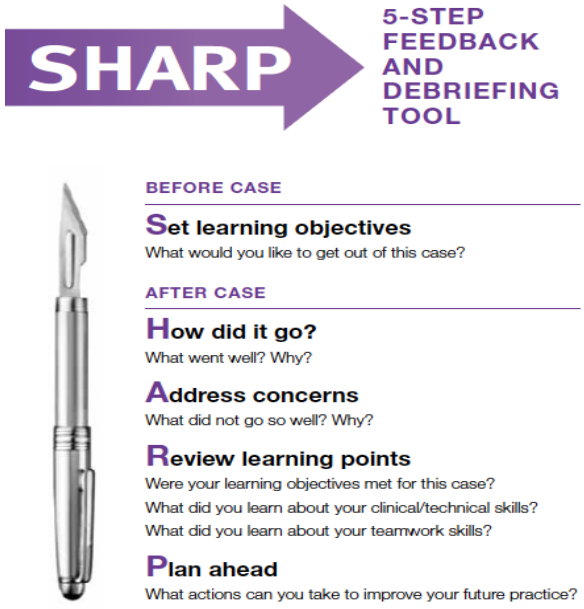


Figure 5.6: SHARP method of giving feedback for simulation training (308) *Copyright permission obtained*

All members of the ward round team, the faculty, fellow participants and the participants themselves gave written feedback with a formative assessment on the M-NOTECHS tool (Medical-NOTECHS), which I developed for this purpose (Chapter 6). The 'patients' gave formal feedback on a short feedback form included in Appendix 5.3. On both feedback forms there was space for free text

remarks. The feedback was collated by the principal researcher for research purposes described in Chapter 6 but also collated and distributed to participants for feedback and inclusion in appraisal documentation where relevant.

Each ward round was filmed using a SMOTS (Scotia medical and observation training system) and this was relayed in real time to an observation room so that the other participants could watch. In the alternate location, there was no SMOTS system and fellow participants observed from the side of the room.

Field notes were taken for each pilot day and subsequent training day.

Ethics

The project was given approval by the Imperial College NHS ethics team following approval by email by the Associate Medical Director (Medical Education) of Imperial College and the Director of Medical Education at Northwick Park Hospital. (Emails copied into Appendix 5.4)

Each participant, team member, faculty member and actor was asked to sign a consent form for the video including stills and audio to be used for research purposes. A copy of this form is included in Appendix 5.5.

The main ethical considerations were concerning the use of filming equipment and gaining consent for using the videos and audio in the research project.

Setting

2 pilot days were held at St Mary's Hospital (London) in a dedicated simulation unit with SMOTS technology . A further 10 simulation days were run between St Mary's (7 days) and Northwick Park (3 days). The simulation days at Northwick Park Hospital (Harrow) education centre did not have SMOTS available.

Participants

The selection of participants was purposive. An email was sent to all medical registrars in North West Thames across all hospital sites. The email was sent via the Imperial Lead Provider who coordinated training for these registrars. Allocation was on a first come first served basis. Junior registrars were also invited to take part via email to give further validation of the simulation and tool.

In order to validate both the tool and the simulation, medical consultants from the Imperial College NHS Trust (ST Mary's and Charing Cross Hospitals) and from Northwick Park Hospital, were invited

by email to take part in the simulation. The email was sent by the Associate Medical Director (Medical Education) for Imperial to enhance response.

Further information on the cost, funding and 'set up' including equipment, are included in Appendix 5.6.

Results

Participants

The numbers and spread of seniority of participants are shown in Table 5.3 below. There has been the occasional 'no show' of participants which impacted the attendance numbers.

Table 5.3: A table showing the spread of seniority for participation in the PTWR simulation

Participants in PTWR Simulation	
Grade	**Number participated in simulation**
ST3	2
ST4	1
ST5	3
ST6	8
ST7	17
Total overall SPR number	31
Consultant < 5 years experience	1
Consultant > 5 years experience	5
Total overall consultant number	6
TOTAL	37

Pilot days and further development

In keeping with the iterative development model, each pilot day was discussed with its relevant field notes by the principal investigator and CM, an experienced medical consultant who leads PTWRs and acted as faculty member for all the PTWR simulation days.

Various practical points were raised and changed to enable the smooth running of the day. These are shown in Box 5.2. From these discussions, it was apparent that there was a difference in consultants performance leading the simulated PTWR compared to registrars. This difference was explored using the field notes, observations and video replay where needed. The findings from these discussions were fed back into the development of the tool to capture the elements of leadership on a medical PTWR and these findings will be discussed in the following Chapter (Chapter 6).

1. Changing the names of the 'patients' to 'made-up normal everyday' names from the use of well-known monikers to increase the fidelity of the situation, e.g. Homer Simpson. This improved the fidelity of subsequent days greatly.
2. Aside from the actor's information about their character and their ailment, the actors were provided with the scenario information, to help with their portrayal and smooth running of the day.
3. The participant themselves was asked to complete a self-appraisal.
4. There was trail of completing the appraisal tool form online in real time to aid analysis and avoid timely data entry but this led to further problems. Paper copies were used throughout and SP completed the data entry onto a spreadsheet for analysis (reported in Chapter 6).
5. The nurse presence on the ward round was not mandated. It was very difficult to get a nurse released from clinical practice and the pharmacist could fulfil the tasks the nurse had and not lose the fidelity of his or her role.
6. There was a need to change the timings of the days occasionally to fit in with consultants' timetables and this was achieved with ease, showing that the day had flexibility when required.
7. The ward round 'team' were asked about their learning from the day in a follow-up questionnaire to look at inter-professional learning. The full analysis of this is beyond the scope of this study.
8. The ward round 'team' changed depending on availability. Each participant had the same information sent to them on email with a follow-up phone call or meeting with SP to talk through the day. A pre-simulated ward round briefing session was made standard on account of this.
9. Stickers were used as clinical ID badges to aid the running of the simulation
10. The simulated ward rounds were colour-coded to aid administration of the day and communication within the day.

Box 5.2: Summary of changes made to the practical running of the simulation after the pilot days

Results – individual learning aims

As described in the method, each participant was asked prior to commencing the simulation whether they had any particular learning objectives for the leading of the simulated ward round. The answers were diverse and not everyone had anything particular to add except the wish for experience and feedback in leading a PTWR. Other examples of individual aims are shown below. These aims are individual and may mean different things to different people and the emphasis was always to prioritise the learning of the simulation participant. 'Behaving like a consultant' means something different to everyone, as we all have a different idea of what that entails.

- Maintaining authority like a consultant
- Behaving like a consultant and not a registrar
- Communication skills
- Time keeping
- Dealing with conflict with time pressures
- Dealing with difficult team members

Results – feasibility

The day ran effectively in both locations. The administration became easier as experience of running the days increased. Assembling a 'ward round team' was possible with pharmacists being more available due to enthusiasm from their senior colleagues to be involved in the project. Finding volunteers to act as F1 or SHO doctors was more difficult but achieved for all days with the support of the consultants involved in planning the day. The difficult stems from the fact that all junior doctors have busy schedules and obtaining permission to be released from work in order to take part was difficult on account of work commitments. The benefits of taking part were emphasised to supervisors which helped permission to be obtained. Some of the juniors did agree to take part on their 'zero days' or days off which made the need for permission unnecessary. A bank of juniors was acquired over the run of the training days which also helped this process. The interest in the project by the juniors involved really helped, as they were keen to participate.

The actors were easy to book and the day went well with their input. The majority of actors did all of the simulation days. They were paid for each day (range £100-£400/day each) (Appendix 5.6). The project was funded by Health Education England.

Results of feedback questionnaire

Results - acceptability

The results of the feedback questionnaire have been used to demonstrate the acceptability of the simulation. The questionnaire is included Appendix 5.3. There were 37 participants of the simulation over 12 days over 2 years. 27/37 (73%) completed the feedback questionnaire. No consultant participants completed the feedback questionnaire, and 4 registrars did not complete the questionnaire. The numbers below do reflect the numbers in Table 5.3, which displayed the participants in the simulation, and here it is the respondents of the questionnaire.

The characteristics of the questionnaire respondents are displayed in table form below:

Table 5.4: Characteristics of respondents to feedback questionnaire

Characteristic		Number of Participants
	Female	16
	Male	11
	TOTAL	**27**

Grade	ST3	1
	ST5	3
	ST6	7
	ST7	16
	TOTAL	**27**
Speciality	Cardiology	1
	Clinical Pharmacology	1
	Endocrinology	6
	Gastroenterology	4
	Geriatrics	7
	Respiratory	3
	Rheumatology	2
	Not answered	1
	TOTAL	**27**
Venue	Northwick Park Hospital – Hall in Postgraduate Education Centre	8
	St Mary's Hospital Simulation Suite	19
	TOTAL	**27**

The questionnaire was developed for the trainees at which it was directed, namely those in their last 2 years of training prior to applying for a consultant job. It was given to all participating registrars and not consultants. 27 participants (registrars) completed a questionnaire. The following questions were asked and respondents were asked to score on a Likert sale from 1 to 5 (1=not very well, 5=very well or equivalent). All scores for all questions were 4 or 5 except for 1 score of 3. The table below shows the breakdown.

Table 5.5: Overview of the participant feedback

Question	Detailed scores: Not very well - - -- >Very well (/equivalent) 1	2	3	4	5	Summary: Total response	Mean	Range
How well did the eductional programme for the day meet the stated aims?	-	-	-	9	18	27	4.67	4-5
How well did it match your own learning needs?	-	-	-	11	16	27	4.59	4-5
How interesting did you find it?	-	-	-	9	18	27	4.67	4-5
How relevant did you find it?	-	-	-	2	25	27	4.93	4-5
How would you rate the style of the tutors / facilitators?	-	-	-	7	20	27	4.74	4-5
How would you rate the overall level of satisfaction with the educational programme you	-	-	-	5	22	27	4.81	4-5
How useful did you find the opportunitiy to reflect on your performance?	-	-	1	3	23	27	4.81	3-5

The feedback from all these questions is positive. This shows that the training was well received and thought to be useful in relation to their current stage of training.

The participants were also asked if there was anything that they had learnt during the day that had not been taught effectively elsewhere, and also if there were any suggested areas of improvement. The following table gives us examples of the responses. These were not analysed formally.

Table 5.6: A table showing example responses to the posed feedback questions shown

Was there anything that you learnt today that has not been taught effectively elsewhere?	*'Great opportunity for dealing with complex scenarios in a non-threatening environment'*
	'All of it – practice and practice in PTWR; amazingness of one to one feedback – a luxury and privilege to have this training focussed to us with so much research and work behind it'
	'Complexity of decision making in a timeframe'
	'Feedback from all parties involved and reflection'
	Managerial consultant skills 'better than any management course for senior trainees'

	'No courses focus on transition from SPR to consultant, this has highlighted that it is important to consider everyone's roles appropriately'
Any suggested areas of improvement?	*The ability to watch yourself on video (this was provided after the training day if the participant wanted it).*
	The inclusion of more 'normal' or 'dischargeable' patients
	Several suggestions to make the course mandatory for CCT or an initiative to make 'acting-up' on PTWR a required pre-requisite for CCT
	Run more courses
	The possibility of watching a senior consultant complete the ward round
	To include the following scenarios: consent issues, vulnerable adults, advanced directive, safe guarding
	Improved audio to make the most of the spectator phase of the day (1 comment)

'What have you learnt today?'

The respondents were asked to explain 3 things that they had learnt during the day. These qualitative responses were analysed using inductive thematic coding. This analysis was not party to co-coding or a further MDT discussion. The main themes are as follows, with illustrative quotations:

Table 5.7: A table showing the main themes of 'What have you learnt today?' with illustrative quotations

Theme	Illustrative quotations
Importance of delegation	*'taking a step back', 'delegating', 'devolving responsibility', 'how to better utilise the team including the skills and knowledge of members at different stages of training'*
The importance of the patient perspective	*'the importance of the patient perspective and empathy', 'importance of focusing on patient but still involving relative'*
The importance of the overall perspective/ How to maintain flow and structure	*'difficulties of the flow of the PTWR and some tools to manage these', 'time constraints', 'how to space decision making over stint – medium and long term, increased awareness of this', 'awareness of activity of whole medical team'*
Self-reflection	*'more about my strengths and weaknesses especially under pressure',* *'to be aware of your own mannerisms', 'more about myself especially under pressure', 'self-awareness'*
Non-verbal communication and communication	*'use of smile (physical expression)', need to be aware of not being too procedural in communication style', 'enhanced understanding of effective communication style', 'assertiveness'*
Don't forget teaching/educational aspect	*'educational component of PTWR should be included', 'don't forget to teach'*

The participants were also asked if they felt prepared to be a consultant. The majority of participants were in their last 2 years of training prior to taking up a consultant post. 26 respondent

answered this question. 38.5% (n=10) answered that they did feel prepared and 61.5% (n=16) answered that they did not feel prepared.

The respondents were asked the following questions to ascertain a self-reported expected change in behaviour.

Table 5.8: An overview of participant's responses to questions on self-reported change in behaviour

Question	Yes	No	No response	Total
Do you believe that today's course is likely to enhance your multidisciplinary working in your current / future team?	23	2	2	27
Do you believe that today's course is likely to impact on your clinical practice in the future to the benefit of patient care?	25	0	2	27
Do you believe that today's course is likely to impact on your future practice with regard to patient safety?	22	3	2	27
Do you believe that today's course is likely to enhance your communication skills?	24	0	3	27
Do you believe that today's course has made you more prepared for life as a consultant?	23	2	2	27

Discussion

The simulation training was developed for senior registrars, and was well received and feasible to run. The learning objectives of the simulation were appropriate and achieved by the simulation training, as shown by the feedback received.

The scenarios worked and served to give a wide-ranging day of training with multiple non-technical skills tested and clinical scenarios requiring complex decision-making. The iterative process of development worked well leading to the changes to the various practical aspects of the day, and consequently, the day ran smoother.

What did the participants learn?

The qualitative feedback themes show the diversity of what was learnt during the course. The themes demonstrated here overlap with those of the preceding chapter (Chapter 4).

- The importance of the patient's perspective
- Communication – verbal and non-verbal
- The teaching aspect of the ward round
- Self-reflection

However, 2 further themes are highlighted:

- Delegation
- The importance of the overall perspective/ how to maintain flow and structure on a PTWR

These themes do not necessarily overlap with the themes from the literature review on training and ward rounds in Chapter 2 except for the theme on the teaching aspect of the ward round. Reflection has been touched on in preceding chapters and the importance of feedback, as well as acknowledgement of unacknowledged learning – a form of self-reflection. The first 2 themes concern communication skills. The importance of the patient's perspective is clear from this study and also from the interviews with patients including the need to be listened to, and have information given to you, as a patient, is an easily digested format. Communication, verbal and non-verbal, are important non-technical skills and their importance as well as the art of listening are echoed throughout this thesis as key elements of NTS of ward round leadership.

Delegation is a new theme. It was mentioned in the discussion on NTS tools in Chapter 3 but was not a main theme. Here it is a main theme, and one that needs to be considered in the development of the tool. The same is true for 'the importance of the overall perspective/ how to maintain flow and structure on a PTWR.'

The responses to the questionnaire show that the training day would reach Kirkpatrick level 1 and 2 and some responses hint at Kirkpatrick Level 3, including the comments included in 'self-reflection'. The 'self-awareness' as one participant describes of various aspects of their 'behaviour' or 'performance' may lead to changes in behaviour. However, this is not proven and is entirely self-reported. The enjoyment and 'reactions' of the course are clear from the feedback both qualitative and quantitative correlating to Kirkpatrick Level 1, and changes in knowledge and attitudes are noted by the responses across all the themes. The importance of the 'use of smile' and of balancing conversations with a patient and their friend or relative are examples of a shift in perspective for ward round behaviour. Further research needs to be done to prove that the individual predicted changes in behaviour both happen and also are maintained. This would need to be shown both in a simulated environment and within real life.

The design of the simulation training

The majority of elements, discussed in the Introduction for this chapter, concerning the design for the simulation training have been considered. The simulation is patient centred and service driven. The use of professional actors experienced in giving feedback from the perspective of their characters was described as useful in understanding the importance of the patient's perspective. Ward rounds are a compulsory and necessary part of the service provision of a hospital. Other aspects of the service provision of a hospital including dealing with unclear diagnosis, error, duty of candour are all included in this simulation training. It has content and face validity from the triangulation of resources that fed into its development, including expert review. It is a novel concept – simulation training for senior trainees and a simulated ward round for medics are both new medical education initiatives. It is educationally coherent and fits within the 'scaffolding' of the GIM and speciality curricula, and postgraduate training on general.

This training also helps to bridge a traditionally difficult transition within medicine – registrar to consultant. New consultants feel prepared clinically at the start of their new posts but not necessarily for the non-clinical aspects of their posts (103,104). Supervision and delegation and management issues such as dealing with error and staffing issues are examples of these non-clinical aspects. As discussed in the introduction to this chapter, the value for money of the training and the effect on patient outcomes, safety and experience will be assessed in future research. The simulation provided a safe arena as explained in the qualitative feedback. There is a breadth of clinical and non-technical variety included in the simulation training across the 4 ward rounds. Participants experience variety within their own ward round but also by observing their peers in the other 3 ward rounds. The difficulty level is different for each trainee with different strengths and weaknesses in NTS, but also varies within a ward round with testing and less testing aspects included throughout. The scenarios maintain an illusion of tension. There are established staff training and debriefing sessions.

Complexity of tasks within simulation needs to be aligned with a trainees needs, as was seen in the simple study on lumbar punctures discussed in this chapter (303). Within this concept is also the theory of cognitive load. The extraneous load and intrinsic load of a ward round are facilitated by the development of an individual's cognitive load. A dedicated ward round training should help to develop this germane load albeit in a simulated environment. An interesting future study would be to use the validated self-reported instrument for measuring cognitive load used by Sewell et al (52), within either the simulated ward round or real life ward rounds to see if a person's germane load alters over time, and if there is a difference between senior and junior colleagues when leading a PTWR. The complexity of this simulation was high as the trainees were senior. The scenarios were

developed with triangulation of resources and expert input. Consideration of cognitive load of participants is difficult because we all have different attributes and weaknesses but provides interesting opportunities for future research.

The simulation day is labour intensive and costly for 4 participants. One day, 5 ward rounds were run so that a consultant could make the simulation (one ward round was run twice and the day was started early) and this is feasible but there is a trade off as that means more watching of ward rounds for the delegates. Their interest needs to be maintained to achieve maximal learning. However, no feedback was given about loss of interest in the spectator phase of the day except for one comment on audio of cameras. The cost depends on the cost of actors. The maximum cost of actors researched was £500/day. That gives a total cost for actors at £2500 for the day for 4 participants. One registrar explained that they regularly spend £500-600 on a compulsory management day, and that he had learnt more on this day then his management course so he feels that people would pay for it or could apply for contributions from their study leave budget. This course was provided for free with funding from Health Education England. There are ongoing discussions regarding further courses being run. However, postgraduate training in London is being restructured so this is only at the discussion phase. The cost of equipment is a one off initial expenditure. The course ran well in a hall (a non-dedicated simulation suite with no SMOTS) with no difference in feedback showing that a lower-fidelity option is also feasible and acceptable within this study.

On the same theme, a subsequent simulation day was run without the lead researcher, SP, showing that the day does not depend on the input or administration from one person. This day was not included in analysis. The administration and organisation of the training has been handed over to the postgraduate education administration team in NW Thames. There is a 'bank' of volunteers for the ward round team and faculty. More recently an offer from the Royal College of Nursing to provide a nurse once again on the simulation day. This all helps maintain the sustainability of the project.

Returning to Kolb's 4 stages of experiential learning, the need to repeat actions to form a further conceptualisation is required to repeat the cycle. The idea that simulation sits alone is wrong. It stands within the curricula to enhance the training already provided. It provides a non-threatening' environment in which to hone skills prior to real life experience. The 4 stages are illustrated below using the same cycle diagram as previously but this time the relevant part of this training is labelled for each stage.

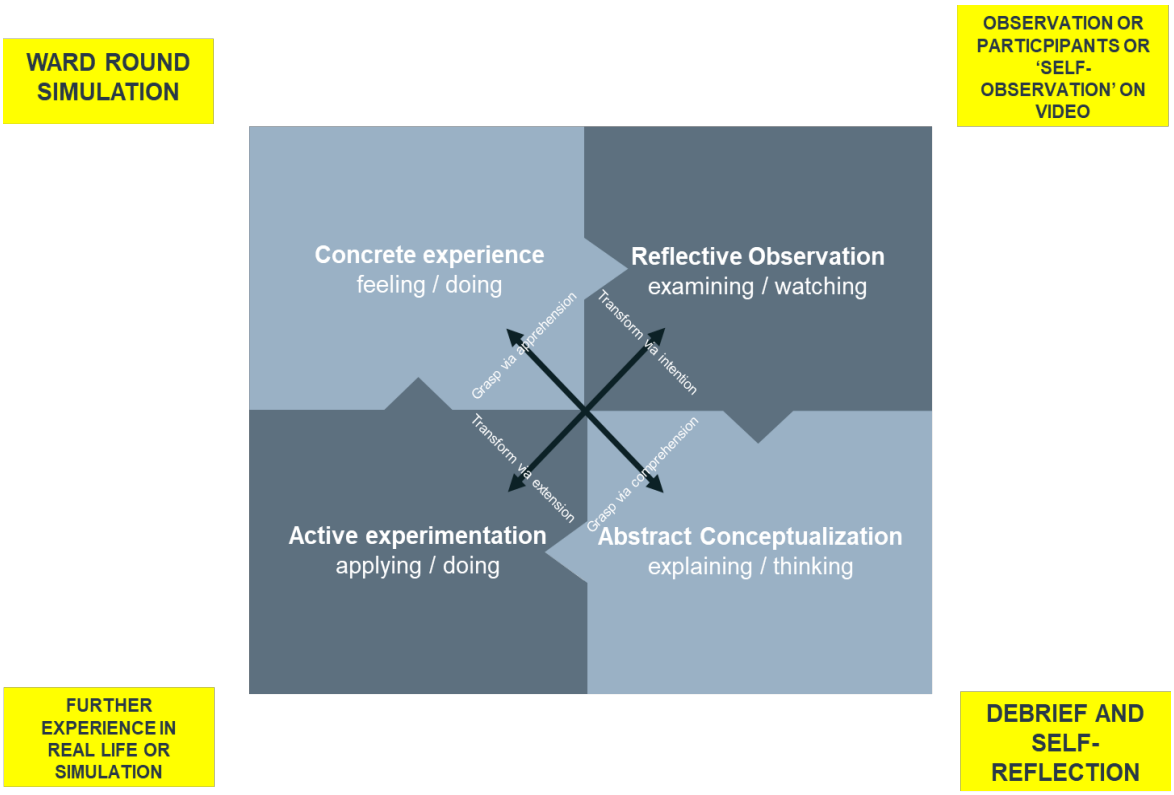


Figure 5.3: An adaptation of Kolb's model of experiential learning showing the relevant stages of learning for this simulation training

The future

This simulation correlates with the 'scaffolding' of postgraduate training for medical doctors. Every general internal medicine trainee experiences a PTWR as a junior but rarely do registrars get the opportunity to 'act up' as the consultant in real life. From the work done within this project and also from the research that is published on the matter, PTWRs need to be a focus of further research but also they need to be a focus for training and to help smooth the transition from registrar to consultant. The suggestion by several of the respondents that such 'acting-up' should be made a compulsory pre-requisite for Certificate of Completion of Training (CCT) has been noted by the postgraduate training body within NW Thames. It has been discussed that evidence should be shown by trainees that they have had such experience with feedback at their Penultimate Year Assessment (PYA). One consultant suggested participating in such a simulation should become integral to their revalidation process. With this in mind, the simulation training day administration team (that now exists) are considering applying for CPD (Continuing Professional Development) points for the learning involved during the simulation.

With consultant continuing professional education in mind, the importance of NTS is sustained throughout a career, and training in NTS remains as important. A study of 40 surgical trainees and

30 experienced surgeons showed that for most elements of the chosen NTS assessment tool (NOTSS) the scores decreased roughly linearly over time. This trend was most apparent for the following NTS: considering options, implementing and reviewing decisions, establishing a shared understanding, setting and maintaining standards, supporting others and coping with pressure (286). This shows that even experienced surgeons may have NTS deficiencies, and therefore continued professional education programmes are required as well as training for trainees.

Limitations of study

Firstly, the simulation is only relevant if there is a change in practice to allow registrars to lead PTWRs under supervision. This is currently a recommendation but mandatory training advised by the General Internal Medicine Specialist Advisory Committee (reported by CM (Thesis Supervisor), a member of the GIM Specialist Advisory Committee) is being increasingly discussed at Penultimate Year Assessments (PYAs), so this is looking more likely to happen. This real life practice is required to provide the 'active experimentation' stage. This study has shown that there is a need for further research and educational focus on ward rounds. This study needs to be extended to see if the simulation has lasting effects on changes of behaviour but also patient safety and experience, in keeping with the last two Kirkpatrick levels.

The tool has been developed to use in real life but has yet to be tested outside the simulated environment as will be explained in the following chapter. After further reliability and validity testing with real life ward rounds, the practice of 'acting up' to lead ward rounds under supervision will be easier to facilitate as there will be a validated formative appraisal tool. The current literature does show the positive impact of simulation especially on NTS performance scores and that NTS impact technical skills. However, transfer of these skills from the simulation suite to a real scenario is demonstrated less in the literature (309).

Real life testing could go further with the possibility of 'in-situ' simulations for medical teams on ward rounds akin to operating theatre team's 'in situ' simulation or resuscitation team 'in situ' simulation. This would not only allow training for ward rounds but also provide a good research opportunity to examine ward rounds further in a real life setting. This would also provide excellent potential for inter-professional learning.

A future study needs to demonstrate that this training does, or does not, change practice and improve quality of care. This will be difficult to try and show. A possible method would be to give a performance score for each scenario, and see if this improves in a longitudinal fashion. There could be a prospective trial with a group of registrars participating in the simulation and consequently leading real PTWRs under supervision, another group just doing supervised real PTWRs, and another

group just doing a one off assessment, and comparing the findings to see if a difference was seen. Patients could be asked to complete a 'Patient Questionnaire' following each ward round as a measure of patient experience. Supervisors could also complete an acute care assessment tool (ACAT) as an established assessment tool alongside the assessment tool described in the next chapter, to provide a proxy to criterion validity.

A further possible measure of 'performance' on a ward round would be to develop 'standards' for a PTWR. This could be used to add validity to a subsequent study on ward round simulation. Chapter 2 showed us that very little has been done to establish ward round standards, let alone PTWR standards. These standards would have to incorporate both clinical and non-technical elements. This thread of discussion will be picked up in the main discussion chapter of this thesis – Chapter 7.

The learning achieved by the members of the ward round team is the focus of another study and may also be an avenue for further research. The main theme so far in this study shows the appreciation of each other's roles is foremost.

The sampling for this study is purposive and there is no control group to compare to. The sample could be 'self-selected' as in the most interested registrars and consultants were the ones to reply and volunteer to take part. Voluntary selection classically biases towards a high performance group. If this is true, then it is potentially true for both groups but the effect of this is not known. Consultant participants volunteered as part of their day to day job, squeezing it in between clinical duties, whereas it counted as a day of study leave for registrars and this difference may have had an unknown impact.

This training is an example of a small group of trainees receiving an interactive personalised training session, and often they score the training highly because of this. The aim was **to design a simulation training initiative for senior medical registrars to develop their leadership skills and associated non-technical skills in leading a medical PTWR, aligned to their generic curriculum and individual needs.** The training was reported to meet the stated aims and match their own individualised learning needs. A possible limitation of the study is that these individual learning aims were not formally recorded except in field notes. In addition, the option to provide individual videos of a person's performance to aid self-reflection was suggested in the introduction but perhaps was not highlighted enough. This is a possible area for development going forward but would understandably make the ward rounds less individualised if there was some improvised changes in order to test an individual's personal learning needs. It was rated as interesting and relevant, with a high satisfaction score for the training, but interestingly the best quantitative feedback was for the question regarding the utility of the opportunity to self-reflect. This echoes the theme drawn from

the qualitative feedback. A further limitation of this study is that an opportunity for follow up interviews or focus groups to explore this idea and other elements of the feedback was not harnessed. This could have provided a further insight into the learning achieved from the course.

There were regular intervals when only one faculty consultant was available. However, the premise of the feedback is that it is 360 degree and not faculty driven. The feedback included the participant themselves, fellow participants, the ward round team, faculty and the 'patients'. Therefore, having a further faculty member should not influence the feedback process unduly. Having another experienced consultant present to give an insight into leading a PTWR may have been useful to the participants.

The feedback was not collected from the consultants formally and this would be useful going forward. However, most of the consultants only could attend for their simulation and they did not observe others so it would be difficult to gain meaningful feedback without participants attending for the whole day. There is also no further breakdown of characteristics for the consultants present. However, the numbers involved in this study are not large so this may not be relevant.

One final limitation of the study is that the 360 degree appraisers are not blinded to the level of the participant. While, the level of seniority was not discussed, it was sometimes apparent because of age or prior knowledge of participants. This could have led to bias in formative assessment, and feedback during the debrief session.

Conclusion

The simulation was well received and feasible to run. It received good feedback relating to Kirkpatrick Level1/2, and the training maps well onto Kolb's model of experiential learning. Further work is required to examine possible lasting effects to behaviour in real life practice in keeping with Kirkpatrick's later stages of evaluation. It is a successful simulation training programme for senior registrars, and the simulation can be used to psychometrically test the assessment tool described in the next chapter.

To finish, this simulation works because of the development of the M-NOTECHS tool for appraising leadership on medical PTWRs – I report this in chapter 6. It also provides a registrar the opportunity to act up and experience leading a PTWR in the safety of the simulation suite. This opportunity is rare within clinical medicine prior to 'learning on the job' within your consultant post. Debrief sessions do work without a formal guide on performance. However, this day is focussed on leadership and associated NTS, and the formative assessment tool helps to guide the feedback sessions to maximise learning. This thesis has shown how multi-faceted leading a ward round is.

Standardised appraisal is required for meaningful feedback and development of NTS. The following chapter will describe the concomitant development of this tool.

Appendix summary

5.1 Actor notes for ward rounds and scenarios

5.2 Clinical notes for the ward rounds

5.3 Feedback form

5.4 Ethics paperwork

5.5 Filming and use consent

5.6 Details of costing, funding and equipment and set up required for the simulation training

Chapter 6

The Medical-NOTECHS (M-NOTECHS) tool development and psychometric evaluation

Introduction

This chapter will explain how the non-technical skills tool for leading medical PTWRs was developed. It is based on the NOTECHS tool described in Chapter 3 and has been called M-NOTECHS (Medical NOTECHS). This chapter will describe the triangulation of sources that have informed development. These include the results of the preceding chapters. It will also include the results of the post pilot simulation day discussions and field notes that led to further iterations of the tool.

The preceding chapters of this thesis have shown that there is a gap in the literature on the assessment of ward round quality (Chapters 2 and 3). There is also scant literature on ward round leadership, and the skills required to lead a successful ward round (Chapter 2). The idea of what makes a ward round successful is beginning to be described in formal guidance (4) but much of this guidance is founded on limited literature (Chapter 2). To my knowledge, there are no NTS tools for assessing aspects of medicine outside of the 'practical skills' domain. The majority have been developed for surgery, anaesthetics, emergency care and intensive care. There is one tool that was recently developed for appraising performance on paediatric ward rounds but no other ward round tool exists (236,310).

Medical error exists on medical wards (112). Up to 78% of malpractice claims highlight poor NTS and in particular failures in communications skills (274,311). Communication errors have been shown to be causal factors for up to 43% of surgical errors, showing that effective NTS are required to improve patient safety and reduce error (174). Scant research has looked at the source of error or omissions on medical wards (114). The medical ward round is the primary interface between doctors and patients in the hospital in-patient setting. Patient safety research has focussed on surgery and anaesthetics/intensive care and the development of NTS has been part of this. Medical NTS tools need to be developed in order to facilitate further research to look at patient safety and training on medical wards. There is very little training for medical ward rounds at any stage of training from student to registrar. The transition literature for registrar to consultant, describes that consultants feel prepared clinically for their roles but not for the non-clinical aspects of their jobs (60,98,102,312). Many of these fall within the umbrella term non-technical skills including

supervision, delegation, communication skills, dealing with complaints and management issues. Focussed training on NTS should help this transition and will also impact awareness and changes of behaviour to try and reduce medical error. Examination of leadership of a medical PTWR is a new research focus and one that will lead to future research on this topic. Patient safety and medical education have a symbiotic relationship and therefore a tool that helps advance one should impact the other.

There has been a significant focus in recent few years on patient experience and patient led care (87,313,314). None of the NTS reported in the literature have taken into account the patient perspective. Patient perspective's on medical training may be limited but they can give a view on leading a ward round as has been seen in Chapter 4. It is important to make sure that any ward round tool includes consideration of the patient viewpoints.

Aim

- To develop a formative tool to appraise the non-technical skills required to lead a medical post take ward round

One of the aims of this thesis is to develop a tool that evaluates the ability of senior medical trainees and consultants to lead a medical ward round. This chapter will describe the methods employed to develop this tool. It will also explain how the tool was evaluated within the simulated setting described in Chapter 5. It will determine if the tool is valid and reliable, and whether it is acceptable and feasible to use. This psychometric evaluation is in keeping with the evaluation processes employed in the development of the NTS tools described in Chapter 3.

The method of development will follow De Vellis's 8 stage scale development method (185), and there will be explanation at each step to describe the relevant parts of the thesis and how they have fed into the developmental cycle of the tool. The changes to the tool will then be explained in detail, explaining the 2 iterations from the original tool on which this Chapter's tool is based. This section includes the pilot use of the tool within the pilot simulation days described in the preceding chapter.

The tool will be evaluated in terms of face and content validity and also for construct validity. The tool's reliability will be evaluated by examining its inter-observer agreement, its intra-class coefficient and its internal consistency. Acceptability and feasibility will be determined through its use within the evaluation and feedback.

Methods

Tool development

The tool was developed in line with the guidelines set out by DeVellis (185).

Each step will be discussed with the different elements that fed into the development at each step. In each case, examples of how the different sources fed into the development of the tool are explained. Specific changes to the tool and the tool itself will be explained in a section between method and results. The following flow diagram gives an overview of the process.

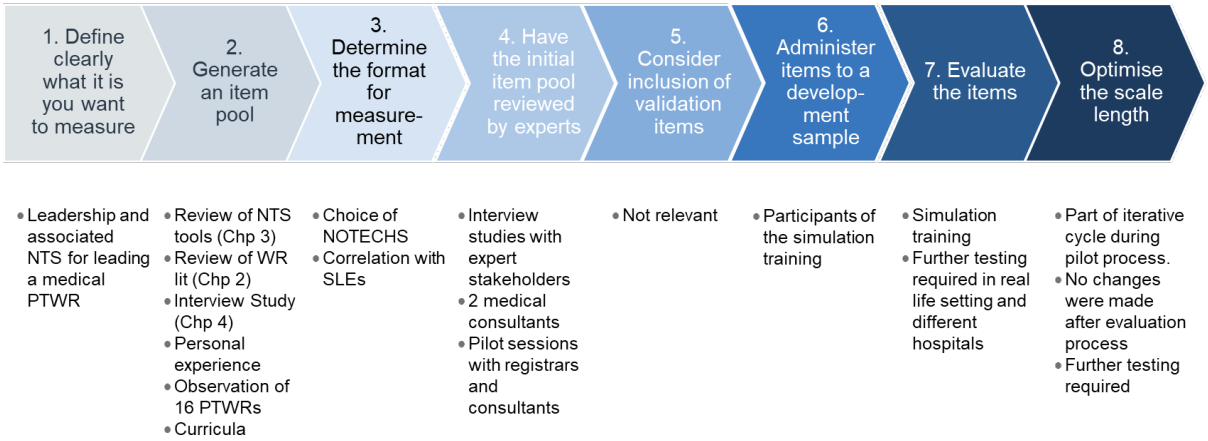


Figure 6.1: A diagram illustrating DeVellis' 8 stage process of tool development, relating it to the methods used for developing M-NOTECHS

Before I explain the process shown above (Figure 6.1), I will briefly explain why the tool that I created is formative and not summative. The aim of the tool is to guide personal development to ease the transition from registrar to consultant and to work alongside the training all ready in place for GIM registrars. Most of our assessment is formative, allowing a significant role for the individual concerned to reflect and adjust behaviour if necessary accordingly, or realise areas of their training that need more time and practice. A formative tool does this. It is to be used as a guide to self-development, and could have a role in discussions with supervisors to aid training and progression.

Step 1: Determine clearly what it is you want to measure

The aim of this tool is to appraise the non-technical skills of the leader of a medical post take ward round (PTWRs). It will be a formative tool. There is no current tool for this purpose to my knowledge, and the thesis so far has explained the need for such a tool to both enhance patient safety and experience but also improve training for doctors of all levels of experience. Chapter 3

presented a review of other NTS tools in use for research or educational purposes and the commonalities of the collection of tools reviewed will serve as a framework for the tool development. These tools support a more standardised evaluation of NTS throughout surgical, anaesthetic and emergency medicine training. Furthermore, the tools have been employed in research to evaluate interventions and establish the importance of non-technical skills in reducing negative patient outcomes. The absence of a similarly validated tool for use within medical ward rounds was the impetus for this study.

DeVellis highlights the need for specificity in tool development (185). The tool will be used to evaluate senior trainees primarily leading a medical PTWR under the supervision of a consultant. It will be used to give formative feedback on an individual's performance leading a PTWR, and guide a trainee's development towards leading to them taking up a consultant's post of their own.

Step 2: Generate an item pool

This is the main stage in the development process of this tool. Much of this step is guided by the review of NTS tools currently in use. The different elements measured in these tools provide a large pool from which to base our tool. However, as a tool such as ours does not exist then other items also need to be considered that do not necessarily feature in the tools reviewed so far. This stage of tool development also includes the relevant findings of the review of articles on ward rounds and training in Chapter 2. It also includes the relevant findings from the interview studies in Chapter 4 and also the registrar interview study, discussed in Chapter 4 (252). Personal experience and observation of several PTWRs will also feed into this stage of development. The development of the tool is based on triangulation of these sources. The items need to reflect the tool's purpose, and also be grouped into a systematic form in order to make the tool easy to use and understand. This stage encourages inclusivity of items in order to reflect the essence of what is being measured. DeVellis discusses that redundancy is both good and bad in terms of scale development. Irrelevant redundancies need to be avoided so that relevant redundancies yield more reliability (185). The balance is difficult. In the early stages of development, redundancy is less of an issue. Redundancy on account of slight changes in accidence, syntax or vocabulary, however, should be avoided. Redundancy is relevant to discussions of the tool's reliability. DeVellis emphasises the importance of accuracy of grammar to avoid ambiguity. Items also need to be related enough to endorse each other in terms of evaluation – there needs to be a common thread for the tool to work cohesively.

The following sections will explain how different elements of this thesis added to this stage of the tool development as shown in Figure 1.

- NTS Tool Literature Review (Chapter 3)

The main tools reviewed in chapter 3 were NOTECHS, NOTSS, ANTS and OTAS. The majority of the tools reviewed were developed with expert consensus, observational methodology and evaluated in a simulated environment. Similar methodology has been employed within this thesis. The domains that are most often tested by the tools reviewed in this chapter were: Leadership, teamwork, communication, situational awareness and decision making. These domains seemed a good place to start. Cooperation/ back up behaviour was the next on the list; it has overlap with teamwork as discussed within Chapter 3.

The NOTECHS tool was chosen as the basis for the medicine specific tool, as it includes all of the domains listed above. There is also good evidence for it's reliability and validity as reported in Chapter 3. In particular, the Oxford NOTECHS iteration was chosen (205). To differentiate my tool from previous NOTECHS iterations, it will be referred to as M-NOTECHS (Medical NOTECHS).

Basing my tool on a previous tool strengthens its validity (content and face). This is further improved by the similarities between my tool and the other NTS tools which have been validated for use in research. The common elements with our tool strengthen its validity.

- Training and ward round literature review (Chapter 2)

This chapter determined some main themes from the literature. Those themes relevant to the development of this tool are:

- *Poor educational value of current ward rounds*
- *The importance of 'unacknowledged learning'*
- *Role modelling*
- *Feedback*
- *Effect of increased consultant presence on registrar's autonomy and decision making skills*

The first point means that the tool needs to consider the training aspect required of a ward round. Feedback relates to training; it can be either direct or indirect. Indirect feedback is a form of unacknowledged learning and it is this element that current or potential leaders of medical post take ward rounds may not be aware of the importance of. The tool needs to try and bring this element into focus for the individuals concerned. Role modelling is a crucial element of ward round learning and this is reflected in the interview studies as well, and as such should be a key feature of the tool. The last point highlights the need for a focus on decision making. A leader also has to try and facilitate this skill in the members of their team because it seems that opportunities in other areas of

medicine for autonomous decision making by doctors junior to consultant level are decreasing. This point also includes the need to involve all members of the team in the decision making process.

This step in the developmental process again enhances the validity of the tool. It supports the inclusion of elements as explained above.

- Interview Studies (Chapter 4)

This section also shows how the validity of the tool was demonstrated by considering the findings of the interview studies discussed in Chapter 4. The non-operational findings of this chapter need to be reflected in the tool to make it a holistic enquiry into leadership on ward rounds. As mentioned in the previous section, the importance of unacknowledged learning including the value of observational learning is an element that needs to be considered by any leader of a ward round. Within this are the separate elements of role modelling, non-technical skills in general (notably delegation, supervision and dealing with the unexpected).

The need to facilitate clinical decision making in doctors-in-training is important as once again the reduction in autonomous decision making opportunities below consultant grade is theme from this study. The ability to work with a team that you are unfamiliar with is crucial (as shown in the results of the consultant interview study in Chapter 4). A ward round leader should be able to work out mechanisms to work with an unfamiliar team in whom they may not have developed professional trust. There is also the need to be aware of the impact of morale, exhaustion and possible external pressures which may influence a team member's performance. The final relevant point is that throughout a ward round, any team member is either consciously or unconsciously contemplating the development of his or her own style of ward round leadership and also their priorities. The latter may change depending on external pressures out of one's control, like number of patients and bed pressures but the ability to adapt one's own practice depending on these pressures while staying true to one's own chosen style and personality as a doctor is an attribute highlighted by the interviews should be reflected within the tool.

The patient point of view highlights the need for good communication and to garner respect from your patients as well as respecting the patients themselves. Trust is harder to evaluate within an observational tool. Various elements of communication and respect will engender trust in a leader but this was not included as a separate element on account of the difficulties in evaluating it from an observers point of view.

Time pressure is a common thread of all the interview studies and is an important consideration in the tension between service provision and training. Good timekeeping is an essential element of the tool.

- Other considerations

I observed 16 medical PTWRs as an introduction to this study. It was an informal ethnographic exercise resulting in field notes. This coupled with my experience (being part of post take wards for over 10 years as a doctor) gave an insight into a medical PTWR without being involved in it. A ward round needs to flow, be aware of time and geography constraints and maintain all parties' interest. Interestingly, the team following a consultant on a PTWR always diminished in size from start to finish, in part due to the need to start jobs created on the ward round in order to get everything done in time, but also due to loss of interest from team members. Ward rounds are reported by participants to be long and boring, and a leader needs to be conscious of this from the outset. Inclusion of all members on a ward round including students is an essential part of this. Another part of leading a PTWR noted from the observation process, is the power and difficulty of supervision. There is an expectation that what you say is being recorded accurately and also that someone will carry out your instructions. Direct observation revealed that these specific instructions were not adhered to and the leader was unaware. A leader cannot have an all-seeing eye, but must be mindful of appropriate and practically possible supervision elements including a system of review of the notes and actions after the ward round.

Another element considered in the development of this tool, is the relevant curricula. There is a General Internal Medicine curriculum for registrars (128) and also speciality specific curricula. There is overlap between the generic skills required for these curricula, and these are mostly the NTS discussed so far. These include the importance of the patient being the focus of care, time management and decision making, delegation and training of less experienced colleagues. The curricula do, however, highlight some aspects that have not been discussed so far: The importance of behaving honestly and with probity including a doctor's duty for candour the ability to prioritise tasks and to work flexibly depending on the changing clinical situation.

The pilot simulated ward rounds also added to the tool development. Field notes were made by both SP and CM and discussed retrospectively. The main theme from this exercise was how consultant practice differed from registrar practice. The main description of this difference was one of ward round flow and performance. A consultant, no matter his or her style, conducted a ward round that was cohesive; it flowed. These ward rounds were also reported to be less exhausting to be a part of and maintain the team's interest, principally on account of inclusivity.

Step 3. Determine the format of measurement

This step is made easier by considering the tools that already exist and utilise the formats of measurement that doctors are familiar with. The Supervised Learning Events that doctors are required to complete when training in order to demonstrate satisfactory progression are graded in relation to the standard expected at particular levels of training. It is important that the items are compatible with the format of measurement. A format of measurement has to be something that both the trainee and 'scorer' can relate to. Keeping the format of measurement similar to the other tools that we use every day in medicine gives that familiarity to both parties. The tools presented in Chapter 3 have a range of measurement options which can also be considered in developing the scale for this tool.

Step 4: Have initial pool reviewed by experts

This step is important for the validation of the tool. This step maximises the content validity of the tool. Experts can review how relevant each item is what to what is being measured; secondly, they can evaluate the item's clarity and conciseness; and thirdly, they can consider aspects that may not have been thought of so far in the process. In Chapter 3, it was demonstrated that this was step included in the majority of the NTS tool development process. The expert's evaluation of the content of the tool gives 'credibility' to the content included.

The concept of what defines an 'expert' within tool development is vague. DeVellis explains that 'experts' are a 'group of people who are knowledgeable in the content area' (185). The expert review was done by 2 experienced medical consultants who regularly lead medical PTWRs, and a medical registrar. A further 'expert' review was done by conducting the pilot days as all members of the simulation team including participants (except for the actors), have experience of taking part or leading medical PTWRs. The findings of the interview studies with key ward round stake holders have also fed into the tool. The use of the tool and subsequent feedback by registrars and consultants is further expert opinion.

Caution is needed in heeding all suggestions from an expert panel. Reliability involves a fine balance between including variety, and also elements that involve a certain amount of overlap. It is important to consider redundancy of elements, and possible changes to the tool in this regard but redundancy itself is an important element of internal consistency so removing all aspects would not be advisable. Internal consistency is a measure of the tool's reliability. Ultimately the final decision rests with the tool developer.

Step 5: Consider Inclusion of Validation Items

This step involves including additional elements to detect flaws or problems particularly in how people respond to the tool questions. It also describes how you could include elements to test construct validity further within the tool responses. This step is relevant after some pilot trials of the tool. For this tool, construct validity is achieved by using the tool to assess doctors of different levels.

This step is less relevant to the development process of this tool. The construct validity is measured using clinicians of different levels of experience. Within the tool, there are no additional elements to help detect flaws or problems, as it was felt that the tool should be kept as simple as possible.

Step 6: Administer Items to a Development Sample

This step explains how one should work out the sample that the tool should be used to appraise. Ideally, a sample should be large enough to eliminate subject variance as a significant concern. However, reality and practicality does also need to be considered. The testing of the tool needs to be practically possible and be able to give robust enough data to fully appraise the tools use in terms of acceptability, reliability and validity.

A sample that is too small leads to difficulties in testing these 3 factors. Measuring of internal consistency within a small sample may not translate to a bigger sample. The small sample may not be truly representative of the larger population that the tool has been developed to appraise. This relates both to size but also to representativeness of the sample tested. Non-representativeness is a concern in tool development. It relates both to qualitative and quantitative differences. A sample is testing both how the tool works but also how it is understood both in terms of behaviour and language. Terminology can mean very different things to different people, and despite the steps of development that have led to this stage being in place, it might not be until a tool is tested in a different environment that nuances of language is understood.

The main drive within this study was practicality as well as trying to test the tool on as many clinicians as possible. The method of testing the tool was the simulation described in Chapter 5. The sample was purposive in so far as an email was sent out to all registrars in their final 2 years of training prior to applying to consultant posts. Participation in the simulation training was voluntary. To achieve a range of experience in those who took part, further emails were sent out to consultants for voluntary participation. Requests for more junior colleagues' participation were also made but on a more ad hoc level, because there was minimal capacity for numbers of junior trainees.

Restrictions in numbers were limited both in terms of budget (cost of running the day) but also resources (availability of team and faculty, availability of the simulation room or hall etc).

Step 7: Evaluate the Items

The next step in the process involves the tool evaluation on the selected sample group. This is the section that will be explained in the statistical methods and results section. This concerns the psychometric evaluation of the tool – examining its reliability, validity, feasibility and acceptability.

The ultimate quality that is sought of any individual item on the scale is that there is high correlation with the true score of the latent variable. The true score is unmeasurable and so we rely on inferences based on formal measurement models to calculate the quality of the tool. The principal measure of this for this study is reliability, here internal consistency. In other words, the items of a scale need to be highly correlated within each domain and to each other to suggest reliability. The reliability coefficient, alpha, is an indication of the proportion of variance in the scale scores attributable to the true score.

Possible values of alpha range from 0.0 to 1.0. In general, a score above 0.7 suggests acceptable reliability (185).

Chapter 3 also provided an overview of how the other NTS tools were evaluated. The majority of the tools were evaluated within a simulated setting for reliability and validity. Generalisability studies were also carried out on several of the tools. Reliability assessment included inter-rater reliability/ inter-observer agreement or intra-class correlation which all assess agreement on a score up to a maximum of 1. It also involves the calculation of alpha as described above.

Evidence for face and content validity is usually centred around the method of development and expert input. Despite the absence of a consensus on precisely how experts should inform development of observational tools, their input is universally acknowledged as important, particularly considering content validity. Therefore, development of the M-NOTECHS included interviews with consultants and registrars and also the review of the prototype tool throughout the process. Experts were identified as those who participated regularly in ward rounds; these people were experts for their own role in a ward round. In addition to this, two of the experts were also experienced general internal medicine consultants with a specialist interest in medical education. A further 'expert' review was made by those consultants and registrars who participated in the pilot testing rounds and obtaining feedback on the tool directly.

Step 8: Optimize Scale Length

This step involves ensuring a correct balance between the number of items on the scale, and the extent of covariance of these items. It needs good reliability but not redundancy. The scale also needs to be practical for everyday use. Shorter scales place less of a burden upon the respondents and this does not only relate to time spent completing the scale. Ultimately the balance is one of brevity versus reliability.

Development of M-NOTECHS

The development of M-NOTECHs involved 2 main iterations – one prior to the pilot simulation days and one after. The development process is illustrated in the following diagram.

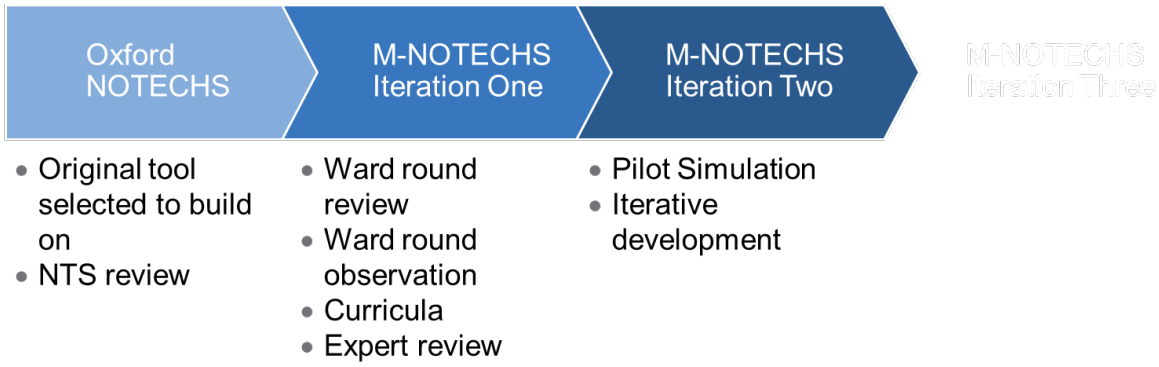


Figure 6.2: A flowchart showing the development cycle of M-NOTECHS

In keeping with Step 2 described above, M-NOTECHS is based on the Oxford NOTECHs tool (205). This tool, which was adapted for clinical use, has no separate domain for communication as the idea was that this theme ran through all of the other NTS; they saw communication as the means by which the other domains were achieved. While this is true, the strength of emphasis on communication that runs through the findings of both the Consultant and patient interviews supports the decision that the M-NOTECHS would include a separate communication section.

M-NOTECHS is an observational tool designed to facilitate formative feedback for senior medical registrars for leading a PTWR. It is designed to assess an individual leading all or part of a PTWR. It has 5 domains and each domain has several elements. Each element has a descriptor explaining considerations for that element. The first iteration of the tool is displayed in Appendix 6.2. The domains, correlating to step 2 of the method described above, were:

1. Leadership, management and role modelling
2. Teamwork/ cooperation
3. Problem solving/ decision making
4. Situational awareness

5. Communication skills

Step 3 concerns the development of a scale for assessment. The tool is formative and has a place for free text comments and a scoring scale that relates to the scale used in the majority of Supervised Learning Events (SLEs). This is as follows:

1. Below expectations of a junior SPR (ST3-5)
2. Standard expected of a junior SPR (ST3-5)
3. Standard expected of a senior SPR (ST6-7)
4. Standard expected of a consultant
5. Beyond expectations

This last element (5. Beyond expectations) was included to reflect the Consultant interview theme that within the lack of feedback on ward rounds there also seems to be a lack of encouragement for excellence. A free text response area was included to help facilitate formative feedback.

The adapted NOTECHs tool includes a separate page of definitions with examples of positive and negative modifiers (205). This was not included for M-NOTECHS. It was decided with consultation of the expert panel, that there was enough information on the tool and that the inclusion of more information may make the form less 'feasible' to use in an observational real-time capacity. The inclusion of such descriptors was also thought to distract from the practicality of use of the form in a time sensitive environment. The form is only useful in the future if it is practical to use given the time constraints both in simulated and real world environments. It is not for summative use and its primary purpose is to guide a feedback session between trainer and trainee rather that achieve an objective measure of where an individual lies within a population of doctors of similar experience.

This is a difference between this tool and the tools reviewed in Chapter 3. These tools have been developed to provide a summative score for mostly research purposes. The positive and negative modifiers are used to guide assessors to assess an individual or team and can be used retrospectively. The tool developed in this chapter will be used in real time to give real time feedback. It is clear from the description of the e-portfolio assessments in chapter 4 that a lack of available time is a key factor in the failure of these assessments to have value such the exercise can become a meaningless 'tick boxing' exercise with no consideration of the quality of practice. The main focus of this tool is that it should be used to guide formative feedback rather than add to the list of 'tick boxing' exercises. It is designed to guide personal development of a senior trainee and the feedback received will guide reflection of practice. It has also been explained both within the literature on ward rounds and training (Chp 2) and the interview studies (Chp 4) that the different

styles of practice are an essential element of ward round leadership. A robotic automated leadership style has not been welcomed by any participants according to this study. The emphasis is on developing one's own style and there needs to be a breadth and diversity in these styles to help inform the decisions of those trainees who will follow behind. This makes creating a complete list of negative and positive descriptors difficult. The emphasis is on a trainee determining what works for them and fits with how they want to behave as a consultant leading a ward round in the future.

The tool development process is a continuous one. However, the development could be separated into 2 main iterations and the changes involved are explained in detail in this section. Step 4 requires expert review of the proposed tool. Expert stakeholders have contributed to the process so far in terms of the interview process. The changes described below were discussed and agreed with experts in ward rounds (two medical consultants and a medical registrar). The list of changes to the original NOTECHS domains and elements, following the triangulation of sources involved in the development of M-NOTECHS at this stage of development are explained in the following paragraphs. They will each be discussed in turn, explaining the refinement of Step 2.

- **Leadership -** role modelling, delegation, inclusion of reference to guidelines as well as standards, inclusion of the need to explain deviation from guidelines as well as have team approval, emphasis on valuing team input

Time management was included in the original form. Delegation does not appear on the NOTECHS tool and is key to the ward process. Role modelling is a central theme throughout these studies. However, it is the learning through role modelling that is key and the leader of any ward round needs to be aware of the importance of this and behave accordingly. It was decided that the elements that are 'adopted' by the learner may be a conscious or unconscious choice and as such does not necessarily mean that a ward round leader should consciously change their *modus operandi*. It is more an awareness that they are a role model and should behave as such, but the individual style of consultants is required to maximise learning and are key to learning via role modelling and should also be encouraged. For this reason, it was included in the leadership element of the form rather than have a separate 'role modelling' element.

- **Teamwork/cooperation** – new domain of teaching /training including supervision and feedback, team building to include the element of checking and maintaining teams' interest, support of others to include encouragement of junior decision making

Teaching and training was felt to be important to include in the tool in order to encompass supervision and feedback. Non-clinical decision making is key to the running of a ward round and is

discussed in the consultant interviews. Much of this decision making involves dealing with the unexpected (see Chapter 4 – Interview Study).. The unexpected on a ward round may be wither clinical or non-clinical. This element involves both situational awareness and also non-clinical decision making. Additional elements were added to include these in the domains of situational awareness and decision making.

- **Decision making and problem solving** – includes non-clinical decision making, emphasis on inclusivity and encouragement of others; 'outcome review' changed to 'plan for review/ considers options'

The theme involving a possible reduction in registrar autonomy and decision making on account of an increased consultant presence is more difficult to reflect in the tool. After the expert panel discussion, the concept of inclusivity and encouragement of others was included throughout the tool. There is also the inclusion of 'valuing' team input with appropriate feedback.

- **Situational awareness** – notice including particular reference to dealing with error and omissions

Within situational awareness, the element of 'notice' now includes particular reference to error and omissions and how they are dealt with. This is to reflect the sense of the consultant needing to be the 'safety net' on a ward round and this additional element in the responsibility of the ward round leader.

- **Communication** including politeness/introductions, empathy, and feedback

Communication is a new separate domain and this clearly reflects that themes and sub-themes from the patients' interviews – the need for introductions and politeness, empathy and feeling cared for, clarity with the use of non-medical jargon. It is relevant to the communication with the team and the use of feedback and facilitation and giving instructions. Listening to patients is included within the empathy element of the communication domain.

Step 5 involves including validation items and it was decided that these were not necessary for this tool. The NTS tools described in Chapter 3 did not include validation items.

The role of simulation in the development and evaluation process

The simulation training developed is described in Chapter 5. This was used to inform the tool development but also to evaluate the tool.

Simulation and tool development

Step 6 requires the tool to be administered to a developmental sample. M-NOTECHS was tested on the two pilot simulation days described in the preceding chapter, and then was used throughout the subsequent simulation days. As described previously, the main driver for the size and make up of the developmental sample was practicality.

Two pilot days were held to trial both the simulation for training leaders of a medical PTWR, and also to trial the tool in February 2014. The two pilot days involved both registrars and consultant's participation to see how the day and the scenarios worked but also to give further data for the tool development. Each pilot day had 4 participants (both days had 2 senior registrars and 2 consultants taking part). After each day, the 'performance' of the registrars and consultants were discussed between the study lead (SP) and one of the supervisors (CM). This discussion included discussion of the debrief/feedback sessions. Field notes were taken by both and these helped to facilitate the discussion with the option of video review where needed. This observation and discussion process led to further changes to the tool, in particular the need for delegation, and managing multiple things at once including delegation, supervision, teaching and need to cope with distractions and stress.

The following list shows the further adaptations of the tool which reflect the findings from the field notes from the simulation observations. These changes are displayed in the tool at the end of this section (Table 1). This list is of additional elements added to the tool and their respective domain. However, there is an omission to the descriptor of Authority and assertiveness element of Leadership, as well as an addition.

- **Leadership** –
    - **Flow / integration** – effortless, inspiring interest and showmanship
    - **Authority and assertiveness** – medical – dropped 'persistent', unthreatened by disagreement
    - **Planning and preparation** - inclusion of the need for flexibility of style or plan
- **Situational awareness**
    - **Coping with stress** – copes with stress for individual, themselves and team
    - **Approach to distractions** – stays calm, remains focussed but addresses concerns where warranted

It was apparent that consultants did have different styles, but that despite their individuality, they performed better (see 'construct validity' section within 'Results'). The consultant performance flowed and they were consciously ensuring that each element was checked (drug chart, observations chart, venous thromboprohylaxis etc); it was less disjointed. Registrars appeared to be working to a list in their head, making it seem like a listed exercise of separate elements rather than a cohesive whole. Feedback on consultants included words such as 'effortless and 'like a work of art'. They also seemed to be less tired at the end of the hour-long simulation than registrars who all unanimously explained how exhausted and drained they felt at the end of their simulated ward rounds. This seemed to reflect the 'effortless' nature of the more experienced clinician on ward rounds. The 'team' (simulation ward round team of registrar, SHO, FY1 and pharmacist) also found consultant led rounds more enjoyable and less tiring.

For this reason, an element' for 'flow and integration' was introduced within the leadership domain. Within this element description, inspiring interest and showmanship were included. These are alluded to within the consultant interviews. Observing consultants within the simulation enforces this view that the leader needs to keeps the interest of the team. One of the feedback remarks for one consultant's performance was like it was' like watching a piece of art or theatre'. This is because of the performance nature of inspiring the team to maintain interest in a long process, but it is also because of the flow and integration involved that it seems like a cohesive whole as opposed to many small parts interlinked that all fall under the umbrella term of PTWR.

Part of this element of flow is likely to link with the previously described framework of cognitive load. A more experienced clinician has built up their germane load, meaning that the rest of the ward round is less of a cognitive stress (52). There is more capacity for both intrinsic and extraneous cognitive load, and this is reflected in how they lead a ward round. Ward round flow is perhaps just one example of how cognitive load theory can explain ward round practice. Further discussion on this is beyond the scope of this study and requires further research to explore possible associations and parallels, leading to further analysis of ward round leadership behaviour.

The descriptions of the new elements within the situational awareness domain of 'coping with stress' and 'approach to distractions' were shaped further after this iteration. 'Coping with stress' was made inclusive – 'Copes with stress for individual, themselves and team', and 'Approach to distractions' emphasises a maintenance of a calm exterior and keeping focus wile balance addressing any concerns where warranted i.e. not letting oneself become distracted.

A further change to the tool relates to the 'authority and assertiveness' element of the leadership domain. The previous description within the NOTECHS form was deemed a very surgical description

and after observing the participants, it was decided to formulate a new description in incorporate a more medical/physician approach. The Oxford NOTECHS description is as follows:

'Advocates position/values team input/takes control/persistent/appropriate assertiveness'

This was amended to take out the idea of persistence, and to include an appreciation of the team value. Observation of the leaders on ward rounds both simulated and real, never showed authority demonstrated with 'persistence'. Appreciation of the team value was shown in the observation of the simulated ward rounds but is also echoed within the interview studies. The M-NOTECHS also includes the idea of 'constructive discussion' and being 'unthreatened by disagreement'. A leader of a medical ward round needs to be able to facilitate discussion and accept different approaches to a particular problem. A leader therefore needs to be unthreatened by someone who disagrees with them but yet able to facilitate a discussion on a particular subject maintaining their authority. These were both consultant behaviours observed during the simulation when conflict or need for authority/assertiveness occurred. The consultants maintained an illusion of approachability according to the team despite being authoritarian and assertive and this was valued greatly by the team. It also fits with the need to encourage participation and reduce the fear of criticism, which was a concern form the registrars in the previous study of registrar perspectives of PTWRs. The newly formulated definition for 'authority and assertiveness' is as follows:

'*Advocates position / values team input and conveys to team / takes control / deals well with constructive discussion / appropriate assertiveness / unthreatened by disagreement / maintains approachability'*

Some of the observations of authority may be inherent within the social construct of medicine which relies heavily on hierarchy. It is likely that any authority is easier to achieve because of these social constructs. However, this subtle description of authority may well be relevant beyond ward rounds but from the triangulation of sources that fed into this tool development, the evidence collected suggests that it is an accurate description of a medical ward round leader's authority.

Observation of the simulation and use of the tool showed that it was easy to use. The scoring system was readily understood and employed. The need for space for free text comments was confirmed by the amount that was written in this section by many of the 'appraisers' using the tools.

The following table is a copy of the M-NOTECHs and the text in red shows the changes that were made to the original M-NOTECHS form in the iterative process. It also shows how the tool was presented on sheet of A4 including a guide to the marking scheme, and an area for free text comments.

Table 6.1: M-NOTECHS TOOL modification from the Oxford NOTECHS are shown in red

M-NOTECHS[1] - Non-technical skills assessment tool for leading medical PTWRs

Trainee Identifier:	
Appraiser role:	Trainee - Self appraisal/ MDT/ Trainee Observer/ Faculty
Date:	
WR (please circle):	Blue/ Red/ Yellow/ Green

		1	2	3	4	5
Leadership, management and role modelling	OVERALL:					
Leadership	Involves / reflects on suggestions / visible / accessible / inspires / motivates / coaches / Role model					
Maintenance of standards - Protocols, guidelines	Subscribes to standards and guidelines / monitors compliance to standards / intervenes if deviation / deviates with explanation and team approval / demonstrates desire to achieve high standards					
Planning and preparation	Team participation in planning / plan is shared / understanding confirmed / projects / changes in consultation style or plan as appropriate					
Workload / time management	Distributes tasks/ appropriate delegation / monitors / reviews / tasks are prioritised / allots adequate time / responds to stress					
Authority and assertiveness	Advocates position / values team input and conveys to team / takes control / deals well with constructive discussion / appropriate assertiveness / unthreatened by disagreement / maintains approachability					
Flow / Integration	Manages multiple elements of the ward round. Appears relaxed and effortless. Inspires confidence and puts team & patients at ease. Inspires interest/ showmanship					
Teamwork / cooperation	OVERALL:					
Team building / maintaining	Relaxed / supportive / open / inclusive / polite / friendly / use of humour / does not compete / checks and keeps teams interest					
Support of others	Helps others / offers assistance / gives feedback/ checks understanding / encourages particpation and junior decision making					
Understanding the teams needs	Listens to others / recognises ability of team / condition of others considered / gives personal feedback					
Conflict solving	Keeps calm in conflicts/ suggests conflict solutions/ concentrates on what is right / listens /respectful and maintains trust/ appropriate level of assertiveness					
Teaching / Training	Supervision / Uses feedback / discussion / collaboration to increase learning. Aware of team's needs and offers guidance / advice / teaches how to think as well as what to know / encouraging					
Problem solving / decision making	OVERALL:					
Clinical decision making	Uses all resources / analytical decision-making / reviews factors with team / inclusive					
Non clinical decision making	Uses all resources / analytical decision-making / reviews factors with team / inclusive					
Risk assessment	Estimates risks / considers risk in terms of team capabilities / estimates patient outcome / explanation/ respectful of duty of candour / decisive					
Plan for review / considers options	Reviews outcomes / reviews new options / objective, constructive and timely reviews / makes time for review / seeks feedback from others / conducts post-treatment review					
Situational awareness	OVERALL:					
Notice	Considers all team elements / asks for or shares information / aware of available of resources / encourages vigilance / checks and reports changes in team / requests reports / updates / notices and deals with error/omissions appropriately					
Understanding	Knows capabilities / cross-checks above / shares mental models / speaks up when unsure / updates other team members / discusses team constraints / supervision					
Think ahead	Identifies future problems / discusses contingencies / anticipates requirements / consideration of whole picture					
Coping with stress	Copes with stress for individual, themselves and team					
Approach to distractions	Stays calm, remains focussed but addresses concerns where warranted					
Communication skills	OVERALL:					
Empathy	Demonstrates understanding of patient viewpoint and develops rapport, listening and involvement of patient					
Giving Instructions	Gives clear instructions, easy to follow, witin teams limitations and abilities, gives scope for review					
Facilitation / feedback	Facilitative and feedback during ward round					
Politeness / Introductions	Introduction to themselves and team / courtesy					
Clarity	Clarity of understanding / clarity of instructions					

Comments: (Strengths, weaknesses, any other relevant comments)

For clinical team

1 *Below expectations of a junior SPR (ST 3-5)*
2 *Standard expected of junior SPR (ST 3-5)*
3 *Standard expected of senior SPR (ST 6-8)*
4 *Standard expected of consultant*
5 *Beyond expectations*

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Imperial College Healthcare NHS Trust

Reference -1. Mishra, A, Catchpole, K & McCulloch, P (2009) The Oxford NOTECHS System: reliability and validity of a tool for measuring teamwork behaviour in the operating theatre Qual Saf Health Care 2009; 18: 104-8

The 'patients' or professional actors were also asked to give feedback on the participants. They were only asked to comment in general on communication with patients and communication with the team. This simple table of assessment is shown below.

Table 6.2: 'Patients' feedback form

Actor Assessment Tool for PTWR Training					
Date:					
Trainee identifier:					
Ward Round:					
Pt name:					
	1	2	3	4	5
Interaction with patients					
Interaction with team					
Comments:					
For actors/patients					
1 VERY POOR					
2 POOR					
3 SATISFACTORY					
4 GOOD					
5 VERY GOOD					

Simulation and tool evaluation

The PTWR simulation, described in Chapter 5, was used to evaluate the tool. Each participant evaluated themselves, and the fellow participants present on the day also completed the tool. The other 'assessors' were the faculty and the members of the team including F1, SHO, registrar, pharmacist and nurse if present. There were usually 4 participants per session. Each assessor was asked to complete the overall score for each domain at least and if possible the elements within the domains. The overall score was a subjective score and not calculated mathematically by the appraisers. This point is relevant to the statistical calculations reported later in this chapter. For the purposes of onward discussion, domain refers to the summary level, and element refers to the more granular aspects of each domain, for example, for the domain of Communication skills – empathy, giving instructions, facilitation/ feedback, politeness/ introductions and clarity. The person being assessed is the participant and a person completing the tool is an assessor.

The tool was easy to use, and the time taken to complete was appropriate although not formally measured. One faculty member suggested that the form was made electronic and this would make data entry easier. This was trialled at the second pilot day and resulted in more time taken to complete; paper copies were used henceforth and the study lead (SP) transferred the data onto a spreadsheet. This spreadsheet was used to give simple graphs representing the results of the tool use but it was also sent to a statistics expert with an outline of the analysis required, and here the SPSS package was used to calculate the results[1].

The statistical methodology is explained and then the results are reported. The simulated patient feedback is also analysed in the following section.

Statistical analysis

In this section, the methodology behind the psychometric evaluation used in this study will be described, evaluating the validity and reliability of the M-NOTECHS tool. I will use methods similar to those cited in Chapter 3, the review of the NTS tools.

The following table gives an overview of the different aspects of validity and reliability examined in this study.

Psychometric evaluation	Element	How measured
Validity	Face validity	• Method
	Content validity	• Method • Triangulation of resources • Expert input • Peer feedback
	Construct validity	• Spearman's rank correlation between level of experience and score
Reliability	Inter-observer agreement	• Weighted Kappa • Intra-class correlation coefficient
	Internal consistency	• Cronbach's alpha
Feasibility		• Feedback from participants. • Use of the tool
Acceptability		• Feedback from participants

Table 6.3: An overview of psychometric evaluation of M-NOTECHS

[1] The methodology was designed by the lead researcher but the calculations were carried out by Paul Bassett of Statsconsultancy Ltd.

Validity

The evidence for tool validity will be presented in the statistical results section. This will follow the validity descriptions reported in the NTS review (Chapter 3). Evidence will be shown for face, content and construct validity of the tool. The evidence for reliability will also support the evidence of validity, because as DeVelllis describes 'reliability is in turn the foundation of validity' (185).

Correlation of level of experience and score

Examination was also made for a possible association between level of experience of the simulation participant who was being evaluated throughout the simulation, and also the score that that participant was given. Level of experience was given a numerical value based on number of years' experience as a doctor. The analyses used the single overall score for each domain, and also the score calculated from the individual questions within the domain. The strength of association was assessed using Spearman's rank correlation. Firstly, this was assessed using the data from the two main observers who evaluated all participants as discussed above, and secondly it was analysed using the data from all the observers combined. Some caution should be exercised from this last analysis, as this contains multiple measurements from the same participants in the analysis. The number of 'multiple' measurements also differs from one participant to another. This potentially conflicts with the assumption that all data points are independent of each other.

A correlation between the scores given by the simulated patients / professional actors and level of experience was also analysed using Spearman's rank correlation. The analysis was first performed using the scores from each individual observer separately (5 observers). The data was then analysed using the data combined from all 5 observers. In the same vein as above, caution should be exercised for this last analysis as it contains multiple measurements from the same participants in the analysis, and this potentially violates the assumption that all data points are independent of each other.

Reliability

The reliability of the tool is measured using the inter-observer agreement and also the internal consistency of the tool. Prior to explanations of the methods used, a number of points regarding data collection are explained. Each assessor (team member, faculty, fellow participant and participant themselves) was asked to complete the M-NOTECHS. They had to complete the 'Overall' section for each domain as a minimum. Many assessors scored for each element of each domain as well. However, they also scored the 'Overall' section mark, and this was not derived mathematically by the assessors but as a subjective 'Overall' mark. To explain further, each assessor chose a mark on the scale to give the participant for the 'Overall' domain score rather than calculating the score

from the separate element scores for that domain. This has repercussions which will explained within the relevant statistical sections. At various points, a mathematical overall mark was calculated using the separate element scores where needed for statistical calculations.

Secondly, the score was marked on a 5 point ordinal scale as seen in the previous section which related to the standards expected for particular levels of experience (see page 10 of this Chapter).

Reliability rests on the assumption that indicators sharing a common cause should be associated with each other. In terms of an assessment tool, if the scores arising from their observations reflect the properties of what they are observing rather than the properties of the assessors, then the scores should agree.

I shall discuss Cohen's kappa first which gives a measure of the exact agreement for the M-NOTECHS and then Cronbach's alpha which gives a gauge of whether the scores do correspond without exact agreement.

Inter-observer agreement

The inter-observer agreement was analysed for a number of measured factors. The agreement for the questions regarding the overall rating was calculated first. This overall rating was asked at the time of assessment, and is a subjective measure as opposed to a mathematically derived 'overall' mark. The mark is a point on a 5 point ordinal scale. The agreement was assessed using a weighted kappa method. Kappa measures the agreement over and above that which would be expected due to chance. Kappa is measured on a scale of 0 to 1 with maximal agreement measuring 1. The weighted kappa method is similar but it takes into account the amount of disagreement or agreement in the scores; it measures the proportion of weighted agreement corrected for by chance (315). It gives greater importance to observations disagreeing by fewer categories than to observations where the disagreement was greater. Standard kappa does not account for the distance between disagreements when they appear on an ordinal scale. It can be used with an ordinal scale, but it does not weight the coefficient by distance. Weighted kappa assigns less weight to agreement as categories are further apart (316).

The kappa method relies on assigning the data to specific observers. Because of the method of data collection and the reliance on different personnel to make up the ward round team and faculty, and also the changing participants, only two assessors (SP and CM) rated all subjects, and therefore only their scores were analysed.

Weighted kappa was also used to analyse the scores given by assessor SP and also the score given by the participant themselves. This analysis uses the original subjective overall scores as above.

In addition to the kappa analysis of the subjective 'overall' score, an additional mean score was calculated for each of the 5 domains. Not all the elements for the 5 domains were scored as sometimes, a subjective 'overall' score was given alone, and therefore the mean value for each of the constituent questions was used to combine the scores in preference to a sum of the scores. On account of this, the calculated scores were continuous in nature, as they were able to take non-integer values. For this data set, an interval data set, a different method of analysis was required to calculate the inter-observer agreement – the intra-class correlation (ICC). This method divides the total variation in the scores into the variation between subjects, and the variation within subjects (due to assessor variation). The ICC is the proportion of the total variation between subjects. If the agreement is good then there is little variation between assessors, and thus the within-subject variation should be small, and so the ICC value should be close to 1. This method does not rely on assigning the data to specific observers, like the kappa method. It can include all measurements made by different observers, with no necessity that all observers score all subjects. Therefore, 2 analyses were completed. Firstly, an analysis using all measurements by all observers or raters, and secondly, using only those from the two observers that rated all subjects, to allow for consistency with the kappa calculations explained above.

Similarly, as with the weighted kappa analysis, ICC calculations were used to evaluate the correlation between the scores of SP and those scores given by the participant themselves, using the calculated 'overall' scores.

A further analysis was carried out including the scores of the simulated patients/ the professional actors who marked solely on communication skills – interaction with the team and interaction with the patient. The majority of participants were marked by 5 observers as there were 5 actors involved in each ward round (4 patients and a relative or friend of one of the patients). Occasionally the ward round was not completed by a participant on account of an hour time limit. For this reason, some participants do not have scores from all 5 actors. Here the kappa method was employed because of the ordinal nature of the score (1 to 5), but the weighted kappa could not be used again as this time there are more than 5 observers.

Interpretation of these two methods is different despite both scoring agreement on a scale up to 1. Kappa above 0.41 is interpreted as acceptable (316,317). ICC levels above 0.7 are deemed acceptable (317,318).

Internal consistency

The next statistical analyses carried out examined the internal consistency between the individual scores within each domain. This evaluates how well the scores from each of the various items within

each domain agree with each other i.e. how consistent they are, and therefore their suitability for combining these items' into a single score. Internal consistency was assessed by calculating a Cronbach's alpha value. Higher values (typically >0.7) suggests good internal consistency (317).

The professional actors or simulated patients were only asked to score on communication skills – interaction with team and interaction with patients, and therefore internal consistency calculations could not be calculated with this set of data.

Results

Table 5.3 displays the characteristics of the participants in the simulation.

Each participant was assessed by the ward round 'team', at least one member of the faculty, themselves and participant observers. The 2 assessors who evaluated all participants were CM (faculty) and SP (team member – registrar).

Validity

Face and Content Validity

The evidence for the face and content validity is provided by the development process. The triangulation of sources including the literature reviews, interviews, consultation of the relevant curricula, the simulation performance of registrars and consultants, along with informal ethnography and personal experience all adds to the evidence of face and content validity of the M-NOTECHS. Construct validity will be shown by correlation calculations of the data reported below.

Construct Validity - Correlation of level of experience and score

The analysis of the association of score and level of experience or seniority of the participant was appraised using the Spearman's rank correlation. The analysis results are summarised in the next Table 4 for associations with the single overall score, and for the calculated score based in the individual questions. The figures reported are the correlation coefficients, and the associated p values indication the significance of the results (all ≤ 0.005).

Table 5: Correlation of score and level of experience for each domain, as assessed by CM, SP and then all observers

Variable	Single measure		Calculated score	
	Correlation	P-value	Correlation	P-value

Observer 1 (CM)				
Leadership and management	0.71	**<0.001**	0.65	**<0.001**
Teamwork / cooperation	0.45	**0.005**	0.49	**0.004**
Problem solving / decision making	0.60	**<0.001**	0.62	**<0.001**
Situational awareness	0.63	**<0.001**	0.61	**<0.001**
Communication skills	0.58	**<0.001**	0.45	**0.009**
Observer 2 (SP)				
Leadership and management	0.72	**<0.001**	0.77	**<0.001**
Teamwork / cooperation	0.69	**<0.001**	0.60	**<0.001**
Problem solving / decision making	0.75	**<0.001**	0.74	**<0.001**
Situational awareness	0.58	**<0.001**	0.48	**0.005**
Communication skills	0.51	**0.002**	0.59	**<0.001**
All observers				
Leadership and management	0.54	**<0.001**	0.60	**<0.001**
Teamwork / cooperation	0.53	**<0.001**	0.51	**<0.001**
Problem solving / decision making	0.58	**<0.001**	0.57	**<0.001**
Situational awareness	0.52	**<0.001**	0.51	**<0.001**
Communication skills	0.43	**<0.001**	0.43	**<0.001**

Table 5 shows significant associations between level of experience of the participant and the scores obtained from all five domains. Significant results were observed when the data from the 2 main assessors was examined individually, and also when the data was pooled together. All the correlations were positive, suggesting a greater level of experience was associated with a higher

score. The size of correlation was typically similar for each domain from the single question to those using the calculated average of individual questions.

Table 6 shows the results of analysis of the scores of the simulated patients and the level of experience of the participant.

Table 6: *Correlation of score and level of experience for each domain, as assessed by the simulated patients*

Observer	Interaction with patients		Interaction with team	
	Correlation	P-value	Correlation	P-value
Observer 1	0.27	0.11	0.34	**0.04**
Observer 2	0.25	0.15	0.27	0.13
Observer 3	0.41	**0.01**	0.28	0.10
Observer 4	0.43	**0.009**	0.04	0.80
Observer 5	0.06	0.70	0.19	0.26
All observers combined	0.27	**<0.001**	0.22	**0.003**

This table shows significant positive associations between level of experience and the scores of the actors for 'interaction with patient' only for 2 observers, i.e. higher the level of experience, the higher the score. There was no significant association for the other 3 observers. The other column shows the correlation between the scores given by the actors for 'interaction with team' and level of experience. A significant positive correlation was only found for one actor.

However, when the data from all the actor observers was pooled giving a larger data set for both 'interaction with patients' and 'interaction with team', the associations were significant and positive. However, this analysis pooled data so each participant had multiple measurements which could potentially violate the assumption that all data points are independent of each other.

In summary, there is evidence for face and content validity of the tool. There is also evidence of construct validity as shown by the positive correlations between greater level of experience and

greater score. This correlation was greatest when scored by the clinicians as opposed to the professional actors.

Reliability

Inter-observer agreement (Weighted kappa and Intra-class coefficient)

The agreement between the two main observers for the single overall score for each domain was assessed using the weighted kappa method, and the results are summarised below:

Table 7: Inter-observer agreement between SP and CM using the overall score for each domain – weighted kappa

Variable	Weighted Kappa
Leadership and management	0.54
Teamwork / cooperation	0.38
Problem solving / decision making	0.48
Situational awareness	0.51
Communication skills	0.35

This analysis shows moderate agreement between the 2 main observers for leadership, problem solving and situational awareness, with kappa values around 0.5. The agreement for teamwork and communication skills was only fair, with kappa values around 0.35.

The following table summarises the agreement between the scores given by main observer SP and the scores given by the participant themselves using the subjective 'overall' score only using the weighted kappa method.

Table 8: Inter-observer agreement between SP and the participant scoring themselves using the overall score for each domain – weighted kappa

Variable	Weighted Kappa

Leadership and management	-0.08
Teamwork / cooperation	0.36
Problem solving / decision making	0.16
Situational awareness	0.28
Communication skills	-0.09

These results show fairly poor agreement between the scores of SP and the participant themselves for the majority of the measures evaluated.

The analyses of the composite scores calculated mathematically from the individual questions within each domain were done using the ICC. The ICC was calculated using all the observers in the analysis, and the equivalent values were calculated when the analysis was restricted to the two main raters (SP and CM). The results are summarised below:

Table 9: Inter-observer agreement between all assessors, and the 2 principal assessors SP and CM using the composite overall score for each domain – ICC

Variable	ICC (all assessors)	ICC (2 assessors)
Leadership and management	0.58	0.80
Teamwork / cooperation	0.51	0.74
Problem solving / decision making	0.49	0.74
Situational awareness	0.48	0.78
Communication skills	0.44	0.67

These results show that when the data from all the observers was included, the ICC values are fairly low, all < 0.6, suggesting less than acceptable agreement between observers in the calculated

scores. Looking at the ICC values for the analysis of the 2 main observers shows higher values signifying moderate agreement with values typically between 0.7-0.8.

The analysis using the composite scores calculated from the individual questions within each domain for principal scorer SP and the scores the participants gave themselves, is summarised below:

Table 10: Inter-observer agreement between SP and participant self-scores using the composite overall score for each domain – ICC

Variable	ICC
Leadership and management	0.30
Teamwork / cooperation	0.49
Problem solving / decision making	0.24
Situational awareness	0.54
Communication skills	0.24

This table shows that the agreement is fairly low, all < 0.6, and hence poor agreement between the scores of SP and the participants self-score.

Analysis of the scores by the simulated patients was as follows: The inter-observer agreement was assessed using the kappa analysis and these are summarised in the next table. The values show relatively low kappa values, suggesting only fair agreement between observers at best.

Table 11: Inter-observer agreement between professional actors or simulated patients

Variable	Kappa
Interaction with patients	0.22
Interaction with team	0.35

Internal consistency

Cronbach's alpha values for assessing the internal consistency of the calculated scores from the individual questions for each of the five domains are summarised in the next table:

Table 12: Cronbach's alpha values for the five domains

Variable	Cronbach's alpha
Leadership and management	0.91
Teamwork / cooperation	0.91
Problem solving / decision making	0.90
Situational awareness	0.91
Communication skills	0.90

This table shows that all five domains were highly consistent with values around 0.9.

In summary, the tool has good internal consistency. The intra-observer agreement, as measure using weighted kappa, between the 2 main assessors, CM and SP, is moderate for leadership, problem solving and situational awareness. It was not acceptable for teamwork and communication skills. The data shows an unacceptable level of agreement between the scores of SP and the participant themselves, using weighted kappa. There were poor levels of agreement between the professional actors' scores.

However, when using the composite scores for the overall domain mark and the intra-class correlation coefficient, there is significant agreement between SP and CM but not when looking at all observers. Again the level of agreement between SP and the participant's self-score is poor using this method.

Discussion

The results show that the use of the tool is feasible. The tool shows some evidence of construct validity when looking at the two expert scorers. The developmental process gives evidence of content and face validity. There was no concurrent validity in this evaluation process. There is no

established ward round tool to compare this one to making any further study of concurrent validity of this tool difficult. An opportunity for further research would be to compare it against another generic human factor or NTS tool. Further studies of consequential validity are required to complete the evaluation of this tool. However, the NTS tool review showed that nearly all of the established NTS tools have not shown consequential validity.

The reliability measures show that the tool is highly internally consistent. There is an argument that results analysed by Cronbach alpha scores >0.8 imply a redundancy to tool elements. However, this tool is a formative feedback tool to assess NTS on a ward round and so some overlap between elements within a domain adds to the validity and reliability of the score improving the educational process. Redundancy with respect to content is an asset, not a liability. It is the foundation of internal consistency and in turn reliability, which is itself the foundation for validity.

The expert scorers show a moderate inter-observer agreement in keeping with those tools reported in the review of hospital NTS tools. Further work needs to be done to assess the impact of novice raters versus expert raters as a result of the training that is currently given within the simulation. In addition the observers were not blinded to the seniority of the participant. Whilst the grade or seniority of doctor was not discussed openly, visible differences in age and various other factors such as prior knowledge of participants may have biased appraisers. This bias is difficult to avoid.

The overall score included on the form was not mathematically calculated and was a subjective score in keeping with those scorers that chose to only complete the overall domain sections of the form. This was taken into account within the statistical methodology.

There is an argument that the scorers had a lack of standardisation of scoring which is tied into the level of training each 'team' member and faculty member received. This is an option for improvement in the future. Training could be standardised further including examples of good and bad practice. Ward rounds and the way they are led is variable. All aspects of this study have shown that variety is pervasive throughout ward round practice on an individual, operational and Trust level. This makes standardisation difficult and more research into ward round quality would need to be published to give some quality standards from which to base the training. However, the data from this study does suggest that differing styles are not related to different efficacy. A larger study is required as this sample is a self-selected group and may not account for behavioural outliers.

There is also the possibility of expanding the data for looking at the inter-observer agreement data. If the study was repeated and a group of assessors who make up the ward round team could be replicated, then further data could be obtained to examine reliability in greater detail. Another

option would be for a group of raters to observe videos of the simulation and the spread of assessment scores could be examined appropriately. They could also be examined against a 'standard' score to give further evidence of concurrent validity. The participant's self-score should be compared against the 2 main assessors in this study as any further correlation will play to reproducibility across faculty. All of these options for further research would add to the evidence for reliability of the tool. There is also the option of examining both inter-observer agreement and internal consistency of the tool when used to evaluate day to day PTWRs in a hospital setting.

The sample of consultants are a self-selected group. This means that it is likely that those who volunteered to take part are those with an interest in ward rounds and training and perhaps therefore likely to score better for their NTS than those who did not volunteer and therefore this may have biased the construct validity of the study.

The sample size is small and is predominantly registrars as the funding provided was specifically to study this group and to set up the simulation and develop a tool. The limitations of this study could be minimised by a larger scale testing of the tool, using the simulation in different centres as well as within real life.

The acceptability of the tool was not formally assessed, although the study shows that the use of the tool is feasible. However, feedback was given for the day and it was very well received. Informal feedback showed that the tool was well received. The acceptability of the tool is an area of possible future research with feedback about the tool requested of users – both trainers and trainees. Cost analysis is difficult because the cost of ward rounds and the training involved has never been formally studied, but there is cost of approximately £6-7000/ day staff costs in UK (319).

There are always limitations to observational studies. The main limitations are listed below (135). They are as true for this study as they are for other observational studies.

1. Classification of behaviour can never capture every aspect of performance
2. Important but infrequent behaviours are hard to measure once they do occur
3. To err is human and this also applies to observers.

Observation is context specific and it is clear that the more frequently a work-place assessment is integrated into routine practice, the better the validity of the tool.

A further limitation involves the way that the simulated patients were asked for feedback. There was a lack of correlation within this group and the correlation with the communication skills domain of the M-NOTECHS tool was not formally assessed. This is an important correlation to be examined, because as we have seen from the findings of the Interview Study in Chapter 4, the patient view is as

important, and some may argue more so. Examining this correlation is one option, but so also would be a comparison with a validated Global Rating score. This would help give the 'patient' feedback form some validity. There is a question as to whether this feedback is evaluating the doctor with a view to giving constructive formative feedback to improve patient care and hence be used a s a training tool or to whether they are answering on the acceptability of the experience. Whilst these may seem to overlap in real life, in research terms they need to be evaluated separately. It might also be useful to use something akin to the NHS Friends and Family feedback question (320) in order to get more information and feedback on the acceptability of the process for the simulated 'patients'.

Conclusion

In conclusion, the tool has been developed with more sources in the triangulation process than those reported in Chapter 3 and it also includes the patient's perspective, a novel concept. It is valid and shows moderate reliability with good internal consistency. It is easy to use and acceptable to those people that used it during this process, facilitating good feedback sessions and the training including the use of the tool got very positive feedback. This tool provides options for future training and research for ward rounds. Further research is required for further in-depth evaluation of the tool with a view to use in real life training. There have been discussions in the general internal medicine training programme meeting group about including evidence of leading a PTWR in your digital portfolio for your PYA or final CCT review; the M-NOTECHS tool was suggested as one possible method for doing this.

In the final chapter of the thesis, I will discuss the conclusions from each section of this thesis and look for overarching conclusions of this project and possibilities for future research and new areas of focus for medical education.

Chapter 7 – Discussion

The aim of this chapter is to review and reflect on the aims of the thesis and the findings. It will give a brief summary of findings from each section of the thesis and then a discussion of the conclusions from the project. There will be a discussion of any major limitations to the research as a whole, and also possible areas for future research that are stemming from this thesis. It will also place the findings within the current context of clinical medicine, linking back to various aspects that were discussed throughout the thesis.

Research Aims

The overarching aims of this thesis were firstly to expand the current understanding of medical ward rounds, in particular post take ward rounds, and training, and secondly to translate this better understanding into an instrument that evaluates senior trainees or consultants leading a medical post take ward round. Ultimately, through this, this work will contribute to not only enhanced training but also patient safety and effectiveness of care within medical ward rounds.

To achieve the above aims, the specific objectives of this thesis were as follows:

6. To explore the current literature on training and hospital ward rounds (Chapter 2)
7. To explore the current non-technical skills assessment tools for individuals or teams within a hospital setting for doctors or teams involving doctors (Chapter 3)
8. To explore the perspectives of key stakeholders on the training and ward rounds (Chapter 4
9. To develop a simulation-based training module that enhances medical trainees' skills in conducting wards rounds (Chapter 5)
10. To develop (or refine, based on objective 2 and 3) a tool for assessing leadership on post take ward rounds (Chapters 5 and 6)

Summary of findings

This section will concentrate on reporting the main themes of each study and demonstrate that the aims of the thesis were achieved.

Chapter 2 – Ward rounds and training: a narrative review of hospital ward rounds and medical postgraduate training

This chapter reviewed 24 articles on 'training on ward rounds' and 10 on 'training for ward rounds'. The first section reviewing articles on 'training on ward rounds' was divided into 'ward round

observation', 'attitudes to ward rounds' and 'operational factors'. The second section on 'training on ward rounds' was divided into 'assessment tools', 'curriculum/checklists for ward round training', 'simulation training' and 'other ward round training interventions'. Most of the literature reviewed consisted of observational or questionnaire/survey based studies at small single centre populations. No study within the review provided evidence for either the second or third level of Kirkpatrick's pyramid, as no study showed a sustained difference in behaviour or learning that was not self-reported. The one exception was that there was some evidence of reduced length of stay (Level 4) after the introduction of 'Gatorounds' to improve training on ward rounds (166) There was also minimal evidence of sharing ideas/interventions. The main themes from this narrative review are:

1. *Poor educational value of current ward rounds*
2. *The importance of 'unacknowledged learning'*
3. *The importance of learning through 'role modelling'*
4. *The importance of feedback*
5. *The importance of having the opportunity to present one's clerking of patients admitted to a senior on a ward round*
6. *Poor preparation for ward round practice at the beginning and end of training as a junior doctor*
7. *The possible effect of an increased consultant presence on registrar's autonomy and decision-making skills*

Chapter 3 – A review of non-technical skills tools used for assessment in hospital medicine

This chapter examined current non-technical skills assessment tools for doctors or teams within a hospital setting including a doctor. Non-technical skills are the 'cognitive and social skills underpinning medical knowledge and technical skills needed to contribute to safe and efficient performance (175) and as explained in Chapter 3 the definition should be expanded to include personal resource skills, for example stress management and fatigue management. Forty-two articles covering 21 tools were included. The tools were evaluated in terms of the 'Utility Index' framework incorporating reliability, validity, educational impact, cost efficiency and acceptability (321). Of the 21 tools reviewed, the Observational teamwork assessment for surgery tool/OTAS (teams), Anaesthetist's non-technical skills tool/ANTS, Non-technical skills for surgeons tool/NOTSS and various revisions of the Non-technical skills tool/NOTECHS tools have the most evidence behind them for assessing non-technical skills. The volume of evidence for these tools may be more a

product of longevity; these tools have been used and tested more than others reported in this Chapter. They each show satisfactory reliability and validity when the articles are combined, and each have been studied to the point that the feasibility of using each tool is assumed within the research domain (ANTS has weaker reliability evidence). Most of the evidence comes from use in simulations or video observations, and there is limited evidence of their use within real world situations, and hence their impact on real world training. As I state in Chapter 3's Discussion, each tool is specific to its speciality and different simulations have been used, and different methodology employed, so direct comparison is difficult. To my knowledge, their utility within large-scale medical education settings has not been tested.

The evaluations of these tools were diverse but some common methods employed included using simulation. Cronbach's alpha, as a measure of internal consistency, was used in the majority of the evaluation articles, giving a measure of the tool's reliability. Validity was examined in the form of both face and content validity across nearly all the tools examined, with evidence for construct validity being provided in some cases. Concurrent validity evaluated in some cases with a comparison with another tool. However, with reference to concurrent validity, the tools discussed have not necessarily been shown to be a 'gold standard' tool, and this is discussed in the relevant papers' Discussion sections.

This chapter reports the first systematic review of these tools, to the best of my knowledge. It was useful for the development of the M-NOTECHS tool reported in this thesis and its subsequent psychometric evaluation, but also will be useful to future NTS tool developers and evaluators. However, as stated in the Discussion, one of the limitations of this study, is that each individual NTS was not examined individually, for example, communication skills or decision-making. This review examines tools that look at a selection of them simultaneously.

Table 3.1 gives an overview of the main tools and what they evaluate – the NTS domains. There are no tools reviewed that look at general internal medicine and only 2 tools look at ward work (243,322)., emergency department and surgical ward respectively. This highlights a gap in this area of literature that needs to be a focus for future work. There was only one tool developed specifically for ward rounds - 'Multi-source feedback/MSF for ward rounds' – but it was developed for use on paediatric ward rounds (235). It had good reliability but failed to show a difference with experience hence lacked evidence for construct validity. It also only included 2 of the main domains covered by the majority of the other tools. NOTSS, NOTECHS and Observational skill-based clinical assessment tool/OSCAR covered most of these domains, along with OTAS which is used to evaluate whole teams and not individuals. There is no validated, reliable tool for use within medicine or for ward rounds

within adult medicine that incorporates the domains that most of the established tools consider crucial. This thesis includes the development of one such tool, and it was based on the NOTECHS tool, in particular the Oxford NOTECHS (205). The reasoning for choosing this tool as a basis for this project's tool on is given in Chapter 6.

Chapter 4 – Consultant and patient's perspectives on medical post take ward rounds: an interview study

This chapter reported on the findings from interviewing both general internal medicine consultants and newly admitted medical patients before and after a medical post take ward round. The aim of this chapter was to explore consultant's and patient's views of ward rounds – specifically the non-technical skills required of physicians in order to conduct them effectively and the educational value of these rounds. Inductive thematic analysis was employed for both studies; it is compatible with the constructivist paradigm. Chapter 2 showed that there is little research on ward rounds so the inductive approach was appropriate. An active, flexible process was required and the researchers both work within the same clinical world as the participants. As established in Chapter 2, there is little research on ward rounds, hence this interview data was analysed inductively; the set of themes provide a rich description of the entire data set.

The findings for both studies are displayed in Figures 4.1 (Consultant study) and 4.2 (Patients). The main themes of the consultant study were:

- *The importance of observational learning including unacknowledged learning and role modelling*
- *Differences to Post take ward rounds over time*
- *Decreased registrar autonomy and decision making*
- *Increased consultant presence*
- *Obstacles to PTWR training*

Time is also a crucial factor that affects everything associated with a PTWR, and this is echoed by the patients in their interviews. The main themes of the patient study were:

- *Communication*
- *Trust*
- *Respect*

There was significant overlap between the themes arising from the consultant study and from a similar study involving registrar interviews, and the narrative review the literature on ward rounds and training (252). This overlap adds validity to each study's findings. The following table (Table 7.1) illustrates this overlap. Time and communication are threads that run through all of the studies but often implicitly rather than explicitly.

Both interview studies – consultant and patient – emphasised the importance of NTS, the main skills that are being studied in relation to ward rounds in this thesis. Both consultants and patients considered them to be vital to the role of a clinician.

This chapter stresses the benefit of simply being present on the PTWR due to the educational value – the so-called 'unacknowledged learning'. This was also one of the main themes found in the narrative review in Chapter 2 (see point 2 in Box 2.1).

The conclusions of the patient interview study are reflected by the GMC's domains of clinical practice (1) and also the RCP report on ward rounds (4). The GMC states that any clinician should provide a good standard of care and within their practice, treat patients as individuals and respect their dignity, working in partnership with patients and enabling trust with patients. The professional attitudes of a doctor including their NTS are as important as their clinical skills to both professional bodies and most importantly, patients themselves.

	Narrative review (Chp 2)	**Consultant Interview Study (Chp 4)**	**Registrar Interview Study** (1 referenced in Chp 4)	**Patient Interview Study (Chp 4)**
Poor educational value of current ward rounds	•	• *(crosses themes)*	• *(crosses themes)*	
The importance of 'unacknowledged learning'	•	•	• *(Observational learning)*	

The importance of learning through 'role modelling'	•	•	• *(Observational learning)*	
The importance of feedback	•	•	•	
The importance of having the opportunity to present one's clerking of patients admitted to a senior on a ward round	•	•	•	
Poor preparation for ward round practice at the beginning and end of training as a junior doctor	•	• *(within 'lack of learning on the job)*	•	
The possible effect of an increased consultant presence on registrars' autonomy and decision-making skills	•	•	•	
Differences to PTWRs over time		•	•	
Self-directed learning		• *(Self-reflection)*	•	
Trust			• *(cultivate in patients, team trust, perhaps lack of trust in SPR)*	• *(in doctors, invoked or assumed)*
Respect				•
Communication				

Time				
KEY	*Major theme*			
	Sub-theme			
	Within sub-theme			

Table 7.1: Thematic overlap across studies

Chapter 5 – Simulation training development

Chapter 5 reports on the development of a medical PTWR simulation training for senior trainees aimed at development of leadership skills on a PTWR. The simulation was also developed to psychometrically evaluate the newly developed NTS tool for leading a medical PTWR, which is described in Chapter 6.

A successful simulation training day was developed iteratively for senior trainees assessing various NTS throughout the day. There was allocated time for evaluation using the Medical-NOTECHS (M-NOTECHS) tool, and for participant reflection. The simulation was developed with consideration of Kolb's model of experiential learning (298) and the framework for technology enhanced learning (289). The development of the M-NOTECHS tool is explained in Chapter 6, and this was developed simultaneously with the simulation. The simulation used a triangulation of data collected from Chapters 2, 3 and, an informal ethnographic study of 10 medical PTWRs and informal interviews with various stakeholders of a medical PTWR team including junior doctors and other members of the ward round multi-disciplinary team. My own personal experience as a medical registrar also fed into the developmental process. The tool was developed to test the NTS highlighted by the tool and also was aligned with the GIM curriculum (2010) (128). Two pilot days and a subsequent 10 further simulation days were run across 2 Trusts – one with a dedicated high-fidelity simulation suite, and the other in a large hall with no high-fidelity equipment. Thirty-one registrars of varying seniority, and 6 consultants participated in the simulation. The simulation was feasible to run and got good feedback. The qualitative feedback from the day showed the diversity of what was learnt during the simulation. The themes from this qualitative feedback are:

- *The importance of the patient's perspective*
- *Communication – verbal and non-verbal*
- *The teaching aspect of the ward round*
- *Self-reflection*

- *Delegation*
- *The importance of the overall perspective/ how to maintain flow and structure on a PTWR*

Some of the findings are consistent with the themes identified in the interview chapter (Chp 4). Delegation is discussed in Chapter 3 but it was not a main theme. The simulation evaluation showed that as a training tool it has attained Kirkpatrick level 1 or 2 but further research is needed to see if there is a change in behaviour or an impact on patient care. There would also need to be further research to show if there is a 'return of investment' in keeping with Phillip's fifth element (135).

Chapter 6 – The Medical-NOTECHS (M-NOTECHS) tool development and psychometric evaluation

The aim of the chapter was to develop a formative tool to appraise the non-technical skills required to lead a medical PTWR. The Medical NOTECHS tool was developed to formatively assess the leader of a medical post take ward round. It was developed following best practice guidelines for tool development (185), described in depth in Chapter 6. The findings of the previous chapters were instrumental to the content and design of the tool, including a further iteration to the tool following the pilot simulation days. This is the first NTS tool, at the time of writing, to include the patient perspective which is in keeping with the current interest of a shared partnership for every patient journey, involving patient led care and patient experience. Chapter 3 described the 'Utility index' framework used to guide psychometric evaluation of NTS tools: reliability, validity, educational impact, cost efficiency, acceptability (321). This same framework was used to evaluate the M-NOTECHS tool.

The M-NOTECHS tool was easy to use and had good evidence of face and content validity. It showed moderate evidence of construct validity, as more experienced clinicians tended to score higher across most domains. It was highly internally consistent, and in comparing the 2 expert scorers shows a moderate inter-observer agreement in keeping with those tools reported in the review in Chapter 3. The acceptability and feasibility were only assessed within the feedback of the simulation day, and as part of informal feedback; both of these were positive. The tool has not been used to assess if there was any learning curve in performance with experience and this is required for Kirkpatrick's levels 2, 3 or 4. This is an area for future research.

The tool is novel as it is a tool for physicians and ward rounds. It was developed using similar methodology to the tools discussed in Chapter 3. However, it included the perspective of patients

within the tool development which has not been done before. It also used a good triangulation of sources to give the tool good content validity and the construct validity of tool was evidenced by the positive correlation between participant grade and score.

An overview of the conclusions of this thesis

This thesis has shown that there are some clear training challenges that need to be considered to maximise training for ward rounds and on ward rounds, especially when it comes to leadership. There is the ever-present tension of training and service provision with the overarching theme of time and its role in most elements of ward round practice. 'Unacknowledged' learning is very difficult to measure or evaluate, but is clearly one of the principal modes by which trainees learn on ward rounds. Part of this 'unacknowledged learning' is role modelling. Leaders of a ward round may not be aware of how much learning is done by role modelling especially when considering NTS.

M-NOTECHS is a reliable and valid tool that has clear use within a simulated environment and can be used to assess a leader of a PTWR. It includes reference to these challenges for the observer and also makes explicit reference to feedback which is a theme of this study but is also reflected in the literature (62,323,324).

Limitations of my doctoral research

Limitations for each chapter have been discussed already; this section will deal with limitations for the project as a whole. The first of these is my role as a researcher. My role as a clinician impacts the project both positively and negatively, and I have clearly acknowledged this throughout. It not only impacts the findings and method, but I would argue has been an essential part of the tool development process; for example, the role of the reflexive interviewer is discussed in Chapter 4. I have my own way of leading a ward round albeit from a registrar perspective and I have only experience of London ward rounds. I had read many articles and watched many PTWRs as preparation for this study and these with my personal experience may have affected my interpretation or synthesis of the data. However, I do feel that my own way of leading a ward round has definitely benefitted from my work of this project and my general reflection about the positives and negatives of the ward round process. I try to always explain my thinking and keep a team interested, and have become even more aware of my communication with patients. I have also noticed the different styles of other members of a ward round team especially a consultant and have become more conscious of the 'unacknowledged learning' and the power of training through role-modelling. This self-reflection is what happens day to day with clinicians on ward rounds but I am definitely more conscious of my own thought processes.

There is an additional limitation to my role as a researcher. I am learning and still relatively new to research. For example, my interview style is still being developed, and the same for my thematic analysis. Throughout this thesis, I have included 'checks' to my findings such as a second review of the abstracts within the review chapters, and group discussion of the interview findings, because I am conscious that I am less experienced than many qualitative researchers.

As my project progressed, my confidence grew as I saw that each chapter overlapped with other elements of the project, giving further validation to my findings. As more data was accumulated and the themes synthesised, and the correlation between conclusions of the separate chapters became apparent, it helped to increase my confidence in my methodology and research analysis. The same could be said for reviewing the NTS tools and their evaluation, prior to evaluating M-NOTECHS. It helped to increase my confidence and practical application of tool psychometric evaluation. The development of my research skills over the duration of this project was a steep learning curve, and validation of the themes helped to validate my own skills throughout this time. Building confidence is essential for development of qualitative research skills so it was beneficial to have this validation along the way.

The iterative style of tool development can sometimes make processes unclear. The simulation and tool were developed alongside each other to the benefit of the study, in my opinion. However, this method does mean that there may be aspects of both sides that have been reported separately that in fact only really exist when you consider then both together. An example of this is the changes to the simulation and M-NOTECHS tool after the pilot days of simulations. These happened together, and therefore it is hard to determine an almost 'cause and effect' sequence of changes made to both, because they are so dependent on each other. However, this method did also give the opportunity to develop both at the same time, which was of practical and financial benefit. It also added a perspective to each other's development that may not have been present if developed separately. For example, the inclusion of 'flow and integration' to the tool would not have happened if the tool had not been developed alongside the simulation.

The future

- ### Research

M-NOTECHS has been shown to have value in a simulated setting and needs to be evaluated within a real-life setting. This has to happen prior to its use as a formative feedback tool for physician

trainees leading a PTWR or for consultant's as part of their continuing medical education (CME). As a training tool, its effect on patient care as well as training needs to evaluated in keeping with the later steps of the Kirkpatrick pyramid (Fig 2.2).

Good performance in a controlled environment does not necessarily predict good performance in a real workplace (179). This study does not test the M-NOTECHS tool in real life, only in a simulated setting. This is a very clear limitation of the study and definitely needs to a next step in continuing this research. There is a huge amount written on competence versus capability and the new GIM curriculum is attempting to help address this within medical training (65). Competence in a controlled environment is very different to capability in a real world one. There has been reference throughout this thesis to cognitive load theory and Sewell et al's application of it to endoscopy training (52). The cognitive load in a controlled environment is very different to that in a real world one and as a person's cognitive load increases, their NTS deteriorate. I find that the application of cognitive load theory to leading a ward round, here in particular a PTWR, is one that I can relate to and that this needs to be studied in greater detail to try and understand leadership on ward rounds in greater detail, and then in turn develop training accordingly.

A full cost analysis has not been conducted for this course to appreciate whether it is cost effective or not. This analysis would need to come after any evidence that pertains to higher Kirkpatrick levels than level 1 or 2, as reported in Chapter 5.

Once the M-NOTECHS tool has been evaluated further, it could be used to guide further research on ward rounds. For example, there could be further research to develop a set of standards by which to lead a ward round. This set of standards could include technical observations such as checking a patient's drug chart and observations, but also various non-technical skills such as communication and ensuring that the patient was involved and this would be where M-NOTECHS would play a role. Training would need to be included in this set of standards. The Royal College of Physicians (RCP) have begun this process with their paper on ward rounds but there needs to be more robust research to have a valid and reliable set of standards in the future. This research needs to consider not only the ward round leader but all participants on the ward round, including patients.

Involving patients in future research on this key area is necessary. They are the most important stakeholder on a ward round, and from the conclusions of the patient interview study they want to be treated with respect and included in the process (Chapter 4). Their point of view has influenced the development of the M-NOTECHS tool in Chapter 6, and should continue to inform any further research on ward rounds. Patients could be involved with a wider interview study across different centres, and also assessment of doctors' leaderships skills from a patient perspective in leading a

ward round. Future interventions to improve PTWR and training should always consider the patient perspective.

The overarching theme of time in both interview studies in Chapter 4 is often an implicit theme or conclusion from other studies but has yet to be explored explicitly. This needs to become an explicit research priority especially if we consider the cost repercussions within a resource strapped health service (263) and the continual tension between service provision and training. It also may affect patient engagement in healthcare services which needs to be considered especially in today's patient driven health service with an aim for a partnership between doctor and patient.

Ward rounds exist in every speciality and so work also needs to be done to examine other speciality ward rounds. Medical ward rounds can be led in different styles but there is a wide variation in the process involved in different speciality ward rounds. Surgical ward rounds tend to be shorter; and paediatric ward rounds need to consider parents' presence; psychiatric ward rounds tend to happen in a separate room away from the ward. They each have slightly different aims, team members, and composition, but any description of the process or differences would be my personal opinion and subjective. Each speciality ward round needs to be examined and researched to be able to understand the process and what is involved in a successful effective ward round, and therefore the leadership attributes required to lead a successful ward round. Pucher et al have begun projects on surgical ward (10,231,300) rounds and Lakshminarayara, Goodyear et al (236,310) have begun work in paediatric rounds. Further research will need to be done to adapt the M-NOTECHS or one of the other tools for the other clinical specialities.

The definition of a ward round used in Chapter 2 is 'a complex clinical process during which the clinical care of hospital in-patients is reviewed' (4). As noted in Chapter 2, there is an additional role for a ward round to review social and continuing care. The traditional ward round may need to adapt to suit the 'continually evolving complex care system' (4). Currently the RCP explains the processes involved in a ward round (see Chapter 2), and training and development of healthcare professionals is one of these processes. The GMC is also very clear on the 4 domains of clinical practice (1). The aim of this thesis was to explore training on ward rounds and not primarily ward rounds per se. However, this thesis does explain that there is scant meaningful research on ward rounds and training. The literature describes the need to further maximise the educational potential of ward rounds (29,136,137) and this thesis explains that the training on PTWRs needs to be maximised. However, in keeping with an old study (1996) cited in Chapter 2 (31), it might be that consultant or attending rounds have a higher educational value than general ward rounds. There are many more ward rounds then just PTWRs of which there is only one per hospital per day, and so

an overview of all ward rounds, all the different types, need to be examined to fully understand their impact or contribution to medical training of all levels. There also needs to be more systematic synthesis of current research.

The subject of competency and capability is a much-researched subject and a full discussion is beyond the scope of this project. Let's return to Miller's pyramid (Fig 1.1 Miller's pyramid of clinical competence) discussed in the Introduction to this thesis. Other theories briefly discussed in this thesis include cognitive load theory (52) and the idea of progressive independence within medicine (50). Both of these can be mapped onto Miller's pyramid when your skills move from cognitive to behavioural, i.e. one becomes progressively more independent and one's 'germane' load increases and therefore a person's ability to then deal with both intrinsic and extrinsic load improves. A person's NTS suffer as their cognitive load increases so development of their germane or innate abilities or behavioural abilities is crucial to demonstrating expertise. Leading a ward round displays this thinking as can be seen from the work done in this thesis. Consultants perform better; it seems more effortless as their competence is such that many of the leadership skills have become innate. To illustrate this, consider learning to drive. When you have been driving for many years, certain elements are automatic and are considered less so one has more ability to consider other elements of driving and hone further skills such as parallel parking. Leading a ward round repeatedly hones certain skills so they become automatic rather than feeling like the approach is more of a list of jobs that one must check off on a checklist as you go round each patient in turn (Chp 4, (252)). A possible future study would be to use the cognitive load tool in Sewell's study (52) and apply it to ward round leaders of differing levels of experience to try and enhance our understanding of not only competence and capability but primarily to get a better understanding of ward round leadership.

Leading on from this discussion, there is one interesting theme sub theme of the patient interview study is that of 'assumed competence' which in turn is reflected in the minor themes of 'seniority' and 'trust in the system' (Figure 4.2). The guidance states that a consultant must review a new patient within 12-14 hours of admission (4–7). The interviewees discussed that 'a doctor is a doctor is a doctor' and they seemed to think that seniority was not an issue. This interview study is far from generalisable but this finding is intriguing for clinicians and policy makers and one that should be researched further.

- Medical Education

In the context of a training/service provision tension within the NHS, and looking at outcomes of this thesis, feedback on ward round skills offers an opportunity for improvement in training. The M-

NOTECHS tool provides a method by which to guide formative feedback. It has been shown to be valid and reliable and has value in a simulated setting. As stated above there needs to be further research to evaluate the M-NOTECHS tool in a real world setting as an appraisal and learning tool.

The lack of feedback to individuals is highlighted both within the ward round literature review and also in the consultant interview study; it is also a theme in the registrar interview study referred to in the discussion of Chapter 4 (252). There is also a discussion in both the consultant and registrar interview study about the lack of encouragement for excellence, a theme promoted by the Tooke report (178). There is an opportunity for immediate improvement by incorporating formal feedback into everyday practice; additionally, there could be scope for promoting the idea of more frequent informal feedback. The supervisee may be a medical student, but this is still a key role in the development of future doctors. Verbal feedback does not have a formal role in training progression but counts very much on an individual level according to the interview participants. Quick, structured verbal feedback, positive or constructive, would seem to be something that takes minimal time and could improve training within a pressured environment. There was a discussion on the low morale of doctors within the consultant interview study, and perhaps a simple measure such as this would also help to improve morale. It would perhaps lead to more reflection and understanding of areas in need of development in terms of each trainee. More research would be needed to show that if more direct informal research made a difference in terms of morale and training but some trusts have already instigated a semi-formal way of promoting positive performance in the form of Favourable Event Reporting Form (325,326).

Since the writing of Chapter 2, NICE has published guideline 94 'Emergency and acute medical care in over 16s: service, delivery and organisation (2018) (327). This includes guidance on the frequency of consultant reviews (328) and also a chapter on structured ward rounds, including a review of relevant literature (329). Their recommendation for regular consultant ward rounds (daily or twice daily) with an explicit rounding approach to maximise training and patient care colludes with elements of this thesis. However, regular consultant reviews might have an effect on registrar autonomy as suggested by the work presented in this thesis so this needs to be considered in future research. This concern is echoed in a recent randomised control trial concerning the frequency of attending or consultant supervision (USA, 2018) (330). They found that increased consultant supervision did not significantly reduce the rate of medical errors but it did result in interns (junior doctors) contributing less verbally to the ward round and also a reduction in residents (registrars) level of autonomy when it comes to decision making.

This concern of the impact on registrars' autonomy and hence their preparedness for a consultant role is a key theme of this study. The official advice and guidelines are becoming more concrete on the frequency of consultant reviews and therefore this concern on the impact that this may have on registrars training needs to be examined. The expectation of a consultant review may stand to deter allowing a registrar to lead a ward round, including a PTWR, under direct supervision. However, we saw from the patient interview study that the seniority of the doctor may not be as crucial to this cohort as it is to the policy makers; however, this is not a generalisable conclusion.

There needs to be a renewed emphasis on training for leading ward rounds and for consultants to allow registrars to lead a PTWR under their supervision and provide them with feedback. The M-NOTECHS tool could help guide this feedback but the opportunities for leading a ward round need to be found in real life to make it of use. It is clear from this project that there is poor preparation for ward round practice at the beginning and end of training as a junior doctor (Chp 2 and Chp 4).

The GIM curriculum emphasises the need to develop one's NTS (128). There are core generic skills and the skills are always assessed on each SLE done by a trainee. The present curriculum is based on showing evidence to demonstrate competence for a large number of competencies via a variety of different methods of which the mainstay is SLEs. These competencies include NTS. However, there is some evidence from this study to echo what is being described in current literature that this method of evaluating doctors' progress is too overwhelming and has become a simple 'tick box' exercise. There is a new curriculum developed in line with the GMC's guidance that a trainee's progression should be evaluated by a more outcomes-based curriculum, and this has led to a new curriculum based on a much smaller number of outcomes, called capabilities in practice, which reflect the key professional work activities of a general medical physician (65). The core thesis behind this change in the GIM curriculum is to 'trust' the work of a trainee as a whole picture and for trainers to use professional judgement rather than simply a list in an assessment, perhaps spending more time on the administration of training rather than ensuring quality of training. This move is in keeping with the findings of this thesis. The SLEs are not described positively in Chapter 4 with the words 'tick-box exercise' (Participant C, Consultant) echoing the description of the current GIM curriculum described by Quraishi et al (2019) (65). Their use as training tools is described very negatively as well as their purpose seemingly being to ensure an average yet safe capability rather than striving for excellence as encouraged by the Tooke report (178). This move seems to be a step in the right direction according to the conclusions of this thesis but it remains to be seen if the practical results of the new curriculum with its 'capabilities in practice' will be echoed in real life. There will need to be further evaluation and research on this subject to find out this answer.

The role of simulation in ward round training needs to be explored. It is used for 'hard' clinical skills but its role in training for NTS is not as well established despite simulation training for NTS for critical events leading to improved patient safety (265–267), and it is very rarely used to train for ward rounds (162,163,297). At the time of writing there was only one example of a simulated PTWR for medical students and an interesting finding from this study that all self-reported learning reports from the students were non-technical (331) (although the study was primarily aimed at increasing medical students' awareness of NTS). In situ simulations are becoming more commonplace for emergency medicine and surgery and this is perhaps worth examining for ward rounds. Supervised leading of ward rounds in real life needs to become usual practice for consultants and registrars alike to adequately prepare them for consultant practice, but this study shows that trainees found the experience of leading a PTWR in a simulated environment a useful one and this idea should be explored further within medical education. There may be a role for virtual reality training of ward rounds but again this idea has only recently been introduced by Keele University and Leicester University (332,333).

The emphasis of this thesis is on trainees but as has been noted in preceding chapters, some NTS seem to diminish over time even for experienced practitioners (286). This enforces the reality that consultants need to ensure they are undergoing continued professional education in keeping with the GMC guidelines (1). The simulated PTWR and use of M-NOTECHS tool may offer such an opportunity for reflecting on one's own practice.

The theme of the 'unacknowledged learning' on ward rounds by simply being present on one is not researched in the current research but is a theme from the narrative review in Chapter 2 and the interview study in Chapter 4. This would be an interesting area for future research as it would likely lead to clarification of the role of role-modelling and what role observational learning has in medical training especially when we are considering purely NTS.

From the findings of Chapter 4, there seems to be a need for a renewed emphasis on the role of an individual for self-directed learning, as well as facilitating one's own learning and training. The role of reflection is considered as well as the need to follow up patients yourself as there is minimal continuity of patient care in today's medicine. During the interviews, Consultant A explained that there needs to be reflection on cases but also the need to reflect 'on the fact that they are learning' (Chapter 4). This raises 2 important considerations; firstly, there needs be further research/consideration of the extension of self-directed learning beyond the conventional reading around the subject or checking formal guidelines. If this does indeed involve reflection on what is being learned beyond simple clinical skills and knowledge to involve NTS, then how can this be

measured and how can the skills be shown to develop both on a personal level but also on a more formal training assessment level. Secondly, there is the question of when a trainee does this self-directed learning as we have seen that time is an important limiting factor for all elements of clinical care and training. This has to be considered in planning of jobs locally and training programmes nationally.

Sustainability

Any outcome of an education or patient safety research project is only effective if it is sustainable. Therefore, it seems appropriate to discuss sustainability. The simulation has been run in a dedicated high-fidelity simulation centre, but it has also been run in a low fidelity hall with no simulation equipment. Within the number of simulation days and results discussed in Chapter 5, there was no difference in feedback between both locations. This is important because it demonstrates that the training could be run in Trusts or Universities that do not have a dedicated simulation centre. It also reduces the cost of running the training day.

The resources required to run the training are significant as discussed in Chapter 5. This is relevant to the sustainability of the project because at present there are no data on cost effectiveness. This needs to be considered in further research in keeping with Phillip's fifth element of the Kirkpatrick pyramid – cost effectiveness (135).

The main advantage of this project for sustainability is the M-NOTECHS tool. This tool is cheap to use in day to day practice and has been found to be feasible and acceptable. It can be used formally or informally and it could be used on an ad hoc basis. If it does become incorporated into the objectives of the Penultimate Year Assessment, then the sustainability will be formally maintained.

Conclusion

This thesis has developed both a medical post-take ward round training simulation and also the M-NOTECHS tool. The appraisal of both is satisfactory, suggesting that they could be used as the focus both of training delivery and future research. Throughout this thesis, I have referred to the idea of cognitive load theory (52). This theory is very useful to explain modes of practice on a ward round and also the difference that experience suggests. Experience enables more 'thinking' to focus on both extraneous and intrinsic cognitive load, because there is a more mature and developed germane load involved. This thesis has highlighted the need for robust research into ward rounds and it has helped to facilitate the RCP's request for a focus on ward rounds. It will hopefully act as a stepping stone to further much needed ward round research. This research will be easier because of the foundation laid by this project and the development of a valid tool – M-NOTECHS.

Personal Reflection – what have I learnt

The work towards this thesis has been long, fun at times but arduous. It has been a major personal development exercise. The skills that I have learnt have been far ranging but these are not the only skills. The long and stressful journey towards completing a thesis takes you on a journey that you do not envisage at the beginning. You also do not have any control over what else is happening in your life during the process. Needless to say – small children, working as a hospital doctor and writing a thesis is not a combination that I would advise repeating!

When I completed my Masters, I had a grounding in qualitative research but undertaking this thesis has given this basis a more practical grounding. It teaches you not only the nuances of qualitative research which does involve a very different way of thinking, but it gives you the opportunity to practise multiple different methods and approaches. My experience to date had been of quantitative research, and qualitative research does make you turn much intuitive learned analysis and interpretation skills on their head. This simple process of approaching a subject with a very different motivation and way of thinking is a process that I have never had to facilitate previously. It involves training your brain to think differently; the process takes time. I think that I definitely need further experience to help ground this way of thinking further into my innate thinking or 'germane cognitive load'(1). It is difficult to be an unbiased researcher whilst being embedded within the research topic. I have come to realise that this is not always a problem with qualitative research and can bring positives to the work.

On a more practical knowledge, it has given me experience of writing a plan, establishing aims and working out a method. I have had experience of writing grant applications. It has introduced me to various methods of reviewing published material in a systematic way. The 2 reviews helped to shape the methodology and plan for the thesis. They gave me a good understanding of the topics but also a good understanding of the different methods and approaches that have been employed to date. Statistics such as those used to evaluate non-technical skills tools was a very difficult area for me to grasp and writing the review in Chapter 3 was a perfect learning opportunity for learning these statistical methods, and in turn evaluating the methods used in the papers on NTS tool development.

My interviewing experience was very limited prior to this project. It has been invaluable and interviewing patients was my favourite part of my work. However, again thematic analysis is not intuitive and involved much work and repetition to ensure that the methods employed were correct. It takes time to establish confidence in an unfamiliar area and one of the biggest barriers to my

thesis was under-confidence in being 'academic' enough or uncertainty that what I had completed was done correctly. There was a continual concern that I would have to repeat work when I realised that I should have done something differently. However, you come to realise that this is the process of research. The ability to self-critique and development ones skills is actually the aim of the PhD.

The simulation development and tool development were again 2 new areas to me. It was hard to develop two things practically simultaneously and then write them up separately. The concern that I was not going to be able to write it up when I thought about it haunted me during the process. I am very proud of the simulation and tool, and enjoyed this part of the process.

The write up is the punishing part. The 2 best pieces of advice that I got during this long process were – just go away and read and don't stop reading, and just start writing and the rest will follow. The introspective process of self -analysis and self-doubt starts again at nearly every stage of the write up process. The discipline involved makes any exam and its associated revision look positively minor in comparison. It has taught me a different level of organisation, self-motivation and time management.

The research skills are the clear learning points. However, as a doctor, my email skills were lacking and other basic presumed skills of a professional like conducting meetings and diary management. As a doctor you live your life by a timetable. During this process the timetable is what you make it. I had never used Outlook or really needed to use email communication on such a level previously. These skills are completely invaluable to life. It has also taught be the power to say no. At times in this process, there has simply been too much, and I had no choice but to let other important projects be suspended for a while. I have never had to do this before and at first, I was ashamed, as I felt that I should be able to do it all, but you realise that this is not something to be embarrassed about but it actually is a positive process. The same is true for use of Excel and Word. I did not know there was an automatic layout and 'contents' function in word, and learnt to love Mendelay, my reference manager. My Excel skills still need much work but they are hugely improved from when I started this process. I am indebted to my husband for his patience and IT training skills.

I have been stressed before. However, this long process has been the instigator of so much stress that it has forced me to try and develop ways of dealing with it. Stress impacts on every part of your life in an all pervasive manner. I have experienced insomnia, and other physical symptoms. Again, you blame yourself for the impact that this has on yourself and your family but you learn to think of things in a more positive manner.

You cannot control life. Much has happened personally during the process. I have experienced serious ill health (pregnancy associated and complicated appendicitis as well as another hospital stay with severe flu associated pneumonia). I have never really been ill in my life until the last few years. I nearly lost a child during the process at the birth of my daughter, and the need for clear priorities and the (still evolving) skill of compartmentalisation are essential parts of my life these days. Both my children have had very serious admissions to hospital. Much of this has put a strain on relationships and family life and the need to manage as the primary caregiver, with a husband who works away, is beyond tough. I have included this not for sympathy but in order to explain that my journey to complete this thesis has been about far more than learning about research. My life has changed dramatically, and I have struggled throughout the process. It has been a steep learning curve on many levels. My gratitude to family, friends and supervisors is immeasurable.

The overwhelming feeling of achievement is more than just intellectual. I been very fortunate to have experienced intellectual success in my life with 2 undergraduate degrees, my postgraduate membership to the Royal College of Physicians, and my Masters. This is so much more than intellectual success and the achievement of completing the process, whatever the outcome, is personal. Saying this, I would advise others to avoid pregnancy during research, and to complete research before children if possible. Although, I would not advocate delaying having children if it is something that a person wants. Being a mother makes everything else so much smaller – it is the job that I am most proud of. However, when your son says that he is proud of you aged 5, you realise that maybe you should be to!

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Appendix 1.1: Abbreviations

AMA	American Medical Association
ARCP	Annual review of competency progression
BMJ	British Medical Journal
CCT	Completion of certificate of training
CLT	Cognitive Load Theory (IL: Intrinsic Load, El: Extrinsic Load, GL: Germane Load)
CQC	Care Quality Commission
F1	Foundation Year 1 Doctor (First year doctor)
GIM	General Internal Medicine
GMC	General Medical Council
NCEPOD	National Confidential Enquiry into Patient Outcomes and Deaths
NHS	National Health Service
NTS	Non-technical skills
PTWR	Post Take Ward Round
PYA	Penultimate Year Assessment
RCN	Royal College of Nurses
RCP	Royal College of Physicians
RITA	Record of in-training Assessment
SLE	Supervised learning event (replaced WBPA)
SPR	Speciality Registrar
ST3 etc	Speciality training 3 (year) etc
WBPA	Work based placed assessment (replaced by SLE)
WHO	World Health Organisation
WR	Ward round

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
A cost-benefit analysis of twice-daily consultant ward rounds and clinical input on investigation and pharmacy costs in a major teaching hospital in the UK.	Ahmad A, Weston PJ, Ahmad M, Sharma D, Purewal T.	BMJ Open. 2015 Apr 8;5(4):e007367. doi: 10.1136/bmjopen-2014-007367.			Intervention	No or pts, pharmacy costs, no of investigations, readmission, mortality	Daily WR		Financial, Twice daily Consultant ward rounds								Medicine	Cost benefit analysis to assess amount of money saved - no of patients, pharmacy costs, investigations - reduction of 50% costs per patient over 12 month and sustained for next 12 months, no effect of readmission rate or mortality, L of S almost halved. Net saving of daily senior input resulted in net cost saving of £336 528 per year following intervention. Two medical wards at major teaching hospital in Liverpool, receiving acute admissions from medical assessment and emergency departments, 2 years before and after intervention - change in working practice from twice weekly to twice daily WRs.
Student life - Spiritual connections.	Sadler C.	Nurs Stand. 2015 Apr 1;29(31):66. doi: 10.7748/ns.29.31.66.s49.	Y	Hospital chaplain ward round, mental health nursing student														
Teaching a 'good' ward round.	Powell N, Bruce CG, Redfern O.	Clin Med. 2015 Apr;15(2):135-8. doi: 10.7861/clinmedicine.15-2-135.			New training	Pre and post training survey	Daily WR								Simulation in leading and documenting WRs		?general	New simulation training for final year medical students and F1 - focussing on WR skills themed to key pt safety issues, delivered to over 100 learners, pre and post training questionnaire statistical improvements in confidence in leading and documenting WRs, and 94/3% felt it should be included in undergrad curriculum
Design and validation of the surgical ward round assessment tool: a quantitative observational study.	Ahmed K, Anderson O, Jawad M, Tierney T, Darzi A, Athanasiou T, Hanna GB.	Am J Surg. 2015 Apr;209(4):682-688.e2. doi: 10.1016/j.amjsurg.2014.08.017. Epub 2014 Oct 13.			Validation of WR assessment tool - SWAT	Assement tool score - simulation and real life, level of experience											Surgery	SWAT - surgical WR assessment tool, used healthcare failure mode and effects analysis identified 30 WR steps that were developed into SWAT, 19 surgeons (8 fully qualified, 11 trainees) simulated WR and fully trained scored higher, 44 real surgical WRs, 15 experts scored significantly higher than 29 trainees, inter-rater reliability
Understanding the causes of intravenous medication administration errors in hospitals: a qualitative critical incident study.	Keers RN, Williams SD, Cooke J, Ashcroft DM.	BMJ Open. 2015 Mar 13;5(3):e005948. doi: 10.1136/bmjopen-2014-005948.	Y	IV meds adminisatration errors														
Measuring ward round quality in urology.	Darbyshire D, Barrett C, Ross D, Shackley D.	Int J Risk Saf Med. 2015 Jan 1;27(1):23-33. doi: 10.3233/JRS-150640.			?	20 indicators thought to relate to WR quality											Urology	20 indicators of WR quality were recorded for every weekday wr - urology, for a month, 20 WRs, 93 pt encounters, 37% consultant presence, 84% obs chart reviewed, drug charts 28%, antibiotics 70%, mean time 6 mins/pt
Do mandatory nasal interventions after epistaxis just delay discharge? Our experience in 90 adults.	Lau AS, Smith K, Mealey L, Rylands J, Heseltine J, Williams SP, Swift AC.	Clin Otolaryngol. 2015 Mar 9. doi: 10.1111/coa.12411. [Epub ahead of print]	Y	Epistaxis and nasal interventions														
The surgical admissions proforma: Does it make a difference?	Ehsanullah J, Ahmad U, Solanki K, Healy J, Kadoglou N.	Ann Med Surg (Lond). 2015 Mar;4(1):53-7. doi: 10.1016/j.amsu.2015.01.004.	Y	Surgical admissions proforma														
Clinical pharmacy services that influence prescribing in the Western Pacific Region based on the FIP Basel Statements.	Penm J, Chaar B, Moles R.	Int J Clin Pharm. 2015 Mar 3. [Epub ahead of print]	Y	Pharmacy services that influence prescribing in the Western Pacific Region based on the FIP Basel Statements.														
Response to: 'Driven to distraction and driving for excellence in ward round practice' by Pucher and Aggarwal.	Thomas I, Nicol L, Regan L, Cleland J, Maliepaard D, Clark L, Walker K, Duncan J.	BMJ Qual Saf. 2015 Apr;24(4):291-2. doi: 10.1136/bmjqs-2015-004014. Epub 2015 Feb 20. No abstract available.			Response to article and questions, adds to 23		Mix								Simualted ward rounds for students			Response to 12 saying how distractors were chosen (focus groups), why final year students (lit shows juniors most susceptible to mistakes), main focus was to change error rates on ward rounds, how we need collaboration and multi-centre work.
'Driven to distraction' and driving for excellence in ward round practice.	Pucher P, Aggarwal R.	BMJ Qual Saf. 2015 Apr;24(4):290-1. doi: 10.1136/bmjqs-2015-004013. Epub 2015 Feb 16. No abstract available.			Letter to authors of 23		Surgical					Yes - mentions SWAT, WNTSs			Simualted ward rounds		Surgery	Letter questioning some academic points of 23 - how distractions chosen, why not hospital staff, suggesting looking at their tool
[Standardized training of gastrointestinal surgeons should be emphasized].	Qin X, Liu F.	Zhonghua Wei Chang Wai Ke Za Zhi. 2015 Feb 25;18(2):101-3. Chinese.	Y	In Chinese														
Ward rounds have no place in today's hospital settings.	Soni H.	Nurs Stand. 2015 Feb 10;29(23):34. doi: 10.7748/ns.29.23.34.s44.	Y	Letter														
Ward rounds are an essential component of good basic care.	Smith J.	Nurs Stand. 2015 Jan 27;29(21):34. doi: 10.7748/ns.29.21.34.s43.	y	letter														
Departmental induction and the simulated surgical ward round.	Gee C, Morrissey N, Hook S.	Clin Teach. 2015 Feb;12(1):22-6. doi: 10.1111/tct.12247.			Simulated ward rounds	perceived preparedness, consultant feedback in ward round performance, satisfaction in placement									Simulated ward rounds for juniors		Surgery	Following an audit of juniors highlighting concerns including inadequate training and preparedness for roles - simulated ward rounds led to increased perceived preparedness, improved consultant feedback on ward rounds, and satisfaction in placement
Introduction of a new ward round approach in a cardiothoracic critical care unit.	Shaughnessy L, Jackson J.	Nurs Crit Care. 2015 Jan 16. doi: 10.1111/nicc.12149. [Epub ahead of print]			interviews, survey, observational audit	perceived improvements in clarity, pt care, reduced omissions	Cardiology		Yes checklist, nurse presence		Yes						Cardiology	Following francis, use of interviews, questionnaire, observational audit - improved clarity with verbal summarising, perceived improved pt care, more nurse attendance
Comparison between electronic method and conventional method recording and follow-up of general surgery ward-round notes taken.	Aydin I, Yeldan E, IbiÂŸ AC, Albayrak D, OÄŸuz S, Senlikci A.	Minerva Chir. 2014 Dec;69(6):331-336.	y	electronic records comparison														
The advance nurse practitioner in critical care: a workload evaluation.	Jackson A, Carberry M.	Nurs Crit Care. 2015 Mar;20(2):71-7. doi: 10.1111/nicc.12133. Epub 2014 Dec 8.	y	nurse practioner role - not relevant														
Tablet computers with mobile electronic medical records enhance clinical routine and promote bedside time: a controlled prospective crossover study.	Fleischmann R, Duhm J, Hupperts H, Brandt SA.	J Neurol. 2015 Mar;262(3):532-40. doi: 10.1007/s00415-014-7581-7. Epub 2014 Dec 5.	y	elctronic records														
Improving the quality of documentation of paediatric post-take ward rounds: the impact of an acrostic.	Newnham AL, Hine C, Rogers C, Agwu JC.	Postgrad Med J. 2015 Jan;91(1071):22-5. doi: 10.1136/postgradmedj-2013-132534. Epub 2014 Dec 4.			evaluation of intervention	audit before and after introduction of acrostic, survey of use	paediatrics		written communication						sort of		Paediatrics	Pre and post audit of written notes following notes inspection while investigating critical incidents - poor documentation especially of paeds ptwr, acrostic 'Please Verify Information for doctors, please note every pla, (Problem, vital signs, investigations, fluids, drugs, pt/parental concerns, nursing concerns, examination, plan. After acrostic, improved notes, and 95% of juniors said it provided them with easy format to document important aspects of ptwrs - ? still the case
The Usefulness of the Surgical Knowledge and Skills Acquired via the University Curriculum for Doctors' Medical Practice Several Years After Graduation.	Zyluk A, Puchalski P, Szlosser Z.	J Surg Educ. 2014 Dec 1. doi:pii: S1931-7204(14)00297-9. 10.1016/j.jsurg.2014.10.015. [Epub ahead of print]	y	not relevant														

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Driven to distraction: a prospective controlled study of a simulated ward round experience to improve patient safety teaching for medical students.	Thomas I, Nicol L, Regan L, Cleland J, Maliepaard D, Clark L, Walker K, Duncan J.	BMJ Qual Saf. 2015 Feb;24(2):154-61. doi: 10.1136/bmjqs-2014-003272. Epub 2014 Nov 24.			Training intervention	WR error	Mix								Simualtion ward round training for medical students		Mix	Controlled study of simulated ward rounds for medical students including feedback/no feedback looking at handling of distraction management and error - receive feedback, rate of error decreased more but simulation training reduced error rates in both groups.
Generating new telehealth services using a whole of community approach: experience in regional Queensland.	Smith AC, Caffery LJ, Saunders R, Bradford NK, Gray LC.	J Telemed Telecare. 2014 Oct;20(7):365-9. doi: 10.1177/1357633X14552371.	y	telecare														
Study of drug utilization pattern for acute exacerbation of chronic obstructive pulmonary disease in patients attending a government hospital in kerala, India.	Veettil SK, Rajiah K, Kumar S.	J Family Med Prim Care. 2014 Jul;3(3):250-4. doi: 10.4103/2249-4863.141622.	y	drugs and copd														
Re: Does Surgical Ward Round Quality Really Impact on Patient Outcomes?	Pucher PH, Aggarwal R.	Ann Surg. 2014 Nov 3. [Epub ahead of print] No abstract available.	y	letter														
Does Surgical Ward Round Quality Really Impact on Patient Outcomes?	Hakeem AR.	Ann Surg. 2014 Oct 30. [Epub ahead of print] No abstract available.	y	letter														
Incidents resulting from staff leaving normal duties to attend medical emergency team calls.	Concord Medical Emergency Team (MET) Incidents Study Investigators, Cheung W, Sahai V, Mann-Farrar J, Skylas K, Uy J, Doyle B.	Med J Aust. 2014 Nov 3;201(9):528-31.			Interview, questionnaire, single centre	rate of advers events andincidents			Medical emergency calls		yes			yes			all	Interviews and survey showing poorly documented critical incidents (0.8%), and most common disruption for a medical emergency call was disruption to ward round and patient reviews and normal duties
Randomized clinical trial of the impact of surgical ward-care checklists on postoperative care in a simulated environment.	Pucher PH, Aggarwal R, Qurashi M, Singh P, Darzi A.	Br J Surg. 2014 Dec;101(13):1666-73. doi: 10.1002/bjs.9654. Epub 2014 Oct 28.			Checklist trial on simulated patients	adherence to critical care processes	surgey		checklist								surgery	use of checklist in simulation - intervention and control groups, use of checklist, less errors, improved pt management and non technical skills between baseline and final ward rounds, small learning effect in both groups, intervention group subjects found checklist easy to use and would want to use them in their practice.
Quality of surgical care in hospitals providing internship training in Kenya: a cross sectional survey.	Mwinga S, Kulohoma C, Mwaniki P, Idowu R, Masasabi J, English M; SIRCLE Collaboration.	Trop Med Int Health. 2015 Feb;20(2):240-9. doi: 10.1111/tmi.12422. Epub 2014 Nov 19.	y	ckenya services evaluation														
[Daily routine in orthopedics and traumatology - results of a nationwide survey of residents].	Merschin D, MÃ¼nzberg M, Stange R, SchÃ¼ttrumpf JP, Perl M; Junges Forum O & U, Mutschler M.	Z Orthop Unfall. 2014 Oct;152(5):440-5. doi: 10.1055/s-0034-1382869. Epub 2014 Oct 14. German.	Y	German														
Three basic modes for patients' clinical decision-making in China.	Li EC, Wang Z, Zhang WY, Zhao LY.	Chin J Integr Med. 2014 Nov;20(11):876-80. doi: 10.1007/s11655-014-1987-z. Epub 2014 Sep 24.	Y	Pt decision making not ward rounds														
Learning clinical communication on ward-rounds: an ethnographic case study.	Quilligan S.	Med Teach. 2015 Feb;37(2):168-73. doi: 10.3109/0142159X.2014.947926. Epub 2014 Aug 26.			Ethnography										learning clinical communication		Various	Ethnography - observation and audio recordings of 63 patient episodes within 18 wrs on 4 different wards, then 9 student and 4 clinican interviews, each episode offered opportunity for learning clinical communication but students did not always recognise this, students rarely invited to participate, clinicians overlooked opportunities for learning, students questionned educational value of wrs and hence did not attend
Associations between stroke mortality and weekend working by stroke specialist physicians and registered nurses: prospective multicentre cohort study.	Bray BD, Ayis S, Campbell J, Cloud GC, James M, Hoffman A, Tyrrell PJ, Wolfe CD, Rudd AG.	PLoS Med. 2014 Aug;11(8):e1001705. doi: 10.1371/journal.pmed.1001705.	y	stroke														
iPad use during ward rounds: an observational study.	Lehnbom EC, Adams K, Day RO, Westbrook JI, Baysari MT.	Stud Health Technol Inform. 2014;204:67-73.	y	I pad use														
The ward round.	Wilcken B.	J Paediatr Child Health. 2014 Aug;50(8):660. doi: 10.1111/jpc.12641. No abstract available.	y	comment														
The ward round: what it is and what it can be.	Cohn A.	Br J Hosp Med (Lond). 2014 Jun;75(6):C82-5. No abstract available.	y	education comment														
Reply to Letter: Surgical Ward Round Quality and Impact on Patient Outcomes""	Pucher PH, Aggarwal R.	Ann Surg. 2014 Jul 28. [Epub ahead of print] No abstract available.	y	Reply														
Leadership training for registrars on ward rounds.	Levett T, Caldwell G.	Clin Teach. 2014 Aug;11(5):350-4. doi: 10.1111/tct.12167.			Questionnaire		PTWr medicine								Leaadership training using considerative checklist		Medicine	no respondent out of 18 had received formal training of leadership for ptwrs, most felt wr skills were learnt on the job from observation and experience of watching senior colleagues, exposure to considerative checklist changed thinking (? How) in 94% and changed practice in 88% - common positive themes - enhance wr preparation, importance of inclusion and communication, need for structure faciliatated by physical or mental checklist. 17/18 flet that the training would influence consulatnt practice.
The ward round: what it is and what it can be.	Cohn A.	Br J Hosp Med (Lond). 2014 Jun;75 Suppl 6:C82-5. doi: 10.12968/hmed.2014.75.Sup6.C82. No abstract available.	y	comment														
Nurses should be empowered to challenge doctors who overprescribe.	[No authors listed]	Nurs Stand. 2014 Jul 15;28(45):8. doi: 10.7748/ns.28.45.8.s6.	y	comment														
iPad use at the bedside: a tool for engaging patients in care processes during ward rounds?	Baysari MT, Adams K, Lehnbom EC, Westbrook JI, Day RO.	Intern Med J. 2014 Oct;44(10):986-90. doi: 10.1111/imj.12518.	y	I pad use														
Prevention of meticillin-resistant Staphylococcus aureus bloodstream infections in European hospitals: moving beyond policies.	Borg MA, Hulscher M, Scicluna EA, Richards J, Azanowsky JM, Xuereb D, Huis A, Moro ML, Maltezou HC, Frank U.	J Hosp Infect. 2014 Aug;87(4):203-11. doi: 10.1016/j.jhin.2014.05.003. Epub 2014 Jun 5.	y	not wrs														
Delivery of enteral nutrition after the introduction of practice guidelines and participation of dietitians in pediatric critical care clinical teams.	Gentles E, Mara J, Diamantidi K, Alfheeaid HA, Spenceley N, Davidson M, Gerasimidis K.	J Acad Nutr Diet. 2014 Dec;114(12):1974-80.e3. doi: 10.1016/j.jand.2014.04.027. Epub 2014 Jun 21.	y	not wrs														
Re: Surgical Ward Round Quality and Impact on Variable Patient Outcomes.	Oliphant R, Jackson A, Moug S, Drummond R, Blackhall V, Renwick A.	Ann Surg. 2014 Jun 19. [Epub ahead of print] No abstract available.	yes	letter														

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How we involved rural clinicians in teaching ethics to medical students on rural clinical placements.	Parker L, Watts LD.	Med Teach. 2015 Mar;37(3):228-31. doi: 10.3109/0142159X.2014.923559. Epub 2014 Jun 17.	y	ethics														
Evaluation of an online medical teaching forum.	Ravindran R, Kashyap M, Lilis L, Vivekanantham S, Phoenix G.	Clin Teach. 2014 Jul;11(4):274-8. doi: 10.1111/tct.12139.	y	online teaching														
[Bioethics in medical institutions--new custom or help? The example of clinical ethics consultation at a University Medical Center].	Richter G.	Herz. 2014 Aug;39(5):567-75. doi: 10.1007/s00059-014-4114-1. German.	y	german														
Video-based feedback of oral clinical presentations reduces the anxiety of ICU medical students: a multicentre, prospective, randomized study.	Schmidt M, Freund Y, Alves M, Monsel A, Labbe V, Darnal E, Messika J, Bokobza J, Similowski T, Duguet A.	BMC Med Educ. 2014 May 22;14:103. doi: 10.1186/1472-6920-14-103.	Yes	Video based feedback fro medical students for case presentations on ICU rounds - nice study but not relevant														
[Feedback on service provision in cancer patients using the Ward Satisfaction Questionnaire (WSQ)--testing a new tool].	Singer S, Hornemann B, Hertzschuch D, Elchlep F, Hentschel L, Ehninger G, Schuler MK.	Dtsch Med Wochenschr. 2014 Jul;139(27):1409-14. doi: 10.1055/s-0034-1370104. Epub 2014 May 28. German.	y	german														
An interventional study on intensive care unit drug therapy assessment in a rural district hospital in India.	Pichala PT, Kumar BM, Zachariah S, Thomas D, Saunchez L, Gerardo AU.	J Basic Clin Pharm. 2013 Jun;4(3):64-7. doi: 10.4103/0976-0105.118801.	y	pharmacy tool for drug related problems on icu														
Improving ward round skills.	Krautter M, Koehl-Hackert N, Nagelmann L, JÃ¼nger J, Norcini J, Tekian A, Nikendei C.	Med Teach. 2014 Sep;36(9):783-8. doi: 10.3109/0142159X.2014.909585. Epub 2014 May 7.			Training intervention with control	ward round comptencies	?								Specific wr training		?	effects of structured on ward supervision of final year medical students, 8 week long training course v control, no difference in pt ratings but IG achieved significantly more predefined learning goals, need to look at cost effectiveness
Learning the lessons from banding appeals: evidence based guidance for running junior doctor rotas.	Moreton A, Jackson E, Ahmed-Little Y.	J Health Organ Manag. 2014;28(1):62-76.	y	doctors rotas														
Medical expertise and patient involvement: a multiperspective qualitative observation study of the patient's role in oncological decision making.	Salloch S, Ritter P, WÃ¤scher S, Vollmann J, Schildmann J.	Oncologist. 2014 Jun;19(6):654-60. doi: 10.1634/theoncologist.2013-0268. Epub 2014 Apr 23.	y	oncology pt decision making														
3D Simulation of a Hospital Environment and Ward Round to Augment a Summer School Program for Pre-Medical Students.	Kulendran M, Taylor M, Taylor D, Darzi A.	Stud Health Technol Inform. 2014;196:209-14.	y	pre-medical students														
Patient safety in South Africa: PICU adverse event registration*.	Vermeulen JM, van Dijk M, van der Starre C, WÃ¶sten-van Asperen RM, Argent AC.	Pediatr Crit Care Med. 2014 Jun;15(5):464-70. doi: 10.1097/PCC.0000000000000114.	y	adverse events on picu														
A letter to the Master Clinician.	Jhaveri KD.	Version 2. F1000Res. 2014 [revised 2014 Feb 13];3:1. doi: 10.12688/f1000research.3-1.v2.	y	letter														
Ward simulation to improve surgical ward round performance: a randomized controlled trial of a simulation-based curriculum.	Pucher PH, Aggarwal R, Singh P, Srisatkunam T, Twaij A, Darzi A.	Ann Surg. 2014 Aug;260(2):236-43. doi: 10.1097/SLA.0000000000000557.			educational intervention	swats, w-notechs	surgical		safety						yes		surgery	investigation of simualtion based curriculum, Hlf day of lectures/structured feedback/debriefing compared to control, training led to improvement in quality of pt assessment, management and nontechnical skills
The ratio of abdominal circumference and body weight--an objective parameter for the daily ward round in a NICU?	Heimann K, Schoberer M, Posielek J, Fitzner C, Orlikowsky T.	Klin Padiatr. 2014 Apr;226(2):72-5. doi: 10.1055/s-0034-1368718. Epub 2014 Mar 14.	y	specific to nicu														
Reviving post-take surgical ward round teaching.	Force J, Thomas I, Buckley F.	Clin Teach. 2014 Apr;11(2):109-15. doi: 10.1111/tct.12071.			Pre and post teaching intervention	Student satisfaction and perceived learning - self rating	Surgical PTWR								Assisted surgical PTWR with surgical fellows		Surgery	Clinical teaching fellows supplied teaching alongside surgical ptwr and increased self raitings of student enjoyment and perceived learning, as biggest barrier to effective undergraduate wr teaching was lack of time for clinical staff
Medical academia clinical experiences of Ward Round Teaching curriculum.	Haghani F, Arabshahi SK, Bigdeli S, Alavi M, Omid A.	Adv Biomed Res. 2014;3:50. doi: 10.4103/2277-9175.125771.	y	gp trainees														
The educational value of ward rounds in conveying knowledge and developing trainees' clinical skills.	Laskaratos FM, Gkotsi D, Panteliou E, Epstein O.	Br J Hosp Med (Lond). 2014 Mar;75(3):162-5. No abstract available.			Review non systematic	Educational value (clinical skills)of wrs	Any								Review of articles		Various	Good review not systematic but varied with good subject headings but only clinical skills
Using junior doctor-led ward rounds to enhance surgical education.	Lad M, Patten DK.	J Surg Educ. 2014 Mar-Apr;71(2):164-5. doi: 10.1016/j.jsurg.2013.08.007. Epub 2013 Sep 26. No abstract available. Erratum in: J Surg Educ. 2014 May-Jun;71(3):451.	y	letter														
Surgical ward rounds in England: a trainee-led multi-centre study of current practice.	Rowlands C, Griffiths SN, Blencowe NS, Brown A, Hollowood A, Hornby ST, Richards SK, Smith J, Strong S; on behalf of the Severn and Peninsula Audit and Research Collaborative for Surgeons (SPARCS); the Northwest Research Collaborative.	Patient Saf Surg. 2014 Feb 28;8(1):11.			Data collection and report	consultant led, nurse presence, outlers, timing	surgical		Yes								Surgical	Large data collection - 471 wrs, 5622 pts, 19 hospitals, 13 subspecialities, 77.9% started before 9, 45% of weekeday rounds were consultant led, 67% weekend rounds, 44% seen with nurse present, 27% outliers, 67% of wrs reporting at least one outlier, highlights need for changes especially in workforce planning
How we breathed life" into problem-based learning cases using a mobile application."	McLean M, Brazil V, Johnson P.	Med Teach. 2014 Oct;36(10):849-52. doi: 10.3109/0142159X.2014.886771. Epub 2014 Feb 26.	y	not wrs, student teaching pbls														
'Safety by DEFAULT': introduction and impact of a paediatric ward round checklist.	Sharma S, Peters MJ; PICU/NICU Risk Action Group.	Crit Care. 2013 Oct 11;17(5):R232. doi: 10.1186/cc13055.			pre and post intervention - checklist	days between accidental extubations, ventialted pts tidal volume, hence increase in patents in target range	PICU		Yes checklist								PICU	introduction of DEFAULT cheklist, led to improvements in PICU specific clinical endpoints, improved communication and safety reported (? Proven)
Does the integration of personalized ultrasound change patient management in critical care medicine? Observational trials.	Breitkreutz R, Campo DelÃ¼ Orto M, Hamm C, Cuca C, Zechner PM, Stenger T, Walcher F, Seeger FH.	Emerg Med Int. 2013;2013:946059. doi: 10.1155/2013/946059. Epub 2013 Dec 18.	y	US on CCU														
Interprofessional learning at work: what spatial theory can tell us about workplace learning in an acute care ward.	Gregory LR, Hopwood N, Boud D.	J Interprof Care. 2014 May;28(3):200-5. doi: 10.3109/13561820.2013.873774. Epub 2014 Jan 9.	y	not wr focussed														
Improving patient handover between teams using a business improvement model: PDSA cycle.	Luther V, Hammersley D, Chekairi A.	Br J Hosp Med (Lond). 2014 Jan;75(1):44-7.	y	handover														
Ward rounds and patient outcome: be attentive or suffer the peril.	Klingensmith ME.	Ann Surg. 2014 Feb;259(2):227-8. doi: 10.1097/SLA.0000000000000493. No abstract available.	y	editorial														
Medical students' awareness of the role of physiotherapists in multidisciplinary healthcare.	Vincent-Onabajo GO, Mustapha A, Oyeyemi AY.	Physiother Theory Pract. 2014 Jul;30(5):338-44. doi: 10.3109/09593985.2013.871765. Epub 2014 Jan 7.	y	student opinions on physios														
Surgical outreach in rural South Africa: are we managing to impart surgical skills?	Clarke DL, Aldous C.	S Afr Med J. 2013 Jul 29;104(1):57-60. doi: 10.7196/samj.7252.	y	not wrs														

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Older patients' participation in team meetings-a phenomenological study from the nurses' perspective.	Lindberg E, Persson E, HÃ¶rberg U, Ekebergh M.	Int J Qual Stud Health Well-being. 2013 Dec 20;8:21908. doi: 10.3402/qhw.v8i0.21908.	y	not wrs														
An evaluation of a formative assessment process used on post take ward rounds.	Caldwell G.	Acute Med. 2013;12(4):208-13.			evaluaion of formative assessment for wrs	survey compared to cbds mini cex	medicine ptwrs								formative assessment		gim	Survey and interviews - this process helped more then cbds/ mini cex in their development, positive effects in areas such as disagnosis, prescribing and confidence, would prefer routine assessment rather than having to ask, effective formative feedback
Antibiotic stewardship ward rounds and a dedicated prescription chart reduce antibiotic consumption and pharmacy costs without affecting inpatient mortality or re-admission rates.	Boyles TH, Whitelaw A, Bamford C, Moodley M, Bonorchis K, Morris V, Rawoot N, Naicker V, Lusakiewicz I, Black J, Stead D, Lesosky M, Raubenheimer P, Dlamini S, Mendelson M.	PLoS One. 2013;8(12):e79747. doi: 10.1371/journal.pone.0079747.	y	antibiotic stewardship wrs, dedicated rug chart														
Prioritising ward rounds would improve junior doctors' experience and patient care.	Price CE.	BMJ. 2013 Dec 16;347:f7427. doi: 10.1136/bmj.f7427. No abstract available. Erratum in: BMJ. 2013;347:f7580. Price, E [corrected to Price, Clare E].	y	letter														
Ward safety checklist in the acute surgical unit.	Blucher KM, Dal Pra SE, Hogan J, Wysocki AP.	ANZ J Surg. 2014 Oct;84(10):745-7. doi: 10.1111/ans.12496. Epub 2013 Dec 16.			evaluation of a checklist	things on checlist, observation, unknown to participants	surgery		checklist								surgery	checklist - 2 week unaware observation, 2 weeks surgical ptwr, improvement in all areas but many compliance still less then 100% - good starting point to overcome some of the deficinencies on surgical ptwr - ? Before and after, where did cheklist come from ? validity and reliability testing
[Conducting ward rounds: a balance between care and teaching].	Gachoud D, Monti M, Waeber G, Bonvin R.	Rev Med Suisse. 2013 Oct 30;9(404):2013-6. French.	y	french														
Improving the quality of care for medical inpatients by placing a higher priority on ward rounds.	Soliman A, Riyaz S, Said E, Hale M, Mills A, Kapur K.	Clin Med. 2013 Dec;13(6):534-8. doi: 10.7861/clinmedicine.13-6-534.			evaluation of change in work patterns for consultants	focus group and questionnaire	medicine		change in consulatnt work patterns		yes			focus group	impact of change		gim	change in consulatnt work patterns putting more focus on ward rounds (not sure what the change is), focus group and questionnaire, overall satisfaction 93%, 75% reported increased safe patient discharges, 68% observed improved teamwork, LOS reduced without increase in readmission, main themes improved quality of care, btter assured patients and relatives, better consulatnt job satisfaction, reduced junior doctors independent decision making and slight reduction in speciality specific activity - all in all positive impact on patient care.
[Right to privacy].	Pafko P, Mach J.	Rozhl Chir. 2013 Aug;92(8):464-6. Czech.	y	czech														
Surgical ward round quality and impact on variable patient outcomes.	Pucher PH, Aggarwal R, Darzi A.	Ann Surg. 2014 Feb;259(2):222-6. doi: 10.1097/SLA.0000000000000376.			investiagtion of vairability in ward round qulaity and clinical outcomes	observation looking at all sources of clinical information (SCI) - % of SCI marker of ward round quality, complications, preventability, looked at WR quality and incidence of prevantable complications	surgery		yes looking at wr quality and complications								surgery	observatins - sci % and no of prevntable complications, 69 wrs over 37 days for 50 pts on hdu, considerable variability, high complication rate, low quality wrs resulted in greater incidence of preventable complications, need to focus on wr quality
There is another way: empowering frontline staff caring for acutely unwell adults.	Turkington P, Power M, Hunt C, Ward C, Donaldson E, Bellerby J, Murphy P.	Int J Qual Health Care. 2014 Feb;26(1):71-8. doi: 10.1093/intqhc/mzt084. Epub 2013 Nov 19.	y	not wrs														
What's wrong with ward rounds?	Launer J.	Postgrad Med J. 2013 Dec;89(1058):733-4. doi: 10.1136/postgradmedj-2013-132472. No abstract available.	y	reflection														
Development of an evidence-based curriculum for training of ward-based surgical care.	Pucher PH, Darzi A, Aggarwal R.	Am J Surg. 2014 Feb;207(2):213-7. doi: 10.1016/j.amjsurg.2013.10.006. Epub 2013 Oct 24.			development of evidence based curriculum for training ward based care surgery		surgery								yes		surgery	development of modular, simulation-based curriculum was develeoped according to validated measures, incroprating most recent evidence in design of each educational module
Multidisciplinary integration in the context of integrated care - results from the North West London Integrated Care Pilot.	Harris M, Greaves F, Gunn L, Patterson S, Greenfield G, Car J, Majeed A, Pappas Y.	Int J Integr Care. 2013;13:e041.	y	md integration - not wrs														
Audit of co-management and critical care outreach for high risk postoperative patients (The POST audit).	Story DA, Shelton A, Jones D, Heland M, Belomo R; Austin Health Post-Operative Surveillance Team Investigators (POST).	Anaesth Intensive Care. 2013 Nov;41(6):793-8.	y	critical care outreach, ot dotors wrs														
Difficult to wean patients: cultural factors and their impact on weaning decision-making.	Kydonaki K, Huby G, Tocher J.	J Clin Nurs. 2014 Mar;23(5-6):683-93. doi: 10.1111/jocn.12104. Epub 2013 Nov 3.	y	not wrs														
Restore the prominence of the medical ward round.	Cohn A.	BMJ. 2013 Oct 31;347:f6451. doi: 10.1136/bmj.f6451. No abstract available.	y	personal view														
Evaluation of poison information services provided by a new poison information center.	Churi S, Abraham L, Ramesh M, Narahari MG.	Indian J Pharmacol. 2013 Sep-Oct;45(5):496-501. doi: 10.4103/0253-7613.117781.	y	poisons														
Medical and surgical ward rounds in teaching hospitals of Kuwait University: students' perceptions.	Almutar S, Altourah L, Sadeq H, Karim J, Marwan Y.	Adv Med Educ Pract. 2013;4:189-93. doi: 10.2147/AMEP.S52096.			questionaaire of medical students	current and expected competencies	medicne and surgery				students				yes for students		medicine and surgery	questinnaire of expected v current comptencies, current lower than expected, medical wrs better at achieveing some comptencies then surgical - like teaching professioanl attidude and approach towards patients, best taught comptency was nedisde examination for both, but both defient in meeting stidents expectations
Developing content for a process-of-care checklist for use in intensive care units: a dual-method approach to establishing construct validity.	Conroy KM, Elliott D, Burrell AR.	BMC Health Serv Res. 2013 Oct 3;13:380. doi: 10.1186/1472-6963-13-380.			Development of checklist for ICU		ICU		Checklist								ICU	Checklist development - interviews and Delphi expert panel - nutrition, pain management, sedation, DVT, stress ulcer prevention, head of bed elevation, blood glucose levels, readiness to extubate, medications
The effect of ward round teaching on patients: The health team and the patients' perspectives.	Adibi P, Enjavian M, Alizadeh R, Omid A.	J Educ Health Promot. 2013;2:35. doi: 10.4103/2277-9531.115824.			Questionnaire on perspectives of satisfaction of wrs incl doctrs, students, nurses and pts	Satisfaction	? Various	Yes perspectives of mdt							impact of bedside teaching - pts liked being invovled		? Various	Questionnaires to pts, interns, residents, nurses (not consultants?) regarding satisfaction of wrs, pts positive, medical teams viewpoint was negative, problems lack of definite responsible doctor, feeling of insecurity during incongruous and unclear discussions, level of respect for pt

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Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
[Professionalization of surgical education in the daily clinical routine. Training concept of the Surgical Working Group for Teaching of the German Society of Surgery].	Adili F, Kadmon M, KÃ¶nig S, Walcher F.	Chirurg. 2013 Oct;84(10):869-74. doi: 10.1007/s00104-013-2530-z. Review. German.	y	german														
The activity of palliative care team pharmacists in designated cancer hospitals: a nationwide survey in Japan.	Ise Y, Morita T, Katayama S, Kizawa Y.	J Pain Symptom Manage. 2014 Mar;47(3):588-93. doi: 10.1016/j.jpainsymman.2013.05.008. Epub 2013 Sep 7.	y	palliative care pharmacists														
Twelve tips to improve medical teaching rounds.	Abdool MA, Bradley D.	Med Teach. 2013 Nov;35(11):895-9. doi: 10.3109/0142159X.2013.826788. Epub 2013 Sep 4.			Comment on ward round teaching	None									Personal 12 tips		Internal medicine	12 tips for improving teaching on WRs
Use of ecological momentary assessment to determine which structural factors impact perceived teaching quality of attending rounds.	Willett L, Houston TK, Heudebert GR, Estrada C.	J Grad Med Educ. 2012 Sep;4(3):322-8. doi: 10.4300/JGME-D-11-00265.1.			prospective ward round teeaching evaluation	Residents evaluation of ward round, also which service ie gen med, pt census, absenteeism of team members, call status, no of teaching methods used by attending	Various								Evaulation in relation to which service, pt census, absenteeism of team members, call status and no of teaching methods used		Various	Use of ecological momentary assessment to determine if any structural factors of ward rounds impact on pereived teaching quality ie higher pt censs was associated with lower perceived teaching quality, attendings can improve teaching if they diversify methods used.
Re-exploring the ritual of the ward round.	Parissopoulos S, Timmins F, Daly L.	Nurs Crit Care. 2013 Sep;18(5):219-21. doi: 10.1111/nicc.12042. No abstract available.	y	edictorial	Editorial													
Collaboration between hospital physicians and nurses: an integrated literature review.	Tang CJ, Chan SW, Zhou WT, Liaw SY.	Int Nurs Rev. 2013 Sep;60(3):291-302. doi: 10.1111/inr.12034. Epub 2013 May 27. Review.			Literature review		Collaboration between nurses and physicians only	Yes				Yes					Hospitals	Review of articles on nurse/physician collaboration - diffs in opinion, what affects it and improvement strategies
Improving communication of the daily care plan in a teaching hospital intensive care unit.	Karalapillai D, Baldwin I, Dunnachie G, Knott C, Eastwood G, Rogan J, Carnell E, Jones D.	Crit Care Resusc. 2013 Jun;15(2):97-102.	y	nursing led communication and handover														
[Patient record based ward rounds as an example of coordination between doctors and nurses courses of action"]."	Nadot Ghanem N.	Rech Soins Infirm. 2013 Jun;(113):61-75. French.	y	french														
The German quality indicators in intensive care medicine 2013--second edition.	Braun JP, Kumpf O, Deja M, Brinkmann A, Marx G, Bloos F, Kaltwasser A, Dubb R, Muhl E, Greim C, Bause H, Weiler N, Chop I, Waydhas C, Spies C.	Ger Med Sci. 2013 Jul 16;11:Doc09. doi: 10.3205/000177. Print 2013. English, German.	y	quality indicators in IC medicine														
A Considerative Checklist to ensure safe daily patient review.	Mohan N, Caldwell G.	Clin Teach. 2013 Aug;10(4):209-13. doi: 10.1111/tct.12023.			Cladwells onsiderative checklist, ? What evaluation	unclear	gim		checklist								gim	Caldwells considerative checklist, report on it - egs vte, prescrigbing, blanket staements that it improves but not sure if it has been tested
Reducing cardiac arrests in the acute admissions unit: a quality improvement journey.	Beckett DJ, Inglis M, Oswald S, Thomson E, Harley W, Wilson J, Lloyd RC, Rooney KD.	BMJ Qual Saf. 2013 Dec;22(12):1025-31. doi: 10.1136/bmjqs-2012-001404. Epub 2013 Jul 4.	y	cardiac arrest reduction qip														
The ward round--patient experiences and barriers to participation.	Swenne CL, Skytt B.	Scand J Caring Sci. 2014 Jun;28(2):297-304. doi: 10.1111/scs.12059. Epub 2013 Jun 30.			Investigation of pateint experiences	interview	cardiovasular						yes	yes			cardiovascular (? Surgical)	Interview study of 14 pts on cardiovascular ward - main theme - handling info from daily ward round while waiting for private consulatntion, subthemes - making best of short time spent on wrs, encountering , traditional roles and taking confort in staff competency, being able to choose the degree to which one participates in decision making process, info given by nurses easier to undertand than doctors, environment important, the pts ability to communicat etheir goals, atmosphere must be open, pt treated with empathy, pts right to participate must be acknowledged
[Practical aspects of medication safety].	Hug B.	Praxis (Bern 1994). 2013 May 8;102(10):591-6. doi: 10.1024/1661-8157/a001287. Review. German.	y	german														
Ward round: A 43-year-old diabetic man with multiple joint pains.	Segula D, Mahmood N, Allain TJ.	Malawi Med J. 2012 Dec;24(4):84-6. No abstract available.	y	case report														
How nurses can lead from the frontline.	Entwistle F.	Nurs Times. 2013 Mar 26-Apr 1;109(12):15.	y	commentary														
The nurse's role in hospital ward rounds.	Lees L.	Nurs Times. 2013 Mar 26-Apr 1;109(12):12-4.			Nurses role on ward rounds	? Report	?	nurses	nurses roles								?	discussion on key aspects of nurses responsibilities and different stages of wr process
Surgical hospital audit of record keeping (SHARK)--a new audit tool for the improvement in surgical record keeping.	Grewal P.	J Surg Educ. 2013 May-Jun;70(3):373-6. doi: 10.1016/j.jsurg.2012.12.003.	y	not wr, record keeping														
Ethics ward rounds: a conduit to finding meaning and value in medical school.	Parker L, Watts L.	J Eval Clin Pract. 2013 Dec;19(6):1084. doi: 10.1111/jep.12029. Epub 2013 Apr 22. No abstract available.	y	ethical wrs														
Rural Ethics Ward Rounds: enhancing medical students' ethical awareness in rural medicine.	Watts L, Parker L, Scicluna H.	Aust J Rural Health. 2013 Apr;21(2):128-9. doi: 10.1111/ajr.12016. No abstract available.	y	ethical wrs														
The importance of ward rounds: a time to connect?	Halligan A.	Br J Hosp Med (Lond). 2013 Apr;74(4):184-5. No abstract available.	y	comment														
Simulation for ward processes of surgical care.	Pucher PH, Darzi A, Aggarwal R.	Am J Surg. 2013 Jul;206(1):96-102. doi: 10.1016/j.amjsurg.2012.08.013. Epub 2013 Mar 30. Review.			review of simulation lit and describ eexperience of setting up a ward simulator	discussion	surgical								sim training for wrs		surgery	Review of lit and desription of setting up simulated wr
Infection control for a methicillin-resistant Staphylococcus aureus outbreak in an advanced emergency medical service center, as monitored by molecular analysis.	Hidaka H, Miura M, Masunaga K, Qin L, Uemura Y, Sakai Y, Hashimoto K, Kawano S, Yamashita N, Sakamoto T, Watanabe H.	J Infect Chemother. 2013 Oct;19(5):884-90. doi: 10.1007/s10156-013-0587-8. Epub 2013 Mar 29.	y	mrsa														
Validation of the simulated ward environment for assessment of ward-based surgical care.	Pucher PH, Aggarwal R, Srisatkunam T, Darzi A.	Ann Surg. 2014 Feb;259(2):215-21. doi: 10.1097/SLA.0b013e318288e1d4.			validation of simulated ward	tool	surgical								validation of simulated ward		surgery	assess feasibility of developing a simulated ward environment in which to assess the ward based care of surgical patients by clinicians of varying levels of experience (construct v), assessed junior ans senior trainees using checklist and management care processes, modified NOTECHS, and fidelity questionnaire, senior trainees performed significantly more assessment processes and management tasks, 15 adverse events by juniors and 8 by seniors, seniors scored higher on nontechnical ability, all felt it wa srealistic

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The safe and effective delivery of ward rounds.	Tingle J.	Br J Nurs. 2012 Nov 22-Dec 12;21(21):1282-3. No abstract available.			Report on RCP/RCN report from nursing perspective													Report on RCP/RCN report from nursing perspective
Ward rounds: what goes around comes around.	Herring R, Richardson T, Caldwell G.	Lancet. 2013 Feb 2;381(9864):373-4. doi: 10.1016/S0140-6736(13)60169-5. No abstract available.	y	letter														
Attending physicians on ward rounds--reply.	Wachter RM, Verghese AC.	JAMA. 2013 Jan 23;309(4):341. doi: 10.1001/jama.2012.65894. No abstract available.	Yes	Letter														
Attending physicians on ward rounds.	Centor RM, Castiglioni A, Roy B.	JAMA. 2013 Jan 23;309(4):341. doi: 10.1001/jama.2012.65887. No abstract available.	Yes	Reply to above														
Parents' experiences of information and communication in the neonatal unit about brain imaging and neurological prognosis: a qualitative study.	Harvey ME, Nongena P, Gonzalez-Cinca N, Edwards AD, Redshaw ME; ePRIME Research Team.	Acta Paediatr. 2013 Apr;102(4):360-5. doi: 10.1111/apa.12154. Epub 2013 Jan 28.	y	paediatric brain imaging														
A comparison of active surveillance programs including a spontaneous reporting model for phamacovigilance of adverse drug events in a hospital.	Yun IS, Koo MJ, Park EH, Kim SE, Lee JH, Park JW, Hong CS.	Korean J Intern Med. 2012 Dec;27(4):443-50. doi: 10.3904/kjim.2012.27.4.443. Epub 2012 Nov 27.	y	reporting system fo adverse events														
Comparison of knowledge, attitude and practices of resident doctors and nurses on adverse drug reaction monitoring and reporting in a tertiary care hospital.	Rehan HS, Sah RK, Chopra D.	Indian J Pharmacol. 2012 Nov-Dec;44(6):699-703. doi: 10.4103/0253-7613.103253.	y	adverse drug reactions														
An antibiotic stewardship program in a French teaching hospital.	Mondain V, Lieutier F, Dumas S, Gaudart A, Fosse T, Roger PM, Bernard E, Farhad R, Pulcini C.	Med Mal Infect. 2013 Jan;43(1):17-21. doi: 10.1016/j.medmal.2012.10.006. Epub 2012 Dec 12.	y	antibiotic stewardship program														
The influence of key clinical practices on the knowledge of first year doctors about the patients under their care.	Naqvi M, Ward ST, Dowswell G, Donnelly J; SWIFT group collaborators & the West Midlands Research Collaborative (WMRC).	Int J Clin Pract. 2013 Feb;67(2):181-8. doi: 10.1111/ijcp.12082. Epub 2012 Dec 6.			study to assess ho wmuch fy1 doctors know about the acute surgcal patients they manage and how this is influenced by changes in key working practices	answer to 16 clincal questions, 48 hours after admission, analused accoring to length of time fy1 had been looking after pt, whethe rthey had clerked pt in, attended ptwr, used handover sheet, sole or shared responsibility for pt	surgical		influence of presence of junior on ptwr		yes				yes		surgery	asked fy1s 16 clinical questions about pt in care for 48 hours and also attended ptwr, clerked pt or not, how long they had been looking after pt, use of hanover sheet, sole of shared responsibility for pt, 274 fy1s from 36 hospitals surveyed, only 8.4% of the had clerked the pt inand 58.4% had attended ptwr, both o fthese impacted on higher scores, scores for those who used a handover sheet were lower than those who did not, shows need to be on ptwr and perform admission clerking, handover sheet associated with poorer knowledge of pt, ? how they did this acorss 36 hospitals
Clinical usefulness of electronic drug-drug interaction checking in the care of cardiovascular surgery inpatients.	Taegtmeyer AB, Kullak-Ublick GA, Widmer N, Falk V, Jetter A.	Cardiology. 2012;123(4):219-22. doi: 10.1159/000343272. Epub 2012 Nov 27.	y	electronic drug interaction checking														
Ward rounds best practice report calls for more nurse involvement.	Duffin C.	Nurs Stand. 2012 Oct 10-16;27(6):9. No abstract available.	y	comment														
Call to raise nurses' profile on ward rounds.	Triggle N.	Nurs Manag (Harrow). 2012 Nov;19(7):6-7. No abstract available.	y	comment														
Productive Ward initiative promotes better communication between mental health teams and ensures timely discharge for patients.	Lennard C.	J Psychiatr Ment Health Nurs. 2014 Feb;21(1):93-6. doi: 10.1111/jpm.12020. Epub 2012 Nov 15.	y	not wrs														
Electronic ward round: finding time for the inpatient with Clostridium difficile infection.	Dube R, Subudhi CP, Chadwick PR.	J Infect. 2013 Jan;66(1):111-3. doi: 10.1016/j.jinf.2012.10.018. Epub 2012 Oct 24. No abstract available.	y	electronic wrs														
How we make good doctors into good teachers: a short course to support busy clinicians to improve their teaching skills.	Foster K, Laurent R.	Med Teach. 2013;35(1):4-7. doi: 10.3109/0142159X.2012.731098. Epub 2012 Oct 26.	y	not wrs														
Ward rounds: what goes around comes around.	[No authors listed]	Lancet. 2012 Oct 13;380(9850):1281. doi: 10.1016/S0140-6736(12)61740-1. No abstract available.	y	comment														
Capturing students' learning experiences and academic emotions at an interprofessional training ward.	Lachmann H, Ponzer S, Johansson UB, Benson L, Karlgren K.	J Interprof Care. 2013 Mar;27(2):137-45. doi: 10.3109/13561820.2012.724124. Epub 2012 Oct 8.	y	not wr specific														
Restore ward rounds to former glory to improve patient care, say colleges.	Kmietowicz Z.	BMJ. 2012 Oct 3;345:e6622. doi: 10.1136/bmj.e6622. No abstract available.	Yes	Statement form RCN on rcp report														
Republished: Daily consultant gastroenterologist ward rounds: reduced length of stay and improved inpatient mortality.	Singh S, Lipscomb G, Padmakumar K, Ramamoorthy R, Ryan S, Bates V, Crompton S, Dermody E, Moriarty K.	Postgrad Med J. 2012 Oct;88(1044):583-7.			intervention - daily consulatnt rounds	los, no of pts treated, no of deaths reduced but less endoscopy and OP activity	Gastroenterology		Daily consulatnt								Gastroenterology	Daily ocnsultnat wrs, los reduced, no of pts seen increased, reduced mortality but less endoscopy and less OP clinics
Is the post-take ward round standardised?	Mansell A, Uttley J, Player P, Nolan O, Jackson S.	Clin Teach. 2012 Oct;9(5):334-7. doi: 10.1111/j.1743-498X.2012.00566.x.			Audit f ptwr with checklist		AMU ptwr		checklist								GIM	Audit of 17 evidence based items - where is evidence from? Lots less than 95%
Why patients need leaders: introducing a ward safety checklist.	Amin Y, Grewcock D, Andrews S, Halligan A.	J R Soc Med. 2012 Sep;105(9):377-83. doi: 10.1258/jrsm.2012.120098.			introduction of ward safety checklist	none that I can see	medicine		checklist (UCL)								GIM	use of UCL checklist - design and implementation but not sure if evaluarted, defines a set of risk factors that should be checked on a daily basis, offers mdt members a number of prompts for sharing and clarifying info between themselves and pt, well recieved but barriers to adoption were informative about surrent culture on many ip wards, faliure to coordinate workloads for nursesing and cotros hence 'de-coupling', further complication is medical culture which values primacy of autonomy and as a result can be resistant to perceived attempts to 'systematize' medical care eg checklists - but is this evaluated????
Patient perceptions of the cardiology ward round.	Molony B, Horgan S, Graham I.	Ir Med J. 2012 Jun;105(6):189-90. No abstract available.			Questionnaire	Cardiology pt perspectives	Cardiology						Cardiology pts via questionnaire				Cardiology	Cardiology pts questionnaires - mixed results - small study with minimal anaylsis
Validation of a transparent decision model to rate drug interactions.	Far E, Curkovic I, Byrne K, Roos M, Egloff I, Dietrich M, Kirch W, Kullak-Ublick GA, Egbring M.	BMC Pharmacol Toxicol. 2012 Aug 20;13:7. doi: 10.1186/2050-6511-13-7.	y	durg interactions														
Impact of pharmacists' intervention on identification and management of drug-drug interactions in an intensive care setting.	Hasan SS, Lim KN, Anwar M, Sathvik BS, Ahmadi K, Yuan AW, Kamarunnesa MA.	Singapore Med J. 2012 Aug;53(8):526-31.	y	durg interactions - impact of pharmacist														
Long-term intended and unintended experiences after Advanced Life Support training.	Rasmussen MB, Dieckmann P, Barry Issenberg S, Ã¨stergaard D, SÃ¸reide E, Ringsted CV.	Resuscitation. 2013 Mar;84(3):373-7. doi: 10.1016/j.resuscitation.2012.07.030. Epub 2012 Aug 9.	y	ALS training														

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Nurse-led ward rounds: a valuable contribution to acute stroke care.	Catangui EJ, Slark J.	Br J Nurs. 2012 Jul 12-25;21(13):801-5.	y	nurse led wrs														
Knowledge-based tacrolimus therapy for kidney transplant patients.	Seeling W, Plischke M, Schuh C.	Stud Health Technol Inform. 2012;180:310-4.	y	tacrolimus														
An ICU clinical information system - clinicians' expectations and perceptions of its impact.	Hains IM, Creswick N, Milliss D, Parr M, Westbrook JI.	Stud Health Technol Inform. 2012;178:64-70.	y	IT system														
Paediatric trainee supervision: management changes and perceived education value.	van den Boom M, Pinnock R, Weller J, Reed P, Shulruf B.	J Paediatr Child Health. 2012 Jul;48(7):567-71. doi: 10.1111/j.1440-1754.2012.02434.x. Epub 2012 Mar 8.	y	not wrs														
A needs assessment study of undergraduate surgical education.	Kaur N, Gupta A, Saini P.	Natl Med J India. 2011 Sep-Oct;24(5):292-3.	y	not wrs														
Medication communication during ward rounds on medical wards: Power relations and spatial practices.	Liu W, Manias E, Gerdtz M.	Health (London). 2013 Mar;17(2):113-34. doi: 10.1177/1363459312447257. Epub 2012 Jun 6.			observation, filed interviews, video, individual and group reflxive interviews	as previous	?	yes			yes nurses and pharmacists	communication, hierarchy					?	communication and power relations on wrs for discussion on medications, traditional hierarchies constructed the ways in which doctors communicated on wrs, nurses nad pharmacists peripheral space, doctors priviledged the discourse of medication rationalisation in their wr discussions, competing with the discourse of inquirytaken up by pts and families, wrs need to be restruttured to provide opportinuities for nurses and pharmacists to speak at dedicated times and in strategic locations
[Critical reflexion on quality improvement and networking].	Adler R.	Praxis (Bern 1994). 2012 Jun 6;101(12):781-5. doi: 10.1024/1661-8157/a000964. German.	y	german														
[Ethic rounds in intensive care. Possible instrument for a clinical-ethical assessment in intensive care units].	Scheffold N, Paoli A, Gross J, Riemann U, Hennersdorf M.	Med Klin Intensivmed Notfmed. 2012 Oct;107(7):553-7. doi: 10.1007/s00063-012-0110-5. Epub 2012 Jun 7. German.	y	german														
The use of a consultant-led ward round checklist to improve paediatric prescribing: an interrupted time series study.	Lepee C, Klaber RE, Benn J, Fletcher PJ, Cortoos PJ, Jacklin A, Franklin BD.	Eur J Pediatr. 2012 Aug;171(8):1239-45. doi: 10.1007/s00431-012-1751-3. Epub 2012 May 25.			Pre and post intervention	Technical and clinical prescribing errors	Paediatric	Pharmacist	Checklist for precripstions						Check and correct prescribing checklist		Paediatrics	Useof check and correct checklist on wrs led to reduction in technical prescribing errors and hence imprvement in wirtten prescriptions - ? Sustained
[Benchmarking surgical resources--a work sampling analysis at a German university hospital].	Schuld J, Bobkowski M, Shayesteh-Kheslat R, Kollmar O, Richter S, Schilling MK.	Zentralbl Chir. 2013 Apr;138(2):151-6. doi: 10.1055/s-0031-1283948. Epub 2012 May 21. German.	y	german														
The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards--effect on training?	Eccersley L, Tan L.	Clin Med. 2012 Apr;12(2):186-7. No abstract available.	Yes	Letter														
Clinical ethics ward rounds: building on the core curriculum.	Parker L, Watts L, Scicluna H.	J Med Ethics. 2012 Aug;38(8):501-5. doi: 10.1136/medethics-2011-100468. Epub 2012 Apr 25.	y	ethics wr														
Ward-rounds: role in clinical teaching and learning in contemporary medicine.	Bassaw B, Naraynsingh V.	West Indian Med J. 2011 Dec;60(6):601-3. No abstract available.	y	comment														
Modular acute system for general surgery: hand over the operation, not the patient.	Poole GH, Glyn T, Srinivasa S, Hill AG.	ANZ J Surg. 2012 Mar;82(3):156-60. doi: 10.1111/j.1445-2197.2011.05963.x. Epub 2012 Jan 19.	y	surgical handover														
Gastroenterology training in Australia: a perspective from the coal face.	De Cruz P, Leung C, Raftopoulos S, Allen PB, Burgell R, Rode A, Rosenbaum J, Bell SJ, Hebbard GS.	Intern Med J. 2012 Oct;42(10):1125-30. doi: 10.1111/j.1445-5994.2012.02756.x.	y	gastro trainee opinions on training														
Skateboards will be needed to deliver hourly ward rounds"."	Radcliffe M.	Nurs Times. 2012 Jan 17-23;108(3):11. No abstract available.	y	comment														
Maximising learning on ward rounds.	Reece A, Klaber R.	Arch Dis Child Educ Pract Ed. 2012 Apr;97(2):61-7. doi: 10.1136/edpract-2011-301593. Epub 2012 Feb 17.			review of lit to focus on different types of wr with view to maximising learning opportunities	review of literature and underpinning of educational theory, small group workshops with over 90 experienced paediatricians	paediatrics		yes						yes		paediatrics	review of lit and educational theory - workshops with over 90 paediatricians looking at adv and disadv of different types of wr
Increasing the frequency of consultant ward rounds reduces hospital bed use.	Rayner HC.	BMJ. 2012 Feb 14;344:e1037. doi: 10.1136/bmj.e1037. No abstract available.	Yes	Letter														
Including pharmacists on consultant-led ward rounds.	Quantrill S, Webbe D.	Clin Med. 2011 Dec;11(6):627-8; author reply 628. No abstract available.	yes	letter														
What is the educational value of ward rounds? A learner and teacher perspective.	Claridge A.	Clin Med. 2011 Dec;11(6):558-62.			Questionnaire and small group	foundation year perspectives					Foundation year docs perspectives				Foundation year docs perspectives on educational value		Various	Quesionnaire and sm group discussions on educational value of wrs
The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards.	Ahmad A, Purewal TS, Sharma D, Weston PJ.	Clin Med. 2011 Dec;11(6):524-8.			Intervention, comparison	LOS, No of discharges	Medical		Twice daily consultant wrs v twice weekly								Medicine	Twice daily consultant WRs reduced, no of discarges increased, readmission and mortality stayed unchanged
Early experience with antimicrobial stewardship ward rounds at a tertiary referral hospital.	Cairns KA, Jenney AW, Krishnaswamy S, Dooley MJ, Morrissey O, Lewin SR, Cheng AC.	Med J Aust. 2012 Jan 16;196(1):34-5. No abstract available.	yes	antibiotic stewardship														
Development of an adhesive surgical ward round checklist: a technique to improve patient safety.	Dhillon P, Murphy RK, Ali H, Burukan Z, Corrigan MA, Sheikh A, Hill AD.	Ir Med J. 2011 Nov-Dec;104(10):303-5.			checklist development	audit pre and post	surgical		checklist								surgery	checklist developed ? How, improvement in dcumentation across areas - using good surgical practice guidelines ? How developed/validity etc
Clostridium difficile infection ward rounds.	Dawson S, White G, Archibald J, Munube H, Hegde M.	J Hosp Infect. 2012 Jan;80(1):96-8. doi: 10.1016/j.jhin.2011.09.011. Epub 2011 Nov 17. No abstract available.	yes	c diff														
Patient safety: culture eats strategy for breakfast.	Halligan A.	Br J Hosp Med (Lond). 2011 Oct;72(10):548-9.	yes	comment														
The lived experience of breathlessness and its implications for care: a qualitative comparison in cancer, COPD, heart failure and MND.	Gysels MH, Higginson IJ.	BMC Palliat Care. 2011 Oct 17;10:15. doi: 10.1186/1472-684X-10-15.	yes	not wrs														
Mobile health IT: the effect of user interface and form factor on doctor-patient communication.	Alsos OA, Das A, SvanÃ¦s D.	Int J Med Inform. 2012 Jan;81(1):12-28. doi: 10.1016/j.ijmedinf.2011.09.004. Epub 2011 Oct 13.	yes	it														

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Patients' perceptions of nurses' behaviour that influence patient participation in nursing care: a critical incident study.	Larsson IE, Sahlsten MJ, Segesten K, Plos KA.	Nurs Res Pract. 2011;2011:534060. doi: 10.1155/2011/534060. Epub 2011 Apr 27.	yes	not wrs														
Ward round--an acute abdominal emergency.	Irabor DO, Adesina AA.	Malawi Med J. 2010 Sep;22(3):79-80. No abstract available.	yes	case study														
Strengthening pharmaceutical care education in Ethiopia through instructional collaboration.	Odegard PS, Tadeg H, Downing D, Mekonnen H, Negussu M, Bartlein R, Stergachis A.	Am J Pharm Educ. 2011 Sep 10;75(7):134. doi: 10.5688/ajpe757134.	yes	not wrs														
Teaching on the AMU ward round.	Cooper N.	Acute Med. 2011;10(3):133-5.				juat comments and tips	AMU								Tips to imprve teaching on AMU rounds		medicine	Tips and comments on teaching on AMU - ? Evidence based??
Cardiology a ward rounds: rationale of using a checklist.	Garg P.	Clin Med. 2011 Jun;11(3):299; author reply 299. No abstract available.	yes	letter														
A qualitative analysis of prescription activity and alert usage in a computerized physician order entry system.	Wipfli R, Betrancourt M, Guardia A, Lovis C.	Stud Health Technol Inform. 2011;169:940-4.	yes	computerised prescribing														
Medication decision-making on hospital ward-rounds.	Baysari M, Westbrook J, Day R.	Stud Health Technol Inform. 2011;169:935-9.	Yes	IT														
Innovation in intensive care nursing work practices with PACS.	Creswick N, Hains IM, Westbrook JI.	Stud Health Technol Inform. 2011;169:402-6.	yes	not wrs														
Does PACS facilitate work practice innovation in the intensive care unit?	Hains IM, Creswick N, Westbrook JI.	Stud Health Technol Inform. 2011;169:397-401.	yes	not wrs														
Virtual ward round.	Storck M, Uckert F.	Stud Health Technol Inform. 2011;169:213-7.	yes	virtual no patients	Reprots on use of virtual ward round for students	unclear	students so not sure								virtual wr		unsure	just use of virtual ward round, no evaluation
Including pharmacists on consultant-led ward rounds: a prospective non-randomised controlled trial.	Miller G, Franklin BD, Jacklin A.	Clin Med. 2011 Aug;11(4):312-6.			Prospective non randomised controlled trial	Physician accepted interventions compared to control	medical	Pharmacist role									GIM	Pharmacist prescence lead to physician accepted intervention every 8 mins compared to one every 63 mins during ward pharmacist visit alone - therefore pharmacist on ward round leads to many more interventions, rectifying prescribing errors and optimising treatment
Initiative to change ward culture results in better patient care.	Desai T, Caldwell G, Herring R.	Nurs Manag (Harrow). 2011 Jul;18(4):32-5.			Report on checklist use	nurse presence	Medicine	Yes	use of checklist								Medicine	Use of checklist showed poor nurse attendance and hence the need to change culture but not sure this proves anything - we just know from others that nurses are needed on WRs, it syas pt safety and patient care were improved but not sure how it tells us this
The clinical pharmacist's contributions within the multidisciplinary patient care team of an intern nephrology ward.	Stemer G, Lemmens-Gruber R.	Int J Clin Pharm. 2011 Oct;33(5):759-62. doi: 10.1007/s11096-011-9548-4. Epub 2011 Aug 10.			observation??	pharmacist contribution and physician acceptance	renal	yes pharmacist									renal	pharmacist contributions on specialied nephrology ward round, 90% approximately of the applicable contributions were accepted y pyhsician; 85% discussed with doctor
Feasibility and reliability of point-of-care pocket-sized echocardiography.	Andersen GN, Haugen BO, Graven T, Salvesen O, MjÃ¸stad OC, Dalen H.	Eur J Echocardiogr. 2011 Sep;12(9):665-70. doi: 10.1093/ejechocard/jer108. Epub 2011 Aug 2.	yes	not wrs														
Hand hygiene and infection control survey pre- and peri-H1N1-2009 pandemic: knowledge and perceptions of final year medical students in Singapore.	Hsu LY, Jin J, Ang BS, Kurup A, Tambyah PA.	Singapore Med J. 2011 Jul;52(7):486-90.	yes	not wrs														
[Consequences drawn from the evaluation of logbook-based surgical training for final year students].	Busemann A, von Bernstorff W, Heidecke CD.	Zentralbl Chir. 2012 Apr;137(2):165-72. doi: 10.1055/s-0031-1271384. Epub 2011 Jul 7. German.	yes	german														
Improving the efficiency of the emergency general surgical service.	Western CE, Faux JW, Feldman M.	Eur J Emerg Med. 2011 Oct;18(5):261-4. doi: 10.1097/MEJ.0b013e3283450758.	yes	not wrs														
Team situation awareness and the anticipation of patient progress during ICU rounds.	Reader TW, Flin R, Mearns K, Cuthbertson BH.	BMJ Qual Saf. 2011 Dec;20(12):1035-42. doi: 10.1136/bmjqs.2010.048561. Epub 2011 Jun 23.			Report on method for investigating situational awareness	Predictions of pt outcomes over 48 h in ICU among team	ICU									Method for observing situational awareness	ICU	Method of observing wrs and then asking for predictions of deterioration - senior doctors were the best, over half conflicting
The influence of computerized decision support on prescribing during ward-rounds: are the decision-makers targeted?	Baysari MT, Westbrook JI, Richardson KL, Day RO.	J Am Med Inform Assoc. 2011 Nov-Dec;18(6):754-9. doi: 10.1136/amiajnl-2011-000135. Epub 2011 Jun 14.	yes	it														
Improving parental satisfaction in pediatric orthopaedics.	Williams G, Pattison G, Mariathas C, Lazar J, Rashied M.	J Pediatr Orthop. 2011 Jul-Aug;31(5):610-5. doi: 10.1097/BPO.0b013e3182203955.	yes	not wrs														
Learning safe prescribing during post-take ward rounds.	Conroy-Smith E, Herring R, Caldwell G.	Clin Teach. 2011 Jun;8(2):75-8. doi: 10.1111/j.1743-498X.2011.00432.x.			Innovation pilot	unclear	medical		Pharmacy check and correct						Safe prescribing		medicne	Check and correct - chek drug chart and discuss errors on ward round, highly dependent on consulatnt leading wr
Cardiologists' workflow in small to medium-sized German hospitals: an observational work analysis.	Mache S, Busch D, Vitzthum K, Kusma B, Klapp BF, Groneberg DA.	J Cardiovasc Med (Hagerstown). 2011 Jul;12(7):475-81. doi: 10.2459/JCM.0b013e328347db8f.	yes	not wrs														
[The acute orthogeriatric unit. Assessment of its effect on the clinical course of patients with hip fractures and an estimate of its financial impact].	GonzÃ¡lez Montalvo JI, Gotor PÃ©rez P, MartÃn Vega A, AlarcÃ³n AlarcÃ³n T, Ãlvarez de Linera JL, Gil Garay E, GarcÃa Cimbrelo E, Alonso Biarge J.	Rev Esp Geriatr Gerontol. 2011 Jul-Aug;46(4):193-9. doi: 10.1016/j.regg.2011.02.004. Epub 2011 Apr 20. Spanish.	yes	spanish														
Teaching and learning on busy post-take ward rounds.	Claridge A.	Clin Med. 2010 Dec;10(6):638-9. No abstract available.	yes	comment														
Quality and safety at the point of care: how long should a ward round take?	Herring R, Desai T, Caldwell G.	Clin Med. 2011 Feb;11(1):20-2. Review.			Timings of ward rounds using checklist	Time of ward rounds	WRs and PTWR		Timing								Medicine	Using a checklist and timing WRs and PTWRs, 12 mins average (10 for wrs, 14 for ptwrs)
[Effective inpatient ward round by discharge support team - a report of the inpatient ward round at acute hospital specialized in elderly patient].	Miyashita K, Komoda M, Yamazaki S, Watanabe A, Mikoshiba R, Fukuzawa K, Kikuchi H.	Gan To Kagaku Ryoho. 2010 Dec;37 Suppl 2:166-8. Japanese.	yes	japenese														
Ward round--A rare tumor of the kidney resulting in hypertension, renal failure and a cerebrovascular accident in a young female.	Broadis E, Ntoto C, Kamiza S, Borgstein E.	Malawi Med J. 2011 Mar;23(1):18-9.	yes	case report														

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Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Ward round--A patient with multi-organ failure.	Stevenson A, Phiri C, Mallewa J, Molyneux M.	Malawi Med J. 2011 Mar;23(1):16-7. No abstract available.	yes	case report														
[Reduced time-frame for ward rounds and patient satisfaction].	Veigel S, Schmid A, Kollmar O, Schuld J, Bialas P, Kopp B, Schilling M, Moussavian MR.	Zentralbl Chir. 2012 Apr;137(2):187-95. doi: 10.1055/s-0030-1247482. Epub 2011 Feb 22. German.	yes	german														
Multi-disciplinary collaboration during ward rounds: embodied aspects of electronic medical record usage.	Morrison C, Fitzpatrick G, Blackwell A.	Int J Med Inform. 2011 Aug;80(8):e96-111. doi: 10.1016/j.ijmedinf.2011.01.007. Epub 2011 Feb 22.	yes	it system														
Ward rounds: missed learning opportunities in diagnostic changes?	Bhangu A, Hartshorne G.	Clin Teach. 2011 Mar;8(1):17-21. doi: 10.1111/j.1743-498X.2010.00408.x.			Prospective observation of consecutive admissions to general surgery	change to diagnosis on ptwr	Surgical ptwr								Cahnges to disagnosis		Surgery	52 pts admitted by 7 surgical juniors, 27% diagnosis chaged including 2 major with no real difference in initial investigations results, 35% had further ix ordered, therefore missed learning opportunity for feedback if junior is not present
[Vocational perspective" - concept and acceptance of a group treatment for patients with extensive work-related problems]."	Dorn M, BÃ¶nisch A, Ehlebracht-KÃ¶nig I.	Rehabilitation (Stuttg). 2011 Feb;50(1):44-56. doi: 10.1055/s-0030-1254130. Epub 2011 Feb 14. German.	yes	german														
Active learning on the ward: outcomes from a comparative trial with traditional methods.	Melo Prado H, Hannois Falbo G, Rodrigues Falbo A, Natal FigueirÃ´a J.	Med Educ. 2011 Mar;45(3):273-9. doi: 10.1111/j.1365-2923.2010.03846.x.			compare educational effectiveness of ward rounds conducted with 2 different learning methodologies	knowledge test, then attended ward rounds using active and traditional learning methodology, then second test 48 hours later, and asked about SDL and opinions	paediatric		sort of - teaching style of ward round						yes different styles of wr - comaprison of 2 - for students		paediatrics	comaprision measured by knowledge test - active wr fared better for knwledge acquisition, self directed learning, and student opinion
No substitute for experience: do consultants that have been practising for longer lead faster post-take medical ward rounds?	Gill D, Gaunt R, Hamdulay S.	Acute Med. 2013;12(3):141-5.			audit timings	time and no of patients	medicine		timings						experienced consulatnts		gim	experienced consultants see more patients in less time
Ward round-- non-resolving pleural effusion in a patient with HIV infection.	Nyirenda M, Gray KJ, Allain TJ, van Oosterhout JJ.	Malawi Med J. 2009 Dec;21(4):182-3. No abstract available.	yes	case report														
Hourly ward rounds improve care and reduce staff stress.	Duffin C.	Nurs Manag (Harrow). 2010 Nov;17(7):6-7. No abstract available.	yes	nursing rounds														
Learning in the surgical workplace: necessity not luxury.	Monkhouse S.	Clin Teach. 2010 Sep;7(3):167-70. doi: 10.1111/j.1743-498X.2010.00359.x.			novel approaches to ward rouds	? Think just commentary	sugery		yes how						yes		surgery	making ward rounds novel and active for learner in surgery
Anatomy of the ward round: the time spent in different activities.	Creamer GL, Dahl A, Perumal D, Tan G, Koea JB.	ANZ J Surg. 2010 Dec;80(12):930-2. doi: 10.1111/j.1445-2197.2010.05522.x. Epub 2010 Oct 12.			observation	time doing activities	surgical		time doing what								surgery	observation over 4 days, 58% by bedside, average time per pt doubled for outlying pts compared to home wards but most of that time was travelling to wards, average times spent at bedside and in patient discussion were similar for different ward types, 66 mins in ransit of 7h 7 min (15%)
[Patient-doctor interaction in rehabilitation: is there a relationship between perceived interaction quality and long term treatment results?].	Dibbelt S, Schaidhammer M, Fleischer C, Greitemann B.	Rehabilitation (Stuttg). 2010 Oct;49(5):315-25. doi: 10.1055/s-0030-1263119. Epub 2010 Oct 20. German.	yes	german														
A patient's experience of ward rounds.	Sweet GS, Wilson HJ.	Patient Educ Couns. 2011 Aug;84(2):150-1. doi: 10.1016/j.pec.2010.08.016. Epub 2010 Sep 29. No abstract available.	yes	personal reflection														
Analyzing effects of providing performance feedback at ward rounds on guideline adherence - the importance of feedback usage analysis and statistical control charts.	Abu-Hanna A, Eslami S, Schultz MJ, de Jonge E, de Keizer NF.	Stud Health Technol Inform. 2010;160(Pt 2):826-30.	Yes	IT related														
Time for change: teaching and learning on busy post-take ward rounds.	Dewhurst G.	Clin Med. 2010 Jun;10(3):231-4. No abstract available.			Focus group	exploration of experiences on ptwr					F1s, SHOs, SPRs				Perspectves on education on ptwr		Medicine	5 groups of trainees at 3 different leveles - f1, shos, sprs - focus groups, emerging themes from transcripts then grouped into 10 broader categories to show educational value, showed wide range of learning available on ptwr but not all trainees are aware of them
The dermatopathology ward round: a tribute to the multiheaded microscope.	Tallon BG.	Arch Dermatol. 2010 Aug;146(8):869. doi: 10.1001/archdermatol.2010.159. No abstract available.	yes	no patients														
Teaching ward rounds: what are the alternatives?	MacLean AB, Ramos KA.	J Obstet Gynaecol. 2010;30(6):535-6. doi: 10.3109/01443615.2010.503437. No abstract available.	Yes	edictorial														
Dementia care 3: evaluating the effects of wellbeing reviews on residents and staff.	Wheeler NL, Johnson E.	Nurs Times. 2010 Jul 6-12;106(26):21-3.	yes	not wrs														
Cancer care and residents' working hours in oncology and hematology departments: an observational real-time study in German hospitals.	Mache S, SchÃ¶ffel N, Kusma B, Vitzthum K, Klapp BF, Groneberg DA.	Jpn J Clin Oncol. 2011 Jan;41(1):81-6. doi: 10.1093/jjco/hyq152. Epub 2010 Aug 7.	yes	not wrs														
The learners' perspective on internal medicine ward rounds: a cross-sectional study.	Tariq M, Motiwala A, Ali SU, Riaz M, Awan S, Akhter J.	BMC Med Educ. 2010 Jul 9;10:53. doi: 10.1186/1472-6920-10-53.			cross sectional questionnaire	questionnaire	internal medicine	yes			yes				yes		internal medicine	questionnaire of students, interns, residents, fellows, teaching of clinical skills and bedside teaching received lowest overall mean score, rated lower by postgrads then students, management of pt covered best by ward rounds, questions on desired ward rounds v current ward rounds, postgrads wanted more focus on communication skills, counselling, ethics compared to students, majority preferred bedside rounds to conferenc erounds, lack of individual attention on rounds, highlights areas where improvement is needed
[Quality assurance in acute pain therapy : Development of software for the acute pain service].	Czaplik M, Joppich R, Rossaint R.	Schmerz. 2010 Aug;24(4):358-66. doi: 10.1007/s00482-010-0938-7. German.	yes	german														
Does standardization of critical care work?	Hasibeder WR.	Curr Opin Crit Care. 2010 Oct;16(5):493-8. doi: 10.1097/MCC.0b013e32833cb84a. Review.	yes	not wrs														
The orthogeriatric unit for acute patients: a new model of care that improves efficiency in the management of patients with hip fracture.	GonzÃ¡lez-Montalvo JI, AlarcÃ³n T, MauleÃ³n JL, Gil-Garay E, Gotor P, MartÃ-n-Vega A.	Hip Int. 2010 Apr-Jun;20(2):229-35.	yes	not wrs														
Ward rounds: the next focus for quality improvement?	Bradfield OM.	Aust Health Rev. 2010 May;34(2):193-6. doi: 10.1071/AH09797.			Discussion on ward rounds following Garling Report		All	Yes	Yes								All	Disussion on Garling report which specifically recommends daily, supervised multidisciplinary ward rounds - need for further evidence, and discassuion of barriers

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Family centred care? Facilities, information and support for parents in UK neonatal units.	Redshaw ME, StC Hamilton KE; POPPY Project Research Team.	Arch Dis Child Fetal Neonatal Ed. 2010 Sep;95(5):F365-8. doi: 10.1136/adc.2009.163717. Epub 2010 May 13.	yes	not wrs														
Assessing the quality of clinical teaching: a preliminary study.	Conigliaro RL, Stratton TD.	Med Educ. 2010 Apr;44(4):379-86. doi: 10.1111/j.1365-2923.2009.03612.x.			checklist development for teaching - observational	obsevrations	various		teaching checklist						yes		varoius	development of objective structured clinical examination type checklist for obsevring clinical teaching that are 1) observable, 2) applicable to many disciplines, 3) reliably identifiable, tested for a variet of in-patient rounds, apirs of raters, 2 occasions, 9 attending physicians, good internal consistency,, genralisability (? stats) genrally acceptable, inter-rater reliability varied between occasions and items on checklist, therefore not straightforward
The value of the post-take ward round.	Medford A.	Clin Med. 2010 Feb;10(1):93-4; author reply 94. No abstract available.	yes	comment														
[PACS: acceptance by orthopedic surgeons].	Lenhart M, Haueis A, Schneider H, Jung EM, Herold T, Feuerbach S, SchÃ¶ll V, Zorger N.	Orthopade. 2010 Oct;39(10):994-1002. doi: 10.1007/s00132-010-1616-2. German.	yes	it system, german														
'Team Teach': a novel approach to ward round teaching.	Crawshaw A.	Med Educ. 2010 May;44(5):499. doi: 10.1111/j.1365-2923.2010.03652.x. Epub 2010 Mar 30. No abstract available.			Really Good stuff' article describing novel approach to teaching on wr	focus groups and survey	Gim								yes		GIM	description of a novel approach to teaching on ward rounds evaluated using survey and focus groups bu the results of evaluation are not gone into very much. Pairs, a junior and senior of whatever grade leave ward rounds to dicuss learn teach look up certain things and then rejoin to report back
Once-a-week psychiatric ward round or daily inpatient team meeting? A multidisciplinary mental health team's experience of new ways of working.	Fiddler M, Borglin G, Galloway A, Jackson C, McGowan L, Lovell K.	Int J Ment Health Nurs. 2010 Apr;19(2):119-27. doi: 10.1111/j.1447-0349.2009.00652.x.	yes	psych conference round														
Impact of system-level activities and reporting design on the number of incident reports for patient safety.	Fukuda H, Imanaka Y, Hirose M, Hayashida K.	Qual Saf Health Care. 2010 Apr;19(2):122-7. doi: 10.1136/qshc.2008.027532.	yes	not wrs														
Ward round in Moyo House: Management issues in malnourished children with HIV and tuberculosis (TB).	Hayes E, Phiri A, Heikens T.	Malawi Med J. 2009 Sep;21(3):120-2. No abstract available.	yes	case report														
Ward round--Recurrent anemia and infection in an HIV-positive woman. Burkitt's lymphoma.	Nyirenda M, Latham T, Glover S.	Malawi Med J. 2009 Jun;21(2):86, 88-9. No abstract available.	yes	case report														
Ward round--Late presentation of acute compartment syndrome in the thigh.	Bates J, Wamisho BL, Griffin M, Nyamulani N.	Malawi Med J. 2009 Jun;21(2):85, 87.	yes	case report														
Ward round--cough, painful throat and progressive hoarseness of voice for 1 year.	Allain T, Katundu K, Mulwafu W.	Malawi Med J. 2010 Mar;22(1):29-30. No abstract available.	yes	case report														
The value of the post-take ward round.	Kendall D, Hazarika R, Harrop J.	Clin Med. 2009 Dec;9(6):632-3. No abstract available.	yes	letter														
Acute medical care. The right person, in the right setting--first time: how does practice match the report recommendations?	Ward D, Potter J, Ingham J, Percival F, Bell D.	Clin Med. 2009 Dec;9(6):553-6.	yes	not wrs														
Clinical pharmacists' interventions in a German university hospital.	Langebrake C, Hilgarth H.	Pharm World Sci. 2010 Apr;32(2):194-9. doi: 10.1007/s11096-010-9367-z. Epub 2010 Jan 19.	yes	not wrs														
Following National Guidelines in Acute Care can improve emergency access and patient flow.	Ahmed SV, Jayawarna C, Atkinson D, Rippon A.	Acute Med. 2010;9(3):114-7.	yes	not wrs														
Hospital pharmacists' knowledge and opinions regarding adverse drug reaction reporting in Northern China.	Su C, Ji H, Su Y.	Pharmacoepidemiol Drug Saf. 2010 Mar;19(3):217-22. doi: 10.1002/pds.1792.	yes	not wrs														
Geriatric ward rounds by video conference: a solution for rural hospitals.	Gray LC, Wright OR, Cutler AJ, Scuffham PA, Wootton R.	Med J Aust. 2009 Dec 7-21;191(11-12):605-8.	yes	not generisable - video ward rounds for geriatrics in rural Oz														
A practical approach to teaching medical ethics.	Mills S, Bryden DC.	J Med Ethics. 2010 Jan;36(1):50-4. doi: 10.1136/jme.2009.031153.	yes	ethics														
Electronic screening of medical records to detect inpatients at risk of drug-related problems.	Roten I, Marty S, Beney J.	Pharm World Sci. 2010 Feb;32(1):103-7. doi: 10.1007/s11096-009-9352-6. Epub 2009 Dec 10.	yes	electronic screening														
[The clinical application of remote critical care network].	Chen J, Fang XL, Fang Q, Cai HL, Su Q, Zhang YT.	Zhongguo Wei Zhong Bing Ji Jiu Yi Xue. 2009 Nov;21(11):679-81. Chinese.	yes	chinese														
Patient perceptions of the surgical ward round.	Mahar P, Lake H, Waxman BP.	ANZ J Surg. 2009 Sep;79(9):584-5. doi: 10.1111/j.1445-2197.2009.05009.x. No abstract available.			survey	pts perspectives likert scale	surgical						yes				surgical	small survey in Oz 40 pts some with a prior explanation of ward round fundtion and half without, found overall positive, problem with hearing but not terminology, having an explanation seemed to make a difference
Doctors' concerns of PDAs in the ward round situation. Lessons from a formative simulation study.	Alsos OA, Dabelow B, Faxvaag A.	Methods Inf Med. 2011;50(2):190-200. doi: 10.3414/ME09-01-0017. Epub 2009 Nov 5.	yes	pdas - electronic device														
Teaching and learning in the hospital ward.	Jaye C, Egan T, Smith-Han K, Thompson-Fawcett M.	N Z Med J. 2009 Oct 9;122(1304):13-22.			obsevration and interviews	student learning	surgical								yes students		surgical	observation of surgical teams and indepth interviews with students and consultant surgeons, teaching and learning opportunities missed by clinical teachers and students as service provision and patient care took precedence, students felt excluded and expressed ambivalence about educational value of formal team rounds, students more likely to feel part of the team when are useful and included, learned more effectively on smaller, more educationally focussed ward rounds that incorporated bedside tutorials and opportunities to practise examinations skills
Variation in the human soluble epoxide hydrolase gene and risk of restenosis after percutaneous coronary intervention.	Kullmann S, Binner P, Rackebrandt K, Huge A, Haltern G, Lankisch M, FÃ¼th R, von Hodenberg E, Bestehorn HP, Scheffold T.	BMC Cardiovasc Disord. 2009 Oct 8;9:48. doi: 10.1186/1471-2261-9-48.	yes	not wrs														
Ward round--crocodile bites in Malawi: microbiology and surgical management.	Wamisho BL, Bates J, Tompkins M, Islam R, Nyamulani N, Ngulube C, Mkandawire NC.	Malawi Med J. 2009 Mar;21(1):29-31.	yes	case report														
Ward round--sudden increase of breathlessness in a patient with pneumocystis pneumonia (PCP) and haematemesis.	Waitt P.	Malawi Med J. 2009 Mar;21(1):28, 32. No abstract available.	yes	case report														
Pediatricians' working conditions in German hospitals: a real-time task analysis.	Mache S, Vitzthum K, Kusma B, Nienhaus A, Klapp BF, Groneberg DA.	Eur J Pediatr. 2010 May;169(5):551-5. doi: 10.1007/s00431-009-1065-2. Epub 2009 Sep 23.	yes	not wrs														

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Analysis of communicative behaviour: profiling roles and activities.	SÃ¸rby ID, NytrÃ¸. Ã¯.	Int J Med Inform. 2010 Jun;79(6):e144-51. doi: 10.1016/j.ijmedinf.2009.08.003. Epub 2009 Sep 18.	yes	not wrs														
[Clinical pharmacist in a multidisciplinary team in a paediatric department].	Kjeldby C, Bjerre A, Refsum N.	Tidsskr Nor Laegeforen. 2009 Sep 10;129(17):1746-9. doi: 10.4045/tidsskr.09.33816. Norwegian.	yes	norwegian														
An observational real-time study to analyze junior physicians' working hours in the field of gastroenterology.	Mache S, Bernburg M, Scutaru C, Quarcoo D, Welte T, Klapp BF, Groneberg DA.	Z Gastroenterol. 2009 Sep;47(9):814-8. doi: 10.1055/s-0028-1109175. Epub 2009 Sep 11.	yes	not wrs														
Usability laboratory as the last outpost before implementation - lessons learnt from testing new patient record functionality.	Seland G, SÃ¸rby ID.	Stud Health Technol Inform. 2009;150:404-8.	yes	not wrs														
The value of the post-take ward round: are new working patterns compromising junior doctor education?	Chaponda M, Borra M, Beeching NJ, Almond DS, Williams PS, Hammond MA, Price VA, Tarry L, Taegtmeyer M.	Clin Med. 2009 Aug;9(4):323-6.			prospective observational	consultant, spr review, change of diagnosis clerking team member present	medicine		ewtd/shift pattern changes, reviews, clerking doctor present		sort of				yes		medicine	auidt pre and post 2006 and 2008 for 2 7 day periods, significant increase in pts seeing consultant within 24 hours, target waiting times met, but missed leanring opportunities, absebce of admitting/clerking doctor, less spr role
Patient-doctor interaction in rehabilitation: the relationship between perceived interaction quality and long-term treatment results.	Dibbelt S, Schaidhammer M, Fleischer C, Greitemann B.	Patient Educ Couns. 2009 Sep;76(3):328-35. doi: 10.1016/j.pec.2009.07.031. Epub 2009 Aug 14.	yes	not wrs														
Mobile and fixed computer use by doctors and nurses on hospital wards: multi-method study on the relationships between clinician role, clinical task, and device choice.	Andersen P, Lindgaard AM, Prgomet M, Creswick N, Westbrook JI.	J Med Internet Res. 2009 Aug 4;11(3):e32. doi: 10.2196/jmir.1221.	yes	it														
Operational research methodology in the general medical rounds.	Pinheiro L.	Ann Acad Med Singapore. 2009 Jul;38(7):639-4.	yes	it														
An approach to improve early detection of sternal wound infection.	Howlader MH, Smith JE, Madden BP.	Bangladesh Med Res Counc Bull. 2009 Apr;35(1):11-4.	yes	not wrs														
General and visceral surgery practice in German hospitals: a real-time work analysis on surgeons' work flow.	Mache S, Kelm R, Bauer H, Nienhaus A, Klapp BF, Groneberg DA.	Langenbecks Arch Surg. 2010 Jan;395(1):81-7. doi: 10.1007/s00423-009-0541-5. Epub 2009 Jul 18.	yes	not wrs														
[Always out of breath? An analysis of a doctor's tasks in pneumology].	Mache S, Jankowiak N, Scutaru C, Groneberg DA.	Pneumologie. 2009 Jul;63(7):369-73. doi: 10.1055/s-0029-1214798. Epub 2009 Jul 9. German.	yes	german														
Evaluation of pharmacists' participation in post-admission ward rounds in a tertiary hospital in South-West Nigeria.	Anyika EN, Alade TB.	Nig Q J Hosp Med. 2009 Jul-Sep;19(3):151-4.			evaluation of pharmacists perception and participation	as before	post admission, various	pharmacist									various	questionnaire to pharmacists about post admission rounds, positive perception on participation, peer review of cases dominated by medical staff, pharmacists role not clearly defined, current impact is not significant
Oncology pharmacy practice in a teaching hospital in Nepal.	Khanal S, Poudel A, Sharan K, Palaian S.	J Oncol Pharm Pract. 2010 Jun;16(2):75-9. doi: 10.1177/1078155209337662. Epub 2009 Jun 18.	yes	not wrs														
Ward Round--paediatric bowel obstruction: a surprising and rare cause of a common problem.	Samuel JC, Muyco AP.	Malawi Med J. 2008 Sep;20(3):100, 102. No abstract available.	yes	case reports														
Ward Round--a boy with multiple joint swellings.	Tickell D.	Malawi Med J. 2008 Sep;20(3):99, 101. No abstract available.	yes	case reports														
Surveillance for healthcare-acquired febrile respiratory infection in pediatric hospitals participating in the Canadian Nosocomial Infection Surveillance Program.	Vayalumkal JV, Gravel D, Moore D, Matlow A; Canadian Nosocomial Infection Surveillance Program.	Infect Control Hosp Epidemiol. 2009 Jul;30(7):652-8. doi: 10.1086/598247.	yes	not wrs														
Does a post-take ward round proforma have a positive effect on completeness of documentation and efficiency of information management?	Wright DN.	Health Informatics J. 2009 Jun;15(2):86-94. doi: 10.1177/1460458209102970.			ptwr proforma audit	audit pre and post	?ptwr		ptwr proforma								?	improved documentation with proforma ? How was proforma developed
Emotional labour: clinicians' attitudes to death and dying.	Sorensen R, Iedema R.	J Health Organ Manag. 2009;23(1):5-22.	yes	not wrs														
The art of the ward round.	Ahmed A, Rutter P, Neequaye S.	Br J Hosp Med (Lond). 2009 May;70(5):M71-3. No abstract available.	yes	personal opinion														
A survey of interventional radiology awareness among final-year medical students in a European country.	Leong S, Keeling AN, Lee MJ.	Cardiovasc Intervent Radiol. 2009 Jul;32(4):623-9. doi: 10.1007/s00270-009-9569-8. Epub 2009 May 16.	yes	not wrs														
Emerging evidence for neuroischemic diabetic foot ulcers: model of care and how to adapt practice.	Ndip A, Jude EB.	Int J Low Extrem Wounds. 2009 Jun;8(2):82-94. doi: 10.1177/1534734609336948. Review.	yes	not wrs														
Does early review by a respiratory physician lead to a shorter length of stay for patients with non-severe community-acquired pneumonia?	Bewick T, Cooper VJ, Lim WS.	Thorax. 2009 Aug;64(8):709-12. doi: 10.1136/thx.2008.109983. Epub 2009 Apr 21.	yes	not wrs														
Clinical Audit of Pharmaceutical Care provided by a Clinical Pharmacist in Cardiology and Infectious Disease in-patients at the Royal Hospital, Muscat/Oman.	Al Salmi Z.	Oman Med J. 2009 Apr;24(2):89-94. doi: 10.5001/omj.2009.21.	yes	not wrs														
Trainees in gastroenterology views on teaching in clinical gastroenterology and endoscopy.	Wells CW, Inglis S, Barton R.	Med Teach. 2009 Feb;31(2):138-44. doi: 10.1080/01421590802144252.	yes	not wrs														
Ethics Man. Rethinking ward rounds.	Sokol DK.	BMJ. 2009 Mar 4;338:b879. doi: 10.1136/bmj.b879. No abstract available.	yes	ethics														
Ward round--seizures, tremor and muscle weakness 20 years after thyroid surgery.	Banda P, Allain TJ.	Malawi Med J. 2008 Mar;20(1):29, 34-5. No abstract available.	yes	case report														
Ward round--a football injury?	Freeman RT, Harrison WJ.	Malawi Med J. 2008 Mar;20(1):28, 32-3. No abstract available.	yes	case report														
Clinical information systems in the intensive care unit: primum non nocere.	Lapinsky SE.	Crit Care. 2009;13(1):107. doi: 10.1186/cc7143. Epub 2009 Jan 9. Review.	yes	it														
A simple effective clean practice protocol significantly improves hand decontamination and infection control measures in the acute surgical setting.	Howard DP, Williams C, Sen S, Shah A, Daurka J, Bird R, Loh A, Howard A.	Infection. 2009 Feb;37(1):34-8. doi: 10.1007/s15010-008-8005-3. Epub 2008 Dec 5.	yes	it														
Driving standards in tracheostomy care: a preliminary communication of the St Mary's ENT-led multi disciplinary team approach.	Arora A, Hettige R, Ifeacho S, Narula A.	Clin Otolaryngol. 2008 Dec;33(6):596-9. doi: 10.1111/j.1749-4486.2008.01814.x.	yes	not wrs														

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Postgraduate trainees' assessment of the educational value of ward rounds in obstetrics and gynaecology.	Qureshi NS, Swamy NN.	J Obstet Gynaecol. 2008 Oct;28(7):671-5. doi: 10.1080/01443610802421858.			Quesionnaire						SPR perspectives				SPR perspectives on wr as training opportunity		O and G	Questionnaire study - only 46 respones in Wales in o and g but 70% uncertain if they learned anything new on wr and 74% agreed in presencce of consuktant spr did not get the opportunity to lead wr
Teaching on a ward round.	Ker J, Cantillon P, Ambrose L.	BMJ. 2008 Dec 2;337:a1930. doi: 10.1136/bmj.a1930. No abstract available.			deveopment of question plan for teaching on wr	none	any								yes		any	development of 6 questions with practical points for teaching on wr ? Evidence based or opionion
Hand hygiene during the intensive care unit ward round: how much is enough? An observational study.	Witterick P, Stuart R, Gillespie E, Buist M.	Crit Care Resusc. 2008 Dec;10(4):285-7.	yes	not wrs														
Electronic patient record use during ward rounds: a qualitative study of interaction between medical staff.	Morrison C, Jones M, Blackwell A, Vuylsteke A.	Crit Care. 2008;12(6):R148. doi: 10.1186/cc7134. Epub 2008 Nov 24.	yes	It														
Survey of patients' preference for the location of rehabilitation ward rounds.	New PW.	J Rehabil Med. 2008 Aug;40(8):678-80. doi: 10.2340/16501977-0224.	yes	not wrs														
[Information or confusion. A formal quantitative analysis of ophthalmology ward rounds].	Papsdorf I, Hannich H, Tost F.	Ophthalmologe. 2009 Oct;106(10):905-12. doi: 10.1007/s00347-008-1873-1. German.	yes	german														
Team meetings in specialist palliative care: asking questions as a strategy within interprofessional interaction.	Arber A.	Qual Health Res. 2008 Oct;18(10):1323-35. doi: 10.1177/1049732308322588.	yes	not wrs														
How often do physicians review medication charts on ward rounds?	Looi KL, Black PN.	BMC Clin Pharmacol. 2008 Sep 29;8:9. doi: 10.1186/1472-6904-8-9.	yes	not wrs	Observation	checking drug charts	medicine?	pharmacist	drug chart reviews								? Medicine	21 physicians observed over 26 week period, review medication chart 77% occasions (surprised how many), range 45-100%, on routine ward rounds, and 65% of time on post admission, subspeciality consultants who did not see more than 8 pts per round reviewed
Ability of medical students to calculate drug doses in children after their paediatric attachment.	Oshikoya KA, Senbanjo IO, Soipe A.	Pharm Pract (Granada). 2008 Oct;6(4):191-6. Epub 2008 Dec 15.	yes	not wrs														
Randomised trial comparing ocular lubricants and polyacrylamide hydrogel dressings in the prevention of exposure keratopathy in the critically ill.	Ezra DG, Chan MP, Solebo L, Malik AP, Crane E, Coombes A, Healy M.	Intensive Care Med. 2009 Mar;35(3):455-61. doi: 10.1007/s00134-008-1284-4. Epub 2008 Sep 23. Erratum in: Intensive Care Med. 2009 Mar;35(3):578.	yes	not wrs														
Cysticercosis of the fourth ventricle causing sudden death: a case report and review of the literature.	HortobÃ¡gyi T, Alhakim A, Biedrzycki O, Djurovic V, Rawal J, Al-Sarraj S.	Pathol Oncol Res. 2009 Mar;15(1):143-6. doi: 10.1007/s12253-008-9098-9. Epub 2008 Sep 18.	yes	not wrs														
Physician-patient communication in single-bedded versus four-bedded hospital rooms.	van de Glind I, van Dulmen S, Goossensen A.	Patient Educ Couns. 2008 Nov;73(2):215-9. doi: 10.1016/j.pec.2008.07.004.			Audiotaped ward rounds	observational checklist, duration of speech, types of verbal and non verbal communication, extent to which pts and physciains raise subjects	?		single and multiple bedded wards			communication					?	comparison of ward round communication within single beds and multiple bedded wards, ward rounds in single rooms took more time, pts asked more questions and made more remarks in single roms, more empatheitc remarks in single room, no difference in extent to which intimate subjects
[Intercommunication and information flow. An explorative study about ward rounds and patients' documentation].	Maier U, Fotuhi P, Seele A, Nikolic D.	Pflege Z. 2008 Jul;61(7):400-3. German.	yes	german														
Why don't doctors wash their hands? A correlational study of thinking styles and hand hygiene.	Sladek RM, Bond MJ, Phillips PA.	Am J Infect Control. 2008 Aug;36(6):399-406. doi: 10.1016/j.ajic.2007.11.002.	yes	not wrs														
Anatomy of the ward round.	O'Hare JA.	Eur J Intern Med. 2008 Jul;19(5):309-13. doi: 10.1016/j.ejim.2007.09.016. Epub 2008 Feb 20. Review.			Non systematic review ?				Some	Some		Yes			A bit		Various	summary review but also authors perspective of ward rounds from 2008 highlighting possible research areas for future
Assessing senior house officers' perceptions of learning.	Mayell SJ, Shaw NJ.	Arch Dis Child. 2008 Dec;93(12):1022-6. doi: 10.1136/adc.2007.124453. Epub 2008 Jun 6.	yes	not wrs														
Quantifying the volume of documented clinical information in critical illness.	Manor-Shulman O, Beyene J, Frndova H, Parshuram CS.	J Crit Care. 2008 Jun;23(2):245-50. doi: 10.1016/j.jcrc.2007.06.003. Epub 2007 Dec 11.	yes	not wrs														
Positive effects of electronic patient records on three clinical activities.	Hertzum M, Simonsen J.	Int J Med Inform. 2008 Dec;77(12):809-17. doi: 10.1016/j.ijmedinf.2008.03.006. Epub 2008 May 23.	yes	It														
An account of the life and achievements of Miss Diana Beck, neurosurgeon (1902-1956).	Gilkes CE.	Neurosurgery. 2008 Mar;62(3):738-42; discussion 738-42. doi: 10.1227/01.neu.0000317324.71483.e5.	yes	not wrs														
Antimicrobial optimisation in secondary care: the pharmacist as part of a multidisciplinary antimicrobial programme--a literature review.	Tonna AP, Stewart D, West B, Gould I, McCaig D.	Int J Antimicrob Agents. 2008 Jun;31(6):511-7. doi: 10.1016/j.ijantimicag.2008.01.018. Epub 2008 Mar 20. Review.	yes	not wrs														
Drug-related problems: evaluation of a classification system in the daily practice of a Swiss University Hospital.	Lampert ML, Kraehenbuehl S, Hug BL.	Pharm World Sci. 2008 Dec;30(6):768-76. doi: 10.1007/s11096-008-9213-8. Epub 2008 Mar 21.	yes	not wrs														
The contribution of a pharmacy admissions service to patient care.	Bracey G, Miller G, Franklin BD, Jacklin A, Gaskin G.	Clin Med. 2008 Feb;8(1):53-7.	yes	not wrs														
Parental responses to involvement in rounds on a pediatric inpatient unit at a teaching hospital: a qualitative study.	Latta LC, Dick R, Parry C, Tamura GS.	Acad Med. 2008 Mar;83(3):292-7. doi: 10.1097/ACM.0b013e3181637e21.			quali descriptive study using semi structured interviews	interviews	paeds						parents				paeds	? Bedside rounds but interview of parents on paeds ward - being able to communicate, understand plan and participate with team in decision making about childs care were most frquently cited outcomes of importance to parents, all 18 described participan=tion as positive and most described it as comfortable, use of lay terminology and inclusion of nurses preferred
Ward rounds: how prepared are future doctors?	Nikendei C, Kraus B, Schrauth M, Briem S, JÃ¼nger J.	Med Teach. 2008 Feb;30(1):88-91. doi: 10.1080/01421590701753468.			video of simulation/observation	video	medicine								students		medicine	45 final year students participated win simulated ward round session with 3 standardised pt scenarios, videotaped and rated with independent raters using binary item checks which reflected predefined learning goals in 5 different domains - info gathering, communication with pt, focused physical ex, chart reviewing/prescription/ documentation and team communication, very low score less then 50% for chart reviewing and documentation - urgent need for training maybe in simulation field.
Introduction of enhancement technologies into the intensive care service, Royal Prince Alfred Hospital, Sydney.	Ryan A, Patrick J, Herkes R.	HIM J. 2008;37(1):40-5.	yes	It														

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Reshaping ICU ward round practices using video-reflexive ethnography.	Carroll K, Iedema R, Kerridge R.	Qual Health Res. 2008 Mar;18(3):380-90. doi: 10.1177/1049732307313430.			trial of video ethnography to achieve results from feedback	feedback from interviews and video led to changes	ICU	yes	yes		yes	yes		yes	yes		ICU	use of video ethnography and interviews (video-reflexive) technology, using feedback to iteratively engage clinicians in problem solving their own communication difficulties - atricle focuses on one feedback meeting and describes ensuing changes
The contribution of a clinical pharmacist to the improvement of medication at a geriatric hospital unit in Norway.	Veggeland T, Dyb S.	Pharm Pract (Granada). 2008 Jan;6(1):20-4. Epub 2008 Mar 10.	yes	not soley wrs														
A hospital-wide study of the impact of introducing a personal data assistant-augmented blood culture round.	Inglis TJ, Hodge M, Ketharanathan S.	J Med Microbiol. 2008 Jan;57(Pt 1):43-9.	yes	pdas - electronic device														
[Learning and supervision in Danish clerkships--a qualitative study].	Wichmann-Hansen G, MÃ¸rcke AM, Eika B.	Ugeskr Laeger. 2007 Oct 15;169(42):3574-8. Danish.	yes	danish														
Medical information delivered to patients: discrepancies concerning roles as perceived by physicians and nurses set against patient satisfaction.	Moret L, Rochedreux A, Chevalier S, Lombrail P, Gasquet I.	Patient Educ Couns. 2008 Jan;70(1):94-101. Epub 2007 Nov 7.	yes	not wrs														
International critical care hospital pharmacist activities.	LeBlanc JM, Seoane-Vazquez EC, Arbo TC, Dasta JF.	Intensive Care Med. 2008 Mar;34(3):538-42. Epub 2007 Nov 7.	yes	not wrs														
Analysis of communicative behaviour: profiling roles and activities.	SÃ¸rby ID, NytrÃ¸ O.	Stud Health Technol Inform. 2007;130:111-20.	yes	not solely wrs														
[Hospital infection and its countermove].	Matsushima Y, Mori A, Bessho Y, Yanou K, Murata T, Kawakami K, Yamamoto N.	Rinsho Byori. 2007 Aug;55(8):775-9. Japanese.	yes	japenese														
Ward Round: a jaundiced 43 year old man with cavitary lessions on chest radiograph.	Hartung T, van Oosterhout J.	Malawi Med J. 2007 Sep;19(3):126-35. No abstract available.	yes	case report														
Confidentiality on ward rounds.	Church D.	Br J Gen Pract. 2007 Jul;57(540):581-2. No abstract available.	yes	personal comment														
An innovative model for teaching complex clinical procedures: integration of standardised patients into ward round training for final year students.	Nikendei C, Kraus B, Lauber H, Schrauth M, Weyrich P, Zipfel S, JÃ¼nger J, Briem S.	Med Teach. 2007 Mar;29(2-3):246-52.			teaching innovation	use of standardised patients in simulation for training final year medical students	?								final year medical students		?	using 3 standardised ots and role plays, with students as docor, nurse or student, provide peer feedback, training assessed using focus groups and semi structured interviews, training appreciated and viewed as important
The use of portable computer for information acquirement during anesthesiologist's ward round in acute pain service.	Lee YL, Wu JL, Wu HS, Yang SF, Hsu SC, Tsai CC, Ku TH.	Acta Anaesthesiol Taiwan. 2007 Jun;45(2):79-87.	yes	portable computer														
Do patients want to see recordings of their surgery?	Papadopoulos N, Polyzos D, Gambadauro P, Papalampros P, Chapman L, Magos A.	Eur J Obstet Gynecol Reprod Biol. 2008 May;138(1):89-92. Epub 2007 Jul 27.	yes	not wrs														
Preventing adverse drug events in hospital practice: an overview.	Rommers MK, Teepe-Twiss IM, Guchelaar HJ.	Pharmacoepidemiol Drug Saf. 2007 Oct;16(10):1129-35. Review.	yes	not wrs solely														
Short communication: pattern of adverse drug reaction related queries received by the drug information centre of a tertiary care teaching hospital.	Jimmy B, Jose J, Rao PG.	Pak J Pharm Sci. 2007 Oct;20(4):333-9.	yes	not wrs														
We all need to help make ward rounds a success.	Sandier M.	Nurs Times. 2007 Jun 12-18;103(24):13. No abstract available.	yes	personal comment														
Communication during ward rounds in internal medicine. An analysis of patient-nurse-physician interactions using RIAS.	Weber H, Stockli M, Nubling M, Langewitz WA.	Patient Educ Couns. 2007 Aug;67(3):343-8. Epub 2007 Jun 5.			Audio taped wr interactions analysed with RIA$		Int medicine	Yes			nurse doctor interactions	communication	pt doctor interatcions				GIM	WR interactions recorded and anlysed using RIAS, average time alloted 7.5 mins, pts receive 20 bits of clinical info per contact nurses knowledge is under represented, need for more attention
Incidence and nature of medication errors in neonatal intensive care with strategies to improve safety: a review of the current literature.	Chedoe I, Molendijk HA, Dittrich ST, Jansman FG, Harting JW, Brouwers JR, Taxis K.	Drug Saf. 2007;30(6):503-13. Review.	yes	not wrs														
Ward round: Chronic respiratory symptoms with no response to tuberculosis treatment in a 35 year old HIV positive man.	Jones A, Bates J, Molyneux M.	Malawi Med J. 2007 Jun;19(2):88-94. No abstract available.	yes	case report														
Ward round: A patient with blurred vision and leg weakness.	Nyirenda M, Whiteley W, Zijlstra E.	Malawi Med J. 2007 Jun;19(2):87-93. No abstract available.	yes	case report														
Corrected incidences of co-morbidities - a statistical approach for risk-assessment in anesthesia using an AIMS.	RÃ¶hrig R, Hartmann B, Junger A, Klasen J, Brammen D, Brenck F, Jost A, Hempelmann G.	J Clin Monit Comput. 2007 Jun;21(3):159-66. Epub 2007 Apr 5.	yes	wrs														
Third-year medical students' evaluation of hospitalist and nonhospitalist faculty during the inpatient portion of their pediatrics clerkships.	Geskey JM, Kees-Folts D.	J Hosp Med. 2007 Jan;2(1):17-22.	yes	not wrs														
Junior staffing changes and the temporal ecology of adverse incidents in acute psychiatric wards.	Bowers L, Jeffery D, Simpson A, Daly C, Warren J, Nijman H.	J Adv Nurs. 2007 Jan;57(2):153-60.	yes	not wrs, psych														
[Advantages of systematic ward rounds during weekends].	Campillo-Soto A, Soria-Aledo V, Flores-Pastor B, Aguayo-Albasini JL.	Med Clin (Barc). 2006 Oct 14;127(14):556-7. Spanish. No abstract available.	yes	spanish														
Measurement of the clinical usability of a configurable EHR.	MÃ¸ller-Jensen J, Lund Pedersen I, Simonsen J.	Stud Health Technol Inform. 2006;124:356-61.	yes	electronic pt record														
Is it possible for nurses and doctors to form a useful clinical overview of an EHR?	Neve K, Kragh Iversen R, Andersen CK.	Stud Health Technol Inform. 2006;122:314-9.	yes	electronic pt record														
Alphabetical prejudice in team discussions (or would Zebedee ever get seen on a ward round).	Singh R, Philip A, Smith S, Pentland B.	Disabil Rehabil. 2006 Oct 30;28(20):1299-300.	yes	not wrs														
The risk of vertebral canal complications in 2837 cardiac surgery patients with thoracic epidurals.	Jack ES, Scott NB.	Acta Anaesthesiol Scand. 2007 Jul;51(6):722-5. Epub 2006 Oct 31.	yes	not wrs														
Use of time by physiotherapists and occupational therapists in a stroke rehabilitation unit: a comparison between four European rehabilitation centres.	Putman K, de Wit L, Schupp W, Ilse B, Berman P, Connell L, Dejaeger E, de Meyer AM, de Weerdt W, Feys H, Walter J, Lincoln N, Louckx F, Anneleen M, Birgit S, Smith B, Leys M.	Disabil Rehabil. 2006 Nov 30;28(22):1417-24.	yes	not wrs														
[Decision-making about gout by physicians of China and influencing factors thereof].	Fang WG, Zeng XJ, Li MT, Chen LX, Schumacher HR Jr, Zhang FC.	Zhonghua Yi Xue Za Zhi. 2006 Jul 18;86(27):1901-5. Chinese.	yes	chinese														
Presence of parents during ward rounds: experience from a Greek NICU.	Dellagrammaticas HD, Lacovidou N.	Arch Dis Child Fetal Neonatal Ed. 2006 Nov;91(6):F466-7. No abstract available.	yes	letter														
Electronic patient records and their benefit for patient care. Findings from the Section on Patient Records.	Knaup P.	Yearb Med Inform. 2006:40-2.	yes	epr														

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Can we improve doctors' hand hygiene on ward rounds?	Wharton EM, Platt AJ.	J Hosp Infect. 2006 Dec;64(4):400-1. Epub 2006 Sep 25. No abstract available.	yes	letter														
Advocacy at end-of-life research design: an ethnographic study of an ICU.	Sorensen R, Iedema R.	Int J Nurs Stud. 2007 Nov;44(8):1343-53. Epub 2006 Sep 15.	yes	not wrs														
Participation of family members in ward rounds: Attitude of medical staff, patients and relatives.	Rotman-Pikielny P, Rabin B, Amoyal S, Mushkat Y, Zissin R, Levy Y.	Patient Educ Couns. 2007 Feb;65(2):166-70. Epub 2006 Sep 11.			prospective questionnaire	questionnaire with two phases with family and without	medicine				yes on family prrsence		yes and family				gim	Israel, internal medicine department, wrs were conducted with and without family members in 2 phases and questionnaires completed by staff, aptients and family members, general postive reception to inclusion of family members, staff became more positive having experienced it, patients believed it contributed to a better undertsnading of their illness and family members felt it provided them with an opportunity to participate in medical decision making - but small study, ? impact on time etc
[The clinical examination of the critically ill patient in the intensive care unit].	Rudiger A.	Ther Umsch. 2006 Jul;63(7):479-84. German.	yes	german														
A qualification in medical education--a luxury or a necessity?	McLachlan JK.	J R Nav Med Serv. 2006;92(2):84-7.	yes	not wrs														
[Interprofessional communication and cooperation training in ward rounds for medical and nursing students: a pilot project].	Pedersen BD, Poulsen IK, Ringsted CV, Schroeder TV.	Ugeskr Laeger. 2006 Jun 19;168(25):2449-51. Danish.	yes	danish														
Speaking about dying in the intensive care unit, and its implications for multidisciplinary end-of-life care.	Iedema R, Sorensen R, Braithwaite J, Turnbull E.	Commun Med. 2004;1(1):85-96.	yes	not wrs														
An integrated care pathway to save the critically ischaemic diabetic foot.	El Sakka K, Fassiadis N, Gambhir RP, Halawa M, Zayed H, Doxford M, Greensitt C, Edmonds M, Rashid H.	Int J Clin Pract. 2006 Jun;60(6):667-9.	yes	not wrs														
Ward rounds -- bedside or conference room?	Chauke HL, Pattinson RC.	S Afr Med J. 2006 May;96(5):398-400. No abstract available.	yes	forum article														
Using post-take ward rounds to facilitate simple discharge.	Lees L, Allen G, O'Brien D.	Nurs Times. 2006 May 2-8;102(18):28-30.	yes	personal experience														
A teaching ward round in infectious diseases - a pilot module.	Senanayake S, Bowden F, Ironside J, Robertson T.	Aust Fam Physician. 2006 May;35(5):357-8.	yes	not 'generalisable'														
Interprofessional training of students in conducting ward rounds.	Pedersen BD, Poulsen IK, Schroeder TV, Ringsted C.	Med Educ. 2006 May;40(5):478-9. No abstract available.			really good stuff' in med educ, small group attendance to 1 day course on ward rounds, communication and simulation	training evaluation by questionnaire and focus groups	?	yes interprofessional learning			yes interprofessioanl				interprofessional learning, simulation		?	course with comm skills lecture, model of teamwork on a wr,, interviews between students and nurses, group work on discharge planning, role playing of a ward rounds cenario video taped, feedback highly valued, increased understanding of each others roles, professions, duties, enhanced ability to structure and conduct ward rounds, more at ease in engaging in interprofessional relations in clincial rotations, highly relevant and well situated in curricula
Patient perceptions of the otolaryngology ward round in a teaching hospital.	Montague ML, Hussain SS.	J Laryngol Otol. 2006 Apr;120(4):314-8.			survey	pts perceptions	otolaryngology						yes survey				otolaryngology	100 pts, 79% response rate, likert scale for agreement with statements, overall satisfaction especially for info giving for diagnosis, treatment and follow up, large size intimidating and induced anxiety in 1/3 pts, wished for staffs roles to be btter defined and to be informed of presence of emdical students, 1/3 use of difficult to undertsnad laguage
Innovation and teamwork: introducing multidisciplinary team ward rounds.	Moroney N, Knowles C.	Nurs Manag (Harrow). 2006 Apr;13(1):28-31. No abstract available.			pilot of mdt ward rounds	audited using various tools, questionnaires, obsevration refelections)personal) to ascertain qulaitative outcomes - improved pt centredness, interdisciplinary relationships	surgery	yes	yes								surgery	pilot of interdiscipinary wrs, good quali and quat results, adopted throughout surgical side of hospital, pdds, other improveements, nursing interventions carried out in appropriate timeframes, pts liked to know when wr would take place so they could prepare for it, liked opportunity to discuss case, diappointment in wr cancelled, so wr take place even in some members of mdt were not present, educational and professional development for all involved especially nurses, better communication esp written, better understanding of social fctors affecting discharge, better relationships, negative - junior docs - documentation laborious and ward rounds time soncuming but these were off set by benefits
[Utilization of patient isolation in non critical units from a university hospital].	TÃ©llez-Plaza M, Bautista-Rentero D, UsÃ³-Talamantes R, Buch-GarcÃ-a MJ, ZamÃ³n-Viguer V.	Med Clin (Barc). 2006 Feb 4;126(4):125-8. Spanish.	yes	spanish														
Does a Post-take Ward Round Proforma Lead to Sustainable Improvements in Quality of Documentation for Patients Admitted to the Medical Assessment Unit?	Kamara A, Henderson S, Rodrigo C, Dulay J.	Acute Med. 2006;5(3):108-11.			audit of ptwr proforma		medical ptwr		proforma for ptwr								gim	proforma, improvements in documentation after 3 months, and further improvement after 2 years
Wireless telemedicine for the delivery of specialist paediatric services to the bedside.	Smith AC, Coulthard M, Clark R, Armfield N, Taylor S, Goff R, Mottarelly I, Youngberry K, Isles A, McCrossin R, Wootton R.	J Telemed Telecare. 2005;11 Suppl 2:S81-5.	yes	telemedicine														
[Participation of medical technologists in the nutrition support team (NST)].	Harashima N, Muroya T, Shoji K, Sekine K, Ikeda H.	Rinsho Byori. 2005 Nov;53(11):1043-50. Japanese.	yes	japenses														
Temporal and spatial organization of doctors' computer usage in a UK hospital department.	Martins HM, Nightingale P, Jones MR.	Med Inform Internet Med. 2005 Jun;30(2):135-42.	yes	computers														
Title	Description	Details	yes	not wrs														
Are we able to comply with the NICE head injury guidelines?	Qureshi AA, Mulleady V, Patel A, Porter KM.	Emerg Med J. 2005 Dec;22(12):861-2.	yes	not generlisable - icu specific														
Follow-up ward rounds after intensive care--what do the patients and their visitors think?	Defres S, Scott C, Park G.	Br J Anaesth. 2005 Dec;95(6):837-8. No abstract available.	yes	not generlisable - icu specific														

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Families' views on ward rounds in neonatal units.	Bramwell R, Weindling M; FVWR Research Team.	Arch Dis Child Fetal Neonatal Ed. 2005 Sep;90(5):F429-31.			survey and semi structure dinterview	parents perceptions on wrs on neonatal unit	neonatal						parents				neonatal	survey using semi sturcture dinterviews (??) 86 repsondents, some had been on ward rounds, some not, about half had overheard conversations about their baby and this led to concern, little info about a ward round, held divers views and expressed different priotrities, mixture of concerns about communication, practicalities and issues of ethics and principle, confidentiality was an issue of concern, but many parents expected some sharing of info between families
The role of the junior surgical trainee in ward rounds.	Noble D, Mitchell D, Zilvetti M, Vaidya A.	Med Teach. 2005 May;27(3):283-4. No abstract available.	yes	letter														
Introducing matrons' ward rounds to improve care.	Sud H.	Nurs Times. 2005 Jul 5-11;101(27):26-7.	yes	not doctor led														
Interruptive communication patterns in the intensive care unit ward round.	Alvarez G, Coiera E.	Int J Med Inform. 2005 Oct;74(10):791-6.			observation - communication observation method	communication time, conversation initiating interruptions (CII), turn taking interruptions (TTI)	ICU		communication		communication						ICU	observation of interruptions and communication, CII accounted for 37% of wr communication, and hence maybe a burden we underestimate
Improving medication management for patients: the effect of a pharmacist on post-admission ward rounds.	Fertleman M, Barnett N, Patel T.	Qual Saf Health Care. 2005 Jun;14(3):207-11. Erratum in: Qual Saf Health Care. 2005 Aug;14(4):312.			pre and post intervention	pharmacist on ptwr, drug history, costs, risk	medicine	pharmacist role									GIM	pharmacist role pre and post - led to more accurate drug history, reduced prescribing costs, and decreased potential risk to patients
A post-take ward round.	Vallance P.	J R Soc Med. 2005 May;98(5):191-2. No abstract available.	yes	personal opinion														
Physicians' ability to diagnose sepsis in newborns and critically ill children.	Fischer JE.	Pediatr Crit Care Med. 2005 May;6(3 Suppl):S120-5. Review.	yes	not wrs														
Detecting adverse drug reactions on paediatric wards: intensified surveillance versus computerised screening of laboratory values.	Haffner S, von Laue N, Wirth S, ThÃ¼rmann PA.	Drug Saf. 2005;28(5):453-64.	yes	not wrs														
A web-based incident reporting system and multidisciplinary collaborative projects for patient safety in a Japanese hospital.	Nakajima K, Kurata Y, Takeda H.	Qual Saf Health Care. 2005 Apr;14(2):123-9.	yes	not wrs														
Well rounded.	Kirkpatrick JN, Nash K, Duffy TP.	Arch Intern Med. 2005 Mar 28;165(6):613-6.			duscussion	?	?ethics								? Ethics		?	need to look at full article but possibly ethics realted or just educational - need to be inventive to get educational value for wr
[Talk of enlightenment and information in the hospital].	Luderer C, Behrens J.	Pflege. 2005 Feb;18(1):15-23. German.	yes	german														
Improving patient and carer communication, multidisciplinary team working and goal-setting in stroke rehabilitation.	Monaghan J, Channell K, McDowell D, Sharma AK.	Clin Rehabil. 2005 Mar;19(2):194-9.	yes	not wrs														
Graduate nurses' communication with health professionals when managing patients' medications.	Manias E, Aitken R, Dunning T.	J Clin Nurs. 2005 Mar;14(3):354-62.	yes	not wrs														
Staff attitudes to a daily otolaryngology ward round.	Montague ML, Lee MS, Hussain SS.	J Laryngol Otol. 2004 Dec;118(12):963-71.			survey	staff attitudes to daily otolarnynology wr	otolaryngology				yes on daily wr							open ended survey on daily wr - positive, cultivates team spirit, allowed communication between doctors and nurses, vaulable learning (nursing), medical staff uncertain about learning, wr was reassuring, concerns over pt confidedtiality, will inform departmental changes
The informationist: a prospective uncontrolled study.	Sladek RM, Pinnock C, Phillips PA.	Int J Qual Health Care. 2004 Dec;16(6):509-15.	yes	not wrs														
Do post-take ward round proformas improve communication and influence quality of patient care?	Thompson AG, Jacob K, Fulton J, McGavin CR.	Postgrad Med J. 2004 Nov;80(949):675-6.			audit pre and post proforma	documentation	?medicine		documentation and roformas								?gim	poor written documentation on ptwr, improved with proforma, ? Sustained
[For whom the ward round tolls. Medical rounds on hospital wards].	MakÃ³i Z.	Orv Hetil. 2004 Sep 12;145(37):1911-2. Hungarian. No abstract available.	yes	hungarian														
Pitfalls of adverse event reporting in paediatric cardiac intensive care.	Ricci M, Goldman AP, de Leval MR, Cohen GA, Devaney F, Carthey J.	Arch Dis Child. 2004 Sep;89(9):856-9.	yes	not wrs														
Evaluation of the use of the X-ray department with regard to plain chest radiography on acute general medical admissions in the context of recently introduced UK guidelines.	Nayak S, Lindsay KA.	Emerg Radiol. 2004 Jul;10(6):314-7; discussion 318. Epub 2004 Apr 29.	yes	not wrs														
Organizing the transfer of patient care information: the development of a computerized resident sign-out system.	Van Eaton EG, Horvath KD, Lober WB, Pellegrini CA.	Surgery. 2004 Jul;136(1):5-13.	yes	not wrs														
Evidence-based medicine: a new ritual in medical teaching.	Sinclair S.	Br Med Bull. 2004;69:179-96. Review.	yes	not wrs														
[Validation of a check list for the assessment of physicians' competence in connection with ward rounds].	NÃ,rgaard K, Ringsted CV, Dolmans D.	Ugeskr Laeger. 2004 May 17;166(21):2027-31. Danish. No abstract available.	yes	danish														
Validation of a checklist to assess ward round performance in internal medicine.	NÃ,rgaard K, Ringsted C, Dolmans D.	Med Educ. 2004 Jul;38(7):700-7.			validation of wr checklist to assess wr performace	content validity - questionnaire, construct observer assed 4 groups of doctors during complete wr, nurse made a global assessment	internal medicine		checklist								gim	content valdiity questionnaire 259 physicians, 80.7% respone rate, all 10 items relevant, construct validity more sneior the better, siginifcant correlation between observer and nurse global scores
The informationist in Australia: a feasibility study.	Sladek RM, Pinnock C, Phillips PA.	Health Info Libr J. 2004 Jun;21(2):94-101.	yes	not wrs														
Variation in medical student grading criteria: a survey of clerkships in obstetrics and gynecology.	Zahn CM, Nalesnik SW, Armstrong AY, Satin AJ, Haffner WH.	Am J Obstet Gynecol. 2004 May;190(5):1388-93.	yes	not wrs														
Computer keyboard and mouse as a reservoir of pathogens in an intensive care unit.	Hartmann B, Benson M, Junger A, Quinzio L, RÃ¶hrig R, Fengler B, FÃ¤rber UW, Wille B, Hempelmann G.	J Clin Monit Comput. 2004 Feb;18(1):7-12.	yes	not wrs														
Information access at the point of care: what can we learn for designing a mobile CPR system?	Reuss E, Menozzi M, BÃ¼chi M, Koller J, Krueger H.	Int J Med Inform. 2004 May;73(4):363-9.	yes	it														
Resource utilisation, length of hospital stay, and pattern of investigation during acute medical hospital admission.	McMullan R, Silke B, Bennett K, Callachand S.	Postgrad Med J. 2004 Jan;80(939):23-6.	yes	not wrs														

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The sound of silence--nurses' non-verbal interaction within the ward round.	Hill K.	Nurs Crit Care. 2003 Nov-Dec;8(6):231-9.			observation	nurses non verbal communication	ICU				yes nurses non verbal communication						icu	themes - being there, knowing the script, knowing what you want from the wr, silencing and gazing, key issue highlighted - nurses need to recognize their contribution to wrs and ot management decisions, educational and training strategies suggested to enhance clinical practice
[Acrocyanosis: crucial symptom in a case of chronic diarrhea and weight loss].	Hackelsberger N, Schmidt T, Stein A, Schepp W.	Internist (Berl). 2003 Nov;44(11):1437-43. German.	yes	german														
Effect of a comprehensive, multidisciplinary, educational program on the use of antibiotics in a geriatric university hospital.	Lutters M, Harbarth S, Janssens JP, Freudiger H, Herrmann F, Michel JP, Vogt N.	J Am Geriatr Soc. 2004 Jan;52(1):112-6.	yes	not wrs														
Does reporting of plain chest radiographs affect the immediate management of patients admitted to a medical assessment unit?	Grosvenor LJ, Verma R, O'Brien R, Entwisle JJ, Finlay D.	Clin Radiol. 2003 Sep;58(9):719-22; discussion 717-8.	yes	not wrs														
Picture archiving and communication systems: the users' view.	Pilling JR.	Br J Radiol. 2003 Aug;76(908):519-24.	yes	not wrs														
Assessment of a selective surveillance method for detecting nosocomial infections in patients in the intensive care department.	Zolldann D, Haefner H, Poetter C, Buzello S, Sohr D, Luetticken R, Lemmen SW.	Am J Infect Control. 2003 Aug;31(5):261-5. Erratum in: Am J Infect Control. 2003 Oct;31(6):386. Sohr David [corrected to Sohr Dorit].	yes	not wrs														
Incorporating the views of obstetric clinicians in implementing evidence-supported labour and delivery suite ward rounds: a case study.	Deshpande N, Publicover M, Gee H, Khan KS.	Health Info Libr J. 2003 Jun;20(2):86-94.	yes	not wrs														
Reflections of physician-authors on death: literary selections appropriate for teaching rounds.	Donohoe M.	J Palliat Med. 2002 Dec;5(6):843-8.	yes	not wrs														
Prevalence of hospital-acquired infections in a tertiary referral hospital in northern Tanzania.	Gosling R, Mbatia R, Savage A, Mulligan JA, Reyburn H.	Ann Trop Med Parasitol. 2003 Jan;97(1):69-73.	yes	not wrs														
Inpatient experiences of ward rounds in acute psychiatric settings.	Wagstaff K, Solts B.	Nurs Times. 2003 Feb 4-10;99(5):34-6.	yes	psych														
Pain and anxiety management in the postoperative gastro-surgical setting.	Manias E.	J Adv Nurs. 2003 Mar;41(6):585-94.	yes	not wrs														
What do students want? The types of learning activities preferred by final year medical students.	Bloomfield L, Harris P, Hughes C.	Med Educ. 2003 Feb;37(2):110-8.	yes	not wrs														
Development and implementation of a curriculum in communication skills and psycho-oncology for medical oncology fellows.	Hoffman M, Steinberg M.	J Cancer Educ. 2002 Winter;17(4):196-200.	yes	not wrs														
Do we want to bring back matron's ward rounds?	Callander-Grant S.	Br J Nurs. 2000 Nov 9-22;9(20):2122. No abstract available.	yes	opinion														
Unnecessary peripheral intravenous catheterisation on an acute medical admissions unit: a preliminary study.	Barlow G, Palniappan S, Mukherjee R, Jones M, Nathwani D.	Eur J Intern Med. 2002 Sep;13(6):380.	yes	not wrs														
The renal diabetic nurse specialist...a luxury or an essential player?	Marchant K.	EDTNA ERCA J. 2002 Apr-Jun;28(2):67-9.	yes	not wrs														
Detection of adverse drug reactions in a neurological department: comparison between intensified surveillance and a computer-assisted approach.	Thuermann PA, Windecker R, Steffen J, Schaefer M, Tenter U, Reese E, Menger H, Schmitt K.	Drug Saf. 2002;25(10):713-24.	yes	not wrs														
Implementing a medicine-spirituality curriculum in a community-based internal medicine residency program.	Pettus MC.	Acad Med. 2002 Jul;77(7):745.	yes	not wrs														
Ambulatory rounds: a venue for evidence-based medicine.	Ozuah PO, Orbe J, Sharif I.	Acad Med. 2002 Jul;77(7):740-1.	yes	no patients														
Peri-operative fluid and electrolyte management: a survey of consultant surgeons in the UK.	Lobo DN, Dube MG, Neal KR, Allison SP, Rowlands BJ.	Ann R Coll Surg Engl. 2002 May;84(3):156-60.	yes	not wrs														
How clinicians in neonatal care see the introduction of neonatal nurse practitioners.	Redshaw ME, Harvey ME.	Acta Paediatr. 2002;91(2):184-7.	yes	not wrs														
Working together: neonatal nurse practitioners in practice.	Redshaw ME, Harvey ME.	Acta Paediatr. 2002;91(2):178-83.	yes	not wrs														
Pre-registration house officers and ward-based learning: a 'new apprenticeship' model.	Bleakley A.	Med Educ. 2002 Jan;36(1):9-15.	yes	not wrs														
A complication conference for internal quality control at the Neurosurgical Department of the University of Heidelberg.	Bonsanto MM, Hamer J, Tronnier V, Kunze S.	Acta Neurochir Suppl. 2001;78:139-45.	yes	not wrs														
Nurse-doctor interactions during critical care ward rounds.	Manias E, Street A.	J Clin Nurs. 2001 Jul;10(4):442-50.			ethnography, observation, ppt journals, individual and focus group interviews	communication and ower play	critical care	nurses			nurses			yes			critical care	6 ppting nurses, observation, journals, interviews, findings - doctors used nurses for supplement info and to provide extra detail about pt assessment during wrs, nurses experienced enormaous barriers to participating in decision making activities during wr discussions, need to challenge different p of view that nurses and docrtors hold for enhanced participation
Institutional feeding of the elderly.	Allison S.	Curr Opin Clin Nutr Metab Care. 2002 Jan;5(1):31-4. Review.	yes	not wrs														
Student placements--is there evidence supporting team skill development in clinical practice settings?	Hilton R, Morris J.	J Interprof Care. 2001 May;15(2):171-83.	yes	not wrs														
Curtailing unnecessary vancomycin usage in a hospital with high rates of methicillin resistant Staphylococcus aureus infections.	Kumana CR, Ching TY, Kong Y, Ma EC, Kou M, Lee RA, Cheng VC, Chiu SS, Seto WH.	Br J Clin Pharmacol. 2001 Oct;52(4):427-32.	yes	not wrs														
Care of HIV complications in patients receiving anti-tuberculosis treatment in hospitals in Malawi.	Chimzizi RB, Harries AD, Hargreaves NJ, Kwanjana JH, Salaniponi FM.	Int J Tuberc Lung Dis. 2001 Oct;5(10):979-81.	yes	not wrs														
Prospective cohort study of adverse events monitored by hospital pharmacists. Hospital Adverse Event Monitoring Study (HAEMS) Group.	Emerson A, Martin RM, Tomlin M, Mann RD.	Pharmacoepidemiol Drug Saf. 2001 Mar-Apr;10(2):95-103.	yes	not wrs														
Training, job demands and mental health of pre-registration house officers.	Bogg J, Gibbs T, Bundred P.	Med Educ. 2001 Jun;35(6):590-5.	yes	not wrs														
Resources for controlling tuberculosis in Malawi.	Harries AD, Kwanjana JH, Hargreaves NJ, Van Gorkom J, Salaniponi FM.	Bull World Health Organ. 2001;79(4):329-36. Epub 2003 Jul 2.	yes	not wrs														

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Problems with solutions: drowning in the brine of an inadequate knowledge base.	Lobo DN, Dube MG, Neal KR, Simpson J, Rowlands BJ, Allison SP.	Clin Nutr. 2001 Apr;20(2):125-30.	yes	not wrs														
Influence of an infectious disease consulting service on quality and costs of antibiotic prescriptions in a university hospital.	Lemmen SW, Becker G, Frank U, Daschner FD.	Scand J Infect Dis. 2001;33(3):219-21.	yes	not wrs														
Standards of documentation of the surgeon-patient consultation in current surgical practice.	Fernando KJ, Siriwardena AK.	Br J Surg. 2001 Feb;88(2):309-12.	yes	not wrs														
The Effect of post-discharge surveillance and control strategies on the course of a Staphylococcus aureus outbreak in a newborn nursery.	Couto RC, Pedrosa TM, TupinambÃ¡s U, Rezende NA.	Braz J Infect Dis. 2000 Dec;4(6):296-300.	yes	not wrs														
Ideal ward round making in neurosurgical practice.	Pathak A, Pathak N, Kak VK.	Neurol India. 2000 Sep;48(3):216-22.			observation	round making roup' communication mainly	neurosurgery		consulatnt style			consultant style					neurosurgery	12 senior consultants with >10 yrs experience at 3 diff university hospitals observed by ppt observeer, observations on the group climate of the RMG 'round making group', the leadership pattern and language expressed, effectiveness of his performance as a leader, good productivity and flexibility with 92% and 75% consultants, pleasantness of climate was 50% and poor objectivity with 42%; 42% of consulatnts were not always very well comprehensible, only 50% spoke fitting to the occasion, only 33% used humour effectively, 42% spoke unecessarily in between discussion and were poor in intriducing the problems of patient to round making groupo - ??? what is round making group and also how were all these measured ? tool or ? personal opionion, was observer an 'expert.
The potential role of IT in supporting the work of junior doctors.	Young RJ, Horsley SD, McKenna M.	J R Coll Physicians Lond. 2000 Jul-Aug;34(4):366-70.	yes	It														
Fragmentation of treatment and the potential for human error in neonatal intensive care.	Kostopoulou O, Shepherd A.	Top Health Inf Manage. 2000 May;20(4):78-92.	yes	not wrs														
Low-cost video-films in the teaching of undergraduate and postgraduate medical students.	Lewis L, Jones J, Haynes E.	J Telemed Telecare. 2000;6 Suppl 2:S45-7.	yes	not wrs														
Objectifying psychomental stress in the workplace--an example.	Fischer JE, Calame A, Dettling AC, Zeier H, Fanconi S.	Int Arch Occup Environ Health. 2000 Jun;73 Suppl:S46-52.	yes	not wrs														
The German medical dissertation--time to change?	Diez C, Arkenau C, Meyer-Wentrup F.	Acad Med. 2000 Aug;75(8):861-3.	yes	not wrs														
The impact of a picture archiving and communication system (PACS) upon an intensive care unit.	Watkins J, Weatherburn G, Bryan S.	Eur J Radiol. 2000 Apr;34(1):3-8.	yes	not wrs														
Interventions to promote collaboration between nurses and doctors.	Zwarenstein M, Bryant W.	Cochrane Database Syst Rev. 2000;(2):CD000072. Review. Update in: Cochrane Database Syst Rev. 2009;(3):CD000072.			review of 2 studies	doctor nurse collaboration	mixed	yes	yes			yes					mixed	2 articles fitted criteria, joint decisions - shortened los, reduced hospital charges, no differences in mortality rates o rtype of care pt was discarged to, another trial - no difference in L o S, but excluding pts who had died in hospital showed there was a difference.
A review of a surgical ward round in a large paediatric hospital: does it achieve its aims?	Birtwistle L, Houghton JM, Rostill H.	Med Educ. 2000 May;34(5):398-403.			interviews then questionnaire - surgeons, nurses, parents and patients	wr role, attitudes	paeds surgery	yes	yes		yes	yes	yes	yes			paeds surgery	16 surgical team members, 30 nurses, 14 patients, 24 parents, surgical team generally theought ward rounds were valuable, nursing staff dissatisifed, both thought the wr should change from its present form and suggestions for changes to improve teaching and promote quality. pts tended to display neutral experience, and significant minority of parents expressed concerns over confidentiality and level of anxiety felt by children
Risk factors for postcesarean surgical site infection.	Tran TS, Jamulitrat S, Chongsuvivatwong V, Geater A.	Obstet Gynecol. 2000 Mar;95(3):367-71.	yes	not wrs														
The struck-off mystery.	Buntwal N, Hare J, King M.	J R Soc Med. 1999 Sep;92(9):443-5.	yes	not wrs														
Opportunistic immunisation in hospital.	Conway SP.	Arch Dis Child. 1999 Nov;81(5):422-5.	yes	not wrs														
The impact of two changes in service delivery on a geriatric psychiatry liaison service.	Baheerathan M, Shah A.	Int J Geriatr Psychiatry. 1999 Sep;14(9):767-75.	yes	psych														
Gender, isolation, work patterns and stress among old age psychiatrists.	Benbow SM, Jolley DJ.	Int J Geriatr Psychiatry. 1999 Sep;14(9):726-32.	yes	not wrs														
Joint surgical/palliative care ward round in a district general hospital.	Fisher JA, Parker MC.	Palliat Med. 1999 May;13(3):249-50. No abstract available.																
Academic detailing improves identification and reporting of adverse drug events.	Schlienger RG, LÃ¼scher TF, Schoenenberger RA, Haefeli WE.	Pharm World Sci. 1999 Jun;21(3):110-5.	yes	not wrs														
Patterns of interaction during rounds: implications for work-based learning	Walton Jm, Steinert Y	Med Educ 44: 550-8			Observational/survey						Yes				Yes		?	In patient rounds example of an opportunity for a powerful work-based learning, observational, rounds are time consuming and dominated by attendings, with individuals not directly involved in a case often minimally involved, ward rounds seen as most useful for patient care and contrary to expectations students and residents viwed attending physicians-dominated sessions as more educational
Improving communication in the ICU using Daily Goals	Pronovost P, Berenholtz S, Dorman T, Lipsett PA, Simmonds T, Haraden C	Journal of Critical Care 2003 Jun: 18(2): 71-5			Prospective cohort intervention	LOS, % of residents and nurses who understood goals of care for the day	ICU		Daily Goals Form								ICU	Use of daily goals sheet led to vastly increased understanding and also reduced LOS, evaluation over 1 year
A pilot study using nominal group technique to assess residents' perceptions of successful attending rounds	Castiglioni A, Shewchuk RM, Willett LL, Heudebert GR, Centor RM	J Gen Intern Med 23(7): 1060-5			Pilot using nominal group technique - assess resident perceptions of successful attending rounds	Success factors and detractors	Internal medicine				Residents perspectives						GIM	Residents perspectives - want approachability, enthusiasm, teaching, length of round, HO autonomy, estabblishing goals/expectations, detractors were long/ too short, WRs, time constraints, poor rapport within team, disrespectful comments - group meetins using nominal group technique - facilitated grup meeting - 4 stages

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Using cognitive mapping to define key domains for successful attending rounds	Roy B, Catiglioni A, Kraemer R, Salanitro, Willett L, Shewchuk R, Qu H, Heudebert G, Centor R	J Gen Intern Med 27(11): 1492-8			Multi institutional, corss sectional study to understand perceptions of successful WRs and help define key domains	Key WR domains identified	Internal medicine				Faculty, residents and students						GIM	Rating exercise - highest rated attributes, teach by example/ bedisde manner, sharing an attendings thought process, approachable but not intimidating, insist on respect for all team members, conduct rounds in organised, efficient and timely fashion, state expectations for residents/students - 2 dimensional cognitive map and adequate convergance was achieved - 5 disctinct domains or realted attributes 1) Learning atmosphere, 2) Clinical teaching, 3) Teaching style, 4) Communicating expectations, 5) team mangement
The dance between attending physicians and senior residents as teachers and supervisors	Balmer D, Giardino A, Richards B	Paediatrics 129:910			Ethnography and nterviews	Coding	Paediatircs		Relationship between attending and senior resident		Attendings and senior residents						Paediatrics	Coding from ethnography and interviews - stpping up and sstanding back - using methaphor of a dance to try and expalin relationship
The prevalence of social and behavioral topics and related educational opportunities during attending rounds.	Satterfield JM, Bereknyei S, Hilton JF, Bogetz AL, Blankenburg R, Buckelew SM, Chen HC, Monash B, Ramos JS, Rennke S, Braddock CH 3rd.	Acad Med. 2014 Nov;89(11):1548-57. doi: 10.1097/ACM.0000000000000483.			Cross sectional observational study	Prevalence of SBS topics	Paediatrics and Internal medicien	a bit	a bit		yes	sort of			yes		Paediatrics and GIM	Observational study looking at SBS Social and behavioural topics and related educational opportunities - pain, nutrition, social support, resources, variety among 4 services observed and no of topics raised was related to greater patient centredness, an sevices varied for learner-centredness and patient centredness
Family participation during intensive care unit rounds: goals and expectations of parents and health care providers in a tertiary pediatric intensive care unit.	Stickney CA, Ziniel SI, Brett MS, Truog RD.	J Pediatr. 2014 Dec;165(6):1245-1251.e1. doi: 10.1016/j.jpeds.2014.08.001. Epub 2014 Sep 17.			semistructured interviews, focus groups	perceptions, goals and expectations of healthcare	paeds				yes		parents				paeds	semis tructured interviews and focus groups, 21 parents, 24 health care providers. Key areas of agreement between providers and parents regarding goals for rounds - helping the parents achieve an undertsanding of their child's current status and plan of care. Disagreement about the nature of opportunities to ask questions, parents have a strong desire to provide expert advice about their children and expected transparency from their care team, providers tated that parental presence sometimes hindered frank discussions and education
A division of medical communications in an academic medical center's department of medicine.	Drazen JM, Shields HM, Loscalzo J.	Acad Med. 2014 Dec;89(12):1623-9. doi: 10.1097/ACM.0000000000000472.	yes	not wrs														
Twenty-five years of accomplishments of the College of American Pathologists Q-probes program for clinical pathology.	Howanitz PJ, Perrotta PL, Bashleben CP, Meier FA, Ramsey GE, Massie LW, Zimmerman RL, Karcher DS.	Arch Pathol Lab Med. 2014 Sep;138(9):1141-9. doi: 10.5858/arpa.2014-0150-OA.	yes	not wrs														
Norwegian nursing and medical students' perception of interprofessional teamwork: a qualitative study.	Aase I, Hansen BS, Aase K.	BMC Med Educ. 2014 Aug 14;14:170. doi: 10.1186/1472-6920-14-170.	yes	not wrs														
Executive walk rounds open gates to communication with staff.	Wood E.	OR Manager. 2014 Jun;30(6):8-10. No abstract available.	yes	letter														
Listening to patients changes clinicians' perspectives and improves care.	Vidal K.	Creat Nurs. 2014;20(2):122-6.	yes	not wrs														
Effects of the 2011 duty hour restrictions on resident education and learning from patient admissions.	Auger KA, Jerardi KE, Sucharew HJ, Yau C, Unaka N, Simmons JM.	Hosp Pediatr. 2014 Jul;4(4):222-7. doi: 10.1542/hpeds.2014-0004.	yes	not wrs														
Applying athletic principles to medical rounds to improve teaching and patient care.	Southwick F, Lewis M, Treloar D, Cherabuddi K, Radhakrishnan N, Leverence R, Han X, Cottler L.	Acad Med. 2014 Jul;89(7):1018-23. doi: 10.1097/ACM.0000000000000278.			new intervention	LoS, 30 day readmissions	medicine	yes	yes, use of athletic principles to train MDT								GIM	experimental group sof GIM introduced to individual job descriptions (playbooks), key customer-supplier relation ships, efficient communication protocols, and weekly feedback (game films) - 30% reducstion in 30 day readmission rate and 18% shorter length of stay from interventions, surveys - greater satisfaction, and students rated teaching as markedly improved. Pt satisfaction did not change
Discharge planning rounds to the bedside: a patient- and family-centered approach.	Wrobleski DM, Joswiak ME, Dunn DF, Maxson PM, Holland DE.	Medsurg Nurs. 2014 Mar-Apr;23(2):111-6.	yes	not doctor led														
Educating medical students about the personal meaning of terminal illness using the film, Wit"."	Ozcakir A, Bilgel N.	J Palliat Med. 2014 Aug;17(8):913-7. doi: 10.1089/jpm.2013.0462. Epub 2014 Jun 12.	yes	not wrs														
Stimulated recall methodology for assessing work system barriers and facilitators in family-centered rounds in a pediatric hospital.	Carayon P, Li Y, Kelly MM, DuBenske LL, Xie A, McCabe B, Orne J, Cox ED.	Appl Ergon. 2014 Nov;45(6):1540-6. doi: 10.1016/j.apergo.2014.05.001. Epub 2014 Jun 2.			simulated recall methodology	family centered rounds	paeds				yes	parents				trial of simulated recall	paeds	use simulated recall methodology 5 parents and 5 healthcare team members - video of ward orunds, identified barriers and facilitators in all work system elements
Red blood cell transfusion practices in two surgical intensive care units: a mixed methods assessment of barriers to evidence-based practice.	Murphy DJ, Pronovost PJ, Lehmann CU, Gurses AP, Whitman GJ, Needham DM, Berenholtz SM.	Transfusion. 2014 Oct;54(10 Pt 2):2658-67. doi: 10.1111/trf.12718. Epub 2014 May 21.	yes	not wrs														
Implementing goal-directed protocols reduces length of stay after cardiac surgery.	Miller A, Wagner CE, Song Y, Burns K, Ahmad R, Lee Parmley C, Weinger MB.	J Cardiothorac Vasc Anesth. 2014 Jun;28(3):441-7. doi: 10.1053/j.jvca.2014.01.010. Epub 2014 Apr 16. Erratum in: J Cardiothorac Vasc Anesth. 2014 Aug;28(4):1189-91.	yes	not wrs														
Findings from the implementation of a validated readmission predictive tool in the discharge workflow of a medical intensive care unit.	Ofoma UR, Chandra S, Kashyap R, Herasevich V, Ahmed A, Gajic O, Pickering BW, Farmer CJ.	Ann Am Thorac Soc. 2014 Jun;11(5):737-43. doi: 10.1513/AnnalsATS.201312-436OC.	yes	not wrs														
Developing a toolkit for comparing safety in spine surgery.	Mirza SK, Martin BI, Goodkin R, Hart RA, Anderson PA.	Instr Course Lect. 2014;63:271-86.	yes	not wrs														
Can hospital rounds with pocket ultrasound by cardiologists reduce standard echocardiography?	Khan HA, Wineinger NE, Uddin PQ, Mehta HS, Rubenson DS, Topol EJ.	Am J Med. 2014 Jul;127(7):669.e1-7. doi: 10.1016/j.amjmed.2014.03.015. Epub 2014 Mar 24.	yes	not wrs														
A patient with AKI after cardiac surgery.	Tolwani AJ.	Clin J Am Soc Nephrol. 2014 Aug 7;9(8):1470-8. doi: 10.2215/CJN.10461013. Epub 2014 Mar 20.	yes	case study														
Family-centered rounds in theory and practice: an ethnographic case study.	Subramony A, Hametz PA, Balmer D.	Acad Pediatr. 2014 Mar-Apr;14(2):200-6. doi: 10.1016/j.acap.2013.11.003.			ethnography, interviews	family centred rounds	paeds		yes				yes				paeds	ethnography and interviews, 4 themes - incomplete alignment bewtween family cantered practices and principles of fc care1) opportunity for info sharing but medical jargon used andlimited communication, 2) respect uintended but contextual factors undermined intenet, 3) opportunity to participate in care but did not guarantee involvement4) fcr were a starting point for collaboration around plan making but did not guarantee that collaboration occured

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Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
A real-time locating system observes physician time-motion patterns during walk-rounds: a pilot study.	Ward DR, Ghali WA, Graham A, Lemaire JB.	BMC Med Educ. 2014 Feb 25;14:37. doi: 10.1186/1472-6920-14-37.			pilot study using real-time locating system to observe physician time-motion patterns	time and location	medicine		time and location - how they are done								medicine	pilot study to assess efficacy of rtls technology to track equipment and patients in clinical setting, used small-scale to observe attending physician walk-round patterns during mandatory once-weekly team rounding session, 8 participants, pictoral represtations, visual analysis of time motion 2 researchers, rounds 60-425 mins, median duration of rounds within pt rooms - 33%, 3 patterns observed, first predominantly in ward hallways, little time in rooms, second predominant in medical conferencew room, third balanced pattern pt rooms and hallways
Enhancing capacity management.	Rees S, Houlahan B, Lavrenz D.	J Nurs Adm. 2014 Mar;44(3):121-4. doi: 10.1097/NNA.0000000000000036.	yes	not wrs														
The value of case-based teaching vignettes in clinical microbiology rounds.	Spicer JO, Kraft CS, Burd EM, Armstrong WS, Guarner J.	Am J Clin Pathol. 2014 Mar;141(3):318-22. doi: 10.1309/AJCPW71HRNSSBYPO.	yes	not patients														
Internal medicine rounding practices and the Accreditation Council for Graduate Medical Education core competencies.	Shoeb M, Khanna R, Fang M, Sharpe B, Finn K, Ranji S, Monash B.	J Hosp Med. 2014 Apr;9(4):239-43. doi: 10.1002/jhm.2164. Epub 2014 Feb 3.			survey	see if attending rounds covered ACGME (USA) 6 core domains are covered	?								yes		?	survey but also not sure how they assessed attending physcians rounding models, then compared the answers for each model - bedside rounds, hallway rounds, card flipping rounds, hallway rounds used the most, and bedside for new pts, bedside rounds and hallway rounds superior to CFR for AGCME competencies
Is there a place for medical students as teachers in the education of junior residents?	Wirth K, Malone B, Barrera K, Widmann WD, Turner C, Sanni A.	Am J Surg. 2014 Feb;207(2):271-4. doi: 10.1016/j.amjsurg.2013.11.001. Epub 2013 Dec 5.	yes	not wrs														
Long-term persistence of quality improvements for an intensive care unit communication initiative using the VALUE strategy.	Wysham NG, Mularski RA, Schmidt DM, Nord SC, Louis DL, Shuster E, Curtis JR, Mosen DM.	J Crit Care. 2014 Jun;29(3):450-4. doi: 10.1016/j.jcrc.2013.12.006. Epub 2013 Dec 21.	yes	not wrs														
Considerations for attending rounds--reply.	Stickrath C, Anderson M.	JAMA Intern Med. 2014 Jan;174(1):162. doi: 10.1001/jamainternmed.2013.11085. No abstract available.	yes	letter														
Considerations for attending rounds.	Bergl P, Arora V, Farnan J.	JAMA Intern Med. 2014 Jan;174(1):161-2. doi: 10.1001/jamainternmed.2013.11122. No abstract available.	yes	letter														
Considerations for attending rounds.	Walsh K.	JAMA Intern Med. 2014 Jan;174(1):161. doi: 10.1001/jamainternmed.2013.11100. No abstract available.	Yes	comment														
Attending rounds: A patient with intradialytic hypotension.	Reilly RF.	Clin J Am Soc Nephrol. 2014 Apr;9(4):798-803. doi: 10.2215/CJN.09930913. Epub 2014 Jan 2.	yes	case study														
Identifying and overcoming the barriers to bedside rounds: a multicenter qualitative study.	Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H, Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki DM.	Acad Med. 2014 Feb;89(2):326-34. doi: 10.1097/ACM.0000000000000100.			telephone interviews	barriers, methods to overcome trainee apprehensions, strategies to educate faculty	?		yes						yes		?	perceived barriers - physician and systems related but actual barriers encountered related to systems, time and physician specific issues, to address rersident apprehensions6 themse- build partnerships, create safe leanring environments, overcome with experience, make bedside rounds educationally worthwhile, respect trainee time, highlight positive impact on pt care
Jefferson interprofessional clinical rounding project: an innovative approach to patient care.	Lyons KJ, Giordano C, Speakman E, Isenberg G, Antony R, Hanson-Zalot M, Ward J, Papastrat K.	J Allied Health. 2013 Winter;42(4):197-201.			education	structured observation form to assess team mebers participation in interactive probing question	colerectal, surgical	yes, interprofessioanl round	yes		yes				yes		surgical	medical, nursing and pharmacy students attended round in colorectal surgery, discussed patients from discipline specific perspective, then presented to attending who asked probing questions and a structured observation form was used to assess team members interaction during process and then debrief, results showed most were engaged in process and summaries showed high level of satisfaction, all groups suggested a better undertsanding of each others roles as a result f incresed communication, resulted in a more patient centered approach, additional info provided in team apporach resulted in more intergrated paln of carebecause of input provided from diff perspectives, consulsion intrprofessional besdie rounding can be implemeneted successfully, ? numbers, ? further evaluation
Views of parents and health-care providers regarding parental presence at bedside rounds in a neonatal intensive care unit.	Grzyb MJ, Coo H, RÃ¼hland L, Dow K.	J Perinatol. 2014 Feb;34(2):143-8. doi: 10.1038/jp.2013.144. Epub 2013 Nov 7.			survey	parental attitudes and health care providers attitudes regarding parental presence at nedside rounds	neonatal		yes		yes		yes					survery, parents, medical trainees, nurses, majority of parents reported attending rounds reduced anxiety and increased confidence in health care team, nurses more likely than medical trainees to support parental presence, approx 3/4 medical trainees and nurses thought conversation was inhibited, and 69% of trainees thought teaching was inhibited
Clinical quality improvement: eliminating unplanned extubation in the CCU.	Chia PL, Santos DR, Tan TC, Leong C, Foo D.	Int J Health Care Qual Assur. 2013;26(7):642-52.	yes	not wrs														
The Boston marathon bombings: the early plastic surgery experience of one Boston hospital.	Kim PS, Malin E, Kirkham JC, Helliwell LA, Ibrahim AM, Tobias AM, Upton J, Lee BT, Lin SJ.	Plast Reconstr Surg. 2013 Nov;132(5):1351-63. doi: 10.1097/PRS.0b013e3182a5a3d9.	yes	not wrs														
Family presence at bedside rounds in the intensive care unit: should we look at alternative solutions?	Walsh K.	Intensive Crit Care Nurs. 2014 Apr;30(2):119. doi: 10.1016/j.iccn.2013.09.001. Epub 2013 Oct 11. No abstract available.	yes	editorial														
The value of bedside rounds: a multicenter qualitative study.	Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick GS, Harrell H, Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki DM.	Teach Learn Med. 2013;25(4):326-33. doi: 10.1080/10401334.2013.830514.			telephone interviews	views on bedside rounds from bedside teachers	?				yes attendings				yes		? Varied	telephone interviews - 34 attendings, 6 themes: skill development for learners, observationa and feedback, role modelling, team building among trainees, attending and patient, improved pt care delivery through combined clinical decision making and team consensus, culture of medicine as pt-centered care which has embodied all themes Conslusion bedside teachers identify potential benefits of bedside rounds, many alin with national calls to change approach to medical education, bedside rounds enables activities essential to high quality patient care and education
A survey of the attitudes and perceptions of multidisciplinary team members towards family presence at bedside rounds in the intensive care unit.	Santiago C, Lazar L, Jiang D, Burns KE.	Intensive Crit Care Nurs. 2014 Feb;30(1):13-21. doi: 10.1016/j.iccn.2013.06.003. Epub 2013 Aug 17.			survey	staff perspectives on family presence on icu rounds	ICU	yes	yes		yes						icu	survey of crutucal care physicians, fellows, registered nurses, allied health care discipline and managers towards family presence on bedside rounds, questionnaire, respone rate 72.4% (160/221), most MDs agreed, HD and managers somewhat agreed and nurses disagreed strongly, majority agredd their presence prolongs rounds, reduces education and constrains delivery of negative medical info, nurses showed greatest reservation and among nurses, more experience showed greatest reservation (95 nurses) largest group

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Residents' attitudes toward a smartphone policy for inpatient attending rounds.	Katz-Sidlow RJ, Lindenbaum Y, Sidlow R.	J Hosp Med. 2013 Sep;8(9):541-2. doi: 10.1002/jhm.2070. Epub 2013 Aug 17. No abstract available.	yes	smartphone														
A clinical trial comparing physician prompting with an unprompted automated electronic checklist to reduce empirical antibiotic utilization.	Weiss CH, Dibardino D, Rho J, Sung N, Collander B, Wunderink RG.	Crit Care Med. 2013 Nov;41(11):2563-9. doi: 10.1097/CCM.0b013e318298291a.	yes	electornic checklist for antibiotics														
The effect of a clinical medical librarian on in-patient care outcomes.	Esparza JM, Shi R, McLarty J, Comegys M, Banks DE.	J Med Libr Assoc. 2013 Jul;101(3):185-91. doi: 10.3163/1536-5050.101.3.007.	yes	not wrs														
Mourning on morning rounds.	Vallurupalli M.	N Engl J Med. 2013 Aug 1;369(5):404-5. doi: 10.1056/NEJMp1300969. No abstract available.	yes	mounring on wrs														
Implementing delirium screening in the ICU: secrets to success.	Brummel NE, Vasilevskis EE, Han JH, Boehm L, Pun BT, Ely EW.	Crit Care Med. 2013 Sep;41(9):2196-208. doi: 10.1097/CCM.0b013e31829a6f1e. Review.	yes	delirium screening														
Establishing patient-centered physician and nurse bedside rounding.	Rimmerman CM.	Physician Exec. 2013 May-Jun;39(3):22-5. No abstract available.																
A foundation for patient safety: phase I implementation of interdisciplinary bedside rounds in the pediatric intensive care unit.	Licata J, Aneja RK, Kyper C, Spencer T, Tharp M, Scott M, Hamilton MF, Pasek TA.	Crit Care Nurse. 2013 Jun;33(3):89-91. doi: 10.4037/ccn2013280. No abstract available.																
Students' expectations on the surgery clerkship exceed those of residents and faculty.	Quillin RC 3rd, Pritts TA, Tevar AD, Hanseman DJ, Edwards MJ, Davis BR.	J Surg Res. 2013 Sep;184(1):495-500. doi: 10.1016/j.jss.2013.04.048. Epub 2013 May 13.	yes	not wrs														
A systematic review of evidence-informed practices for patient care rounds in the ICU*.	Lane D, Ferri M, Lemaire J, McLaughlin K, Stelfox HT.	Crit Care Med. 2013 Aug;41(8):2015-29. doi: 10.1097/CCM.0b013e31828a435f. Review.			systematic review article	evidence informed practices for pt care rounds in ICU	ICU	yes	yes		yes		yes				icu	systematic review of icu rounds, 136 articles in 3 languages, ethnographic, 15 uncontrolled before-after studies, Toal of 13 facilitators and 9 barriers to pt care orounds idenitfied through narrative and meta synsthesis review. Identified facilitators suggest quality of rounds is improved if mdt, explicitly defined roles, standardised structure and goal orientated approach includes best practice checklist, barriers include poor info retrieval, documentation, interruptions, long rounding times, allied healthcare provider perceptions of not being valued by rounding physcians
Bedside rounding strategies used by bedside teachers.	LeFrancois D, Leung S.	J Gen Intern Med. 2013 Sep;28(9):1130. doi: 10.1007/s11606-013-2461-x. No abstract available.																
Attending rounds: where do we go from here?: comment on Attending rounds in the current era"."	Amoss J.	JAMA Intern Med. 2013 Jun 24;173(12):1089-90. doi: 10.1001/jamainternmed.2013.6063. No abstract available.	yes	Comment														
Attending rounds in the current era: what is and is not happening.	Stickrath C, Noble M, Prochazka A, Anderson M, Griffiths M, Manheim J, Sillau S, Aagaard E.	JAMA Intern Med. 2013 Jun 24;173(12):1084-9. doi: 10.1001/jamainternmed.2013.6041.			Cross sectional observation		GIM	yes	yes	yes							GIM	observation 90 days of rounds 9 patients in 2 hours, 1 attending, 3 trainees, what is discussed - only 73% communicated with patients, 68.8% discussed medication list, 12% communicated with nurses, lots of activites did not occur a bedside, poor educational value - see their options
Bedside rounding strategies used by bedside teachers. The authorsâ€™ reply.	Gonzalo J.	J Gen Intern Med. 2013 Sep;28(9):1131. doi: 10.1007/s11606-013-2462-9. No abstract available.																
Radiation exposure in patients with subarachnoid hemorrhage: a quality improvement target.	Wong JM, Ho AL, Lin N, Zenonos GA, Martel CB, Frerichs K, Du R, Gormley WB.	J Neurosurg. 2013 Jul;119(1):215-20. doi: 10.3171/2013.3.JNS12253. Epub 2013 Apr 26.	yes	not wrs														
Development of a checklist for documenting team and collaborative behaviors during multidisciplinary bedside rounds.	Henneman EA, Kleppel R, Hinchey KT.	J Nurs Adm. 2013 May;43(5):280-5. doi: 10.1097/NNA.0b013e31828eebfb.			development of checklist	team and collaborative behaviours during mdt rounds	gim		yes to measure teamwork							? Look for development of checklist	gim	checklist developed (how?) on 3 GIM units, items dervied form literature and medical centres pt-family centred values (??), determined reliable and valid and easy to use (??), encouragement to use checklist, need further rresearch to objectively measure thses things
Assessing the impact of mobile technology on order verification during pharmacist participation in patient rounds.	Ray SM, Clark S, Jeter JW, Treadway SA.	Am J Health Syst Pharm. 2013 Apr 1;70(7):633-6. doi: 10.2146/ajhp120219.	yes	technology														
Promoting a culture of safety as a patient safety strategy: a systematic review.	Weaver SJ, Lubomksi LH, Wilson RF, Pfoh ER, Martinez KA, Dy SM.	Ann Intern Med. 2013 Mar 5;158(5 Pt 2):369-74. doi: 10.7326/0003-4819-158-5-201303051-00002. Review.	yes	not wrs														
Are family characteristics associated with attendance at family centered rounds in the PICU?.	Drago MJ, Aronson PL, Madrigal V, Yau J, Morrison W.	Pediatr Crit Care Med. 2013 Feb;14(2):e93-7. doi: 10.1097/PCC.0b013e3182712 9cc.			observational study, questionnaire	family characteristics for attendance on rounds	PICU	yes					yes				picu	most frequest family member present was mothers, observation of 431 pt encounters and 100 questionnaires, race, age, educational level, age of family member, age of child, expectation of admission, whether family member was a healthcare professional had no association. both family members present and those not pesent felt being at the rounds would improve the care of the child, familys response that they would like to attend rounds was only factor associated with higher likelihood of attending rounds
Saving time on morning rounds: the application of the traveling salesman problem to surgical team movement patterns.	Falcone JL.	Am Surg. 2013 Jan;79(1):110-1. No abstract available.																
Peer observation and feedback of resident teaching.	Snydman L, Chandler D, Rencic J, Sung YC.	Clin Teach. 2013 Feb;10(1):9-14. doi: 10.1111/j.1743-498X.2012.00591.x.			observation and survey	resident doctors teaching	?	yes residents							yes rsident teaching of students		?	observation by attending and a peer, 21 residents completed survey, half felt partcipation in per observation had stimulate dtheire interest, prior to observation fewer than half felt comfortable with being observed by peers,compared to 71.4% after participation. proporation of residents who felt confortable giving feedback to peers increased, and ame with those receiving feedback but small numbers and one centre Conclusion peer observation possible and feasible and rewarding
Bedside rounding moves into the future.	Burrell A.	Nurs Times. 2012 Oct 9-15;108(41):19. No abstract available.	yes	commentary														
Introduction of a rounding sticker improves care and reduces infection rates in the Pediatric Intensive Care Unit (PICU).	Stroud MH, Moss MM, Gilliam CH, Honeycutt M, Frost M, Green JW.	J Ark Med Soc. 2012 Nov;109(6):114-7.			pre and psot sticker checklist on infetion rates	infection rates	PICU		yes checklist								picu	following sticker use, 56% decrease in UTIsand increase in GI prophylaxis, and enoxaparin ? Method, whats on checklist, numbers, how implemented, sustained effect???
The art of bedside rounds: a multi-center qualitative study of strategies used by experienced bedside teachers.	Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H, Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki DM.	J Gen Intern Med. 2013 Mar;28(3):412-20. doi: 10.1007/s11606-012-2259-2. Epub 2012 Nov 6.			telphone interviews	understand prearation, pt selection, role allocation	gim	yes residents	yes checklist		yes attendings			yes			gim	thematic analysis of telephone interviews, prepartion for rounds included using trainee specific, pt specific and disased specific info, with additional mental prep. Sought trainee buy-in and learning objectives, reviewed expectations, methods, ensure pt comfort and provided early guidance with bedside encounters, talk of pt selction (? relevance to all if you can choose which pts), team members roles varied and autonomy graduated with experiece

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AKI in a hospitalized patient with cellulitis.	Perazella MA.	Clin J Am Soc Nephrol. 2013 Apr;8(4):658-64. doi: 10.2215/CJN.09370912. Epub 2012 Oct 25.	yes	case study														
Perspective: a business school view of medical interprofessional rounds: transforming rounding groups into rounding teams.	Bharwani AM, Harris GC, Southwick FS.	Acad Med. 2012 Dec;87(12):1768-71. doi: 10.1097/ACM.0b013e318271f8da.			observation and interview	teamwork	internal medicine	yes	yes		yes	yes		yes			internal medicine	4 groups of business students observed interprofessional work rounds on 4 different int medicine services, and interviewed all participants. Observed working groups not working teams, ppts exhibited parallel interdependence rather than reciprocal interdependence (hallmark of sucessful team), with one exception hierarchial with senior attending possessing authority. Nurses and pharmacists often prsent, never contributed and rarely spoke. Recommendations - team launch to promote active particiaption by all team members, use of succint protocols, conduct work rounds in a quiet distraction free environemnt, teams remain togetehr for longer durations, receive teamwork training and periodoic coaching
An elderly patient with chronic hyponatremia.	Berl T.	Clin J Am Soc Nephrol. 2013 Mar;8(3):469-75. doi: 10.2215/CJN.03100312. Epub 2012 Oct 4. Review.	yes	case study														
Chest radiographs in 104 French ICUs: current prescription strategies and clinical value (the RadioDay study).	Lakhal K, Serveaux-Delous M, Lefrant JY, Capdevila X, Jaber S; AzuRÃ©a network for the RadioDay study group.	Intensive Care Med. 2012 Nov;38(11):1787-99. doi: 10.1007/s00134-012-2650-9. Epub 2012 Aug 2.																
AKI in a patient with cirrhosis and ascites.	Davenport A.	Clin J Am Soc Nephrol. 2012 Dec;7(12):2041-8. doi: 10.2215/CJN.03390412. Epub 2012 Sep 13.																
Early feeding and discontinuation of intravenous fluid after laparoscopic cholecystectomy.	Shah JN, Maharjan SB, Manandhar K, Paudyal S, Shrestha S, Shah S, Lamichhane D.	J Nepal Health Res Counc. 2012 Jan;10(1):28-31.																
Strategies for improving patient safety culture in hospitals: a systematic review.	Morello RT, Lowthian JA, Barker AL, McGinnes R, Dunt D, Brand C.	BMJ Qual Saf. 2013 Jan;22(1):11-8. doi: 10.1136/bmjqs-2011-000582. Epub 2012 Jul 31. Review.																
Empiric antibiotic, mechanical ventilation, and central venous catheter duration as potential factors mediating the effect of a checklist prompting intervention on mortality: an exploratory analysis.	Weiss CH, Persell SD, Wunderink RG, Baker DW.	BMC Health Serv Res. 2012 Jul 13;12:198. doi: 10.1186/1472-6963-12-198.																
Development of a hospitalist-led-and-directed physical examination curriculum.	Janjigian MP, Charap M, Kalet A.	J Hosp Med. 2012 Oct;7(8):640-3. doi: 10.1002/jhm.1954. Epub 2012 Jul 12.																
To dialyze or not: the patient with metastatic cancer and AKI in the intensive care unit.	Moss AH.	Clin J Am Soc Nephrol. 2012 Sep;7(9):1507-12. doi: 10.2215/CJN.02030212. Epub 2012 Jul 5.																
Smartphone use during inpatient attending rounds: prevalence, patterns and potential for distraction.	Katz-Sidlow RJ, Ludwig A, Miller S, Sidlow R.	J Hosp Med. 2012 Oct;7(8):595-9. doi: 10.1002/jhm.1950. Epub 2012 Jun 28.	yes	on smartphones														
Using cognitive mapping to define key domains for successful attending rounds.	Roy B, Castiglioni A, Kraemer RR, Salanitro AH, Willett LL, Shewchuk RM, Qu H, Heudebert G, Centor RM.	J Gen Intern Med. 2012 Nov;27(11):1492-8. doi: 10.1007/s11606-012-2121-6. Epub 2012 Jun 22.																
Maintaining quality of care 24/7 in a nontrauma surgical intensive care unit.	McMillen MA, Boucher N, Keith D, Gould DS, Gave A, Hoffman D.	J Trauma Acute Care Surg. 2012 Jul;73(1):202-8. doi: 10.1097/TA.0b013e31824ba4bf.																
Family-centered rounds in Pakistani pediatric intensive care settings: non-randomized pre- and post-study design.	Ladak LA, Premji SS, Amanullah MM, Haque A, Ajani K, Siddiqui FJ.	Int J Nurs Stud. 2013 Jun;50(6):717-26. doi: 10.1016/j.ijnurstu.2012.05.009. Epub 2012 Jun 15.																
The effects of a 'discharge time-out' on the quality of hospital discharge summaries.	Mohta N, Vaishnava P, Liang C, Ye K, Vitale M, Dalal A, Schnipper J.	BMJ Qual Saf. 2012 Oct;21(10):885-90. Epub 2012 May 5.																
Does admission during morning rounds increase the mortality of patients in the medical ICU?	Bisbal M, Pauly V, Gainnier M, Forel JM, Roch A, Guervilly C, Demory D, Arnal JM, Michel F, Papazian L.	Chest. 2012 Nov;142(5):1179-84.																
Medical student self-efficacy with family-centered care during bedside rounds.	Young HN, Schumacher JB, Moreno MA, Brown RL, Sigrest TD, McIntosh GK, Schumacher DJ, Kelly MM, Cox ED.	Acad Med. 2012 Jun;87(6):767-75. doi: 10.1097/ACM.0b013e318253dcdb.																
New knowledge, innovations, and improvement in a MagnetÃ® Children's Hospital Cardiac Center.	Barton SJ, Forster EK, Stuart ME, Patton AM, Rim JS, Torowicz DL.	J Pediatr Nurs. 2012 Jun;27(3):271-4. doi: 10.1016/j.pedn.2011.07.002. Epub 2011 Sep 6.																
The simulated ward: ideal for training clinical clerks in an era of patient safety.	Mollo EA, Reinke CE, Nelson C, Holena DN, Kann B, Williams N, Bleier J, Kelz RR.	J Surg Res. 2012 Sep;177(1):e1-6. doi: 10.1016/j.jss.2012.03.050. Epub 2012 Apr 12.			simualted ward, survey	survey	surgery								simualted ward		surgery	creation of a surgical ward using simulators, morning rounds then acute event, findings plan to chief resident, then survey6% response rate, 66% though the simulated floor management course improved their undertsanding of medical management of surgical issues and 78% their documentation skills, 89% said attending invovolvement made experience more valuable and 66% said not intimidating, 72% expressed an interest in more scenarios (? what is a surgical clerk) ? for students
The dance between attending physicians and senior residents as teachers and supervisors.	Balmer DF, Giardino AP, Richards BF.	Pediatrics. 2012 May;129(5):910-5. doi: 10.1542/peds.2011-2674. Epub 2012 Apr 9.																
Impact of computerized physician order entry on medication errors.	Menendez MD, Alonso J, RancaÃ±o I, Corte JJ, Herranz V, Vazquez F.	Rev Calid Asist. 2012 Nov-Dec;27(6):334-40. doi: 10.1016/j.cali.2012.01.010. Epub 2012 Mar 31.																
What constitutes patient safety culture in Chinese hospitals?	Zhu J, Li L, Li Y, Shi M, Lu H, Garnick DW, Weingart SN.	Int J Qual Health Care. 2012 Jun;24(3):250-7. doi: 10.1093/intqhc/mzs010. Epub 2012 Mar 29.																
Peer-to-peer nursing rounds and hospital-acquired pressure ulcer prevalence in a surgical intensive care unit: a quality improvement project.	Kelleher AD, Moorer A, Makic MF.	J Wound Ostomy Continence Nurs. 2012 Mar-Apr;39(2):152-7. doi: 10.1097/WON.0b013e3182435409.																
Attending rounds: an older patient with nephrotic syndrome.	Glassock RJ.	Clin J Am Soc Nephrol. 2012 Apr;7(4):665-70. doi: 10.2215/CJN.12771211. Epub 2012 Mar 8. Review.																
Utility of the electronic information resource UpToDate for clinical decision-making at bedside rounds.	Phua J, See KC, Khalizah HJ, Low SP, Lim TK.	Singapore Med J. 2012 Feb;53(2):116-20.																
Nurse-reported patient safety climate in Swiss hospitals: a descriptive-explorative substudy of the Swiss RN4CAST study.	Ausserhofer D, Schubert M, Engberg S, Blegen M, De G, Schwendimann R.	Swiss Med Wkly. 2012 Jan 20;142:w13501. doi: 10.4414/smw.2012.13501.																
Presentation skills for the nurse educator.	Longo A, Tierney C.	J Nurses Staff Dev. 2012 Jan-Feb;28(1):16-23. doi: 10.1097/NND.0b013e318240a699.																
Effective multilevel teaching techniques on attending rounds: a pilot survey and systematic review of the literature.	Certain LK, Guarino AJ, Greenwald JL.	Med Teach. 2011;33(12):e644-50. doi: 10.3109/0142159X.2011.610844. Review.			Survey										Multi-level teaching approaches		GIM	concenring multilevel teaching - best methods - boradening, targeting, novelty, least effective teaching advanced material unfamiliar to most or all of the team; systemative review has no results on multi-level teaching techiniques.
Time changes for scheduled nursing assessments: impact on clinical decisions and patient discharge.	Monforto K, Figueroa-Altmann A, Stevens C, Thiele K, Ely E.	J Pediatr Nurs. 2012 Feb;27(1):26-33. doi: 10.1016/j.pedn.2010.11.002. Epub 2010 Dec 30.																
Attending rounds: microangiopathic hemolytic anemia with renal insufficiency.	Clark WF, Hildebrand A.	Clin J Am Soc Nephrol. 2012 Feb;7(2):342-7. doi: 10.2215/CJN.07230711. Epub 2011 Dec 22.																
Improving the discharge process by embedding a discharge facilitator in a resident team.	Finn KM, Heffner R, Chang Y, Bazari H, Hunt D, Pickell K, Berube R, Raju S, Farrell E, Iyasere C, Thompson R, O'Malley T, O'Donnell W, Karson A.	J Hosp Med. 2011 Nov;6(9):494-500. doi: 10.1002/jhm.924. Epub 2011 Oct 31.																

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Impact of facilitating physician access to relevant medical literature on outcomes of hospitalised internal medicine patients: a randomised controlled trial.	Izcovich A, Malla CG, Diaz MM, Manzotti M, Catalano HN.	Evid Based Med. 2011 Oct;16(5):131-5. doi: 10.1136/ebmed-2011-100117.																
How medical alumni now see their junior clerkships in surgery.	Chapman JR, Weidner BC, Nakayama DK.	Am Surg. 2011 Sep;77(9):1161-8.																
Daily multidisciplinary rounds to implement the ventilator bundle decreases ventilator-associated pneumonia in trauma patients: but does it affect outcome?	Stone ME Jr, Snetman D, O' Neill A, Cucuzzo J, Lindner J, Ahmad S, Teperman S.	Surg Infect (Larchmt). 2011 Oct;12(5):373-8. doi: 10.1089/sur.2010.067. Epub 2011 Sep 20.																
Attending rounds: patient with hypokalemia and metabolic acidosis.	Rastegar A.	Clin J Am Soc Nephrol. 2011 Oct;6(10):2516-21. doi: 10.2215/CJN.04150511. Epub 2011 Sep 15.																
Building effective critical care teams.	Manthous C, Nembhard IM, Hollingshead AB.	Crit Care. 2011 Aug 12;15(4):307. doi: 10.1186/cc10255.																
Attending rounds: a patient with drug-resistant hypertension.	Townsend RR.	Clin J Am Soc Nephrol. 2011 Sep;6(9):2301-6. doi: 10.2215/CJN.04120511. Epub 2011 Aug 18.																
A new CJASN feature: attending rounds.	Berns JS.	Clin J Am Soc Nephrol. 2011 Sep;6(9):2300. doi: 10.2215/CJN.06350611. Epub 2011 Jul 28. No abstract available.																
The computerized rounding report: implementation of a model system to support transitions of care.	Wohlauer MV, Rove KO, Pshak TJ, Raeburn CD, Moore EE, Chenoweth C, Srivastava A, Pell J, Meacham RB, Nehler MR.	J Surg Res. 2012 Jan;172(1):11-7. doi: 10.1016/j.jss.2011.04.015. Epub 2011 May 5.																
Clinical pharmacy consultations provided by American and Kenyan pharmacy students during an acute care advanced pharmacy practice experience.	Pastakia SD, Vincent WR 3rd, Manji I, Kamau E, Schellhase EM.	Am J Pharm Educ. 2011 Apr 11;75(3):42.																
Prompting physicians to address a daily checklist and process of care and clinical outcomes: a single-site study.	Weiss CH, Moazed F, McEvoy CA, Singer BD, Szleifer I, Amaral LA, Kwasny M, Watts CM, Persell SD, Baker DW, Sznajder JI, Wunderink RG.	Am J Respir Crit Care Med. 2011 Sep 15;184(6):680-6. doi: 10.1164/rccm.201101-0037OC. Epub 2011 May 26.																
Patient safety culture in a Dutch pediatric surgical intensive care unit: an evaluation using the Safety Attitudes Questionnaire.	Poley MJ, van der Starre C, van den Bos A, van Dijk M, Tibboel D.	Pediatr Crit Care Med. 2011 Nov;12(6):e310-6. doi: 10.1097/PCC.0b013e318220afca.																
Developing and testing a tool to measure nurse/physician communication in the intensive care unit.	Manojlovich M, Saint S, Forman J, Fletcher CE, Keith R, Krein S.	J Patient Saf. 2011 Jun;7(2):80-4. doi: 10.1097/PTS.0b013e3182192463.																
Alternative perceptions of the educational value of attending rounds.	Hinchey K, McArdle P.	Med Educ. 2011 May;45(5):536; author reply 537. doi: 10.1111/j.1365-2923.2011.03940.x. No abstract available.	Yes	Letter - but describes modelling their bedside teaching on ICU rounds - received accolades but not published - they saw observation study is ongoing														
Targeted interventions improve shared agreement of daily goals in the pediatric intensive care unit.	Rehder KJ, Uhl TL, Meliones JN, Turner DA, Smith PB, Mistry KP.	Pediatr Crit Care Med. 2012 Jan;13(1):6-10. doi: 10.1097/PCC.0b013e3182192a6c.																
Medical student outcomes after family-centered bedside rounds.	Cox ED, Schumacher JB, Young HN, Evans MD, Moreno MA, Sigrest TD.	Acad Pediatr. 2011 Sep-Oct;11(5):403-8. doi: 10.1016/j.acap.2011.01.001. Epub 2011 Mar 10.																
A model of awareness to enhance our understanding of interprofessional collaborative care delivery and health information system design to support it.	Kuziemsky CE, Varpio L.	Int J Med Inform. 2011 Aug;80(8):e150-60. doi: 10.1016/j.ijmedinf.2011.01.009. Epub 2011 Feb 12.																
The return of bedside rounds.	Peltan ID, Wright DE.	J Gen Intern Med. 2011 Feb;26(2):113; author reply 114. doi: 10.1007/s11606-010-1564-x. No abstract available.																
Lean analysis of a pediatric intensive care unit physician group rounding process to identify inefficiencies and opportunities for improvement.	Vats A, Goin KH, Fortenberry JD.	Pediatr Crit Care Med. 2011 Jul;12(4):415-21. doi: 10.1097/PCC.0b013e3181fe2e3c.																
An ethnographic study of attending rounds in general paediatrics: understanding the ritual.	Balmer DF, Master CL, Richards BF, Serwint JR, Giardino AP.	Med Educ. 2010 Nov;44(11):1105-16. doi: 10.1111/j.1365-2923.2010.03767.x.			Ethnography/ interviews		Paediatrics							Yes			Paediatrics	Ethnography and interviews of attednings, interns, senior residents - 4 themes 1/ attending rounds were pervasivea nd routine part of clinical education 2/ interns, senior residents and attending physicians hold assumptions about what should happen on rounds 3) tension exists between interns, senior residents and attending physicians assumptions about bedside teaching during rounds and teh reality imposed by contextual factors 4) bedside teaching during rounds is impacted but not prohibtbted by contextual factors therefore infrequently achieved
Attending rounds.	Sarosi GA.	Ann Intern Med. 2010 Oct 5;153(7):482. doi: 10.7326/0003-4819-153-7-201010050-00016. No abstract available.	Yes	Comment														
Integrating incident data from five reporting systems to assess patient safety: making sense of the elephant.	Levtzion-Korach O, Frankel A, Alcalai H, Keohane C, Orav J, Graydon-Baker E, Barnes J, Gordon K, Puopulo AL, Tomov EI, Sato L, Bates DW.	Jt Comm J Qual Patient Saf. 2010 Sep;36(9):402-10.																
Stress ulcer prophylaxis: reducing non-indicated prescribing after hospital discharge.	Hatch JB, Schulz L, Fish JT.	Ann Pharmacother. 2010 Oct;44(10):1565-71. doi: 10.1345/aph.1P167. Epub 2010 Sep 14.																
Spacelabs Innovative Project Award winner--2007. Solar system of safety.	Plouffe JA.	Dynamics. 2010 Fall;21(3):20-1.																
How length of stay for congestive heart failure patients was reduced through six sigma methodology and physician leadership.	Albert K, Sherman B, Backus B.	Am J Med Qual. 2010 Sep-Oct;25(5):392-7. doi: 10.1177/1062860610371823. Epub 2010 Aug 12.																
Evaluation of the role of the critical care pharmacist in identifying and avoiding or minimizing significant drug-drug interactions in medical intensive care patients.	Rivkin A, Yin H.	J Crit Care. 2011 Feb;26(1):104.e1-6. doi: 10.1016/j.jcrc.2010.04.014. Epub 2010 Jun 19.																
The learners' perspective on internal medicine ward rounds: a cross-sectional study.	Tariq M, Motiwala A, Ali SU, Riaz M, Awan S, Akhter J.	BMC Med Educ. 2010 Jul 9;10:53. doi: 10.1186/1472-6920-10-53.																
Association between ICU admission during morning rounds and mortality.	Desai H, El Solh AA.	Chest. 2010 Jun;137(6):1488; author reply 1488-9. doi: 10.1378/chest.09-3127. No abstract available.																
Morning rounds becoming mourning rounds?	Ligtenberg JJ, Dijkema LM, Zijlstra JG.	Chest. 2010 May;137(5):1253-4; author reply 1254. doi: 10.1378/chest.09-2952. No abstract available.																
Teaching paediatric critical care medicine to paediatric residents.	Haque A, Haider R, Salat MS.	J Pak Med Assoc. 2010 Apr;60(4):319-21.																
Morning rounds in the neighborhood.	Glazier EJ.	Ann Intern Med. 2010 Apr 20;152(8):535-6. doi: 10.7326/0003-4819-152-8-201004200-00014. No abstract available.																
The return of bedside rounds: an educational intervention.	Gonzalo JD, Chuang CH, Huang G, Smith C.	J Gen Intern Med. 2010 Aug;25(8):792-8. doi: 10.1007/s11606-010-1344-7. Epub 2010 Apr 13.																
A new leadership role for pharmacists: a prescription for change.	Burgess LH, Cohen MR, Denham CR.	J Patient Saf. 2010 Mar;6(1):31-7. doi: 10.1097/PTS.0b013e3181d108cb.																
The effect of multidisciplinary care teams on intensive care unit mortality.	Kim MM, Barnato AE, Angus DC, Fleisher LA, Kahn JM.	Arch Intern Med. 2010 Feb 22;170(4):369-76. doi: 10.1001/archinternmed.2009.521. Erratum in: Arch Intern Med. 2010 May 24;170(10):867. Fleisher, Lee F [corrected to Fleisher, Lee A].																
Pilot of direct observation of clinical skills (DOCS) in a medicine clerkship: feasibility and relationship to clinical performance measures.	Kang Y, Bardes CL, Gerber LM, Storey-Johnson C.	Med Educ Online. 2009 Aug 5;14:9. doi: 10.3885/meo.2009.T0000137.																

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Enhancing diagnostic accuracy among nonexperts through use of video cases.	Balslev T, de Grave WS, Muijtjens AM, Scherpbier AJ.	Pediatrics. 2010 Mar;125(3):e570-6. doi: 10.1542/peds.2009-0438. Epub 2010 Feb 15.																
Effect of nutritional support team restructuring on the use of parenteral nutrition.	Sriram K, Cyriac T, Fogg LF.	Nutrition. 2010 Jul-Aug;26(7-8):735-9. doi: 10.1016/j.nut.2009.08.012. Epub 2009 Dec 16.																
Delays in discharge in a tertiary care pediatric hospital.	Srivastava R, Stone BL, Patel R, Swenson M, Davies A, Maloney CG, Young PC, James BC.	J Hosp Med. 2009 Oct;4(8):481-5. doi: 10.1002/jhm.490.																
What's new is old: maximizing the benefits of parental presence at bedside rounds through 100 years of insights from the literature.	Simmons JM, Brinkman WB.	J Pediatr. 2009 Oct;155(4):466-8. doi: 10.1016/j.jpeds.2009.06.061. No abstract available.																
Uni- and interdisciplinary effects on round and handover content in intensive care units.	Miller A, Scheinkestel C, Limpus A, Joseph M, Karnik A, Venkatesh B.	Hum Factors. 2009 Jun;51(3):339-53.																
Impact of family presence during pediatric intensive care unit rounds on the family and medical team.	Aronson PL, Yau J, Helfaer MA, Morrison W.	Pediatrics. 2009 Oct;124(4):1119-25. doi: 10.1542/peds.2009-0369. Epub 2009 Sep 7.																
Discordance in interpretation of chest radiographs between pediatric intensivists and a radiologist: impact on patient management.	Nesterova GV, Leftridge CA Jr, Natarajan AR, Appel HJ, Bautista MV, Hauser GJ.	J Crit Care. 2010 Jun;25(2):179-83. doi: 10.1016/j.jcrc.2009.05.016. Epub 2009 Aug 13.																
Pediatric patient safety in emergency departments: unit characteristics and staff perceptions.	Shaw KN, Ruddy RM, Olsen CS, Lillis KA, Mahajan PV, Dean JM, Chamberlain JM; Pediatric Emergency Care Applied Research Network.	Pediatrics. 2009 Aug;124(2):485-93. doi: 10.1542/peds.2008-2858. Epub 2009 Jul 27.																
Evaluation of a new chest tube removal protocol using digital air leak monitoring after lobectomy: a prospective randomised trial.	Brunelli A, Salati M, Refai M, Di Nunzio L, XiumÃ© F, Sabbatini A.	Eur J Cardiothorac Surg. 2010 Jan;37(1):56-60. doi: 10.1016/j.ejcts.2009.05.006. Epub 2009 Jul 8.																
Implementation of a mandatory checklist of protocols and objectives improves compliance with a wide range of evidence-based intensive care unit practices.	Byrnes MC, Schuerer DJ, Schallom ME, Sona CS, Mazuski JE, Taylor BE, McKenzie W, Thomas JM, Emerson JS, Nemeth JL, Bailey RA, Boyle WA, Buchman TG, Coopersmith CM.	Crit Care Med. 2009 Oct;37(10):2775-81. doi: 10.1097/CCM.0b013e3181a96379.																
Daily rapid rounds: decreasing length of stay and improving professional practice.	Geary S, Cale DD, Quinn B, Winchell J.	J Nurs Adm. 2009 Jun;39(6):293-8. doi: 10.1097/NNA.0b013e3181a72ab8.																
Association between ICU admission during morning rounds and mortality.	Afessa B, Gajic O, Morales IJ, Keegan MT, Peters SG, Hubmayr RD.	Chest. 2009 Dec;136(6):1489-95. doi: 10.1378/chest.09-0529. Epub 2009 Jun 8.																
Quantification of bedside teaching by an academic hospitalist group.	Crumlish CM, Yialamas MA, McMahon GT.	J Hosp Med. 2009 May;4(5):304-7. doi: 10.1002/jhm.540.																
The Fielding H. Garrison lecture: I am their physician": Dr. Owen J. Wister of Germantown and his too many patients."	Peitzman SJ.	Bull Hist Med. 2009 Summer;83(2):245-70. doi: 10.1353/bhm.0.0200.																
Attending rounds and bedside case presentations: medical student and medicine resident experiences and attitudes.	Gonzalo JD, Masters PA, Simons RJ, Chuang CH.	Teach Learn Med. 2009 Apr-Jun;21(2):105-10. doi: 10.1080/10401330902791156.																
Biliary spills and collections: causes, diagnosis, and multidisciplinary management.	Nader M, D'Agostino HB, Vea R, de Gregorio Ariza M, Zibari G, Manas K, Jordan P, Shi R.	J La State Med Soc. 2009 Jan-Feb;161(1):46-52; quiz 53-4.																
Implementing a patient safety and quality program across two merged pediatric institutions.	Abramson E, Hyman D, Osorio SN, Kaushal R.	Jt Comm J Qual Patient Saf. 2009 Jan;35(1):43-8.																
The role of SVS volunteer vascular surgeons in the care of combat casualties: results from Landstuhl, Germany.	Bush RL, Fairman RM, Flaherty SF, Gillespie DL.	J Vasc Surg. 2009 Jan;49(1):226-9. doi: 10.1016/j.jvs.2008.09.015.																
Nurses participate in presenting patients in morning rounds: the first test of change was more complex than was anticipated.	Stefancyk AL.	Am J Nurs. 2008 Nov;108(11):70-2. doi: 10.1097/01.NAJ.0000339161.32035.20.																
Postoperative chest tube management: measuring air leak using an electronic device decreases variability in the clinical practice.	Varela G, JimÃ©nez MF, Novoa NM, Aranda JL.	Eur J Cardiothorac Surg. 2009 Jan;35(1):28-31. doi: 10.1016/j.ejcts.2008.09.005. Epub 2008 Oct 9.																
Evaluation of patient participation in a patient empowerment initiative to improve hand hygiene practices in a Veterans Affairs medical center.	Lent V, Eckstein EC, Cameron AS, Budavich R, Eckstein BC, Donskey CJ.	Am J Infect Control. 2009 Mar;37(2):117-20. doi: 10.1016/j.ajic.2008.04.248. Epub 2008 Oct 3.																
Hand hygiene compliance by physicians: marked heterogeneity due to local culture?	Cantrell D, Shamriz O, Cohen MJ, Stern Z, Block C, Brezis M.	Am J Infect Control. 2009 May;37(4):301-5. doi: 10.1016/j.ajic.2008.05.001. Epub 2008 Oct 3.																
Prolongation of hospital stay and additional costs due to nosocomial bloodstream infection in an Algerian neonatal care unit.	Atif ML, Sadaoui F, Bezzaoucha A, Kaddache CA, Boukari R, Djelato S, Boubechou N.	Infect Control Hosp Epidemiol. 2008 Nov;29(11):1066-70. doi: 10.1086/591858.																
Medical complications drive length of stay after brain hemorrhage: a cohort study.	Naidech AM, Bendok BR, Tamul P, Bassin SL, Watts CM, Batjer HH, Bleck TP.	Neurocrit Care. 2009;10(1):11-9. doi: 10.1007/s12028-008-9148-x. Epub 2008 Sep 27.																
Care of children isolated for infection control: a prospective observational cohort study.	Cohen E, Austin J, Weinstein M, Matlow A, Redelmeier DA.	Pediatrics. 2008 Aug;122(2):e411-5. doi: 10.1542/peds.2008-0181.																
A before and after study of medical students' and house staff members' knowledge of ACOVE quality of pharmacologic care standards on an acute care for elders unit.	Jellinek SP, Cohen V, Nelson M, Likourezos A, Goldman W, Paris B.	Am J Geriatr Pharmacother. 2008 Jun;6(2):82-90. doi: 10.1016/j.amjopharm.2008.06.003.																
A pilot study using nominal group technique to assess residents' perceptions of successful attending rounds.	Castiglioni A, Shewchuk RM, Willett LL, Heudebert GR, Centor RM.	J Gen Intern Med. 2008 Jul;23(7):1060-5. doi: 10.1007/s11606-008-0668-z.																
Evaluation of a culturally effective health care curriculum integrated into a core pediatric clerkship.	Paul CR, Devries J, Fliegel J, Van Cleave J, Kish J.	Ambul Pediatr. 2008 May-Jun;8(3):195-9. doi: 10.1016/j.ambp.2007.12.007. Epub 2008 Apr 11.																
Computer-generated automatic alerts of respiratory distress after blood transfusion.	Finlay-Morreale HE, Louie C, Toy P.	J Am Med Inform Assoc. 2008 May-Jun;15(3):383-5. doi: 10.1197/jamia.M2538. Epub 2008 Feb 28.																
Intensive care unit nurses' perceptions of safety after a highly specific safety intervention.	Elder NC, Brungs SM, Nagy M, Kudel I, Render ML.	Qual Saf Health Care. 2008 Feb;17(1):25-30. doi: 10.1136/qshc.2006.021949.																
Newborn care by pediatric hospitalists in a community hospital: effect on physician productivity and financial performance.	Tieder JS, Migita DS, Cowan CA, Melzer SM.	Arch Pediatr Adolesc Med. 2008 Jan;162(1):74-8. doi: 10.1001/archpediatrics.2007.15.																
Image-guided catheter drainage of infected pleural effusions.	Akhan O, Ozkan O, Akinci D, Hassan A, Ozmen M.	Diagn Interv Radiol. 2007 Dec;13(4):204-9.																
Postoperative robotic telerounding: a multicenter randomized assessment of patient outcomes and satisfaction.	Ellison LM, Nguyen M, Fabrizio MD, Soh A, Permpongkosol S, Kavoussi LR.	Arch Surg. 2007 Dec;142(12):1177-81; discussion 1181.																
Cost implications of and potential adverse events prevented by interventions of a critical care pharmacist.	Kopp BJ, Mrsan M, Erstad BL, Duby JJ.	Am J Health Syst Pharm. 2007 Dec 1;64(23):2483-7.																
SynopSIS: integrating physician sign-out with the electronic medical record.	Sarkar U, Carter JT, Omachi TA, Vidyarthi AR, Cucina R, Bokser S, van Eaton E, Blum M.	J Hosp Med. 2007 Sep;2(5):336-42.																
A randomized, controlled trial of bedside versus conference-room case presentation in a pediatric intensive care unit.	Landry MA, Lafrenaye S, Roy MC, Cyr C.	Pediatrics. 2007 Aug;120(2):275-80.																
Admission time and outcomes of patients in a medical intensive care unit.	Sheu CC, Tsai JR, Hung JY, Yang CJ, Hung HC, Chong IW, Huang MS, Hwang JJ.	Kaohsiung J Med Sci. 2007 Aug;23(8):395-404.																
Robotic telepresence: profit analysis in reducing length of stay after laparoscopic gastric bypass.	Gandsas A, Parekh M, Bleech MM, Tong DA.	J Am Coll Surg. 2007 Jul;205(1):72-7.																
Defining family-centered rounds.	Sisterhen LL, Blaszak RT, Woods MB, Smith CE.	Teach Learn Med. 2007 Summer;19(3):319-22.																
Designing a protocol that eliminates Clostridium difficile: a collaborative venture.	Whitaker J, Brown BS, Vidal S, Calcaterra M.	Am J Infect Control. 2007 Jun;35(5):310-4.																

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Diurnal variation in swim performance remains, irrespective of training once or twice daily.	Martin L, Nevill AM, Thompson KG.	Int J Sports Physiol Perform. 2007 Jun;2(2):192-200.																
Using daily rounds to drive quality assurance.	Braeutigam DW.	Biomed Instrum Technol. 2005 Nov-Dec;39(6):441-3. No abstract available.																
Viewpoint: reflections on a well-traveled path: self-awareness, mindful practice, and relationship-centered care as foundations for medical education.	Dobie S.	Acad Med. 2007 Apr;82(4):422-7. Review.																
Family-centered bedside rounds: a new approach to patient care and teaching.	Muething SE, Kotagal UR, Schoettker PJ, Gonzalez del Rey J, DeWitt TG.	Pediatrics. 2007 Apr;119(4):829-32.																
Attributable cost and length of stay for patients with central venous catheter-associated bloodstream infection in Mexico City intensive care units: a prospective, matched analysis.	Higuera F, Rangel-Frausto MS, Rosenthal VD, Soto JM, CastaÃ±on J, Franco G, Tabal-Galan N, Ruiz J, Duarte P, Graves N.	Infect Control Hosp Epidemiol. 2007 Jan;28(1):31-5.																
Evidence-based medicine among internal medicine residents in a community hospital program using smart phones.	LeÃ³n SA, Fontelo P, Green L, Ackerman M, Liu F.	BMC Med Inform Decis Mak. 2007 Feb 21;7:5.																
Saturday morning rounds.	Pontious JM.	J Okla State Med Assoc. 2006 Dec;99(12):568. No abstract available.																
MEDLINE as a source of just-in-time answers to clinical questions.	Demner-Fushman D, Hauser SE, Humphrey SM, Ford GM, Jacobs JL, Thoma GR.	AMIA Annu Symp Proc. 2006:190-4.																
Implementing best practice strategies to prevent infection in the ICU.	Aragon D, Sole ML.	Crit Care Nurs Clin North Am. 2006 Dec;18(4):441-52. Review.																
Computers and daily bedside rounds in the neonatal intensive care unit.	Manzar S.	Saudi Med J. 2006 Nov;27(11):1774. No abstract available.																
Perceived needs for geriatric education by medical students, internal medicine residents and faculty.	Drickamer MA, Levy B, Irwin KS, Rohrbaugh RM.	J Gen Intern Med. 2006 Dec;21(12):1230-4.																
Merging cultures: palliative care specialists in the medical intensive care unit.	Billings JA, Keeley A, Bauman J, Cist A, Coakley E, Dahlin C, Montgomery P, Thompson BT, Wise M; Massachusetts General Hospital Palliative Care Nurse Champions.	Crit Care Med. 2006 Nov;34(11 Suppl):S388-93.																
Communication between physicians and nurses as a target for improving end-of-life care in the intensive care unit: challenges and opportunities for moving forward.	Puntillo KA, McAdam JL.	Crit Care Med. 2006 Nov;34(11 Suppl):S332-40. Review.																
Open bedside rounds for families with children in pediatric intensive care units.	Kleiber C, Davenport T, Freyenberger B.	Am J Crit Care. 2006 Sep;15(5):492-6. No abstract available.																
ICU collaborative achieves major reductions in hospital infections.	[No authors listed]	Healthcare Benchmarks Qual Improv. 2006 May;13(5):49-52.																
A pilot study to test the use of a checklist in a tertiary intensive care unit as a method of ensuring quality processes of care.	Hewson KM, Burrell AR.	Anaesth Intensive Care. 2006 Jun;34(3):322-8. Erratum in: Anaesth Intensive Care. 2006 Aug;34(4):528.																
Measuring perinatal patient safety: review of current methods.	Simpson KR.	J Obstet Gynecol Neonatal Nurs. 2006 May-Jun;35(3):432-42. Review.																
Radiographic measures of intravascular volume status: the role of vascular pedicle width.	Miller RR, Ely EW.	Curr Opin Crit Care. 2006 Jun;12(3):255-62. Review.																
The delivery of critical care services in US trauma centers: is the standard being met?	Nathens AB, Maier RV, Jurkovich GJ, Monary D, Rivara FP, Mackenzie EJ.	J Trauma. 2006 Apr;60(4):773-83; disucssion 783-4.																
Post-operative rounds by anaesthesiologists after hip fracture surgery: a pilot study.	Foss NB, Christensen DS, Krasheninnikoff M, Kristensen BB, Kehlet H.	Acta Anaesthesiol Scand. 2006 Apr;50(4):437-42.																
2004 survey of ECMO in the neonate after open heart surgery: circuitry and team roles.	Searles B, Gunst G, Terry B, Melchior R, Darling E.	J Extra Corpor Technol. 2005 Dec;37(4):351-4.																
Family as a member of the trauma rounds: a strategy for maximized communication.	Schiller WR, Anderson BF.	J Trauma Nurs. 2003 Oct-Dec;10(4):93-101.																
Team model: advocating for the optimal method of care delivery in the intensive care unit.	Durbin CG Jr.	Crit Care Med. 2006 Mar;34(3 Suppl):S12-7. Review.																
Implementing screening, brief intervention, and referral for alcohol and drug use: the trauma service perspective.	Sise MJ, Sise CB, Kelley DM, Simmons CW, Kelso DJ.	J Trauma. 2005 Sep;59(3 Suppl):S112-8; discussion S124-33.																
Sunday morning rounds when the Baptist Church Choir came through.	Haddy RI, Haddy TB.	Pharos Alpha Omega Alpha Honor Med Soc. 2005 Summer;68(3):31. No abstract available.																
Changing unit culture: an interdisciplinary commitment to improve pain outcomes.	Chung H, Nguyen PH.	J Healthc Qual. 2005 Mar-Apr;27(2):12-9.																
The daily moment: a stress reduction program for cancer center staff.	Kendall J, Waddington C, Kendall C.	J Oncol Manag. 2005 Summer;14(3):68-71.																
Real time patient safety audits: improving safety every day.	Ursprung R, Gray JE, Edwards WH, Horbar JD, Nickerson J, Plsek P, Shiono PH, Suresh GK, Goldmann DA.	Qual Saf Health Care. 2005 Aug;14(4):284-9.																
Effect of a physical examination teaching program on the behavior of medical residents.	McMahon GT, Marina O, Kritek PA, Katz JT.	J Gen Intern Med. 2005 Aug;20(8):710-4.																
Internal medicine resident education in the medical intensive care unit: the impact on education and patient care of a scheduling change for didactic sessions.	Lim KG, Dunn WF, Klarich KW, Afessa B.	Crit Care Med. 2005 Jul;33(7):1534-7.																
Frequency of sit-down patient care rounds, attainment of clinical performance targets, hospitalization, and mortality in hemodialysis patients.	Berns JS.	Semin Dial. 2005 May-Jun;18(3):258-60. No abstract available.																
Assessing competence of residents to discuss end-of-life issues.	Buss MK, Alexander GC, Switzer GE, Arnold RM.	J Palliat Med. 2005 Apr;8(2):363-71.																
The effect of executive walk rounds on nurse safety climate attitudes: a randomized trial of clinical units[ISRCTN85147255] [corrected].	Thomas EJ, Sexton JB, Neilands TB, Frankel A, Helmreich RL.	BMC Health Serv Res. 2005 Apr 11;5(1):28. Erratum in: BMC Health Serv Res. 2005 Jun 8;5(1):4.																
Effects on processes and costs of care associated with the addition of an internist to an inpatient psychiatry team.	Rubin AS, Littenberg B, Ross R, Wehry S, Jones M.	Psychiatr Serv. 2005 Apr;56(4):463-7.																
Title	Description	Details																
The attributable cost and length of hospital stay because of nosocomial pneumonia in intensive care units in 3 hospitals in Argentina: a prospective, matched analysis.	Rosenthal VD, Guzman S, Migone O, Safdar N.	Am J Infect Control. 2005 Apr;33(3):157-61.																
Frequency of sit-down patient care rounds, attainment of clinical performance targets, hospitalization, and mortality in hemodialysis patients.	Plantinga LC, Fink NE, Jaar BG, Sadler JH, Coresh J, Klag MJ, Levey AS, Powe NR.	J Am Soc Nephrol. 2004 Dec;15(12):3144-53.																
Telerounding and patient satisfaction after surgery.	Ellison LM, Pinto PA, Kim F, Ong AM, Patriciu A, Stoianovici D, Rubin H, Jarrett T, Kavoussi LR.	J Am Coll Surg. 2004 Oct;199(4):523-30.																
The challenges of residents teaching neurology.	Frank SA, JÃ¾zefowicz RF.	Neurologist. 2004 Jul;10(4):216-20. Review.																
The positive impact of initiation of hospitalist clinician educators.	Kulaga ME, Charney P, O'Mahony SP, Cleary JP, McClung TM, Schildkamp DE, Mazur EM.	J Gen Intern Med. 2004 Apr;19(4):293-301.																

Appendix 2.1 - Ward Round Literature Review Exclusions

Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Effects of interdisciplinary rounds on length of stay in a telemetry unit.	Wild D, Nawaz H, Chan W, Katz DL.	J Public Health Manag Pract. 2004 Jan-Feb;10(1):63-9.			Intervention	LOS	Telemetry unit	Yes - comparison of interdisciplinary v traditional									? Cardiology (telemtry)	Comparison of interdisciplinary and traditional ward rounds - no difference in LOS but telemetry unit, conchrane rated moderate quality study
The mirror" and "the village": a new method for teaching practice-based learning and improvement and systems-based practice."	Ziegelstein RC, Fiebach NH.	Acad Med. 2004 Jan;79(1):83-8.																
The attributable cost, length of hospital stay, and mortality of central line-associated bloodstream infection in intensive care departments in Argentina: A prospective, matched analysis.	Rosenthal VD, Guzman S, Migone O, Crnich CJ.	Am J Infect Control. 2003 Dec;31(8):475-80.																
Do physicians examine patients in contact isolation less frequently? A brief report.	Saint S, Higgins LA, Nallamothu BK, Chenoweth C.	Am J Infect Control. 2003 Oct;31(6):354-6.																
Developing and pilot testing quality indicators in the intensive care unit.	Pronovost PJ, Berenholtz SM, Ngo K, McDowell M, Holzmueller C, Haraden C, Resar R, Rainey T, Nolan T, Dorman T.	J Crit Care. 2003 Sep;18(3):145-55.																
Explicit approach to rounds in an ICU improves communication and satisfaction of providers.	Dodek PM, Raboud J.	Intensive Care Med. 2003 Sep;29(9):1584-8. Epub 2003 Jul 25.																
Improving communication in the ICU using daily goals.	Pronovost P, Berenholtz S, Dorman T, Lipsett PA, Simmonds T, Haraden C.	J Crit Care. 2003 Jun;18(2):71-5.																
Twelve tips to improve bedside teaching.	Ramani S.	Med Teach. 2003 Mar;25(2):112-5.																
Pressure ulcer education: a pilot study of the knowledge and clinical confidence of geriatric fellows.	Odierna E, Zeleznik J.	Adv Skin Wound Care. 2003 Jan-Feb;16(1):26-30.																
A method for real-time, evidence-based general medical attending rounds.	McGinn T, Seltz M, Korenstein D.	Acad Med. 2002 Nov;77(11):1150-2.			Intervention of EBM but prior research to round	self evaluation	Medicine		Safety - ebm						yes		gim	use of ebm directed towards attending rounds and whether process changed management of present or future pt - self assessed, educational but surely based on prior knowledge of patients
Research utilization among pediatric health professionals.	McCleary L, Brown GT.	Nurs Health Sci. 2002 Dec;4(4):163-71.																
Coding errors and the trauma patient--is nursing case management the solution?	Curtis K, Bollard L, Dickson C.	Aust Health Rev. 2002;25(4):73-80.																
Nosocomial infections in internal medicine, University of Frankfurt, Germany--a prospective surveillance study.	Schaumann R, Schlicher C, Shah PM.	Eur J Med Res. 2002 Jun 28;7(6):278-82.																
Implementing a medicine-spirituality curriculum in a community-based internal medicine residency program.	Pettus MC.	Acad Med. 2002 Jul;77(7):745.																
A physician-based voluntary reporting system for adverse events and medical errors.	Weingart SN, Callanan LD, Ship AN, Aronson MD.	J Gen Intern Med. 2001 Dec;16(12):809-14.																
Reorganizing the delivery of intensive care could improve efficiency and save lives.	Randolph AG, Pronovost P.	J Eval Clin Pract. 2002 Feb;8(1):1-8.																
How an audit of epidural patients in a community hospital setting resulted in the development of a formal acute pain management service.	Goldstein DH, VanDenKerkhof EG, Sherlock R, Sherlock J, Harper S.	Pain Res Manag. 2001 Spring;6(1):16-20.																
Instituting a disruptive conduct policy for medical staff.	Barnsteiner JH, Madigan C, Spray TL.	AACN Clin Issues. 2001 Aug;12(3):378-82.																
Intensive care unit physician staffing is associated with decreased length of stay, hospital cost, and complications after esophageal resection.	Dimick JB, Pronovost PJ, Heitmiller RF, Lipsett PA.	Crit Care Med. 2001 Apr;29(4):753-8.																
The role of a nurse case manager in implementing a critical pathway for infrainguinal bypass surgery.	Walsh MD, Barry M, Scott TE, Lamorte WW, Menzoian JO.	Jt Comm J Qual Improv. 2001 Apr;27(4):230-8.																
Confidential clinician-reported surveillance of adverse events among medical inpatients.	Weingart SN, Ship AN, Aronson MD.	J Gen Intern Med. 2000 Jul;15(7):470-7.																
The orchestration of occupation: the dance of mothers.	Larson EA.	Am J Occup Ther. 2000 May-Jun;54(3):269-80.																
Morning rounds inpatient test availability: a College of American Pathologist Q-Probes study of 79860 morning complete blood cell count and electrolyte test results in 367 institutions.	Novis DA, Dale JC.	Arch Pathol Lab Med. 2000 Apr;124(4):499-503.																
Cognitive orientation in rehabilitation and neuropsychological outcome after traumatic brain injury.	Dowler RN, Bush BA, Novack TA, Jackson WT.	Brain Inj. 2000 Feb;14(2):117-23.																
Evidence-based medicine training in internal medicine residency programs a national survey.	Green ML.	J Gen Intern Med. 2000 Feb;15(2):129-33.																
Data collection by acute pain services in Australia and New Zealand.	Turner GA, Halliwell R.	Anaesth Intensive Care. 1999 Dec;27(6):632-5.																
Organizational characteristics of intensive care units related to outcomes of abdominal aortic surgery.	Pronovost PJ, Jenckes MW, Dorman T, Garrett E, Breslow MJ, Rosenfeld BA, Lipsett PA, Bass E.	JAMA. 1999 Apr 14;281(14):1310-7.																
The impact of a multidisciplinary approach on caring for ventilator-dependent patients.	Young MP, Gooder VJ, Oltermann MH, Bohman CB, French TK, James BC.	Int J Qual Health Care. 1998 Feb;10(1):15-26.																
A firm trial of interdisciplinary rounds on the inpatient medical wards: an intervention designed using continuous quality improvement.	Curley C, McEachern JE, Speroff T.	Med Care. 1998 Aug;36(8 Suppl):AS4-12.			Intervention	LOS, costs and administration of aerosols	medical	yes - interdisciplinary v traditional									Medicine	comparison of interdisciplinary v traditional with reduced los, costs and more appropriate use of aerosol therapy for interdisciplinary group, cochrane analysis of moderate quality trial
Improving functional outcomes in older patients: lessons from an acute care for elders unit.	Covinsky KE, Palmer RM, Kresevic DM, Kahana E, Counsell SR, Fortinsky RH, Landefeld CS.	Jt Comm J Qual Improv. 1998 Feb;24(2):63-76.																
Status of physiatry and physical medicine and rehabilitation departments in adult level I trauma centers.	Melchiorre PJ.	Arch Phys Med Rehabil. 1998 Jan;79(1):62-6.																
Morning rounds and the search for evidence-based answers to clinical questions.	Schneeweiss R.	J Am Board Fam Pract. 1997 Jul-Aug;10(4):298-300. No abstract available.																
Bedside rounds revisited.	Thibault GE.	N Engl J Med. 1997 Apr 17;336(16):1174-5. No abstract available.																
The effect of bedside case presentations on patients' perceptions of their medical care.	Lehmann LS, Brancati FL, Chen MC, Roter D, Dobs AS.	N Engl J Med. 1997 Apr 17;336(16):1150-5.																
The impact of routine chest radiography on ICU management decisions: an observational study.	Marik PE, Janower ML.	Am J Crit Care. 1997 Mar;6(2):95-8.																
On bedside teaching.	LaCombe MA.	Ann Intern Med. 1997 Feb 1;126(3):217-20.																
An alternative strategy for studying adverse events in medical care.	Andrews LB, Stocking C, Krizek T, Gottlieb L, Krizek C, Vargish T, Siegler M.	Lancet. 1997 Feb 1;349(9048):309-13.																
Patterns of anesthesia and nursing care for interventional radiology procedures: a national survey of physician practices and preferences.	Mueller PR, Wittenberg KH, Kaufman JA, Lee MJ.	Radiology. 1997 Feb;202(2):339-43.																

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Title	Authors	Details	Excluded?	Why excluded	Type	Outcome measures	Type of ward round	MDT	Operational	Timing	Staff perspective	Skills required	Patient perspective	Interview	Educational	Research methodology	SPECIALITY	Summary
Residents' question-asking behaviors during work rounds.	Arseneau R.	Acad Med. 1997 Jan;72(1):71. No abstract available.																
Improving laboratory results turnaround time.	Rudat KS, Henry J, Mosley J.	Best Pract Benchmarking Healthc. 1996 Nov-Dec;1(6):301-6.																
Computer reminders to implement preventive care guidelines for hospitalized patients.	Overhage JM, Tierney WM, McDonald CJ.	Arch Intern Med. 1996 Jul 22;156(14):1551-6.																
Housestaff attitudes about work rounds.	Ways M, Kroenke K, Umali J, Buchwald D.	Acad Med. 1996 Feb;71(2):108-9. No abstract available.																
Documentation of the first steps of pediatric pharmaceutical care in a county hospital.	Lal LS, Anassi EO, McCants E.	Hosp Pharm. 1995 Dec;30(12):1107-8, 1111-2.																
Measuring the use of the population perspective on internal medicine attending rounds.	Raik B, Fein O, Wachspress S.	Acad Med. 1995 Nov;70(11):1047-9.																
Breast-feeding in a low-income population. Program to increase incidence and duration.	Brent NB, Redd B, Dworetz A, D'Amico F, Greenberg JJ.	Arch Pediatr Adolesc Med. 1995 Jul;149(7):798-803.																
Title	Description	Details																
Turning interns into senior residents: preparing residents for their teaching and leadership roles.	Wipf JE, Pinsky LE, Burke W.	Acad Med. 1995 Jul;70(7):591-6. Review.																
Failure of information as an intervention to modify clinical management. A time-series trial in patients with acute chest pain.	Lee TH, Pearson SD, Johnson PA, Garcia TB, Weisberg MC, Guadagnoli E, Cook EF, Goldman L.	Ann Intern Med. 1995 Mar 15;122(6):434-7.																
Teaching medical students complex cognitive skills in the intensive care unit.	Rogers PL, Grenvik A, Willenkin RL.	Crit Care Med. 1995 Mar;23(3):575-81.																
Work rounds data collection.	Richardson WS, Smith LG.	J Gen Intern Med. 1995 Feb;10(2):115-6. No abstract available.																
Resident training in nursing home care: survey of successful educational strategies.	Counsell SR, Katz PR, Karuza J, Sullivan GM.	J Am Geriatr Soc. 1994 Nov;42(11):1193-9.																
Internal medicine program directors' perceptions of resident work rounds.	Boutros A, Della Ratta RK.	J Community Health. 1994 Aug;19(4):231-8.																
Concurrent use of foscarnet and ciprofloxacin may increase the propensity for seizures.	Fan-Harvard P, Sanchorawala V, Oh J, Moser EM, Smith SP.	Ann Pharmacother. 1994 Jul-Aug;28(7-8):869-72.																
The association between residents' work-rounds styles and the process and outcome of medical care.	Ashton CM, Wray NP, Friedland JA, Zollo AJ, Scheurich JW.	J Gen Intern Med. 1994 Apr;9(4):208-12.																
Nursing patient care rounds in the postanesthesia care unit setting.	Clark KL.	J Post Anesth Nurs. 1994 Feb;9(1):20-5.																
Reorganising a hospital ward as an accountable care unit	Stein J, Payne C, Methvin A, Bonsall JM, Chadwick L, Clark D, Castle BW, Tong D, Dressler DD	J Hosp Med 10 (1): 36-40			SIDR - bedside unlike O'Leary		Medicine	yes	yes	yes	yes	yes					Mediine	Narrative article describing implementation of each feature of ACU - accountable care unit, specifically describes sidr at bedside unlike o'leary
Use of a daily goals checklist for morning icu rounds: a mixed methods study	Centofanti JE, Duan EH, Hoad NC, Swinton ME, Perri D, Waugh L, Cook DJ	Crit Care Med 42(8): 1797-803			Observations, document analysis, individual and focus group interviews		ICU		Goals checklist								ICU	Goals checklist enhanced communication, pt care, education, ehanced interdisciplinary communication, facilitated structured thorough individualised approach to care, seved as multipurpose teaching tool
	Others																	
Improving surgical ward care. Development and psychometric properties of a global assessment toolkit	Hull L, Birnbach D, Arora S, Fitzpatrick M, Sevdalis N	Ann of Surg 2014; 259(5): 904-9			Toolkit development	interassessor reliability, internal consistency, convergent validity	surgical	yes	sort of						sort of	good for vaidity and reliability and consistency	surgery	clinical skills assessment for ward care C-SAW-C, novel team assessment scale for ward rounds {Teamwork skills assessmnet for ward care: T-SAW-C and revised version of physician-patient interaction scale (Physician-Patient Interaction Global Rting Scale PP-GIS) interassessor elaibility, convergent vilidity, internal consistency evaluated statistically in 38 scenarios during which pt deteriorated rapidly involving 185 residents. Consulsions developed a toolkit that captures comprehensively the skills required for safe and effective ward care, including the high-risk situation where a patient decompensates. Toolkit offers systematic evaluation of the quality and safety of surgical ward care and can be used to train and debrief
Structuring ward rounds for learning: can opportunities be created?	Stanley, P	Med Educ 1998 May 32(3) 239-43			obsevrational	training opportunities	?		yes different ways of conducting						yes training opportunties		?	obsevration of 90 ward rounds by 24 trainers - different styles seen - 4 structures noted, discussion time away from pt showed more on the job teaching, pre or post meetings good opportunity, need planning rather than spontaneity although that is also good

Appendix 2.2 - Ward Round Review Zoe Exclusions

Title	Authors	Details	Publication Year	Include / Exclude	Reason
A cost-benefit analysis of twice-daily consultant ward rounds and clinical input on investigation and pharmacy costs in a major teaching hospital in the UK.	Ahmad A, Weston PJ, Ahmad M, Sharma D, Purewal T.	BMJ Open. 2015 Apr 8;5(4):e007367. doi: 10.1136/bmjopen-2014-007367.	2015	Exclude	cost analysis not training
Student life - Spiritual connections.	Sadler C.	Nurs Stand. 2015 Apr 1;29(31):66. doi: 10.7748/ns.29.31.66.s49.	2015	Exclude	?psych
Teaching a 'good' ward round.	Powell N, Bruce CG, Redfern O.	Clin Med. 2015 Apr;15(2):135-8. doi: 10.7861/clinmedicine.15-2-135.	2015	Include	
Design and validation of the surgical ward round assessment tool: a quantitative observational study.	Ahmed K, Anderson O, Jawad M, Tierney T, Darzi A, Athanasiou T, Hanna GB.	Am J Surg. 2015 Apr;209(4):682-688.e2. doi: 10.1016/j.amjsurg.2014.08.017. Epub 2014 Oct 13.	2015	Include	
Understanding the causes of intravenous medication administration errors in hospitals: a qualitative critical incident study.	Keers RN, Williams SD, Cooke J, Ashcroft DM.	BMJ Open. 2015 Mar 13;5(3):e005948. doi: 10.1136/bmjopen-2014-005948.	2015	Exclude	not about WR training
Measuring ward round quality in urology.	Darbyshire D, Barrett C, Ross D, Shackley D.	Int J Risk Saf Med. 2015 Jan 1;27(1):23-33. doi: 10.3233/JRS-150640.	2015	Exclude	quality not training
Do mandatory nasal interventions after epistaxis just delay discharge? Our experience in 90 adults.	Lau AS, Smith K, Mealey L, Rylands J, Heseltine J, Williams SP, Swift AC.	Clin Otolaryngol. 2015 Mar 9. doi: 10.1111/coa.12411. [Epub ahead of print]	2015	Exclude	not WR training
The surgical admissions proforma: Does it make a difference?	Ehsanullah J, Ahmad U, Solanki K, Healy J, Kadoglou N.	Ann Med Surg (Lond). 2015 Mar;4(1):53-7. doi: 10.1016/j.amsu.2015.01.004.	2015		
Clinical pharmacy services that influence prescribing in the Western Pacific Region based on the FIP Basel Statements.	Penm J, Chaar B, Moles R.	Int J Clin Pharm. 2015 Mar 3. [Epub ahead of print]	2015	Exclude	assessing pharmacy interventions
Response to: 'Driven to distraction and driving for excellence in ward round practice' by Pucher and Aggarwal.	Thomas I, Nicol L, Regan L, Cleland J, Maliepaard D, Clark L, Walker K, Duncan J.	BMJ Qual Saf. 2015 Apr;24(4):291-2. doi: 10.1136/bmjqs-2015-004014. Epub 2015 Feb 20. No abstract available.	2015	Exclude	opinion piece
'Driven to distraction' and driving for excellence in ward round practice.	Pucher P, Aggarwal R.	BMJ Qual Saf. 2015 Apr;24(4):290-1. doi: 10.1136/bmjqs-2015-004013. Epub 2015 Feb 16. No abstract available.	2015		
[Standardized training of gastrointestinal surgeons should be emphasized].	Qin X, Liu F.	Zhonghua Wei Chang Wai Ke Za Zhi. 2015 Feb 25;18(2):101-3. Chinese.	2015	Exclude	opinion piece
Ward rounds have no place in today's hospital settings.	Soni H.	Nurs Stand. 2015 Feb 10;29(23):34. doi: 10.7748/ns.29.23.34.s44.	2015	Exclude	letters
Ward rounds are an essential component of good basic care.	Smith J.	Nurs Stand. 2015 Jan 27;29(21):34. doi: 10.7748/ns.29.21.34.s43.	2015	Exclude	opinion piece
Departmental induction and the simulated surgical ward round.	Gee C, Morrissey N, Hook S.	Clin Teach. 2015 Feb;12(1):22-6. doi: 10.1111/tct.12247.	2015	Include	
Introduction of a new ward round approach in a cardiothoracic critical care unit.	Shaughnessy L, Jackson J.	Nurs Crit Care. 2015 Jan 16. doi: 10.1111/nicc.12149. [Epub ahead of print]	2015	Exclude	nurses on ward rounds, not training
Comparison between electronic method and conventional method recording and follow-up of general surgery ward-round notes taken.	Aydin I, Yeldan E, IbiÄŸ AC, Albayrak D, OÄŸuz S, Senlikci A.	Minerva Chir. 2014 Dec;69(6):331-336.	2015	Exclude	electronic v written, not training
The advance nurse practitioner in critical care: a workload evaluation.	Jackson A, Carberry M.	Nurs Crit Care. 2015 Mar;20(2):71-7. doi: 10.1111/nicc.12133. Epub 2014 Dec 8.	2015	Exclude	evaluating ANPs, not WR training
Tablet computers with mobile electronic medical records enhance clinical routine and promote bedside time: a controlled prospective crossover study.	Fleischmann R, Duhm J, Hupperts H, Brandt SA.	J Neurol. 2015 Mar;262(3):532-40. doi: 10.1007/s00415-014-7581-7. Epub 2014 Dec 5.	2015	Exclude	electronic v written, not training
Improving the quality of documentation of paediatric post-take ward rounds: the impact of an acrostic.	Newnham AL, Hine C, Rogers C, Agwu JC.	Postgrad Med J. 2015 Jan;91(1071):22-5. doi: 10.1136/postgradmedj-2013-132534. Epub 2014 Dec 4.	2015	Exclude	assessing acrostic, not WR training
The Usefulness of the Surgical Knowledge and Skills Acquired via the University Curriculum for Doctors' Medical Practice Several Years After Graduation.	Zyluk A, Puchalski P, Szlosser Z.	J Surg Educ. 2014 Dec 1. doi:pii: S1931-7204(14)00297-9. 10.1016/j.jsurg.2014.10.015. [Epub ahead of print]	2015	Exclude	not about WRs
Driven to distraction: a prospective controlled study of a simulated ward round experience to improve patient safety teaching for medical students.	Thomas I, Nicol L, Regan L, Cleland J, Maliepaard D, Clark L, Walker K, Duncan J.	BMJ Qual Saf. 2015 Feb;24(2):154-61. doi: 10.1136/bmjqs-2014-003272. Epub 2014 Nov 24.	2015	Include	

Appendix 2.2 - Ward Round Review Zoe Exclusions

Title	Authors	Details	Publication Year	Include / Exclude	Reason
Generating new telehealth services using a whole of community approach: experience in regional Queensland.	Smith AC, Caffery LJ, Saunders R, Bradford NK, Gray LC.	J Telemed Telecare. 2014 Oct;20(7):365-9. doi: 10.1177/1357633X14552371.	2015	Exclude	not WRs, telehealth
Study of drug utilization pattern for acute exacerbation of chronic obstructive pulmonary disease in patients attending a government hospital in kerala, India.	Veettil SK, Rajiah K, Kumar S.	J Family Med Prim Care. 2014 Jul;3(3):250-4. doi: 10.4103/2249-4863.141622.	2015	Exclude	not about WRs, drug utilisation
Re: Does Surgical Ward Round Quality Really Impact on Patient Outcomes?	Pucher PH, Aggarwal R.	Ann Surg. 2014 Nov 3. [Epub ahead of print] No abstract available.	2015	Exclude	opinion piece, not training
Does Surgical Ward Round Quality Really Impact on Patient Outcomes?	Hakeem AR.	Ann Surg. 2014 Oct 30. [Epub ahead of print] No abstract available.	2015	Exclude	opinion piece, not training
Incidents resulting from staff leaving normal duties to attend medical emergency team calls.	Concord Medical Emergency Team (MET) Incidents Study Investigators, Cheung W, Sahai V, Mann-Farrar J, Skylas K, Uy J, Doyle B.	Med J Aust. 2014 Nov 3;201(9):528-31.	2014	Exclude	not about WR s or training
Randomized clinical trial of the impact of surgical ward-care checklists on postoperative care in a simulated environment.	Pucher PH, Aggarwal R, Qurashi M, Singh P, Darzi A.	Br J Surg. 2014 Dec;101(13):1666-73. doi: 10.1002/bjs.9654. Epub 2014 Oct 28.	2014		
Quality of surgical care in hospitals providing internship training in Kenya: a cross sectional survey.	Mwinga S, Kulohoma C, Mwaniki P, Idowu R, Masasabi J, English M; SIRCLE Collaboration.	Trop Med Int Health. 2015 Feb;20(2):240-9. doi: 10.1111/tmi.12422. Epub 2014 Nov 19.	2015	Exclude	not about WRs
[Daily routine in orthopedics and traumatology - results of a nationwide survey of residents].	Merschin D, MÃ¼nzberg M, Stange R, SchÃ¼ttrumpf JP, Perl M; Junges Forum O & U, Mutschler M.	Z Orthop Unfall. 2014 Oct;152(5):440-5. doi: 10.1055/s-0034-1382869. Epub 2014 Oct 14. German.	2014	Exclude	working conditions
Three basic modes for patients' clinical decision-making in China.	Li EC, Wang Z, Zhang WY, Zhao LY.	Chin J Integr Med. 2014 Nov;20(11):876-80. doi: 10.1007/s11655-014-1987-z. Epub 2014 Sep 24.		Exclude	about patient decision-making
Learning clinical communication on ward-rounds: an ethnographic case study.	Quilligan S.	Med Teach. 2015 Feb;37(2):168-73. doi: 10.3109/0142159X.2014.947926. Epub 2014 Aug 26.	2014	Include	
Associations between stroke mortality and weekend working by stroke specialist physicians and registered nurses: prospective multicentre cohort study.	Bray BD, Ayis S, Campbell J, Cloud GC, James M, Hoffman A, Tyrrell PJ, Wolfe CD, Rudd AG.	PLoS Med. 2014 Aug;11(8):e1001705. doi: 10.1371/journal.pmed.1001705.	2014	Exclude	about weekend effect
iPad use during ward rounds: an observational study.	Lehnbom EC, Adams K, Day RO, Westbrook JI, Baysari MT.	Stud Health Technol Inform. 2014;204:67-73.	2014		
The ward round.	Wilcken B.	J Paediatr Child Health. 2014 Aug;50(8):660. doi: 10.1111/jpc.12641. No abstract available.	2014		
The ward round: what it is and what it can be.	Cohn A.	Br J Hosp Med (Lond). 2014 Jun;75(6):C82-5. No abstract available.	2014	Exclude	opinion piece
Reply to Letter: Surgical Ward Round Quality and Impact on Patient Outcomes""	Pucher PH, Aggarwal R.	Ann Surg. 2014 Jul 28. [Epub ahead of print] No abstract available.	2014	Exclude	letter
Leadership training for registrars on ward rounds.	Levett T, Caldwell G.	Clin Teach. 2014 Aug;11(5):350-4. doi: 10.1111/tct.12167.	2014	Include	
The ward round: what it is and what it can be.	Cohn A.	Br J Hosp Med (Lond). 2014 Jun;75 Suppl 6:C82-5. doi: 10.12968/hmed.2014.75.Sup6.C82. No abstract available.	2014	Exclude	opinion piece
Nurses should be empowered to challenge doctors who overprescribe.	[No authors listed]	Nurs Stand. 2014 Jul 15;28(45):8. doi: 10.7748/ns.28.45.8.s6.	2014	Exclude	opinion piece and not about WRs
iPad use at the bedside: a tool for engaging patients in care processes during ward rounds?	Baysari MT, Adams K, Lehnbom EC, Westbrook JI, Day RO.	Intern Med J. 2014 Oct;44(10):986-90. doi: 10.1111/imj.12518.	2014		
Prevention of meticillin-resistant Staphylococcus aureus bloodstream infections in European hospitals: moving beyond policies.	Borg MA, Hulscher M, Scicluna EA, Richards J, Azanowsky JM, Xuereb D, Huis A, Moro ML, Maltezou HC, Frank U.	J Hosp Infect. 2014 Aug;87(4):203-11. doi: 10.1016/j.jhin.2014.05.003. Epub 2014 Jun 5.	2014	Exclude	about MRSA
Delivery of enteral nutrition after the introduction of practice guidelines and participation of dietitians in pediatric critical care clinical teams.	Gentles E, Mara J, Diamantidi K, Alfheeaid HA, Spenceley N, Davidson M, Gerasimidis K.	J Acad Nutr Diet. 2014 Dec;114(12):1974-80.e3. doi: 10.1016/j.jand.2014.04.027. Epub 2014 Jun 21.	2014	Exclude	not about WRs
Re: Surgical Ward Round Quality and Impact on Variable Patient Outcomes.	Oliphant R, Jackson A, Moug S, Drummond R, Blackhall V, Renwick A.	Ann Surg. 2014 Jun 19. [Epub ahead of print] No abstract available.	2014	no abstract	

Appendix 2.2 - Ward Round Review Zoe Exclusions

Title	Authors	Details	Publication Year	Include / Exclude	Reason
How we involved rural clinicians in teaching ethics to medical students on rural clinical placements.	Parker L, Watts LD.	Med Teach. 2015 Mar;37(3):228-31. doi: 10.3109/0142159X.2014.923559. Epub 2014 Jun 17.	2014	Exclude	not transferrable, psych
Evaluation of an online medical teaching forum.	Ravindran R, Kashyap M, Lilis L, Vivekanantham S, Phoenix G.	Clin Teach. 2014 Jul;11(4):274-8. doi: 10.1111/tct.12139.		Exclude	not involving patients, not WRs
[Bioethics in medical institutions--new custom or help? The example of clinical ethics consultation at a University Medical Center].	Richter G.	Herz. 2014 Aug;39(5):567-75. doi: 10.1007/s00059-014-4114-1. German.		Exlcude	not about WRs
Video-based feedback of oral clinical presentations reduces the anxiety of ICU medical students: a multicentre, prospective, randomized study.	Schmidt M, Freund Y, Alves M, Monsel A, Labbe V, Darnal E, Messika J, Bokobza J, Similowski T, Duguet A.	BMC Med Educ. 2014 May 22;14:103. doi: 10.1186/1472-6920-14-103.	2014		
[Feedback on service provision in cancer patients using the Ward Satisfaction Questionnaire (WSQ)--testing a new tool].	Singer S, Hornemann B, Hertzschuch D, Elchlep F, Hentschel L, Ehninger G, Schuler MK.	Dtsch Med Wochenschr. 2014 Jul;139(27):1409-14. doi: 10.1055/s-0034-1370104. Epub 2014 May 28. German.	2014	Exclude	feedback on service, not training
An interventional study on intensive care unit drug therapy assessment in a rural district hospital in India.	Pichala PT, Kumar BM, Zachariah S, Thomas D, Saunchez L, Gerardo AU.	J Basic Clin Pharm. 2013 Jun;4(3):64-7. doi: 10.4103/0976-0105.118801.	2014	Exclude	not about WRs or training
Improving ward round skills.	Krautter M, Koehl-Hackert N, Nagelmann L, JÃ¼nger J, Norcini J, Tekian A, Nikendei C.	Med Teach. 2014 Sep;36(9):783-8. doi: 10.3109/0142159X.2014.909585. Epub 2014 May 7.	2014	Include	
Learning the lessons from banding appeals: evidence based guidance for running junior doctor rotas.	Moreton A, Jackson E, Ahmed-Little Y.	J Health Organ Manag. 2014;28(1):62-76.	2014	Exclude	not about training
Medical expertise and patient involvement: a multiperspective qualitative observation study of the patient's role in oncological decision making.	Salloch S, Ritter P, WÃ¤scher S, Vollmann J, Schildmann J.	Oncologist. 2014 Jun;19(6):654-60. doi: 10.1634/theoncologist.2013-0268. Epub 2014 Apr 23.	2014	Exlcude	not WRs, patient decision-making
3D Simulation of a Hospital Environment and Ward Round to Augment a Summer School Program for Pre-Medical Students.	Kulendran M, Taylor M, Taylor D, Darzi A.	Stud Health Technol Inform. 2014;196:209-14.	2014	Exlcude	pre-med students
Patient safety in South Africa: PICU adverse event registration*.	Vermeulen JM, van Dijk M, van der Starre C, WÃ¶sten-van Asperen RM, Argent AC.	Pediatr Crit Care Med. 2014 Jun;15(5):464-70. doi: 10.1097/PCC.0000000000000114.	2014	Exclude	patient adverse events
A letter to the Master Clinician.	Jhaveri KD.	Version 2. F1000Res. 2014 [revised 2014 Feb 13];3:1. doi: 10.12688/f1000research.3-1.v2.	2014	Exclude	opinion piece
Ward simulation to improve surgical ward round performance: a randomized controlled trial of a simulation-based curriculum.	Pucher PH, Aggarwal R, Singh P, Srisatkunam T, Twaij A, Darzi A.	Ann Surg. 2014 Aug;260(2):236-43. doi: 10.1097/SLA.0000000000000557.	2014	Include	
The ratio of abdominal circumference and body weight--an objective parameter for the daily ward round in a NICU?	Heimann K, Schoberer M, Posielek J, Fitzner C, Orlikowsky T.	Klin Padiatr. 2014 Apr;226(2):72-5. doi: 10.1055/s-0034-1368718. Epub 2014 Mar 14.	2014	Exclude	not about WRs or training
Reviving post-take surgical ward round teaching.	Force J, Thomas I, Buckley F.	Clin Teach. 2014 Apr;11(2):109-15. doi: 10.1111/tct.12071.	2014	Include	
Medical academia clinical experiences of Ward Round Teaching curriculum.	Haghani F, Arabshahi SK, Bigdeli S, Alavi M, Omid A.	Adv Biomed Res. 2014;3:50. doi: 10.4103/2277-9175.125771.		Include	
The educational value of ward rounds in conveying knowledge and developing trainees' clinical skills.	Laskaratos FM, Gkotsi D, Panteliou E, Epstein O.	Br J Hosp Med (Lond). 2014 Mar;75(3):162-5. No abstract available.	2014		
Using junior doctor-led ward rounds to enhance surgical education.	Lad M, Patten DK.	J Surg Educ. 2014 Mar-Apr;71(2):164-5. doi: 10.1016/j.jsurg.2013.08.007. Epub 2013 Sep 26. No abstract available. Erratum in: J Surg Educ. 2014 May-Jun;71(3):451.	2014		
Surgical ward rounds in England: a trainee-led multi-centre study of current practice.	Rowlands C, Griffiths SN, Blencowe NS, Brown A, Hollowood A, Hornby ST, Richards SK, Smith J, Strong S; on behalf of the Severn and Peninsula Audit and Research Collaborative for Surgeons (SPARCS); the Northwest Research Collaborative.	Patient Saf Surg. 2014 Feb 28;8(1):11.	2014	Exlcude	analysis of current practice, not about training
How we breathed life" into problem-based learning cases using a mobile application."	McLean M, Brazil V, Johnson P.	Med Teach. 2014 Oct;36(10):849-52. doi: 10.3109/0142159X.2014.886771. Epub 2014 Feb 26.	2014	Include	
'Safety by DEFAULT': introduction and impact of a paediatric ward round checklist.	Sharma S, Peters MJ; PICU/NICU Risk Action Group.	Crit Care. 2013 Oct 11;17(5):R232. doi: 10.1186/cc13055.	2013	Exlcude	WR checklist rather than training
Does the integration of personalized ultrasound change patient management in critical care medicine? Observational trials.	Breitkreutz R, Campo DelÃ¾ Orto M, Hamm C, Cuca C, Zechner PM, Stenger T, Walcher F, Seeger FH.	Emerg Med Int. 2013;2013:946059. doi: 10.1155/2013/946059. Epub 2013 Dec 18.	2013	Exclude	Not about WRs

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
Interprofessional learning at work: what spatial theory can tell us about workplace learning in an acute care ward.	Gregory LR, Hopwood N, Boud D.	J Interprof Care. 2014 May;28(3):200-5. doi: 10.3109/13561820.2013.873774. Epub 2014 Jan 9.	2013	Exclude	spatial theory in the workplace, not specifically WRs
Improving patient handover between teams using a business improvement model: PDSA cycle.	Luther V, Hammersley D, Chekairi A.	Br J Hosp Med (Lond). 2014 Jan;75(1):44-7.	2013	Exclude	patient handover
Ward rounds and patient outcome: be attentive or suffer the peril.	Klingensmith ME.	Ann Surg. 2014 Feb;259(2):227-8. doi: 10.1097/SLA.0000000000000493. No abstract available.	2013	Exlcude	opinion piece
Medical students' awareness of the role of physiotherapists in multidisciplinary healthcare.	Vincent-Onabajo GO, Mustapha A, Oyeyemi AY.	Physiother Theory Pract. 2014 Jul;30(5):338-44. doi: 10.3109/09593985.2013.871765. Epub 2014 Jan 7.	2013	Exclude	Not about WRs
Surgical outreach in rural South Africa: are we managing to impart surgical skills?	Clarke DL, Aldous C.	S Afr Med J. 2013 Jul 29;104(1):57-60. doi: 10.7196/samj.7252.	2013	Exclude	Not about WRs, not transferable
Older patients' participation in team meetings-a phenomenological study from the nurses' perspective.	Lindberg E, Persson E, HÃ¶rberg U, Ekebergh M.	Int J Qual Stud Health Well-being. 2013 Dec 20;8:21908. doi: 10.3402/qhw.v8i0.21908.	2013	Exclude	not about WRs, not training
An evaluation of a formative assessment process used on post take ward rounds.	Caldwell G.	Acute Med. 2013;12(4):208-13.	2013	Include	
Antibiotic stewardship ward rounds and a dedicated prescription chart reduce antibiotic consumption and pharmacy costs without affecting inpatient mortality or re-admission rates.	Boyles TH, Whitelaw A, Bamford C, Moodley M, Bonorchis K, Morris V, Rawoot N, Naicker V, Lusakiewicz I, Black J, Stead D, Lesosky M, Raubenheimer P, Dlamini S, Mendelson M.	PLoS One. 2013;8(12):e79747. doi: 10.1371/journal.pone.0079747.	2013	Exclude	not about training
Prioritising ward rounds would improve junior doctors' experience and patient care.	Price CE.	BMJ. 2013 Dec 16;347:f7427. doi: 10.1136/bmj.f7427. No abstract available. Erratum in: BMJ. 2013;347:f7580. Price, E [corrected to Price, Clare E].		no abstract	
Ward safety checklist in the acute surgical unit.	Blucher KM, Dal Pra SE, Hogan J, Wysocki AP.	ANZ J Surg. 2014 Oct;84(10):745-7. doi: 10.1111/ans.12496. Epub 2013 Dec 16.	2014	Exclude	checklist, not training
[Conducting ward rounds: a balance between care and teaching].	Gachoud D, Monti M, Waeber G, Bonvin R.	Rev Med Suisse. 2013 Oct 30;9(404):2013-6. French.	2013	Include	literature review but relevant
Improving the quality of care for medical inpatients by placing a higher priority on ward rounds.	Soliman A, Riyaz S, Said E, Hale M, Mills A, Kapur K.	Clin Med. 2013 Dec;13(6):534-8. doi: 10.7861/clinmedicine.13-6-534.	2013	Exclude	work patterns, not training
[Right to privacy].	Pafko P, Mach J.	Rozhl Chir. 2013 Aug;92(8):464-6. Czech.	2013	Exclude	editorial
Surgical ward round quality and impact on variable patient outcomes.	Pucher PH, Aggarwal R, Darzi A.	Ann Surg. 2014 Feb;259(2):222-6. doi: 10.1097/SLA.0000000000000376.	2014	Exclude	quality, not training
There is another way: empowering frontline staff caring for acutely unwell adults.	Turkington P, Power M, Hunt C, Ward C, Donaldson E, Bellerby J, Murphy P.	Int J Qual Health Care. 2014 Feb;26(1):71-8. doi: 10.1093/intqhc/mzt084. Epub 2013 Nov 19.	2013	Exclude	not about WRs
What's wrong with ward rounds?	Launer J.	Postgrad Med J. 2013 Dec;89(1058):733-4. doi: 10.1136/postgradmedj-2013-132472. No abstract available.	2013	Exclude	opinion piece
Development of an evidence-based curriculum for training of ward-based surgical care.	Pucher PH, Darzi A, Aggarwal R.	Am J Surg. 2014 Feb;207(2):213-7. doi: 10.1016/j.amjsurg.2013.10.006. Epub 2013 Oct 24.	2014	Include	
Multidisciplinary integration in the context of integrated care - results from the North West London Integrated Care Pilot.	Harris M, Greaves F, Gunn L, Patterson S, Greenfield G, Car J, Majeed A, Pappas Y.	Int J Integr Care. 2013;13:e041.	2013	Exclude	not about WRs
Audit of co-management and critical care outreach for high risk postoperative patients (The POST audit).	Story DA, Shelton A, Jones D, Heland M, Belomo R; Austin Health Post-Operative Surveillance Team Investigators (POST).	Anaesth Intensive Care. 2013 Nov;41(6):793-8.		Exclude	not about WRs
Difficult to wean patients: cultural factors and their impact on weaning decision-making.	Kydonaki K, Huby G, Tocher J.	J Clin Nurs. 2014 Mar;23(5-6):683-93. doi: 10.1111/jocn.12104. Epub 2013 Nov 3.		Exclude	not wrs
Restore the prominence of the medical ward round.	Cohn A.	BMJ. 2013 Oct 31;347:f6451. doi: 10.1136/bmj.f6451. No abstract available.		Exclude	personal view
Evaluation of poison information services provided by a new poison information center.	Churi S, Abraham L, Ramesh M, Narahari MG.	Indian J Pharmacol. 2013 Sep-Oct;45(5):496-501. doi: 10.4103/0253-7613.117781.		Exclude	poisons

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
Medical and surgical ward rounds in teaching hospitals of Kuwait University: students' perceptions.	Almutar S, Altourah L, Sadeq H, Karim J, Marwan Y.	Adv Med Educ Pract. 2013;4:189-93. doi: 10.2147/AMEP.S52096.	2013	Include	
Developing content for a process-of-care checklist for use in intensive care units: a dual-method approach to establishing construct validity.	Conroy KM, Elliott D, Burrell AR.	BMC Health Serv Res. 2013 Oct 3;13:380. doi: 10.1186/1472-6963-13-380.	2013	Include	
The effect of ward round teaching on patients: The health team and the patients' perspectives.	Adibi P, Enjavian M, Alizadeh R, Omid A.	J Educ Health Promot. 2013;2:35. doi: 10.4103/2277-9531.115824.	2013	Include	
[Professionalization of surgical education in the daily clinical routine. Training concept of the Surgical Working Group for Teaching of the German Society of Surgery].	Adili F, Kadmon M, KÃ¶nig S, Walcher F.	Chirurg. 2013 Oct;84(10):869-74. doi: 10.1007/s00104-013-2530-z. Review. German.	2013	Exclude	german
The activity of palliative care team pharmacists in designated cancer hospitals: a nationwide survey in Japan.	Ise Y, Morita T, Katayama S, Kizawa Y.	J Pain Symptom Manage. 2014 Mar;47(3):588-93. doi: 10.1016/j.jpainsymman.2013.05.008. Epub 2013 Sep 7.	2014	Exclude	palliative care pharmacists
Twelve tips to improve medical teaching rounds.	Abdool MA, Bradley D.	Med Teach. 2013 Nov;35(11):895-9. doi: 10.3109/0142159X.2013.826788. Epub 2013 Sep 4.	2013	Include	
Use of ecological momentary assessment to determine which structural factors impact perceived teaching quality of attending rounds.	Willett L, Houston TK, Heudebert GR, Estrada C.	J Grad Med Educ. 2012 Sep;4(3):322-8. doi: 10.4300/JGME-D-11-00265.1.	2012	Include	
Re-exploring the ritual of the ward round.	Parissopoulos S, Timmins F, Daly L.	Nurs Crit Care. 2013 Sep;18(5):219-21. doi: 10.1111/nicc.12042. No abstract available.	2013	Exclude	Editorial
Collaboration between hospital physicians and nurses: an integrated literature review.	Tang CJ, Chan SW, Zhou WT, Liaw SY.	Int Nurs Rev. 2013 Sep;60(3):291-302. doi: 10.1111/inr.12034. Epub 2013 May 27. Review.	2013	Include	
Improving communication of the daily care plan in a teaching hospital intensive care unit.	Karalapillai D, Baldwin I, Dunnachie G, Knott C, Eastwood G, Rogan J, Carnell E, Jones D.	Crit Care Resusc. 2013 Jun;15(2):97-102.	2013	Exclude	Nurse led communication
[Patient record based ward rounds as an example of coordination between doctors and nurses courses of action"]."	Nadot Ghanem N.	Rech Soins Infirm. 2013 Jun;(113):61-75. French.	2013	Exclude	French
The German quality indicators in intensive care medicine 2013--second edition.	Braun JP, Kumpf O, Deja M, Brinkmann A, Marx G, Bloos F, Kaltwasser A, Dubb R, Muhl E, Greim C, Bause H, Weiler N, Chop I, Waydhas C, Spies C.	Ger Med Sci. 2013 Jul 16;11:Doc09. doi: 10.3205/000177. Print 2013. English, German.	2013	Exclude	Quality in Int Care
A Considerative Checklist to ensure safe daily patient review.	Mohan N, Caldwell G.	Clin Teach. 2013 Aug;10(4):209-13. doi: 10.1111/tct.12023.	2014	Include	
Reducing cardiac arrests in the acute admissions unit: a quality improvement journey.	Beckett DJ, Inglis M, Oswald S, Thomson E, Harley W, Wilson J, Lloyd RC, Rooney KD.	BMJ Qual Saf. 2013 Dec;22(12):1025-31. doi: 10.1136/bmjqs-2012-001404. Epub 2013 Jul 4.	2013	Exclude	cardiac arrest reduction project
The ward round--patient experiences and barriers to participation.	Swenne CL, Skytt B.	Scand J Caring Sci. 2014 Jun;28(2):297-304. doi: 10.1111/scs.12059. Epub 2013 Jun 30.	2014	Include	
[Practical aspects of medication safety].	Hug B.	Praxis (Bern 1994). 2013 May 8;102(10):591-6. doi: 10.1024/1661-8157/a001287. Review. German.	2013	Exclude	German
Ward round: A 43-year-old diabetic man with multiple joint pains.	Segula D, Mahmood N, Allain TJ.	Malawi Med J. 2012 Dec;24(4):84-6. No abstract available.	2012	Exclude	Case report
How nurses can lead from the frontline.	Entwistle F.	Nurs Times. 2013 Mar 26-Apr 1;109(12):15.	2012	Exclude	Commentary
The nurse's role in hospital ward rounds.	Lees L.	Nurs Times. 2013 Mar 26-Apr 1;109(12):12-4.	2013		
Surgical hospital audit of record keeping (SHARK)--a new audit tool for the improvement in surgical record keeping.	Grewal P.	J Surg Educ. 2013 May-Jun;70(3):373-6. doi: 10.1016/j.jsurg.2012.12.003.			
Ethics ward rounds: a conduit to finding meaning and value in medical school.	Parker L, Watts L.	J Eval Clin Pract. 2013 Dec;19(6):1084. doi: 10.1111/jep.12029. Epub 2013 Apr 22. No abstract available.			
Rural Ethics Ward Rounds: enhancing medical students' ethical awareness in rural medicine.	Watts L, Parker L, Scicluna H.	Aust J Rural Health. 2013 Apr;21(2):128-9. doi: 10.1111/ajr.12016. No abstract available.			

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The importance of ward rounds: a time to connect?	Halligan A.	Br J Hosp Med (Lond). 2013 Apr;74(4):184-5. No abstract available.			
Simulation for ward processes of surgical care.	Pucher PH, Darzi A, Aggarwal R.	Am J Surg. 2013 Jul;206(1):96-102. doi: 10.1016/j.amjsurg.2012.08.013. Epub 2013 Mar 30. Review.	2013		
Infection control for a methicillin-resistant Staphylococcus aureus outbreak in an advanced emergency medical service center, as monitored by molecular analysis.	Hidaka H, Miura M, Masunaga K, Qin L, Uemura Y, Sakai Y, Hashimoto K, Kawano S, Yamashita N, Sakamoto T, Watanabe H.	J Infect Chemother. 2013 Oct;19(5):884-90. doi: 10.1007/s10156-013-0587-8. Epub 2013 Mar 29.			
Validation of the simulated ward environment for assessment of ward-based surgical care.	Pucher PH, Aggarwal R, Srisatkunam T, Darzi A.	Ann Surg. 2014 Feb;259(2):215-21. doi: 10.1097/SLA.0b013e318288e1d4.	2014		
The safe and effective delivery of ward rounds.	Tingle J.	Br J Nurs. 2012 Nov 22-Dec 12;21(21):1282-3. No abstract available.	2014		
Ward rounds: what goes around comes around.	Herring R, Richardson T, Caldwell G.	Lancet. 2013 Feb 2;381(9864):373-4. doi: 10.1016/S0140-6736(13)60169-5. No abstract available.	2013		
Attending physicians on ward rounds--reply.	Wachter RM, Verghese AC.	JAMA. 2013 Jan 23;309(4):341. doi: 10.1001/jama.2012.65894. No abstract available.	2013		
Attending physicians on ward rounds.	Centor RM, Castiglioni A, Roy B.	JAMA. 2013 Jan 23;309(4):341. doi: 10.1001/jama.2012.65887. No abstract available.	2013		
Parents' experiences of information and communication in the neonatal unit about brain imaging and neurological prognosis: a qualitative study.	Harvey ME, Nongena P, Gonzalez-Cinca N, Edwards AD, Redshaw ME; ePRIME Research Team.	Acta Paediatr. 2013 Apr;102(4):360-5. doi: 10.1111/apa.12154. Epub 2013 Jan 28.	2013		
A comparison of active surveillance programs including a spontaneous reporting model for phamacovigilance of adverse drug events in a hospital.	Yun IS, Koo MJ, Park EH, Kim SE, Lee JH, Park JW, Hong CS.	Korean J Intern Med. 2012 Dec;27(4):443-50. doi: 10.3904/kjim.2012.27.4.443. Epub 2012 Nov 27.			
Comparison of knowledge, attitude and practices of resident doctors and nurses on adverse drug reaction monitoring and reporting in a tertiary care hospital.	Rehan HS, Sah RK, Chopra D.	Indian J Pharmacol. 2012 Nov-Dec;44(6):699-703. doi: 10.4103/0253-7613.103253.			
An antibiotic stewardship program in a French teaching hospital.	Mondain V, Lieutier F, Dumas S, Gaudart A, Fosse T, Roger PM, Bernard E, Farhad R, Pulcini C.	Med Mal Infect. 2013 Jan;43(1):17-21. doi: 10.1016/j.medmal.2012.10.006. Epub 2012 Dec 12.			
The influence of key clinical practices on the knowledge of first year doctors about the patients under their care.	Naqvi M, Ward ST, Dowswell G, Donnelly J; SWIFT group collaborators & the West Midlands Research Collaborative (WMRC).	Int J Clin Pract. 2013 Feb;67(2):181-8. doi: 10.1111/ijcp.12082. Epub 2012 Dec 6.	2013		
Clinical usefulness of electronic drug-drug interaction checking in the care of cardiovascular surgery inpatients.	Taegtmeyer AB, Kullak-Ublick GA, Widmer N, Falk V, Jetter A.	Cardiology. 2012;123(4):219-22. doi: 10.1159/000343272. Epub 2012 Nov 27.	2012		
Ward rounds best practice report calls for more nurse involvement.	Duffin C.	Nurs Stand. 2012 Oct 10-16;27(6):9. No abstract available.			
Call to raise nurses' profile on ward rounds.	Triggle N.	Nurs Manag (Harrow). 2012 Nov;19(7):6-7. No abstract available.			
Productive Ward initiative promotes better communication between mental health teams and ensures timely discharge for patients.	Lennard C.	J Psychiatr Ment Health Nurs. 2014 Feb;21(1):93-6. doi: 10.1111/jpm.12020. Epub 2012 Nov 15.			
Electronic ward round: finding time for the inpatient with Clostridium difficile infection.	Dube R, Subudhi CP, Chadwick PR.	J Infect. 2013 Jan;66(1):111-3. doi: 10.1016/j.jinf.2012.10.018. Epub 2012 Oct 24. No abstract available.			
How we make good doctors into good teachers: a short course to support busy clinicians to improve their teaching skills.	Foster K, Laurent R.	Med Teach. 2013;35(1):4-7. doi: 10.3109/0142159X.2012.731098. Epub 2012 Oct 26.			
Ward rounds: what goes around comes around.	[No authors listed]	Lancet. 2012 Oct 13;380(9850):1281. doi: 10.1016/S0140-6736(12)61740-1. No abstract available.			
Capturing students' learning experiences and academic emotions at an interprofessional training ward.	Lachmann H, Ponzer S, Johansson UB, Benson L, Karlgren K.	J Interprof Care. 2013 Mar;27(2):137-45. doi: 10.3109/13561820.2012.724124. Epub 2012 Oct 8.	2012		
Restore ward rounds to former glory to improve patient care, say colleges.	Kmietowicz Z.	BMJ. 2012 Oct 3;345:e6622. doi: 10.1136/bmj.e6622. No abstract available.	2012		

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
Republished: Daily consultant gastroenterologist ward rounds: reduced length of stay and improved inpatient mortality.	Singh S, Lipscomb G, Padmakumar K, Ramamoorthy R, Ryan S, Bates V, Crompton S, Dermody E, Moriarty K.	Postgrad Med J. 2012 Oct;88(1044):583-7.	2012		
Is the post-take ward round standardised?	Mansell A, Uttley J, Player P, Nolan O, Jackson S.	Clin Teach. 2012 Oct;9(5):334-7. doi: 10.1111/j.1743-498X.2012.00566.x.	2012		
Why patients need leaders: introducing a ward safety checklist.	Amin Y, Grewcock D, Andrews S, Halligan A.	J R Soc Med. 2012 Sep;105(9):377-83. doi: 10.1258/jrsm.2012.120098.	2012		
Patient perceptions of the cardiology ward round.	Molony B, Horgan S, Graham I.	Ir Med J. 2012 Jun;105(6):189-90. No abstract available.	2012		
Validation of a transparent decision model to rate drug interactions.	Far E, Curkovic I, Byrne K, Roos M, Egloff I, Dietrich M, Kirch W, Kullak-Ublick GA, Egbring M.	BMC Pharmacol Toxicol. 2012 Aug 20;13:7. doi: 10.1186/2050-6511-13-7.			
Impact of pharmacists' intervention on identification and management of drug-drug interactions in an intensive care setting.	Hasan SS, Lim KN, Anwar M, Sathvik BS, Ahmadi K, Yuan AW, Kamarunnesa MA.	Singapore Med J. 2012 Aug;53(8):526-31.			
Long-term intended and unintended experiences after Advanced Life Support training.	Rasmussen MB, Dieckmann P, Barry Issenberg S, Ã¯stergaard D, SÃ¸reide E, Ringsted CV.	Resuscitation. 2013 Mar;84(3):373-7. doi: 10.1016/j.resuscitation.2012.07.030. Epub 2012 Aug 9.			
Nurse-led ward rounds: a valuable contribution to acute stroke care.	Catangui EJ, Slark J.	Br J Nurs. 2012 Jul 12-25;21(13):801-5.			
Knowledge-based tacrolimus therapy for kidney transplant patients.	Seeling W, Plischke M, Schuh C.	Stud Health Technol Inform. 2012;180:310-4.			
An ICU clinical information system - clinicians' expectations and perceptions of its impact.	Hains IM, Creswick N, Milliss D, Parr M, Westbrook JI.	Stud Health Technol Inform. 2012;178:64-70.			
Paediatric trainee supervision: management changes and perceived education value.	van den Boom M, Pinnock R, Weller J, Reed P, Shulruf B.	J Paediatr Child Health. 2012 Jul;48(7):567-71. doi: 10.1111/j.1440-1754.2012.02434.x. Epub 2012 Mar 8.			
A needs assessment study of undergraduate surgical education.	Kaur N, Gupta A, Saini P.	Natl Med J India. 2011 Sep-Oct;24(5):292-3.			
Medication communication during ward rounds on medical wards: Power relations and spatial practices.	Liu W, Manias E, Gerdtz M.	Health (London). 2013 Mar;17(2):113-34. doi: 10.1177/1363459312447257. Epub 2012 Jun 6.	2013		
[Critical reflexion on quality improvement and networking].	Adler R.	Praxis (Bern 1994). 2012 Jun 6;101(12):781-5. doi: 10.1024/1661-8157/a000964. German.			
[Ethic rounds in intensive care. Possible instrument for a clinical-ethical assessment in intensive care units].	Scheffold N, Paoli A, Gross J, Riemann U, Hennersdorf M.	Med Klin Intensivmed Notfmed. 2012 Oct;107(7):553-7. doi: 10.1007/s00063-012-0110-5. Epub 2012 Jun 7. German.			
The use of a consultant-led ward round checklist to improve paediatric prescribing: an interrupted time series study.	Lepee C, Klaber RE, Benn J, Fletcher PJ, Cortoos PJ, Jacklin A, Franklin BD.	Eur J Pediatr. 2012 Aug;171(8):1239-45. doi: 10.1007/s00431-012-1751-3. Epub 2012 May 25.	2012		
[Benchmarking surgical resources--a work sampling analysis at a German university hospital].	Schuld J, Bobkowski M, Shayesteh-Kheslat R, Kollmar O, Richter S, Schilling MK.	Zentralbl Chir. 2013 Apr;138(2):151-6. doi: 10.1055/s-0031-1283948. Epub 2012 May 21. German.			
The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards--effect on training?	Eccersley L, Tan L.	Clin Med. 2012 Apr;12(2):186-7. No abstract available.	2012		
Clinical ethics ward rounds: building on the core curriculum.	Parker L, Watts L, Scicluna H.	J Med Ethics. 2012 Aug;38(8):501-5. doi: 10.1136/medethics-2011-100468. Epub 2012 Apr 25.			
Ward-rounds: role in clinical teaching and learning in contemporary medicine.	Bassaw B, Naraynsingh V.	West Indian Med J. 2011 Dec;60(6):601-3. No abstract available.			
Modular acute system for general surgery: hand over the operation, not the patient.	Poole GH, Glyn T, Srinivasa S, Hill AG.	ANZ J Surg. 2012 Mar;82(3):156-60. doi: 10.1111/j.1445-2197.2011.05963.x. Epub 2012 Jan 19.			
Gastroenterology training in Australia: a perspective from the coal face.	De Cruz P, Leung C, Raftopoulos S, Allen PB, Burgell R, Rode A, Rosenbaum J, Bell SJ, Hebbard GS.	Intern Med J. 2012 Oct;42(10):1125-30. doi: 10.1111/j.1445-5994.2012.02756.x.			

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
Skateboards will be needed to deliver hourly ward rounds"."	Radcliffe M.	Nurs Times. 2012 Jan 17-23;108(3):11. No abstract available.			
Maximising learning on ward rounds.	Reece A, Klaber R.	Arch Dis Child Educ Pract Ed. 2012 Apr;97(2):61-7. doi: 10.1136/edpract-2011-301593. Epub 2012 Feb 17.			
Increasing the frequency of consultant ward rounds reduces hospital bed use.	Rayner HC.	BMJ. 2012 Feb 14;344:e1037. doi: 10.1136/bmj.e1037. No abstract available.	2012		
Including pharmacists on consultant-led ward rounds.	Quantrill S, Webbe D.	Clin Med. 2011 Dec;11(6):627-8; author reply 628. No abstract available.	2011		
What is the educational value of ward rounds? A learner and teacher perspective.	Claridge A.	Clin Med. 2011 Dec;11(6):558-62.	2011		
The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards.	Ahmad A, Purewal TS, Sharma D, Weston PJ.	Clin Med. 2011 Dec;11(6):524-8.	2011		
Early experience with antimicrobial stewardship ward rounds at a tertiary referral hospital.	Cairns KA, Jenney AW, Krishnaswamy S, Dooley MJ, Morrissey O, Lewin SR, Cheng AC.	Med J Aust. 2012 Jan 16;196(1):34-5. No abstract available.			
Development of an adhesive surgical ward round checklist: a technique to improve patient safety.	Dhillon P, Murphy RK, Ali H, Burukan Z, Corrigan MA, Sheikh A, Hill AD.	Ir Med J. 2011 Nov-Dec;104(10):303-5.	2011		
Clostridium difficile infection ward rounds.	Dawson S, White G, Archibald J, Munube H, Hegde M.	J Hosp Infect. 2012 Jan;80(1):96-8. doi: 10.1016/j.jhin.2011.09.011. Epub 2011 Nov 17. No abstract available.			
Patient safety: culture eats strategy for breakfast.	Halligan A.	Br J Hosp Med (Lond). 2011 Oct;72(10):548-9.			
The lived experience of breathlessness and its implications for care: a qualitative comparison in cancer, COPD, heart failure and MND.	Gysels MH, Higginson IJ.	BMC Palliat Care. 2011 Oct 17;10:15. doi: 10.1186/1472-684X-10-15.			
Mobile health IT: the effect of user interface and form factor on doctor-patient communication.	Alsos OA, Das A, SvanÃ¦s D.	Int J Med Inform. 2012 Jan;81(1):12-28. doi: 10.1016/j.ijmedinf.2011.09.004. Epub 2011 Oct 13.			
Patients' perceptions of nurses' behaviour that influence patient participation in nursing care: a critical incident study.	Larsson IE, Sahlsten MJ, Segesten K, Plos KA.	Nurs Res Pract. 2011;2011:534060. doi: 10.1155/2011/534060. Epub 2011 Apr 27.			
Ward round--an acute abdominal emergency.	Irabor DO, Adesina AA.	Malawi Med J. 2010 Sep;22(3):79-80. No abstract available.			
Strengthening pharmaceutical care education in Ethiopia through instructional collaboration.	Odegard PS, Tadeg H, Downing D, Mekonnen H, Negussu M, Bartlein R, Stergachis A.	Am J Pharm Educ. 2011 Sep 10;75(7):134. doi: 10.5688/ajpe757134.			
Teaching on the AMU ward round.	Cooper N.	Acute Med. 2011;10(3):133-5.	2011		
Cardiology a ward rounds: rationale of using a checklist.	Garg P.	Clin Med. 2011 Jun;11(3):299; author reply 299. No abstract available.	2011		
A qualitative analysis of prescription activity and alert usage in a computerized physician order entry system.	Wipfli R, Betrancourt M, Guardia A, Lovis C.	Stud Health Technol Inform. 2011;169:940-4.			
Medication decision-making on hospital ward-rounds.	Baysari M, Westbrook J, Day R.	Stud Health Technol Inform. 2011;169:935-9.	2011		
Innovation in intensive care nursing work practices with PACS.	Creswick N, Hains IM, Westbrook JI.	Stud Health Technol Inform. 2011;169:402-6.			
Does PACS facilitate work practice innovation in the intensive care unit?	Hains IM, Creswick N, Westbrook JI.	Stud Health Technol Inform. 2011;169:397-401.			
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Including pharmacists on consultant-led ward rounds: a prospective non-randomised controlled trial.	Miller G, Franklin BD, Jacklin A.	Clin Med. 2011 Aug;11(4):312-6.	2011		
Initiative to change ward culture results in better patient care.	Desai T, Caldwell G, Herring R.	Nurs Manag (Harrow). 2011 Jul;18(4):32-5.	2011		
The clinical pharmacist's contributions within the multidisciplinary patient care team of an intern nephrology ward.	Stemer G, Lemmens-Gruber R.	Int J Clin Pharm. 2011 Oct;33(5):759-62. doi: 10.1007/s11096-011-9548-4. Epub 2011 Aug 10.	2011		
Feasibility and reliability of point-of-care pocket-sized echocardiography.	Andersen GN, Haugen BO, Graven T, Salvesen O, MjÃ¸lstad OC, Dalen H.	Eur J Echocardiogr. 2011 Sep;12(9):665-70. doi: 10.1093/ejechocard/jer108. Epub 2011 Aug 2.			
Hand hygiene and infection control survey pre- and peri-H1N1-2009 pandemic: knowledge and perceptions of final year medical students in Singapore.	Hsu LY, Jin J, Ang BS, Kurup A, Tambyah PA.	Singapore Med J. 2011 Jul;52(7):486-90.			
[Consequences drawn from the evaluation of logbook-based surgical training for final year students].	Busemann A, von Bernstorff W, Heidecke CD.	Zentralbl Chir. 2012 Apr;137(2):165-72. doi: 10.1055/s-0031-1271384. Epub 2011 Jul 7. German.			
Improving the efficiency of the emergency general surgical service.	Western CE, Faux JW, Feldman M.	Eur J Emerg Med. 2011 Oct;18(5):261-4. doi: 10.1097/MEJ.0b013e3283450758.			
Team situation awareness and the anticipation of patient progress during ICU rounds.	Reader TW, Flin R, Mearns K, Cuthbertson BH.	BMJ Qual Saf. 2011 Dec;20(12):1035-42. doi: 10.1136/bmjqs.2010.048561. Epub 2011 Jun 23.	2011		
The influence of computerized decision support on prescribing during ward-rounds: are the decision-makers targeted?	Baysari MT, Westbrook JI, Richardson KL, Day RO.	J Am Med Inform Assoc. 2011 Nov-Dec;18(6):754-9. doi: 10.1136/amiajnl-2011-000135. Epub 2011 Jun 14.			
Improving parental satisfaction in pediatric orthopaedics.	Williams G, Pattison G, Mariathas C, Lazar J, Rashied M.	J Pediatr Orthop. 2011 Jul-Aug;31(5):610-5. doi: 10.1097/BPO.0b013e3182203955.			
Learning safe prescribing during post-take ward rounds.	Conroy-Smith E, Herring R, Caldwell G.	Clin Teach. 2011 Jun;8(2):75-8. doi: 10.1111/j.1743-498X.2011.00432.x.	2011		
Cardiologists' workflow in small to medium-sized German hospitals: an observational work analysis.	Mache S, Busch D, Vitzthum K, Kusma B, Klapp BF, Groneberg DA.	J Cardiovasc Med (Hagerstown). 2011 Jul;12(7):475-81. doi: 10.2459/JCM.0b013e328347db8f.			
[The acute orthogeriatric unit. Assessment of its effect on the clinical course of patients with hip fractures and an estimate of its financial impact].	GonzÃ¡lez Montalvo JI, Gotor PÃ©rez P, MartÃn Vega A, AlarcÃ³n AlarcÃ³n T, Ã lvarez de Linera JL, Gil Garay E, GarcÃa Cimbrelo E, Alonso Biarge J.	Rev Esp Geriatr Gerontol. 2011 Jul-Aug;46(4):193-9. doi: 10.1016/j.regg.2011.02.004. Epub 2011 Apr 20. Spanish.			
Teaching and learning on busy post-take ward rounds.	Claridge A.	Clin Med. 2010 Dec;10(6):638-9. No abstract available.			
Quality and safety at the point of care: how long should a ward round take?	Herring R, Desai T, Caldwell G.	Clin Med. 2011 Feb;11(1):20-2. Review.	2011		
[Effective inpatient ward round by discharge support team - a report of the inpatient ward round at acute hospital specialized in elderly patient].	Miyashita K, Komoda M, Yamazaki S, Watanabe A, Mikoshiba R, Fukuzawa K, Kikuchi H.	Gan To Kagaku Ryoho. 2010 Dec;37 Suppl 2:166-8. Japanese.			
Ward round--A rare tumor of the kidney resulting in hypertension, renal failure and a cerebrovascular accident in a young female.	Broadis E, Ntoto C, Kamiza S, Borgstein E.	Malawi Med J. 2011 Mar;23(1):18-9.			
Ward round--A patient with multi-organ failure.	Stevenson A, Phiri C, Mallewa J, Molyneux M.	Malawi Med J. 2011 Mar;23(1):16-7. No abstract available.			
[Reduced time-frame for ward rounds and patient satisfaction].	Veigel S, Schmid A, Kollmar O, Schuld J, Bialas P, Kopp B, Schilling M, Moussavian MR.	Zentralbl Chir. 2012 Apr;137(2):187-95. doi: 10.1055/s-0030-1247482. Epub 2011 Feb 22. German.			
Multi-disciplinary collaboration during ward rounds: embodied aspects of electronic medical record usage.	Morrison C, Fitzpatrick G, Blackwell A.	Int J Med Inform. 2011 Aug;80(8):e96-111. doi: 10.1016/j.ijmedinf.2011.01.007. Epub 2011 Feb 22.			
Ward rounds: missed learning opportunities in diagnostic changes?	Bhangu A, Hartshorne G.	Clin Teach. 2011 Mar;8(1):17-21. doi: 10.1111/j.1743-498X.2010.00408.x.	2011		
[Vocational perspective" - concept and acceptance of a group treatment for patients with extensive work-related problems]."	Dorn M, BÃ¶nisch A, Ehlebracht-KÃ¶nig I.	Rehabilitation (Stuttg). 2011 Feb;50(1):44-56. doi: 10.1055/s-0030-1254130. Epub 2011 Feb 14. German.			

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Active learning on the ward: outcomes from a comparative trial with traditional methods.	Melo Prado H, Hannois Falbo G, Rodrigues Falbo A, Natal FigueirÃ´a J.	Med Educ. 2011 Mar;45(3):273-9. doi: 10.1111/j.1365-2923.2010.03846.x.	2011		
No substitute for experience: do consultants that have been practising for longer lead faster post-take medical ward rounds?	Gill D, Gaunt R, Hamdulay S.	Acute Med. 2013;12(3):141-5.	2013		
Ward round-- non-resolving pleural effusion in a patient with HIV infection.	Nyirenda M, Gray KJ, Allain TJ, van Oosterhout JJ.	Malawi Med J. 2009 Dec;21(4):182-3. No abstract available.			
Hourly ward rounds improve care and reduce staff stress.	Duffin C.	Nurs Manag (Harrow). 2010 Nov;17(7):6-7. No abstract available.			
Learning in the surgical workplace: necessity not luxury.	Monkhouse S.	Clin Teach. 2010 Sep;7(3):167-70. doi: 10.1111/j.1743-498X.2010.00359.x.	2010		
Anatomy of the ward round: the time spent in different activities.	Creamer GL, Dahl A, Perumal D, Tan G, Koea JB.	ANZ J Surg. 2010 Dec;80(12):930-2. doi: 10.1111/j.1445-2197.2010.05522.x. Epub 2010 Oct 12.	2010		
[Patient-doctor interaction in rehabilitation: is there a relationship between perceived interaction quality and long term treatment results?].	Dibbelt S, Schaidhammer M, Fleischer C, Greitemann B.	Rehabilitation (Stuttg). 2010 Oct;49(5):315-25. doi: 10.1055/s-0030-1263119. Epub 2010 Oct 20. German.			
A patient's experience of ward rounds.	Sweet GS, Wilson HJ.	Patient Educ Couns. 2011 Aug;84(2):150-1. doi: 10.1016/j.pec.2010.08.016. Epub 2010 Sep 29. No abstract available.			
Analyzing effects of providing performance feedback at ward rounds on guideline adherence - the importance of feedback usage analysis and statistical control charts.	Abu-Hanna A, Eslami S, Schultz MJ, de Jonge E, de Keizer NF.	Stud Health Technol Inform. 2010;160(Pt 2):826-30.	2010		
Time for change: teaching and learning on busy post-take ward rounds.	Dewhurst G.	Clin Med. 2010 Jun;10(3):231-4. No abstract available.	2010		
The dermatopathology ward round: a tribute to the multiheaded microscope.	Tallon BG.	Arch Dermatol. 2010 Aug;146(8):869. doi: 10.1001/archdermatol.2010.159. No abstract available.			
Teaching ward rounds: what are the alternatives?	MacLean AB, Ramos KA.	J Obstet Gynaecol. 2010;30(6):535-6. doi: 10.3109/01443615.2010.503437. No abstract available.	2010		
Dementia care 3: evaluating the effects of wellbeing reviews on residents and staff.	Wheeler NL, Johnson E.	Nurs Times. 2010 Jul 6-12;106(26):21-3.			
Cancer care and residents' working hours in oncology and hematology departments: an observational real-time study in German hospitals.	Mache S, SchÃ¶ffel N, Kusma B, Vitzthum K, Klapp BF, Groneberg DA.	Jpn J Clin Oncol. 2011 Jan;41(1):81-6. doi: 10.1093/jjco/hyq152. Epub 2010 Aug 7.			
The learners' perspective on internal medicine ward rounds: a cross-sectional study.	Tariq M, Motiwala A, Ali SU, Riaz M, Awan S, Akhter J.	BMC Med Educ. 2010 Jul 9;10:53. doi: 10.1186/1472-6920-10-53.	2010		
[Quality assurance in acute pain therapy : Development of software for the acute pain service].	Czaplik M, Joppich R, Rossaint R.	Schmerz. 2010 Aug;24(4):358-66. doi: 10.1007/s00482-010-0938-7. German.			
Does standardization of critical care work?	Hasibeder WR.	Curr Opin Crit Care. 2010 Oct;16(5):493-8. doi: 10.1097/MCC.0b013e32833cb84a. Review.			
The orthogeriatric unit for acute patients: a new model of care that improves efficiency in the management of patients with hip fracture.	GonzÃ¡lez-Montalvo JI, AlarcÃ³n T, MauleÃ³n JL, Gil-Garay E, Gotor P, MartÃ-n-Vega A.	Hip Int. 2010 Apr-Jun;20(2):229-35.			
Ward rounds: the next focus for quality improvement?	Bradfield OM.	Aust Health Rev. 2010 May;34(2):193-6. doi: 10.1071/AH09797.	2010		
Family centred care? Facilities, information and support for parents in UK neonatal units.	Redshaw ME, StC Hamilton KE; POPPY Project Research Team.	Arch Dis Child Fetal Neonatal Ed. 2010 Sep;95(5):F365-8. doi: 10.1136/adc.2009.163717. Epub 2010 May 13.			
Assessing the quality of clinical teaching: a preliminary study.	Conigliaro RL, Stratton TD.	Med Educ. 2010 Apr;44(4):379-86. doi: 10.1111/j.1365-2923.2009.03612.x.	2010		
The value of the post-take ward round.	Medford A.	Clin Med. 2010 Feb;10(1):93-4; author reply 94. No abstract available.			

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[PACS: acceptance by orthopedic surgeons].	Lenhart M, Haueis A, Schneider H, Jung EM, Herold T, Feuerbach S, SchÃ¶ffl V, Zorger N.	Orthopade. 2010 Oct;39(10):994-1002. doi: 10.1007/s00132-010-1616-2. German.			
'Team Teach': a novel approach to ward round teaching.	Crawshaw A.	Med Educ. 2010 May;44(5):499. doi: 10.1111/j.1365-2923.2010.03652.x. Epub 2010 Mar 30. No abstract available.	2010		
Once-a-week psychiatric ward round or daily inpatient team meeting? A multidisciplinary mental health team's experience of new ways of working.	Fiddler M, Borglin G, Galloway A, Jackson C, McGowan L, Lovell K.	Int J Ment Health Nurs. 2010 Apr;19(2):119-27. doi: 10.1111/j.1447-0349.2009.00652.x.			
Impact of system-level activities and reporting design on the number of incident reports for patient safety.	Fukuda H, Imanaka Y, Hirose M, Hayashida K.	Qual Saf Health Care. 2010 Apr;19(2):122-7. doi: 10.1136/qshc.2008.027532.			
Ward round in Moyo House: Management issues in malnourished children with HIV and tuberculosis (TB).	Hayes E, Phiri A, Heikens T.	Malawi Med J. 2009 Sep;21(3):120-2. No abstract available.			
Ward round--Recurrent anemia and infection in an HIV-positive woman. Burkitt's lymphoma.	Nyirenda M, Latham T, Glover S.	Malawi Med J. 2009 Jun;21(2):86, 88-9. No abstract available.			
Ward round--Late presentation of acute compartment syndrome in the thigh.	Bates J, Wamisho BL, Griffin M, Nyamulani N.	Malawi Med J. 2009 Jun;21(2):85, 87.			
Ward round--cough, painful throat and progressive hoarseness of voice for 1 year.	Allain T, Katundu K, Mulwafu W.	Malawi Med J. 2010 Mar;22(1):29-30. No abstract available.			
The value of the post-take ward round.	Kendall D, Hazarika R, Harrop J.	Clin Med. 2009 Dec;9(6):632-3. No abstract available.			
Acute medical care. The right person, in the right setting--first time: how does practice match the report recommendations?	Ward D, Potter J, Ingham J, Percival F, Bell D.	Clin Med. 2009 Dec;9(6):553-6.			
Clinical pharmacists' interventions in a German university hospital.	Langebrake C, Hilgarth H.	Pharm World Sci. 2010 Apr;32(2):194-9. doi: 10.1007/s11096-010-9367-z. Epub 2010 Jan 19.			
Following National Guidelines in Acute Care can improve emergency access and patient flow.	Ahmed SV, Jayawarna C, Atkinson D, Rippon A.	Acute Med. 2010;9(3):114-7.			
Hospital pharmacists' knowledge and opinions regarding adverse drug reaction reporting in Northern China.	Su C, Ji H, Su Y.	Pharmacoepidemiol Drug Saf. 2010 Mar;19(3):217-22. doi: 10.1002/pds.1792.			
Geriatric ward rounds by video conference: a solution for rural hospitals.	Gray LC, Wright OR, Cutler AJ, Scuffham PA, Wootton R.	Med J Aust. 2009 Dec 7-21;191(11-12):605-8.			
A practical approach to teaching medical ethics.	Mills S, Bryden DC.	J Med Ethics. 2010 Jan;36(1):50-4. doi: 10.1136/jme.2009.031153.			
Electronic screening of medical records to detect inpatients at risk of drug-related problems.	Roten I, Marty S, Beney J.	Pharm World Sci. 2010 Feb;32(1):103-7. doi: 10.1007/s11096-009-9352-6. Epub 2009 Dec 10.			
[The clinical application of remote critical care network].	Chen J, Fang XL, Fang Q, Cai HL, Su Q, Zhang YT.	Zhongguo Wei Zhong Bing Ji Jiu Yi Xue. 2009 Nov;21(11):679-81. Chinese.			
Patient perceptions of the surgical ward round.	Mahar P, Lake H, Waxman BP.	ANZ J Surg. 2009 Sep;79(9):584-5. doi: 10.1111/j.1445-2197.2009.05009.x. No abstract available.	2009		
Doctors' concerns of PDAs in the ward round situation. Lessons from a formative simulation study.	Alsos OA, Dabelow B, Faxvaag A.	Methods Inf Med. 2011;50(2):190-200. doi: 10.3414/ME09-01-0017. Epub 2009 Nov 5.			
Teaching and learning in the hospital ward.	Jaye C, Egan T, Smith-Han K, Thompson-Fawcett M.	N Z Med J. 2009 Oct 9;122(1304):13-22.	2009		
Variation in the human soluble epoxide hydrolase gene and risk of restenosis after percutaneous coronary intervention.	Kullmann S, Binner P, Rackebrandt K, Huge A, Haltern G, Lankisch M, FÃ¼th R, von Hodenberg E, Bestehorn HP, Scheffold T.	BMC Cardiovasc Disord. 2009 Oct 8;9:48. doi: 10.1186/1471-2261-9-48.			
Ward round--crocodile bites in Malawi: microbiology and surgical management.	Wamisho BL, Bates J, Tompkins M, Islam R, Nyamulani N, Ngulube C, Mkandawire NC.	Malawi Med J. 2009 Mar;21(1):29-31.			

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
Ward round--sudden increase of breathlessness in a patient with pneumocystis pneumonia (PCP) and haematemesis.	Waitt P.	Malawi Med J. 2009 Mar;21(1):28, 32. No abstract available.			
Pediatricians' working conditions in German hospitals: a real-time task analysis.	Mache S, Vitzthum K, Kusma B, Nienhaus A, Klapp BF, Groneberg DA.	Eur J Pediatr. 2010 May;169(5):551-5. doi: 10.1007/s00431-009-1065-2. Epub 2009 Sep 23.			
Analysis of communicative behaviour: profiling roles and activities.	SÃ¸rby ID, NytrÃ, Ã˜.	Int J Med Inform. 2010 Jun;79(6):e144-51. doi: 10.1016/j.ijmedinf.2009.08.003. Epub 2009 Sep 18.			
[Clinical pharmacist in a multidisciplinary team in a paediatric department].	Kjeldby C, Bjerre A, Refsum N.	Tidsskr Nor Laegeforen. 2009 Sep 10;129(17):1746-9. doi: 10.4045/tidsskr.09.33816. Norwegian.			
An observational real-time study to analyze junior physicians' working hours in the field of gastroenterology.	Mache S, Bernburg M, Scutaru C, Quarcoo D, Welte T, Klapp BF, Groneberg DA.	Z Gastroenterol. 2009 Sep;47(9):814-8. doi: 10.1055/s-0028-1109175. Epub 2009 Sep 11.			
Usability laboratory as the last outpost before implementation - lessons learnt from testing new patient record functionality.	Seland G, SÃ¸rby ID.	Stud Health Technol Inform. 2009;150:404-8.			
The value of the post-take ward round: are new working patterns compromising junior doctor education?	Chaponda M, Borra M, Beeching NJ, Almond DS, Williams PS, Hammond MA, Price VA, Tarry L, Taegtmeyer M.	Clin Med. 2009 Aug;9(4):323-6.	2009		
Patient-doctor interaction in rehabilitation: the relationship between perceived interaction quality and long-term treatment results.	Dibbelt S, Schaidhammer M, Fleischer C, Greitemann B.	Patient Educ Couns. 2009 Sep;76(3):328-35. doi: 10.1016/j.pec.2009.07.031. Epub 2009 Aug 14.			
Mobile and fixed computer use by doctors and nurses on hospital wards: multi-method study on the relationships between clinician role, clinical task, and device choice.	Andersen P, Lindgaard AM, Prgomet M, Creswick N, Westbrook JI.	J Med Internet Res. 2009 Aug 4;11(3):e32. doi: 10.2196/jmir.1221.			
Operational research methodology in the general medical rounds.	Pinheiro L.	Ann Acad Med Singapore. 2009 Jul;38(7):639-4.			
An approach to improve early detection of sternal wound infection.	Howlader MH, Smith JE, Madden BP.	Bangladesh Med Res Counc Bull. 2009 Apr;35(1):11-4.			
General and visceral surgery practice in German hospitals: a real-time work analysis on surgeons' work flow.	Mache S, Kelm R, Bauer H, Nienhaus A, Klapp BF, Groneberg DA.	Langenbecks Arch Surg. 2010 Jan;395(1):81-7. doi: 10.1007/s00423-009-0541-5. Epub 2009 Jul 18.			
[Always out of breath? An analysis of a doctor's tasks in pneumology].	Mache S, Jankowiak N, Scutaru C, Groneberg DA.	Pneumologie. 2009 Jul;63(7):369-73. doi: 10.1055/s-0029-1214798. Epub 2009 Jul 9. German.			
Evaluation of pharmacists' participation in post-admission ward rounds in a tertiary hospital in South-West Nigeria.	Anyika EN, Alade TB.	Nig Q J Hosp Med. 2009 Jul-Sep;19(3):151-4.	2009		
Oncology pharmacy practice in a teaching hospital in Nepal.	Khanal S, Poudel A, Sharan K, Palaian S.	J Oncol Pharm Pract. 2010 Jun;16(2):75-9. doi: 10.1177/1078155209337662. Epub 2009 Jun 18.			
Ward Round--paediatric bowel obstruction: a surprising and rare cause of a common problem.	Samuel JC, Muyco AP.	Malawi Med J. 2008 Sep;20(3):100, 102. No abstract available.			
Ward Round--a boy with multiple joint swellings.	Tickell D.	Malawi Med J. 2008 Sep;20(3):99, 101. No abstract available.			
Surveillance for healthcare-acquired febrile respiratory infection in pediatric hospitals participating in the Canadian Nosocomial Infection Surveillance Program.	Vayalumkal JV, Gravel D, Moore D, Matlow A; Canadian Nosocomial Infection Surveillance Program.	Infect Control Hosp Epidemiol. 2009 Jul;30(7):652-8. doi: 10.1086/598247.			
Does a post-take ward round proforma have a positive effect on completeness of documentation and efficiency of information management?	Wright DN.	Health Informatics J. 2009 Jun;15(2):86-94. doi: 10.1177/1460458209102970.	2009		
Emotional labour: clinicians' attitudes to death and dying.	Sorensen R, Iedema R.	J Health Organ Manag. 2009;23(1):5-22.			
The art of the ward round.	Ahmed A, Rutter P, Neequaye S.	Br J Hosp Med (Lond). 2009 May;70(5):M71-3. No abstract available.			
A survey of interventional radiology awareness among final-year medical students in a European country.	Leong S, Keeling AN, Lee MJ.	Cardiovasc Intervent Radiol. 2009 Jul;32(4):623-9. doi: 10.1007/s00270-009-9569-8. Epub 2009 May 16.			

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
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Does early review by a respiratory physician lead to a shorter length of stay for patients with non-severe community-acquired pneumonia?	Bewick T, Cooper VJ, Lim WS.	Thorax. 2009 Aug;64(8):709-12. doi: 10.1136/thx.2008.109983. Epub 2009 Apr 21.			
Clinical Audit of Pharmaceutical Care provided by a Clinical Pharmacist in Cardiology and Infectious Disease in-patients at the Royal Hospital, Muscat/Oman.	Al Salmi Z.	Oman Med J. 2009 Apr;24(2):89-94. doi: 10.5001/omj.2009.21.			
Trainees in gastroenterology views on teaching in clinical gastroenterology and endoscopy.	Wells CW, Inglis S, Barton R.	Med Teach. 2009 Feb;31(2):138-44. doi: 10.1080/01421590802144252.			
Ethics Man. Rethinking ward rounds.	Sokol DK.	BMJ. 2009 Mar 4;338:b879. doi: 10.1136/bmj.b879. No abstract available.			
Ward round--seizures, tremor and muscle weakness 20 years after thyroid surgery.	Banda P, Allain TJ.	Malawi Med J. 2008 Mar;20(1):29, 34-5. No abstract available.			
Ward round--a football injury?	Freeman RT, Harrison WJ.	Malawi Med J. 2008 Mar;20(1):28, 32-3. No abstract available.			
Clinical information systems in the intensive care unit: primum non nocere.	Lapinsky SE.	Crit Care. 2009;13(1):107. doi: 10.1186/cc7143. Epub 2009 Jan 9. Review.			
A simple effective clean practice protocol significantly improves hand decontamination and infection control measures in the acute surgical setting.	Howard DP, Williams C, Sen S, Shah A, Daurka J, Bird R, Loh A, Howard A.	Infection. 2009 Feb;37(1):34-8. doi: 10.1007/s15010-008-8005-3. Epub 2008 Dec 5.			
Driving standards in tracheostomy care: a preliminary communication of the St Mary's ENT-led multi disciplinary team approach.	Arora A, Hettige R, Ifeacho S, Narula A.	Clin Otolaryngol. 2008 Dec;33(6):596-9. doi: 10.1111/j.1749-4486.2008.01814.x.			
Postgraduate trainees' assessment of the educational value of ward rounds in obstetrics and gynaecology.	Qureshi NS, Swamy NN.	J Obstet Gynaecol. 2008 Oct;28(7):671-5. doi: 10.1080/01443610802421858.	2008		
Teaching on a ward round.	Ker J, Cantillon P, Ambrose L.	BMJ. 2008 Dec 2;337:a1930. doi: 10.1136/bmj.a1930. No abstract available.	2008		
Hand hygiene during the intensive care unit ward round: how much is enough? An observational study.	Witterick P, Stuart R, Gillespie E, Buist M.	Crit Care Resusc. 2008 Dec;10(4):285-7.			
Electronic patient record use during ward rounds: a qualitative study of interaction between medical staff.	Morrison C, Jones M, Blackwell A, Vuylsteke A.	Crit Care. 2008;12(6):R148. doi: 10.1186/cc7134. Epub 2008 Nov 24.			
Survey of patients' preference for the location of rehabilitation ward rounds.	New PW.	J Rehabil Med. 2008 Aug;40(8):678-80. doi: 10.2340/16501977-0224.			
[Information or confusion. A formal quantitative analysis of ophthalmology ward rounds].	Papsdorf I, Hannich H, Tost F.	Ophthalmologe. 2009 Oct;106(10):905-12. doi: 10.1007/s00347-008-1873-1. German.			
Team meetings in specialist palliative care: asking questions as a strategy within interprofessional interaction.	Arber A.	Qual Health Res. 2008 Oct;18(10):1323-35. doi: 10.1177/1049732308322588.			
How often do physicians review medication charts on ward rounds?	Looi KL, Black PN.	BMC Clin Pharmacol. 2008 Sep 29;8:9. doi: 10.1186/1472-6904-8-9.	2008		
Ability of medical students to calculate drug doses in children after their paediatric attachment.	Oshikoya KA, Senbanjo IO, Soipe A.	Pharm Pract (Granada). 2008 Oct;6(4):191-6. Epub 2008 Dec 15.			
Randomised trial comparing ocular lubricants and polyacrylamide hydrogel dressings in the prevention of exposure keratopathy in the critically ill.	Ezra DG, Chan MP, Solebo L, Malik AP, Crane E, Coombes A, Healy M.	Intensive Care Med. 2009 Mar;35(3):455-61. doi: 10.1007/s00134-008-1284-4. Epub 2008 Sep 23. Erratum in: Intensive Care Med. 2009 Mar;35(3):578.			
Cysticercosis of the fourth ventricle causing sudden death: a case report and review of the literature.	HortobÃ¡gyi T, Alhakim A, Biedrzycki O, Djurovic V, Rawal J, Al-Sarraj S.	Pathol Oncol Res. 2009 Mar;15(1):143-6. doi: 10.1007/s12253-008-9098-9. Epub 2008 Sep 18.			
Physician-patient communication in single-bedded versus four-bedded hospital rooms.	van de Glind I, van Dulmen S, Goossensen A.	Patient Educ Couns. 2008 Nov;73(2):215-9. doi: 10.1016/j.pec.2008.07.004.	2008		

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[Intercommunication and information flow. An explorative study about ward rounds and patients' documentation].	Maier U, Fotuhi P, Seele A, Nikolic D.	Pflege Z. 2008 Jul;61(7):400-3. German.			
Why don't doctors wash their hands? A correlational study of thinking styles and hand hygiene.	Sladek RM, Bond MJ, Phillips PA.	Am J Infect Control. 2008 Aug;36(6):399-406. doi: 10.1016/j.ajic.2007.11.002.			
Anatomy of the ward round.	O'Hare JA.	Eur J Intern Med. 2008 Jul;19(5):309-13. doi: 10.1016/j.ejim.2007.09.016. Epub 2008 Feb 20. Review.	2008		
Assessing senior house officers' perceptions of learning.	Mayell SJ, Shaw NJ.	Arch Dis Child. 2008 Dec;93(12):1022-6. doi: 10.1136/adc.2007.124453. Epub 2008 Jun 6.			
Quantifying the volume of documented clinical information in critical illness.	Manor-Shulman O, Beyene J, Frndova H, Parshuram CS.	J Crit Care. 2008 Jun;23(2):245-50. doi: 10.1016/j.jcrc.2007.06.003. Epub 2007 Dec 11.			
Positive effects of electronic patient records on three clinical activities.	Hertzum M, Simonsen J.	Int J Med Inform. 2008 Dec;77(12):809-17. doi: 10.1016/j.ijmedinf.2008.03.006. Epub 2008 May 23.			
An account of the life and achievements of Miss Diana Beck, neurosurgeon (1902-1956).	Gilkes CE.	Neurosurgery. 2008 Mar;62(3):738-42; discussion 738-42. doi: 10.1227/01.neu.0000317324.71483.e5.			
Antimicrobial optimisation in secondary care: the pharmacist as part of a multidisciplinary antimicrobial programme--a literature review.	Tonna AP, Stewart D, West B, Gould I, McCaig D.	Int J Antimicrob Agents. 2008 Jun;31(6):511-7. doi: 10.1016/j.ijantimicag.2008.01.018. Epub 2008 Mar 20. Review.			
Drug-related problems: evaluation of a classification system in the daily practice of a Swiss University Hospital.	Lampert ML, Kraehenbuehl S, Hug BL.	Pharm World Sci. 2008 Dec;30(6):768-76. doi: 10.1007/s11096-008-9213-8. Epub 2008 Mar 21.			
The contribution of a pharmacy admissions service to patient care.	Bracey G, Miller G, Franklin BD, Jacklin A, Gaskin G.	Clin Med. 2008 Feb;8(1):53-7.			
Parental responses to involvement in rounds on a pediatric inpatient unit at a teaching hospital: a qualitative study.	Latta LC, Dick R, Parry C, Tamura GS.	Acad Med. 2008 Mar;83(3):292-7. doi: 10.1097/ACM.0b013e3181637e21.	2008		
Ward rounds: how prepared are future doctors?	Nikendei C, Kraus B, Schrauth M, Briem S, JÃ¼nger J.	Med Teach. 2008 Feb;30(1):88-91. doi: 10.1080/01421590701753468.	2008		
Introduction of enhancement technologies into the intensive care service, Royal Prince Alfred Hospital, Sydney.	Ryan A, Patrick J, Herkes R.	HIM J. 2008;37(1):40-5.			
Reshaping ICU ward round practices using video-reflexive ethnography.	Carroll K, Iedema R, Kerridge R.	Qual Health Res. 2008 Mar;18(3):380-90. doi: 10.1177/1049732307313430.	2008		
The contribution of a clinical pharmacist to the improvement of medication at a geriatric hospital unit in Norway.	Veggeland T, Dyb S.	Pharm Pract (Granada). 2008 Jan;6(1):20-4. Epub 2008 Mar 10.			
A hospital-wide study of the impact of introducing a personal data assistant-augmented blood culture round.	Inglis TJ, Hodge M, Ketharanathan S.	J Med Microbiol. 2008 Jan;57(Pt 1):43-9.			
[Learning and supervision in Danish clerkships--a qualitative study].	Wichmann-Hansen G, MÃ¸rcke AM, Eika B.	Ugeskr Laeger. 2007 Oct 15;169(42):3574-8. Danish.			
Medical information delivered to patients: discrepancies concerning roles as perceived by physicians and nurses set against patient satisfaction.	Moret L, Rochedreux A, Chevalier S, Lombrail P, Gasquet I.	Patient Educ Couns. 2008 Jan;70(1):94-101. Epub 2007 Nov 7.			
International critical care hospital pharmacist activities.	LeBlanc JM, Seoane-Vazquez EC, Arbo TC, Dasta JF.	Intensive Care Med. 2008 Mar;34(3):538-42. Epub 2007 Nov 7.			
Analysis of communicative behaviour: profiling roles and activities.	SÃ¸rby ID, NytrÃ¸ O.	Stud Health Technol Inform. 2007;130:111-20.			
[Hospital infection and its countermove].	Matsushima Y, Mori A, Bessho Y, Yanou K, Murata T, Kawakami K, Yamamoto N.	Rinsho Byori. 2007 Aug;55(8):775-9. Japanese.			
Ward Round: a jaundiced 43 year old man with cavitary lessions on chest radiograph.	Hartung T, van Oosterhout J.	Malawi Med J. 2007 Sep;19(3):126-35. No abstract available.			

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Confidentiality on ward rounds.	Church D.	Br J Gen Pract. 2007 Jul;57(540):581-2. No abstract available.			
An innovative model for teaching complex clinical procedures: integration of standardised patients into ward round training for final year students.	Nikendei C, Kraus B, Lauber H, Schrauth M, Weyrich P, Zipfel S, JÃ¼nger J, Briem S.	Med Teach. 2007 Mar;29(2-3):246-52.	2007		
The use of portable computer for information acquirement during anesthesiologist's ward round in acute pain service.	Lee YL, Wu JL, Wu HS, Yang SF, Hsu SC, Tsai CC, Ku TH.	Acta Anaesthesiol Taiwan. 2007 Jun;45(2):79-87.			
Do patients want to see recordings of their surgery?	Papadopoulos N, Polyzos D, Gambadauro P, Papalampros P, Chapman L, Magos A.	Eur J Obstet Gynecol Reprod Biol. 2008 May;138(1):89-92. Epub 2007 Jul 27.			
Preventing adverse drug events in hospital practice: an overview.	Rommers MK, Teepe-Twiss IM, Guchelaar HJ.	Pharmacoepidemiol Drug Saf. 2007 Oct;16(10):1129-35. Review.			
Short communication: pattern of adverse drug reaction related queries received by the drug information centre of a tertiary care teaching hospital.	Jimmy B, Jose J, Rao PG.	Pak J Pharm Sci. 2007 Oct;20(4):333-9.			
We all need to help make ward rounds a success.	Sandier M.	Nurs Times. 2007 Jun 12-18;103(24):13. No abstract available.			
Communication during ward rounds in internal medicine. An analysis of patient-nurse-physician interactions using RIAS.	Weber H, Stockli M, Nubling M, Langewitz WA.	Patient Educ Couns. 2007 Aug;67(3):343-8. Epub 2007 Jun 5.	2007		
Incidence and nature of medication errors in neonatal intensive care with strategies to improve safety: a review of the current literature.	Chedoe I, Molendijk HA, Dittrich ST, Jansman FG, Harting JW, Brouwers JR, Taxis K.	Drug Saf. 2007;30(6):503-13. Review.			
Ward round: Chronic respiratory symptoms with no response to tuberculosis treatment in a 35 year old HIV positive man.	Jones A, Bates J, Molyneux M.	Malawi Med J. 2007 Jun;19(2):88-94. No abstract available.			
Ward round: A patient with blurred vision and leg weakness.	Nyirenda M, Whiteley W, Zijlstra E.	Malawi Med J. 2007 Jun;19(2):87-93. No abstract available.			
Corrected incidences of co-morbidities - a statistical approach for risk-assessment in anesthesia using an AIMS.	RÃ¶hrig R, Hartmann B, Junger A, Klasen J, Brammen D, Brenck F, Jost A, Hempelmann G.	J Clin Monit Comput. 2007 Jun;21(3):159-66. Epub 2007 Apr 5.			
Third-year medical students' evaluation of hospitalist and nonhospitalist faculty during the inpatient portion of their pediatrics clerkships.	Geskey JM, Kees-Folts D.	J Hosp Med. 2007 Jan;2(1):17-22.			
Junior staffing changes and the temporal ecology of adverse incidents in acute psychiatric wards.	Bowers L, Jeffery D, Simpson A, Daly C, Warren J, Nijman H.	J Adv Nurs. 2007 Jan;57(2):153-60.			
[Advantages of systematic ward rounds during weekends].	Campillo-Soto A, Soria-Aledo V, Flores-Pastor B, Aguayo-Albasini JL.	Med Clin (Barc). 2006 Oct 14;127(14):556-7. Spanish. No abstract available.			
Measurement of the clinical usability of a configurable EHR.	MÃ¸ller-Jensen J, Lund Pedersen I, Simonsen J.	Stud Health Technol Inform. 2006;124:356-61.			
Is it possible for nurses and doctors to form a useful clinical overview of an EHR?	Neve K, Kragh Iversen R, Andersen CK.	Stud Health Technol Inform. 2006;122:314-9.			
Alphabetical prejudice in team discussions (or would Zebedee ever get seen on a ward round).	Singh R, Philip A, Smith S, Pentland B.	Disabil Rehabil. 2006 Oct 30;28(20):1299-300.			
The risk of vertebral canal complications in 2837 cardiac surgery patients with thoracic epidurals.	Jack ES, Scott NB.	Acta Anaesthesiol Scand. 2007 Jul;51(6):722-5. Epub 2006 Oct 31.			
Use of time by physiotherapists and occupational therapists in a stroke rehabilitation unit: a comparison between four European rehabilitation centres.	Putman K, de Wit L, Schupp W, Ilse B, Berman P, Connell L, Dejaeger E, de Meyer AM, de Weerdt W, Feys H, Walter J, Lincoln N, Louckx F, Anneleen M, Birgit S, Smith B, Leys M.	Disabil Rehabil. 2006 Nov 30;28(22):1417-24.			
[Decision-making about gout by physicians of China and influencing factors thereof].	Fang WG, Zeng XJ, Li MT, Chen LX, Schumacher HR Jr, Zhang FC.	Zhonghua Yi Xue Za Zhi. 2006 Jul 18;86(27):1901-5. Chinese.			
Presence of parents during ward rounds: experience from a Greek NICU.	Dellagrammaticas HD, Lacovidou N.	Arch Dis Child Fetal Neonatal Ed. 2006 Nov;91(6):F466-7. No abstract available.			

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Electronic patient records and their benefit for patient care. Findings from the Section on Patient Records.	Knaup P.	Yearb Med Inform. 2006:40-2.			
Can we improve doctors' hand hygiene on ward rounds?	Wharton EM, Platt AJ.	J Hosp Infect. 2006 Dec;64(4):400-1. Epub 2006 Sep 25. No abstract available.			
Advocacy at end-of-life research design: an ethnographic study of an ICU.	Sorensen R, Iedema R.	Int J Nurs Stud. 2007 Nov;44(8):1343-53. Epub 2006 Sep 15.			
Participation of family members in ward rounds: Attitude of medical staff, patients and relatives.	Rotman-Pikielny P, Rabin B, Amoyal S, Mushkat Y, Zissin R, Levy Y.	Patient Educ Couns. 2007 Feb;65(2):166-70. Epub 2006 Sep 11.	2007		
[The clinical examination of the critically ill patient in the intensive care unit].	Rudiger A.	Ther Umsch. 2006 Jul;63(7):479-84. German.			
A qualification in medical education--a luxury or a necessity?	McLachlan JK.	J R Nav Med Serv. 2006;92(2):84-7.			
[Interprofessional communication and cooperation training in ward rounds for medical and nursing students: a pilot project].	Pedersen BD, Poulsen IK, Ringsted CV, Schroeder TV.	Ugeskr Laeger. 2006 Jun 19;168(25):2449-51. Danish.			
Speaking about dying in the intensive care unit, and its implications for multidisciplinary end-of-life care.	Iedema R, Sorensen R, Braithwaite J, Turnbull E.	Commun Med. 2004;1(1):85-96.			
An integrated care pathway to save the critically ischaemic diabetic foot.	El Sakka K, Fassiadis N, Gambhir RP, Halawa M, Zayed H, Doxford M, Greensitt C, Edmonds M, Rashid H.	Int J Clin Pract. 2006 Jun;60(6):667-9.			
Ward rounds -- bedside or conference room?	Chauke HL, Pattinson RC.	S Afr Med J. 2006 May;96(5):398-400. No abstract available.			
Using post-take ward rounds to facilitate simple discharge.	Lees L, Allen G, O'Brien D.	Nurs Times. 2006 May 2-8;102(18):28-30.			
A teaching ward round in infectious diseases - a pilot module.	Senanayake S, Bowden F, Ironside J, Robertson T.	Aust Fam Physician. 2006 May;35(5):357-8.			
Interprofessional training of students in conducting ward rounds.	Pedersen BD, Poulsen IK, Schroeder TV, Ringsted C.	Med Educ. 2006 May;40(5):478-9. No abstract available.	2006		
Patient perceptions of the otolaryngology ward round in a teaching hospital.	Montague ML, Hussain SS.	J Laryngol Otol. 2006 Apr;120(4):314-8.	2006		
Innovation and teamwork: introducing multidisciplinary team ward rounds.	Moroney N, Knowles C.	Nurs Manag (Harrow). 2006 Apr;13(1):28-31. No abstract available.	2006		
[Utilization of patient isolation in non critical units from a university hospital].	TÃ©llez-Plaza M, Bautista-Rentero D, UsÃ³-Talamantes R, Buch-GarcÃ-a MJ, ZanÃ³n-Viguer V.	Med Clin (Barc). 2006 Feb 4;126(4):125-8. Spanish.			
Does a Post-take Ward Round Proforma Lead to Sustainable Improvements in Quality of Documentation for Patients Admitted to the Medical Assessment Unit?	Kamara A, Henderson S, Rodrigo C, Dulay J.	Acute Med. 2006;5(3):108-11.	2006		
Wireless telemedicine for the delivery of specialist paediatric services to the bedside.	Smith AC, Coulthard M, Clark R, Armfield N, Taylor S, Goff R, Mottarelly I, Youngberry K, Isles A, McCrossin R, Wootton R.	J Telemed Telecare. 2005;11 Suppl 2:S81-5.			
[Participation of medical technologists in the nutrition support team (NST)].	Harashima N, Muroya T, Shoji K, Sekine K, Ikeda H.	Rinsho Byori. 2005 Nov;53(11):1043-50. Japanese.			
Temporal and spatial organization of doctors' computer usage in a UK hospital department.	Martins HM, Nightingale P, Jones MR.	Med Inform Internet Med. 2005 Jun;30(2):135-42.			
Are we able to comply with the NICE head injury guidelines?	Qureshi AA, Mulleady V, Patel A, Porter KM.	Emerg Med J. 2005 Dec;22(12):861-2.			
Follow-up ward rounds after intensive care--what do the patients and their visitors think?	Defres S, Scott C, Park G.	Br J Anaesth. 2005 Dec;95(6):837-8. No abstract available.			

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Families' views on ward rounds in neonatal units.	Bramwell R, Weindling M; FVWR Research Team.	Arch Dis Child Fetal Neonatal Ed. 2005 Sep;90(5):F429-31.	2005		
The role of the junior surgical trainee in ward rounds.	Noble D, Mitchell D, Zilvetti M, Vaidya A.	Med Teach. 2005 May;27(3):283-4. No abstract available.	2005		
Introducing matrons' ward rounds to improve care.	Sud H.	Nurs Times. 2005 Jul 5-11;101(27):26-7.			
Interruptive communication patterns in the intensive care unit ward round.	Alvarez G, Coiera E.	Int J Med Inform. 2005 Oct;74(10):791-6.	2005		
Improving medication management for patients: the effect of a pharmacist on post-admission ward rounds.	Fertleman M, Barnett N, Patel T.	Qual Saf Health Care. 2005 Jun;14(3):207-11. Erratum in: Qual Saf Health Care. 2005 Aug;14(4):312.	2005		
A post-take ward round.	Vallance P.	J R Soc Med. 2005 May;98(5):191-2. No abstract available.			
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Title	Authors	Details	Publication Year	Include / Exclude	Reason
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The informationist in Australia: a feasibility study.	Sladek RM, Pinnock C, Phillips PA.	Health Info Libr J. 2004 Jun;21(2):94-101.			
Variation in medical student grading criteria: a survey of clerkships in obstetrics and gynecology.	Zahn CM, Nalesnik SW, Armstrong AY, Satin AJ, Haffner WH.	Am J Obstet Gynecol. 2004 May;190(5):1388-93.			
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Inpatient experiences of ward rounds in acute psychiatric settings.	Wagstaff K, Solts B.	Nurs Times. 2003 Feb 4-10;99(5):34-6.			
Pain and anxiety management in the postoperative gastro-surgical setting.	Manias E.	J Adv Nurs. 2003 Mar;41(6):585-94.			
What do students want? The types of learning activities preferred by final year medical students.	Bloomfield L, Harris P, Hughes C.	Med Educ. 2003 Feb;37(2):110-8.			
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Working together: neonatal nurse practitioners in practice.	Redshaw ME, Harvey ME.	Acta Paediatr. 2002;91(2):178-83.			
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Nurse-doctor interactions during critical care ward rounds.	Manias E, Street A.	J Clin Nurs. 2001 Jul;10(4):442-50.	2001		
Institutional feeding of the elderly.	Allison S.	Curr Opin Clin Nutr Metab Care. 2002 Jan;5(1):31-4. Review.			
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Resources for controlling tuberculosis in Malawi.	Harries AD, Kwanjana JH, Hargreaves NJ, Van Gorkom J, Salaniponi FM.	Bull World Health Organ. 2001;79(4):329-36. Epub 2003 Jul 2.			
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The Effect of post-discharge surveillance and control strategies on the course of a Staphylococcus aureus outbreak in a newborn nursery.	Couto RC, Pedrosa TM, TupinambÃ¡s U, Rezende NA.	Braz J Infect Dis. 2000 Dec;4(6):296-300.			
Ideal ward round making in neurosurgical practice.	Pathak A, Pathak N, Kak VK.	Neurol India. 2000 Sep;48(3):216-22.	2000		
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Interventions to promote collaboration between nurses and doctors.	Zwarenstein M, Bryant W.	Cochrane Database Syst Rev. 2000;(2):CD000072. Review. Update in: Cochrane Database Syst Rev. 2009;(3):CD000072.	2000		
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The struck-off mystery.	Buntwal N, Hare J, King M.	J R Soc Med. 1999 Sep;92(9):443-5.			
Opportunistic immunisation in hospital.	Conway SP.	Arch Dis Child. 1999 Nov;81(5):422-5.			
The impact of two changes in service delivery on a geriatric psychiatry liaison service.	Baheerathan M, Shah A.	Int J Geriatr Psychiatry. 1999 Sep;14(9):767-75.			
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Patterns of interaction during rounds: implications for work-based learning	Walton Jm, Steinert Y	Med Educ 44: 550-8	2010		
Improving communication in the ICU using Daily Goals	Pronovost P, Berenholtz S, Dorman T, Lipsett PA, Simmonds T, Haraden C	Journal of Critical Care 2003 Jun: 18(2): 71-5	2013		
A pilot study using nominal group technique to assess residents' perceptions of successful attending rounds	Castiglioni A, Shewchuk RM, Willett LL, Heudebert GR, Centor RM	J Gen Intern Med 23(7): 1060-5	2008		
Using cognitive mapping to define key domains for successful attending rounds	Roy B, Catiglioni A, Kraemer R, Salanitro, Willett L, Shewchuk R, Qu H, Heudebert G, Centor R	J Gen Intern Med 27(11): 1492-8	2012		
The dance between attending physicians and senior residents as teachers and supervisors	Balmer D, Giardino A, Richards B	Paediatrics 129:910	2012		
The prevalence of social and behavioral topics and related educational opportunities during attending rounds.	Satterfield JM, Bereknyei S, Hilton JF, Bogetz AL, Blankenburg R, Buckelew SM, Chen HC, Monash B, Ramos JS, Rennke S, Braddock CH 3rd.	Acad Med. 2014 Nov;89(11):1548-57. doi: 10.1097/ACM.0000000000000483.	2014		
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Discharge planning rounds to the bedside: a patient- and family-centered approach.	Wrobleski DM, Joswiak ME, Dunn DF, Maxson PM, Holland DE.	Medsurg Nurs. 2014 Mar-Apr;23(2):111-6.			
Educating medical students about the personal meaning of terminal illness using the film, Wit"."	Ozcakir A, Bilgel N.	J Palliat Med. 2014 Aug;17(8):913-7. doi: 10.1089/jpm.2013.0462. Epub 2014 Jun 12.			
Stimulated recall methodology for assessing work system barriers and facilitators in family-centered rounds in a pediatric hospital.	Carayon P, Li Y, Kelly MM, DuBenske LL, Xie A, McCabe B, Orne J, Cox ED.	Appl Ergon. 2014 Nov;45(6):1540-6. doi: 10.1016/j.apergo.2014.05.001. Epub 2014 Jun 2.			
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Long-term persistence of quality improvements for an intensive care unit communication initiative using the VALUE strategy.	Wysham NG, Mularski RA, Schmidt DM, Nord SC, Louis DL, Shuster E, Curtis JR, Mosen DM.	J Crit Care. 2014 Jun;29(3):450-4. doi: 10.1016/j.jcrc.2013.12.006. Epub 2013 Dec 21.			

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Considerations for attending rounds.	Bergl P, Arora V, Farnan J.	JAMA Intern Med. 2014 Jan;174(1):161-2. doi: 10.1001/jamainternmed.2013.11122. No abstract available.			
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Jefferson interprofessional clinical rounding project: an innovative approach to patient care.	Lyons KJ, Giordano C, Speakman E, Isenberg G, Antony R, Hanson-Zalot M, Ward J, Papastrat K.	J Allied Health. 2013 Winter;42(4):197-201.	2013		
Views of parents and health-care providers regarding parental presence at bedside rounds in a neonatal intensive care unit.	Grzyb MJ, Coo H, RÃ¼hland L, Dow K.	J Perinatol. 2014 Feb;34(2):143-8. doi: 10.1038/jp.2013.144. Epub 2013 Nov 7.	2014		
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Family presence at bedside rounds in the intensive care unit: should we look at alternative solutions?	Walsh K.	Intensive Crit Care Nurs. 2014 Apr;30(2):119. doi: 10.1016/j.iccn.2013.09.001. Epub 2013 Oct 11. No abstract available.			
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Residents' attitudes toward a smartphone policy for inpatient attending rounds.	Katz-Sidlow RJ, Lindenbaum Y, Sidlow R.	J Hosp Med. 2013 Sep;8(9):541-2. doi: 10.1002/jhm.2070. Epub 2013 Aug 17. No abstract available.			
A clinical trial comparing physician prompting with an unprompted automated electronic checklist to reduce empirical antibiotic utilization.	Weiss CH, Dibardino D, Rho J, Sung N, Collander B, Wunderink RG.	Crit Care Med. 2013 Nov;41(11):2563-9. doi: 10.1097/CCM.0b013e318298291a.			
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Establishing patient-centered physician and nurse bedside rounding.	Rimmerman CM.	Physician Exec. 2013 May-Jun;39(3):22-5. No abstract available.			
A foundation for patient safety: phase I implementation of interdisciplinary bedside rounds in the pediatric intensive care unit.	Licata J, Aneja RK, Kyper C, Spencer T, Tharp M, Scott M, Hamilton MF, Pasek TA.	Crit Care Nurse. 2013 Jun;33(3):89-91. doi: 10.4037/ccn2013280. No abstract available.			
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Bedside rounding strategies used by bedside teachers.	LeFrancois D, Leung S.	J Gen Intern Med. 2013 Sep;28(9):1130. doi: 10.1007/s11606-013-2461-x. No abstract available.			

Appendix 2.2 - Ward Round Review Zoe Exclusions

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Attending rounds: where do we go from here?: comment on Attending rounds in the current era"."	Amoss J.	JAMA Intern Med. 2013 Jun 24;173(12):1089-90. doi: 10.1001/jamainternmed.2013.6063. No abstract available.	2013		
Attending rounds in the current era: what is and is not happening.	Stickrath C, Noble M, Prochazka A, Anderson M, Griffiths M, Manheim J, Sillau S, Aagaard E.	JAMA Intern Med. 2013 Jun 24;173(12):1084-9. doi: 10.1001/jamainternmed.2013.6041.	2013		
Bedside rounding strategies used by bedside teachers. The authorsâ€™ reply.	Gonzalo J.	J Gen Intern Med. 2013 Sep;28(9):1131. doi: 10.1007/s11606-013-2462-9. No abstract available.			
Radiation exposure in patients with subarachnoid hemorrhage: a quality improvement target.	Wong JM, Ho AL, Lin N, Zenonos GA, Martel CB, Frerichs K, Du R, Gormley WB.	J Neurosurg. 2013 Jul;119(1):215-20. doi: 10.3171/2013.3.JNS12253. Epub 2013 Apr 26.			
Development of a checklist for documenting team and collaborative behaviors during multidisciplinary bedside rounds.	Henneman EA, Kleppel R, Hinchey KT.	J Nurs Adm. 2013 May;43(5):280-5. doi: 10.1097/NNA.0b013e31828eebfb.	2013		
Assessing the impact of mobile technology on order verification during pharmacist participation in patient rounds.	Ray SM, Clark S, Jeter JW, Treadway SA.	Am J Health Syst Pharm. 2013 Apr 1;70(7):633-6. doi: 10.2146/ajhp120219.			
Promoting a culture of safety as a patient safety strategy: a systematic review.	Weaver SJ, Lubomksi LH, Wilson RF, Pfoh ER, Martinez KA, Dy SM.	Ann Intern Med. 2013 Mar 5;158(5 Pt 2):369-74. doi: 10.7326/0003-4819-158-5-201303051-00002. Review.			
Are family characteristics associated with attendance at family centered rounds in the PICU?.	Drago MJ, Aronson PL, Madrigal V, Yau J, Morrison W.	Pediatr Crit Care Med. 2013 Feb;14(2):e93-7. doi: 10.1097/PCC.0b013e31827129cc.	2013		
Saving time on morning rounds: the application of the traveling salesman problem to surgical team movement patterns.	Falcone JL.	Am Surg. 2013 Jan;79(1):110-1. No abstract available.			
Peer observation and feedback of resident teaching.	Snydman L, Chandler D, Rencic J, Sung YC.	Clin Teach. 2013 Feb;10(1):9-14. doi: 10.1111/j.1743-498X.2012.00591.x.	2013		
Bedside rounding moves into the future.	Burrell A.	Nurs Times. 2012 Oct 9-15;108(41):19. No abstract available.			
Introduction of a rounding sticker improves care and reduces infection rates in the Pediatric Intensive Care Unit (PICU).	Stroud MH, Moss MM, Gilliam CH, Honeycutt M, Frost M, Green JW.	J Ark Med Soc. 2012 Nov;109(6):114-7.	2012		
The art of bedside rounds: a multi-center qualitative study of strategies used by experienced bedside teachers.	Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H, Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki DM.	J Gen Intern Med. 2013 Mar;28(3):412-20. doi: 10.1007/s11606-012-2259-2. Epub 2012 Nov 6.	2013		
AKI in a hospitalized patient with cellulitis.	Perazella MA.	Clin J Am Soc Nephrol. 2013 Apr;8(4):658-64. doi: 10.2215/CJN.09370912. Epub 2012 Oct 25.			
Perspective: a business school view of medical interprofessional rounds: transforming rounding groups into rounding teams.	Bharwani AM, Harris GC, Southwick FS.	Acad Med. 2012 Dec;87(12):1768-71. doi: 10.1097/ACM.0b013e318271f8da.	2012		
An elderly patient with chronic hyponatremia.	Berl T.	Clin J Am Soc Nephrol. 2013 Mar;8(3):469-75. doi: 10.2215/CJN.03100312. Epub 2012 Oct 4. Review.			
Chest radiographs in 104 French ICUs: current prescription strategies and clinical value (the RadioDay study).	Lakhal K, Serveaux-Delous M, Lefrant JY, Capdevila X, Jaber S; AzuRÃ©a network for the RadioDay study group.	Intensive Care Med. 2012 Nov;38(11):1787-99. doi: 10.1007/s00134-012-2650-9. Epub 2012 Aug 2.			
AKI in a patient with cirrhosis and ascites.	Davenport A.	Clin J Am Soc Nephrol. 2012 Dec;7(12):2041-8. doi: 10.2215/CJN.03390412. Epub 2012 Sep 13.			
Early feeding and discontinuation of intravenous fluid after laparoscopic cholecystectomy.	Shah JN, Maharjan SB, Manandhar K, Paudyal S, Shrestha S, Shah S, Lamichhane D.	J Nepal Health Res Counc. 2012 Jan;10(1):28-31.			
Strategies for improving patient safety culture in hospitals: a systematic review.	Morello RT, Lowthian JA, Barker AL, McGinnes R, Dunt D, Brand C.	BMJ Qual Saf. 2013 Jan;22(1):11-8. doi: 10.1136/bmjqs-2011-000582. Epub 2012 Jul 31. Review.			
Empiric antibiotic, mechanical ventilation, and central venous catheter duration as potential factors mediating the effect of a checklist prompting intervention on mortality: an exploratory analysis.	Weiss CH, Persell SD, Wunderink RG, Baker DW.	BMC Health Serv Res. 2012 Jul 13;12:198. doi: 10.1186/1472-6963-12-198.			
Development of a hospitalist-led-and-directed physical examination curriculum.	Janjigian MP, Charap M, Kalet A.	J Hosp Med. 2012 Oct;7(8):640-3. doi: 10.1002/jhm.1954. Epub 2012 Jul 12.			

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To dialyze or not: the patient with metastatic cancer and AKI in the intensive care unit.	Moss AH.	Clin J Am Soc Nephrol. 2012 Sep;7(9):1507-12. doi: 10.2215/CJN.02030212. Epub 2012 Jul 5.			
Smartphone use during inpatient attending rounds: prevalence, patterns and potential for distraction.	Katz-Sidlow RJ, Ludwig A, Miller S, Sidlow R.	J Hosp Med. 2012 Oct;7(8):595-9. doi: 10.1002/jhm.1950. Epub 2012 Jun 28.	2013		
Using cognitive mapping to define key domains for successful attending rounds.	Roy B, Castiglioni A, Kraemer RR, Salanitro AH, Willett LL, Shewchuk RM, Qu H, Heudebert G, Centor RM.	J Gen Intern Med. 2012 Nov;27(11):1492-8. doi: 10.1007/s11606-012-2121-6. Epub 2012 Jun 22.			
Maintaining quality of care 24/7 in a nontrauma surgical intensive care unit.	McMillen MA, Boucher N, Keith D, Gould DS, Gave A, Hoffman D.	J Trauma Acute Care Surg. 2012 Jul;73(1):202-8. doi: 10.1097/TA.0b013e31824ba4bf.			
Family-centered rounds in Pakistani pediatric intensive care settings: non-randomized pre- and post-study design.	Ladak LA, Premji SS, Amanullah MM, Haque A, Ajani K, Siddiqui FJ.	Int J Nurs Stud. 2013 Jun;50(6):717-26. doi: 10.1016/j.ijnurstu.2012.05.009. Epub 2012 Jun 15.			
The effects of a 'discharge time-out' on the quality of hospital discharge summaries.	Mohta N, Vaishnava P, Liang C, Ye K, Vitale M, Dalal A, Schnipper J.	BMJ Qual Saf. 2012 Oct;21(10):885-90. Epub 2012 May 5.			
Does admission during morning rounds increase the mortality of patients in the medical ICU?	Bisbal M, Pauly V, Gainnier M, Forel JM, Roch A, Guervilly C, Demory D, Arnal JM, Michel F, Papazian L.	Chest. 2012 Nov;142(5):1179-84.			
Medical student self-efficacy with family-centered care during bedside rounds.	Young HN, Schumacher JB, Moreno MA, Brown RL, Sigrest TD, McIntosh GK, Schumacher DJ, Kelly MM, Cox ED.	Acad Med. 2012 Jun;87(6):767-75. doi: 10.1097/ACM.0b013e318253dcdb.			
New knowledge, innovations, and improvement in a MagnetÂ® Children's Hospital Cardiac Center.	Barton SJ, Forster EK, Stuart ME, Patton AM, Rim JS, Torowicz DL.	J Pediatr Nurs. 2012 Jun;27(3):271-4. doi: 10.1016/j.pedn.2011.07.002. Epub 2011 Sep 6.			
The simulated ward: ideal for training clinical clerks in an era of patient safety.	Mollo EA, Reinke CE, Nelson C, Holena DN, Kann B, Williams N, Bleier J, Kelz RR.	J Surg Res. 2012 Sep;177(1):e1-6. doi: 10.1016/j.jss.2012.03.050. Epub 2012 Apr 12.	2012		
The dance between attending physicians and senior residents as teachers and supervisors.	Balmer DF, Giardino AP, Richards BF.	Pediatrics. 2012 May;129(5):910-5. doi: 10.1542/peds.2011-2674. Epub 2012 Apr 9.			
Impact of computerized physician order entry on medication errors.	Menendez MD, Alonso J, RancaÃ±o I, Corte JJ, Herranz V, Vazquez F.	Rev Calid Asist. 2012 Nov-Dec;27(6):334-40. doi: 10.1016/j.cali.2012.01.010. Epub 2012 Mar 31.			
What constitutes patient safety culture in Chinese hospitals?	Zhu J, Li L, Li Y, Shi M, Lu H, Garnick DW, Weingart SN.	Int J Qual Health Care. 2012 Jun;24(3):250-7. doi: 10.1093/intqhc/mzs010. Epub 2012 Mar 29.			
Peer-to-peer nursing rounds and hospital-acquired pressure ulcer prevalence in a surgical intensive care unit: a quality improvement project.	Kelleher AD, Moorer A, Makic MF.	J Wound Ostomy Continence Nurs. 2012 Mar-Apr;39(2):152-7. doi: 10.1097/WON.0b013e3182435409.			
Attending rounds: an older patient with nephrotic syndrome.	Glassock RJ.	Clin J Am Soc Nephrol. 2012 Apr;7(4):665-70. doi: 10.2215/CJN.12771211. Epub 2012 Mar 8. Review.			
Utility of the electronic information resource UpToDate for clinical decision-making at bedside rounds.	Phua J, See KC, Khalizah HJ, Low SP, Lim TK.	Singapore Med J. 2012 Feb;53(2):116-20.			
Nurse-reported patient safety climate in Swiss hospitals: a descriptive-explorative substudy of the Swiss RN4CAST study.	Ausserhofer D, Schubert M, Engberg S, Blegen M, De G, Schwendimann R.	Swiss Med Wkly. 2012 Jan 20;142:w13501. doi: 10.4414/smw.2012.13501.			
Presentation skills for the nurse educator.	Longo A, Tierney C.	J Nurses Staff Dev. 2012 Jan-Feb;28(1):16-23. doi: 10.1097/NND.0b013e318240a699.			
Effective multilevel teaching techniques on attending rounds: a pilot survey and systematic review of the literature.	Certain LK, Guarino AJ, Greenwald JL.	Med Teach. 2011;33(12):e644-50. doi: 10.3109/0142159X.2011.610844. Review.	2011		
Time changes for scheduled nursing assessments: impact on clinical decisions and patient discharge.	Monforto K, Figueroa-Altmann A, Stevens C, Thiele K, Ely E.	J Pediatr Nurs. 2012 Feb;27(1):26-33. doi: 10.1016/j.pedn.2010.11.002. Epub 2010 Dec 30.			
Attending rounds: microangiopathic hemolytic anemia with renal insufficiency.	Clark WF, Hildebrand A.	Clin J Am Soc Nephrol. 2012 Feb;7(2):342-7. doi: 10.2215/CJN.07230711. Epub 2011 Dec 22.			
Improving the discharge process by embedding a discharge facilitator in a resident team.	Finn KM, Heffner R, Chang Y, Bazari H, Hunt D, Pickell K, Berube R, Raju S, Farrell E, Iyasere C, Thompson R, O'Malley T, O'Donnell W, Karson A.	J Hosp Med. 2011 Nov;6(9):494-500. doi: 10.1002/jhm.924. Epub 2011 Oct 31.			

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Impact of facilitating physician access to relevant medical literature on outcomes of hospitalised internal medicine patients: a randomised controlled trial.	Izcovich A, Malla CG, Diaz MM, Manzotti M, Catalano HN.	Evid Based Med. 2011 Oct;16(5):131-5. doi: 10.1136/ebmed-2011-100117.			
How medical alumni now see their junior clerkships in surgery.	Chapman JR, Weidner BC, Nakayama DK.	Am Surg. 2011 Sep;77(9):1161-8.			
Daily multidisciplinary rounds to implement the ventilator bundle decreases ventilator-associated pneumonia in trauma patients: but does it affect outcome?	Stone ME Jr, Snetman D, O' Neill A, Cucuzzo J, Lindner J, Ahmad S, Teperman S.	Surg Infect (Larchmt). 2011 Oct;12(5):373-8. doi: 10.1089/sur.2010.067. Epub 2011 Sep 20.			
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Building effective critical care teams.	Manthous C, Nembhard IM, Hollingshead AB.	Crit Care. 2011 Aug 12;15(4):307. doi: 10.1186/cc10255.			
Attending rounds: a patient with drug-resistant hypertension.	Townsend RR.	Clin J Am Soc Nephrol. 2011 Sep;6(9):2301-6. doi: 10.2215/CJN.04120511. Epub 2011 Aug 18.			
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The computerized rounding report: implementation of a model system to support transitions of care.	Wohlauer MV, Rove KO, Pshak TJ, Raeburn CD, Moore EE, Chenoweth C, Srivastava A, Pell J, Meacham RB, Nehler MR.	J Surg Res. 2012 Jan;172(1):11-7. doi: 10.1016/j.jss.2011.04.015. Epub 2011 May 5.			
Clinical pharmacy consultations provided by American and Kenyan pharmacy students during an acute care advanced pharmacy practice experience.	Pastakia SD, Vincent WR 3rd, Manji I, Kamau E, Schellhase EM.	Am J Pharm Educ. 2011 Apr 11;75(3):42.			
Prompting physicians to address a daily checklist and process of care and clinical outcomes: a single-site study.	Weiss CH, Moazed F, McEvoy CA, Singer BD, Szleifer I, Amaral LA, Kwasny M, Watts CM, Persell SD, Baker DW, Sznajder JI, Wunderink RG.	Am J Respir Crit Care Med. 2011 Sep 15;184(6):680-6. doi: 10.1164/rccm.201101-0037OC. Epub 2011 May 26.			
Patient safety culture in a Dutch pediatric surgical intensive care unit: an evaluation using the Safety Attitudes Questionnaire.	Poley MJ, van der Starre C, van den Bos A, van Dijk M, Tibboel D.	Pediatr Crit Care Med. 2011 Nov;12(6):e310-6. doi: 10.1097/PCC.0b013e318220afca.			
Developing and testing a tool to measure nurse/physician communication in the intensive care unit.	Manojlovich M, Saint S, Forman J, Fletcher CE, Keith R, Krein S.	J Patient Saf. 2011 Jun;7(2):80-4. doi: 10.1097/PTS.0b013e3182192463.			
Alternative perceptions of the educational value of attending rounds.	Hinchey K, McArdle P.	Med Educ. 2011 May;45(5):536; author reply 537. doi: 10.1111/j.1365-2923.2011.03940.x. No abstract available.	2011		
Targeted interventions improve shared agreement of daily goals in the pediatric intensive care unit.	Rehder KJ, Uhl TL, Meliones JN, Turner DA, Smith PB, Mistry KP.	Pediatr Crit Care Med. 2012 Jan;13(1):6-10. doi: 10.1097/PCC.0b013e3182192a6c.			
Medical student outcomes after family-centered bedside rounds.	Cox ED, Schumacher JB, Young HN, Evans MD, Moreno MA, Sigrest TD.	Acad Pediatr. 2011 Sep-Oct;11(5):403-8. doi: 10.1016/j.acap.2011.01.001. Epub 2011 Mar 10.			
A model of awareness to enhance our understanding of interprofessional collaborative care delivery and health information system design to support it.	Kuziemsky CE, Varpio L.	Int J Med Inform. 2011 Aug;80(8):e150-60. doi: 10.1016/j.ijmedinf.2011.01.009. Epub 2011 Feb 12.			
The return of bedside rounds.	Peltan ID, Wright DE.	J Gen Intern Med. 2011 Feb;26(2):113; author reply 114. doi: 10.1007/s11606-010-1564-x. No abstract available.			
Lean analysis of a pediatric intensive care unit physician group rounding process to identify inefficiencies and opportunities for improvement.	Vats A, Goin KH, Fortenberry JD.	Pediatr Crit Care Med. 2011 Jul;12(4):415-21. doi: 10.1097/PCC.0b013e3181fe2e3c.			
An ethnographic study of attending rounds in general paediatrics: understanding the ritual.	Balmer DF, Master CL, Richards BF, Serwint JR, Giardino AP.	Med Educ. 2010 Nov;44(11):1105-16. doi: 10.1111/j.1365-2923.2010.03767.x.	2010		
Attending rounds.	Sarosi GA.	Ann Intern Med. 2010 Oct 5;153(7):482. doi: 10.7326/0003-4819-153-7-201010050-00016. No abstract available.	2010		
Integrating incident data from five reporting systems to assess patient safety: making sense of the elephant.	Levtzion-Korach O, Frankel A, Alcalai H, Keohane C, Orav J, Graydon-Baker E, Barnes J, Gordon K, Puopulo AL, Tomov EI, Sato L, Bates DW.	Jt Comm J Qual Patient Saf. 2010 Sep;36(9):402-10.			
Stress ulcer prophylaxis: reducing non-indicated prescribing after hospital discharge.	Hatch JB, Schulz L, Fish JT.	Ann Pharmacother. 2010 Oct;44(10):1565-71. doi: 10.1345/aph.1P167. Epub 2010 Sep 14.			

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How length of stay for congestive heart failure patients was reduced through six sigma methodology and physician leadership.	Albert K, Sherman B, Backus B.	Am J Med Qual. 2010 Sep-Oct;25(5):392-7. doi: 10.1177/1062860610371823. Epub 2010 Aug 12.			
Evaluation of the role of the critical care pharmacist in identifying and avoiding or minimizing significant drug-drug interactions in medical intensive care patients.	Rivkin A, Yin H.	J Crit Care. 2011 Feb;26(1):104.e1-6. doi: 10.1016/j.jcrc.2010.04.014. Epub 2010 Jun 19.			
The learners' perspective on internal medicine ward rounds: a cross-sectional study.	Tariq M, Motiwala A, Ali SU, Riaz M, Awan S, Akhter J.	BMC Med Educ. 2010 Jul 9;10:53. doi: 10.1186/1472-6920-10-53.			
Association between ICU admission during morning rounds and mortality.	Desai H, El Solh AA.	Chest. 2010 Jun;137(6):1488; author reply 1488-9. doi: 10.1378/chest.09-3127. No abstract available.			
Morning rounds becoming mourning rounds?	Ligtenberg JJ, Dijkema LM, Zijlstra JG.	Chest. 2010 May;137(5):1253-4; author reply 1254. doi: 10.1378/chest.09-2952. No abstract available.			
Teaching paediatric critical care medicine to paediatric residents.	Haque A, Haider R, Salat MS.	J Pak Med Assoc. 2010 Apr;60(4):319-21.			
Morning rounds in the neighborhood.	Glazier EJ.	Ann Intern Med. 2010 Apr 20;152(8):535-6. doi: 10.7326/0003-4819-152-8-201004200-00014. No abstract available.			
The return of bedside rounds: an educational intervention.	Gonzalo JD, Chuang CH, Huang G, Smith C.	J Gen Intern Med. 2010 Aug;25(8):792-8. doi: 10.1007/s11606-010-1344-7. Epub 2010 Apr 13.			
A new leadership role for pharmacists: a prescription for change.	Burgess LH, Cohen MR, Denham CR.	J Patient Saf. 2010 Mar;6(1):31-7. doi: 10.1097/PTS.0b013e3181d108cb.			
The effect of multidisciplinary care teams on intensive care unit mortality.	Kim MM, Barnato AE, Angus DC, Fleisher LA, Kahn JM.	Arch Intern Med. 2010 Feb 22;170(4):369-76. doi: 10.1001/archinternmed.2009.521. Erratum in: Arch Intern Med. 2010 May 24;170(10):867. Fleisher, Lee F [corrected to Fleisher, Lee A].			
Pilot of direct observation of clinical skills (DOCS) in a medicine clerkship: feasibility and relationship to clinical performance measures.	Kang Y, Bardes CL, Gerber LM, Storey-Johnson C.	Med Educ Online. 2009 Aug 5;14:9. doi: 10.3885/meo.2009.T0000137.			
Enhancing diagnostic accuracy among nonexperts through use of video cases.	Balslev T, de Grave WS, Muijtjens AM, Scherpbier AJ.	Pediatrics. 2010 Mar;125(3):e570-6. doi: 10.1542/peds.2009-0438. Epub 2010 Feb 15.			
Effect of nutritional support team restructuring on the use of parenteral nutrition.	Sriram K, Cyriac T, Fogg LF.	Nutrition. 2010 Jul-Aug;26(7-8):735-9. doi: 10.1016/j.nut.2009.08.012. Epub 2009 Dec 16.			
Delays in discharge in a tertiary care pediatric hospital.	Srivastava R, Stone BL, Patel R, Swenson M, Davies A, Maloney CG, Young PC, James BC.	J Hosp Med. 2009 Oct;4(8):481-5. doi: 10.1002/jhm.490.			
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Uni- and interdisciplinary effects on round and handover content in intensive care units.	Miller A, Scheinkestel C, Limpus A, Joseph M, Karnik A, Venkatesh B.	Hum Factors. 2009 Jun;51(3):339-53.			
Impact of family presence during pediatric intensive care unit rounds on the family and medical team.	Aronson PL, Yau J, Helfaer MA, Morrison W.	Pediatrics. 2009 Oct;124(4):1119-25. doi: 10.1542/peds.2009-0369. Epub 2009 Sep 7.			
Discordance in interpretation of chest radiographs between pediatric intensivists and a radiologist: impact on patient management.	Nesterova GV, Leftridge CA Jr, Natarajan AR, Appel HJ, Bautista MV, Hauser GJ.	J Crit Care. 2010 Jun;25(2):179-83. doi: 10.1016/j.jcrc.2009.05.016. Epub 2009 Aug 13.			
Pediatric patient safety in emergency departments: unit characteristics and staff perceptions.	Shaw KN, Ruddy RM, Olsen CS, Lillis KA, Mahajan PV, Dean JM, Chamberlain JM; Pediatric Emergency Care Applied Research Network.	Pediatrics. 2009 Aug;124(2):485-93. doi: 10.1542/peds.2008-2858. Epub 2009 Jul 27.			
Evaluation of a new chest tube removal protocol using digital air leak monitoring after lobectomy: a prospective randomised trial.	Brunelli A, Salati M, Refai M, Di Nunzio L, XiumÃ© F, Sabbatini A.	Eur J Cardiothorac Surg. 2010 Jan;37(1):56-60. doi: 10.1016/j.ejcts.2009.05.006. Epub 2009 Jul 8.			
Implementation of a mandatory checklist of protocols and objectives improves compliance with a wide range of evidence-based intensive care unit practices.	Byrnes MC, Schuerer DJ, Schallom ME, Sona CS, Mazuski JE, Taylor BE, McKenzie W, Thomas JM, Emerson JS, Nemeth JL, Bailey RA, Boyle WA, Buchman TG, Coopersmith CM.	Crit Care Med. 2009 Oct;37(10):2775-81. doi: 10.1097/CCM.0b013e3181a96379.			

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Daily rapid rounds: decreasing length of stay and improving professional practice.	Geary S, Cale DD, Quinn B, Winchell J.	J Nurs Adm. 2009 Jun;39(6):293-8. doi: 10.1097/NNA.0b013e3181a72ab8.			
Association between ICU admission during morning rounds and mortality.	Afessa B, Gajic O, Morales IJ, Keegan MT, Peters SG, Hubmayr RD.	Chest. 2009 Dec;136(6):1489-95. doi: 10.1378/chest.09-0529. Epub 2009 Jun 8.			
Quantification of bedside teaching by an academic hospitalist group.	Crumlish CM, Yialamas MA, McMahon GT.	J Hosp Med. 2009 May;4(5):304-7. doi: 10.1002/jhm.540.			
The Fielding H. Garrison lecture: I am their physician": Dr. Owen J. Wister of Germantown and his too many patients."	Peitzman SJ.	Bull Hist Med. 2009 Summer;83(2):245-70. doi: 10.1353/bhm.0.0200.			
Attending rounds and bedside case presentations: medical student and medicine resident experiences and attitudes.	Gonzalo JD, Masters PA, Simons RJ, Chuang CH.	Teach Learn Med. 2009 Apr-Jun;21(2):105-10. doi: 10.1080/10401330902791156.			
Biliary spills and collections: causes, diagnosis, and multidisciplinary management.	Nader M, D'Agostino HB, Vea R, de Gregorio Ariza M, Zibari G, Manas K, Jordan P, Shi R.	J La State Med Soc. 2009 Jan-Feb;161(1):46-52; quiz 53-4.			
Implementing a patient safety and quality program across two merged pediatric institutions.	Abramson E, Hyman D, Osorio SN, Kaushal R.	Jt Comm J Qual Patient Saf. 2009 Jan;35(1):43-8.			
The role of SVS volunteer vascular surgeons in the care of combat casualties: results from Landstuhl, Germany.	Bush RL, Fairman RM, Flaherty SF, Gillespie DL.	J Vasc Surg. 2009 Jan;49(1):226-9. doi: 10.1016/j.jvs.2008.09.015.			
Nurses participate in presenting patients in morning rounds: the first test of change was more complex than was anticipated.	Stefancyk AL.	Am J Nurs. 2008 Nov;108(11):70-2. doi: 10.1097/01.NAJ.0000339161.32035.20.			
Postoperative chest tube management: measuring air leak using an electronic device decreases variability in the clinical practice.	Varela G, JimÃ©nez MF, Novoa NM, Aranda JL.	Eur J Cardiothorac Surg. 2009 Jan;35(1):28-31. doi: 10.1016/j.ejcts.2008.09.005. Epub 2008 Oct 9.			
Evaluation of patient participation in a patient empowerment initiative to improve hand hygiene practices in a Veterans Affairs medical center.	Lent V, Eckstein EC, Cameron AS, Budavich R, Eckstein BC, Donskey CJ.	Am J Infect Control. 2009 Mar;37(2):117-20. doi: 10.1016/j.ajic.2008.04.248. Epub 2008 Oct 3.			
Hand hygiene compliance by physicians: marked heterogeneity due to local culture?	Cantrell D, Shamriz O, Cohen MJ, Stern Z, Block C, Brezis M.	Am J Infect Control. 2009 May;37(4):301-5. doi: 10.1016/j.ajic.2008.05.001. Epub 2008 Oct 3.			
Prolongation of hospital stay and additional costs due to nosocomial bloodstream infection in an Algerian neonatal care unit.	Atif ML, Sadaoui F, Bezzaoucha A, Kaddache CA, Boukari R, Djelato S, Boubechou N.	Infect Control Hosp Epidemiol. 2008 Nov;29(11):1066-70. doi: 10.1086/591858.			
Medical complications drive length of stay after brain hemorrhage: a cohort study.	Naidech AM, Bendok BR, Tamul P, Bassin SL, Watts CM, Batjer HH, Bleck TP.	Neurocrit Care. 2009;10(1):11-9. doi: 10.1007/s12028-008-9148-x. Epub 2008 Sep 27.			
Care of children isolated for infection control: a prospective observational cohort study.	Cohen E, Austin J, Weinstein M, Matlow A, Redelmeier DA.	Pediatrics. 2008 Aug;122(2):e411-5. doi: 10.1542/peds.2008-0181.			
A before and after study of medical students' and house staff members' knowledge of ACOVE quality of pharmacologic care standards on an acute care for elders unit.	Jellinek SP, Cohen V, Nelson M, Likourezos A, Goldman W, Paris B.	Am J Geriatr Pharmacother. 2008 Jun;6(2):82-90. doi: 10.1016/j.amjopharm.2008.06.003.			
A pilot study using nominal group technique to assess residents' perceptions of successful attending rounds.	Castiglioni A, Shewchuk RM, Willett LL, Heudebert GR, Centor RM.	J Gen Intern Med. 2008 Jul;23(7):1060-5. doi: 10.1007/s11606-008-0668-z.			
Evaluation of a culturally effective health care curriculum integrated into a core pediatric clerkship.	Paul CR, Devries J, Fliegel J, Van Cleave J, Kish J.	Ambul Pediatr. 2008 May-Jun;8(3):195-9. doi: 10.1016/j.ambp.2007.12.007. Epub 2008 Apr 11.			
Computer-generated automatic alerts of respiratory distress after blood transfusion.	Finlay-Morreale HE, Louie C, Toy P.	J Am Med Inform Assoc. 2008 May-Jun;15(3):383-5. doi: 10.1197/jamia.M2538. Epub 2008 Feb 28.			
Intensive care unit nurses' perceptions of safety after a highly specific safety intervention.	Elder NC, Brungs SM, Nagy M, Kudel I, Render ML.	Qual Saf Health Care. 2008 Feb;17(1):25-30. doi: 10.1136/qshc.2006.021949.			
Newborn care by pediatric hospitalists in a community hospital: effect on physician productivity and financial performance.	Tieder JS, Migita DS, Cowan CA, Melzer SM.	Arch Pediatr Adolesc Med. 2008 Jan;162(1):74-8. doi: 10.1001/archpediatrics.2007.15.			
Image-guided catheter drainage of infected pleural effusions.	Akhan O, Ozkan O, Akinci D, Hassan A, Ozmen M.	Diagn Interv Radiol. 2007 Dec;13(4):204-9.			
Postoperative robotic telerounding: a multicenter randomized assessment of patient outcomes and satisfaction.	Ellison LM, Nguyen M, Fabrizio MD, Soh A, Permpongkosol S, Kavoussi LR.	Arch Surg. 2007 Dec;142(12):1177-81; discussion 1181.			

Appendix 2.2 - Ward Round Review Zoe Exclusions

Title	Authors	Details	Publication Year	Include / Exclude	Reason
Cost implications of and potential adverse events prevented by interventions of a critical care pharmacist.	Kopp BJ, Mrsan M, Erstad BL, Duby JJ.	Am J Health Syst Pharm. 2007 Dec 1;64(23):2483-7.			
SynopSIS: integrating physician sign-out with the electronic medical record.	Sarkar U, Carter JT, Omachi TA, Vidyarthi AR, Cucina R, Bokser S, van Eaton E, Blum M.	J Hosp Med. 2007 Sep;2(5):336-42.			
A randomized, controlled trial of bedside versus conference-room case presentation in a pediatric intensive care unit.	Landry MA, Lafrenaye S, Roy MC, Cyr C.	Pediatrics. 2007 Aug;120(2):275-80.			
Admission time and outcomes of patients in a medical intensive care unit.	Sheu CC, Tsai JR, Hung JY, Yang CJ, Hung HC, Chong IW, Huang MS, Hwang JJ.	Kaohsiung J Med Sci. 2007 Aug;23(8):395-404.			
Robotic telepresence: profit analysis in reducing length of stay after laparoscopic gastric bypass.	Gandsas A, Parekh M, Bleech MM, Tong DA.	J Am Coll Surg. 2007 Jul;205(1):72-7.			
Defining family-centered rounds.	Sisterhen LL, Blaszak RT, Woods MB, Smith CE.	Teach Learn Med. 2007 Summer;19(3):319-22.			
Designing a protocol that eliminates Clostridium difficile: a collaborative venture.	Whitaker J, Brown BS, Vidal S, Calcaterra M.	Am J Infect Control. 2007 Jun;35(5):310-4.			
Diurnal variation in swim performance remains, irrespective of training once or twice daily.	Martin L, Nevill AM, Thompson KG.	Int J Sports Physiol Perform. 2007 Jun;2(2):192-200.			
Using daily rounds to drive quality assurance.	Braeutigam DW.	Biomed Instrum Technol. 2005 Nov-Dec;39(6):441-3. No abstract available.			
Viewpoint: reflections on a well-traveled path: self-awareness, mindful practice, and relationship-centered care as foundations for medical education.	Dobie S.	Acad Med. 2007 Apr;82(4):422-7. Review.			
Family-centered bedside rounds: a new approach to patient care and teaching.	Muething SE, Kotagal UR, Schoettker PJ, Gonzalez del Rey J, DeWitt TG.	Pediatrics. 2007 Apr;119(4):829-32.			
Attributable cost and length of stay for patients with central venous catheter-associated bloodstream infection in Mexico City intensive care units: a prospective, matched analysis.	Higuera F, Rangel-Frausto MS, Rosenthal VD, Soto JM, CastaÃ±on J, Franco G, Tabal-Galan N, Ruiz J, Duarte P, Graves N.	Infect Control Hosp Epidemiol. 2007 Jan;28(1):31-5.			
Evidence-based medicine among internal medicine residents in a community hospital program using smart phones.	LeÃ³n SA, Fontelo P, Green L, Ackerman M, Liu F.	BMC Med Inform Decis Mak. 2007 Feb 21;7:5.			
Saturday morning rounds.	Pontious JM.	J Okla State Med Assoc. 2006 Dec;99(12):568. No abstract available.			
MEDLINE as a source of just-in-time answers to clinical questions.	Demner-Fushman D, Hauser SE, Humphrey SM, Ford GM, Jacobs JL, Thoma GR.	AMIA Annu Symp Proc. 2006:190-4.			
Implementing best practice strategies to prevent infection in the ICU.	Aragon D, Sole ML.	Crit Care Nurs Clin North Am. 2006 Dec;18(4):441-52. Review.			
Computers and daily bedside rounds in the neonatal intensive care unit.	Manzar S.	Saudi Med J. 2006 Nov;27(11):1774. No abstract available.			
Perceived needs for geriatric education by medical students, internal medicine residents and faculty.	Drickamer MA, Levy B, Irwin KS, Rohrbaugh RM.	J Gen Intern Med. 2006 Dec;21(12):1230-4.			
Merging cultures: palliative care specialists in the medical intensive care unit.	Billings JA, Keeley A, Bauman J, Cist A, Coakley E, Dahlin C, Montgomery P, Thompson BT, Wise M; Massachusetts General Hospital Palliative Care Nurse Champions.	Crit Care Med. 2006 Nov;34(11 Suppl):S388-93.			
Communication between physicians and nurses as a target for improving end-of-life care in the intensive care unit: challenges and opportunities for moving forward.	Puntillo KA, McAdam JL.	Crit Care Med. 2006 Nov;34(11 Suppl):S332-40. Review.			
Open bedside rounds for families with children in pediatric intensive care units.	Kleiber C, Davenport T, Freyenberger B.	Am J Crit Care. 2006 Sep;15(5):492-6. No abstract available.			
ICU collaborative achieves major reductions in hospital infections.	[No authors listed]	Healthcare Benchmarks Qual Improv. 2006 May;13(5):49-52.			

Appendix 2.2 - Ward Round Review Zoe Exclusions

Title	Authors	Details	Publication Year	Include / Exclude	Reason
A pilot study to test the use of a checklist in a tertiary intensive care unit as a method of ensuring quality processes of care.	Hewson KM, Burrell AR.	Anaesth Intensive Care. 2006 Jun;34(3):322-8. Erratum in: Anaesth Intensive Care. 2006 Aug;34(4):528.			
Measuring perinatal patient safety: review of current methods.	Simpson KR.	J Obstet Gynecol Neonatal Nurs. 2006 May-Jun;35(3):432-42. Review.			
Radiographic measures of intravascular volume status: the role of vascular pedicle width.	Miller RR, Ely EW.	Curr Opin Crit Care. 2006 Jun;12(3):255-62. Review.			
The delivery of critical care services in US trauma centers: is the standard being met?	Nathens AB, Maier RV, Jurkovich GJ, Monary D, Rivara FP, Mackenzie EJ.	J Trauma. 2006 Apr;60(4):773-83; disucssion 783-4.			
Post-operative rounds by anaesthesiologists after hip fracture surgery: a pilot study.	Foss NB, Christensen DS, Krasheninnikoff M, Kristensen BB, Kehlet H.	Acta Anaesthesiol Scand. 2006 Apr;50(4):437-42.			
2004 survey of ECMO in the neonate after open heart surgery: circuitry and team roles.	Searles B, Gunst G, Terry B, Melchior R, Darling E.	J Extra Corpor Technol. 2005 Dec;37(4):351-4.			
Family as a member of the trauma rounds: a strategy for maximized communication.	Schiller WR, Anderson BF.	J Trauma Nurs. 2003 Oct-Dec;10(4):93-101.			
Team model: advocating for the optimal method of care delivery in the intensive care unit.	Durbin CG Jr.	Crit Care Med. 2006 Mar;34(3 Suppl):S12-7. Review.			
Implementing screening, brief intervention, and referral for alcohol and drug use: the trauma service perspective.	Sise MJ, Sise CB, Kelley DM, Simmons CW, Kelso DJ.	J Trauma. 2005 Sep;59(3 Suppl):S112-8; discussion S124-33.			
Sunday morning rounds when the Baptist Church Choir came through.	Haddy RI, Haddy TB.	Pharos Alpha Omega Alpha Honor Med Soc. 2005 Summer;68(3):31. No abstract available.			
Changing unit culture: an interdisciplinary commitment to improve pain outcomes.	Chung H, Nguyen PH.	J Healthc Qual. 2005 Mar-Apr;27(2):12-9.			
The daily moment: a stress reduction program for cancer center staff.	Kendall J, Waddington C, Kendall C.	J Oncol Manag. 2005 Summer;14(3):68-71.			
Real time patient safety audits: improving safety every day.	Ursprung R, Gray JE, Edwards WH, Horbar JD, Nickerson J, Plsek P, Shiono PH, Suresh GK, Goldmann DA.	Qual Saf Health Care. 2005 Aug;14(4):284-9.			
Effect of a physical examination teaching program on the behavior of medical residents.	McMahon GT, Marina O, Kritek PA, Katz JT.	J Gen Intern Med. 2005 Aug;20(8):710-4.			
Internal medicine resident education in the medical intensive care unit: the impact on education and patient care of a scheduling change for didactic sessions.	Lim KG, Dunn WF, Klarich KW, Afessa B.	Crit Care Med. 2005 Jul;33(7):1534-7.			
Frequency of sit-down patient care rounds, attainment of clinical performance targets, hospitalization, and mortality in hemodialysis patients.	Berns JS.	Semin Dial. 2005 May-Jun;18(3):258-60. No abstract available.			
Assessing competence of residents to discuss end-of-life issues.	Buss MK, Alexander GC, Switzer GE, Arnold RM.	J Palliat Med. 2005 Apr;8(2):363-71.			
The effect of executive walk rounds on nurse safety climate attitudes: a randomized trial of clinical units[ISRCTN85147255] [corrected].	Thomas EJ, Sexton JB, Neilands TB, Frankel A, Helmreich RL.	BMC Health Serv Res. 2005 Apr 11;5(1):28. Erratum in: BMC Health Serv Res. 2005 Jun 8;5(1):4.			
Effects on processes and costs of care associated with the addition of an internist to an inpatient psychiatry team.	Rubin AS, Littenberg B, Ross R, Wehry S, Jones M.	Psychiatr Serv. 2005 Apr;56(4):463-7.			
The attributable cost and length of hospital stay because of nosocomial pneumonia in intensive care units in 3 hospitals in Argentina: a prospective, matched analysis.	Rosenthal VD, Guzman S, Migone O, Safdar N.	Am J Infect Control. 2005 Apr;33(3):157-61.			
Frequency of sit-down patient care rounds, attainment of clinical performance targets, hospitalization, and mortality in hemodialysis patients.	Plantinga LC, Fink NE, Jaar BG, Sadler JH, Coresh J, Klag MJ, Levey AS, Powe NR.	J Am Soc Nephrol. 2004 Dec;15(12):3144-53.			
Telerounding and patient satisfaction after surgery.	Ellison LM, Pinto PA, Kim F, Ong AM, Patriciu A, Stoianovici D, Rubin H, Jarrett T, Kavoussi LR.	J Am Coll Surg. 2004 Oct;199(4):523-30.			
The challenges of residents teaching neurology.	Frank SA, JÃ³zefowicz RF.	Neurologist. 2004 Jul;10(4):216-20. Review.			

Appendix 2.2 - Ward Round Review Zoe Exclusions

Title	Authors	Details	Publication Year	Include / Exclude	Reason
The positive impact of initiation of hospitalist clinician educators.	Kulaga ME, Charney P, O'Mahony SP, Cleary JP, McClung TM, Schildkamp DE, Mazur EM.	J Gen Intern Med. 2004 Apr;19(4):293-301.			
Effects of interdisciplinary rounds on length of stay in a telemetry unit.	Wild D, Nawaz H, Chan W, Katz DL.	J Public Health Manag Pract. 2004 Jan-Feb;10(1):63-9.	2004		
The mirror" and "the village": a new method for teaching practice-based learning and improvement and systems-based practice."	Ziegelstein RC, Fiebach NH.	Acad Med. 2004 Jan;79(1):83-8.			
The attributable cost, length of hospital stay, and mortality of central line-associated bloodstream infection in intensive care departments in Argentina: A prospective, matched analysis.	Rosenthal VD, Guzman S, Migone O, Crnich CJ.	Am J Infect Control. 2003 Dec;31(8):475-80.			
Do physicians examine patients in contact isolation less frequently? A brief report.	Saint S, Higgins LA, Nallamothu BK, Chenoweth C.	Am J Infect Control. 2003 Oct;31(6):354-6.			
Developing and pilot testing quality indicators in the intensive care unit.	Pronovost PJ, Berenholtz SM, Ngo K, McDowell M, Holzmueller C, Haraden C, Resar R, Rainey T, Nolan T, Dorman T.	J Crit Care. 2003 Sep;18(3):145-55.			
Explicit approach to rounds in an ICU improves communication and satisfaction of providers.	Dodek PM, Raboud J.	Intensive Care Med. 2003 Sep;29(9):1584-8. Epub 2003 Jul 25.			
Improving communication in the ICU using daily goals.	Pronovost P, Berenholtz S, Dorman T, Lipsett PA, Simmonds T, Haraden C.	J Crit Care. 2003 Jun;18(2):71-5.			
Twelve tips to improve bedside teaching.	Ramani S.	Med Teach. 2003 Mar;25(2):112-5.			
Pressure ulcer education: a pilot study of the knowledge and clinical confidence of geriatric fellows.	Odierna E, Zeleznik J.	Adv Skin Wound Care. 2003 Jan-Feb;16(1):26-30.			
A method for real-time, evidence-based general medical attending rounds.	McGinn T, Seltz M, Korenstein D.	Acad Med. 2002 Nov;77(11):1150-2.	2002		
Research utilization among pediatric health professionals.	McCleary L, Brown GT.	Nurs Health Sci. 2002 Dec;4(4):163-71.			
Coding errors and the trauma patient--is nursing case management the solution?	Curtis K, Bollard L, Dickson C.	Aust Health Rev. 2002;25(4):73-80.			
Nosocomial infections in internal medicine, University of Frankfurt, Germany--a prospective surveillance study.	Schaumann R, Schlicher C, Shah PM.	Eur J Med Res. 2002 Jun 28;7(6):278-82.			
Implementing a medicine-spirituality curriculum in a community-based internal medicine residency program.	Pettus MC.	Acad Med. 2002 Jul;77(7):745.			
A physician-based voluntary reporting system for adverse events and medical errors.	Weingart SN, Callanan LD, Ship AN, Aronson MD.	J Gen Intern Med. 2001 Dec;16(12):809-14.			
Reorganizing the delivery of intensive care could improve efficiency and save lives.	Randolph AG, Pronovost P.	J Eval Clin Pract. 2002 Feb;8(1):1-8.			
How an audit of epidural patients in a community hospital setting resulted in the development of a formal acute pain management service.	Goldstein DH, VanDenKerkhof EG, Sherlock R, Sherlock J, Harper S.	Pain Res Manag. 2001 Spring;6(1):16-20.			
Instituting a disruptive conduct policy for medical staff.	Barnsteiner JH, Madigan C, Spray TL.	AACN Clin Issues. 2001 Aug;12(3):378-82.			
Intensive care unit physician staffing is associated with decreased length of stay, hospital cost, and complications after esophageal resection.	Dimick JB, Pronovost PJ, Heitmiller RF, Lipsett PA.	Crit Care Med. 2001 Apr;29(4):753-8.			
The role of a nurse case manager in implementing a critical pathway for infrainguinal bypass surgery.	Walsh MD, Barry M, Scott TE, Lamorte WW, Menzoian JO.	Jt Comm J Qual Improv. 2001 Apr;27(4):230-8.			
Confidential clinician-reported surveillance of adverse events among medical inpatients.	Weingart SN, Ship AN, Aronson MD.	J Gen Intern Med. 2000 Jul;15(7):470-7.			
The orchestration of occupation: the dance of mothers.	Larson EA.	Am J Occup Ther. 2000 May-Jun;54(3):269-80.			

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Morning rounds inpatient test availability: a College of American Pathologist Q-Probes study of 79860 morning complete blood cell count and electrolyte test results in 367 institutions.	Novis DA, Dale JC.	Arch Pathol Lab Med. 2000 Apr;124(4):499-503.			
Cognitive orientation in rehabilitation and neuropsychological outcome after traumatic brain injury.	Dowler RN, Bush BA, Novack TA, Jackson WT.	Brain Inj. 2000 Feb;14(2):117-23.			
Evidence-based medicine training in internal medicine residency programs a national survey.	Green ML.	J Gen Intern Med. 2000 Feb;15(2):129-33.			
Data collection by acute pain services in Australia and New Zealand.	Turner GA, Halliwell R.	Anaesth Intensive Care. 1999 Dec;27(6):632-5.			
Organizational characteristics of intensive care units related to outcomes of abdominal aortic surgery.	Pronovost PJ, Jenckes MW, Dorman T, Garrett E, Breslow MJ, Rosenfeld BA, Lipsett PA, Bass E.	JAMA. 1999 Apr 14;281(14):1310-7.			
The impact of a multidisciplinary approach on caring for ventilator-dependent patients.	Young MP, Gooder VJ, Oltermann MH, Bohman CB, French TK, James BC.	Int J Qual Health Care. 1998 Feb;10(1):15-26.			
A firm trial of interdisciplinary rounds on the inpatient medical wards: an intervention designed using continuous quality improvement.	Curley C, McEachern JE, Speroff T.	Med Care. 1998 Aug;36(8 Suppl):AS4-12.	1998		
Improving functional outcomes in older patients: lessons from an acute care for elders unit.	Covinsky KE, Palmer RM, Kresevic DM, Kahana E, Counsell SR, Fortinsky RH, Landefeld CS.	Jt Comm J Qual Improv. 1998 Feb;24(2):63-76.			
Status of physiatry and physical medicine and rehabilitation departments in adult level I trauma centers.	Melchiorre PJ.	Arch Phys Med Rehabil. 1998 Jan;79(1):62-6.			
Morning rounds and the search for evidence-based answers to clinical questions.	Schneeweiss R.	J Am Board Fam Pract. 1997 Jul-Aug;10(4):298-300. No abstract available.			
Bedside rounds revisited.	Thibault GE.	N Engl J Med. 1997 Apr 17;336(16):1174-5. No abstract available.			
The effect of bedside case presentations on patients' perceptions of their medical care.	Lehmann LS, Brancati FL, Chen MC, Roter D, Dobs AS.	N Engl J Med. 1997 Apr 17;336(16):1150-5.			
The impact of routine chest radiography on ICU management decisions: an observational study.	Marik PE, Janower ML.	Am J Crit Care. 1997 Mar;6(2):95-8.			
On bedside teaching.	LaCombe MA.	Ann Intern Med. 1997 Feb 1;126(3):217-20.			
An alternative strategy for studying adverse events in medical care.	Andrews LB, Stocking C, Krizek T, Gottlieb L, Krizek C, Vargish T, Siegler M.	Lancet. 1997 Feb 1;349(9048):309-13.			
Patterns of anesthesia and nursing care for interventional radiology procedures: a national survey of physician practices and preferences.	Mueller PR, Wittenberg KH, Kaufman JA, Lee MJ.	Radiology. 1997 Feb;202(2):339-43.			
Residents' question-asking behaviors during work rounds.	Arseneau R.	Acad Med. 1997 Jan;72(1):71. No abstract available.			
Improving laboratory results turnaround time.	Rudat KS, Henry J, Mosley J.	Best Pract Benchmarking Healthc. 1996 Nov-Dec;1(6):301-6.			
Computer reminders to implement preventive care guidelines for hospitalized patients.	Overhage JM, Tierney WM, McDonald CJ.	Arch Intern Med. 1996 Jul 22;156(14):1551-6.			
Housestaff attitudes about work rounds.	Ways M, Kroenke K, Umali J, Buchwald D.	Acad Med. 1996 Feb;71(2):108-9. No abstract available.			
Documentation of the first steps of pediatric pharmaceutical care in a county hospital.	Lal LS, Anassi EO, McCants E.	Hosp Pharm. 1995 Dec;30(12):1107-8, 1111-2.			
Measuring the use of the population perspective on internal medicine attending rounds.	Raik B, Fein O, Wachspress S.	Acad Med. 1995 Nov;70(11):1047-9.			
Breast-feeding in a low-income population. Program to increase incidence and duration.	Brent NB, Redd B, Dworetz A, D'Amico F, Greenberg JJ.	Arch Pediatr Adolesc Med. 1995 Jul;149(7):798-803.			

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Title	Authors	Details	Publication Year	Include / Exclude	Reason
Turning interns into senior residents: preparing residents for their teaching and leadership roles.	Wipf JE, Pinsky LE, Burke W.	Acad Med. 1995 Jul;70(7):591-6. Review.			
Failure of information as an intervention to modify clinical management. A time-series trial in patients with acute chest pain.	Lee TH, Pearson SD, Johnson PA, Garcia TB, Weisberg MC, Guadagnoli E, Cook EF, Goldman L.	Ann Intern Med. 1995 Mar 15;122(6):434-7.			
Teaching medical students complex cognitive skills in the intensive care unit.	Rogers PL, Grenvik A, Willenkin RL.	Crit Care Med. 1995 Mar;23(3):575-81.			
Work rounds data collection.	Richardson WS, Smith LG.	J Gen Intern Med. 1995 Feb;10(2):115-6. No abstract available.			
Resident training in nursing home care: survey of successful educational strategies.	Counsell SR, Katz PR, Karuza J, Sullivan GM.	J Am Geriatr Soc. 1994 Nov;42(11):1193-9.			
Internal medicine program directors' perceptions of resident work rounds.	Boutros A, Della Ratta RK.	J Community Health. 1994 Aug;19(4):231-8.			
Concurrent use of foscarnet and ciprofloxacin may increase the propensity for seizures.	Fan-Harvard P, Sanchorawala V, Oh J, Moser EM, Smith SP.	Ann Pharmacother. 1994 Jul-Aug;28(7-8):869-72.			
The association between residents' work-rounds styles and the process and outcome of medical care.	Ashton CM, Wray NP, Friedland JA, Zollo AJ, Scheurich JW.	J Gen Intern Med. 1994 Apr;9(4):208-12.			
Nursing patient care rounds in the postanesthesia care unit setting.	Clark KL.	J Post Anesth Nurs. 1994 Feb;9(1):20-5.			
Reorganising a hospital ward as an accountable care unit	Stein J, Payne C, Methvin A, Bonsall JM, Chadwick L, Clark D, Castle BW, Tong D, Dressler DD	J Hosp Med 10 (1): 36-40	2015		
Use of a daily goals checklist for morning icu rounds: a mixed methods study	Centofanti JE, Duan EH, Hoad NC, Swinton ME, Perri D, Waugh L, Cook DJ	Crit Care Med 42(8): 1797-803	2014		
	Others				
Improving surgical ward care. Development and psychometric properties of a global assessment toolkit	Hull L, Birnbach D, Arora S, Fitzpatrick M, Sevdalis N	Ann of Surg 2014; 259(5): 904-9	2014		
Structuring ward rounds for learning: can opportunities be created?	Stanley, P	Med Educ 1998 May 32(3) 239-43	1998		

Appendix 3.1 NTS Tools and Domains Overview

Tool Name	Author(s) and Year	Specialty	Team / Individual	Leadership	Team Work	Communication	Situational Awareness	Coordination	Co-operation / Back up behavior	Decision Making	Task Management	Additional aspects	Number of underpinning elements for all domains
OTAS: Observational Teamwork Assessment for Surgery	1. Hull, Arora, Kassab (2011) 2. Russ, Hull, Rout et al 2012 3. Undre, Sevdalis, Healey et al (2007) 4. Undre, Healey, Darzi 2006 5. Sevdalis, Lyons, Healey et al (2009)	Surgery (refinement for urology Undre 2007)	Team	●	●	●	●	●	●				114
OTAS-S: Observational Teamwork Assessment for Surgery - Spanish	Arias, Barajas, Eslava-Schmalbach et al. (2014)	Surgery	Team	●		●	●	●	●				
OTAS -D: Observational Teamwork Assessment for Surgery - German	Passauer-Baieri, Hull, Miskovic et al (2014)	Surgery	Team	●		●	●	●	●				

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ANTS: Anesthetists' Non-Technical Skills taxonomy and behaviour rating scale	1. Flin & Patey (2011) 2. Graham, Hocking & Giles (2010) 3. fletcher, McGeorge, Flin et al (2003) 4. Fletcher, McGeorge, Flin et al (2002) 5. Flin, Fletcher, McGeorge 2003 6. fletcher, flin, mcgeorge 2004 7. flin, patey, glavin 2010	Anaesthetics	Individ-ual		●		●			●	●		15
ANTSdk: Customised Anaethetists' Non-Technical Skills instrument for Danish setting	Jepsen, Spanager, Luk-Jensen et al 2015	Anaesthetics	Individ-ual	●	●		●			●			16
Oxford NOTECHS II (Previously Oxford NOTECHS): Oxford Non-Technical Skills Scale	1. Mishra, Catchpole & McCulloch (2009) 2. Robertson, Hadi, Morgan et al (2014)	Surgery	Team	●	●		●		●	●			
Revised NOTECHS (Non-TECHnical Skills scale)	1. Sevdalis, Davis, Koutantji et al. (2008)	Surgery	Individ-ual	●		●	●		●	●			

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T-NOTECHS: Trauma NOTECHS	1. Steinemann, Berg, DiTullio et al (2012) 2. Lim, Steinemann & Berg (2014)	Trauma		●		●	●		●	●			26 exemplar behaviours
NOTSS: Non-Technical Skills for Surgeons	1. Pugh, Cohen, Kwan et al (2014) 2. Arora, Miskovic, Hul et al (2011) 3. Crossley, Marriot, Purdie et al (2011) 4. Yule, Flin, Maran et al (2008) 5. Yule, Rowley, Flin et al 2009	Surgery	Individ-ual	●	●	●	●			●	●		14
NOTSSdk: Non-Technical Skills for Surgeons (Denmark)	1. Spanager, Lyk-Jensen, Dieckmann et al (2012) 2. Spanager, Beier-Holgersen, Dieckmann (2013)	Surgery	Individ-ual	●	●	●	●			●			13
TEAM: Team Emergency Assessment Measure	1. Cooper & Cant (2014) 2. Cooper, Cant, Porter et al. (2010)	Medical emergencies	Team	●	●						●		
IPETT: Imperial Paediatric Emergency Training Toolkit	Lamden, DeMunter, Dowson et al (2013)	Paediatric Intensive Care (PICU)	Team	●		●			●	●		Technical element score	

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OSCAR: Observational Skill-based Clinical Assessment tool for Resuscitation	Walker, Brett, McKay et al (2011)	Resuscitation	Team	●		●	●	●	●	●			
Crossingham Tool': No specific name given	Crossingham, Sice, Roberts et al. (2012)	Anaesthesia	Individual		●	●	●			●	●		
BMS-NNTS: Behavioural marker system for assessing neurosurgical non-technical skills	Michinov, Jamet, Dodeler et al 2014	Neurosurgery	Individual	●	●		●	●	●	●			
TRENT: Temporal Rating of Emergency Non-Technical skills	Ferguson, Buttery, Mile (2014)	Emergency	Individual									Introduces and interacts with patient, focus on colleagues rather than self, attends and reacts to the environment, avoids taking the lead, offers social support	33
Assessment of EM physicians'	Flowerdew, Gaunt, Spedding et al (2013)	Emergency	Individual		●		●		●	●	●	Supervision	

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non-technical skills													
EPOC: Explicit professional oral communication measurement	Kemper, Noord, de Bruijne (2013)	Emergency Department and Intensive Care	Individ-ual	●	●		●	●			●	Assertiveness	
CTS: Clinical Teamwork Scale	Guise, Deering, Kanki (2008)	Obstetric simulation	Team			●	●			●	●	Other- Patient friendly, OVERALL	
MHPTS: Mayo High Performance Teamwork Scale	Malec, Torsheer, Dunn et al (2007)		Team										19
MSF for Ward rounds: Multi-source feedback tool to assess ward round leaderhsip skills of senior specialist trainees	1. Lakshminarayana, Wall, Bindal et al (2015) 2. Goodyear,Lakshminarayana, Wall et al 2015	Paediatrics	Individ-ual		●	●					●	Teaching and enthusiasm, Punctuality	
T-SAW-C: Teamwork Skills	Hull, Birnbach, Arora et al 2014	Surgery	Team	●		●	●	●	●	●			

PA CONFIDENTIAL – Internal Use Only

Assessment for Ward Care													

PA CONFIDENTIAL – Internal Use Only

Appendix 3.2.

Tool Name	Author(s) and Year	Validity			Reliability				Feasibility and acceptability
		Content	Concurrent	Construct	Inter-rater	Test-retest	Internal consistency	Generalisability	
OTAS: Observational Teamwork Assessment for Surgery(1,2)	1. Hull, Arora, Kassab (2011) 2. Russ, Hull, Rout et al 2012 3. Undre, Sevdalis, Healey et al (2007) 4. Undre, Healey, Darzi 2006 5. Sevdalis, Lyons, Healey et al (2009)	Surgical expert panel (n=15); Operating room patient safety expert panel (n=3); measure of exemplars observed leading to removal or modification of exemplars ICC 0.64-0.77 (p<0.001) and across OR personnel 0.87-0.91 (p<0.001) with good IRR κ≥0.41 and percentage agreement ≥for 109 of 130 exemplars (Hull Arora Kassab 2011). Expert/expert and expert/novice scorers with overall size of scoring inconsistency 2% and 15% respectively (sevdalis 2009)		Yes	IRR - surgeons 0.91, anaesthetists 0.91, and nurses 0.87 (p<0.001)Hull Arora 2011; Inter-rater agreement was also high ≥0.68 (Russ); ICC 0.40-0.90, some significance, across all raters (phitayakorn 2014)		Leadership, communication and coordination ICC >0.7; coordination and team monitoring were 0.67 and 0.64 respectively (p<0.001) Hull Arora 2011.		Initial feasibility studies at beginning of tool assessment (Undre, Healey, Darzi 2006, Healey, Undre Vincent 2004)); 22.54+/-22.1min (Longest tested) [Phitayakorn, Minehart 2014]
OTAS-S: Observational Teamwork Assessment for Surgery - Spanish	Arias, Barajas, Eslava-Schmalbach et al. (2014)	Yes - panel of experts (n=8)			Weighted Kappa testing - Kw=0.602; 95% IC: 0.581-0.620				
OTAS -D: Observational Teamwork Assessment for Surgery - German	Passauer-Baieri, Hull, Miskovic et al (2014)	Translation, adaptation and refinement process							
ANTS: Anesthetists' Non-Technical Skills taxonomy and behaviour rating scale	1. Flin & Patey (2011) 2. Graham, Hocking & Giles (2010) 3. fletcher, McGeorge, Flin et al (2003) 4. Fletcher, McGeorge, Flin et al (2002) 5. Flin, Fletcher, McGeorge 2003 6. fletcher, flin, mcgeorge 2004 7. flin, patey, glavin 2010	Interview study, literature review, critical incident analysis, observations, surveys (4-6); results of a survey of all consultants taking part on tool content, completeness and relevance was very positive (fletcher, flin, mcgeorge glavin, maran, patey 2003)	Good accuracy scores with raters scores compared to reference range>88%; mean absolute deviation from reference i.e. error score 0.49-0.84 showing significant variation between elements but only minor differences		8 hours training given to novice assessors/ senior anaesthetists; intra-class correlations of r>0.7 not reached; poor agreement on scores, Cornbach's alpha [Graham]; rwg=0.55-0.67 at element level, 0.56-0.65 at category level (Fletcher , flin,		ICC for each element 0.11-0.62 [Graham]; ICC Cronbach alpha 0.79-0.86 (fletcher, flin, mcgeorge glavin, maran, patey 2003)		Time to complete 12.9+/-8.7min [Phitayakorn, Minehart 2014]; results of a survey of all consultants on tool usability taking part in initial testing (n=50) was very positive (fletcher, flin, mcgeorge glavin, maran, patey 2003)

Appendix 3.2: Tool Reliability and validity table

			between boundaries (Fletcher , flin, mcgeorge, glavin 2003		mcgeorge, glavin 2003); ICC 0.17-0.57 (<0.7) across all raters (phitayakorn 2014)				
ANTSdk: Customised Anaesthetists' Non-Technical Skills instrument for Danish setting	Jepsen, Spanager, Luk-Jensen et al 2015	Discussion with anaesthetists across 17 centres; in depth multi-professional group interviews							
Oxford NOTECHS II (Previously Oxford NOTECHS): Oxford Non-Technical Skills Scale	1. Mishra, Catchpole & McCulloch (2009) 2. Robertson, Hadi, Morgan et al (2014)		1. Inverse correlation between NOTECHS score and surgical errors ρ=-0.267, n=65, p=0.045, and strong correlation with OTAS scors (n=5, r+0.886, p=0.046) [Mishra] 2. Correlation with 'glitch count' was weak 0.26 (95% CI-0.36 to -0.15)and good with WHO checklist compliance	Improved scores after training (t=-3.019, p=0.005)	1. rwg 0.99 with two observers [mishra 2009] 2. Good IRR between human factors and clinical observers in each of 4 domains {Robertson 2014]	Acceptable with no difference in mean NOTECHS scores during 3 pre-intervention periods (ANOVA F(2,1)=1.341, p=0.281) or in 3 post-intervention sessions (ANOVA F(2,1)=1.028, p=0.386) p values > 0.05 [Mishra]			
Revised NOTECHS (Non-TECHnical Skills scale)	1. Sevdalis, Davis, Koutantji et al. (2008)						Cronbach's alpha acceptable across all groups, in separate analyses for trainers and trainees, in successive administrations of the scale, and in the professional sub-groups analysed separately (>0.7)		
T-NOTECHS: Trauma NOTECHS	1. Steinemann, Berg, DiTullio et al (2012) 2. Lim, Steinemann & Berg (2014)	Trauma panel input, literature review	Better T-NOTECHS scores were correlated with better performance during simulations, evidenced by greater number of completed resuscitations and faster resuscitations; also improvement after training		IRR for small teams was good (ICC=0.6)but for large teams poor (0.29) (Lim Steinemann 2014)		ICC 0.44 for simulated and 0.48 for actual resuscitations		

Appendix 3.2: Tool Reliability and validity table

NOTSS: Non-Technical Skills for Surgeons	1. Pugh, Cohen, Kwan et al (2014) 2. Arora, Miskovic, Hul et al (2011) 3. Crossley, Marriot, Purdie et al (2011) 4. Yule, Flin, Maran et al (2008) 5. Yule, Rowley, Flin et al 2009	Questionnaire by assessors; 75% agreed NOTSS provided a common language for assessing NTS, and found it easy to assess interpersonal domains; only 54% found it easy to assess cognitive domains [Corssley 2011); Gaps noted in comparison with Cannon-Bowers Scale - critical team errors, individual team member contributions, task performance, overall team performance [Pugh 2014]; Interview study conducted [Yule, Flin 2006)	4 out of 5 items had significant correlation with Cannon-Bowers Scale; 0.9-1.0, P<0.05)[Pugh 2014]; all 4 domain scores significantly positively correlated with the Procedure Based Assessment global summary score; Pearson's coefficient was 0.43-0.55 (P<0.001); all 4 domains significantly positively correlated with the generic part of the Observational Teamwork Assessment for Surgery (OSATS) score; Pearson's coefficients 0.4-0.58 - decision making most strongly correlated with technical performance [Crossley 2011]; good correlation with PBA, & OSATS with strongest correlation in decision making (Beard 2011)	All 4 NOTSS domains, there was a positive correlation with experience as determined by ST level and years of UK training (p< 0.0125); valid internal structure and correlation with experience and level of training found (Beard 2011)	Spearman p correlation p=0.684, p<0.05 [Arora 2011]; Within group agreement (rwg) acceptable for Communication and Teamwork (0.70), and Leadership (0.72), low IRR for Task Management and hence removed from Tool [Yule, Flin, Maran 2008 World J surgery); novice versus expert raters - comparison of mode rating - novice the same as expert in 50% of ratings - therefore novices need significant training [Yule, Rowley, Flin et al 2009]; ICC 0.12-0.83 (mostly <0.7) across all raters (phitayakorn 2014)		Assessor scores compared to reference scores; above 60% accuracy for all categories; ICC - high agreement using average measures (values were .95-.99); consistency between category rating and ratings for 2 or 3 underling elements was high (M<0.25 of a scale point between element and category on a 4 point scale) [Yule, Flin, Maran 2008]	G study - ability of trainee being assessed greatest impact on score (30.9% of score variance); stringency or leniency of assessor and subjectivity of assessors (partiality) contributed significantly (27.0% and 20.1% of score variance respectively); D study shows that reliability of trainers scores increased when they were based on several cases or several assessors' scores; 8 assessors, each assessing a single case, would be required to achieve a G coefficient of 0.8 or more [Crossley 2011]; G study - 6 six assessors needed for reliability G>0.8), reliability for a mix of procedures only needed 8 assessors (Beard 2011)	Mixed responses to feasibility study: tool gives a structure and language to rate trainee, and give feedback but difficult to understand some behavioural descriptors and difficult to rate cognitive categories; some routine operations difficult to assess decision making (Yule, Flin, Maran 2008). Difficult to access clinicians time for introduction and training, when consultants intervened assessment became difficult, scheduling difficulties, need to prioritise clinical work over assessments (Crossley 2011); mixed responses to questionnaire on adequacy of training and perceived training, easier to assess interpersonal skills than cognitive skills, split responses on any affect on patient safety (beard, marriott 2011); Majority perceived NOTSS to be useful in supporting insight (84% n=47) and for supporting feedback (70% n=39); 70% thought NOTSS was an important adjunct to surgical training; 45% felt routine use of NOTSS would enhance patient safety (crossley 2011); 10.1+/-6.7 mins [Phitayakorn, Minehart 2014]; pilot study for implementation in obstetrics - disappointing number of evaluations carried out but feedback was positive with average time for completion 10 minutes, but barriers to implementation noted (Jackson 2014)
NOTSSdk: Non-Technical Skills for Surgeons (Denmark)	1. Spanager, Lyk-Jensen, Dieckmann et al (2012) 2. Spanager, Beier-Holgersen, Dieckmann (2013)	Expert panel (n=12); Correlation analyses using Pearson's correlation coefficient 0.95			Cronbach alpha 0.96 (element) and 0.97 (category); Post-training 0.97		Pearsons correlation coefficient=0.95 for	G study and D study; demonstrates that 2 untrained or 1	Qualitatively assessed; study on feedback style facilitated by NOTSSdk (Spanager 2015);

Appendix 3.2: Tool Reliability and validity table

					(element) and 0.98 (category)		category and element scores	trained was necessary to obtain a generalisability coefficient >0.8 [????]; assessment of 5 procedures were sufficient to gain reliable ratings of trainees' NTS, generalisability coefficient >0.80	Qualitatively assessed; ratings for usefulness and comprehensiveness of feedback was above average/high for both trainees and supervisors; ratings varied more for contextual factors 'time pressure involved in the feedback' and 'difficulty of the operation'; comments indicated that tool directed their attention to issues not usually covered in feedback and gave occasion and structure for a neutral and systematic approach (Spanager 2015)
TEAM: Team Emergency Assessment Measure	1. Cooper & Cant (2014) 2. Cooper, Cant, Porter et al. (2010)	Expert rating	Significant association with OSCAR tool; r=0.74; p<0.0001 ???r=rho	Uni-dimensional - correlations measured using non-parametric statistics (Spearman's Rho)	Kappa 0.55; Intra-class correlation coefficients 0.6	Kappa 0.53	Cronbach alpha >0.9		Positive feedback, completed in less than a minute
IPETT: Imperial Paediatric Emergency Training Toolkit	Lamden, DeMunter, Dowson et al (2013)	Correlational analyses; Spearman's rho: median correlation rho=0.549 P<0.05; highest correlations between leadership and decision making skills and between communication and cooperation skills	Correlation of technical with non technical components; Spearman's rho coefficient rho=0.471, P<0.05				Cronbach alpha >0.7 for all 4 skills		
OSCAR: Observational Skill-based Clinical Assessment tool for Resuscitation (OSCAR): Development and Validation	Walker, Brett, McKay et al (2011)	Expert panels; computation of mean and standard deviation scores with follow-up discussions			Intra-class correlation results 0.652 to0.911		Cronbach alpha 0.736 to 0.965		
Crossingham Tool': No specific name given	Crossingham, Sice, Roberts et al. (2012)				Quadratically weighted multi-rater kappa; poor in first year but improved during training, but poor in second round of testing			Generalisability coefficients; G coefficients 0.5 (2007-8) and 0.42 (2008-9) therefore poor	
BMS-NNTS: Behavioural marker system for assessing	Michinov, Jamet, Dodeler et al 2014	Literature review and review of other tools in literature			ICC 0.72 (CI 0.38-0.89, P<0.001)/ 0.70 (CI 0.33-0.87, P<0.001); very poor				

Appendix 3.2: Tool Reliability and validity table

neurosurgical non-technical skills					ICC for decision making 0.16 (first operation), 0.68 (second operation testing)				
TRENT: Temporal Rating of Emergency Non-Technical skills	Ferguson, Buttery, Mile (2014)	Review of published tools, pilot tstudy and faculty discussion			Inter-rater reliability very variable across all 5 domains except 'social support' (0.03); no agreement between self and peer assessments; mean score comparison for peer and self-assessments using a one way between groups ANOVA shows that while self-assessment for positive behaviours were significantly higher than peer, and lower for negative behaviours, there were no significant differences across the two peers' ratings				
Assessment of EM physicians' non-technical skills	Flowerdew, Gaunt, Spedding et al (2013)	Literature review, examination of relevant curricula, interviews with ED staff and a series of observations; All skills observed more than 50% of time (author quoted level of acceptability for observability)			Intra-class coefficient; scale level 0.419 to 0.575, mean scores 0.519 to 0.824 with large confidence intervals	Spearman's rho; individual skills 0.26, mean scores 0.7			
EPOC: Explicit professional oral communication measurement	Kemper, Noord, de Bruijne (2013)	Expert consultation (not a panel)					ICC in ED 0.70-0.91, in ICU 0.53-0.95 (self category is an exception in both cases); LOA (limits of agreement) lengthy calculations and difficult due to small numbers in ED but in summary small values, reflecting small variation		
CTS: Clinical Teamwork Scale	Guise, Deering, Kanki (2008)			Scores from raters	Overall item score correlation between				Good 'completeness' (ie how many elements

Appendix 3.2: Tool Reliability and validity table

				corresponded with the a priori designed teamwork level for each scenario	raters - excellent with Pearson correlation coefficient between 0.94-0.96; ICC of interrater reliability 0.98 (95% CI 0.97-0.99); overall agreement among raters was substantial Kappa=0.78				completed) and accuracy scores
MHPTS: Mayo High Performance Teamwork Scale	Malec, Torsheer, Dunn et al (2007)			Statistically significant improvement in score for pre-training and post-training			Rasch analysis, Cronbach's alpha 0.83		
MSF for Ward rounds: Multi-source feedback tool to assess ward round leaderhsip skills of senior specialist trainees	1. Lakshminarayana, Wall, Bindal et al (2015) 2. Goodyear,Lakshminarayana, Wall et al 2015	Interview study and questionnaire		No difference shown in scores by seniority by Mann-Whitney or general linear mixed model; no difference in subsequent scoring after more experience but some improvement shown in qualitative remarks (?? Any training or just more ward rounds)	Self assessment was significantly lower than assessors		Cronbach alpha 0.84 on field testing	G coefficients 0.73, 0.8, 0.84 for 2, 3, 4 assessors respectively showing reliable results obtained with 3 assessors	
T-SAW-C: Teamwork Skills Assessment for Ward Care	Hull, Birnbach, Arora et al 2014	Literature review, expert panel, previous tools	Correlation with C-SAW-C and Physician-patient interaction global rating scale Pearson co-correlation coefficients ρ=0.73-0.92, P<0.001		ICC=0.99 for all 6 domains		Cronbach alpha 0.87-0.94 across 6 domains		

Service Evaluation Registration Form

Please complete this form and click save, then send to service.evaluation@imperial.nhs.uk - it will be stored by the Quality & Safety Team and you will receive an email with a unique ID number. This should be quoted in future correspondence relating to the project.

Title **_Do senior medical registrars feel consultant-led post take ward rounds support their training?**

Planned Start Date _1st November__2014___ Planned Completion date __April 2016__

What is the purpose of the Service Evaluation?

The aims to this project are twofold. Primarily this study will be explorative into the current situation of post take ward rounds, and secondly, it is to develop an intervention/ training tool to prepare trainees for this element of their consultant role. More specifically, the aims are as follows:

- **To examine how can we instil the required leadership skills in medical registrars to better prepare them for consultant work and responsibilities, in particular on post take ward rounds;**
- **To identify the gaps/problems in the leadership of medical post take ward rounds;**
- **To improve training to address these gaps.**

What will the project involve doing?

I plan to conduct an interview study of medical consultants (novice and experienced) and patients on the subject of post take ward rounds, and the ward rounds good points, bad points and frustrations and what the interviewee feels is their priority for the ward round. I will then analyse the interview transcripts using thematic/coding analysis. The interviews will be anonymised and completely confidential, and the transcripts and audio will be stored securely electronically.

I also plan to further develop a post take award round simulation to use as a training tool but also to use the video analysis of registrars, novice and experienced consultants doing the simulated ward round to further explore my research questions. Alongside this I will be developing a formative appraisal tool to be used to train and give facilitate feedback for senior registrars in preparation for their consultant posts. Both of these processes will be iterative using the video analysis results and the results from the interview study. The 'patients' in the simulation will be experience professional actors. I will then conduct a feasibility study of using the tool on the wards, which will involve observation, and questionnaires for trainees, consultants and patients. The results of the training will not lead to a change in practice but will be used to support personal development on an individual trainee level.

I have attached my full MD plan for your information.

Does this involve a change of practice for the following Groups?

Nursing Yes No If Yes, Nursing and Midwifery Lead: _____No_____
Medical Staff Yes No If Yes, Chief of Service/Divisional Lead: _____NO_____

Have any training issues been addressed and documented? Yes – this project is aimed at evaluating current post take ward rounds from various stakeholders point of views. It is then aimed at developing training to better prepare senior medical registrars for their consultant posts.

Have any costs/financial issues been addressed? Funding is being supplied by the Lead Provider Office

Does this project impact on other Divisions? No
If Yes, for each Division affected please give the email of the member of staff consulted (they will receive an email copy of this document):

Division	Staff email	Division	Staff email	Division	Staff email
____	_____	____	_____	____	_____

Does the use of any patient or staff identifiable information adhere to IG Policy? Yes
If any concerns or outstanding issues contact InformationGovernanceAdvice@imperial.nhs.uk and/or complete Information Governance Review Form

Please give the name and date of the forum (eg Divisional Q&S Committee) where this project proposal was presented

Name __N/A_____ Date _____N/A_____

Manager approving (they will receive an email and copy of this form)

Name __Colin Mitchell and Geoff Smith, Nick Sevdalis__ Position _____Consultants__and Reader in Patient Safety Email ___via Trust email__
colin.mitchell@imperial.nhs.uk, geoff.smith@imperial.nhs.uk, n.sevdalis@imperial.ac.uk

Your details

Name _Suzanne Pomfret_ Position SPR/Education Fellow_ Email suzanne.pomfret@imperial.nhs.uk

Trust Quality & Safety review

Name David Jones Position CE Manager

Signed sent by email Date 25th November 2014

Service Evaluation Registration Form

Please complete this form and click save, then send to service.evaluation@imperial.nhs.uk - it will be stored by the Quality & Safety Team and you will receive an email with a unique ID number. This should be quoted in future correspondence relating to the project.

Title **_Leadership on Medical Ward Rounds – Patient perspective**

Planned Start Date _1st January__2014___ Planned Completion date __April 2016__

What is the purpose of the Service Evaluation?

The aims to this project are twofold. Primarily this study will be explorative into the current situation of post take ward rounds, and secondly, it is to develop an intervention/ training tool to prepare trainees for this element of their consultant role. More specifically, the aims are as follows:

- **To examine how can we instil the required leadership skills in medical registrars to better prepare them for consultant work and responsibilities, in particular on post take ward rounds;**
- **To identify the gaps/problems in the leadership of medical post take ward rounds;**
- **To improve training to address these gaps.**

What will the project involve doing?

There will be an interview study of medical consultants carried out to correlate to a previous project involving medical registrars (Service evaluation Form SE85).

For this registration form, I am focussing on my plan involving patient interviews in order to evaluate their view on medical post take ward rounds.

I plan to conduct an interview study of medical patients on the subject of post take ward rounds, and the ward rounds' good points, bad points and frustrations and what the interviewee feels is their priority for the ward round. The interviews will be recorded, and there will be no use of names on the recording. I will then analyse the interview transcripts using thematic/coding analysis. The interviews will be anonymised and completely confidential, and the transcripts and audio will be stored securely electronically. I will gain both verbal and written consent for the interviews and the patients will be able to withdraw their consent at any point. I will double check their consent on tape at the end of the interview so that consent can again be withdrawn after the discussion.

I will approach patients on the Medical Admission Wards as they wait for the consultant ward round, and after the ward round.

I also plan to further develop a post take award round simulation to use as a training tool but also to use the video analysis of registrars, novice and experienced consultants doing the simulated ward round to further explore my research questions. Alongside this I will be developing a formative appraisal tool to be used to train and give facilitate feedback for senior registrars in preparation for their consultant posts. Both of these processes will be iterative using the video analysis results and the results from the interview study. The 'patients' in the simulation will be experience professional actors. I will then conduct a feasibility study of using the tool on the wards, which will involve observation, and questionnaires for trainees, consultants and patients. The results of the training will not lead to a change in practice but will be used to support personal development on an individual trainee level. No real patients will be used for this part of the project. The conclusions form the interview study of consultants and patients will be used to inform the simulation and tool development but there will be no further direct involvement of patients.

I have attached my full MD plan for your information.

Does this involve a change of practice for the following Groups?

Nursing	Yes	No	If Yes, Nursing and Midwifery Lead: _____No_____
Medical Staff	Yes	No	If Yes, Chief of Service/Divisional Lead: _____NO_____

Have any training issues been addressed and documented? Yes – this project is aimed at evaluating current post take ward rounds from various stakeholders point of views. It is then aimed at developing training to better prepare senior medical registrars for their consultant posts.

Have any costs/financial issues been addressed? Funding is being supplied by the Lead Provider Office/ LETB

Does this project impact on other Divisions? No
If Yes, for each Division affected please give the email of the member of staff consulted (they will receive an email copy of this document):

Division	Staff email	Division	Staff email	Division	Staff email
____	_____	____	_____	____	_____

Does the use of any patient or staff identifiable information adhere to IG Policy? Yes
If any concerns or outstanding issues contact InformationGovernanceAdvice@imperial.nhs.uk and/or complete Information Governance Review Form

Please give the name and date of the forum (eg Divisional Q&S Committee) where this project proposal was presented

Name __N/A_____ Date _____N/A_____

Manager approving (they will receive an email and copy of this form)

Name __Colin Mitchell and Geoff Smith, Nick Sevdalis__ Position _____Consultants__and Reader in Patient Safety Email ___via Trust email__
colin.mitchell@imperial.nhs.uk, geoff.smith@imperial.nhs.uk, n.sevdalis@imperial.ac.uk

Your details

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Trust Quality & Safety review

Name David Jones Position CE Manager

Signed sent by email Date

Appendix 4.3 Reflexive diary for Patient Interviews

This is a summary of my reflections in first person of the interview process for patient interviews and the analysis for both patient and consultant interviews (another researcher carried out the consultant interviews when I was unwell in my pregnancy). I had previously carried out a small interview study for my Masters dissertation. This was my second experience of carrying out interviews and it was with patients.

Interviewing patients was the highlight of my research project. During my research time, I have missed my time with patients and this gave me an opportunity that I do not have during clinical practice – to ask patients some questions about what they would like regarding their care in hospital.

The first step was developing the interview protocol. I knew this had to be easy to undertsand and free from jargon but actually one of the first problems was that I realised many patients would have no experience of what a ward round is or any understanding of it. How was I going to introduce a subject that they may have no knowledge of, without leading them? I had the advice of a patient representative within a research group that I was linked with. She went one step further and said that I was going to struggle completely with this line of questioning, although she agreed that it was important to try. She went through the protocol with me and we amended it accordingly, and had a couple of back up explanations and questions to help clarify if necessary. Her pessimistic outlook was shared by the medical consultants who I spoke to and also to some research pyschologists who had great experience in interviewing but not necessarily patients. The outlook looked pessimistic, and I was warned that patients may not want to be involved, and the logistics of interviewing patients on an acute medical ward may not be possible. However, I have always enjoyed speaking to patients and I have always felt that they enjoyed speaking to me and I felt it was important to give them more credit and try my pilots in the manner I had intended.

The ethics team at Imperial College/NHS deemed the project a service evaluation and I finalised my protocol and set out for my first day of interviewing. I chose a weekend as the wards are less busy and having listened to the words of those who I had sought advice from. PTWRs happen early and so this meant starting very early to try and interview patients prior to the ward round. I also had to find the night team to get a list of patients admitted overnight. I arrived at Charing Cross Hospital on a cold wintery Saturday morning. I have not worked at Charing Cross or St Mary's as a medical registrar and had forgotten how long it takes to work out how different hospitals operate. With the help of the nurses on the acute ward, I located the night registrar and was given a list of patient who were well enough, not cognitively impaired and who spoke English.

I approached my first patient. She immediately said yes despite the early hour (07.00). She had not been in hospital before and so this was a good place to start for me as a pilot interview. The interview went smoothly and she enjoyed it. I had to explain what a ward round was in practical terms (the time the doctors and clinical staff come round to see all the patients admitted overnight to check on progress and reasons for admission and a plan going forward). This is difficult because as an interviewer you are there to explain but not lead a participant in any way. I am a doctor who takes part in ward rounds and as such I am naturally biased and it seemed important to acknowledge this from the outset. Anything other than this would be artificial, and I believe that a natural flow to a conversation especially a patient is also important in order to make a participant feel relaxed and to get them to talk as much as possible to get a richer data set. However, this is definitely the element of this project that I found the most difficult, and I know that I did not get it quite right

when I was listening to the interviews during the analysis process. It is a skill sthat I wish to develop going forward because I feel that interviewing patients about hospital processes gives us an insight that is too often ignored. Interestingly, only one patient asked declined to take part in the study, and this patient was a doctor themselves. Everyone else was very enthusiastic and willing participants.

The next issue was logistics. Having previously tried to record a conversation on the ward during a weekday morning, the weekends were definitely quieter and made the recording easier. The Dictaphone was a simple small model but did need to be positioned close to the interviewer and participant. This was good because it enabled an immediate rapport and the Dictaphone or recording equipment did not affect the flow of the interview on the whole. It was easier to locate the night team at the weekend as there are fewer doctors present on the acute ward at the weekend. I was also much more conspicuous as an additional body on the ward but after an introduction to the nurse in charge and ensuring that I wore my ID at all times, this was not a problem. I did however, find that I often needed to sit on a patient's bed to ensure an intimate close, private, conversation. Sitting on patients' beds is not encouraged in today's medicine, and so this was one practical point. However, permission was always sought from the patient concerned and often no chair was available.

The second problem was breakfast. Breakfast is served between 7-8am in most hospitals – my prime interviewing time. However, patients regularly asked to continue despite breakfast, or were happy to wait until after the interview despite assurances that I could return afterwards. I think, although I clearly do not know, that many f them enjoyed the company and a change from the standard hospital experience. They also seemed to really think that they were doing something to help the hospital. I was also there to help facilitate the breakfast ordering process. Having been present for most patients at this time, and knowing that the patients that I was with were not the cognitively impaired population, I realised that the process is a tricky one to navigate. It is quite easy to not realise that you are being asked what you would like for breakfast, so actually my presence enabled many to have both a hot drink and understand the choices available.

Another logistical point was that I was always conscious of time. I needed to get the interviews done prior to the ward round team appearing to review that patient. I did not want to interfere in the ward round process or delay hospital proceedings. This no doubt meant that at time, I did not explore a topic or an answer as much as I should have. I knew that it was going to take several weekend days to get enough patients to reach saturation of themes. However, I did aim to try and interview 2 patient at least on each day I was interviewing. One patient interview had only just commenced and the ward round team arrived and so I conducted most of the ward round after the ward round. Interviewing in a hospital environment, especially patient, did involve adaptability but this adaptability was easy to achieve and the data achieved from the study was worth it.

Aside from the practical logistics, there was the interview process itself. There was the difference between those who knew and understood ward processes well on account of previous admissions, and those naïve to the in-patient experience. With a good grounding in quantitative research and the need for standardisation, this was difficult to acknowledge at first. However, it was a fact that could not be changed about the interview process and I had to accept this and move on. The number so often interviews are not chronological, but more the random order that they were analysed in the first round of coding. It can be seen from the difference between Interview 12, one of the first pilot patients, and interview 13, a much later patient, that my questioning and interview style had improved with just small amount of experience. I interrupted less and used less leading questions. The use of leading questions is difficult when patients are unfamiliar with the experience.

An experienced interviewer would have ways of dealing with this and I got better in a short space of time but I would definitely like to watch an experienced interviewer interviewing patients going in the future to develop ways of ensuring that leading questions are minimised.

An example of this was the surprise response of many patients that they did not mind the seniority of the doctor. In the style of iterative literature, the protocol was developed to include this question, if the interviewee did not bring the subject up. I tried my best to not lead a patient on this subject, but in order to clarify understanding of responses, I did need to be explicit on whether they were discussing senior doctors or any doctors to enable analysis of this theme. This often meant that I clarified the point in various different ways to ensure understanding.

There was also a problem with understanding patients with strong accents or those patients who did not speak English as a first language. It was difficult face to face but was definitely more difficult on tape for transcribing. One patient was so difficult to understand that I found myself repeating a lot of what he said for clarity on the tape. Another problem was that these patients are unwell. That is the reason that they are in hospital. One interview (interview 15 which is not included) was abandoned as the patient was too breathless to continue. Another interview had to be curtailed for pain which developed during the interview. Here it is very difficult, to not be a doctor, and ethically, it is my duty to be a doctor especially if the clinical picture changes and especially in the situation of a deteriorating clinical picture. I had to ensure a nurse was present while I fetched one of the medical team. I could not initiate treatment or assess a patient as I did not work clinically at the hospital, and luckily did not encounter an emergency during my interviews. I think it will be worth thinking about what you would do in this situation, if I do continue to interview patients. The fact that I could help with drinks, breakfast and getting more blankets and pillows was not a challenge but a bonus in my eyes and this did not change the flow or quality if the interviews.

Interview 14 posed another problem. She was not chatty. She was very young and had her mother and sister present. Despite this being one of the last interviews during the study, it was difficult to get answers to the questions without direct questioning but I think I manged a direct questioning approach without leading the patient.

I know that I need to develop my interviewing skills further to proceed with interview studies. It is a skills that I wish to build on and I feel that my experience to date has been a brilliant foundation. I have learnt so much and improved during the process and most of all enjoyed the interview process. It is an invaluable research method. A MD/PhD is a learning process as much as it is about the subject matter and the interview study has been a steep learning curve that I hope to build on in my academic career in the future.

Service Evaluation Registration Form

Please complete this form and click save, then send to service.evaluation@imperial.nhs.uk - it will be stored by the Quality & Safety Team and you will receive an email with a unique ID number. This should be quoted in future correspondence relating to the project.

Title **_Leadership on Medical Ward Rounds – Patient perspective**

Planned Start Date _1st January__2014___ Planned Completion date __April 2016__

What is the purpose of the Service Evaluation?

The aims to this project are twofold. Primarily this study will be explorative into the current situation of post take ward rounds, and secondly, it is to develop an intervention/ training tool to prepare trainees for this element of their consultant role. More specifically, the aims are as follows:

- **To examine how can we instil the required leadership skills in medical registrars to better prepare them for consultant work and responsibilities, in particular on post take ward rounds;**
- **To identify the gaps/problems in the leadership of medical post take ward rounds;**
- **To improve training to address these gaps.**

What will the project involve doing?

There will be an interview study of medical consultants carried out to correlate to a previous project involving medical registrars (Service evaluation Form SE85).

For this registration form, I am focussing on my plan involving patient interviews in order to evaluate their view on medical post take ward rounds.

I plan to conduct an interview study of medical patients on the subject of post take ward rounds, and the ward rounds' good points, bad points and frustrations and what the interviewee feels is their priority for the ward round. The interviews will be recorded, and there will be no use of names on the recording. I will then analyse the interview transcripts using thematic/coding analysis. The interviews will be anonymised and completely confidential, and the transcripts and audio will be stored securely electronically. I will gain both verbal and written consent for the interviews and the patients will be able to withdraw their consent at any point. I will double check their consent on tape at the end of the interview so that consent can again be withdrawn after the discussion.

I will approach patients on the Medical Admission Wards as they wait for the consultant ward round, and after the ward round.

I also plan to further develop a post take award round simulation to use as a training tool but also to use the video analysis of registrars, novice and experienced consultants doing the simulated ward round to further explore my research questions. Alongside this I will be developing a formative appraisal tool to be used to train and give facilitate feedback for senior registrars in preparation for their consultant posts. Both of these processes will be iterative using the video analysis results and the results from the interview study. The 'patients' in the simulation will be experience professional actors. I will then conduct a feasibility study of using the tool on the wards, which will involve observation, and questionnaires for trainees, consultants and patients. The results of the training will not lead to a change in practice but will be used to support personal development on an individual trainee level. No real patients will be used for this part of the project. The conclusions form the interview study of consultants and patients will be used to inform the simulation and tool development but there will be no further direct involvement of patients.

I have attached my full MD plan for your information.

Does this involve a change of practice for the following Groups?

Nursing	Yes	No	If Yes, Nursing and Midwifery Lead: _____No_____
Medical Staff	Yes	No	If Yes, Chief of Service/Divisional Lead: _____NO_____

Have any training issues been addressed and documented? Yes – this project is aimed at evaluating current post take ward rounds from various stakeholders point of views. It is then aimed at developing training to better prepare senior medical registrars for their consultant posts.

Have any costs/financial issues been addressed? Funding is being supplied by the Lead Provider Office/ LETB

Does this project impact on other Divisions? No
If Yes, for each Division affected please give the email of the member of staff consulted (they will receive an email copy of this document):

Division	Staff email	Division	Staff email	Division	Staff email
____	_____	____	_____	____	_____

Does the use of any patient or staff identifiable information adhere to IG Policy? Yes
If any concerns or outstanding issues contact InformationGovernanceAdvice@imperial.nhs.uk and/or complete Information Governance Review Form

Please give the name and date of the forum (eg Divisional Q&S Committee) where this project proposal was presented

Name __N/A_____ Date _____N/A_____

Manager approving (they will receive an email and copy of this form)

Name __Colin Mitchell and Geoff Smith, Nick Sevdalis__ Position _____Consultants__and Reader in Patient Safety Email ___via Trust email__
colin.mitchell@imperial.nhs.uk, geoff.smith@imperial.nhs.uk, n.sevdalis@imperial.ac.uk

Your details

Name _Suzanne Pomfret_ Position SPR/Education Fellow_ Email suzanne.pomfret@imperial.nhs.uk

Trust Quality & Safety review

Name David Jones Position CE Manager

Signed sent by email Date

Appendix 4.3 Consultant Theme Table

THEMES	SUB-THEMES	ILLUSTRATIVE QUOTATIONS
Observational learning	Unacknowledged learning	I suppose you hope that you, you- I can certainly remember thinking that my bosses were doing a good job and getting to the nitty-gritty quite quickly and learning from that without any formal teaching so I hope that maybe the registrars are getting the same advantage from the variety of people that they interact with. Er, and I think some of the learning that takes place… is invisible. So I think you do learn by osmosis and experience and interacting with people without necessarily the formality of a training process, er, but it's all a bit invisible. G I think that's largely observational because it's unusual to stand the Registrar aside and say, "So I have – what I've just done is send the House Officer to do the death certificate and told this House Officer that they have to stay and write in the notes and you – I'll give your bleep to the Day Reg who's –" I mean that is observational isn't it? C I think it's always been a training opportunity. Whether or not training has always occurred is a different matter, but the opportunity is definitely there… … I suppose it depends on how you define training, er… just the process of being on a post take ward round, even if no specific intention of training is being done, is I suppose training. C
	Role Modelling	I do think it's a valuable training opportunity and I think um really it's about – at that stage it's about the Registrar modelling themselves on the Consultant or seeing – you know they're about to become a Consultant so it's about learning how to do things, taking the good and not so good things from that Consultant that they're with um… and thinking about it on their own a little bit, rather than it being a sort of, "Let me teach you about this condition whilst we're doing the post-take ward rounds" if that makes sense? …. because it's all about developing your own way of doing it and as I said, learning the good things and the not so good things from other people. A … the consultation, erm, managing patient er, information transfer be-, between the patient and the team backwards and forwards, erm, erm, they, they can certainly see where that goes badly and often you learn where it goes badly erm, what you could better in the future.

		B I think it is very useful to learn by example, so on the post take ward round, they will see um different styles of different consultants, of how to approach the patient, err both from just the rapport point of view err but also how they approach the acute medical problem as well, um and certainly because they do post take ward rounds with many different consultants, I think that is very useful. F You know, a lot of registrars can teach me the latest... you know, the latest drugs or the latest medication or the latest way of managing things so I know I'm, I'm somewhat reliant on them to tell me the latest, but I hope in a sense they, they, they, they pick up something which you can't pick up in a textbook from the post-take ward round, and they could be good behaviours, they could be bad behaviours. H I think so, yeah, I mean I think whenever you see another doctor interacting with patients, even if we're not deliberately consciously taking note of how they interact with them, subconsciously you're absorbing their behaviour and their, erm, and registering parts of it that you are useful and might carry into your own practice or the parts you think perhaps, you know, you, you would do differently, so I think er, yes, I think they, it is valuable. Erm. I
	Non-technical skills (communication, dealing with googlies, developing one's own style, supervision, leadership, delegation, developing trust, showmanship, seeing the bigger picture)	Um and I think what I was saying is that the – thinking about the clinical skills bit, so I think there's loads of non-clinical stuff that you learn as a Registrar um just from observing and doing and you know just from the – seeing the Consultant do what they do…. …I don't think I'd even contemplated – I just thought I was um focused on the patient and my assessments and um… you know sorting them out medically as I'd always done as a Registrar. I thought that was going to be my main focus but actually I've come to realise that it's about managing the team and it's about getting a structure in place and if you don't do that as a Consultant it all goes… horribly wrong (laughs) A I think that what is beneficial is to see a consultant integrate information quickly, effectively, efficiently, and pick out the key salient points and prioritise them, and to look at the clerking that has been done

		and to ensure that actually those are the key points, and they have been prioritised, that they have been actioned. So that is one thing that I think they could perhaps learn from, but also need to have experience doing themselves. And the second point is for them to see how consultants are very much also um part of a bigger picture of working within a trust, which has core values and strategies, and targets perhaps to meet. And that consultants perhaps, because they are permanent members of staff, know those and are linked in with those core values a little bit better than … err juniors that turn around a lot, so they may see that that is how that ward round is being run, and I think that is quite useful for them as well, certainly in terms of audit and … E I think um … for me, it is being able to um show the team that you are understanding their um information and their concerns about the patient, and what they think the key issues are…. …And then also giving the same um message to the patient, and putting the two together, and then being a leader means that you take both sets of data, and you make a decision, so that is how I think leading a ward round is valuable. Um err I think time management as a leader is really important as well, and communication is also important as a leader, so them um watching you communicate with the pharmacist, with the nurse, making sure that things are actioned, that shows leadership, because you are not just doing the ward round as a tick, you are doing the ward round, you are communicating with everybody that is looking after the patients in a multi-disciplinary way and then ensuring those plans are acted upon. E Err I think that err once people are informed, they have absolutely no problems. Err it is extremely easy to consent people to participate in anything, even those that have ill health, as long as they know exactly what is happening. So I think communication here is imperative. To date, I have never had any patient, even the sickest one, say to me 'no I don't want you to teach err your students signs that are relevant to my health and relevant to their training'. It is all about communication. F the way you approach the patient, the way you approach questions and the patient, the way you approach conflict, the way... if you have somebody who is not willing to give you much information or somebody who is a bit verbal or something who is hostile or... you know, just those kind of googlies that are sometime bowled at you on a post-take ward round which are non-medical.

		H Well I think always dealing with the, the uncooperative, the unwilling patient, I think that's always... And the importance of not escalating. If you've got somebody who's angry your first inclination might be to either be, you know, angry back or to be quite dismissive. You know, if you've got somebody who has sought medical help and then doesn't want to take your advice and... yeah, your hackles might be somewhat raised, but actually my experience tells me that there's no point in meeting hostility with hostility. So what you need to do is very much diffuse it and, and really kind of make them believe that you really do want to help them in, in any way you possibly can. And I think that kind of thing... 'Cos I think they're... I mean, it... we're all human and I think, you know, it... Particularly if you, if you're, you know, doing this after a long post-take ward round and you come against somebody who you're thinking, "Oh for God's sake, just go and boil your head," you know, (laughs) you might think that but actually that would be completely the wrong way to do it. H And when I was a Registrar I used to think, "Well things are pretty black and white, clearly this is not for Resus, clearly this person needs to be thrombolysed because that PE is really big" or whatever, but actually when it's you who is going to be at the end of the complaint letter or summoned to court or something, actually things are far more grey um… and I suppose that level of responsibility that actually it's my name above the patient really hit me when I first became a Consultant and learning to delegate was very difficult because I was just so OCD about everything and it took me a long time to trust my Registrars, not because my Registrars weren't good – they were all excellent, the Medical Registrars here – fantastic. But it just took me a while to just (laughs) – to delegate appropriately. C Well I know for a fact that when even exceptionally good trainees have done the post-take ward round and have been observed doing it there's kind of "Phew. Boy, that was harder than I thought it was going to be. I didn't think it was gonna be easy but I just..." You know. It's just because, you know... It's, it's, it's, it's like, it's putting on a show, it's a... it's that kind of showmanship and it's the kind of... the act that is actually the thing that is not intuitive necessarily so that actually it's no good just going to give a whole load of, you know, facts to a patient, you have to be able to filter the information that you've been given. Because you've been... you know, you stand by as a consultant on the post-take ward round and

		you have to submit a lot of information and then you need to be able to tell the patient exactly what you think they need to know and it's down to things... H I think that what is beneficial is to see a consultant integrate information quickly, effectively, efficiently, and pick out the key salient points and prioritise them, and to look at the clerking that has been done and to ensure that actually those are the key points, and they have been prioritised, that they have been actioned. So that is one thing that I think they could perhaps learn from, but also need to have experience doing themselves. And the second point is for them to see how consultants are very much also um part of a bigger picture of working within a trust, which has core values and strategies, and targets perhaps to meet. And that consultants perhaps, because they are permanent members of staff, know those and are linked in with those core values a little bit better than … err juniors that turn around a lot, so they may see that that is how that ward round is being run, and I think that is quite useful for them as well, certainly in terms of audit and … E
Consultant Learning		So if I'm – I'm a hepatologist and if I'm doing a post-take ward round and it's a complex um… cystic fibrosis patient and the Registrar happens to be a final year Respiratory Reg who's done a year at Brompton on the Cystic Units that Registrar is going to know more about the clinical management of complex cystic fibrosis lung infection than me and in which case it actually is a potential learning opportunity for the Consultant… …yeah I personally do because I learn things when I do post-take ward rounds. One of the great advantages of working with somewhere like St Mary's is that we have access to so many specialists, if – you can get a cardiologist, you can get a neuro-review, you can get a dermatology review, you can get ID review" so I think every post take ward round I do I learn something. Um yeah so absolutely. C Respondent: I definitely learn things probably every ward round about medicine, erm, I think there's a lay belief that we erm, consultants know everything and we certainly don't, we don't know the most recent things and I learn from it, especially my registrars, er, things about other specialities and that this is how we erm, er, now asthma or whatever. I think though I'll continue to learn about erm, the, the more difficult erm, interaction with patients, their relatives and carers –

		Interviewer: Yeah. Respondent: - which erm, it, it's just amazing, it's a wonderful part of our job and, but I can continue to learn about that. Maybe that's improved or I'm lucky to work in a department where I can discuss it with consultant colleagues in a governance sense, what do you think we should do about this, erm, er, patient who has no carers, has come from prison, you know, and all these sort of things and erm, think how we can look after the patient first in a, a proper way. So that, I think that has improved. B Respondent: I think that's a key issue, not just from a clinical management point of view but in terms of learning. So having nurses on the post-take ward round is a learning opportunity for the nurses, it's also a learning opportunity for the doctors. I mean I have learnt lots of things from senior nurses in terms of wound dressing, when to use TPN *[total parenteral nutrition],* different types of nutritional feeds, so if you've got a good senior nurse, actually an experienced nurse, just getting their clinical input,…. So I think having a – having nurses on the ward round is really important. I think it's a learning opportunity for the doctors, it's a learning opportunity for the nurse and it makes for far better clinical communication and ultimately patient care surely? Interviewer: And do you feel that leading a post take ward round still contributes to your own professional development? Respondent: Very much so, and continuously. And I think it is probably because … well personally I like listening to other points of view, and I do give my registrars particularly a lot of leeway to participate. Um so there are definitely things that I miss out and I am reminded, and that is err learning also having to deal with emergencies in the middle of the post take ward round, while you are having all these people around you, and documenting and dealing with a lot of things, err and also communication aspect, trying to sort things out with regards to logistics on a post take ward round, so yes I think it is a very valuable learning opportunity. F

		…learning as well but bi-directional but for example the pharmacists will say, "Why do you think it's that?" or, "Why have you prescribed that?" and so there's a bit of learning in both directions there. A
Self-reflection		I suppose encouraging trainees to think about what learning they get from ward rounds that isn't made explicit to them um and getting them to feel more confident, to ask questions and to reflect on the fact that they are learning. A
Differences in PTWR over time	Increased shift work/ night shift teams (shift work, familiarity with teams, poor attention span/ right frame of mind, exhaustion/stamina)	I think er, we were able in the past to give a more erm, a thoughtful time on the past take ward round. A I feel that it has swung a little bit towards patient care and delivery. I am not for a minute saying that is wrong, but I feel sorry for the trainees, that are not having that met with an alternative way of helping them, because they need … they need the training and we need to deliver it. I don't think it has been delivered in this setting particularly well. E **<u>SHIFT WORK</u>** I think there's so much emphasis these days on service and speed and cramming loads of patients in to a post take ward round. There's also the pressure on getting people home after nights and that sort of thing which makes it um… perhaps more difficult um because I think we're – as Consultants I think we're more mindful of the fact that we mustn't keep people beyond their allocated hours if possible A Because even though you have 12 hours off, actually you don't really sleep very well and – and I know that. A Registrar on their third or fourth post-take ward rounds having done three or four nights, that's not a conducive time for them to learn, they just need to – patients need to be managed and need to – even if you try and teach it's not the best mental environment for them to learn. Um and to then say to

		a Reg who's been up all night you know running the hospital and dealing with four in Resus and admitting 12 patients – they just (laughs) – let them go home, which is fine. C And I'm certainly conscious that I do less teaching on post-take ward rounds than I used to because we have a night team now who need to be got home... 'Cos when I, when I first started of course there was no... we had an on-call team who were here 24 hours and, umm, they were here the next day irrespective so there's no... there was no urgency to get the night team home. So I'm... I am conscious that we probably do less teaching now on post-take ward rounds because of that change, that split between the day and night teams. H …the, one of the overriding things is that I'm very aware that the night team have just worked a 13-hour shift, erm, they'll be back for more later or if not they've just come to the end of a run of them, so it's not that I don't doubt they would like to learn something it's just I'm not sure how receptive anyone is that stage of the day. I **FAMILIARITY WITH TEAM** So, in the old days, that the take was structured you worked with one particular area registrar, you learned what his or her weaknesses or strengths were, um, you interacted in a more comfortable way with them because you knew they were… er, now I find that I'm on the post-take ward round and the first thing I'm thinking is, 'is this somebody I can trust or not?' Um… (laugh) and if I can't trust them then the last thing I'm interested in doing, I'm afraid, is teaching them; it's trying to spot any mistakes they've made and my first concern, er, first and foremost on the post-take ward round is actually, er… making sure there aren't any dropped catches and making sure the patients are okay. G

		There are things like knowledge, erm, er, erm, er, coping with doctors you may never have met before, and erm, their individual quirks, erm, er, and, knowledge, attitude to actually er, you know, erm, service er, er, erm, delivery, erm, … B But, I mean, I'm a, I'm a big fan of... I mean, I think things you do wrong on post-take ward rounds as a consultant is to re-clerk every patient and re-examine every patient, umm, because, provided you... And that's why you need to know the people you're working with and you need to trust them 'cos as soon as you don't then effectively you do have to do that. D … I also learnt how to work with err team members that I was not at all aware of, because usually the situation is that you … you show up for a take or a … usually a take or a post take day, and usually as a rule of thumb, you won't know almost anyone in your team, which is I think medicine is probably the only profession where that happens. It is extremely difficult to carry out um a take, a post take, with people you don't know. If you don't know them, you don't know their names, you don't know their grades, you don't know what experience they have got, you don't whether they have just passed their exams, haven't passed their exams, whether they have failed or there were base assessments or whether extremely um good clinically, and it taught me to follow a process of getting to know people and actually um work much better in a team of unknown individuals in a safe manner. And I think that is imperative in acute medicine. F I mean, it's common knowledge now that the junior doctors are really, really miserable and, er… and one of the biggest problems that we have is that we no longer work in teams. I mean, the day the managers invented the words, 'team working,' we lost our firm structure. Er… and so it's particularly true of the on-take, in this hospital anyway, because you just work with, er, a random selection of doctors that er, generally you'll never have met before and, er… and nobody likes that. Th- th- the junior doctors feel uncomfortable that, 'is that somebody that I can ring up in the middle of the night because I'm concerned or is it somebody that will give me short shrift?' Er, er, I'm uncomfortable because I'm- is this

		somebody that I can trust? Or have they just er spun me a story and invented a diagnosis? Er… and I- I don't think human beings, human beings don't like strangers. It takes us a long time to trust each other and I think in a… the high-pressure take environment, it's awfully nice to be working with people you know even if you know they're bad. It's better than… not knowing they're bad (laugh). G **EXHAUSTION/STAMINA** Well I've never done it because, well I have done it but not in the post-take situation and the reason for that is that- that's the other problem. The post-take ward round is not our main job. Most of us don't regard ourselves as acute medicine consultants. (Laugh) We're- I'm a-, I, I'm a highly specialised chest physician who occasionally gets rostered in to do the take. It's the chore that nobody wants to do anymore, if I want to be honest, because it's very burdensome and it's a hot potato, er, and it's exhausting. It's draining. It's not- I'm 64 and (laugh) it's not just people of my age that find it exhausting; the youngsters do as well. G **POOR ATTENTION SPAN/ RIGHT FRAME OF MIND** I think almost all aspects are beneficial in some way, assuming that people are in a frame of mind to realise that it's a learning experience. Um… and that they're not – that they don't have too many other pressures that they're not taking in the learning experience. A So, intrinsically, my observation has been that the post take ward round has changed immensely over time, um so there is a lot of destruction, and I don't know whether there is a bit of attention deficit from trainees, because you know they … I was taught to write essays and short time answer questions, and they to do MCQs on a screen, and I think their attention span is extremely short err so it is very difficult to keep their attention on the ward rounds. You will have um people just chatting or answering mobile

		phones, so attitude increasingly I find it an extreme obstacle, and I find myself telling people 'ssh' on the ward round. F
	Nurse presence on ward rounds	Interviewer: Is there anything else that you'd like to add about post-take ward rounds or training? Respondent: The presence of nurses. Interviewer: Okay yeah. Respondent: I think that's a key issue, not just from a clinical management point of view but in terms of learning. So having nurses on the post-take ward round is a learning opportunity for the nurses, it's also a learning opportunity for the doctors. I mean I have learnt lots of things from senior nurses in terms of wound dressing, when to use (TPN?), different types of nutritional feeds, so if you've got a good senior nurse, actually an experienced nurse, just getting their clinical input, … So I think having a – having nurses on the ward round is really important. I think it's a learning opportunity for the doctors, it's a learning opportunity for the nurse and it makes for far better clinical communication and ultimately patient care surely? C
	Intra-take ward round – lack of SPR presence	Certainly my experience on take is that um if err time is ticking on, and we want to complete the intra-take, and maybe an FY1 has seen the patient or even a CT1 has seen the patient, and the registrar hasn't seen the patient, then I end up seeing the patient, and so that then stops the um … registrar also seeing the patient. E …that if they are not on that bit of the ward round, then it is not valuable to them! And it may be that they are not, because time is ticking on and they haven't had a chance to see them, um and then non-valuable the next day would be just trailing around me twice, I feel perhaps the second one … or some of the first one um … they could also have more input into, so there is a lot of … I think watching rather than initiating, and that means that say on the second post … post take ward round, um episode,

Appendix 4.3 Consultant Theme Table

		patients start deteriorating, they won't necessarily be the ones to assess, identity the problem and sort it out, because I will be there, or whichever consultant will be there. So that then reduces their … you know um acute experience…. … I mean I think obviously the intra-take ward round is key, patients must be seen within 12 hours by a consultant, but perhaps not to the exclusion of the registrar. E
	Not presenting the patients that you clerked	… and also the other way, just because of how we're working now, is, er, a minority of patients on the post-take ward round you haven't got the doctor with you that saw them the day before - … … If it's a minority of the patients you clerk that you don't see the following morning then that might be fine and, and if the current system just leaves it at that minority then fine. But I have worked in hospitals, admittedly a few years ago – and I this practice hopefully is dying out – where there'd be the majority of the patients on the post-take round, the doctor who'd seen them the night before wasn't there, and that's clearly, er, you know, bad for... it's not just bad for training, it's bad for, bad for medicine and bad for patients. And usually what's bad for training is bad for medicine. D
	Less time and more pressure	Well I think it's a problem for training as you can't spend the time but I think it's a reality of modern medicine so I don't... I think you have to try and balance the two, quite truthfully. I mean, I, I, I think there has... I mean, if I'm honest, I think there's been a ch... a shift in the emphasis of what a post-take ward round is about. Certainly when I was a senior registrar it was very much about... the focus was much more about training than, than service provision. H
	Service provision and business orientated rounds	Well the time pressure, so um if you've got a lot of patients – if you've got 20 to see, if it's been a really busy night and there's 20 to see on the post take, you've got five or six minutes per case and then it's got to be more a business-orientated round and then teaching opportunities are lessened. C

		I have to say I don't really regard the post-take ward round as a training... you know, it's business, it's not training. D I think trust is put in a difficult position, they need to … and they have to maintain standards, they are constantly striving to increase standards, meet targets, and deliver um excellent patient care, which is why they want consultants hands-on. I can understand that, um and therefore it is the age-old um paradigm of wanting to train and wanting to deliver and how to meet … in the middle. … … in the old days, you would examine something and then say to somebody 'come and have a listen to this', 'come and examine that', or 'tell me what you think the differential diagnoses might be?' before you um offer up what you think, so that you get some discussion going around the bedside. I feel … there is less time for bedside … um teaching on a working business round, they have become very much business rounds, rather than the hybrid of teaching and business, that is my experience from this new model. E Well I think it's a problem for training as you can't spend the time but I think it's a reality of modern medicine so I don't... I think you have to try and balance the two, quite truthfully. I mean, I, I, I think there has... I mean, if I'm honest, I think there's been a ch... a shift in the emphasis of what a post-take ward round is about. Certainly when I was a senior registrar it was very much about... the focus was much more about training than, than service provision. I think it's much different now, I think it's now... it's about getting the patients sorted, getting the patients through, and then any training that can be done is a bit of a bonus. H
Decreased SPR autonomy and decision making	Redundant role and doubling up of manpower	Consultants would do a ward round once a week and whatever patients there were on that day they would see them and if the patient was having a scan or whatever they wouldn't get seen. So – and every other day until the next Consultant ward round, the Registrar was responsible and made all the

		decisions; yes you can go and talk to your Consultant about the case if they were free or around but it was once a week. And so you got used to decision making um and I think that we've really lost that and I think one of the problems with having daily Consultant ward rounds is I do think it's not good for training because actually until you have to make the decision without an immediate safety net, you don't – you just don't know what it's like. C Certainly once on the post-take day is I think mandatory, but I am not sure about twice. And therefore, if the consultant is seeing the patient three times within one and a half days, and it has to be face to face and it has to be documented in the electronic record, I feel that the training opportunity for the registrar is somewhat diminished in their um ability to see and assess patients and deal with problems that come up within that acute period. … … Which is a sadness, and especially for the senior ones, who I feel are chomping at the bit to (laughing) you know take the responsibility and go with it, um it is … it is sort of almost wasted, and it is I feel … the other thing is it is doubling up of um manpower. E Respondent: …they often I think feel well you are going around, what is the point, I might as well go and do something else, and certainly it has been said on the acute medical model by our err leads, that um you know well if you are going round twice, why don't you release them to go to clinic? Or to go and do procedures? So that means on their acute block, they actually feel a bit redundant, and that is evident ---…. ….which is fine, because it would work, and it does work, and it usually does work. But … but that conversation about … the only time that they can actually go off and do clinics and ward … interventions is on the acute block, exemplifies what I am saying in that there is redundancy --- a redundancy feeling! Interviewer: Yes. Respondent: Because you would think on the acute block, that is the only time they can't go off.

		Interviewer: Yeah yeah yeah yeah. Respondent: But actually, that is the only time that they have to go off! E Er, when I… did start doing it, er, whenever, I don't know, whenever they came in, er… (pause) I, I, I, I, to be honest, the consultants of old wanted to push all the responsibility onto their junior doctors. That was the reality of it. Er, er, it's always been a hot potato managing the acute cases. I think, to some extent, a lot of the work involved in a take; the running around that the juniors are doing, er, the mad fre- I mean, the registrar on Friday, she was worked off her feet. I could tell, er, you know, she was being interrupted the whole time when she was interacting with me; she was quickly making decisions; fending, kicking things into the long grass that could be- you know what it's like. Er, and, er, it was like that in my day but it's kind of become- it's no better, er, and, er, and I think it's a young person's job, you know. It's like the generals send the, the, the people, er, to be killed, you know, they're the youngsters, you know. I mean honestly, you know, I think, I think, and our masters had that well-controlled, you know, er, the take was for the youngsters and, er, my, my, my, my bosses never, ever did a post-take ward round. And occasionally, out of devilment, when we were on take, as we happened to be doing a ward round, I would devilishly show them a patient with a tachyarrhythmia or something like that and, er, I'm not saying we didn't need them, you know. They were making the decisions we needed on, on, on the ordinary rounds in a different sort of way, at a higher sort of level but the acute stuff they didn't like. And, er, they used to just pat me on the shoulder and say, 'Andrew, you know better how to manage these things,' and, er, and move on. And I see that now because although we're involved with the post-take ward round I tell you, with the junior doctors' strikes, which were threatening to do the emergency stuff, there was quite a lot of anxiety about who was going to be doing the takes and they selected out the people who'd recently been juniors because, actually, they thought that we no longer have the right skillset anymore. And it's true. Er, er, you know. G
	Minimal feedback with no encouragement for excellence	(SLEs)… it does not account for excellence, and it just makes people I think … it is almost as if a purpose is to make everybody average and safe and let them out into the world to do an average job, that we know is just about safe, and it doesn't um encourage err people to become really really good,

		exceptionally good, and they know that even if they are exceptionally good, they are not going to score many more points on this. F We've got pro-forma on the acute, within acute medicine because the doctors weren't able to write out a history and an examination. That's a terrible indictment of our training, er, and there are some that, you know, have qualified but who actually can't do the job. Now how do you put that right when somebody's become an SHO? I used to be able to train good students to do that in the three-month period that they were attached to me and they were just third years, you know. But there are some people- I know that others weren't doing that because they hadn't got the right training and they'd come to me, having done some- gone somewhere else and they couldn't do it. And, er, and I'm sorry to say that now, er, because they've diluted the students' training and they're sent off for a stroke week and then an acute medicine week, I don't even try to do that anymore so I've lost the ability to train them to take a history and examine the patient, in full. Er, and then, you know, so the most junior doctors should be able to take a long history and a long examination and, er, come up with a diagnosis and they'll give it- it'll take them a long time. As they become more senior, by the time they become a registrar they can give it to you in a nutshell and, er, and it's more focussed. Er, er, so, you know, you need to be moving them on, don't you? So some of them- the ones that can't take a history and examination, where do I start with those? I don't know. They've missed the boat. Er, the ones that are a bit lengthy and can't give it you, er, in a nutshell, you need to say, 'well look, now you don't actually have to put in all these negatives. Listen to how the registrar does it and try and, er, truncate it a bit and make it a bit more pithy. This is something that gets- develops with your clinical maturity, er, but you can probably could speed it up'. I don't take much time out to tell people that. I don't have time. G Well the forms they take are an (ACAT?) which is a sort of general assessment of how you managed a whole raft of patients, rather than a particular patient and – or – and definitely not a particular ward round um and I often find it a little bit difficult to give meaningful feedback based on just one ward round. A

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	Culture of dependency	I- I- to be honest I slightly think it's created a culture- I date back to pre-post-take ward rounds so I think it's slightly created a culture of dependency rather than learning, G …yes you can go and talk to your Consultant about the case if they were free or around but it was once a week. And so you got used to decision making um and I think that we've really lost that and I think one of the problems with having daily Consultant ward rounds is I do think it's not good for training because actually until you have to make the decision without an immediate safety net, you don't – you just don't know what it's like. C
	Lack of 'learning on the job' and less supervision	… then the day they become a consultant, the, the great risk of becoming a consultant is some of the things you do for the first time when you become a consultant. I mean, that's crazy. What kind of madness is that? But, of course, the hospital doesn't like consultants, you know, doesn't like registrars doing the consultants' work because then the patient hasn't seen a consultant so there isn't that tick in the box but you could get them to do the consultants' work under supervision and that would deal with that issue. G Respondent: … interaction with patients, I don't see them interacting with patients ever now (laughing) because it is very hard to see them interacting with patients, all they do is watch me. They do interact with patients, I just never get to see them. … Interviewer: …so you think that registrars probably feel even less prepared now? Respondent: Well, I mean that is for them to say. I … I just feel … in this current acute medical model … I don't see them showing me what they can do. E

Appendix 4.3 Consultant Theme Table

	Fear of criticism	Interviewer: I guess in this hospital it works that we're in teams and so often we're with the same people so perhaps that makes that – Respondent: That makes it really good – much better, yeah. Interviewer: That makes it easier to – to ask questions yeah. Respondent: I think that's a real enabler to training generally because I think if you have some consistency and… you're not – you know when it's a stranger it's really difficult, because I – when I was a Registrar here I used to do my on-calls with a different team um and they were not perhaps the most friendly or helpful team er and I used to just feel terrified on the ward rounds that I was just going to get criticised and I didn't – I'm sure I learnt loads so actually from a training point of view it was really good but there wasn't that open dialogue, I didn't feel sort of treated as a partner in the process if that makes sense? A
Increased consultant presence	Role now like a registrar	I certainly felt I had a huge … a more acute experience because I literally knew every patient, I did the board … I did the 12 o'clock meeting, whereas the registrar unfortunately um was too busy mopping up all the jobs afterwards, because we had to go around again in the afternoon. So for my own experience, yes it was --- I felt like I was a registrar again. When I just did this acute block, err the experience for me um sort of brought back the past, really. I … I was seeing patients, sometimes I was having to see patients pretty much afresh. I deal with things coming up, so it was … clinically … a new --- not a new experience but a … you know a different experience for a consultant. E
	Patient safety	Er, if we were better supported, you know, it wouldn't be people like me have to pick up those dropped catches. Er, and if fact I only found out about it by chance by relating another incident to the registrar saying, er, you know, how some drug had been missed and she said, 'well, it happened only yesterday,' you know? It didn't matter as it turned out, in, in the one that occurred on Friday it mattered and in the one I remember from… er, the olden days when the patient ended up deaf having not been given, er… any antibiotics for meningococcal, meningitis for a while. So the stakes are very high and in that situation, to be honest, that last thing I'm worrying about is the quality of the training.

		G
	Responsibility/dropped catches/ safety net	So, in the old days, that the take was structured you worked with one particular area registrar, you learned what his or her weaknesses or strengths were, um, you interacted in a more comfortable way with them because you knew they were… er, now I find that I'm on the post-take ward round and the first thing I'm thinking is, 'is this somebody I can trust or not?' Um… (laugh) and if I can't trust them then the last thing I'm interested in doing, I'm afraid, is teaching them; it's trying to spot any mistakes they've made and my first concern, er, first and foremost on the post-take ward round is actually, er… making sure there aren't any dropped catches and making sure the patients are okay. G I found it a shock actually, so I was a Registrar here for several years and so I did many, many post take ward rounds as a Medical Registrar um… between 2004 and 2007 er and in those days Douglas Ward was the Admissions Ward and I remember going on the post-take ward round many times and all the patients their names were on the board with the Consultant next to it and I'd done hundreds of post-take rounds and then the first time I did a post-take round as a Consultant I went there and I saw the name, "C, C, C …" and I looked at the board and I thought, "Who is C? There's no Consultant here C" and then I thought, "Bloody hell! That's me!" And suddenly the um – the level of responsibility really hits you because as a Registrar or SHO or F1 you can actually drift in and out of the ward round. I know because I've been a Registrar, I've been a Med Reg, I know what it's like and you can actually just switch off, you can actually disappear for 15 minutes right and no one actually notices – you can just go, you can go off and have a fag or you know ring your builder or whatever and – and just disappear and you can float in and switch off and switch on and junior doctors do, they all do – I know I did, right? But as a Consultant there's – what hit me most was the level of responsibility because you might see 20 plus people and suddenly the buck stops with you and that might be you know the only time you really get to focus on them and every single case you can't switch off, you can't mentally relax, you have to be absolutely on it because you are absolutely responsible. And when I was a Registrar I used to think, "Well things are pretty black and white, clearly this is not for Resus, clearly this person needs to be thrombolysed because that PE is really big" or whatever, but actually when it's you who is going to be at the end of the complaint letter or summoned to court or something, actually things are far more grey um… and I suppose that level of responsibility that actually it's my name above the patient really hit me when I first became a Consultant and learning to delegate was very difficult because I was just so OCD about everything and it took me a long time to trust my Registrars, not because my Registrars weren't good –

		they were all excellent, the Medical Registrars here – fantastic. But it just took me a while to just (laughs) – to delegate appropriately. C
Obstacles to PTWR Training	Operational – resource limitation or unavailability, patient location, results/ patient notes unavailability	**RESOURCES** That's right, so I think the – I think I've had to adjust things to accommodate that. So for example the first ward round I did um with electronic documentation and I just had – brought one computer with the ward round because I'm actually – it was just impossible to try and look everything up and write at the same time, so now I make sure there are two and then there aren't enough computers that are working and it's all really difficult. A Interviewer: Clinical information? Respondent: Exactly and things like you know – have they had melaena? There's some vague rumour going round of melaena or coffee ground vomiting and you have no idea – or someone's got a drain and you have no idea when it was last drained, so it's really important, has it drained – that litre that's in the drain, was that accumulated in the last half an hour or the last 12 hours? It's – you know or the urine bag, you know? There's 100 mls in there, if that's in the last hour that's great but if that's - Interviewer: All night (laughs). Respondent: - after 12 hours, that's really not great (laughs). C **PATIENT LOCATION** There are all sorts of obstacles. So one is the work-load has shot up so we are getting many more patients in than ever we used to. Er, you know, when I did the Friday take er, I think I'm quick compared with s- ma- some of the other consultants. I'm certainly not as slow as some, er, and I'm probably

		amongst the speediest and I went from 8.00-11.00 and we still had, er, you know, a dozen patients left to see. Er, we were going up and down this block in random order because I had to do first the night patients and then the day patients. Er… we, we had- there's no ward we could call our own because, I mean, there is one we call our own but the patients are everywhere. G
	Interruptions/distractions e.g. mobiles, bleeps	So, intrinsically, my observation has been that the post take ward round has changed immensely over time, um so there is a lot of destruction, and I don't know whether there is a bit of attention deficit from trainees, because you know they … I was taught to write essays and short time answer questions, and they to do MCQs on a screen, and I think their attention span is extremely short err so it is very difficult to keep their attention on the ward rounds. You will have um people just chatting or answering mobile phones, so attitude increasingly I find it an extreme obstacle, and I find myself telling people 'ssh' on the ward round. F
	Individual – consultant style and priorities regarding teaching	(training)…is really hard and I think a lot of consultants perhaps don't really think about that so much, you know you're either somebody who is concerned about that or not and some people aren't and they just go in you know make decisions and leave very quickly (laughs). I think it's a really difficult balance, I don't think I've got it right at all. A Time and inclination, I mean, we've all got other things to do. Er, I mean, maybe, you know, we should be finding if I ever do retire, you should bring somebody like me back to, er, take that on maybe as a task, you know? Maybe you need somebody else there on the ward, I mean, another way of doing this, I'm thinking on my feet, would be to have a, er, maybe a teaching person alongside the post-take ward round. The consultant focusses on managing the patients and then gets off and does his favourite tasks, er, when he's finished and then the teaching person takes them to one side and says, 'do this, that, and the other,' again, I'm thinking on my feet. Er, I think it needs, it, it needs somebody focussed on the job. G

		I actually think that post-take ward rounds should be run by registrars and that the consultants shou- could, should just focus on training so you could get a different registrar so that er, I, er, I think- I think the good thing about a post-take ward round is not necessarily, you know, some of the registrars who are, not always but mostly they're very good so mostly I'm doing a rubber-stamping thing. G
	Specific training	We've got pro-forma on the acute, within acute medicine because the doctors weren't able to write out a history and an examination. That's a terrible indictment of our training, er, and there are some that, you know, have qualified but who actually can't do the job. Now how do you put that right when somebody's become an SHO? I used to be able to train good students to do that in the three-month period that they were attached to me and they were just third years, you know. But there are some people- I know that others weren't doing that because they hadn't got the right training and they'd come to me, having done some- gone somewhere else and they couldn't do it. And, er, and I'm sorry to say that now, er, because they've diluted the students' training and they're sent off for a stroke week and then an acute medicine week, I don't even try to do that anymore so I've lost the ability to train them to take a history and examine the patient, in full. Er, and then, you know, so the most junior doctors should be able to take a long history and a long examination and, er, come up with a diagnosis and they'll give it- it'll take them a long time. As they become more senior, by the time they become a registrar they can give it to you in a nutshell and, er, and it's more focussed. Er, er, so, you know, you need to be moving them on, don't you? So some of them- the ones that can't take a history and examination, where do I start with those? I don't know. They've missed the boat. Er, the ones that are a bit lengthy and can't give it you, er, in a nutshell, you need to say, 'well look, now you don't actually have to put in all these negatives. Listen to how the registrar does it and try and, er, truncate it a bit and make it a bit more pithy. This is something that gets- develops with your clinical maturity, er, but you can probably could speed it up'. I don't take much time out to tell people that. I don't have time. G I absolutely think it is time for training, err but you have to find a balance, because you have the limitations of having to carry out your acute role where you may have 25 patients to see, and you have to have seen everybody by midday, err the midday bed meeting, but at the same time, people if they are going to follow you for hours, they need to learn something, and there has to be a balance, you can't

		take an hour with a patient. And you can give people either pearls of wisdom or takeaway messages, from each presentation ask them to go and read on a very specific thing, so there is always a a a a learning aspect on the post take ward round, but it has to be in a very concise manner, and maybe focused a bit on the person who has actually seen the patient so that they take away something from each of the patients that they have actually seen. F
	SLEs	….how do you feel about today's workplace based assessments or SLEs in relation to the post take ward round, do you find them useful or valuable? Respondent: Erm, I'm sorry I've not found them very valuable B No… er I mean in my er experience they're sent, they're not… appropriately done in that it is – it has become a tick box exercise and it's done purely for the sake of ticking it off. You get sort of a virtual PA in your job plan but it doesn't actually translate to 9am to 11am on a Thursday morning or whatever. And the other problem is that actually meeting up with trainees to talk about them is very difficult because of the rota, so um… I'm Educational Supervisor to two SHOs and two House Officers, but actually trying to nail down a time when they're not on nights, not immediately post-take, not on a zero… and at a time when I'm also not in clinic or in endoscopy or giving a lecture or doing something else or at a MDT or at a Radiology meeting or a Histology meeting, actually is very, very difficult. And sometimes actually it's impossible to schedule a time that's mutually convenient for several weeks. So that makes you know a proper sit down leisurely discussion about a SLE very difficult. C I don't really find any of the, umm... The things that are... The things that I fill out for juniors, I don't find them particularly useful as educational tools, they're just things that have to be done. I mean, admittedly, they have to have worked up a case to do it or they have to do something good on the post-

		take ward round or get well stuck into a case before they then send me the assessment but they're not educational, umm... it's not education, it's just... you know, it's ticking a box. D I find them an almost useless tool…. The reason is that um they take an extreme amount of time to be done well, so people don't do them well, because nobody has time. I spend a lot of time when I am doing workplace-based assessments, and I always ask trainees to ask me beforehand so if they want to, I am happy to do it remotely, it is sent to me but I want to know from beforehand that they want to have it done, so at least I give them some constructive feedback there and then. Um but I think that the standardised err the standardised practice too average and they do not allow … they may allow for somebody who is for whatever reason is below par, because you will have to recognise them. Err although it is very difficult to give below par feedback remotely, which is what happens, it is very difficult for me to get an assessment where I think somebody is below par and tick the boxes 'below expected'. That has to be done in person, err because you need to make sure that you say this is below par and I want you to do it again, and I want to reassess you because I know that you will do better, and that is very difficult to relay remotely! F And, er, as for feedback, er, er, (laugh), I've just done a weekend on take and right at the end of the weekend er, various people came up and said, 'oh, can we send you one of these work-based assessments?' So these are people I've never met before, er, and then after the- the- the rounds are over they suddenly say can I appraise them. Why didn't they ask before? Was it because they wanted to see whether I was somebody that they could trust; that I was going to (laugh), did they wait until the end to see if they thought they'd got a good relationship with me? Er… or was it just that just that they hadn't thought of it until then? And then, I think to this day, none of the requests have come through so by the time I'm filling in the online appraisal or work-based assessment thingummy er, my memory of any of the cases they have seen will have completely evaporated. Er, not only that, I don't really kn-know these people, er, I will struggle to remember which one was which when loads of surnames come through. Er, so I think that the whole structure is badly wrong.

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Appendix 4.4 Patients Theme Table

Patients		
BLACK – POSITIVE **RED - NEGATIVE**		
THEMES	**SUB-THEMES**	**ILLUSTRATIVE QUOTATIONS**
TIME		Interviewer: So they haven't explained very much? Respondent: No. Interviewer: Is that okay or would you prefer more explanation? Respondent: They didn't explain anything. They just stay only three minutes, two or three minutes, not more than that. Interviewer: And was that long enough? Or would you prefer more time? Respondent: Should be more time, just to explain me, or you everything. *Interview 1*
COMMUNICATION	**EXPLANATION**	Respondent: The perfect doctor's just someone that's, I suppose kind, understanding, consideration and can erm, relay the information in a reasonable fashion that's easy to understand. *Interview 10*
	ROLE OF NURSES	Interviewer: But when, when the doctors come round on their ward round do you think it's important for a nurse to be there then? So that she can speak to the doctors as well? Respondent: If, if I tell the nurse everything if she will in with doctor she then nurse will tell the doctor. Interviewer: So it might help with the communication?

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		Respondent: Communication. *Interview 2* Interviewer: What about a nurse? Respondent: Well, I think a nurse should accompany them and then she can let them know when they've gone what's going on, she can let the people… Interviewer: So she can, sort of, interpret, so to speak Respondent: Exactly *Interview 4* Interviewer: But when, when the doctors come round on their ward round do you think it's important for a nurse to be there then? So that she can speak to the doctors as well? Respondent: If, if I tell the nurse everything if she will in with doctor she then nurse will tell the doctor. Interviewer: So it might help with the communication? Respondent: Communication. *Interview 6*
	INFORMATION SHARING	Interviewer: How do you think they could go about making you feel more included? Respondent: Well, they could speak more. Interviewer: Okay. So speak more to you? Respondent: Yes.

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		Interviewer: About …? Respondent: Well, everything in general. Interviewer: Okay. So everything that is going on, and then you would feel more included? Respondent: Yes. … Interviewer: … When you say you want your interest inspired, is that because you want to know what is going on, or because you want to learn from what has happened? Respondent: No, I want to know what is going on. *Interview 2* Respondent: Umm, able to, umm, listen to everything that I'm saying, umm, probably patient, and, umm, and informative back to me, umm, giving me as much information as they possibly can at that time. Interviewer: So we're talking about information again, that seems to be the key point, so information – Respondent: Mm. Mm, I think in my case it's all about knowing what's going on and if it's related to my particular problem, mm. *Interview 3* Interviewer: So they haven't explained very much? Respondent: No.

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		Interviewer: Is that okay or would you prefer more explanation? Respondent: They didn't explain anything. They just stay only three minutes, two or three minutes, not more than that. Interviewer: And was that long enough? Or would you prefer more time? Respondent: Should be more time, just to explain me, or you everything. *Interview 6* Interviewer: What would be your ideal situation on a ward round? Respondent: Well, turning up, telling you more about the disease you've got and making you better we hope. Interviewer: So what, what elements of the bedside manner do you think are important? Respondent: Well they sit and explain and things to you and... that's what I think anyway. (Laughter) *Interview 8*
	BEING LISTENED TO	Interviewer: Because you said you wanted to be listened to. Respondent: Yeah, I want them to, umm, know exactly what has happened that's got me to where I am here and, umm, the steps, you know, that I've been through, umm. … Interviewer: … Do you mind if they ask similar questions to the questions you've been asked before or do you think they should know everything?

Appendix 4.4 Patients Theme Table

		Respondent: No. No, I think that, umm, sometimes it's better for them to hear it rather than just read it off a piece of paper, mm. *Interview 3* Respondent: I don't see the doctor, doctor just come three minutes, four minutes he has come. Interviewer: Okay. Respondent: I'm not happy with them. Interviewer: So, in an ideal situation you'd like to have more time, you'd like the doctor to introduce everybody that's with them and themselves, and you'd like to have more of an explanation? Respondent: No, the doctor has to check me but what's wrong with you? He did not ask me any question, he just go, he just stand over there with three people, yeah three... checks your blood test, that's alright, your temperature is a... not going down. We will send you home as soon as possible. *Interview 6* Umm, able to, umm, listen to everything that I'm saying, umm, probably patient, and, umm, and informative back to me, umm, giving me as much information as they possibly can at that time. *Interview 3* Respondent: Yes and not treating you like the complete ninny that you probably are. Interviewer: Well, I don't think you are. Respondent: No, but well, they think that everybody is, you know.

Appendix 4.4 Patients Theme Table

		Interviewer: Doctors? Respondent: There are some Doctors who think that all patients are ninnies. *Interview 7* Yeah, it's erm, no. Is it impo- important when he listen, one like what happened to me, and then explained it him, and he listen, it's nice; but if he listen to – if you'd explained what happened, and you know, not listened, that's not good, but it happens. *Interview 12* Respondent's Mum: Can I add it's important to be treated as an individual, not as a package that- Interviewer: Yeah. Respondent's Mum: A uniformed package; that everyone is treated the same, and you recognise that everyone has different needs and feelings. *Interview 14*
	INTRODUCTIONS	Interviewer: And who else was on the ward round? Respondent: He had some people with him, but he didn't bother to introduce them. Interviewer: Okay, so that is something that maybe could change? Respondent: That could change, yes. ….Well, he could have improve by introducing [pause] the people he was with and the reason they were there. *Interview 2*

Appendix 4.4 Patients Theme Table

		Interviewer: And do you mind if there are other doctors present? Respondent: No. Interviewer: Would you like to know who they are? Respondent: Not particularly. I mean I'll never see them again, so what does it matter? (laughter) *Interview 1* Respondent: I just felt he introduced himself and said that, you know, they're here to, to help me and to find out what's wrong so – Interviewer: That's brilliant. Respondent: - that was really good. Interviewer: Does it matter that you didn't know who they were? Respondent: Er, no, I think because if it really bothered me I would've asked. *Interview 3* Interviewer: And would you prefer someone to let you know who everyone was, or does that doesn't matter? Respondent: It doesn't matter, as long as I know they're medical staff. Interviewer: And the person that's talking to you, would you like them to introduce themselves?

Appendix 4.4 Patients Theme Table

		Respondent: Oh yeah, yeah. *Interview 4* Interviewer: Em, do you think it's important that you know the Doctor's name? Respondent: Um, yes. Interviewer: Yes? Respondent: A little more personal bond with them. *Interview 14*
	INTERRUPTIONS	Interviewer: Can you imagine that anything would disrupt the ward round? Respondent: Maybe just some extreme emergency *Interview 3* Interviewer: … do you think there's anything that might disrupt the flow of a ward round? Respondent: (pause) Um. (pause) Maybe uh, the doctors trying to explain to medical students something as they're going … Interviewer: So, if they were teaching? Respondent: Yeah. Interviewer: You'd find that quite disrupting? Respondent: Um, maybe a little bit.

Appendix 4.4 Patients Theme Table

		Interview 14
TRUST	**ASSUMED COMPETENCE**	Interviewer: Just somebody with some experience. Respondent: Somebody with some experience, yeah. Interviewer: So maybe not a first year doctor? Respondent: Well, I don't know any (laughs), this is awkward because I should imagine some of them could be quite good. Interviewer: It's not awkward, and you should hear what doctors would say if they were patients, so imagine it that way round (laughs). Respondent: Yeah… Interviewer: This is about you being honest, and no one will know who you are on this tape, so I just want you to be honest. Respondent: Yeah, well, I couldn't care less if anybody knew or not, so it doesn't matter really. Interviewer: So if it's a first year doctor who you felt you trusted, is that what you mean when you say good? Or do you mean – Respondent: Yeah, trusted, somebody I trusted. Interviewer: You don't mind if doctors are learning on the ward round, and you don't mind if it's not the most experienced doctor, it could even be a first year doctor as long as you trusted them and they – Respondent: I trust them, and I know they're learning.

Appendix 4.4 Patients Theme Table

		Interview 4 …. when they are safe enough to work here. You have to have confidence in them. *Interview 1*
	- **SENIORITY**	Interviewer: Okay, so if you have one Doctor would you prefer that to be the Doctor in charge, or does it matter as long as it's a Doctor who's personable? (Pause) Would you want the boss Doctor or just any Doctor? Respondent: Oh... if he's a Doctor, he's a Doctor. *Interview 5* Respondent: The doctors is doctors, you know? I am happy any doctor to see me. The doctor are the same, all the doctor are the same, I don't mind. Interviewer: All doctors are the same? Respondent: Yeah. Interviewer: A doctor is a doctor is a doctor? Respondent: A doctor... Interviewer: So a doctor with 20 years' experience is the same with one with five years' experience? Respondent: Yeah. *Interview 6*

Appendix 4.4 Patients Theme Table

		Interviewer: Do you think it makes any difference to you how experienced the doctors are the ward round? Respondent: Well, not difference, darling. Interviewer: No? Respondent: To me. No. Interviewer: It doesn't make any difference? Respondent: No. Interviewer: If I'm understanding you correctly, for you an ideal situation would be that you have the doctor or a doctor, you don't find whether it's the most senior or just, as long a doctor – Respondent: A doctor sees you. Interviewer: Sees you, explains to you what's going on, and makes you feel better, if that's possible? Respondent: Yeah. Interviewer: Then you'd be happy. *Interview 8* Interviewer: How would you feel if it wasn't the most senior doctor, so the consultant, that was talking to you? Respondent: [pause] It don't mind me, love. Interviewer: You don't mind what grade of doctor it is?

Appendix 4.4 Patients Theme Table

		Respondent: No, no. Interviewer: As long as it is somebody that talks to you? What about bedside manner? Respondent: Yes, that was all fine…… [Change in subject] Interviewer: …..Do you think it makes any difference to you how experienced the doctors are the ward round? Respondent: Well, not difference, darling. Interviewer: No? Respondent: To me. No. Interviewer: It doesn't make any difference? Respondent: No. Interviewer: If I'm understanding you correctly, for you an ideal situation would be that you have the doctor or a doctor, you don't find whether it's the most senior or just, as long a doctor – Respondent: A doctor sees you. Interviewer: Sees you, explains to you what's going on, and makes you feel better, if that's possible? Respondent: Yeah. Interviewer: Then you'd be happy.

Appendix 4.4 Patients Theme Table

		Interview 8 Interviewer: You want an experienced Doctor? Respondent: Yes. Interviewer: Do you want the most experienced Doctor? Respondent: No, any experience is good. *Interview 9* Interviewer: But do you, do you want to be seen by the head person? Respondent: Hmm. Interviewer: Yes? Respondent: Hmm. Interviewer: You do? Why is that? Respondent: Er, because I think he knows, he has more experience than... Interviewer: The others? Respondent: Hmm. Interviewer: So he will be...

Appendix 4.4 Patients Theme Table

		Respondent: The junior doctors. Interviewer: So he'll be better able to help you? Respondent: Yeah. *Interview 11* Interviewer: Do you think all the doctors are the same or do you think they're different doctors? Respondent: Oh well, for me they are the same. Interviewer: They're all the same? [Change in subject] Interviewer: - do you think it matters whether it's the most senior one or not? Respondent: Umm, yeah, I think it... I think it does, umm, because, umm, I'm at the stage where I'm really quite worried and I really don't know what's going on, so I would like somebody senior to, umm – Interviewer: And is that, is that... do you think that's a trust thing or you think they know more, or...? Respondent: I think it's a knowledge thing and a, umm... yeah. *Interview 3* Interviewer: … would you not mind what type of doctor it is? Respondent: I don't mind. Interviewer: You don't mind?

Appendix 4.4 Patients Theme Table

		Respondent: I don't mind. Interviewer: Why is that? Respondent: I know, because it is – it is, like, all the same, if it's white or black, or whatever... it's the same as a doctor. *Interview 12* Interviewer: What would you like? Respondent: Um. Interviewer: In an ideal world. Respondent: Someone quite high up. (small laugh) Interviewer: (small laugh) A very experienced Doctor? Respondent: Yeah. (small laugh) Interview 14
	- **TRUST IN SYSTEM**	Interviewer: Do you mind if it's the most senior Doctor or as long as it's a Doctor. What's the most important criteria for you? Respondent: Oh gosh, well getting better of course is the most important but I, don't mind if it's a top dog or the youngest pup because basically he will be on a team that leads to the top dog and will be supervised ultimately one way or another. Erm, and I don't think they really let them loose on you unless, you know (Laughs) They trust them to practice, really. *Interview 7* Interviewer: If we're talking about that particular doctor, do you mind what level of seniority they are?

Appendix 4.4 Patients Theme Table

		Respondent: No, not at all. Interviewer: You don't mind? Respondent: Not at all, no, no. Interviewer: So you don't mind if it's a more junior doctor or a more senior doctor? Respondent: Er, no, no, because if it was not – a – a – very well qualified – they would not put him; they would not put him in the position to check on patients. *Interview 13*
	TRAINING OF DOCTORS ON WARD ROUND	Interviewer: Um okay. So now you have experienced the ward round, do you think it is important from the doctor's training and development? Respondent: Yes. Interviewer: In what way? Respondent: Well, in every aspect. *Interview 2* Respondent: [Others being on a ward round] well it's knowledge and it's, umm, it's how I suppose that they get a variety of cases and learn. Interviewer: Do you think there's more than just the clinical side of things? Respondent: I think it's, umm, bedside manner and all that sort of... you know, how the patient is sort of coping and stuff like that. … I would be thinking that that's the only way that they would get to understand –

Appendix 4.4 Patients Theme Table

		Interviewer: You. Respondent: - your case and, and the person and, and meeting the person, umm, would give them an insight into perhaps the understanding that they need to. Interviewer: Yeah? Respondent: I think it's more than, er, just the medical, maybe sometimes it's, umm... I'm not saying in my case but I'm saying in some cases it could be like, umm, it's... it can be mental as well as physical how they would deal with the patient and... Interviewer: So they sort of get a measure of the patient. *Interview 3* Respondent: Well, the group's normally about between four and six. Interviewer: And is that an okay number? Respondent: Well, to me they're all learning. Interviewer: So the fact that there's some other people learning on the ward rounds, you just think that's fine? Respondent: Well, yeah, because everybody's got to learn something. Interviewer: Do you think the ward round is useful from a doctor's training point of view? Respondent: Oh yeah, gets them to talk to them properly. Interviewer: So it's not only the medical knowledge which you, sort of, alluded to earlier, but also they learn how to talk to patients properly.

Appendix 4.4 Patients Theme Table

		Respondent: Oh yeah, yeah, which they must, they must. *Interview 4* Interviewer: Do you think they learn anything other than just about the clinical things that are wrong with people? Respondent: It's – I think it's... It's most important, is – is how do they deal with the client – with the – with the patients. Interviewer: Okay. Respondent: How they approach them, talking to them, talk to them. Er, a smile on their face, they have to have – this isn't there, to learn it from practical work, with the day ward. *Interview 14*
	LIKEABILITY	Interviewer: And what would you like that doctor to be like? Respondent: Just a pleasant man. Interviewer: A pleasant man, does it have to be a man? Respondent: Oh, no, no, a pleasant person. *Interview 4* Respondent: Well I'd like him to be like three Doctors. Interviewer: Three Doctors? In one?

Appendix 4.4 Patients Theme Table

		Respondent: Doctor Hunt. (Pause) Doctor Fury and Doctor Nice. Interviewer: And what type of Doctors are they? Respondent: General Practitioners. Interviewer: Okay, so you like and respect your General Practitioners so you'd like Hospital Doctors to be a bit more like the General Practitioners. In what way do we differ from the General Practitioners? What do the General Practitioners do that you like so much? Respondent: They're more personable. *Interview 5* Interviewer: What do you expect of that ward round? Respondent: Ideally? Interviewer: Yes ideally, that's what I want to know. Respondent: One would expect… a sort of rapport between the patient and the doctor. Interviewer: Yeah. Respondent: And… establish a contact that is rare – I believe is rare. Interviewer: You think it's rare from your past experience or you think it's rare to get? Respondent: From past experience. *Interview 2*

Appendix 4.4 Patients Theme Table

		Respondent: Well you know… You see it's you know if you can say that because some doctors at the moment seem very proper, very nice. But doctors are a joke and just bad. Interviewer: So you don't mind about their manner? As long as they know what they are talking about? (overspeaking) Respondent: Downright rude. You see doctors can be mean bastards and it won't matter. Interviewer: Because everyone's different. Respondent: Yes of course. But certainly, obviously this is the way that they operate, not deliberately, its just part of their nature. They must… You must like medicine. You must like looking after people. I think-to be a doctor. Interviewer: Okay so for you… As long as the doctor knows what they are talking about and inspires some trust in you, almost their bedside manner doesn't matter? Respondent: Well, I supposed to a certain degree, you want to like him, but you don't have to like a doctor. *Interview 1*
	INSPIRING CONFIDENCE	Interviewer: The best doctor? Respondent: Yes. Interviewer: So- Respondent: I've decided that what I like in a doctor.

Appendix 4.4 Patients Theme Table

		Interviewer: So when you say best, you mean knows what they're talking about? Respondent: Knows and I have confidence in him Interviewer: You want the best doctor. Not the boss doctor. You want the best doctor. Respondent: Exactly, yes. Interviewer: And what's the best doctor to you? Respondent: You, to a certain degree you could say well okay he knows what he's talking about. He's confident. *Interview 1*
	FAMILIARITY WITH DOCTOR	Interviewer: Do you think it's important to know who the doctor is? Respondent: I think so. Interviewer: So you'd like to know who they are? Respondent: Hmm mm. Interviewer: Or do you prefer it to be a doctor that you know? Respondent: Whatever, it don't make no difference – Interviewer: It doesn't make any difference? Respondent: No. *Interview 8*

Appendix 4.4 Patients Theme Table

	LACK OF CONFIDENTIALITY	Respondent: Well… it might be nice if the curtains were drawn and there's a… um… an air of conspiracy if you like. Interviewer: Conspiracy between you and the doctor? Respondent: Yes. Interviewer: What do you mean by "conspiracy"? Respondent: Well… (coughs) well confidentiality rather. *Interview 2* Respondent: Erm, it's, it's generally a good one, erm, you know, I think as long as nothing, nothing too personal is discussed in this kind of setting, and you know, the general ward, with other people around, so if medical issues, but it's absolutely fine. Interviewer: So do you worry a little bit about the confidentiality? Respondent: Yes, I do. … Interviewer: Erm, have you found that there tend to be a few people or a lot of people that come to see you? Respondent: It's been, in the past it's been a few people, between sort of four to five. Interviewer: Okay. And is that an okay number as far you're concerned? Respondent: Yeah. It's okay, it's okay, it's just the, it's just my, my thing is the privacy issue. Interviewer: Erm... what about medical students? Do you mind there being medical students?

Appendix 4.4 Patients Theme Table

		Respondent: No I don't mind, I don't... I don't mind it. Interviewer: You can be honest. Respondent: Yeah I know, no, I don't, no I've had medical students before, and I think... I think depending on the, just depending on the subject, I do get a bit sometimes sad and sort of embarrassed with my medical issues and granted when there's more, the more people there. Interviewer: Do, you know you can ask them to leave? Respondent: Oh okay. I didn't know. *Interview 10*
RESPECT	**FEELING CARED FOR**	Respondent: Well you know, as long as you've got somebody looking after you is okay I think. You feel it's… You're- Interviewer: As long as you're being looked after you don't mind. *Interview 1* Interviewer: What else would you like that Doctor to be like? Respondent: Um, just friendly, and interested in how I'm feeling, and not just the clinical things, I suppose. *Interview 14* Smiling, because patients sometimes – some – it depends for what their sickness, what their illness; if you – if you come in sad, they will think, "Wow, what's wrong?" You give them – you give them ideas like, "Am I so sick?" or so on. When you come in smiling, smiles make other person smiles automatically. *Interview 13*

Appendix 4.4 Patients Theme Table

	POLITENESS	Interviewer: So you, you, you felt all alone? Respondent: Yeah. Interviewer: No one was helping you, no one was paying... Respondent: No, no, it – Interviewer: And you just felt awful? Respondent: Yes. Interviewer: And it was too cold? Respondent: Yeah. I just come in from dialysis, you know, I was tired, I was hungry, nobody did ask me for a cup of tea or anything there... Interviewer: So it's, so it's important? Respondent: Yes. Interviewer: For people, for sort of common politeness, in a way, just to check how you are doing? Respondent: Some people are very polite, some people are very... Interviewer: And do you think it's important to be polite? Respondent: It should be polite with the patient. *Interview 6*

Appendix 4.4 Patients Theme Table

		Respondent: Yes and not treating you like the complete ninny that you probably are. Interviewer: Well, I don't think you are. Respondent: No, but well, they think that everybody is, you know. Interviewer: Doctors? Respondent: There are some Doctors who think that all patients are ninnies. *Interview 7*
	PROFESSIONAL APPEARANCE	Interviewer: And as far as what the Doctor is like, the one that tends to be, whoever it is that's leading it. Is there anything you particularly want from them? Respondent: Well, I could say that. I sound very old-fashioned here but well presented, neat. It doesn't matter if the hair is long, it should be in a ponytail, you know? They should certainly look clean. I'm not over-mad if they're male, with the three day stubble look but other than that. *Interview 7* Interviewer: do you always know who the doctors are? Respondent: Er... from the way they both – that this thing is around the neck. Interviewer: So it's all about the stethoscope? I'm not wearing a stethoscope today, so you wouldn't – Respondent: No, no, because no, you're not going for a check in, this is why. *Interview 13*

Appendix 4.4 Patients Theme Table

	BEING PART OF DECISION-MAKING PROCESS	Interviewer: What about how involved do you want to be in the decisions that are being made? Respondent: I want to be given, I suppose, I want to feel that I've been given a choice and that the, a choice is available, but then I understand that I don't have the medical knowledge and that clearly the, you know, the knowledge lies with the, the doctors, that's where I trust. *Interview 10* Interviewer: Okay. Do you wish that you had felt more included? Respondent: Yes. Interviewer: Did you feel included in the decisions? Respondent: No. Interviewer: Would you want to be included in the decisions? Respondent: Yes. Interviewer: How do you think they could go about making you feel more included? Respondent: Well, they could speak more. Interviewer: Okay. So speak more to you? Respondent: Yes. Interviewer: About …? Respondent: Well, everything in general. Interviewer: Okay. So everything that is going on, and then you would feel more included?

Appendix 4.4 Patients Theme Table

		Respondent: Yes. *Interview 2*
	RUDENESS	Interviewer: Do you mind if they discuss amongst themselves? Respondent: As long as they don't try to make a fool out of me, yeah. *Interview 4* Respondent: Well you know… You see it's you know if you can say that because some doctors at the moment seem very proper, very nice. But doctors are a joke and just bad. Interviewer: So you don't mind about their manner? As long as they know what they are talking about? (overspeaking) Respondent: Downright rude. You see doctors can be mean bastards and it won't matter. Interviewer: Because everyone's different. Respondent: Yes of course. But certainly, obviously this is the way that they operate, not deliberately, its just part of their nature. They must… You must like medicine. You must like looking after people. I think-to be a doctor. Interviewer: Okay so for you… As long as the doctor knows what they are talking about and inspires some trust in you, almost their bedside manner doesn't matter? Respondent: Well, I supposed to a certain degree, you want to like him. You don't have to like a doctor. … Okay so you want someone that knows what they're doing and their manner is not so

Appendix 4.4 Patients Theme Table

			important … as long as it seems like they know what they're doing. And their manner is… Doesn't have to be an amazing bed side manner. But they can't be rude. *Interview 1*
	BEING TALKED OVER	Interviewer: Respondent: Interviewer: Respondent: *Interview 4*	Okay. So as long as they're, sort of, discussing you and your case, if they're talking amongst themselves and not to you directly, that's okay? I prefer to be spoken to. Rather than over? Than over, yeah.
	EMBARRASSMENT	Interviewer: Respondent: Interviewer: Respondent: Interviewer: Respondent: *Interview 10*	Okay, let me just look at my questions for a second. Erm... what about medical students? Do you mind there being medical students? No I don't mind, I don't... I don't mind it. You can be honest. Yeah I know, no, I don't, no I've had medical students before, and I think... I think depending on the, just depending on the subject, I do get a bit sometimes sad and sort of embarrassed with my medical issues and granted when there's more, the more people there. Do, you know you can ask them to leave? Oh okay. I didn't know.

Appendix 4.4 Patients Theme Table

	FEAR	Interviewer: And what about the cure as you call it, so the treatment, do you want that explained to you? Respondent: Yeah in some ways, I suppose, love. Interviewer: In some ways? So in some ways... Respondent: Yeah. You get a bit frightened, don't you, at my age? (Laughter) You wonder what they're going to tell you! (Laughter) Interviewer: So what are you scared of? Respondent: Not really scared, but erm... it's just to explain things to you and what you've got to go through like, you know? Interviewer: So you're worried of what the future holds? Respondent: Hmm mm. Interviewer: As regards your treatment or the illness? Respondent: The illness I think. Interviewer: So you're, you're frightened that it may get a bit worse? Respondent: I hope not. *Interview 8*

Appendix 5: Patient notes

Please see attached Zip file containing the patient notes

Appendix 5.3 Feedback Questionnaire

Today's date: *(dd/mm/yyyy)* _____ Venue: _____

What ST grade are you or equivalent? _____
When is your CCT date? _____
What is your speciality? _____

Are you: Male / Female *(please circle)*

		Very Poorly/ Very Poor	Poorly/ Poor	Adequate/ Adequately	Well/ Good	Very well/ Very Good
1	How well did the educational programme for the day meet the stated aims?	1	2	3	4	5
2	How well did it match your own learning needs?	1	2	3	4	5
3	How interesting did you find it?	1	2	3	4	5
4	How relevant did you find it?	1	2	3	4	5
5	How would you rate the style of the tutors/facilitators?	1	2	3	4	5
6	How would you rate your overall level of satisfaction with the educational programme you took part in today?	1	2	3	4	5
7	How useful did you find the opportunity to reflect on your performance?	1	2	3	4	5
8	Please outline three things you have learnt today 1. 2. 3.					
9	Do you feel prepared for life as a consultant?					

10	What do you feel most under prepared for in life as a consultant?		
11	**Do you believe that today's course** a) is likely to enhance your multidisciplinary working in your current/future team?	Yes	No
	b) is likely to impact on your clinical practice in the future to the benefit of patient care?	Yes	No
	c) is likely to impact on your future practice with regard to patient safety?	Yes	No
	d) is likely to enhance your communication skills?	Yes	No
	e) has made you more prepared for life as a consultant?	Yes	No
12	Is there anything you have learnt today that has not been taught **effectively** elsewhere? If so, what?		
14	Within time constraints, what could we do to improve today's programme?		

Thank you for completing this form. All information will remain confidential & will be used to improve future courses.

Appendix 5.5 Consent form for filming and use of film

PTWR – Preparing to Lead (GIM SIM)

Simulation training day to prepare senior registrars to be consultants.

Name:

Date:

Site:

I, _____, give permission for the film footage to be used in the future for educational or research purposes. I also give permission for any quotations from my footage to be used.

Signature:

Date:

LEAD PROVIDER
Post-graduate medical education for London

Imperial College Healthcare NHS
NHS Trust

Email

From: Smith, Geoff
To: Pomfret, Suzanne
Subject: RE: Research propsal - Ethics

Sent: 5/8/2014 1:22:42 PM

Dear Suzanne,

Having reviewed the projects given that the interviews involve NHS staff (Specialty Registrars) and do not involve either patient information or patients themselves they, as I understand, fall outside the need for formal ethics committee approval.

Regards

Geoff

Dr Geoff Smith
Consultant Gastroenterologist
Head of Gastroenterology, ICHNT
Director of Postgraduate Medical Training, Imperial Lead Provider

Geoff.smith@imperial.nhs.uk
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+44 (0) 203 313 0966

From: Pomfret, Suzanne
Sent: 28 April 2014 14:26
To: Smith, Geoff
Subject: Research propsal (Short)

Geoff

So I am hoping to submit my registration/application later today now I have the department question cleared up and two referees. It asks you to upload a short proposal so please see attached. I have listened to Nick's email. I have not mentioned further ethnography but have included possible analysis of the data from the Sim days as this seems like a good opportunity for comparision of SPRs and consultants in a more standardised setting. Then I can hopefully compare the interview findings with the findings from the Sim analysis? What do you think?

I am off on Thursday and Friday this week but hope to have something written the week after by way of introduction as it is a week without tubes so a good opportunity to get some literature searching/reading/writing done. I think I should also come up with a vague timetable and apply for ethics approval.

Any other thoughts?

I would also really like to get the Coaching email out to the F1s/SHOs so please let me know if you think the stuff I sent you is ok. Sorry to be a pain!

Thank you

Suzie

Appendix 5.6

Cost

The cost to run simulation is relatively low as long as access to a simulation suite or large room is available free of charge. Set up costs are minimal as equipment and paperwork can be re-used. The main cost is for professional actors, but they bring a wealth of expertise. The price range for professional actors is from £100-500/per day each.

Funding

This project was funded by Health Education England.

Setting up

The simulation suite or hall was set up to look like a medical ward. It had 4 beds and possibly a chair by the bed if there was a friend or relative in the scenario. Partitions or curtains were not used for ease of watching the simulation. SMOTS was available and the GoPro cameras were used but these are not essential.

The following equipment was necessary for running the simulation:

- Introductory Powerpoint – learning objectives, how the day will run, timetable, fire evacuations points etc.
- 4 beds made up with hospital sheets/pillows etc.
- Chair for companion
- Medical notes for each patient in each of the 4 ward rounds
- Drug charts for each patient in each of the 4 ward rounds
- Spare clinical continuation sheets
- Patient ID badges
- 'Cannulas' – the inner tube of the cannula resting on the skin held in place with a simple crepe dressing
- Mock up for a bag of fluids/emergency drugs etc
- I Pad access for ECGs and CXRs/ other imaging
- Print outs of the scenarios for actors and 'team' although all emailed prior to training days

Appendix 6.1: The Oxford NOTECHS Tool

Leadership and management	
Leadership	Involves/reflects on suggestions/visible/accessible/inspires/motivates/coaches
Maintenance of standards	Subscribes to standards/monitors compliance to standards/intervenes if deviation/deviates with team approval/demonstrates desire to achieve high standards
Planning and preparation	Team participation in planning/plan is shared/understanding confirmed/projects/changes in consultation
Workload management	Distributes tasks/monitors/reviews/tasks are prioritised/allots adequate time/responds to stress
Authority and assertiveness	Advocates position/values team input/takes control/persistent/appropriate assertiveness
Teamwork and cooperation	
Team building/maintaining	Relaxed/supportive/open/inclusive/polite/friendly/use of humour/does not compete
Support of others	Helps others/offers assistance/gives feedback
Understanding team needs	Listens to others/recognises ability of team/condition of others considered/gives personal feedback
Conflict solving	Keeps calm in conflicts/suggests conflict solutions/concentrates on what is right
Problem-solving and decision-making	
Definition and diagnosis	Uses all resources/analytical decision-making/reviews factors with team
Option generation	Suggests alternative options/asks for options/reviews outcomes/confirms options
Risk assessment	Estimates risks/considers risk in terms of team capabilities/estimates patient outcome
Outcome review	Reviews outcomes/reviews new options/objective, constructive and timely reviews/makes time for review/seeks feedback from others/conducts post-treatment review
Situation awareness	
Notice	Considers all team elements/asks for or shares information/aware of available of resources/encourages vigilance/checks and reports changes in team/requests reports/updates
Understand	Knows capabilities/cross-checks above/shares mental models/speaks up when unsure/updates other team members/discusses team constraints
Think ahead	Identifies future problems/discusses contingencies/anticipates requirements

The Oxford NOTECHS Tool

Appendix 6.2: 1st iteration of the M-NOTECHS tool

M-NOTECHS[1] - Non-technical skills assessment tool for leading medical PTWRs

Trainee Identifier:	
Appraiser role:	Trainee - Self appraisal/ MDT/ Trainee Observer/ Faculty
Date:	
WR (please circle):	Blue/ Red/ Yellow/ Green

		1	2	3	4	5
Leadership, management and role modelling	OVERALL:					
Leadership	Involves / reflects on suggestions / visible / accessible / inspires / motivates / coaches / Role model					
Maintenance of standards - Protocols, guidelines	Subscribes to standards and guidelines / monitors compliance to standards / intervenes if deviation / deviates with explanation and team approval / demonstrates desire to achieve high standards					
Planning and preparation	Team participation in planning / plan is shared / understanding confirmed / projects / changes in consultation style or plan as appropriate					
Workload / time management	Distributes tasks/ appropriate delegation / monitors / reviews / tasks are prioritised / allots adequate time / responds to stress					
Authority and assertiveness	Advocates position / values team input / takes control / persistent / appropriate assertiveness					
Teamwork / cooperation	OVERALL:					
Team building / maintaining	Relaxed / supportive / open / inclusive / polite / friendly / use of humour / does not compete / checks and keeps teams interest					
Support of others	Helps others / offers assistance / gives feedback/ checks understanding / encourages particpation and junior decision making					
Understanding the teams needs	Listens to others / recognises ability of team / condition of others considered / gives personal feedback					
Conflict solving	Keeps calm in conflicts/ suggests conflict solutions/ concentrates on what is right / listens /respectful and maintains trust/ appropriate level of assertiveness					
Teaching / Training	Supervision / Uses feedback / discussion / collaboration to increase learning. Aware of team's needs and offers guidance / advice / teaches how to think as well as what to know / encouraging					
Problem solving / decision making	OVERALL:					
Clinical decision making	Uses all resources / analytical decision-making / reviews factors with team / inclusive					
Non clinical decision making	Uses all resources / analytical decision-making / reviews factors with team / inclusive					
Risk assessment	Estimates risks / considers risk in terms of team capabilities / estimates patient outcome / explanation/ respectful of duty of candour / decisive					
Plan for review / considers options	Reviews outcomes / reviews new options / objective, constructive and timely reviews / makes time for review / seeks feedback from others / conducts post-treatment review					
Situational awareness	OVERALL:					
Notice	Considers all team elements / asks for or shares information / aware of available of resources / encourages vigilance / checks and reports changes in team / requests reports / updates / notices and deals with error/omissions appropriately					
Understanding	Knows capabilities / cross-checks above / shares mental models / speaks up when unsure / updates other team members / discusses team constraints / supervision					
Think ahead	Identifies future problems / discusses contingencies / anticipates requirements / consideration of whole picture					
Communication skills	OVERALL:					
Empathy	Demonstrates understanding of patient viewpoint and develops rapport, listening and involvement of patient					
Giving Instructions	Gives clear instructions, easy to follow, witin teams limitations and abilities, gives scope for review					
Facilitation / feedback	Facilitative and feedback during ward round					
Politeness / Introductions	Introduction to themselves and team / courtesy					
Clarity	Clarity of understanding / clarity of instructions					

Comments: (Strengths, weaknesses, any other relevant comments)

For clinical team

1 *Below expectations of a junior SPR (ST 3-5)*
2 *Standard expected of junior SPR (ST 3-5)*
3 *Standard expected of senior SPR (ST 6-8)*
4 *Standard expected of consultant*
5 *Beyond expectations*

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Imperial College Healthcare NHS Trust

Reference -1. Mishra, A, Catchpole, K & McCulloch, P (2009) The Oxford NOTECHS System: reliability and validity of a tool for measuring teamwork behaviour in the operating theatre Qual Saf Health Care 2009; 18: 104-8

Appendix 6.3: 2nd iteration of the M-NOTECHS tool

M-NOTECHS[1] - Non-technical skills assessment tool for leading medical PTWRs

Trainee Identifier:	
Appraiser role:	Trainee - Self appraisal/ MDT/ Trainee Observer/ Faculty
Date:	
WR (please circle):	Blue/ Red/ Yellow/ Green

		1	2	3	4	5
Leadership, management and role modelling	OVERALL:					
Leadership	Involves / reflects on suggestions / visible / accessible / inspires / motivates / coaches / Role model					
Maintenance of standards - Protocols, guidelines	Subscribes to standards and guidelines / monitors compliance to standards / intervenes if deviation / deviates with explanation and team approval / demonstrates desire to achieve high standards					
Planning and preparation	Team participation in planning / plan is shared / understanding confirmed / projects / changes in consultation style or plan as appropriate					
Workload / time management	Distributes tasks/ appropriate delegation / monitors / reviews / tasks are prioritised / allots adequate time / responds to stress					
Authority and assertiveness	Advocates position / values team input and conveys to team / takes control / deals well with constructive discussion / appropriate assertiveness / unthreatened by disagreement / maintains approachability					
Flow / Integration	Manages multiple elements of the ward round. Appears relaxed and effortless. Inspires confidence and puts team & patients at ease. Inspires interest/ showmanship					
Teamwork / cooperation	OVERALL:					
Team building / maintaining	Relaxed / supportive / open / inclusive / polite / friendly / use of humour / does not compete / checks and keeps teams interest					
Support of others	Helps others / offers assistance / gives feedback/ checks understanding / encourages particpation and junior decision making					
Understanding the teams needs	Listens to others / recognises ability of team / condition of others considered / gives personal feedback					
Conflict solving	Keeps calm in conflicts/ suggests conflict solutions/ concentrates on what is right / listens /respectful and maintains trust/ appropriate level of assertiveness					
Teaching / Training	Supervision / Uses feedback / discussion / collaboration to increase learning. Aware of team's needs and offers guidance / advice / teaches how to think as well as what to know / encouraging					
Problem solving / decision making	OVERALL:					
Clinical decision making	Uses all resources / analytical decision-making / reviews factors with team / inclusive					
Non clinical decision making	Uses all resources / analytical decision-making / reviews factors with team / inclusive					
Risk assessment	Estimates risks / considers risk in terms of team capabilities / estimates patient outcome / explanation/ respectful of duty of candour / decisive					
Plan for review / considers options	Reviews outcomes / reviews new options / objective, constructive and timely reviews / makes time for review / seeks feedback from others / conducts post-treatment review					
Situational awareness	OVERALL:					
Notice	Considers all team elements / asks for or shares information / aware of available of resources / encourages vigilance / checks and reports changes in team / requests reports / updates / notices and deals with error/omissions appropriately					
Understanding	Knows capabilities / cross-checks above / shares mental models / speaks up when unsure / updates other team members / discusses team constraints / supervision					
Think ahead	Identifies future problems / discusses contingencies / anticipates requirements / consideration of whole picture					
Coping with stress	Copes with stress for individual, themselves and team					
Approach to distractions	Stays calm, remains focussed but addresses concerns where warranted					
Communication skills	OVERALL:					
Empathy	Demonstrates understanding of patient viewpoint and develops rapport, listening and involvement of patient					
Giving Instructions	Gives clear instructions, easy to follow, witin teams limitations and abilities, gives scope for review					
Facilitation / feedback	Facilitative and feedback during ward round					
Politeness / Introductions	Introduction to themselves and team / courtesy					
Clarity	Clarity of understanding / clarity of instructions					

Comments: (Strengths, weaknesses, any other relevant comments)

For clinical team

1 *Below expectations of a junior SPR (ST 3-5)*
2 *Standard expected of junior SPR (ST 3-5)*
3 *Standard expected of senior SPR (ST 6-8)*
4 *Standard expected of consultant*
5 *Beyond expectations*

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Reference -1. Mishra, A, Catchpole, K & McCulloch, P (2009) The Oxford NOTECHS System: reliability and validity of a tool for measuring teamwork behaviour in the operating theatre Qual Saf Health Care 2009; 18: 104-8