Assessing and improving the Efficacy of Cancer Multi-Disciplinary Teams in Urology

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Declaration of originality

The work presented in this thesis is my own and all else has been appropriately referenced.

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Abstract

Cancer care driven by a multidisciplinary team (MDT) meeting is mandatory in UK and has become the platform to discuss cancer cases in many countries worldwide.

My aim in this research is to assess the functionality and efficacy of the MDT meeting in making and implementing decisions. Specifically, I aim to develop tools to evaluate how MDTs make clinical decisions and recommendations, understand the role of leadership within these teams and measure why MDT decisions may not get implemented in patient care.

The introduction chapter presents an exploration of the evidence base available in the literature on the functionality of cancer MDTs with a focus on how to assess the efficacy of MDTs. In this chapter, I used an 'input-process-outcome' framework as a systems approach to the MDT and its working. Chapter 2 is a systematic review of the existing evidence on MDT decision making and decision implementation across surgical specialties. Chapter 3 focuses on urological cancers and retrospectively evaluates MDT decision making from the perspective of implementation of team decisions into patient care. Chapters 4 and 5 present the views of core MDT members on the efficacy of the MDT in addition to problems and shortcomings faced by the MDT and also suggestions for improvement. Chapter 6 presents analysis of a survey on how to improve the efficiency of MDT. Chapters 7 and 8 present data from studies that objectively assess MDT performance by developing and validating observational assessment tools.

Finally, the discussion chapter reflects on the findings of this research and discusses their implications for future research and practice.

List of peer reviewed publications and presentations

Peer reviewed publications

Peer reviewed articles – Appendix 1 includes abstracts from published articles

1. Jalil R, Ahmed M, Green JSA, Sevdalis N. Factors that can make an impact on decision-making and decision implementation in cancer multidisciplinary teams: An interview study of the provider perspective. Int J Surg. 2013;11(5):389-94.

2. Jalil R, Lamb B, Russ S, Sevdalis N, Green JSA. The cancer multi-disciplinary team from the co-ordinators' perspective: results from a national survey in the UK. BMC health services research. 2012;12:457.

3. Hull L, Arora S, Symons NR, Jalil R, Darzi A, Vincent C, et al. Training Faculty in Nontechnical Skill Assessment: National Guidelines on Program Requirements. Ann Surg 258, no. 2 (2013): 370-5.

Peer reviewed conference proceedings

1. Jalil R, Sarkar S, Rios MV, Hughes J, Sevdalis N, Green JSA. Barriers to decision making in cancer multidisciplinary teams. Analysis of cancer decision-making in three surgical specialties. Due to be published in BJUI.

2. Jalil R, Sarkar S, Sevdalis N, Green JSA. Decision making and decision implementation in cancer multidisciplinary teams MDTs. Due to be published in BJUI.

3. Jalil R, Akhter W, Sevdalis N, Green JSA. Chairing and leadership in cancer multidisciplinary teams: Development and evaluation of an assessment tool. European Urology Supplements. 2013;12(6):132-3.

4. Jalil R, Rios MV, Sevdalis N, Green JSA. Barriers to decision making in cancer multidisciplinary teams. Analysis of cancer decision-making in two surgical specialities. European Urology Supplements. 2013;12(6):164.

5. Jalil R, Sevdalis N, Green JSA. Treatment recommendations by cancer multidisciplinary meetings: Do they get implemented? A systematic review. European Urology Supplements. 2013;12(6):166-7.

6. Jalil R, Rios MV, Sevdalis N, Green JSA. Barriers to decision making in cancer multidisciplinary teams: Analysis of cancer decision-making in two surgical specialities. Qatar Foundation Annual Research Forum Proceedings. 2013(2013):BIOP 026.

7. Jalil R, Akhter W, Sevdalis N, Green JSA. Chairing and leadership in multidisciplinary cancer teams: Development and evaluation of an assessment tool. Qatar Foundation Annual Research Forum Proceedings. 2013(2013):BIOP 04.

8. Jalil R, Ahmed M, Sevdalis N, Green JSA. Don't forget the patient: Factors that impact on decision-making and decision implementation in cancer MDT meetings. European Urology Supplements. 2012;11(5):226.

9. Jalil R, Lamb B, Green JSA, Sevdalis N. P100 Streamlining the urology MDT meeting – Survey results from a national sample. European Urology Supplements. 2012;11(5):225.

10. Jalil R, Lamb B, Sevdalis N, Green JSA. P101 The views of MDT coordinators on MDT meetings. European Urology Supplements. 2012;11(5):225-6.

11. Jalil R, Lamb B, Sevdalis N, Green JSA. The multi-disciplinary team (MDT) from the coordinators' prospective. Report of the MDT-coordinators' survey. International journal of surgery (London, England). 2012;10(8):S76.

12. Jalil R, Lamb B, Russ S, Sevdalis N, Green JSA. The cancer multi-disciplinary team from the co-ordinators' perspective. Qatar Foundation Annual Research Forum Proceedings. 2012(2012):AESNP19.

13. Lamb B, Jalil R, Shah S, Green JSA, Allchorne P, Sevdalis N. Urology cancer patients' views on multidisciplinary team (MDT) working. A pilot study. International journal of surgery (London, England). 2012;10(8):S97-S8.

Publications under review

1. Jalil R, Lamb BW, Sevdalis N, Vincent C and Green JSA Strategies to improve the efficiency and utility of Multidisciplinary Team meetings in cancer care: a survey study. BMC MS ID 3905509431159240.

2. Jalil R, Akhter W, Lamb BW, Taylor C, Harris J, Green JSA, Sevdalis N. Feasibility, reliability and construct validation of team performance assessment for multidisciplinary cancer tumor boards. Journal of Urology JU-14-179

Presentations

1. Sarkar S, Hamid S, Jalil R, Bishara S, Ellis G, Bunce C, Kavia R, Hrouda D, Lamb B, Green JSA. Documentation of multidisciplinary team recommendations: are we getting it right? RSM Urology Section Prize 2 - Malcolm Coptcoat Spring short papers prize meeting March 2014.

2. Jalil R, Sarkar S, Rios MV, Hughes J, Sevdalis N, Green JSA Barriers to decision making in cancer multidisciplinary teams. Analysis of cancer decision-making in three surgical specialties Urofair congress 2014 Singapore.

3. Jalil R, Sarkar S, Sevdalis N, Green JSA Decision making and decision implementation in cancer multidisciplinary teams MDTs Urofair congress 2014 Singapore.

4. Jalil R, Akhter W, Sevdalis N, Green JSA. P004 Chairing and leadership in cancer multidisciplinary teams: Development and evaluation of an assessment tool. European Multidisciplinary Meeting on Urological Cancers EMUC Marsielle November 2013.

5. Jalil R, Rios MV, Sevdalis N, Green JSA. P088 Barriers to decision making in cancer multidisciplinary teams. Analysis of cancer decision-making in two surgical specialities. European Multidisciplinary Meeting on Urological Cancers EMUC Marsielle November 2013.

6. Jalil R, Sevdalis N, Green JSA. P094 Treatment recommendations by cancer multidisciplinary meetings: Do they get implemented? A systematic review. European Multidisciplinary Meeting on Urological Cancers EMUC Marsielle November 2013.

7. Jalil R, Rios MV, Sevdalis N, Green JSA. Barriers to decision making in cancer multidisciplinary teams: Analysis of cancer decision-making in two surgical specialities. Qatar Foundation Annual Research conference Doha Novermber 2013.

8. Jalil R, Akhter W, Sevdalis N and Green JSA. Chairing and leadership in multidisciplinary cancer teams: Development and evaluation of an assessment tool. Qatar Foundation Annual Research conference Doha Novermber 2013.

9. Jalil R, Rios MV, Sevdalis N and Green JSA. Barriers to decision making in cancer multidisciplinary teams. Analysis of cancer decision-making in two surgical specialties, ASiT Conference Manchester April 2013.

10. Jalil R, Akhter W, Sevdalis N and Green JSA. Chairing and leadership in multidisciplinary cancer teams: development and evaluation of an assessment tool. ASiT Conference Manchester April 2013.

11. Jalil R, Ahmed M, Sevdalis N and Green JSA. Don't forget the patient: Factors that impact on decision implementation in cancer MDT meetings, 4th European Multidisciplinary Meeting on Urological Cancer EMUC Barcelona November 2012.

12. Jalil R, Lamb B, Green JSA and Sevdalis N. Streamlining the Urology MDT meeting- Survey results from a national sample, 4th European Multidisciplinary Meeting on Urological Cancer EMUC Barcelona November 2012.

13. Jalil R, Lamb B, Sevdalis N and Green JSA. The views of MDT coordinators on MDT meetings, 4th European Multidisciplinary Meeting on Urological Cancer EMUC Barcelona November 2012.

14. Green J, Jalil R, Gohil P. The evolving role of the CNSs in MDTs. The British association of Uroogical Nurses BAUN annual conference 2012 Brighton.

15. Jalil R , Lamb B, Russ S, Sevdalis N and Green JSA. The cancer multi-disciplinary team from the co-ordinators' perspective. The Joint Qatar Foundation Annual Research Forum and Arab Expatriate Scientists Network Symposium Doha October 2012.

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17. Jalil R, Lamb B, Green JSA and Sevdalis N. Reforming the Urology MDT meeting – A national survey, London Cancer Urology Annual Research and Audit Meeting September 2012.

18. Jalil R, Lamb B, Green JSA and Sevdalis N. The views of MDT coordinators on MDT meetings. UROFAIR 2012 congress Singapore March 2012.

19. Jalil R, Lamb B, Shah S, Sevdalis N, Allchorne P and Green JSA. Urology MDTs; from patients' perspective. UROFAIR 2012 congress Singapore March 2012.

20. Lamb B, Jalil R, Shah S, Green JSA, Allchorne P and Sevdalis N. Urology cancer patients' views on Multidisciplinary team (MDT) working. A pilot study, ASiT Conference Cardiff March 2012.

21. Jalil R, Lamb B, Sevdalis N and Green JSA. The Multi-disciplinary Team (MDT) from the coordinators' prospective. Report of the MDT-coordinators' survey, ASiT Conference Cardiff March 2012.

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1 Introduction

1.1 Cancer Multidisciplinary Teams MDT

Multidisciplinary teams (MDTs) in the NHS cancer care have been instituted for almost 20 years. The rationale for MDT-driven care is that bringing together cancer specialists from a range of disciplines allows holistic and unbiased review of treatment options and optimisation of treatment pathways for patients. This thesis focuses on cancer multidisciplinary cancer teams with particular attention to the functionality of such teams and how that is linked to the outcome. In this introductory chapter, I first review the definition and the history of MDTs; I then provide an overview of their role within the cancer care pathway using an 'input-process-outcome approach'.

The multidisciplinary team (MDT) is defined as a "group of people of different healthcare disciplines, which meets together at a given time (whether physically in one place, or by video or teleconferencing) to discuss a given patient and who are each able to contribute independently to the diagnostic and treatment decisions about the patient".[1] The role of the MDT is defined as *"The main mechanism to ensure truly holistic care for patients and a seamless service for patients throughout their disease trajectory and across the boundaries of primary, secondary and tertiary care".*[2] Nowadays, it has become a standard practice in the UK that treatment decisions for cancer patients are made within the context of MDT meetings.[3, 4]

Before the early 1990s, only a small proportion of cancer patients were managed by MDT of cancer specialists in some hospitals. In 1995, The Calman-Hine report set out plans to improve the delivery of cancer services within the UK National Health System (NHS) and

provided the corner stone for establishing the national standards for cancer care.[5] Between 1996 and 1999, the UK Department of Health (DoH) produced a series of evidence-based documents aimed to establish national standards for cancer care. Most of the recommendations in Calman-Hine were first applied to breast cancer services, and have subsequently been reformed in services for other common cancers such as colorectal, lung, gastrointestinal and gynaecological cancers.[6-10] In 2000, the DoH introduced the NHS cancer plan [3], which mandated the process for the management of cancer in UK. Then in 2004, the DoH published the *Manual for Cancer Services*. This document demonstrated that cancer services were meeting the *Standards for Better Health*. In 2010, the National Cancer Action Team (NCAT), published a document that set out the characteristics of effective cancer MDT meeting as identified by responses of over 2000 MDT members to a survey in 2009 about MDT working.[11]

Efforts have been undertaken to endorse and implement MDTs in UK,[1, 3] Europe, [12, 13] USA, Asia,[14] and Australia however in other countries like Canada, there was no documentation of its use and establishment until recently.[15] Other countries remain not to have an MDT or it is non-mandatory.[16]

Within urology, there are tree defined levels of care – all arranged via MDTs: local care, specialist care and supra-specialist care. At each level of care, a different type of MDT is carried out – either local, specialist or a supra- regional MDT meetings to choose the best care and treatment pathway.[1]

1.2 Appraising the quality and efficacy of the MDT

In the UK, the MDT is subject to an annual review process known as the 'peer review'. The national annual cancer peer review programme is a requisite mechanism for assessment of

MDTs and a national quality assurance programme for cancer services. MDTs have to show their compliance with standard measures that are derived from tumour-specific improving outcomes. This programme involves 3 stages: Internally validated self-assessment, externally verified self-assessment and peer review visits. Each of the stages determines whether each measure has been achieved or not, and whether progress is being made towards achieving them. The standards set by the cancer peer review programme encompass structural features of MDT meetings such as organisation and the constitution of MDT (having the required expertise); their attendance and having protocols for referral and treatment; providing evidence on caseload demographics and auditing cancer specific survival. Other aspects of MDT functioning, however, such as the quality of leadership and chairing, teamwork and the clinical decision-making process are not covered in the programme. In addition, there is neither a framework for evaluating the decision making within the MDT nor for the implementation of these decisions. Overall, to date there has been no agreed way to evaluate the efficacy of the MDT meetings.[17] Nevertheless, data from the peer-review programme demonstrates wide variation between teams in adherence to national standards.[18, 19]

1.3 Structure of the MDT meeting

The framework of 'Input-Process-Outcome/Output' has been used previously in evaluating healthcare and teamwork quality.[20] This concept was established in aviation were it permits expectations and theory about the relationship between team factors and their effect on team performance. A few of both generic and context specific Input-process-Output models of healthcare team effectiveness have been published in the literature.[21] Based on own research, below is the outline of what is considered to be the most important components of each individual domain of this process.

This concept was introduced into healthcare by Donabedian who built up on this into the 'pillars and buttresses' of quality assurance.[22] Here, I have used this model in relation to cancer MDTs as it provides a useful mean to study teams in general, and the MDT in particular. In what follows, I review the Input-Process-Outcome model that consists of various elements, some of which affects how the MDT works. It should be noted, however, that this model is schematic. This means that some elements are not easily categorised and could fit in both Process and Output. For example, education, decision making or recruitment into clinical trials as elements of what a MDT meeting is meant to do and achieve. Such elements imply a continuous process that leads to specific outputs. I have explored these elements within the time frame and resources that were available for me as part of this thesis. The figure below (Figure1) illustrates the 'Input-Process-Outcome' approach and the elements that constitute each stage.

In the following chapters of this thesis, I have focused in depth on the elements of information, chairing and leadership, coordination, decision making, time and caseload, MDT recommendation and decision implementation – these are colour-coded green in the figure. The remaining elements have been included in a general discussion (colour-coded grey in the figure) that includes areas that have been the subject of research by others, such as preparation, technology and telemedicine, teamwork and decision making. Finally, there are also areas that remain unexplored/anecdotal and provide a niche for future research such as educational value of MDT meetings and communication (colour-coded white in the figure).

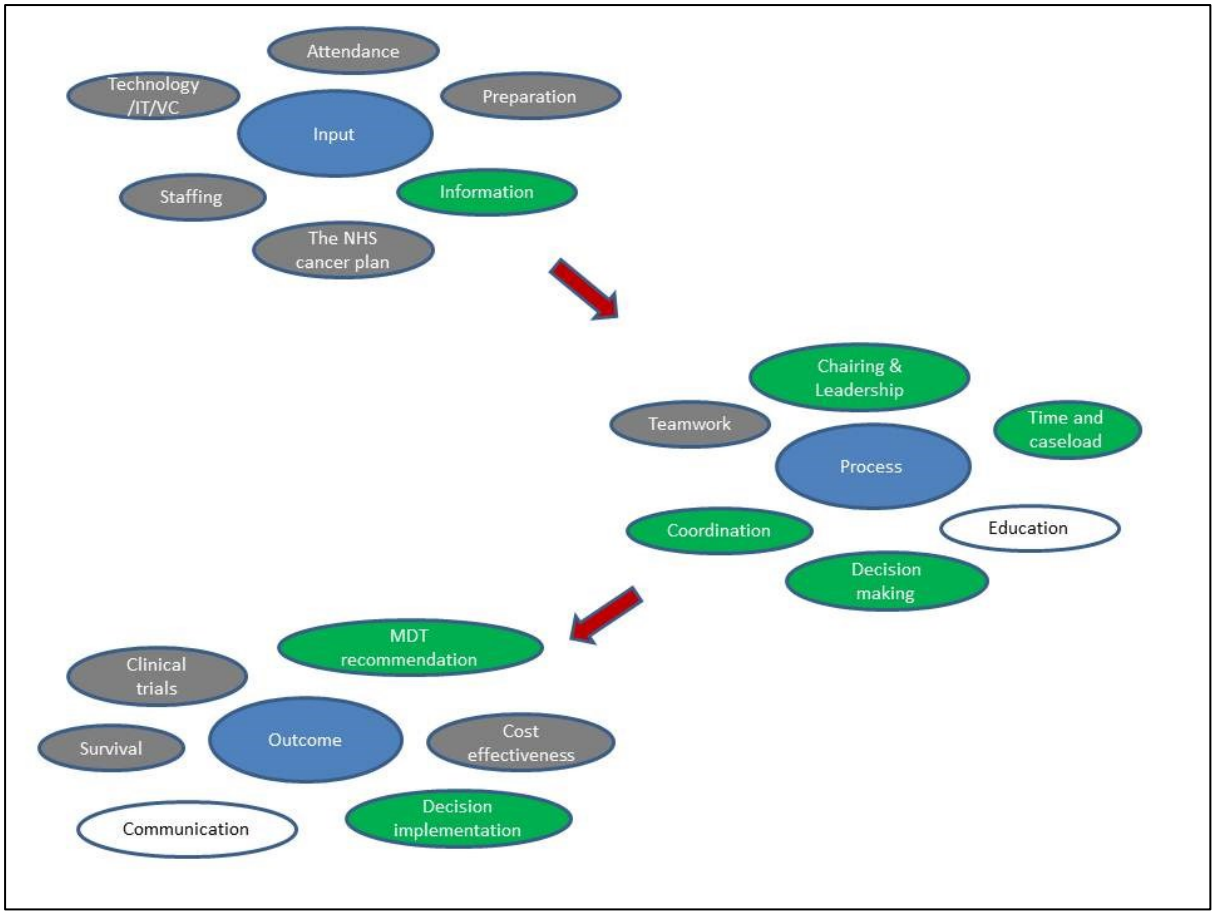


Figure 1: An Input-Process-Outcome approach to the cancer MDT

1.3.1 Input

i. *The NHS cancer plan*[3] In 2000, for the first time a major programme of action was set out linking prevention, diagnosis, treatment, care and research. This plan set out the first comprehensive strategy to tackle cancer. It was a document for the NHS, setting out the actions and milestones that would deliver rapid improvement in cancer care services.

ii. *Information and preparation:* Research so far has demonstrated that clinical decision-making by cancer MDTs is influenced by many factors including the attendance of key team members, the process of case discussion, the information

available when making decisions, team leadership, preparation for meetings, facilities and equipment, and the administrative process. Enough patient information should be available to the team to discuss and make a decision regarding a treatment option for a given patient. Lack of sufficient information or poor preparation has been shown to be barriers to reaching into a decision and re-discuss the case in the next meeting.[23, 24] In a recent national survey of more than 2000 MDT members commissioned by the NCAT, an emerged theme to the question of "*What one thing would you change to make your MDT more effective?"* was better preparation for meetings.[25]

iii. *Attendance:* One of the aims of these cancer case discussion meetings is the multidisciplinary approach in decision making about cancer management. Although surgeons tend to dominate these meetings,[26] the contribution of the other team members is essential to reach into the best treatment available of every discussed patient. Poor attendance of a key member of the MDT has been reported to be a factor that hampers decision making. [24, 26]

Research has further demonstrated that clinical decision-making by cancer MDTs is influenced by factors including the attendance of team members, the process of case discussion, the information available when making decisions, team leadership, preparation for meetings, facilities and equipment, and the administrative process of auctioning outcomes from meetings.[23]

iv. *Information Technology IT/ Video-conferencing:* In modern medicine, information and communication technology plays an important role in enhancing health care services. Having video-conferencing facilities allows sharing of images and pathological slides between MDTs. In order to make an MDT fulfil its purpose,

all the core members should be present when weighing up treatment options for cancer cases. Due to time pressure and centralisation of services sometimes it is not possible for all members to be present physically at the meeting venue. Availability of telemedicine allows bridging this gap and it has shown that it saves time for MDT core members.[27] A randomised trial demonstrated that telemedicine was as good as face-to-face discussion in compliance with clinical guidelines.[28] Yet another theme that emerged from the NCAT survey into making the MDT more effective was "Better technology". This has also been reiterated in my own interview study – see Chapter 4.[24]

v. *Staffing:* Core members of the MDTs are surgeons, radiologists, histopathologists, oncologists, clinical nurse specialists, other allied health professionals (as required), and multidisciplinary team coordinators.[29] There should also be a single named lead clinician for the MDT -a role often performed by surgeons, though not exclusively. Depending on the tumour site, other professionals will need to be members of the team.[30]

1.3.2 Process

i. *Coordination:* MDTs are thought to improve communication and coordination between healthcare professionals when weighing up treatment options for cancer patients.[31] In order to achieve this improvement, the organisation and the setup of the meeting needs good coordination. Soon after establishing the concept of MDT meetings, a need for an MDT coordinator became apparent and essential to maintain a smooth running and coordinated meeting.[32] Research so far has demonstrated that clinical decision-making by cancer MDTs is influenced by many factors, amongst

them are preparation for meetings, facilities and equipment, and the administrative process of these busy and demanding meetings.[23]

ii. *Chairing and leadership:* The role of MDT chairperson is central to effective-running of the meeting. In a survey conducted in 2009 of MDT members, 98% of the respondents agreed that good leadership is essential for effective team working.[25] The MDT chair exercises a broad range of functions and has key responsibilities. These include ensuring integrity of team functioning, achieving team cohesion and goals in a timely and effective manner. These functions can only be served in a setting of collaboration between different professionals on the team and in the contribution to decision making. A good working relationship between the chair, MDT co-ordinator and other team members is critical to the successful functioning of the team.

In a leadership model, the leader has a unique role in the decision making process that is different from other team members.

Furthermore, effective leadership occurs as the leader guides and facilitates the team towards reaching the goal (which is a clinically appropriate decision in a MDT meeting setting).[33] In order to achieve this, a leader must have the necessary skills. These skills for a MDT leader/chair have been summarised in 'The Characteristics of an Effective Multidisciplinary Team (MDT)' document[34] that was produced by the NCAT as a result of a survey of the views of more than 2000 MDT core members and of stakeholders' on effective MDT working.[25] Although in most MDT meetings the chair is a doctor (often a surgeon), a question does exist whether nurses or other allied healthcare professionals could/should chair the meeting.[25, 35]

iii. *Education:* In addition to the principal role of MDT meetings in discussing cancer cases and formulating a management plan for such patients, those meetings have a key role in personal development and training. Learning can be achieved from gathering information about patients when studying case notes. It can be gained by attending MDT meetings and from the interactive discussion. These meetings can be vital resources for doctors in training, as well as for specialist nurses and even for senior healthcare professionals. Further, training opportunities are available to support individuals' roles. [11] Training can help each member of the team to function optimally especially in bringing the relevant information to the meeting that can contribute to the decision making process.

iv. *Time and caseload:* Most MDTs are held weekly.[35] Preparation for and attending the MDT meetings requires a considerable amount of time from all the members.[36] It has been estimated that, for each meeting hour, 2.4 pathology hours and 2 radiology hours are spent in preparation.[37] Currently, it is mandatory to discuss all new cancer patients in the MDT meeting.[38] However, a question exists to whether MDTs should focus on patients whose care is difficult, rather than all patients. [24, 36] A national survey analysed by our group recently showed that the majority of MDT members across different tumour types agree that all cancer patients with recurrence and advanced disease should be discussed by MDT (for urology this was 79%).[39] Another recent study, however, showed that only a few of the patients with recurrent disease are actually re-discussed at the MDT meeting.[40] On the other hand, it has been argued that less complex cases take only a minimum time to discuss, so this might not be a worthwhile change.[41]

The number of cases discussed varies from specialty to specialty and even from a meeting to another in the same speciality,[42, 43] which may turn the meeting very busy and rushed. Some MDTs regularly discuss less than 10 patients (e.g., Head and Neck tumours) and in others the caseload can exceed 40 patients (e.g., urology).

v. *Teamwork:* With the introduction of MDTs, decisions in surgical oncology are made by these teams. It was the complexity and the sophistication of cancer management that led to the introduction of such multifaceted teams of experts. Fleissig and colleagues hypothesised that the MDT approach improves coordination, communication and decision making between healthcare professionals by bringing the experts together.[31] In one study, the initial treatment recommendations for 43% of the cases of women with breast cancer were changed following a second opinion of a multidisciplinary panel.[44] In addition to the clinical advantages of MDTs, it was also reported that it improves team working.[45] However, full contribution of all the MDT members is essential for effective teamwork.[31, 46]

vi. *Decision making:* The aim of an MDT approach is to ensure that the disease is accurately staged and decisions are evidence-based and patient-centred. The decision making process involves weighing up treatment options for patients after considering patients' clinical and non-clinical information in a "team of experts" approach with the contribution of all MDT members producing evidence based recommendations for treating all cancers.

It has been shown that the MDT approach affects the diagnosis and management decisions in a significant number of patients with urological malignancies.[47] An important aspect of MDT-driven care is that the quality of how a MDT runs is likely associated with the quality of its decision-making – including whether the team is able

to make recommendations on first case presentation. Decisions are not always reached and factors that affect decision making are variable.[24] Recently successful attempts have been made by our research group to enhance and support decision making of cancer MDTs.[48]

1.3.3 Outcome

i. *Communication:* MDTs are widely felt to improve communication between healthcare professionals when evaluating treatment options for cancer patients.[31] However, a recent Australian qualitative study by Rowlands and colleagues has shown that barriers still exist to effective communication among lung cancer MDT members[49].

A practising standard that has been set up is mandating that after a patient is given a diagnosis of cancer, the patient's general practitioner should be informed of the diagnosis by the end of the following working day.[30] This is a peer review measure and an audit of timeliness of notification to general practitioners of diagnosis of cancer should be conducted. A recent semi-structured interview study demonstrated that most GPs were dissatisfied with the timing of communication – which often exceeds the above standard.[50]

ii. *Clinical trials:* Randomised controlled clinical trials are recognised as the most reliable method for evaluating interventions in medicine and most importantly in Oncology. With the increasing pressure for a more systematic approach to healthcare delivery based on clinical and cost effectiveness, clinical trials play an important role

to achieve this. The capability of a clinical trial to deliver safe and valid results that are clinically significant and generalisable depends on the recruitment of sufficient numbers of patients.[51] Failure to recruit into trials, however, is common and has been widely reported in the literature. With the standardisation of MDT in cancer management pathway, evidence is consistently emerging on the benefits of this approach including its role in maximizing recruiting into clinical trials.[52, 53] One of the objectives of MDT working is to ensure that mechanisms are in place that support the entry of eligible patients into trials – hence this is a key outcome of MDT working.[1]

iii. *MDT recommendations and their implementation*: Some recent evidence questions the optimal functioning of the MDT [23, 54-58] in particular, the ability of the team members to reach the best decision for the patient;[23, 56] whether the recommendations are appropriate;[26, 56, 59] and finally whether they get implemented into patient care subsequent to the team meeting. [56, 60-62]

iv. *Survival:* Improved survival is an ultimate aim and desired outcome of MDTs. Improving survival was one of the four aims behind setting out the NHS Cancer Plan.[3] There is some emerging evidence of the link between the introduction of MDT and survival. This evidence was lacking and anecdotal for some time but a large cohort study recently showed that the introduction of the MDT in the pathway of cancer care is associated with improved survival.[63] However as currently discussing all new suspected and diagnosed cancers by the MDT is mandatory in the UK, rigorous randomised control trials to further evaluate the link between MDT and cancer survival are understandingly difficult to organise.

v. *Cost effectiveness:* Cancer care is expensive. The cost of MDT working has not yet been properly evaluated, and cost-effectiveness is even further from being defined. It was estimated that multidisciplinary team meetings cost the NHS around £50m a year for preparation and a similar amount for attendance time.[17] Estimates so far range from £14.10 to £628.53 for each treatment plan.[64] Any assessment of the cost-effectiveness of MDT working will have to take account upfront costs of setting up and running MDT meetings, as well as any other costs (in terms of time or expense) that occur later in the treatment pathway.

1.4 Where are we in assessing the quality of MDT meetings?

1.4.1 Assessing by clinical outcome

Despite the increasing acceptance of MDTs internationally, there is little high level hard evidence for improved clinical outcomes (i.e., survival) as a direct influence of the introduction of cancer MDTs.[65-68] On the other hand, a recent study showed that the introduction of multidisciplinary care is associated with improved survival and reduced variation in survival among hospitals.[63] This was also concluded by earlier smaller studies.[69, 70] It has been reported that treatment of oral cancer patients in a specialist unit that has access to MDT, is associated with improving survival and also reduction in cancer recurrence rate.[71]

Assessing the quality of cancer care will unavoidably involve measuring the outcome (i.e. survival) – although the complexity of cancer may mean that a direct link between MDT driven care and improved outcomes cannot be firmly established.

1.4.2 Assessing by the ability to make decisions

My group's research has shown that not every patient discussed at the cancer MDT will have a management decision reached at that time point. Barriers to reaching a clear plan are variable and include: lack of clinical or staging information, lack of personal knowledge of patients, lack of information on co-morbidities, poor attendance by MDT members, disagreement or complex cases.[26] Some recent evidence also suggests that MDTs do not always function optimally.[23, 54-58] In particular, team decision-making processes and the ability of the team members to work together to reach the best decision for the patient.[23, 56] The quality of decision making, the appropriateness of these decisions and the success in reaching a decision plan at the first presentation of the cases have been shown that they could comprise the quality of the MDT meeting.[23, 26, 56]

1.4.3 Assessing by compliance with guidelines

The team nature of the MDT ensures that care follows recognised guidelines. [72] It has been shown that the MDT model can improve adherence to guidelines.[73] On this basis, a particular MDT could be assessed on how consistent their decisions are to certain guidelines. However guidelines for every cancer and every stage do not exist.

1.4.4 Assessing by decision implementation

At MDT meetings, there is a discussion of patient's clinical details alongside detailed review of the radiological and pathological information within a context of a multidisciplinary experts in order to reach into a decision/recommendation that are then shared with the patient. Treatments are taken forward or changed if deemed inappropriate or declined by the patient. As the MDT decision is considered a decision of consensus of cancer experts, it is anticipated that it is the best available option(s) and thus it ought to be implemented. The MDT's

decision outcome for a discussed patient and the implementation of that same decision is thus a potential measure of the performance of that particular team.

In light of the above, previous attempts to assess the quality of MDT have been made and implementation of team decisions into patient care has been used for this purpose.[60-62, 74] This measure to assess the MDT functioning has been used in some of the surgical specialties such as upper gastro-intestinal and lung cancer MDTs. However, the evidence comes from small scale studies and only a few of the surgical specialties have been studied to date.

Thesis Aims

My aims in this thesis are

1. To evaluate the available and generate evidence on the efficacy of MDT decision making and decision implementation (chapters 1, 2 and 3).
2. To assess the views and experience of the MDT members (clinical and non-clinical) on the functionality of the MDT meeting (chapters 4 and 5).
3. To explore the views of core MDT members on possible ways to improve the current functionality of the cancer MDT meeting (chapter 6).
4. To develop methods for assessing the quality of the "input-process" parts of the MDT meeting by focusing on the important factors influencing the MDT outcome, i.e. information, teamwork and leadership (chapters 7 and 8).

2 Making and implementing MDT meeting decisions: Systematic review

2.1 Chapter overview

In this chapter, I present a systematic review of the current empirical research on the outcome of the MDT decisions (whether they have been implemented in practice), the factors that affect their implementation and the consequences of discordance. In the literature, two terms have been commonly used: an implemented decision is a 'concordant' decision and a non-implemented decision is a 'discordant' decision. I will be using these terms throughout this thesis.

As I mentioned in the previous chapter, there is no agreed consensus on the way to assess the MDT meetings with the exception of the 'peer review' programme, which is merely to measure the structure and some functions of the team. The efficacy of the MDT meeting could be assessed by its outcomes including the implementation of the decisions reached by the MDT – this is the focus of this review.

2.2 Aims

The aim of this systematic review is to examine the literature on assessing the efficacy of cancer teams through the implementation of cancer MDT meeting decisions and the factors that enhance or impede effective decision implementation. I also examined the factors that influence MDT decision changing (i.e. discordant decisions) and the eventual outcome of the changed decisions, as well as the time delay from the MDT meeting decision to receiving the final treatment.

2.3 Methods

I performed a systematic search of the literature of Embase, Medline, PsycINFO (using OvidSP), CINAHL, the Cochrane database and Pubmed. The free text and MeSH search terms used were variations of ‘‘neoplasm’’, ‘‘multidisciplinary” and ‘‘decision”. The final search terms were a consensus agreement among the research team.

Results were limited to human beings, English language and dates 1990 to May 2014 (the detailed search strategy is available in **Appendix 2**). I also hand-searched studies through consultation with experts in the field, study of reference lists of retrieved papers, existing reviews, guidelines and governmental documents.

Retrieved titles and abstracts had to relate to decision making and implementation within context of multidisciplinary cancer teams. Articles had to provide data relating to management decisions of patients made by a MDT as well as data on implementation of these decisions. I applied these criteria to all the titles of the included articles.

Both myself and another member of the research team (Sevdalis) reviewed the abstracts resulted from the title review. After reviewing 32.3%(n=80) of the abstracts jointly, the selection criteria were applied by both of us independently to the remaining abstracts. Inter-reviewer agreement in article selection was calculated for the independently reviewed abstracts using Kappa 0.761($P<0.001$) which indicated very good agreement. Disagreement was resolved by including the article in the full text review.

It was intended to conduct a meta-analysis for the time delay of the implemented as compared to the non-implemented decisions. In order to undertake this, the corresponding authors of the relevant articles were contacted. Unfortunately there was no data available to conduct further analysis.

PRISMA is the preferred reporting method for systematic reviews. This was followed to a certain extent. However, as many of the checklist items were not applicable in this study type, it was not explicitly followed and mentioned.

2.4 Results

2.4.1 Study characteristics

The search strategy retrieved 6166 titles (Figure 2). The application of the inclusion criteria excluded 6126 articles. Three articles were found by hand search and were included in the analysis. A final 13 articles resulted from reviewing the full text of the 43 included articles. Articles were from 4 countries: UK (n=7),[40, 74-80] France (n=3), [80-82] Germany (n=1), [83] and USA (n=2),[84, 85]. The articles represented 6 specialties: Upper gastro-Intestinal (n=4), [40, 74, 75, 80] Lung or Thoracic oncology (n=2),[82, 84] Colorectal (n=1), [78] Brain tumour (n=1),[83] Breast (n=2),[76, 79] Dermatology (n=1),[81] and one article studied various tumours[85]. The study design was retrospective in 8 studies[40, 77-81, 83, 84] and prospective in 5 studies.[74-76, 82, 85]

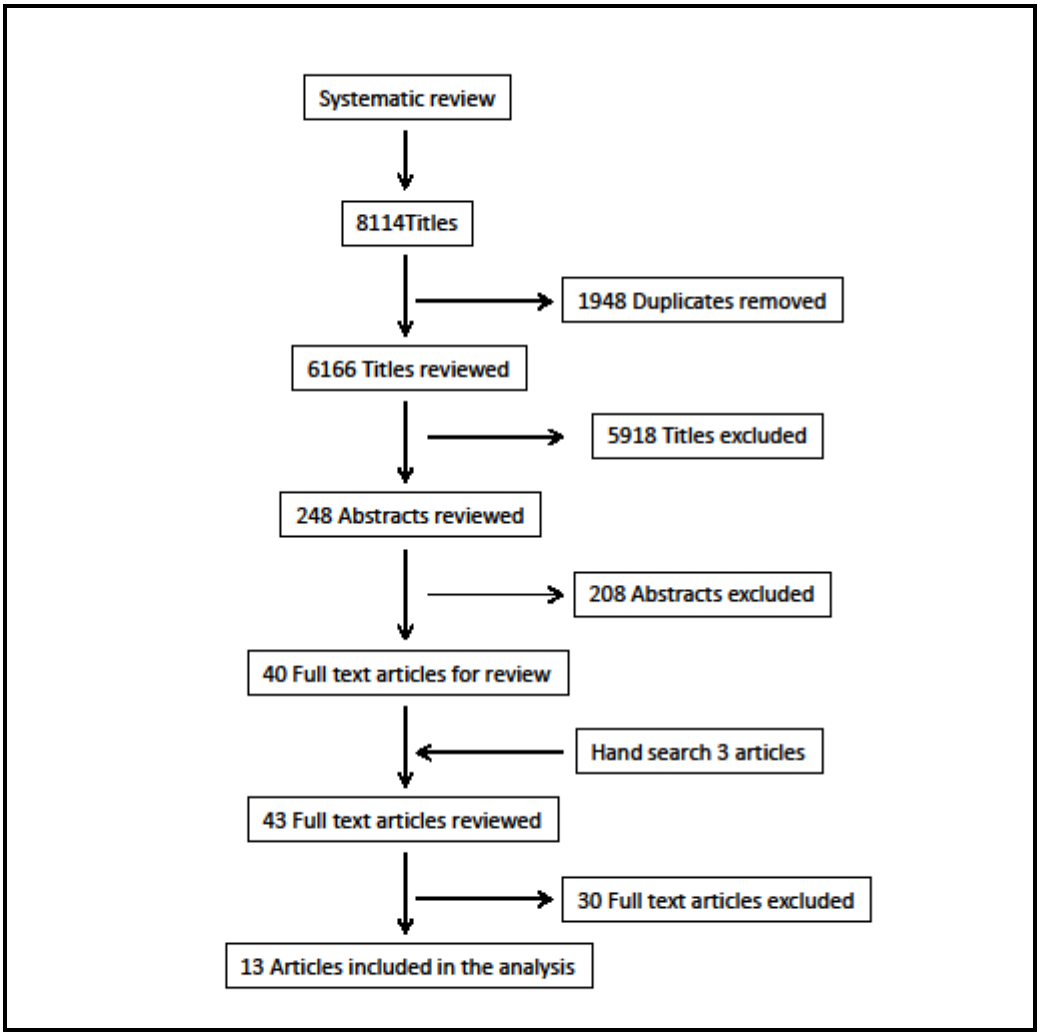


Figure 2: Systematic review study selection flow diagram

2.4.2 Implementation of MDT decisions (Table 1)

A total of 6405 out of 7059 decisions were analysed for implementation of MDT decisions (Bumm et al. and Petty et al.[80, 85] did not analyse reasons of discordance in MDT decisions).

Overall, 9.4% (n=602) of the decisions were not implemented. The main reasons preventing the MDT decision to carry out into practice were: the availability of new information about the patient or a decline in patient's health; patient's disagreement with the MDT decision; unsuitability of the treatment due to patient's comorbidity. The breakdown of the reasons that drove non-implementation is presented in Figure 3.

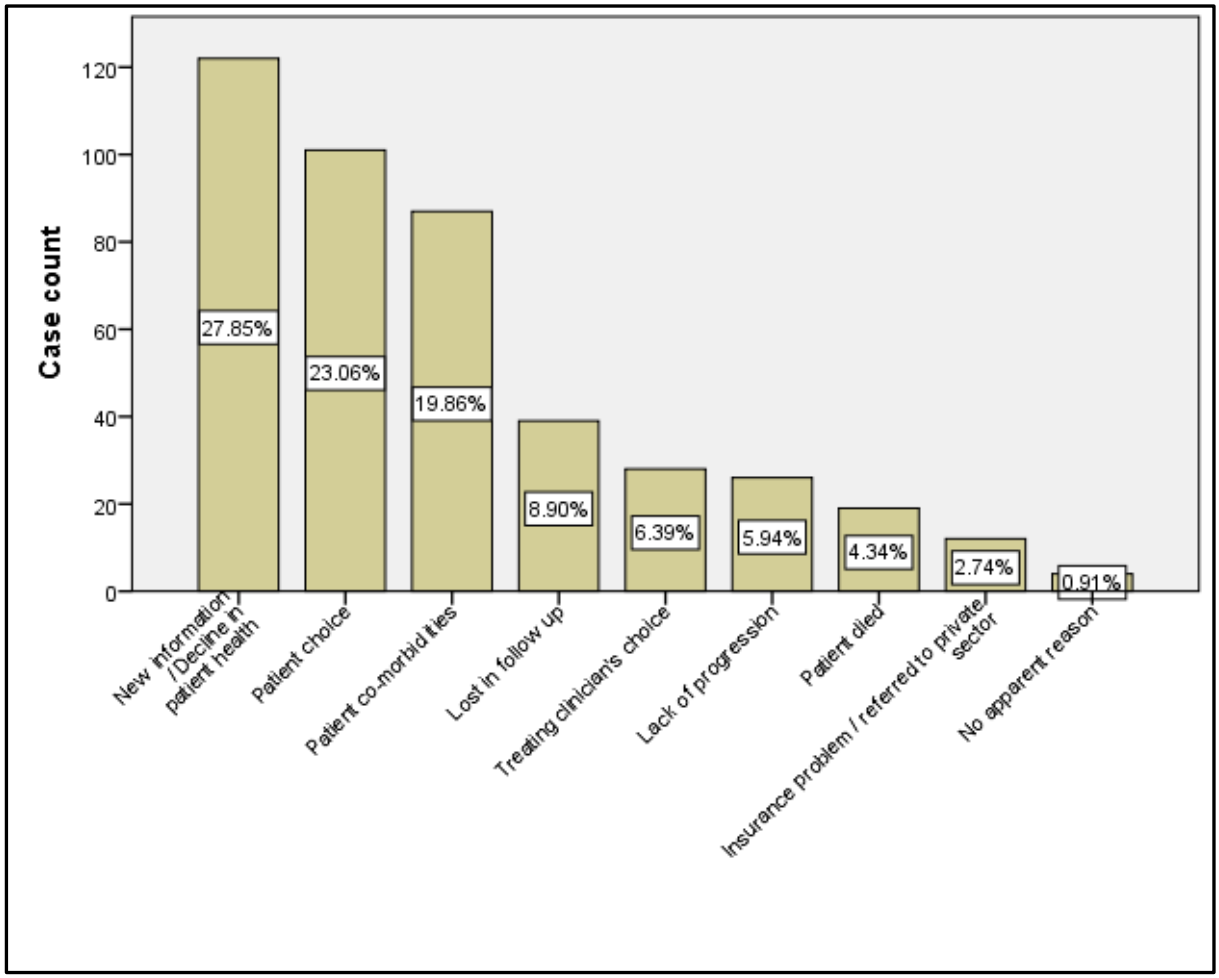


Figure 3: Graph showing factors that impeded implementation of MDT decisions in the reviewed studies

Furthermore, I also analysed the specialty variability in MDT decision implementation. Specialties differed in the rate of decision implementation. Lung/thoracic oncology reported the highest decision discordance whereas Gynaecology the lowest (Figure 4).

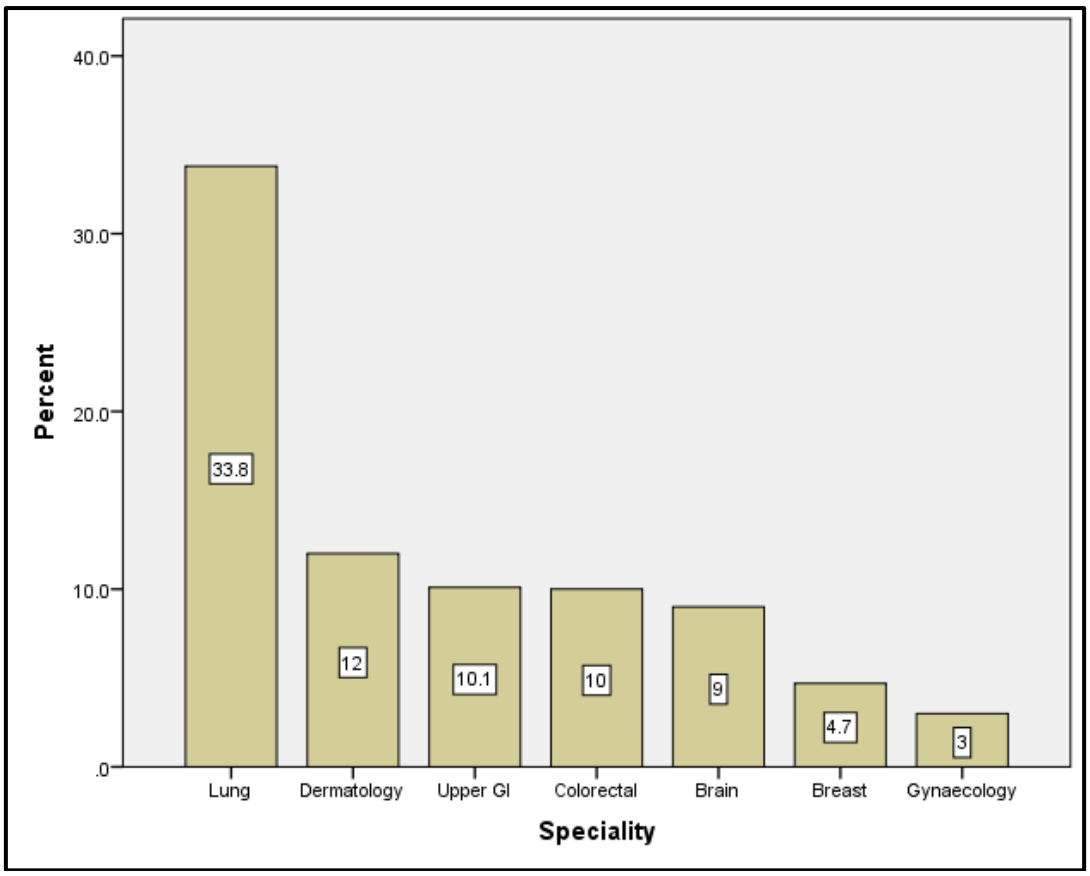


Figure 4: Graph showing specialty variation in MDT decision implementation

Table 1: Implementation and factors that impact on MDT decision discordance

Author, Year	Study design	Study population	Speciality	Non-implementation of MDT decision (%)	Reason for non-implementation
Blazeby et al. 2006[75]	Prospective	271 decisions.	Upper GI	15.1% (n=41 decisions)	43.9% (n=18) patient co-morbid health issues. 34.2 % (n=14) related to patient choice. 19.5 % (n=8) more clinical information was available) e.g. metastatic disease discovered at time of surgery). 2.4% n=1, no apparent reason
Bumm et al. 2007[80]	Retrospective	Total N = 6076 patients, 807 decisions analysed for implementation.	Upper GI, oesophageal cancer.	4% (n=32 decisions)	Reasons for non-implementation were not analysed.
Goolam-Hossen et al. 2011[74]	Prospective	363 decisions	Upper GI Cancer	19.5% (n=71decisions)	45.1% (n=32) co-morbidity 33.8% (n=24) new clinical information available 18.3% (n=13) patient refusal 2.8% (n=2) no apparent reason
Strong et al. 2012[40]	Retrospective	29(recurrent disease)	Upper GI Cancer	13.8% (n=4 decisions)	50% (n=2) declining health 50% (n=2) patient preference
Wood et al. 2008[78]	Retrospective	157 patients and 201 decisions	Colorectal cancer	10% (20 decisions)	45% (n=9) co-morbidities 35% (n=7) patient's choice 10% (n=2) new clinical information 5% (n=1) doctor changed the decision 5% (n=1) no apparent reson.0
Osarogiagbon et al. 2011[84]	Retrospective	376 patients, 454 decisions	Thoracic oncology	38% (n=171 decisions)	61% (n=104) clinician decision(n=61 clinical contraindication, n=14 co-morbidities, n=11 insurance problems, n=11 stage discrepancy, n=7 poor performance status) 19 %(n=32) patient loss to follow up care. 15%(n=26) patient refusal 5% (n=9) patient died before treatment
Leo et al. 2007[82]	Prospective	344 patients, 97 patients studied for decision implementation	Lung cancer	4.4% (n=15 decisions)	2% (n=7) refused treatment 1.4% (n=5) co-morbidities prevented treatment 0.3% (n=1) physician choice(doctor sought second opinion) 13.3% (n=2) lost in the follow up
Lutterbach et al. 2005[83]	Retrospective	Total N = 1,516 patients. A random sample of 500 patients was studied for decision implementation	Brain tumour.	9% (n=45 decisions)	57.8% (n=26) lack of progression 11.1% (n=5) decline in the patient's general or neurological performance status between the MDT presentation and the initiation of the recommended treatment. 31.1% (n=14) the treating physician found another local treatment to be more adequate.
Palmer et al. 2010[77]	Retrospective	Total N = 535 cases (509 analysed for decision implementation)	Gynaecology	3% (n=15 decisions)	13.3% (n=2) co-morbidity, 26.7% (n=4)patient did not attend, 6.7% (n=1)patient referred to private sector, 20% (n=3)patient choice, 6.7% (n=1)new information 26.7% (n=4) discretion of clinician (clinician not at MDT meeting)
Caudron et al. 2010[81]	Retrospective	228 patients, 349 decisions(309 analysed) Jan 2006- Dec	Dermatology	12% (n = 36 decisions)	44.4% (n=1)6 patient refusal 27.8 % (n=10) patients died before treatment. 13.9 % (n=5) deterioration of general condition. 11.1% (n=4) opposition of the treating doctor

		2007			2.8% (n=1) lost in the follow up
English et al. 2012[76]	Prospective	289 decisions, 210 patients April-July 2007	Breast	5% (n=20 decisions)	65% (n=13) patient choice 20% (n=4) doctor changed treatment 15% (n=3) new clinical information become available
Rajan et al. 2013[79]	Retrospective	3230 decisions, 705 patients	Breast	4.5% (n=146 decisions)	41.8% (n=61) patient choice 37% (n=54) new information become available after the MDT meeting 17.8% (n=26) unjustifiable(no apparent reason) 3.4% (n=5) MDT error
Petty et al. 2002[85]	Prospective	153 decisions	Various	12% (n=18 decisions)	Reasons for non-implementation were not analysed.

2.4.3 The eventual outcome of non-implemented MDT decisions

A few of the studies (n=3) analysed the outcome of non-adherence to the MDT meeting decisions.[74, 75, 83] Results showed that this led to patients go down the route of having a more supportive or 'watchful waiting' treatment (Goolam-Hossen et al. 44/71 (62%); Blazeby et al. 25/41 (61%); Lutterbach et al. 26/45 (58%)). Six of these studies also analysed the factors that can influence the change in decision making in the MDT meetings (Table 2).

Table 2: Factors that influence MDT decision changing

Study	Factors
Wood et al. [78]	Multivariate analysis exploring factors that might influence whether MDT treatment decisions changed after the meeting showed that treatment intent was a more important reason for not following the MDTs recommendation compared to being male or of older age. Decisions for colonic tumours were also more likely to change after the meeting than those made for patients with tumours of the rectum or anus after adjusting for gender, age and treatment intent.
English et al. [76]	The regression analysis showed that MDT decisions were significantly more likely to change in older than younger women and in those with finally proven malignant rather than benign disease.
Goolam-Hossen et al. [74]	Of the 71 non-implemented treatment decisions, seven changed from an active treatment plan to another or to active surveillance and the remainder changed between palliative treatments or from a curative to a palliative treatment.
Blazeby et al. [75]	Discordance almost always arose from patients receiving a more conservative treatment than that originally planned. Multivariate analysis showed that diagnosis was a more important reason for not following the MDTs recommendation compared to being female or of older age.
Osarogiagbon et al.[84]	Whites were more likely to receive concordant care than black patients. Those with commercial insurance were the most likely to receive concordant care and those with no insurance, least likely. A slight majority of the uninsured received discordant care
Leo et al.[82]	It is of interest to note that the median age of discordant cases was significantly higher than the median age of concordant cases (74 versus 65 years, p _ 0.01). The rate of discordance was higher for supportive care (2/12, 16.6%) and radiotherapy (1/14, 7.1%) compared chemotherapy (5/183, 2.7%) and surgery (4/93, 4.3%).

2.4.4 Time to implement treatment

Patients with implemented MDT decisions had a significantly shorter time to the commencement of their final treatment plan compared to those for whom the MDT decision was changed, as demonstrated in the table below (Table 3).

Table 3: Time delay in implemented versus non-implemented decisions.

Study	Study sample	Time to treatment (implemented decisions)	Time to treatment (changed decisions)	P value
Goolam-Hossen et al. [74]	363 decisions	Median 24 days IQR 12-33	35 days IQR 17-77.5 (i.e. 11 days delay)	0.009
Caudron et al. [81]	309 decisions	Mean 33.9 days SD 41.2 n=272	No data	No data
Osarogiagbon et al. [84]	454	Median 14 days mean=29.9; SD=65.4	Median 25 days Mean 43.9 SD=54.9 (i.e. 14 days delay)	0.002
Leo et al.[82]	97	Median 20 days	No data	No data

2.5 Discussion

2.5.1 Summary of results

To the best of my knowledge, this is the first systematic review to investigate the implementation of MDT decisions and its impact on patient care. This review has found that the main barriers to implementing the MDT care plan include: new information or decline in patient's health status and lack of information on patient's choice and co-morbidities. It was also found that, adhering to the MDT recommendations will result in a significantly shorter time to the receipt of the definitive treatment, compared to patients for whom their treatment plan changes for any of the reasons mentioned above.

There is good evidence that using the MDT approach would shorten the time from diagnosis to treatment.[86, 87] This would have a great impact on the cancer targets and helps meeting those targets for better patient care and also to avoid fines that incur as a result of breaching these cancer targets.

My review showed that patients, who have their management plan changed for any of the reasons mentioned, will be treated more conservatively.

An overall lack of a 'holistic' approach (the combination of the availability of appropriate investigation, patient factors and time factor) when discussing patients at the meeting has also been reported as a factor that affects reaching a decision at MDT meetings.[52] There is thus an overlap between the barriers to reaching a decision at the MDT meeting and the reasons for non-implementation of MDT decisions and that was ignoring patient related factors of co-morbidities and psychosocial factors that may affect the implementation of such decisions. Lack of consideration of patient-related factors during MDT decision-making has also emerged in previous studies across tumour types in both self-report datasets and also in real-time MDT observations.[26, 55, 75]

2.5.2 Limitations

The reviewed studies were of variable sample size and the majority were retrospective studies .[40, 77-81, 83, 84] The range and the number of tumour types covered by the review are also limited and heterogeneous. This limited number and heterogeneity of research represent a complex issue and provides a limited evidence base for MDT practice and a challenge for future research. Larger prospective studies would reduce the risk of studies being under powered and would help to minimise bias. Only three papers[74, 75, 83] analysed and compared the outcome of non-implemented decisions and only 2 papers[74, 84] explored the difference in time to definitive plan between the implemented and the non-implemented decisions. Therefore, the small sample size could limit the generalisability of the findings.

2.5.3 Conclusion

This chapter summarised the available evidence on cancer MDT decision implementation and in particular, reasons that hinder the implementation of MDT decisions and its aftermath. As there has been no agreed way to evaluate the efficacy of MDT meeting,[17] results of this review could support the hypothesis that the 'implementability' of a MDT decision could be a potential measure of MDT performance, alongside survival and the quality of decisions, and perhaps it could be included in the peer review process as a quality measure. This systematic review included a number of surgical specialties, but there were no studies in urology. In order to investigate MDT decision implementation in urology in depth, I conducted a retrospective study to explore concordance with MDT recommendations and factors that result in discordance in this specialty (Chapter 3).

3 Implementation of MDT meeting decisions in urology. A retrospective study

3.1 Chapter overview

In the previous chapter, I presented the available evidence in the literature on MDT decision implementation and I found that the discordance rate varies among specialties. I analysed the time delay from the MDT decision to the implementation of final decision, which showed less delay if the decision was concordant. There is ,however, no available literature on this in urology. The current chapter explores MDT decision implementation and reasons for discordance of MDT decision in this speciality.

3.2 Aims

The aims of this study are to retrospectively assess the urology MDTs in:

- Ability to make decisions and the barriers preventing such decisions from being made.
- Decision implementation and reasons for discordance.
- Time delay in concordant versus discordant decisions.

3.3 Methods

Electronic records of patients discussed at Urology MDT meetings of a large London teaching hospital from March 2010 to April 2011 were studied. There was one MDT meeting per week in this hospital that was linked via video-conferencing to 3 other sites. At each MDT meeting, all decisions were documented on the MDT proforma by the presenting person and also the meeting minutes were updated by the MDT coordinator. The MDT

proforma were scanned into the Electronic Patient Record system (EPR), which is the main hospital patient recording database that contains referral and clinic letters too.

Patient lists and meeting minutes for all the included MDT meetings were obtained. These were searched alongside the EPR in order to investigate team recommendations and decisions implemented into patient care.

3.4 Results

3.4.1 Demographics

Over a one year period (March 2010 to April 2011), a total of 1059 cases were discussed in the MDT meeting. Out of 1059, 79.3% (n=840) were new diagnosed or suspected cancer cases. The majority 82.4 %(n=873) of the discussed cases were cancer cases, whereas 17.6% (n= 186) were benign. 84.2% (n=892) were males and 15.8% (n=167) were females. Median patient age was 68 years (range 19-91). Tumour sites were: Bladder cancer 23.3% (n=247); Kidney cancer 22.8% (n=241); Prostate cancer 47.3% (n=501); Testicular cancer 5.5% (n=58); Ureteric cancer 1.1% (n=12).

3.4.2 Decision making at the MDT meeting

In 108 of 1059 (10.2%) cases, decision was not reached by the MDT. Reasons for that are shown in the figure below (Figure 5).

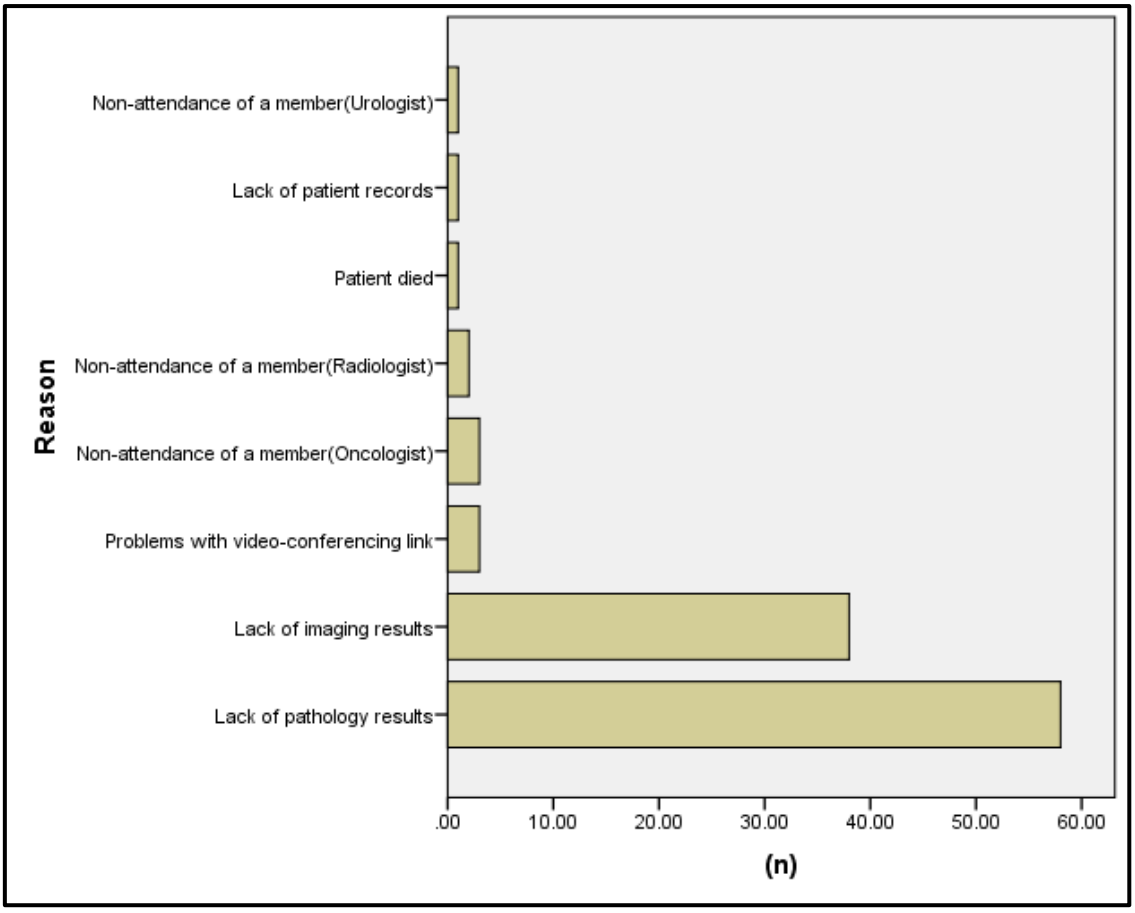


Figure 5: Barriers to reaching decisions at the urology MDT meeting.

3.4.3 Decision implementation following the MDT

783 of the 1059 cases were studied for whether the decision had implemented or not and the time delay in receiving the recommended/ actual treatment. The remaining cases that were excluded from this analysis were cases that had treatment options of active surveillance, palliative therapy, symptomatic control and follow ups due to the difficulty in determining the exact implementation time.

Overall, 89.4% (n=700) of actual patient treatments were concordant with the MDT decision and 10.6% (n=83) were discordant with the MDT decision. The breakdown of reasons for making the MDT decision discordant, are illustrated in Figure 6.

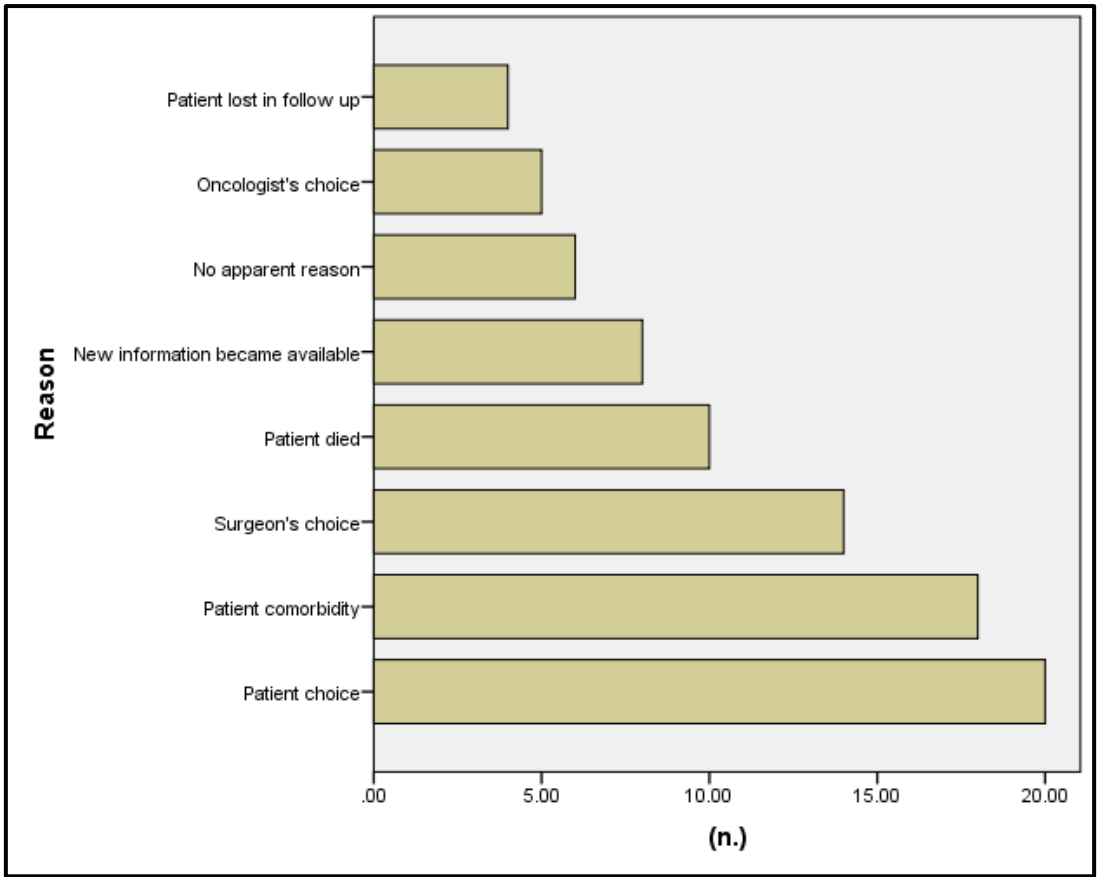


Figure 6: Reasons for non-implementation of MDT decision

Main reasons for non-implementation of MDT decision were patient's choice and comorbidity. The third main reason for deviation from MDT decision was the treating surgeon's choice. The latter could be explained by the fact that the surgeon who knows the patient well was not present at the MDT meeting when the case was discussed and patient factors were not considered appropriately for example- this was also reported in Chapter 4. Table 4 shows a summary of the results tabulated by cancer type.

Table 4: Summary of the findings per cancer type

Tumour type	Age median (range)	Gender F:M n.	New: recurrence/ progressive n.	Benign/ inflammation n.	No decision n.	Non-implementation n.(%)
Bladder	69(25-91)	62:185	155:92	34	32	36 (14.6%)
Kidney	62(28-89)	103:138	221:20	30	24	22 (9.1%)
Prostate	70(49-89)	n/a	440:61	108	40	17 (3.4%)
Testis	31(19-72)	n/a	52:6	14	10	6 (10.3%)
Ureter	52(51-76)	2:10	8:4	2	2	2 (16.7%)

3.4.4 Time delay in receiving treatment

I calculated the time it took from the MDT decision to the actual delivery of the treatment in both patients who had a concordant and discordant treatment to that of the MDT. Patients with concordant decision received treatment in an average of 31.4 (SD=29.3) days compared to those who had their treatment changed who received their treatment in an average of 35.9 days (SD=38.7). This was a statistically significant difference (P=<0.01, t-test), showing treatment delay for patients with discordant treatments.

3.5 Discussion

3.5.1 Summary of findings

This study showed that the investigated Urology MDT could not reach a treatment decision in 10.2% of the discussed cases and reasons for that were mainly because of the lack of investigation results available at the time of the MDT meeting. Although approximately 90% of the cases had a treatment plan reached by the MDT, 10.6% of these MDT decisions were not carried out in practice. Barriers to implementing the MDT decided care plan were mainly due to the ignored patient factors in the case discussion. These findings fall within the average range of other specialties in the rate of discordance that I discovered in my systematic review of the previous chapter (4-38%). This study also replicates the findings

from the systematic review for other cancer types in that it takes a significantly longer time for a patient with a discordant decision to receive treatment (11-14 days average delay).
One of the reasons for changing the MDT decision was surgeon's choice; this raises the question of who could justifiably change the MDT decision! So far there is no documentation about the legal power of the MDT and whether the MDT decision is a shared responsibility of all the MDT members. In an international survey a question was asked of who would be responsible in a case of lawsuit, half of the respondents replied that it would be the treating doctor rather than the MDT members.[16]

3.5.2 Limitations

There were some limitations to the methodology of this study. The data was limited to one hospital in London which may affect the generalisability of the findings – however, the large sample size (n=1059) and the fact that the MDT meeting was linked via video-conferencing to 3 other sites (specialist MDT meeting) should give a representative sample of urology MDTs. This study was retrospective and the sub-sample that I used for the analysis of decision implementation and time delay in receiving the eventual treatment was small as I had to exclude some cases due to the difficulty in determining the exact time frame for receiving their eventual treatments which is a common limitation of retrospective studies.

3.5.3 Conclusions

This study has filled a gap that existed in the literature on decision implementation and time delay in receiving cancer treatment among urology cancer patients.
This was a retrospective study that involved examination of patient records. In the following chapter, I will triangulate the findings of my review and the present study with the views of

the cancer specialists who attend and run MDT meetings on the matter of decision implementation post-MDT meeting.

4 Factors that can impact on decision making and decision implementation following a cancer MDT meeting. A qualitative interview study

4.1 Chapter overview

Chapters 2 and 3 have showed that neither all the cases listed on the MDT discussion list get a treatment decision nor all MDT decisions do get implemented in practice. These results were obtained from reviewing the literature and hospital records of MDT meetings. In this chapter, I report the views of core MDT members of urology and Gastro Intestinal surgery in a qualitative exploratory study that explores in depth the issue of decision making and decision implementation in these 2 specialties.

4.2 Aims

In this study, I aimed to investigate the views of expert urology and gastro-intestinal cancer service providers in relation to the effectiveness of their MDTs in reaching a recommendation for each presented patient and subsequently implementing this recommendation into patient care. I focused on the barriers in implementing MDT decisions in practice and how these can be overcome.

4.3 Methods:

4.3.1 Design:

I employed a qualitative, semi-structured interview-based approach to investigate key issues surrounding MDT decision-making and decision implementation in urological and gastro-intestinal (GI) tumours. Qualitative techniques based on expert contributions are appropriate

when complex clinical issues are to be investigated and experts' views are sought regarding care processes.[88, 89] The outputs of such studies are subsequently used as a basis for large scale surveys, expert consensus development, or the development of interventions. Within my research group, we have used semi-structured interviews with surgeons in studies of surgical decision-making,[89] surgical performance,[90, 91] and recently urology MDT decision-making.[26]

4.3.2 Participants and procedure:

I carried out semi-structured face-to-face interviews with a purposive sample of MDT members across urology and GI Surgery. Participants included Urologists, GI surgeons, Oncologists, Cancer nurses, Radiologists and Histopathologists. In qualitative studies such as this one, the goal in participant selection is that the participants can provide information on the topic of the interview in some depth. Participant numbers, as such, are of lesser importance, provided the themes that emerge from the interviews are recurring ('thematic saturation' criterion;[92] this was achieved in the present study). A purposive sample of representative members of both GI and urology teams across 3 hospitals in London, UK, were interviewed to reflect views from a range of perspectives. The study hospitals were chosen based on convenience (to ensure we had access to participants) and they were representative of a range of hospitals providing cancer care services to GI and Urology cancer patients – including inner city and community institutions. Participation was voluntary, informed consent was obtained, and anonymity was ensured throughout the study.

An interview protocol was developed (**Appendix 3**), focusing on MDT members' views on: decision-making and barriers to reaching a decision at the MDT meeting; implementation of MDT decisions and factors influencing implementation; strategies to improve MDT decision-

making and decision implementation. Participants were also asked questions related to the venue and teleconferencing facilities of their MDT meetings, and demographic information. To ensure face and content validity, the protocol was based on findings of our review of the literature regarding effectiveness of MDTs and the process they use to review patients and make care recommendations[23, 56] and also of recent qualitative findings on the same topic.[26, 49] Each interview lasted 15-25 minutes and was audio-taped and transcribed verbatim (an example of the transcript is presented in **Appendix 4**).

4.3.3 Data analysis:

To ensure accuracy in representing the participants' views and minimisation of researcher bias, a standardised approach to interview analysis was taken. After a joint analysis of two interviews, a coding framework of emerged common themes was developed by two trained clinical researchers (myself: surgeon; Maria Ahmed: foundation academic trainee trained in qualitative methods) to analyse all the interviews independently in order to identify emergent themes as per standard qualitative research practice.[92] Disagreements were resolved through discussion. The analysis was reviewed by a psychologist with extensive experience in patient safety and qualitative research (Sevdalis) and emergent themes tabulated alongside verbatim quotes for illustration.

4.4 Results:

4.4.1 Participants:

Twenty-two MDT members (Consultants, experienced nurses) participated in the study (Urologists=5, Uro-oncologists=3, Urology Nurses=3, Histopathologists=1, Radiologists=1, GI surgeons=4, GI Nurses=3 and GI Oncologists=2) across 3 different hospitals in the wider London (UK) region.

The themes that emerged from the interviews and illustrative verbatim quotations are summarised and presented in the sections that follow.

4.4.2 Venue and facilities of the MDT:

Most participants (Surgeons=7, Oncologists=5, Nurses=2) said that their MDT meeting is held in a dedicated room equipped with video-conferencing facilities. Although useful for teams calling into a cancer centre, videoconferencing can interfere with the meeting and impede teamwork and team decision-making. Table 5 presents disadvantages of video-conferencing from the cohort's perspective.

Table 5: Disadvantages of video-conferencing at a cancer multidisciplinary team meeting

Problems associated with video-conferencing	Representative quotes
On-going technological problems with the equipment	"*It cuts out every hour, so the units have to be reconnected after an hour. So you get a two minute break there, and a lot of the time, especially at the X site, it breaks down, so you can't see any radiological images*" (Surgeon 1). "*There's a lot of mumbling going on, there's a lot of static, sometimes it cuts out*" (Surgeon 1).
Poor communication within the team	"*It's less personal; and it's also difficult especially when more than one person wants to speak at the same time and there's a little bit of a lag. So that's obviously not the same as face to face when you can take turns in speaking*" (Surgeon 5).
Direct negative impact on clinical decision-making	"*If you can't get links then it may only be one urologist making the decision, it could delay treatment if it's more complex*" (Nurse 2).
Cause of conflict and frictions within the team	"*Communication in video conferencing is not ideal because it tends to cause divisions between the two groups on the different sides when there's a change in treatment decision. So video conferencing may lead to tribalism, and what tends to happen is humans who are in the same room as each other tend to stick together, and therefore it creates tension between the two groups*" (Oncologist 3).

4.4.3 Decision-making at the MDT meeting:

Participants reported that, in the majority of patients, a management plan was decided at the MDT meeting (median response to the question "*how often are you able to reach a management plan after case discussion*": 92% range 80-99%). Factors affecting negatively on the team's decision-making are summarised in Table 6 and discussed in detail below.

Table 6: Factors influencing cancer multidisciplinary team decision-making

Factor	**Surgeons (Urologists & general surgeons) (n = 8)**	**Oncologists (Uro-oncologists & GI oncologists) (n = 6)**	**Nurses (Urology and GI) (n = 6)**
Inadequate information			
History	8	4	3
Co-morbidities	5	2	3
Psychosocial factors	2	3	3
Investigation results	8	4	5
Patient's wishes	3	1	3
MDT key member not present	7	3	4
Time pressure	3	2	0
Technological problems (mostly with video-conferencing equipment; see Table 1)	2	1	4

4.4.3.1 Inadequate information

Participants reported that lack of necessary information about the patients at the meeting obstructs decision-making: *"...Well, some relevant crucial bit of history which no one is able to give us and not been stated in the letter and we feel we can't make a decision without that information"* (Surgeon 8).

The majority of participants (n=16) reported that unavailability of investigation results hampered decision-making: "*...you may be awaiting a scan or pathology results, which you don't have...*" (Surgeon 4).

The patient's co-morbid state was reported as an elemental part of the information required for the MDT to make a decision: "*...Just to give a quick example, if a patient has a treatable prostate cancer and he has no mobility? there is no way they can commute to the radiotherapy section five days a week for seven and a half weeks to have radiotherapy to their pelvis...*" (Surgeon 2).

In addition to availability, accuracy and 'representativeness' of the information on the actual status of the patient also impact on decision-making "*...I saw a man, he came to me as a second opinion a few weeks ago, and he ran up all the stairs here... He'd got a letter from the first oncologist saying, 'I am very sorry, you are 76, we do not treat anyone over 75... You can't have radiotherapy.' ...And he went sailing every weekend, he went rock climbing - he was the fittest 76 year old ever...*" (Oncologist 2).

Concern was expressed as to whether the MDT could ever evolve to consider patient management to wholly take account of patients' wishes: "*...It's key that the patient's wishes, their performance status, their abilities and their social status is taken into account when making decisions. And you can't do that with a MDT, it's not a simple issue...*" (Surgeon 3).

4.4.3.2 Non-attendance of key team-members

Treatment decisions are formulated by a team, thus the presence of the core team-members is necessary. A first consequence of a core member's absence is that the decision may be delayed to the detriment of the patient: *"Sometimes the consultant who's in charge of that patient hasn't attended the meeting and therefore they need to wait until the next meeting and he's there to allow a decent discussion"* (Surgeon 5).

Furthermore, making a decision when a key team-member is absent may lead to an inappropriate treatment plan: *I was away at a MDT meeting a few weeks ago. The MDT recommended not to treat a person with salvage therapy for recurrent prostate cancer. They*

hadn't seen the patient. The patient was 81 but he was a very fit guy, he was insistent he wanted treatment and that didn't come up at the MDT, so again, that patient opinion was missing and the co-morbidity was missing at the MDT and I actually overruled it....." (Surgeon 1).

4.4.3.3 Time pressure

Respondents reported that they spend 1-2 hours every week at the MDT meeting. Most of the respondents said that the assigned time for the meeting is not enough to discuss all the patients unless '*you rush through the meeting*'. Patients not reviewed at that meeting would be deferred to next week's meeting – causing delay to patient care: *"Too long but not long enough! People who are not discussed, they usually get bounced onto the following week's meeting"* (Nurse 1).

The impact of deferring patients was considered to affect both patients and the MDT meeting: *"the impact of that is that things will be delayed for a week or so, and it can roll over because when you postpone five patients you'll be adding it to an already overbooked MDT list, so that would lead to another postponement, so it rolls over"* (Surgeon 2).

4.4.4 Implementation of MDT decisions:

Participants reported that the majority of the decisions made by the MDT meeting get implemented (median response to the question "*how often does the management plan you agree during the MDT get implemented*": 95%, range 70%-100%). The main reasons that impede implementation of MDT decisions were patient factors – including (i) lack of consideration of patient's co-morbidities, (ii) patient's choice, and (iii) disease progression

(i) Non-consideration of patient factors by the MDT:

There was a consensus among the participants that taking into account patient-related factors is crucial to reach a correct decision and not doing so may lead to an inappropriate decision or the patient may refuse it and thus discordance between the MDT decision and the administered therapy may occur: *"...the patient might look better on paper but actually physically the patient isn't fit or doesn't want anything done, so I think hopefully the consultant should know that"* (Nurse 2).

(ii) Patient's choice:

Knowledge and consideration of a patient's preferences is another key factor that facilitates implementation of a team's decision: *"If we knew what the patient's opinion was, I think it would save time actually and we wouldn't necessarily have to go back and have another discussion..."* (Surgeon 1).

(iii) Disease progression:

Disease progression was mentioned as a clinical factor that can overturn the MDT decision: "*Sometimes in the intervening period, something has changed, they've become unwell, or sometimes if there's a delay in treatment their clinical stage progresses and it becomes no longer a relevant decision" (*Surgeon 5).

4.4.5 Strategies to improve decision-making and decision implementation:

A number of strategies were suggested by the participants to improve the effectiveness of MDT decision-making and implementation – including better case preparation, effective team leadership, and involvement of an anaesthetist in the MDT (to immediately discuss whether a patient is fit for surgery if this is an option open for consideration, rather than

assess this post-meeting). More controversial views included inclusion of patients in MDTs and not discussing all patients (as is currently mandated in the UK). These are presented in detail in Table 7.

Table 7: Strategies to improve multidisciplinary team decision making and implementation

Proposed strategies for improvement	Representative quotes
	"We used to have one that the information was actually put on to that and it was projected onto a screen.....it actually worked quite well", Oncologist 2.
More preparation for the case presentation (e.g. using a proforma)	*"We don't have all the information(for referrals), and we don't out of courtesy go back and say, "We are not discussing this patient till you give us all the information, But maybe we should start doing that because otherwise they are just getting away with sloppy standards",* Surgeon 8.
Involving the patient in the MDT discussion • **For**	*"In my opinion the best decision making will be done when there is a formal meeting involving the clinicians and the patient, the clinicians will decide immediately while the patient is there",* Surgeon 2.
• **Against**	*"This is where I think, probably, we need to be very careful about what we are going to make the MDT into. That will never work",* Surgeon 3. *"No, I don't think – that's going to be counter-productive",* Oncologist 3. *"This is a highly technical discussion involving a whole bunch of experts and I don't think that is the right format for the patient to be present at",* Surgeon 8. *"I think it's just not practical. I think yes, they should be involved in a sense so that they know that a decision is being taken but to have the patient in the room, it would just be a disaster",* Oncologist 4.

Effective leadership and chairing of meetings	*"Sometimes I feel like there should be one main person leading it because it sometimes becomes a bit of a free-for-all and there is a lot of over-talk and you cannot hear what's going on "*, Nurse 5. *"I think at the end of each patient there should be a period where we say "Okay, the decision is…" and someone clarifies exactly what the decision is and makes sure that everyone agrees with it, because sometimes a number of things are thrown forward but no one's actually said "Actually the decision is this."",* Surgeon 5.
Refining the criteria for patient discussion at MDT	*"I can tell you what way we're going, we're going to separate MDTs (tumour specific MDTs). I think that will help"*, Surgeon 3. *"...I don't think every patient needs to be discussed, and one of the problems we faced, the challenge, is the issue of watering down the MDT, protocol, protocol, protocol, we end up talking about them all and you end up on the three difficult cases that people have lost interest by then and sometimes you can miss...",* Oncologist 3.
Involving the anaesthetist in the MDT process	*".....the surgery may be cancelled and therefore the decision is not implemented/changed/delayed because the anaesthetist is deciding that more investigation is required. So an anaesthetist at the time of the MDT that would be a good idea as well",* Surgeon 7.

4.5 Discussion

4.5.1 Summary of findings

This study explored experienced MDT members' views of the efficacy of their team decision-making and implementation – it specifically identified problems and also solutions to current barriers in achieving decisions that are appropriate and also get implemented as intended into patient care. The study showed that a management plan is not always formulated for all cancer patients that are reviewed at the MDT meeting. Furthermore, not all the MDT decisions get adhered to in practice. Participants estimated that around 91% of the cancer patients get a decision plan at the MDT meeting. Of those, only 90% get implemented

– these figures are close to the range of non-implementation that I found reported in the literature (4-15%)[75, 78, 80, 82] and hence corroborate and extend previous findings using an expert-elicitation methodology (qualitative interviews).

Key reasons for not reaching a decision plan at the time of the MDT meeting were: lacking a 'holistic' approach when discussing patients at the meeting and absence of the treating clinician or a key member(s). Importantly, there was an overlap between the barriers to reaching a decision at the MDT meeting and the reasons for non-implementation of MDT decisions: that was ignoring patient related factors of co-morbidities and psychosocial factors (in addition to disease-related factors) that may affect the implementation of such decisions. This is an important finding, as it suggests that if these issues are addressed, improvement will be obtained both in reaching a decision on first case presentation and also in implementing that decision in patient care. Lack of consideration of patient-related factors during MDT decision-making has also emerged in previous studies across tumour types in both self-report datasets [26] and also in real-time MDT observations.[42, 55]

This study also identified strategies to improve decision-making and implementation. Amongst these was the usage of a proforma in preparing cases for MDT discussion. To this effect, an evidence-based checklist tool was recently developed for use in MDTs by our group – the MDT-QuIC.[93] Strong and effective chairing and leadership of the team meeting and including an anaesthetist to ensure patient fitness for surgery were also mentioned. More contentious strategies also emerged. The first was the suggestion to refine the inclusion criteria for MDT discussion (so that the team has more time to thoroughly discuss patients), either by splitting the MDT meeting into smaller meetings, or by excluding from review some patients that fall under clear protocols/guidelines. The former suggestion

may pose some logistical difficulties – as it will require further meetings to be fitted into already busy clinical schedules, and hence may require amendments to job planning for surgeons and other cancer professionals.[94] The latter suggestion is outside current mandatory practice in the UK – however, it is perhaps an avenue to reconsider in the future. A further contentious suggestion was inclusion of patients in the MDT. Some thought that it would enhance the decision-making, but others thought that this practice is counterproductive [95] and it would raise patient anxiety.[96, 97]

4.5.2 Limitations

Certain limitations apply to the study's findings. The participants were members of urology and GI surgery MDTs and so it is not possible to be certain how representative the sample is of MDT members of other specialties. Similarly, generalisability may also be hampered by the location of the study (London, UK) – although care was taken to sample participants from 3 hospitals. The small sample size and indeed the self-reported nature of the data could further limit generalisability of the findings. This is a limitation of all qualitative studies – however, such studies are necessary if detailed understanding of experts' views is sought. Importantly, all possible steps were taken in the data analysis to ensure minimization of bias, participants were recruited from a large geographical area and also a key strength of the study is the representativeness of the professional groups in both tumour types within the study sample. In order to avoid recall bias within the study as much as possible, the interviews were audio-recorded and transcribed verbatim. Moreover, previous studies in the UK and other countries have arrived at similar conclusions using both self-report and also observational methods, thereby lending validity to these results. Further validation of the views expressed in this study should be sought via larger scale surveys and more objective methods of

assessing MDTs in real time, like standardised observational instruments, which are now available.[43]

4.5.3 Conclusion

I believe that these findings can be used as a basis for designing and implementing acceptable and thus implementable interventions based on our respondents' expert views. Recently published data suggest a cost of £87.41 ($141.95) per case discussion in a UK MDT[64] – which reinforces the point that MDT-driven care is expensive.[98] Non-implementation of a MDT decision is therefore not only a time/prognosis problem, but also a cost-related issue – as these patients have to be re-reviewed. This study provides an understanding of the factors that affect decision-making and implementation from the service providers' perspective and also outlines the strategies to tackle such barriers – some of which are more contentious than others (including more direct patient involvement in the MDT and also patient selection for MDT discussion).

In this chapter, I have explored the views of the clinical core MDT members. In the following chapter, I will investigate the views of a non-clinical member group of the MDT, the MDT co-ordinators, in order to assess their views and needs in the process of the MDT.

5 The MDT meeting from the coordinators' perspective

5.1 Chapter overview

In chapter 4, I explored qualitatively the views of 22 MDT members (Urologists, GI surgeons, Oncologists, Cancer nurses, Radiologists and Histopathologists) on their thoughts about the functionality and effectiveness of their MDT meetings. In this chapter, I analyse the responses of a national sample of the MDT coordinators to a survey in order to investigate the views of the non-clinical members of the MDT on the process of MDT meeting.

MDT coordinators are core members of the MDT meeting.[99] The role of the MDT Coordinator is relatively new, and as such it is evolving. The pivotal contribution of the MDT coordinator to the effectiveness of an MDT has been acknowledged in a survey of 2000 MDT members in the UK.[32, 99-101] Their duties involve identifying patients for discussion prior to the MDT meeting, organising meetings, facilitating and coordinating the logistics for the MDT meeting. They ensure that an appropriate number of patients are discussed at the meeting. MDT coordinators help in the introduction and changes to the proformas used to ensure all patients are discussed, treated appropriately and outcomes are recorded and reviewed. Furthermore, they play a crucial role in bridging the communication gap between the service provider and the patients to enhance the patient-centred care.[102]

5.2 Aims

The aim of the survey reported here is to assess the views of MDT coordinators on their roles within the MDT. More specifically, the objective was to explore the views of the MDT coordinators on:

1. The MDT decision making process and barriers to reaching a treatment decision.

2. Their role as coordinators and its requirements, with a focus on educational and training needs.

5.3 Methods

5.3.1 Study design

This was a prospective electronic survey study. The questions were structured for the purpose of the survey which was three-fold: first, to explore the prevalence of the role of the MDT coordinator in cancer MDTs nationally (currently the UK Intercollegiate recommendations does not mandate that every MDT should have an MDT coordinator[101]). Secondly, to explore their views, as core members, on the MDT efficacy and the process of decision making and ,thirdly, to explore their duties and requirements with focusing on training for the MDT coordinators. The development and implementation of training was given a priority by the Intercollegiate Cancer Committee ICC.[101]

The study was carried out in accordance with the declaration of Helsinki. This study was reviewed by the National Ethics Research Services NRES and deemed that ethics approval was not necessary (Email from NRES provided in **appendix 5**).

5.3.2 Survey instrument

An online survey was administered electronically via freely available software (http://www.surveymonkey.com). The survey comprised a total of 47 questions (the survey is provided in **Appendix 6)**. Most of the questions were multiple choice questions; others required a yes or no answer. Six demographic questions assessed the respondents' background (professional group, gender, job title, age, work place and hospital type); Nine

questions were about the MDT (e.g. venue, frequency and the MDT specialty(s) they coordinated); seven questions assessed the coordinators' views on the discussion procedure of the MDT meeting (e.g. the frequency of the pathological or radiological images being displayed, if patients' views, psychosocial or co-morbidities have been considered, and who contributes to decision making); five questions assessed respondents' views on decision making processes and barriers thereof; eleven questions covered administering and coordinating of MDTs (e.g. the ease of preparing for the MDT, data recording and decision communication); five questions explored the coordinators views on MDT chairing and leadership(e.g. who chairs the MDT and whether the chair rotate or could/should rotate); and four questions assessed training for MDT coordinators (e.g. have you had a training for your role? And in which areas do you think you need training?).

5.3.3 Participants

A purposive sampling technique was used to target the population of interest. The National MDT Coordinators Forum is the national professional organisation for MDT coordinators in the UK. A link to the survey was sent to MDT coordinators, administrators and managers of all cancer types across the UK via the National MDT Coordinators Forum. Survey recipients were asked to circulate the survey to other relevant MDT coordinators (snowballing sampling technique). Responses were anonymised, but a unique identifier was awarded to each respondent to enable comparison between respondents' answers.

5.3.4 Data Analysis

All statistical analyses were performed using SPSS version 19.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (means and standard deviations) were calculated for all survey items. Pearson Chi-Square was used to test whether there was an association between having

undertaken training and stating that further training was required. Pearson Chi-square was also used to test for any association between role (MDT coordinators and their equivalents) and training received/further required. Statistical significance was taken at the 0.05 level. "Coordinator equivalents" in this study is referring to the personnel who work as MDT coordinators, but are not so by job title.

5.4 Results:

5.4.1 Participants' demographics

In total, there were 265 respondents to the survey. The majority of the responders were females (86%). The median age among the respondents was 40-49 years. 44.2 %(n=117) considered their hospitals to be a teaching hospital, 9.8 %(n=26) from tertiary centres, 42.6 %(n=113) were from District General Hospitals (i.e., community hospitals across the UK). Table 8 shows the percentage of respondents who coordinate each tumour type (with some respondents coordinating more than one).

Table 8: Percentage of respondents who coordinate each tumour type (more than one response permitted)

Area/Tumour type	%	Area/Tumour type	%
Colorectal	17	Haematology	9
Upper Gastro-Intestinal	14	Skin	8
Gynaecology	14	Central Nervous System/Brain	4
Urology	13	Children	2
Lung	12	Endocrine	3
Breast	11	Palliative care	2
Head & Neck/Ear, Nose & Throat (ENT)	10		

5.4.2 Job analysis

Regarding professional group, 82.6% (n=219) reported themselves as MDT Coordinators (Group 1), the remaining (Group 2) were: 7.5% (n=20) administrators, 3.4% (n=9) cancer managers, 3.4% (n=8) nurses and 3% (n=8) were doctors (Grouping the respondents into Group 1 and 2 was to see if other health professionals' views are similar to those who coordinate MDT meeting as their primary job). 52 %(n=138) of respondents had the title of MDT coordinator, whilst the remaining 48 %(n=127) had additional or alternative titles, which may explain why 37.7% (35.8% in Group 1 and 46.7% in group 2) felt that the job plan does not reflect their actual duties. Respondents had most commonly entered the position of MDT coordinator from other administrative positions in the NHS 41.5% (n=110), but 11.7% (n=31) had come from non-NHS jobs. 51.3% (n=136) of the participants worked in satellite hospitals, 41.1 %(n=109) were from specialist cancer centres, and 8.7% (n=23) worked in both. Regarding MDT work, 21.5% (n=57) attended an MDT meeting more than once a week, 31.7% (n=84) about once a week while 4.2% (n=11) of the respondents attended once every 2 weeks.

5.4.3 Respondents' views on MDT case discussions

Respondents felt that medical members of the MDT (e.g., surgeons (41.5%), oncologists (32.8%)) always contribute to case discussions, whilst nurses nearly always (18%) contribute, and MDT Coordinators sometimes contribute (15.8%). Regarding the weight that the opinions of different MDT members have in deciding treatment decisions, it was reported that surgeons' opinions were deemed to always carry weight (23.4%), those of oncologists nearly always (13.2%), radiologists usually (11.3%), pathologists and nurses sometimes

(12.1% and 17.7% respectively), and MDT coordinators never (37.7%). Nearly half of the respondents felt that disagreements do not happen very often (Figure 7).

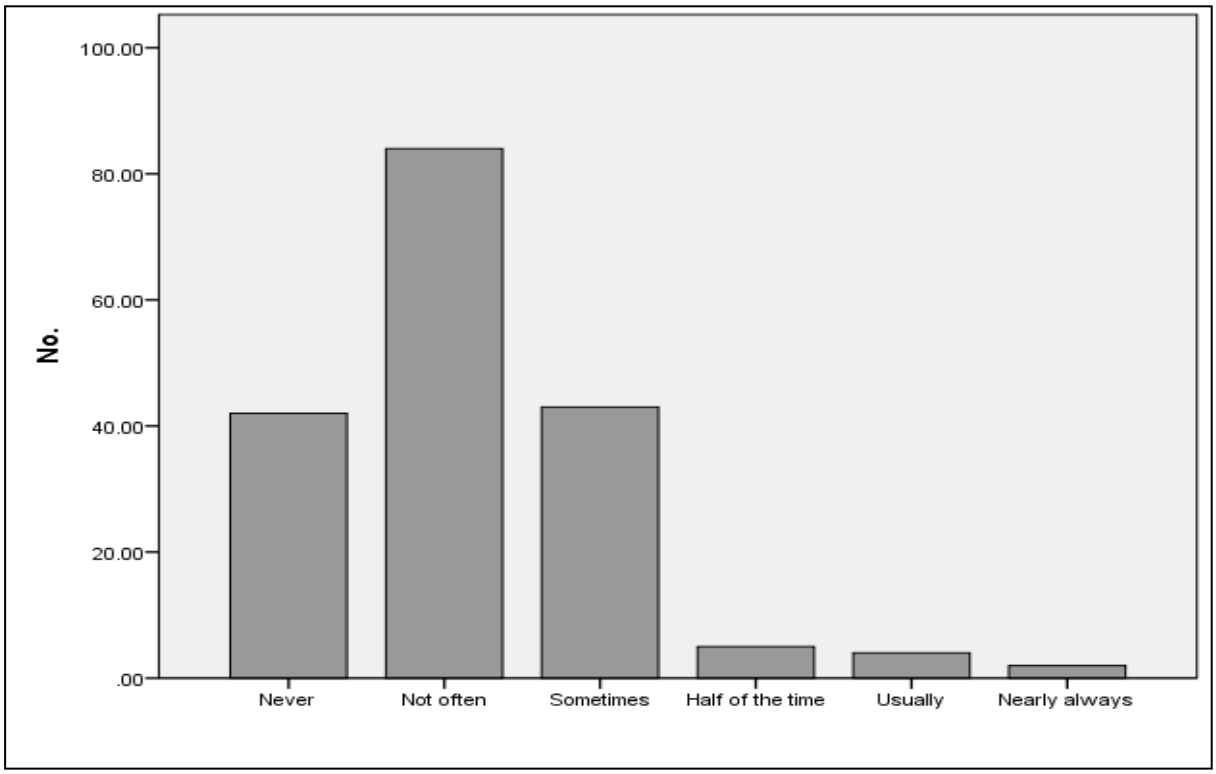


Figure 7: Respondents views on disagreement with MDT plan

5.4.4 MDT chairing and leadership*

For the position of chair of the MDT, 66.9% (n=105) of respondents said the MDT meetings were chaired by surgeons, 33.8% (n=53) physicians, 19.7% (n=31) oncologists, 5.7% (n=9) radiologists, 3.8% (n=6) pathologists, 1.3% (n=2) MDT coordinators and 0.6% (n=1) cancer manager. Under a quarter 24% (n=39) stated that the chair rotated between members, though 68% (n=110) thought that the position of chair should rotate. When respondents were asked about how the meeting goes when the usual chair is away, 3% (n=5) said better, 84% (n=133) the same and 13% (n=21) said worse.

**Some respondents selected more than one choice for MDT chairing hence the total number does not add up to 100%*

5.4.5 Barriers to MDT decision making

The MDT coordinators reported that decisions for cancer patients are not always formulated in the first presentation at the MDT meeting. 46% of the respondents thought that nearly always a clear decision is made at the first presentation while 29% thought that there is usually a plan compared to 13% who said there is always a plan. There was no difference between the satellite hospital and the specialist centre in the frequency of reaching a clear plan in the first presentation of a case at the MDT. Respondents felt that when it was not possible to make decisions on cases at the first presentation, barriers were most commonly due to the lack of radiological or pathological information, or non-attendance of key personnel (Figure 8).

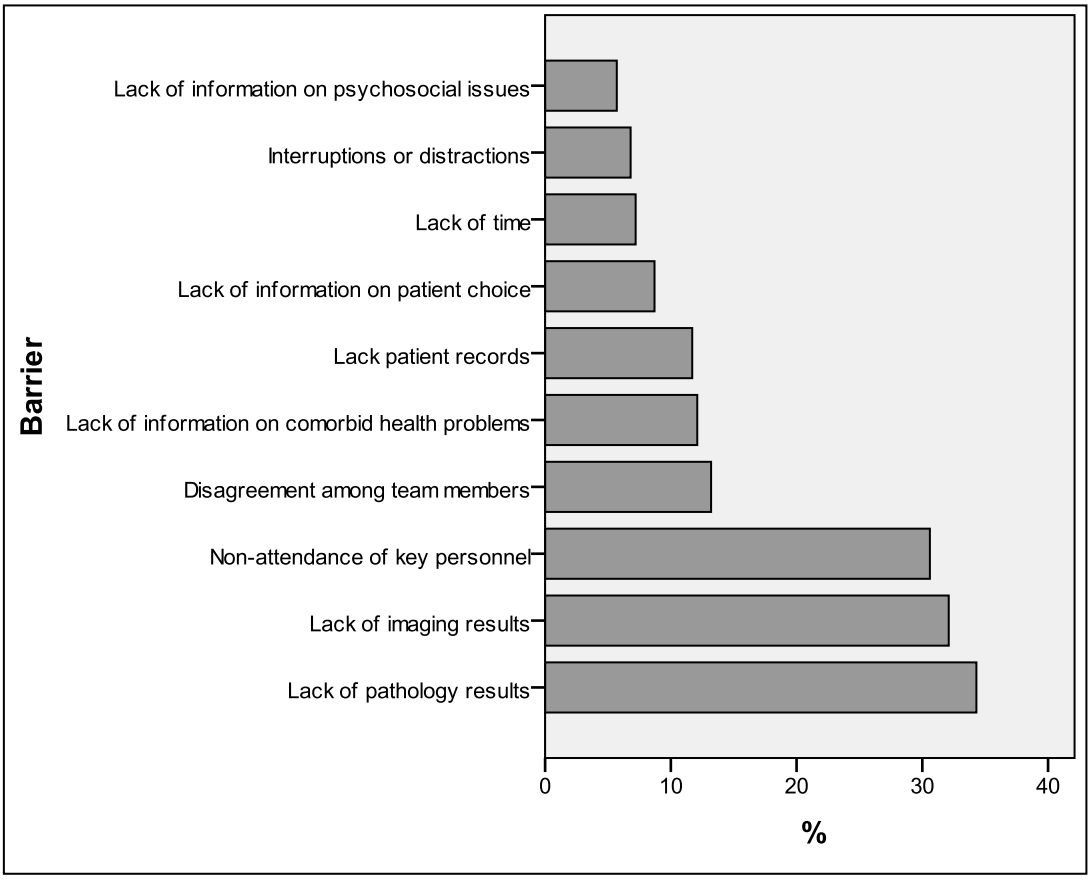


Figure 8: Barriers to reaching a decision in the MDT meeting

5.4.6 Administering and coordinating cancer MDTs

The survey results suggest that coordination and administration of the local MDT is easier than that of the specialist, or that of the supra-specialist MDTs (Figure 9). Different types of patient tracking software were reported available (patient tracking software is a computer system that can be used to enter patient details including background history and investigation results. It also allows keeping patient records and MDT discussions and decisions, in this case, efficiently i.e. replacing the manual transcription and paperwork). Over 90% of respondents had patient tracking software at a local level, with this falling to 60% at specialist level and to less than 40% at supra specialist level.

Just under half of respondents were able to input data from MDT meetings in real time during the meetings. Fewer than 30% transpose data into national databases. Regarding communication of the outcome of the MDT meeting, email was the most frequent means of communication to administrators and clinicians. Respondents tended to communicate to GPs by dictated letters. Approximately three quarters of respondents are able to send out decision or minutes from MDT meetings on the same day as the meeting, and over 90% within 48 hours, at a local level.

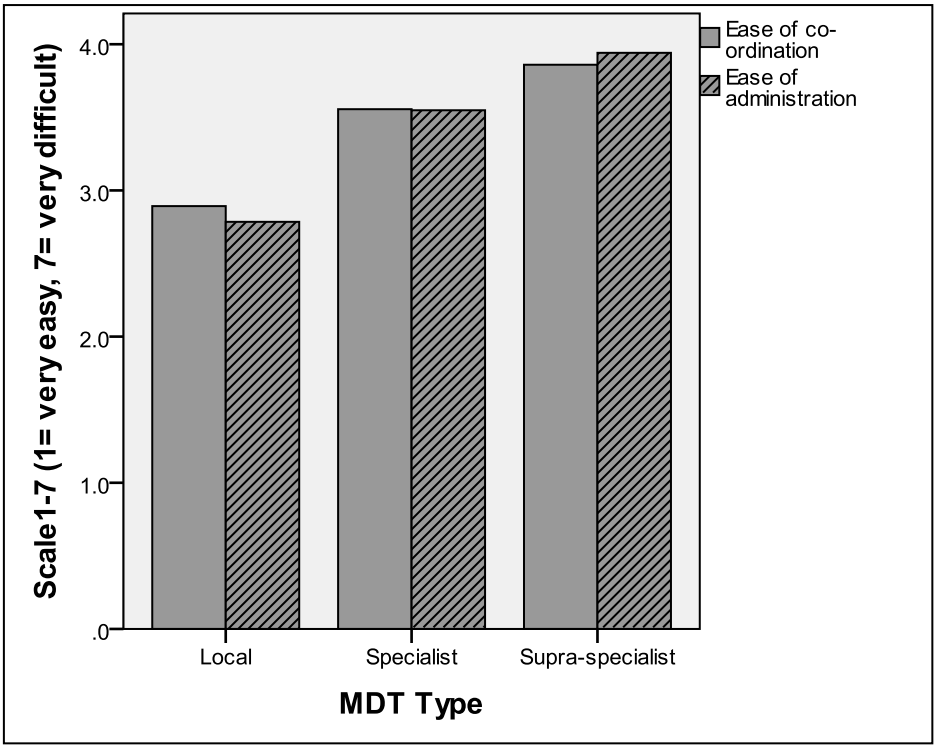


Figure 9: Ease of MDT meeting coordination and administration

5.4.7 Training

The majority of respondents had undergone some kind of induction course and received training in Data systems and IT, data protection and sharing. The figure below outlines the areas in which training was undertaken and others that training needs are unmet and further training deemed required by the MDT coordinators (Figure 10).

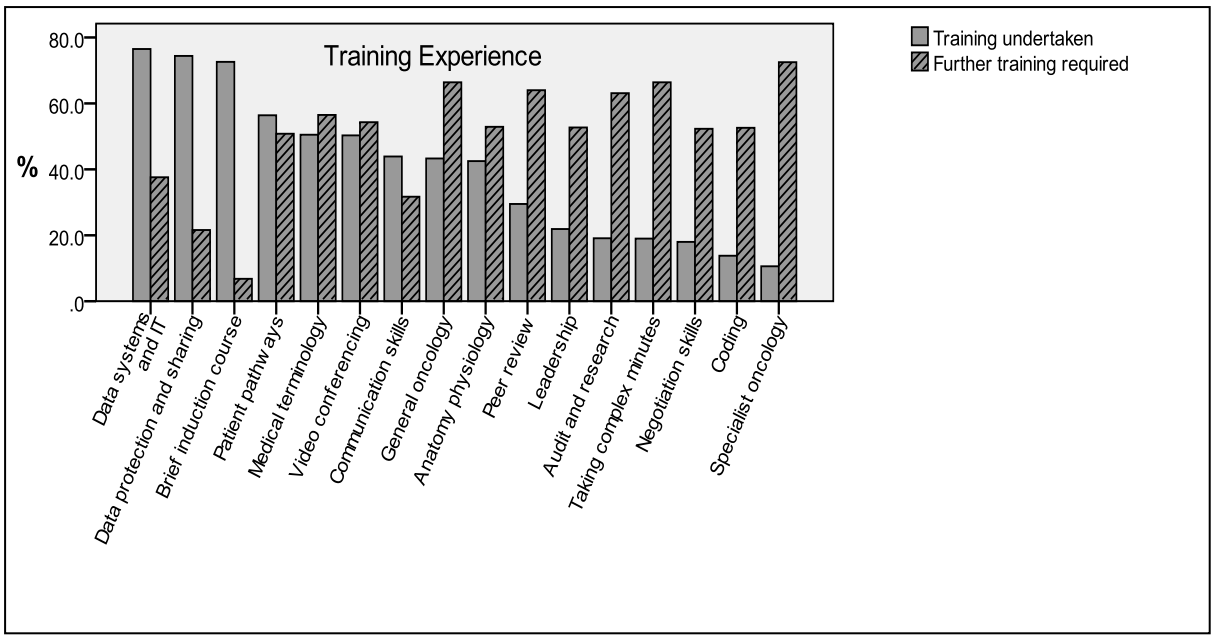


Figure 10: Training undertaken versus further training required for MDT coordinators

There was no significant difference between group 1 (MDT coordinators) and group 2 (their equivalents) in receiving formal teaching in the areas of data system and IT ($\chi^2 = 0.917$, P=0.33), General Oncology ($\chi^2 = 1.958$, P= 0.16), Anatomy and physiology ($\chi^2 = 2.286$, P=0.13), Medical Terminology ($\chi^2 = 2.719$, P= 0.09), videoconferencing (($\chi^2 = 1.432$, P=0.231), brief induction course ($\chi^2 = 0.962$, P=0.327), patient pathways ($\chi^2 = 1.136$, P=0.287), taking complex minutes ($\chi^2 = 1.826$, P=0.177) and data protection ($\chi^2 = 1.032$, P=0.310). However, there was a significant association between the groups and training in receiving formal training in the following areas: specialist Oncology ($\chi^2 = 6.120$, P=0.013), coding ($\chi^2 = 10.064$, P=0.02), leadership ($\chi^2 = 27.0$, P=<0.001), communication skills ($\chi^2 = 16.824$, P<0.001), audit and research ($\chi^2 = 25.18$, P<0.001), peer review ($\chi^2 = 12.673$, P<0.001) and negotiation skills ($\chi^2 = 19.097$, P<0.001). Interestingly, wherever there was a significant difference, the coordinators reported having received less training than group 2. Finally, there was no significant difference between the 2 groups' views in the requirement

for further training, which suggests that the role of MDT coordinator necessitates education and training regardless of the professional title of the person designated for this job.

5.5 Discussion

5.5.1 Summary of findings

To my knowledge, this is only the second study of its kind in the UK, following a 2006 survey of the colorectal MDT coordinators.[103] Nearly half of the MDT coordinators felt that their job plan does not reflect what they actually do. MDT coordinators feel that they neither contribute to the MDT discussion nor their opinions carry weight in treatment decisions. Regarding leadership of MDT meetings, they thought that MDT meetings are mostly chaired by surgeons. MDT coordinators reported that there is not always a decision for each cancer case discussed at the MDT meeting and reasons for such are variable but lack of investigation results and non-attendance of a key member were the commonest. Finally, respondents appear to have received some relevant training and have access to equipment and facilities appropriate for the job. A learning need analysis from a focus group study identified a need for an educational programme for MDT coordinators.[104]

Comparing the results of this survey which was conducted in 2011 to the 2006 survey of the colorectal cancer MDT coordinators,[103] there is a marked improvement in the job related training received by the MDT coordinators and their equivalents. For example, compared to the 2006 survey, the percentage of MDT coordinators who had training has increased from 22% to 57.7% in data systems and IT, from 17.8% to 31.7% in general oncology and from 8.9% to 32.1% in anatomy/physiology. The role of the MDT coordinator is evolving and, as such, training and education should meet the needs of such developing role.

Importantly, although MDT coordinators appear to not have a direct role in clinical decision-making, their work supports the decision-making of the clinical members of the MDT and, without it, decisions could not be made. These findings support our team's previous research,[105] as well as work carried out by others, including the National Cancer Action Team, and the ICCC of the Royal Colleges that recognises the role of the MDT coordinator, as well as the need to strengthen the position by improving resources and training available to MDT coordinators nationally.[103, 106, 107] This view has been reflected in the establishment of the National Team for Cancer MDT coordinators (formally known as the Taskforce), the MDT coordinators forum, and the Annual Conference, along with development of national job descriptions and training programmes.[101]

5.5.2 Limitations

The results of this study are subject to certain limitations. There is no available statistical data on the total number of the MDT coordinators; however the majority of the 1500 MDTs in the UK are supported by a coordinator or an equivalent. Data on the educational background of coordinators was not gathered and may therefore be a confounder with regards to the level of training already undertaken as participants may have trained elsewhere prior to their work as MDT coordinators. The method used to recruit the survey sample involved snowballing so it is not possible to calculate the response rate. This means it is not possible to estimate the representativeness of responses. Furthermore, although the survey software records a unique identifier for each respondent, it is impossible to verify that each response is from a separate individual, and therefore guarantee the integrity of the dataset. However, the sampling was successful in representing respondents across MDTs and different tumour types throughout the UK, and we have no reason to believe that respondents filed multiple surveys.

5.5.3 Conclusion

In this chapter, I have referred to the important role of coordination in the process of the MDT meeting. To further investigate that, I conducted this survey to explore the MDT coordinators views on the MDT and what are the unaddressed needs and requirements around their duties. The study raises the issue of training and education for the MDT coordinators. The study has shown that there is an expressed need to train those key members of the MDT. Perhaps it is the time to seriously consider training or fill the gap in MDT coordinators' education and training in the skills required for them to carry out their role with maximum effectiveness, with the view of further enhancing cancer care. The MDT meeting should not be seen in isolation, but rather as a pivotal point in the patient care pathway, linking information about patients and their disease to the decision making process, and then to the on-going care of the patient thereafter. The role of the MDT coordinator is therefore central to the care of cancer patients, both locally, and also through the coordination and sharing of data on a wider level.

It has become obvious from chapters 4 and 5 that the reasons behind some discordance of MDT decisions and care subsequently implemented within the cancer pathway reflect the decision making process during the meeting. Considering the factors that affect decision making in MDT meetings would lead to improvement in both decision making and hence implementation of these decisions. In the following chapter, I present the findings of a national survey in an attempt to address some of the challenges faced by MDTs and to gather suggestions from the core members regarding interventions to improve the MDT performance.

6 Strategies to improve the utility and efficiency of the urology MDT meeting. A survey study

6.1 Chapter overview

In chapters 4 and 5, I explored the views of MDT members on some of the challenges faced by the MDT. In this chapter I analyse the findings of a national survey where some of the shortcomings identified in the previous studies are presented to MDT members in order to gather their views and suggestions on how to improve the efficacy of the MDT meeting.

Evidence is emerging of the benefits of multidisciplinary working in cancer care.[63] It is thought that time spent at the MDT meeting saves time for members later, but questions remain as to how this time is saved. There is evidence that MDT meetings are high pressured, rapid with high numbers of cases without adequate time to permit the often necessary in-depth discussion.[43, 57, 108] Many cases will need repeated discussion at various points along the care pathway and, although there is no obligation to discuss cases of recurrent or relapsing disease, these are often complex and may benefit most from a multidisciplinary approach.[61] Whilst improving the quality of clinical decision-making is admirable, one potential critique of such quality improvement work is that there is no time to discuss every case in depth. Moreover, such in depth discussion may not be necessary or even desirable for all cases.

6.2 Aims

The specific objectives of this study were to assess the perceptions of MDT members regarding:

- The usefulness of MDT meetings

- Whether MDT working saves time later, and if so, how
- Strategies for improving the efficiency of MDT meetings, namely
    - Treating some cases by protocol, going through the MDT meeting as "chair's action"
    - Prioritising cases at the MDT meeting
    - Splitting the MDT meeting

6.3 Methods

6.3.1 Study design and materials

This was a prospective cross-sectional study. An online survey using a freely available survey engine (www.surveymonkey.com) was constructed (**Appendix 7)**. The survey comprised demographic questions. Three questions asked the respondents about the time they spend at MDT meetings and whether this time is beneficial. Three questions covered the respondents' views on whether all cancer patients should be discussed at the MDT meeting, while other questions explored respondents' views on the caseload burden and whether splitting the MDT into smaller meetings can optimise how the meeting is run. Some questions were answered on a 5-point Likert scale (1=strongly disagree, 3= neither agree nor disagree, 5=strongly agree), some were multiple choice, and others required free text responses. The study was locally approved as a service improvement project prior to data collection.

6.3.2 Participants

Two surveys were conducted on separate occasions using the same questionnaire. The first survey was sent to the attendees of the British Uro-oncology Group (BUG) annual meeting in

2011. Other participants were recruited via the North London Urology Group and North East London Cancer Network. The second survey was administered to the attendees of a national Royal Society of Medicine (RSM) meeting that was jointly organised by the Oncology Section of the RSM and BUG in 2012 (*'What's new – What's changing in prostate cancer?'* meeting). The surveys were aimed at the three core MDT groups attending these meetings – i.e., Oncologists, Urologists and Clinical Nurse Specialists (CNSs). The survey link was emailed to the attendees of the events prior to the meetings. No reminders were administered.

6.3.3 Data analyses

Statistical analysis was conducted using SPSS version 19.0 (SPSS Inc., Chicago, IL). Descriptive analysis (mean, median, standard deviation and percentage as appropriate) was carried out on scale and on binary responses. Kruskal Wallis test (KWT) was used to determine significant differences between respondent groups in these questions. Free-text responses were analysed qualitatively: themes were extracted from respondents' surveys, which were collated depending on their frequency.

6.4 Results

6.4.1 Participants' demographic information

In total, 173 participants completed the surveys. Overall response rate was 54% (320 email invitations were sent). Respondents included 77 Oncologists (44.5%), 30 Urologists (17.3%), 54 CNSs (31.2%), and 12 other specialties (6.9%) (GP=3, Radiologists=2, Radiographer=3, Radiotherapist=3 and Scientist=1). One hundred and eleven respondents completed the survey fully (64.2%).

6.4.2 Time spent at the urology MDT meeting

Oncologists spent more time at MDT meetings (median 3.0hrs/week, range 1-5hrs) compared to Urologists (median 2.0hrs/week, range 2-4hrs) and CNSs (median 2.0hrs/week, range 0-5hrs). The likely reason behind this is that oncologists cover multiple specialties and attend different tumour type MDT meetings.

The majority 68 %(n=75) of the respondents said that attending MDT meetings saves their time later. An open-ended question explored how attending MDTs achieves this. Emergent themes from the responses are shown in the below figure (Figure 11). Discussing and deciding on a care management plan for each patient in the presence of colleagues who ought to know about them was the top theme that emerged from this question. This was followed by the MDT's ability to help decide on the appropriate investigations, as well as being instrumental for patient consultations in the out-patient clinics. Other respondents felt that attending MDT meeting will save them time because all the relevant specialty experts are present in the meeting and referral to other relevant specialties is made easy, efficient and quick. Finally, improvement of patient records and administration were also potential benefits reported by some of the participants.

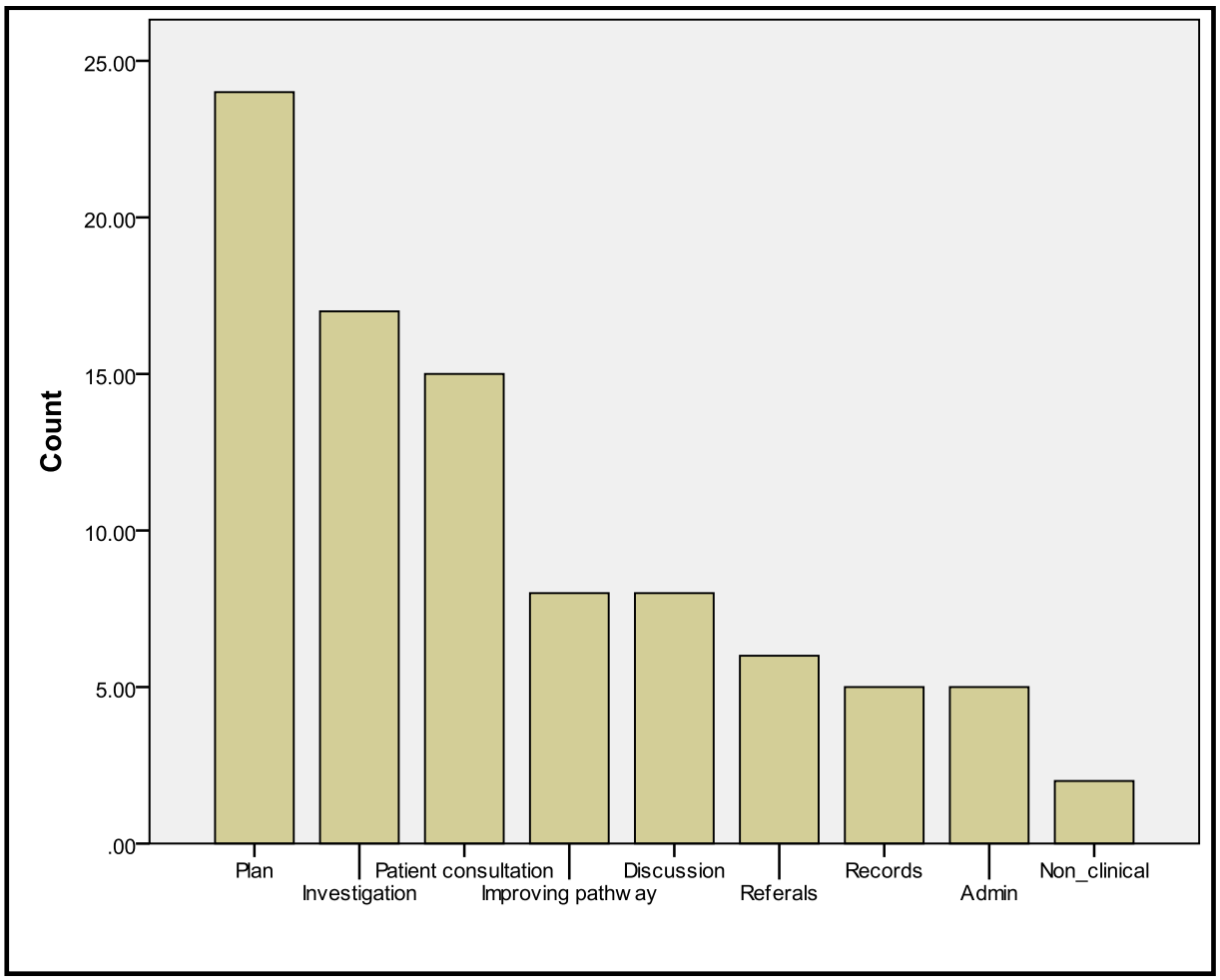


Figure 11: How does attending the MDT meeting save time later?

Interestingly, I did not obtain significant differences between the 3 groups regarding their views of the usefulness of the MDT meeting. In response to whether the time spent at the MDT meeting is useful, CNSs thought that 68% of the time spent at MDT meeting is useful for their own patients while Urologists said 57% and Oncologists 54% of that time is useful for their own patients. Regarding whether the time spent at the MDT meeting is useful for one's colleagues' patients, Urologists were most likely to agree (62%), whereas CNSs and Oncologists scored lower on this question (57% and 55% for CNSs and oncologists, respectively). Finally, the respondents were overall split regarding whether the time spent at the MDT meeting saves time later, 56% of CNS agreed with this statement, followed by 56% of urologists and only 42% of the oncologist respondents.

6.4.3 Improving efficiency of the MDT meetings

6.4.3.1 Do all cancer cases need to be discussed at the MDT meeting?

Overall, there was no significant difference between nursing and medical staff in relation to this question (P=0.34, KWT=0.075). The majority of respondents agreed or strongly agreed that all their cancer patients are discussed at the MDT meeting (nursing staff n=18 (90%), medical staff n=54(74%)).

Since it is currently mandatory to discuss all new cancer cases at the MDT meeting (including the non-complicated cases where decision making is straightforward), we explored the respondents' views on whether those cases that fulfil an agreed protocol should be excluded from extended discussion and treated accordingly to save time for more in-depth discussion of more complex cases. Respondents from different professional backgrounds had different views with regards to the above question. In relation to specialist MDT meetings, medical staff were in agreement about excluding from the MDT discussion those patients whose management falls under a certain pathway or guideline (n=47 (61.8%)). CNSs, however, did not agree or were equivocal in their response (n=10 (59%)). Similar pattern was observed in the responses regarding the local MDT meeting (Figure 12).

To further explore what type of cancer cases could be managed without going through a detailed MDT meeting discussion, 29% (n=33/115) of the respondents thought that the MDT Chair could streamline patients with superficial bladder cancer from the MDT discussion (Figure 13).

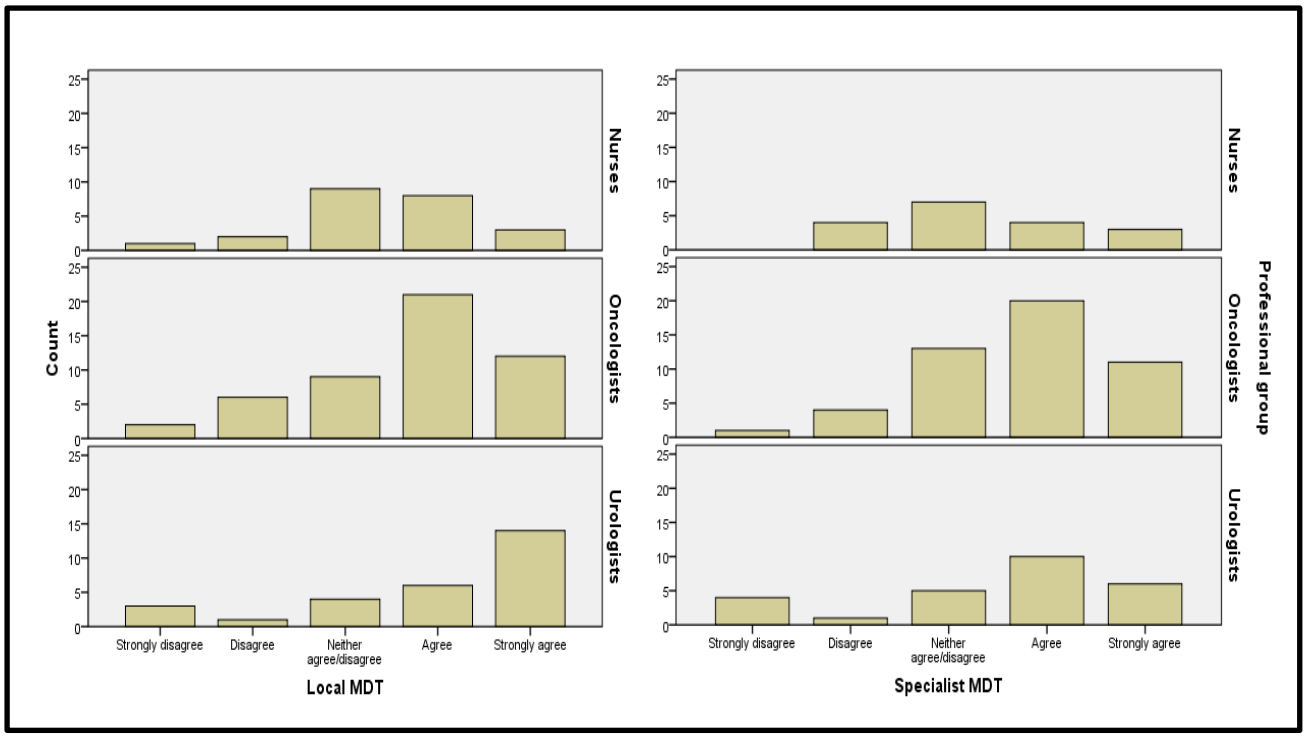


Figure 12: Agreement with the statement '*Some urology cases that are currently discussed in full at the urology MDT meeting could be treated by previously agreed protocol, and be put through the MDT as "chair's action"*'

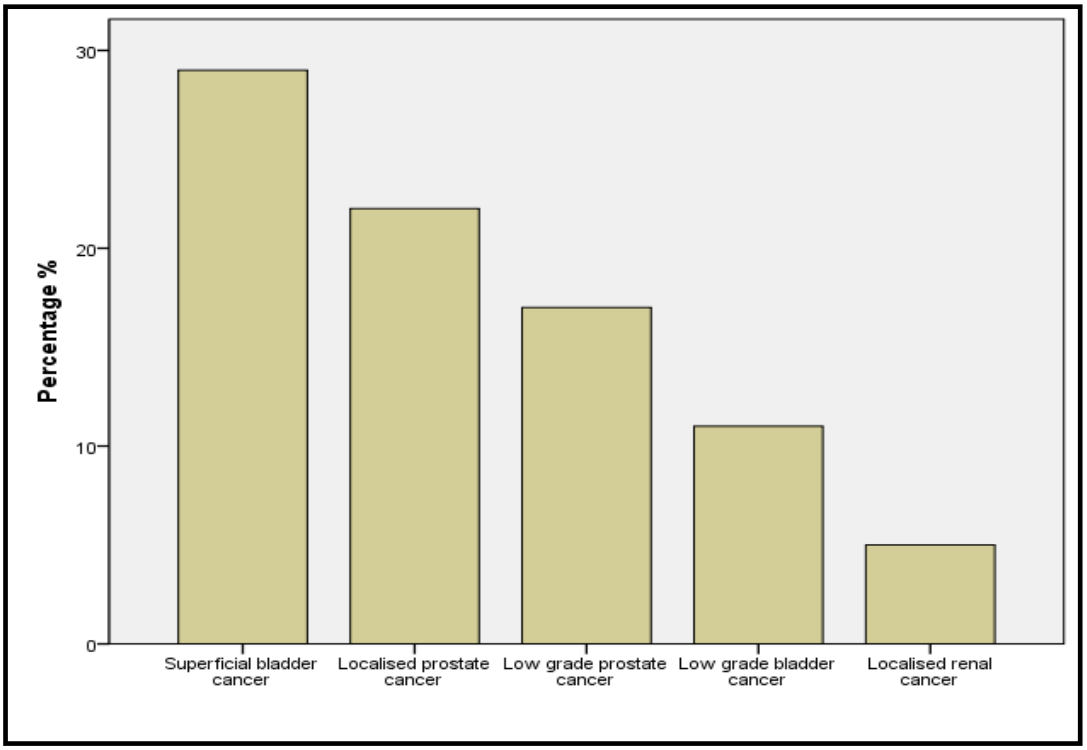


Figure 13: What tumour types could be managed without going through MDT meeting discussion?

6.4.3.2 Could case discussion at the urology MDT meeting be prioritised – and how?

Amongst the three groups, Oncologists were more open to prioritising cases followed by Urologists and Nurses, respectively. Prioritisation by tumour type was the most popular option (n=78 (80%)) in all three groups, followed by prioritisation by case complexity (n=65 (68%)). Prioritisation by team members' availability was the least popular choice (n=56 (60%)).

Splitting the MDT meeting into smaller meetings was not a popular idea in respondents' views. Splitting by complexity was the most unpopular n=16 (17%) followed by splitting by team members' availability n=16 (18%). Splitting by tumour type was the least unpopular n=40 (41%). The disadvantages to splitting the urology MDT meeting as reported in the respondents' free-text comments are shown in Figure 14. The majority of the MDT members felt that splitting the MDT meeting into smaller meetings is wasting more time than it saves and that most healthcare professionals would not have extra time to attend more meetings. They also said that this will result in the meeting losing its multidisciplinary approach.

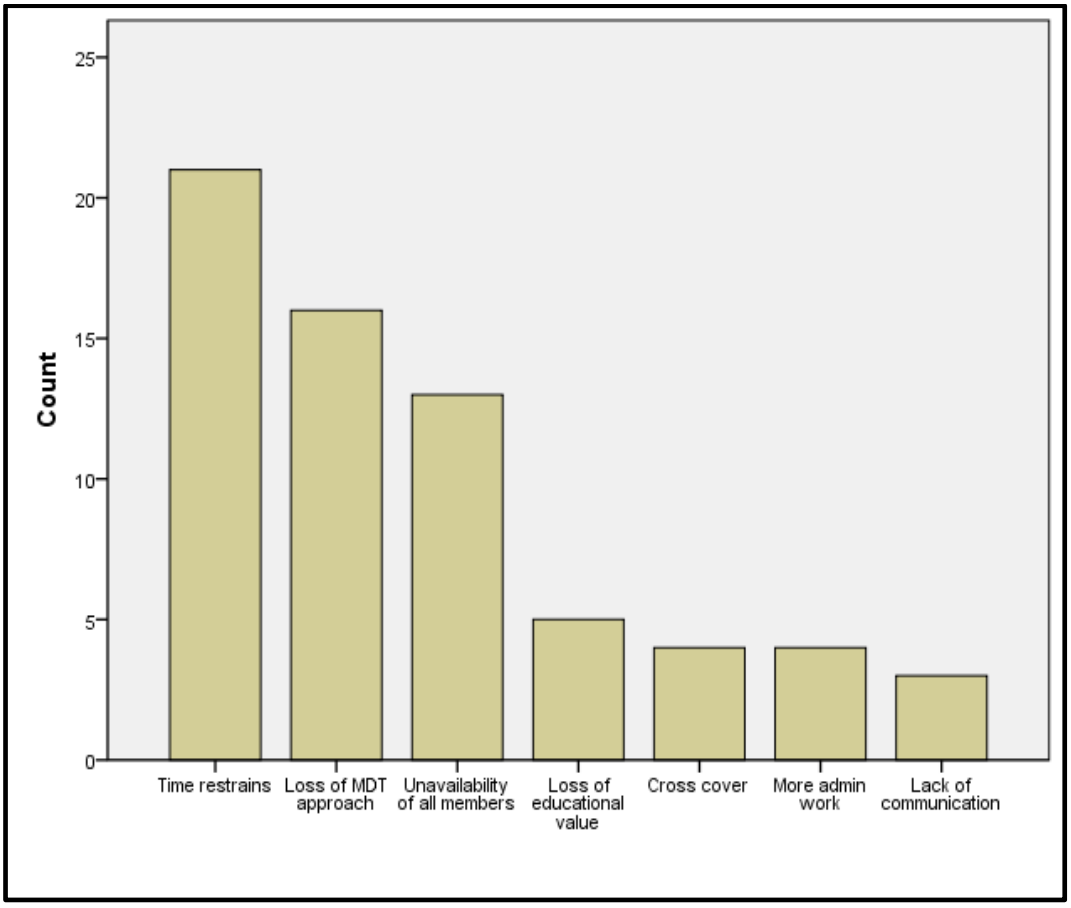


Figure 14: Disadvantages of splitting the MDT meeting

6.5 Discussion

6.5.1 Summary of findings

This study explored core urology MDT members' views on how the current MDT model functions from their perspective and how to improve their cancer services through optimising the MDT meeting. The findings suggest that attending the MDT meeting is a considerable part of the participants' clinical work load (Urologists and Nurses spend on average 120 minutes per week in the MDT meeting, with Oncologists spending longer, presumably due to their membership of other, non-urology, MDTs). Overall, however, participants felts that discussing patients in the presence of all experts at the MDT meeting is beneficial to all members and can save them time of planning and formulating a management plan for treating

their patients. The results suggest that members favour prioritisation of cases on clinical grounds, which might give those at the start of meetings a favourable environment for discussion. However, splitting the MDT meeting into smaller meetings was deemed unpopular and reasons for this unfavourable opinion were mainly time constrains and unavailability of all MDT core members to attend all the sub-meetings, thus losing the team approach in managing cancer patients.

The related issue of whether all cancer cases should be discussed at the MDT meeting is more complicated. As discussion of all newly diagnosed cancer patients via the MDT meeting is mandatory, all simple and complex cases are brought to the forum for expert and a consensus opinion. The survey respondents, however, felt that this may not be necessary. In order to decrease the caseload (so that more complex patients are discussed with less time pressure) a selective approach could be appropriate by excluding some patients from the MDT discussion. These cases could be decided upon based on a combination of treatment protocols and Chair's actions. Those who favoured this selective approach thought that non-muscle invasive bladder and localised prostate cancer patients could be excluded from the extended MDT discussion. It should be noted, however, that CNSs did not favour this approach (i.e., not discussing patients).

6.5.2 Limitations

The sample used in this study was small, consisting only of three professional groups. The study sample may not therefore be representative of MDT members in general. However, the oncologists who participated were recruited from a national forum, and surgeons and nurses from a regional cancer network, and as such represent those core MDT members who have contact with patients, from a range of locations throughout the UK. In addition, sampling

only included core MDT members and it is thus possible that there are views by other healthcare professionals involved in urology MDTs that are not captured here. Importantly, however, the study did capture views of urologists, oncologists and clinical nurse specialists – all of whom are the core members of the urology MDT and contribute most to the team decision making.[59] Finally, as in all surveys, the findings are based on participants' self-reported views and there is a possibility that as participation was opt-in in nature; those who responded are more favourably disposed to engaging in MDT working. More objective methods should be used to further validate these findings – for example, to test how to best prioritise patients for MDT discussion as proposed here. Overall, further replication of these results with more team members across more tumour types will reinforce the generalisability of the findings.

6.5.3 Conclusion

This study shows that the idea of streamlining the MDT by using a combination of agreed treatment protocols and Chair's actions for straightforward cases so that more complex cases can be discussed in more depth at the meeting is potentially viable. The premise of such prioritisation would be that there is no loss of decision quality, but there is a gain in time available to discuss cases that would benefit from multiple specialist inputs (like, for example, advanced or recurrent disease). Both of these aspects can be evaluated prospectively in future studies. The current view that all cases are 'discussed' may in fact be erroneous. Case discussion has recently been measured to average just 3mins per case, which in itself does not represent a thorough discussion[43, 59] Short discussions may certainly be entirely appropriate – as some patients may require discussion lasting only seconds and others may take up significantly longer.

So far, in the few previous chapters, I explored the views and thoughts of the MDT members on the functionality of the MDT meeting, as well as the strategies that can be undertaken to face the shortcomings of the current MDT meetings. These studies were self-reported studies of the core members of different MDT meetings. The following chapters will explore the MDT meeting from an observational point of view and will also involve the development of systematic observational tools to assess some important aspects of the MDT meeting.

7 Systematic observational assessment of the quality of decision making in cancer MDT meetings

7.1 Chapter overview

The main duty of the MDT is to weigh up (process) the available information (input) about a cancer patient in order to reach the best treatment option that can be put in practice in a timely manner (outcome). The previous chapters have shown that there are shortcomings to each stage of it – using review methods (chapter 2), retrospective analysis (chapter 3), and self-report from cancer specialists (chapters 4 to 6). In order to further evaluate decision making during the MDT meeting, I used an objective assessment tool to scientifically assess the performance of the MDT. This enables me to study the 'input-process' part of the MDT in more depth. Further, I took the assessment a step forward by not only using it in real time MDT meetings, but also in evaluating how feasible it is to assess MDT meetings remotely via video-recorded MDT meetings.

7.2 Aims

1. To assess and evaluate the scientific quality of MDTs using an observational tool- The Metric for Observation of Decision making in MDT meetings (MDT MODe).
2. To assess the feasibility/usability of the instrument in real time as well as video-recorded MDT meetings.
3. To derive construct validation evidence for MDT-MODe via prospectively associating MDT-MODe scores with the ability of MDT to make a treatment recommendation on first case presentations.

7.3 Methods

7.3.1.1 Case sample

In total, 683 case discussion were observed and scored using the MDT-MODe tool (see section 7.3.1.2 below for a full description of the instrument) – of those, 556 cases were scored in real time via assessors attending the MDT meeting and 127 cases were assessed via video-recorded MDT meetings. The live assessed cases were all urology tumours; the video assessed cases comprised a range of tumours, including upper- and lower-gastrointestinal tumours, head and neck tumours, urology tumours and skin tumours.

7.3.1.2 Design and procedure

7.3.1.2.1 The instrument:

MDT MODe is an instrument that was developed by our research group to assess clinical decision-making in MDT meetings. This instrument assesses 2 key aspects of team decision-making:

1. The quality of clinical and psychosocial information available to the MDT at the time of case discussion
2. The quality of teamworking during case discussion.

7.3.1.2.2 Design

3-phase prospective observational study design was used – as follows:

Phase 1:

A surgeon assessor of registrar level (myself) was first familiarised with the MDT-MODe instrument by the instrument developers (Ben Lamb: surgeon; James Green: surgeon; Nick

Sevdalis: psychologist). The assessor subsequently started prospective observations of urology MDTs, with regular feedback and guidance provide by one of the tool developers (BL). Observations were carried out in 4 different hospitals within the London, UK, metropolitan area.

Phase 2:

A second surgeon of resident level (Waseem Akhter) was trained to use MDT-MODe by myself and BL. Subsequently, 2 surgeon assessors carried out simultaneous blinded observational assessment of MDTs in real time across the same 4 hospital sites as in Phase 1. Upon completion of this phase, and prior to the video-based observations, the assessors refined the instrument to allow more accurate assessment of the team's decision-making. The following 2 items were added to MDT-MODe:

- "*Patient seen by a team-member*": this item was driven by national cancer care policy in the UK, where presence of an Attending-level physician who has seen the patient prior to the patient being discussed at the MDT is a quality indicator.
- "*Assessor aware of the teams' decision*": this item was added to allow assessment of the clarity of the decision to the member of the team in attendance. The rationale behind the item was that if a surgeon observer is not aware of the final decision for a patient, the same may apply to other team-members – with the potential of confusion and delays in care.

The ethical approval (originally provided for the MDT-MODe study [42]) was amended and obtained a favourable opinion. The approval of the substantial amendment is provided in **Appendix 8.**

Phase 3:

Upon completion of the in vivo observational assessments in MDTs, and the instrument refinement, the same 2 trained assessors used MDT-MODe to prospectively assess video-recorded MDT meetings. These recordings were obtained from 4 different community hospitals across England.

7.3.1.3 Outcome measures

Primary outcome 1: Objective MDT decision-making

Whether a treatment decision was reached for each case was objectively recorded by the MDT coordinator (the dedicated administrator to the MDT) in the meeting minutes. This information was collated by the coordinator and provided to the research team. This outcome was only feasible to collect in the in vivo assessed MDT meetings.

Primary outcome 2: Quality of MDT teamworking

This was assessed via direct in vivo or video-based observation by the surgeon assessors using MDT-MODe (Figure 15). MDT-MODe assesses (i) the quality of information presented at the MDT when a case is reviewed and (ii) the quality of teamworking, i.e. individual team-member's contribution to team decision-making. Both these elements have been shown to be important facets of teamworking at the MDT meeting.[56] They are assessed using a standardized 'behavioural marker' system, which was originally based on the well-validated scoring system of the 'OTAS' tool for operating theatre teams which our group has developed[109, 110] MDT-MODe assessors use 1-5 scales to evaluate quality of information and quality of a specialists' contribution to the team decision-making, which are

anchored at 1 (poor information quality/teamwork), 3 (average information quality/ teamwork) and 5 (excellent information quality/ teamwork).

The assessors used the tool to rate team decision-making for every patient discussed. To minimise the risk of observer bias, the assessors were kept blinded to each other's ratings throughout the data collection. Upon completion of the observations, data were collated for statistical analyses.

Secondary outcome 1: Objective MDT decision-making

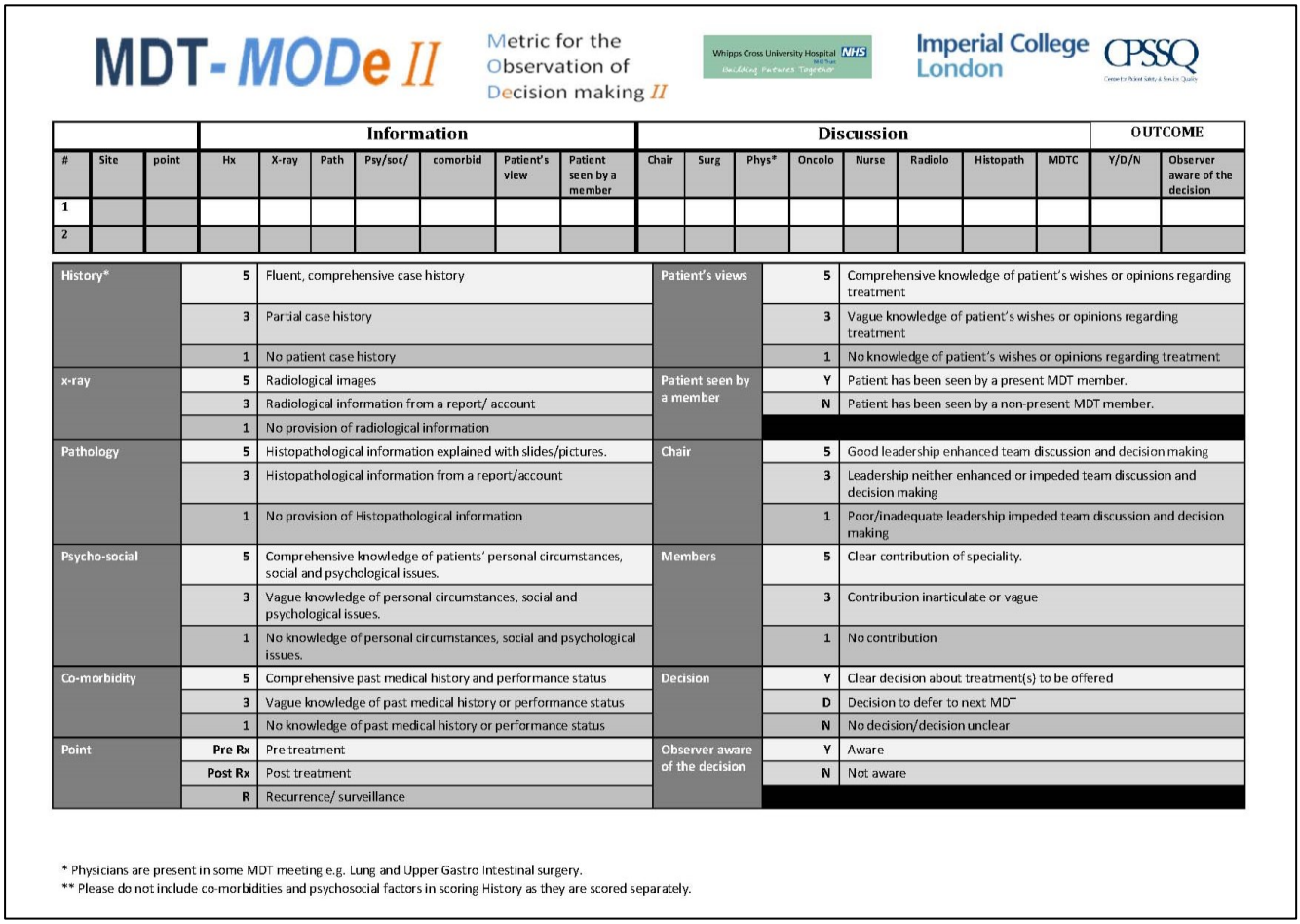
Reasons for the inability of the team to reach a decision (of the in vivo assessed MDTs) were recorded and analysed.

7.3.1.4 Data analyses

All statistical analyses were performed using SPSS version 20.0. (SPSS Inc., Chicago, IL, USA). Mean and standard deviation were computed for all behavioural ratings. Regarding the quality of the observed MDTs, analysis of variance (ANOVA) was used to statistically evaluate the differences in the quality of information presented to the MDT across different types of clinical and psychosocial information and the quality of contribution of the different specialists to the case reviews between observed in vivo and video-recorded MDT meetings. Further, independent sample t-tests were used to compare quality of presented information and also quality of team-members' contributions between cases where the MDT was able to reach a management decisions and those where no decision was reached on first case presentation.

Regarding the scientific quality of the observational assessments, inter-observer agreement was assessed statistically using Intraclass Correlation Coefficients (ICCs), computed with 95% confidence intervals (95% CIs).[111] A cut off score of 0.70 or higher is typically taken as adequate for this type of observational assessment.[112, 113] Further, assessors' calibration curves were computed for all individual elements of the behavioural assessments to statistically evaluate assessors' improvement and cross-assessor consistency in their assessments over time. The curves were computed using ICCs for every 'block' of 20 consecutively observed cases.

For all analyses, significance was taken at $p<0.05$.



MDT-MODe II — Metric for the Observation of Decision making II

Whipps Cross University Hospital NHS — Imperial College London — CPSSQ

			Information							Discussion								OUTCOME	
#	Site	point	Hx	X-ray	Path	Psy/soc/	comorbid	Patient's view	Patient seen by a member	Chair	Surg	Phys*	Oncolo	Nurse	Radiolo	Histopath	MDTC	Y/D/N	Observer aware of the decision
1																			
2																			

History*	5	Fluent, comprehensive case history	Patient's views	5	Comprehensive knowledge of patient's wishes or opinions regarding treatment
	3	Partial case history		3	Vague knowledge of patient's wishes or opinions regarding treatment
	1	No patient case history		1	No knowledge of patient's wishes or opinions regarding treatment
x-ray	5	Radiological images	Patient seen by a member	Y	Patient has been seen by a present MDT member.
	3	Radiological information from a report/ account		N	Patient has been seen by a non-present MDT member.
	1	No provision of radiological information			
Pathology	5	Histopathological information explained with slides/pictures.	Chair	5	Good leadership enhanced team discussion and decision making
	3	Histopathological information from a report/account		3	Leadership neither enhanced or impeded team discussion and decision making
	1	No provision of Histopathological information		1	Poor/inadequate leadership impeded team discussion and decision making
Psycho-social	5	Comprehensive knowledge of patients' personal circumstances, social and psychological issues.	Members	5	Clear contribution of speciality.
	3	Vague knowledge of personal circumstances, social and psychological issues.		3	Contribution inarticulate or vague
	1	No knowledge of personal circumstances, social and psychological issues.		1	No contribution
Co-morbidity	5	Comprehensive past medical history and performance status	Decision	Y	Clear decision about treatment(s) to be offered
	3	Vague knowledge of past medical history or performance status		D	Decision to defer to next MDT
	1	No knowledge of past medical history or performance status		N	No decision/decision unclear
Point	Pre Rx	Pre treatment	Observer aware of the decision	Y	Aware
	Post Rx	Post treatment		N	Not aware
	R	Recurrence/ surveillance			

* Physicians are present in some MDT meeting e.g. Lung and Upper Gastro Intestinal surgery.
** Please do not include co-morbidities and psychosocial factors in scoring History as they are scored separately.

Figure 15: MDT-MODe II

7.4 Results

7.4.1 Observed MDTs: descriptive information

556 cases were scored in vivo (urology tumours) and 127 cases were assessed via video-recordings (upper- and lower-gastrointestinal, head and neck, urology and skin tumours) using MDT-MODe – 683 case discussions were scored in total. Detailed descriptive information of the observed MDTs is shown in Table 9. On average, MDT meetings were attended by 12 specialists each (range 8-15 specialists), discussed 29.5 cases each (range 9-54 cases) within 83.0mins (range 43-118mins) – such that every case was reviewed within an average of 2:49 mm:ss.

Table 9: Descriptive information of all observed multidisciplinary team meetings

	Session	No. of cases	Specialty	Duration (min.)	Average time/case (min:sec)	No. of members present
Phase 1	1	55	Urology	100	01:49	15
	2	30	Urology	80	02:40	13
	3	51	Urology	99	01:56	14
	4	38	Urology	85	02:14	14
	5	41	Urology	90	02:12	15
	6	37	Urology	85	02:18	13
	7	9	Urology	50	05:00	8
	8	36	Urology	85	02:22	13
	9	33	Urology	80	02:25	14
Subtotal	**9**	**332**		**754**		
Phase 2	1	36	Urology	88	02:27	15
	2	47	Urology	95	02:01	12
	3	29	Urology	80	02:46	13
	4	40	Urology	88	02:12	12
	5	35	Urology	85	02:26	15
	6	37	Urology	90	02:26	13
Subtotal	**6**	**224**		**526**		
Phase 3	1	13	Colorectal	99	07:37	12
	2	12	Colorectal	64	05:20	9
	3	13	Skin	54	04:09	10
	4	32	Urology	118	03:41	8
	5	15	Lower GI	97	06:28	12
	6	17	Upper GI	80	04:42	9
	7	16	Head & Neck	78	04:53	10
	8	9	Head & Neck	43	04:47	10
Subtotal	**8**	**127**		**633**		
Total	**23**	**683**		**1913**	**2:49**	
Mean/ session		**29.5**		**83.2**		**12.1**
SD		**13.7**		**17.2**		**2.3**
Range		**9-54**		**43-118**		**8-15**

Primary & secondary outcome 1: Objective MDT decision-making and barriers to reaching clinical decisions

556 cases were assessed in vivo and in those cases the objective meeting outcome was recorded in the formal meeting clinical notes by the MDT coordinator. Analysis of these data revealed that the MDTs were able to reach a clinical decision on first case presentation for 496 of the patients (89.2%, 95% CI 86.4-91.5%) – in other words, 60 patients (10.8%, 95% CI 8.5-13.6%) had to be re-reviewed at a later stage.

Analysis of the cases where no decision could be reached is shown in Figure 16.

Lack of information, including imaging and histology findings were the key reasons for MDTs' inability to make decisions, followed by time pressure and non-attendance of a key team member (oncologist).

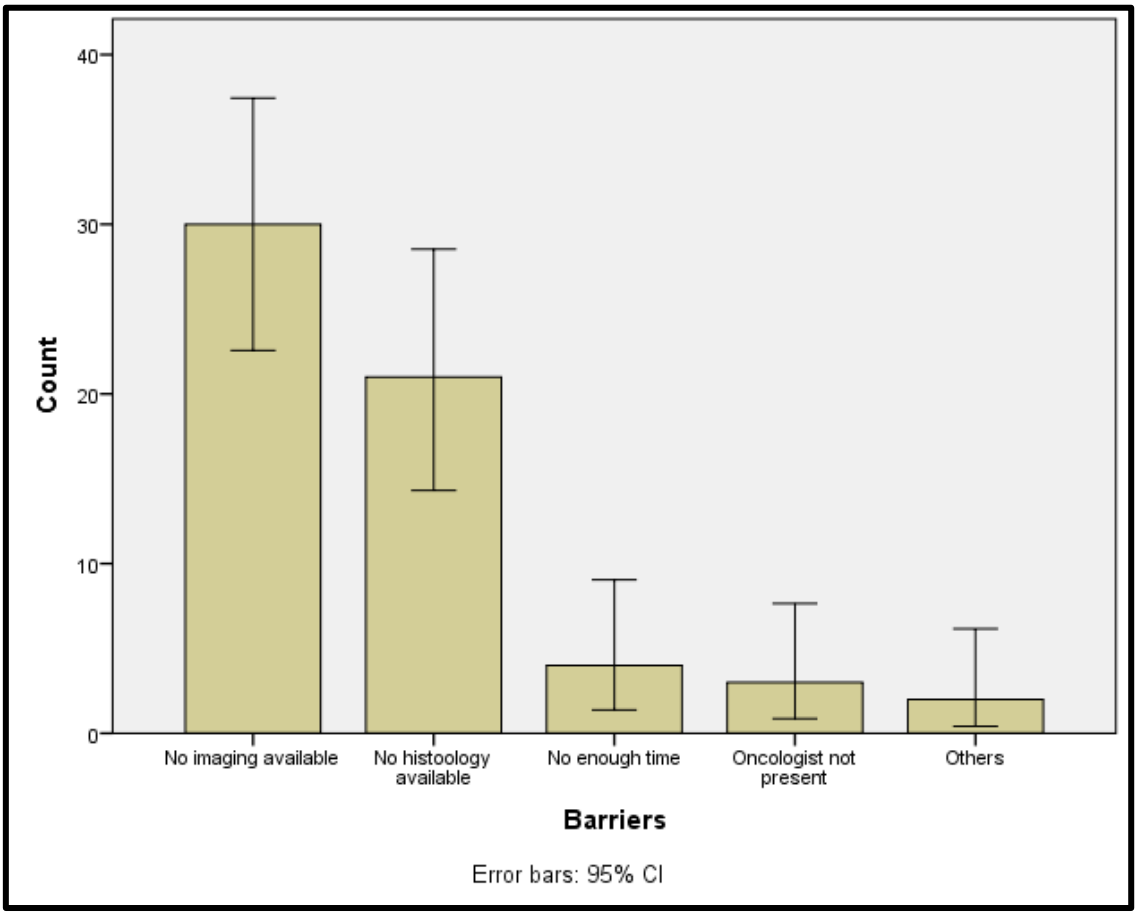


Figure 16: Barriers to decision making

7.4.2 Primary outcome 2: Quality of MDT teamworking

Two aspects of MDT teamworking were assessed. Firstly, the quality of presented information and secondly the quality of specialists' contributions to the case review. Data on each category of assessment of MDT-MODe are presented in Table 10. Regarding categories of quality of information, case history information was scored highest (averaged assessors' mean=4.20, SD=1.20) and information about psychosocial factors and patient views were scored lowest (mean=1.37, SD=1.06 and mean=1.27, SD=0.96, respectively). Regarding each team-member's contribution to discussion, surgeons were scored highest (mean=3.95, SD=1.61) and cancer nurses lowest (mean=1.28, SD=0.92).

I statistically compared the cases where the MDT was able to reach a decision with those where such decision could not be made (Table 10). When the team was able to make a recommendation the majority of MDT-MODe assessment categories were scored significantly higher (all Ps<0.001). The only exceptions were information on patient views (which did not differ between cases with/without a decision) and quality of MDT chair's contribution (which was better in the cases without a decision, P=0.02).

Table 10: The relationship between individual MDT-MODe components and decision making.

	Observed behaviours	Score Decision made (mean)	SD	Score Decision not made (mean)	SD	t test
Information	History	4.36	0.961	2.68	1.85	<0.001
	Radiology	3.43	1.91	1.63	1.40	<0.001
	H/pathology	2.88	1.43	1.70	1.27	<0.001
	Psychosocial	1.41	1.10	1.07	0.52	<0.001
	Comorbidities	2.06	1.64	1.22	0.89	<0.001
	Patient views	1.28	0.997	1.13	0.62	0.259
Total mean score		**2.57**	**0.59**	**1.57**	**0.701**	**<0.001**
Contribution	Chair	2.97	1.82	3.67	1.68	0.02
	Surgeon	4.17	1.46	2.17	1.75	<0.001
	Oncologist	2.42	1.70	1.35	1.01	<0.001
	CNS	1.31	0.96	1.00	0.00	0.014
	Radiologist	2.90	1.96	1.35	1.12	<0.001
	Pathologist	2.25	1.81	1.47	1.30	<0.001
Total mean score		**2.67**	**0.63**	**2.04**	**0.63**	**<0.001**
Grand total mean score		**2.62**	**0.52**	**1.96**	**0.59**	**<0.001**

Regarding the difference between scoring in vivo and video-recorded observation, overall there was variability across all domains. Video-recorded MDT meetings scored higher however statistical significance was only observed in members' contribution scores (Table 11).

Table 11: Variability between scoring between in vivo and video-recorded MDTs

		In vivo observations		Video-recorded observations		ANOVA
		Mean score	SD	Mean score	SD	
Information	History	4.18	1.21	4.370	0.91	0.098
	Radiology	3.23	1.94	3.46	1.81	0.219
	H/pathology	2.76	1.46	3.07	1.47	0.290
	Psychosocial	1.37	1.06	1.32	0.92	0.573
	Comorbidities	1.97	1.60	1.94	1.41	0.842
	Patient views	1.27	0.97	1.43	1.09	0.103
Contribution	Chair	3.02	1.82	3.22	1.64	0.252
	Surgeon	3.95	1.61	4.43	1.05	**0.002**
	Oncologist	2.31	1.68	3.72	1.56	**<0.001**
	CNS	1.28	0.92	2.08	1.52	**<0.001**
	Radiologist	2.74	1.94	2.08	1.52	**<0.001**
	Pathologist	2.16	1.78	3.21	1.84	**<0.001**

7.4.3 Inter-observer reliability analysis: learning curves and assessor consistency

Inter-observer agreement was assessed via intra-class correlations (ICCs). Reliability was calculated and was achieved after 2-3 meetings that remained consistently >0.70.

Assessor learning curves for each element of the assessment are shown in Figures 17 (in vivo scoring) and Figure 18 (video-based scoring). Adequate agreement between the 2 surgeon assessors, defined as ICC of 0.70 or higher, was typically reached within 40-60 observed cases (analysis 'blocks' 2-3) and maintained thereafter- showing good consistency in assessment. Comparably good levels of agreement were found in both the in vivo and the video-based scoring.

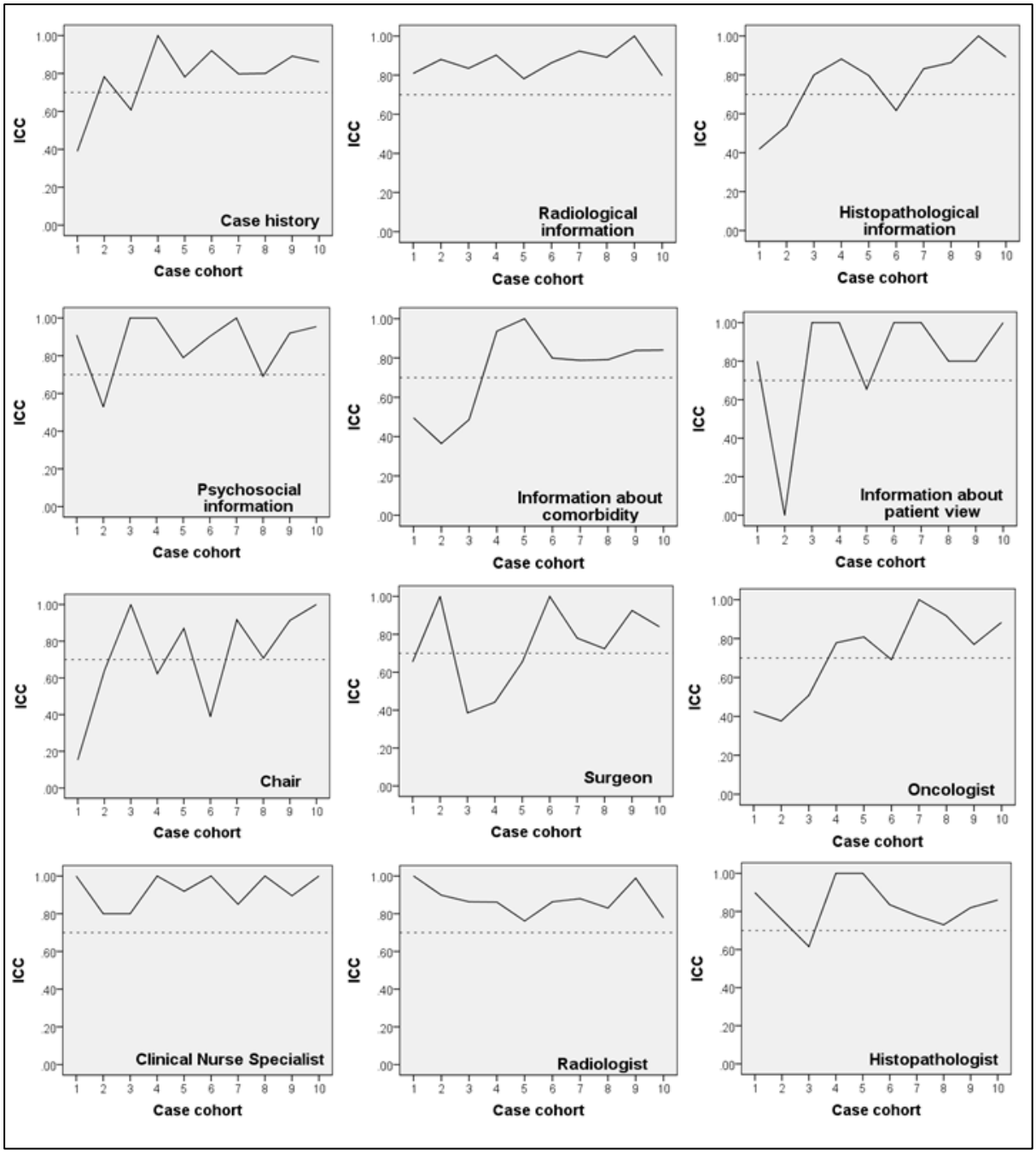


Figure 17: Assessors' agreement in consecutive MDT evaluations carried out in vivo during team meetings

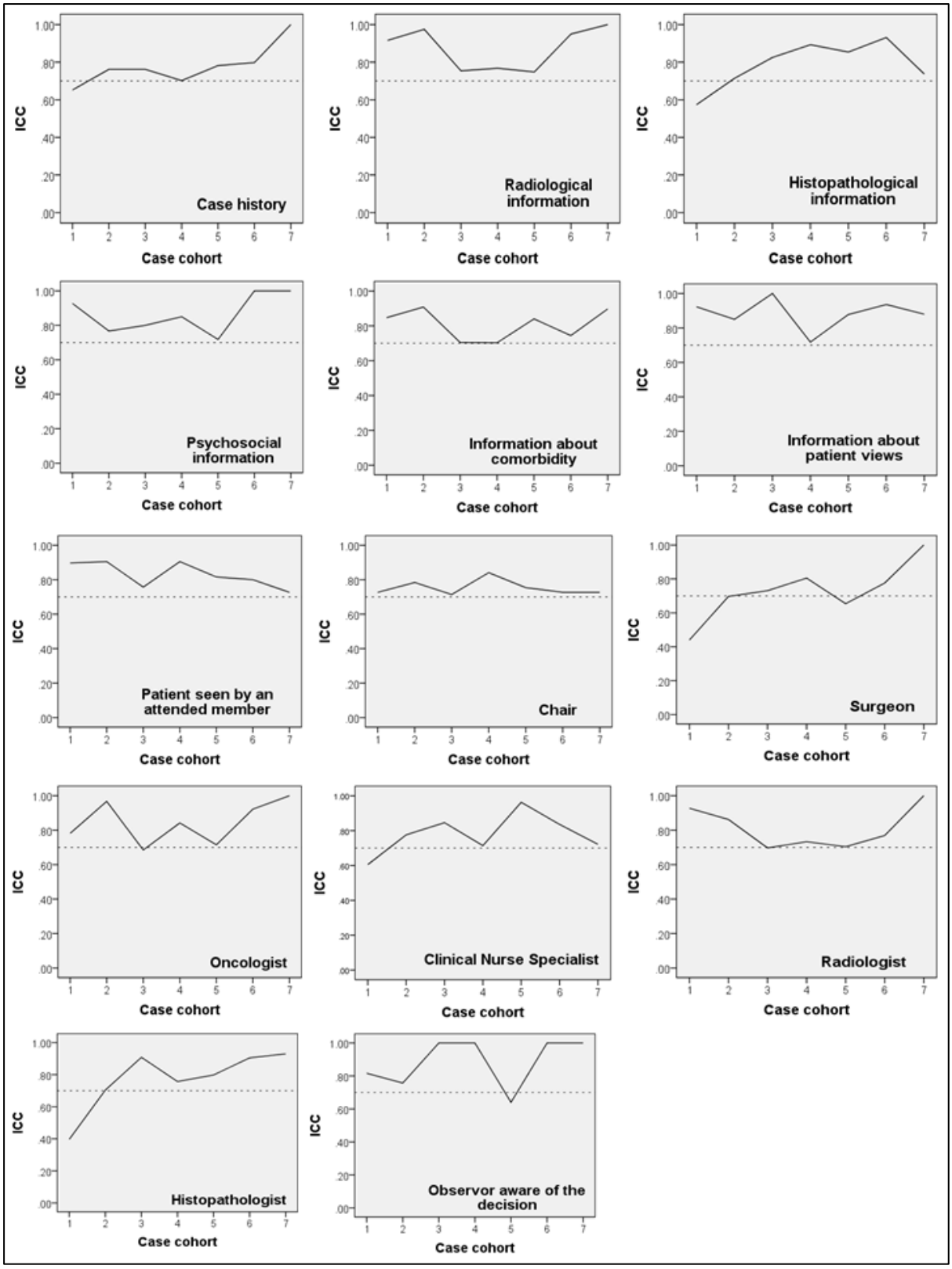


Figure 18: Assessors' agreement in consecutive MDT evaluations carried out via video recordings of team meetings

7.5 Discussion

7.5.1 Summary of findings

Consistent with the 3 objectives I sought to achieve, this study firstly shows that assessment of cancer MDT teams' performance by clinical assessors is feasible, both in vivo and also via video-recorded meetings. Secondly, the study demonstrates that surgeon observers can provide a very good level of scientific assessment both in vivo and via video, with consistently reliable scoring across hundreds of patients. Finally, the study provides evidence that the quality of the teamworking within the MDT meeting is linked to the team's ability to make clinical decisions: for all patients for whom the team had to defer the decision, the quality of information available to the team at the time and also the quality of the team-members' contributions were significantly lower compared to the patients for whom decisions were made.

The MDT-MODe instrument is a scientific assessment of the non-technical aspects of a MDT – including the quality of information available to the team and also the quality of their contributions to the case review. In the past, the tool has been used to evaluate urology MDTs in vivo – and it was found that typically biomedical information is better covered than psychosocial elements, comorbidities are often neglected in the review, and cancer nurses tend not to contribute very much to the case review, even when they have additional information.[43] This study replicates this pattern – the same 3 aspects of the case reviews were the least well covered in the meetings evaluated in this study (even at the MDT meetings where clinical decisions were reached). Further, I found here that the case reviews were largely driven by surgeons – other doctors contributed significantly less, and nurses came lowest.

Lack of information at the time of the meeting was linked to significantly worse case reviews – every single specialist's contribution was scored significantly lower in the cases where information was missing. Lack of imaging and histology results was a key problem – but also lack of time and lack of oncologic presence in the MDT meeting were also factors associated with inability to make a decision. The observed MDTs failed to reach a decision for just under 11% of the patients they reviewed – this finding is fairly representative of the existing evidence base as I found in my systematic review (chapter 2).

7.5.2 Limitations

This study has limitations. Although meaningful links were obtained between MDT-MODe and objective decision-making at the meeting, the tool may not be equally sensitive in the scoring of all specialists in the MDT meeting. Histopathologists might get underscored as not every patient will have histopathological information and sometimes this information will be provided in the case history presentation. Similarly, cancer nurses' low scores may be partly due to the fact that some cases are discussed at the meeting before the nurses have had the opportunity to see the patients – hence their contribution will likely be limited. Moreover, the tool does require initial training – this, however, is what has recently been recommended by a national expert consensus study of nontechnical assessment tool developers, who all agreed that team assessors should first be trained.[114] Importantly, for application purposes, the assessors did not lose their consistency over time, and the agreement between them was transferred from the in vivo scoring to the video-based scoring. Furthermore, assessors found that video recordings of MDTs could be improved. The recordings were made using a single static camera, which made some aspects of the assessment unclear (including assessing the availability of histopathological slides and radiological imaging). A Hawthorne effect could have biased the assessments – such that presence of the assessors in the in vivo scoring or of

the camera in the video scoring altered behaviour during the meeting. This is a limitation present in all observational studies. Importantly, this equally applies to all meetings and hence the differences we obtained between the cases where a decision was reached and those that failed to reach a decision are unlikely to be due to bias. Finally, we evaluate significantly more urology MDTs than other tumours – so more data from non-urologic tumours are required to increase generalisability.

7.5.3 Conclusion:

The present study provides further reliability and validation evidence for a robust instrument to capture nontechnical aspects of performance in cancer MDT meetings, MDT-MODe. I have shown that performance assessments are viable via in vivo and also video-based observation, and that surgeon assessors can learn to use the instrument and remain reliable over time. MDT-MODe enables cancer teams to be evaluated, or to evaluate themselves, and feedback to be provided on how best to improve their team processes.

While attending MDT meetings, I noticed that the duration and smooth running of case discussions were fairly variable – even if patient related factors were excluded (as these tend to be most variable). I soon realised that these aspects of the meeting were linked to the rotating chairperson. Some MDT chairs had effective chairing skills to run the teams, others did not. Indeed, sometimes if they had not introduced themselves as the chairperson, I would not have been able to guess who was the chair of some of the meetings as an observer. This led to the question of what constitutes good chairing in MDT meetings. The specifications and duties of the MDT chairperson/leader have been mentioned in the Characteristics of an Effective MDT document [11] and is the focus of the following chapter.

8 Chairing and leadership in MDT meetings

8.1 Chapter overview

In this chapter, I have taken a step forward towards assessing the MDT chairperson's performance by developing a robust evidence based observational tool. I will present the steps involved in the development of the tool, content validation and reliability of the tool. I will also demonstrate the feasibility of using the tool in both real-time observations and video-recorded MDT meetings.

As I mentioned in the introduction, high quality leadership and chairing skills are vital for good performance in MDT meetings. MDT performance in the UK is subject to a quality assurance exercise by the annual cancer 'peer review' programme which provides an annual mandatory mechanism for assessment of MDTs against set standards, even though performance of MDTs can still be variable.[19] The standards incorporate the process (structural and functional features) of MDTs such as team composition however there is currently no available framework for other aspects of a MDT's functioning such as decision making, decision implementation or the quality of chairing of the MDT meeting. In the UK, the Department of Health has set guidance for MDT working.[38] Some standards in regards to the MDT's leadership are among the many aspects of the MDT that have been included in this guidance – however, who should lead/chair, their characteristics, what are their non-technical skills and whether they ought to undergo any training are not specified. Based on my own research, the importance of good leadership and chairing of the meeting has been an emergent theme among the strategies to improve MDT decision making and implementation (chapter 4). This study aims to address some of these questions.

8.2 Aims

The aim of this study was to develop a robust and valid tool to evaluate the MDT chairperson in leading the meeting through systematic and relevant criteria defined as critical for a MDT chairperson to have.

8.3 Methods

8.3.1 Development and initial validation of the tool

An observational tool was developed to assess the chairing and leadership skills of MDT chairperson. The available literature was first reviewed to gather information about the characteristics of effective chairing. The most relevant document was The characteristics of an effective MDT,[11] which includes a section on the leadership and also mentions a set of skills that an MDT chair should have.

The early stages of instrument development included the largest pool of potential items possible (14 items), which was later reduced to 12 elements, based on content review by experts.[115] This procedure is described in detail below.

The initial review and content validation of the instrument was undertaken in 2 stages:

Stage 1: The characteristics of an effective chairperson were reviewed by 10 senior MDT members who regularly chair their MDT meetings. The characteristics were refined and merged as per the recommendations from these experts - this led to a revised version of the tool to come to its current shape consisting of 12 characteristics by which the chairperson could be assessed.

Stage 2: The revised version of the tool was validated by conducting an online survey of a national sample of Urology MDT members. Attendees of the Prostate Cancer UK Summit 2012 workshop in London were invited to take part in the survey. Participants were asked to rate individual chairing characteristics on a Likert scale (Extremely important =5, Important=4, Does not matter=3, Least important=2, Not applicable=1). The survey questionnaire can be found in **Appendix 9**. In this stage, a Content Validity Index (CVI) was calculated for each item.[116] A CVI represents the proportion of experts who rated the item 4 or 5 on the 5-point scale for its relevance to MDT chairing and leadership.[117] Higher CVIs indicate higher inter-expert agreement that the item is an important criterion of the MDT chairperson. Although there is not a definitive CVI cut-off, 0.78 is taken as a minimum acceptable CVI.[118]

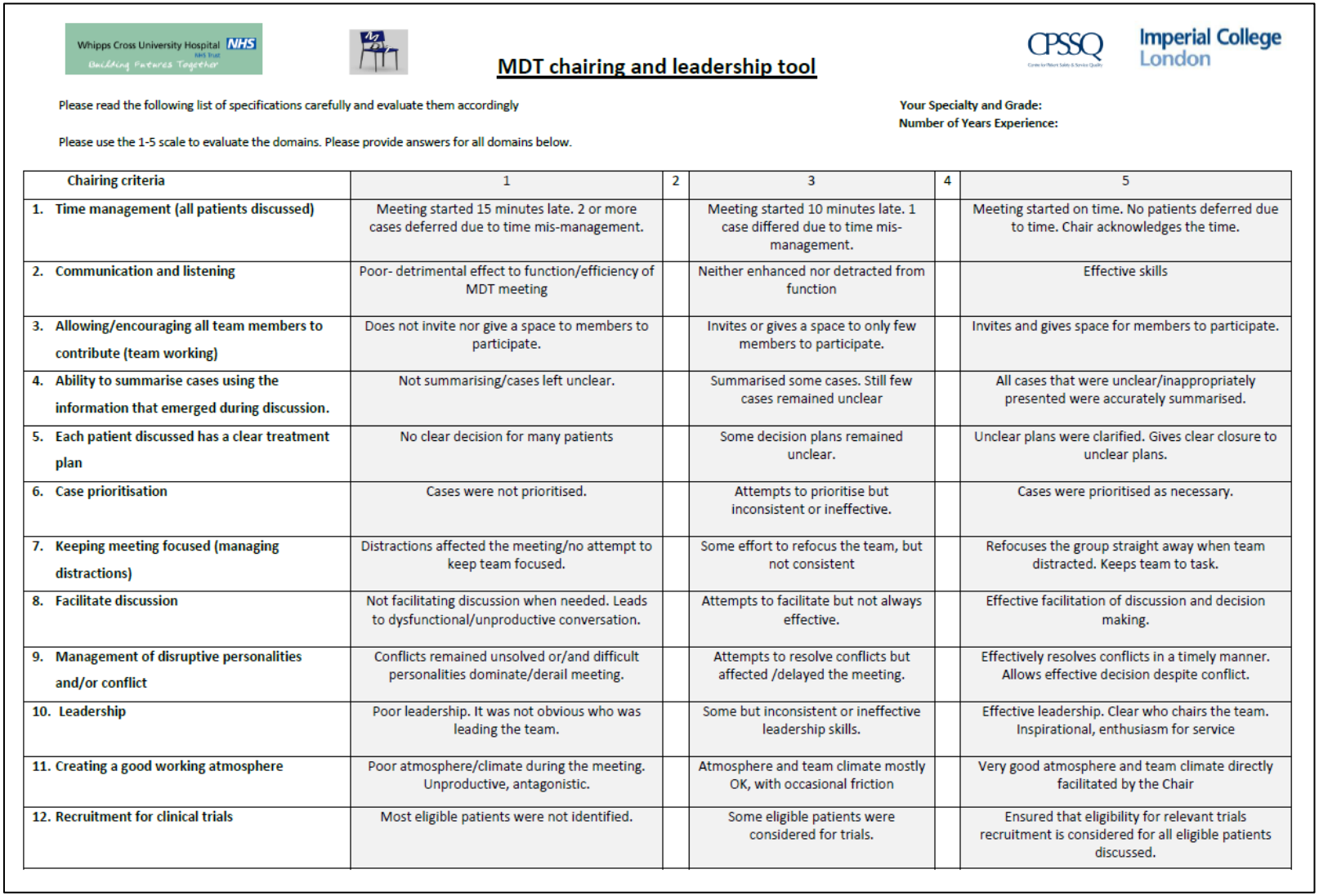
8.3.2 Tool reliability

Following tool content validation, a number of MDT chairpersons were assessed by myself and another surgeon of registrar level (Akhter). The 2 assessors were kept blinded to each other's ratings throughout the assessment process to minimise the risk of bias. Seven real-time Urology MDT meetings (286 cases) and ten video-recorded MDTs (131 cases) of different specialties were observed. A score of 1-5 assessing the chairperson was given by the observers against each individual criterion listed in the tool – such that the minimum score on the scale was 12 (representing poor chairing and leadership skills) and the maximum score was 60 (representing very effective chairing and leadership skills during the meeting). Inter-rater reliability in assessments was evaluated statistically by calculating Intraclass Correlation Coefficients (ICCs) as in chapter 7. ICCs of 0.70 or higher were deemed to indicate adequate inter-rater agreement for research purposes.[112, 113]

The first version and the final version of the MDT chaining and leadership tool is shown in figure 19 and 20.

How would you rate the MDT Chair on the following scale?					
Chairing Criteria	Rating				
1. Ensure the meeting runs to time	1	2	3	4	5
2. Communication	1	2	3	4	5
3. Allowing/encouraging all team members to contribute (team working)	1	2	3	4	5
4. Ability to summarise	1	2	3	4	5
5. Time keeping (all patients discussed)	1	2	3	4	5
6. Each patient discussed has a clear treatment plan	1	2	3	4	5
7. Keeping meeting focused	1	2	3	4	5
8. Facilitate discussion	1	2	3	4	5
9. Conflict resolution	1	2	3	4	5
10. Leadership	1	2	3	4	5
11. Creating a good working atmosphere	1	2	3	4	5
12. Constructive and fair to the team.	1	2	3	4	5
13. Development of the MDT and its activities	1	2	3	4	5
14. Team training needs are identified	1	2	3	4	5

Figure 19: The first version of the chairing and leadership tool



Whipps Cross University Hospital NHS
Building Futures Together

CPSSQ
Centre for Patient Safety & Service Quality

Imperial College London

MDT chairing and leadership tool

Please read the following list of specifications carefully and evaluate them accordingly

Please use the 1-5 scale to evaluate the domains. Please provide answers for all domains below.

Your Specialty and Grade:
Number of Years Experience:

Chairing criteria	1	2	3	4	5
1. Time management (all patients discussed)	Meeting started 15 minutes late. 2 or more cases deferred due to time mis-management.		Meeting started 10 minutes late. 1 case differed due to time mis-management.		Meeting started on time. No patients deferred due to time. Chair acknowledges the time.
2. Communication and listening	Poor- detrimental effect to function/efficiency of MDT meeting		Neither enhanced nor detracted from function		Effective skills
3. Allowing/encouraging all team members to contribute (team working)	Does not invite nor give a space to members to participate.		Invites or gives a space to only few members to participate.		Invites and gives space for members to participate.
4. Ability to summarise cases using the information that emerged during discussion.	Not summarising/cases left unclear.		Summarised some cases. Still few cases remained unclear		All cases that were unclear/inappropriately presented were accurately summarised.
5. Each patient discussed has a clear treatment plan	No clear decision for many patients		Some decision plans remained unclear.		Unclear plans were clarified. Gives clear closure to unclear plans.
6. Case prioritisation	Cases were not prioritised.		Attempts to prioritise but inconsistent or ineffective.		Cases were prioritised as necessary.
7. Keeping meeting focused (managing distractions)	Distractions affected the meeting/no attempt to keep team focused.		Some effort to refocus the team, but not consistent		Refocuses the group straight away when team distracted. Keeps team to task.
8. Facilitate discussion	Not facilitating discussion when needed. Leads to dysfunctional/unproductive conversation.		Attempts to facilitate but not always effective.		Effective facilitation of discussion and decision making.
9. Management of disruptive personalities and/or conflict	Conflicts remained unsolved or/and difficult personalities dominate/derail meeting.		Attempts to resolve conflicts but affected /delayed the meeting.		Effectively resolves conflicts in a timely manner. Allows effective decision despite conflict.
10. Leadership	Poor leadership. It was not obvious who was leading the team.		Some but inconsistent or ineffective leadership skills.		Effective leadership. Clear who chairs the team. Inspirational, enthusiasm for service
11. Creating a good working atmosphere	Poor atmosphere/climate during the meeting. Unproductive, antagonistic.		Atmosphere and team climate mostly OK, with occasional friction		Very good atmosphere and team climate directly facilitated by the Chair
12. Recruitment for clinical trials	Most eligible patients were not identified.		Some eligible patients were considered for trials.		Ensured that eligibility for relevant trials recruitment is considered for all eligible patients discussed.

Figure 20: The MDT chairing and leadership tool.

8.3.3 Cross validation: MDT functioning and chairing/leadership

My research group have developed and validated a tool to assess the MDT meeting – this is the MDT-MODe instrument I used in chapter 7.[43] MDT MODe allows the observational assessment of both (i) the quality of information presented at the MDT meeting when a case is reviewed and (ii) the quality of team working, i.e. individual team-member's contribution to team decision-making including the chairperson. I used the MDT-MODe (the chair contribution component) alongside the chairing tool during both real-time and video-recorded MDT meetings and the scores from both tools were correlated for cross validation.

8.3.4 Analysis

All scores for all the chairing elements were analysed via descriptive statistics. Content Validity Index for the components of the tool was calculated from the survey responses. Intraclass Correlation Coefficients (ICCs) were used to assess inter-rater agreement.[119, 120] Cronbach's alpha was used to assess the internal consistency across the tool domains. Pearson's correlation was used for cross validation purposes. Statistical analysis was conducted using SPSS version 20.0 (SPSS Inc., Chicago, IL).

8.4 Results

8.4.1 Demographics:

Overall, 144 core MDT members responded to the national online survey to validate the content of the tool (Surgeons n=47, Nurses n= 37, Oncologists n=34, Radiologists n=24, others n=2). The majority 68% (n=71) of the doctors were Consultants. The majority of respondents 70% (n=101) spend ≥ 2 hours per week attending MDT meetings. 48% (n=70) of the respondents worked in a specialist centre, 36 %(n=52) of them worked in a non-specialist

centre and the remaining 16% (n=23) worked in both. Only 16% (n=23) of the participants chaired their MDT meetings regularly. Majority of the survey participants 81.4 % (n=99) reported that surgeons are usually chairing their MDT meeting. Oncologists were the second most frequent specialists in chairing the MDT meeting 35.2% (n=51).

8.4.2 Tool content validation and internal consistency:

Based on expert views (phase 1), a few of the tool items were dropped or merged and the revised version of the MDT chairperson assessment tool was further content validated by the survey of experts. The tool was then tested for reliability.

Respondents felt that *ensuring that all cases have a clear treatment plan* is the most important characteristic of the MDT chair and ensuring recruitment for clinical trials was the least important.

The CVI for each scale item is the proportion of experts who rate the item as a 4 or 5 on a 5-point scale.[117] CVIs are shown in table 12. Higher CVIs indicate higher inter-expert agreement.

Further, in order to assess internal consistency of the tool, Cronbach's alpha was calculated and showed good consistency at 0.80. This means that the 12 elements of the instrument tend to be scored in the same direction – which suggest good consistency in the overall tool scoring.[121]

Table 12: Number of the respondents to the survey to validate the content of the chairing tool and computed Content Validity Indices (CVIs)

Items	Respondents who rated the items as 5 (Extremely important) or 4 (Important) (n)	Total Responses (n)	CVI
Time management	114	116	0.98
Communication	116	117	0.99
Team working	116	116	1.00
Ensure clear treatment plans	115	117	0.98
Ability to summarize	110	117	0.94
Case prioritization	95	115	0.83
Keeping meeting focused	113	116	0.97
Facilitate discussion	108	115	0.94
Conflict management	103	114	0.90
Leadership	103	115	0.90
Creating good work environment	106	115	0.92
Recruiting for clinical trials	89	112	0.80

8.4.3 Inter-observer reliability in tool utilisation:

Inter-rater agreement (in the form of ICCs) is shown in table 13. Overall, agreement was higher in meetings scored in real-time compared to those scored retrospectively based on video-recordings – the ICCs between the 2 blinded assessors showed this pattern in 7 out of the 12 elements of the scale.

Table 13: ICCs across all chairing items in both real-live and video recorded MDT meetings

Measured chair's criteria	Observed Real - Live MDT meetings ICC	Observed Video-Recorded MDT meetings ICC
Time management	0.91	0.65
Communication	0.75	0.71
Team working	0.68	0.76
Ensure clear treatment plans	0.88	0.79
Ability to summarize	0.86	0.68
Case prioritisation	0.74	0.64
Keeping meeting focused	0.70	0.69
Facilitate discussion	0.78	0.63
Conflict management	0.69	0.71
Leadership	0.71	0.79
Creating good work environment	0.63	0.67
Recruiting for clinical trials	0.79	0.88

8.4.4 Correlational analysis

To further validate the tool, the individual components of the chairing tool were correlated with the mean scores of the chairing tool (overall) and MODe Chair (i.e., the chair's contribution to the MDT meeting discussion as measured by MODe). In relation to the chairing tool, the *team working* and *communication* appeared to correlate the highest, while in relation to MODe Chair, the *abilities to summarise, prioritise cases* and *keep the meeting focused* reached the highest values. Full results including correlation coefficients and significance levels are shown in Table 14**.**

Table 14: Pearson correlations between the chairing tool and MDT-MODe

Tool	Item	Chairing tool (overall mean score)	MDT-MODe Chair contribution (mean score)
Chairing tool	Time management	0.322	0.405
	Communication	0.882**	0.315
	Team working	0.901**	0.514
	Ensure clear treatment plans	0.445	0.474
	Ability to summarise	0.844**	0.697**
	Case prioritisation	0.684**	0.531*
	Keeping meeting focused	0.782**	0.518*
	Facilitate discussion	0.816**	0.405
	Conflict management	0.558*	0.216
	Leadership	0.815**	0.466
	Creating good working environment	0.429	0.146
	Recruiting for clinical trials	0.759**	0.286
	Recruiting for clinical trials	0.759**	0.286
	Overall (mean)	1.00	0.617*
MODe	Overall (mean)	-.196	.207

Note. N = 15. Two-tailed. *p < 0.05. **p < 0.01.

8.5 Discussion

8.5.1 Summary of findings

To the best of my knowledge, this is the first attempt to develop and evaluate a tool to assess the MDT meeting's chairperson skills. The process and the steps of the tool development ensure that the assessment tool is evidence based, validated by experts, and can be reliably used by assessors. This study relied on experts to validate the content of the tool. The revised version of the tool showed content validity and internal consistency. The two observers statistically agreed on ratings of chairing characteristics. Reasonably reliable assessment was demonstrated for all the 12 domains of the tool in both real-time MDT meeting assessments

and video-recorded MDT meeting assessments, though the former were more reliably scored than the latter, perhaps indicating some limitations of scoring teams on video.

Furthermore, the overall chairing showed the strongest association with the non-technical skills, i.e., team working and communication. These are immensely important aspects of an effective healthcare team since their breakdown is a major contributor to medical errors and adverse events.[122-124] Thus, a tool that is able to measure these factors will allow different cancer MDT meetings to capitalise on efficacy and safety. What is more, chairing tool showed positive relation with the chair's contribution to the meeting as measured by MODe. In particular, the strongest positive association with the chair's contribution was detected with the chair's ability to summarise, prioritise cases and keep the meeting focused (as measured by the chairing tool). This points to an important aspect of the chair's role within MDT since the increase in their involvement signifies gain in the effective case-by-case management commonly associated with optimal quality and cost-effective outcomes.[125, 126]

8.5.2 Limitations

This study has to be interpreted within its limitations. The survey sample was a sample of convenience consisting of attendees of the Prostate Cancer UK summit workshop, however the number of respondents (68% Consultants) and their geographical distribution allow at least some national representation. There was a discrepancy of the ICC between the real-live and video-recorded MDTs. This perhaps can be explained by the videos not being recorded for this purpose and the quality of sound was not ideal in some videos – or it could also mean that video-based assessment is harder to accomplish reliably. Finally, the 12 domains of the tool represent the items that are reported in the limited literature about the desired criteria of

an effective MDT chair, followed by expert review – however, a larger scale study is needed to find out if there are other criteria that should be considered.

8.6 Conclusion

The MDT chair plays a key role in the smooth and effective functioning of the team and their meeting. Several authors have discussed the attributes and characteristics of an effective MDT lead – including the ability to encourage full participation of all team members and good communication skills.[25, 40] In a national survey in the UK of more than 2000 MDT members, the majority of respondents listed non-technical skills such as assertiveness, good communication skills and being a team player, and a minority listed clinical or technical expertise as a quality on the qualities that make a good MDT chair/leader.[19]

In this study, I developed an MDT chairing tool – aiming to produce a validated, reliable and evidence based tool, to assess the quality of the MDT chairperson in managing the team. The tool has been submitted to some testing so far across different surgical specialties with adequate reliability and validity evidence – clearly more is required in the future. Moreover, the association between the chairing, and the communication and team working was found to be particularly high, while the abilities to summarise, prioritise cases and keep the meeting focused were of particular significance in relation to the chair's contribution to the meeting (as measured by MODe). This tool, as it stands, can be the foundation of the development of an assessment toolkit and a start into training MDT chairs and leads for non-technical skills necessary to run more efficient MDT meetings.

9 Discussion

Here, I will first discuss the aims I set out in chapter 1 and my attempt to achieve them via the studies reported in chapters 2 to 8. I will then discuss the limitations of my research and more broadly of this approach to evaluating and improving MDT performance. I will conclude with the implications of my research on clinical practice and research directions to be explored in the future.

9.1 Review of my aims and what I achieved:

9.1.1 To evaluate the available evidence on the efficacy of MDT decision making and decision implementation (chapters 2 and 3).

Evidence suggests that there is no a single way to evaluate the efficacy of an MDT. Despite the existence of a 'peer review' programme as a quality assurance in the UK. Team functioning and the decision making process are not really covered by the peer review. In chapters 2 and 3, I demonstrated through a systematic review and a large retrospective study that there are shortcomings in the Input (i.e. information) that affects the Process of the MDT meeting (i.e. decision making) and in turn can be detrimental to the Outcomes of the team (i.e. decision implementation). Specifically, the systematic review (chapter 2) showed that discordance rate varies from 3 to 33.8% across specialties (non-urological) and the main reasons for that are new information/deterioration of patient's health or ignoring patient-related factors/ preferences in the decision making process. In the study presented in chapter 3, I analysed one year of MDT data in Urology and found that the MDT do not reach into a decision in 10% of the cases, mainly due to lack of investigation results. In the same dataset, I also found that 11% of the MDT decisions do not get implemented.

The straightforward function of the MDT meeting is to decide on the appropriate treatment for the patient. An appropriate treatment surely is one that the patients can have, taking into account all the variables surrounding their circumstances of psychosocial factors, comorbidities as well as their preferences. As a result of lacking of the necessary information (Input), reaching a treatment option is neither always possible, nor are the team's recommendations always right for the patient. As a consequence, the MDT decision is then subject to change, eventually resulting in significant treatment delays for the patient.

9.1.2 To assess the views and experience of the MDT members (clinical and non-clinical) on the efficacy of the MDT meeting (chapters 4 and 5).

In chapter 4, I assessed the views of clinical members of urology and colorectal MDTs through semi-structured interview regarding making and implementing treatment recommendations. The 22 MDT members agreed on the convenience of the venue of their MDT, but had problems with the video-conferencing facility across sites. They reported that decisions could not be reached in 8% of the discussed cases due to inadequate information, unavailability of an MDT member, time pressure or technological problems. Those interviewed also thought that only 5% of their MDT decisions do not get implemented – for reasons similar to what previous studies showed, i.e. ignoring patient related factors and disease progression.

In chapter 5, I extended the themes from chapter 4 to assess the views of the non-clinical MDT members (MDT coordinators). I conducted a survey of a national sample of MDT coordinators across different specialties. Only half of the 265 respondents had the title of an MDT coordinator and about 38% felt that they had a disparity between their job plan and their actual duties. They attributed not reaching into a decision at the MDT meeting to,

unsurprisingly, lack of investigation results and non-attendance of a key MDT member. The findings of this study indicate that the coordinators' job involves high workload, it involves a high load of administrative work and most of them are either not trained or have educational needs that are not addressed yet.

9.1.3 To explore the views of core MDT members on how to improve the functionality of the MDT meeting (chapter 6).

In this chapter, I explored the views of the participants of 2 national Uro-oncological meetings comprising Urologists, Oncologists and CNSs about the usefulness and time-effectiveness of the MDT meeting within the cancer care pathway. Oncologists tended to spend more time attending MDT meetings compared to Urologists – likely because they attend different tumour MDTs and they cover different specialties. Respondents thought that the time spent in the meeting helps both their own patients and their colleagues' patients. Urologists, however, reported that the MDT is more useful for their colleagues' patients. The main themes that emerged from the survey in terms of time saving were: formulating a plan, aid in deciding of appropriate investigations during out-patient consultation. A key aspect of the survey was whether all cases should be discussed at the MDT – and whether alternatives to this approach exist. It is mandatory to discuss all suspected and diagnosed new cancer cases by the MDT meeting, however, whether recurrent disease would benefit from such practice is questionable as those recurrent cancers are more complex and carry a high symptom burden. A recent study showed that 79% of Urology MDT members agree that all cancer patients with recurrence should be discussed by the MDT.[33] The survey discussed here showed similar results as a way to benefit the more complicated and advanced disease cases. However, including all recurrent and advanced disease in the MDT meeting would add even more load on the MDT meeting. Respondents argued that some cases could be excluded

form discussion such as non-muscle invasive bladder cancer and low grade prostate cancer cases. Aiming to improve the case discussion process, participants further suggested that cases could be prioritised by complexity or tumour type, but prioritisation by team members' availability was less popular. In contrast, participants generally did not agree that the MDT meeting could be split into smaller meetings neither by complexity, tumour type or by team members' availability.

9.1.4 To develop methods to assess the "input-process" of the MDT meeting by focusing on the factors influencing the MDT outcome, i.e. preparation, teamwork and leadership (chapters 7 and 8).

The end stage of the MDT Process in the context of the 'Input-Process-Outcome' approach that I presented in chapter 1 of this thesis is to reach into a recommendation. Broadly, there are 2 factors that are necessary in order to reach this stage. One of them is the information about the disease and the patient including investigation results (an Input). The second one is the expert opinion and review of the team members, i.e. their contribution to the case discussion (a Process). In chapter 7, I used a tool to assess both Input and Process aspects of the MDT meeting and how the assessments relate to the outcome of the meeting, i.e. reaching into a decision.

The study showed that different MDT meetings differ in caseload. Some MDT meetings discussed 9 patients (Head and Neck MDT), whereas in others the caseload reached into over 50 cases such as in Urology MDTs. It was observed that 10.8% of the cases did not have a decision made at the end of the meeting - similar finding as in chapter 3 (10.2%). Again reasons for not reaching into decision included lack of investigation results and unavailability of a core MDT member in the meeting. In this particular study, another factor came forward:

lack of time. I believe this is where a case load can impose a pressure in some MDT meetings (like in Urology). The study further showed that observational assessment using a systematic tool like the MDT-MODe were reliable and importantly reflected whether a decision is reached or not – a finding that adds further validation to such observational assessments. Finally, I also validated MDT MODe to observe video-recorded MDTs as well as in vivo observations for the first time.

From my experience and during attending MDT meetings, I noticed that there were occasions that a decision was made and that was obvious from the presenter documenting the decision in the MDT proforma, but I as an observer and a junior trainee was not aware what that decision was. This was affecting the coordinators' work, as they were trying to update the MDT minutes during the meeting so this made them to transfer the information after the meeting from the MDT proforma. This raised the issue of the educational duty of the MDT meeting for the attendees, especially the juniors. I also noticed that often when cases are discussed, the presenter had not met the patient before, which delayed the discussion by looking into the notes searching for information about the patient such as psychosocial issues and fitness for a certain treatment. These two objective observations were added to the MDT-MODe in my revisions to the tool.

A further observation of mine, which triggered the study of chapter 8, was the variability of the leadership skills of the chairperson running the meeting. In order to run such meetings, certain skills are critical for the chairperson. These became the focus of chapter 8, where I developed an evidence based tool to assess the MDT chairperson. The desired and expected chairing criteria were extracted from the literature and also from expert opinion. The tool was content validated, correlated positively with the leadership scale of the MDT MODe, and

showed adequate inter-rater reliability in real time and video-recorded MDT meetings. Further research is required to validate the tool and make it useful in the context of chairmanship/leadership training – however this tool represents an initial systematic and evidence based attempt to address this gap.

9.2 Limitations

There are some limitations to this research – and to the wider field of improving the quality of MDT working via multi-method studies such as those I report in this thesis. As the concept of integrating the MDT in the cancer pathway is already established in many countries and mandatory in others like the UK, it is not possible to conduct trials in order to study the effects of the MDT meeting, as opposed to no MDT meeting discussion in the cancer pathway, in the context of decision making, decision implementation and timing of receiving treatment.

Limited evidence in the literature is another limitation of this research. Despite this so far, the function and effectiveness of the MDT meeting have been assessed against different criteria. The outcome measure i.e. survival that has been used in some of the recent studies to assess the functionality of the MDT meeting using 3 and 5 year mortality are rather basic measures as they may be objective and are also multifactorial so using them to explain success or failure of interventions which the introduction of the MDT meeting in the cancer care in this case, is likely to be problematic and non-conclusive. There is a limitation of the evidence available in the literature in the researched area of MDTs (the implementation of the MDT decision). There is a limitation in the evidence base in every speciality too about the MDT outcome measures. In urology, there is no study in the literature looking at the concordance of the MDT decision.

Self-report has many advantages however they suffer from some disadvantages. There is a validity limitation as the respondents may exaggerate the situation and there is the unavoidable inclusion of the person's feeling s at the time of the interview or answering the questionnaire. A second limitation to self-reported studies is that the sample size is limited to the voluntary respondents and its associated bias if there is a systematic difference between the included sample and the non-respondents group.

Similarly, observational studies that have been used in this research also have disadvantages. Limited time is one, the time allocated for MD (Res) programme is limited and data collection is time and resource demanding. In addition, other potential weaknesses of observational studies include the observer bias and the Hawthorne effect (observer effect) where the presence of the observer may affect the behaviour of the observed party. Further, another limitation of the observational studies is that they are time consuming and require observers to be trained. I used 2 observational tools to assess the MDT function: the MDT MODe to objectively assess the information that was brought to the meeting and individual member's contribution to the discussion. The second tool was the MDT chairing tool. The latter tool was developed to assess the chairing and leadership skills of the MDT chairperson. Both tools are objectively capturing performance information including non-technical skills of the MDT members together with the chairperson. The limitation I experienced using the tool with other raters was that every evaluator differs in rating and assessing others despite the existence of anchors for the ratings. This is can be reflected in the learning curves demonstrated in chapters 7 and 8. This takes us back to the fact and a finding of a recent study quoting that assessors of non-technical skills should be trained first.[106]

9.3 Implications of my research and future directions

For research purposes, my findings have implications for future work in this field. One area of interest is different ways to evaluate the quality of MDT working using parameters other than survival. It would be interesting to look at whether the MDT approach has improved compliance with guidelines. As I mentioned in the introduction, the efficacy of an MDT could be assessed via their adherence rate with available guidelines. I believe that this is an area that needs exploring as there is lack of evidence base on this and there are only few small scale studies in the literature. During my research, I also became aware that there is no systematic arrangement in place to ensure that eligible patients are highlighted for recruitment into clinical trials. Generally, MDT meetings with a research nurse present tend to do better from what I experienced first-hand. Recruitment into clinical trials is one of the functions of the MDT meeting. It has been underlined also in the 'Characteristics of an effective MDT' report.[28]

Another neglected area and one of the key MDT functions is the education duty of the MDT meeting. Research should focus on the barriers and obstacles facing the MDT (and the meeting) in delivering such an important function. A specific finding of my research highlights the educational needs that some of the non-clinical members of the MDT have. Further research can explore these needs and evaluate the impact of better-trained coordinators on the running and of the MDT and the coordination of care across the cancer pathway more broadly. Beyond the non-clinical members, MDT leads and chairs seem to perform variably as well, and it seems that there are no set criteria at present for individuals to be able to run those meetings. The clinical knowledge is not what was highlighted in my research, but rather a set of non-technical skills. Such skills should be included in theoretical and practical training. The elements of the newly developed instrument of chapter 8 could be

used to train MDT chairs and leads – with the hypothesis to be tested that better trained chairs/leads contribute to more effective meetings and decision making.

For clinical practice purposes, the assessment tools used within this thesis can be used in practice to assess both the performance and the efficacy of MDT meetings. These assessments can form a part of a toolkit to assess the functionality of the MDT and also for team self-reflective purposes. Members can improve the 'Input-Process-Outcome' elements of their meetings through intervention – depending on what is locally needed. The studies I have presented in this thesis show that experienced MDT members are aware of the function and the shortcomings of their MDTs. Thus self-assessment, perhaps with some external facilitation if needed and/or available, may provide a positive step to enhance the functionality of cancer MDTs as a first stage. I do not envisage such a process as 'competing' in any way with the established 'peer review' system – but rather as a complementary process with a focus on teamworking and team leadership elements.

In the recent years, there has been an emphasis on training of non-technical skills alongside technical skills – particularly within the context of surgery. Surgical oncology, especially MDT driven care, seems to now be following the same path. Although more work needs to be conducted in this area, improvement in MDT processes can enhance teamworking, and decision making, and can lead to improved timeliness in cancer care. Ultimately, these improvements ought to be linked to enhanced patient satisfaction and improved patient reported outcomes and eventually the quality of the delivered care.

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Appendices

Appendix 1: Abstracts of published articles

Chapter 4- Factors that can make an impact on decision-making and decision implementation in cancer multidisciplinary teams: An interview study of the provider perspective

BACKGROUND: It is becoming a standard practice worldwide for cancer patients to be discussed by a multidisciplinary team (MDT or 'tumour board') in order to formulate an expert-derived management plan. Evidence suggests that MDTs do not always work optimally in making clinical decisions and that not all MDT decisions get implemented into care. We investigated factors influencing decision-making and decision implementation in cancer MDTs.

METHODS: Semi-structured interviews were carried out with expert MDT members of Urological and Gastro-Intestinal tumours of 3 London (UK) hospitals. The standardised interview protocol assessed MDT experts' views on decision-making, barriers to reaching a decision and implementing it into care, and interventions to improve this process. All interviews were audio-taped, transcribed verbatim and analysed using a standardised approach. Emergent themes were identified by 2 clinical coders and tabulated.

RESULTS: Twenty-two participants participated in the study and data collection achieved 'saturation' (i.e., similar themes raised by different participants). Barriers to clinical decision-making included: inadequate clinical information; lack of investigation results; non-attendance of key members; teleconferencing failures. Barriers to implementation of MDT recommendations included: non-consideration of patients' choices or co-morbidities; disease progression at the time of implementation. Proposed interventions included improving the information available for the discussion through a standardised proforma; improving video-

conferencing; reducing the MDT caseload (e.g., via selective MDT review of certain patients); and including patients more in the decision process.

CONCLUSIONS: There is an increasing drive to improve the clinical role of the MDT within cancer care. This study demonstrates the main barriers that MDTs face in deciding on and, importantly, implementing a management plan. Further research should prospectively evaluate interventions to enhance translation of MDT decision-making into cancer care and thus to expedite and improve care.

Chapter 5- The cancer multi-disciplinary team from the co-ordinators' perspective: results from a national survey in the UK

ABSTRACT: BACKGROUND: The MDT-Coordinators' role is relatively new, and as such it is evolving. What is apparent is that the coordinator's work is pivotal to the effectiveness and efficiency of an MDT. This study aimed to assess the views and needs of MDT-coordinators.

METHODS: Views of MDT-coordinators were evaluated through an online survey that covered their current practice and role, MDT chairing, opinions on how to improve MDT meetings, and coordinators' educational/training needs.

RESULTS: 265 coordinators responded to the survey. More than one third of the respondents felt that the job plan does not reflect their actual duties. It was reported that medical members of the MDT always contribute to case discussions. 66.9% of the respondents reported that the MDTs are chaired by Surgeons. The majority reported having training on data management and IT skills but more than 50% reported that they felt further training is needed in areas of Oncology, Anatomy and physiology, audit and research, peer-review, and leadership skills.

CONCLUSIONS: MDT-Coordinators' role is central to the care of cancer patients. The study reveals areas of training requirements that remain unmet. Improving the resources and

training available to MDT-coordinators can give them an opportunity to develop the required additional skills and contribute to improved MDT performance and ultimately cancer care. Finally, this study looks forward to the impact of the recent launch of a new e-learning training programme for MDT coordinators and discusses implications for future research.

Chapter 7- Validation of team performance assessment for multidisciplinary tumor boards

OBJECTIVE: To construct validate the 'Multidisciplinary Tumor Board Metric for the Observation of Decision-Making' instrument (MTB-MODe), to evaluate assessors' learning curves, and to evaluate its feasibility and inter-rater reliability for assessing the decision-making process of video-recorded MTB meetings.

BACKGROUND: MTBs are becoming the standard practice in managing cancer patients internationally - however, there are no agreed standards to assess the efficacy of such teams. The MTB-MODe tool assesses the process of MTB decision-making via standardized observation (1-5 anchored scales) of the quality of information presented at the MTB and MTB-members' contribution to case review.

METHODS: A total of 683 MTB case-discussions were assessed using MTB-MODe in a multi-phased study: 332 cases (9 urology MTBs) by 1 urologist in vivo; 224 cases (6 urology MTBs) by 2 urologists in vivo. The instrument was refined and subsequently used to rate 127 cases of eight video-recorded MTBs of five different tumor types.

RESULTS: Good inter-rater reliability was achieved in vivo and transferred to the video-recorded MTB meetings that remained consistent (Intra-Class Correlations>/=0.70). MTB-MODe scores were higher in cases that resulted in a decision (mean=2.54, SD=0.47) than cases where no decision was reached (mean=2.02, SD=0.65) (P</=0.001).

CONCLUSIONS: A standardized method to assess the quality of MTB working can enhance the quality of cancer care and the ability of MTBs to evaluate their own performance enables promotion of good practice. Video recordings offer a feasible and reliable method of assessing MTB working.

Appendix 2: Detailed search strategy of the systematic review

	Search terms	Ovid(Embase, Medline and PsycINFO)	CINAHL	Cochrane	Pubmed
1	(malignan* or cancer* or neoplas* or tumour* or tumor*).	2720002	80163	78980	2682916
2	MDT OR MCC OR MCT OR MDM OR MCM OR multidisciplinary team OR patient care team OR tumor board.	90385	9290	6812	871692
3	Decision OR decision making OR decision implementation	228397	28046	21427	180277
4	1 AND 2 AND 3	1934	89	1702 (MeSH=1)	4955
5	limit 4 to English language & Human	1662 (MeSH=100)	17(LIMIT EXCLUDING Medline)	N/A	4632
	Total	1762	17	1703	4632

Appendix 3: Topic guide for the interview study

1. Introduction	• Introduce myself • Thank them for taking part. • Introduce project – State aim of the interview • Timing of the interview: is about 20- 30 minutes • Ask permission to tape-record the interview, assure anonymity and confidentiality *(sign consent and start recording), tell them that you will make notes* • Establish ID of who I'm speaking to(demographics): ○ Sex: M F ○ Speciality and grade: ○ Years in that grade:	
2. Identify present system	• I would like to talk to you about multidisciplinary team meeting in urology/GI Surgery • Do you attend MDTM? *(How many? How often?)*	
3. Venue and Environment	• Where is the MDT meeting that you attend held? • Do you have video conferencing? • How does video conferencing affect communication compared to face to face? • At the MDTM are there problems with equipment/IT? *(Does this affect the meeting and the decision making process? Can you give examples?)* • *Does this affect the decision making?*	
4. Decision making	• Is there always a clear treatment plan from the MDT meeting on every patient? • What percentage of cases will have a clear plan post MDTM? • If not, why not? • What are the implications of not reaching a decision? *(on patient, MDT, NHS)* • What could be done to improve that?	
5. Implementing decision	• Does the decision always get implemented? *Yes or No?* • If not, why?(*reasons for non-implementation*) • Any idea of how many decisions get implemented/not implemented? % • What are the implications of not implementing a decision? *(on patient, MDT, NHS)* • What could be done to improve that?	
6. Questions to be asked in the decision making and decision implementation section(do not duplicate)	• At the MDTM is every patient's case **History** presented? *Who presents?* *Is it useful? Is it complete? Do have trust/faith in what is presented?* *What are the possible problems, or problems you've encountered in your experience?)* • How are cases for discussion booked? *(What info is needed, are there any criteria?)*	

	• What format is the **information** available in? *Are the notes present?* *Is there a summary?* *Is it prepared beforehand? By whom?* *Is there and aid to help bringing the right information?* • At the MDTM Are the **x-ray images** presented? *(For all patients or certain ones?) Elaborate on the answer.* • At the MDTM Are the **path slides** presented? *(For all patients or certain ones?) Elaborate on the answer.* • At the MDTM are the patients' other problems presented? *(**Morbidity and psycho-social** problems or issues) Whom by?)* • At the MDTM Are the **patient's wishes** presented? Wishes in general, or for specific treatment options. *(Who knows them? Whom by?)* • Is the clinician who knows the patient, present always in the meeting? • How long is the MDT? • It there enough time to discuss all cases? • At the MDTM is there a chair person? • Does the chair enhance decision making? *How?*	
7. Improvement	• What do you find good about MDTMs? (*ask for examples)* • What are the problems with the MDTM? • Can you identify/ suggest one thing that would make your MDT decision making and implementation improved? Is there something you would change? • Ask about recruiting to trials	
8. Questions	• Do you have any questions? Anything else you would like to add?	

Appendix 4: An example transcript from the interview study

For the purpose of the transcribing company, this is Mr……., and your speciality and grade?

Uro-oncology consultant.

Consultant. How many years have you been in this grade?

One.

So we'll talk about MDT, mainly urology MDTs. How many MDTs do you attend a week?

Two, two.

Two. And they are?

UCH and one at Bart's, and they're uro-oncology MDTs.

Okay, and do you get, are they, are they held in a dedicated space, a venue?

Yeah, they're both held in a, a lecture theatre type of, or a large office type of space.

And do you have video conferencing?

We have video conferencing.

In both?

Yeah.

Do you think there's, how, how does this video conferencing affect mainly decision making compared to face to face discussion?

I, I think it's, it's more difficult because there are a lot of problems, as you know, with, with actual, the videos themselves or the, the teleconferencing in that, you know, some of the time you can't hear what they're saying on the other side. There's a lot of mumbling going on, there's a lot of static, sometimes it cuts out. So it, it is much more difficult to do it in that setting. But it, obviously it's not practical for –

Everybody?

Hospitals which are, you know, a long way away to centralise it to one, to one area either. And, and also I think it's more difficult to get, get, to get more, to get opinions across on teleconferencing, sort of, you know, strategy.

Okay, and do you see a conflict between B sites(?), what if there is a?

Yes, and this is, actually, I saw one of the questions, this is, what I think, one of the reasons why MDTs aren't ideal, because every surgeon, radiotherapist, or whoever it is –

All team up?

Has their own bio, has their own bio section. And often every unit, depending on their sub-speciality, what they, what procedure they specialise in, have their own bias towards a certain procedure.

I mean, certainly you mentioned you had problems with the, with the IT and video conferencing?

Yeah, yeah.

Did you have delays, at all, in (overspeaking)?

Yeah, we've, we've often had delays. In fact… the, the most problematic one, the one I sit at at Bart's, it cuts out every hour, so the units have to be reconnected after an hour. So you get a two minute break there, and a lot of the time the, the IT, especially at the Bart's site breaks down. The, the imaging, the PACS system, so you can't see any images, so –

Oh, I see, and, and that, that kind of thing affects the decision making process?

Yeah. And, and, easiest example is last week, but we had no radiologist. Not this last week, the week before, for two weeks in a row we had no radiologist, so actually all that happened we was had to cancel the, anything which needed a radiology opinion. In fact, which is pretty much everything, it's the whole point of the MDT (laughter).

True, true. Well, we'll shift to one of the main cores of this questionnaire which is decision making. Do you think 100% of the cases are discussed in the MDT get a decision?

No. Some are deferred, because –

Okay, well, I, I, I name(?) then, deferred are not decision made, so then –

Okay, yeah.

Okay, so can you give us a rough idea percentage wise?

I would say 5%.

5% are not getting decisions. And these are reasons?

Either the appropriate –

I mean, you mentioned a few.

Yeah, appropriate investigations not being available, the… problems with the IT. Also that there can be a conflict of opinion, and actually they go away having to have more

investigations or, and come back the following week. It's not just missing investigations, they need more investigation before we can make a decision.

And, what, in terms of information available to the MDT, like patient history, let's say, do you, from experience, did you have any problem with them at all, in, in?

Yeah, because the majority of patients that we discuss at the MDT, the individual surgeon or the clinician will not have seen them. So we will only personally know about, say, 10% to 20% of the patients presented at that MDT. And the other 80% to 90% will be patients that we have never actually seen, personally. And if the full history is not there, which often it isn't, I think, it's, well not often I would say, but a significant number of times it's not. We, I think we make decisions with implications about the history, we don't know their comorbid state, often, we don't know about the patient's comorbidity. So we may be recommending a radical prostatectomy without actually knowing that they've had freak allergies. So that sort of history tends to be missing, but actually the, the work involved in getting that history is a lot of work. You need, I, I think if you're going to do that for the number of patients that we have at the MDT that each hospital probably needs one junior dedicated, half their time at least, half the week, just gathering that information, and it's, that's not practical.

So, I mean, the information aren't complete?

Yeah.

Who's, who's preparing your summaries, I mean?

Our registrars prepare the summaries.

So your… your cases are prepared by your registrar?

Our registrars, yeah.

Okay, and is that, is there a, a proforma or a, a, something to prepare?

There's no proforma, no, nothing –

Nothing agreed?

No, but it's not –

So depending on experience?

It depends on experience, so if you have a first year registrar preparing it, it's, often the MDT is very slow. Whereas if a Fellow is preparing it, it, it's much, the histories are much shorter, to the point.

X-rays, are they, like images, are they always, I mean, you mentioned there is a media problem(?)?

Yeah, sometimes there's a, there's a problem with the images or the, the PACS system or the x-ray system and you can't get the images up. But otherwise –

And that sounds the reason.

Yes.

Is that a reason to not, to reach a decision?

Yeah, that's often, that's it, we, we will cancel the case, if images aren't available –

So defer to next?

Or histology is not available, which happens as well. Then the patient, no decision is made that week. And, you know, a lot depends, thinking of the histopathologist as well, a lot depends on the workload he receives that week. And also when he was asked, the same with the x-ray, the radiologist, when they were asked to, to prepare the images or the histopathology. If they were asked at the last minute, then those patients will not be discussed, because they won't have had time to go through the images or the histology prior to that.

Okay, path slides do you have path slides presented? The slides themselves?

Yes, we have the slides.

Okay, do, do you, do you see any point in presenting the slides, apart from being educational?

I was a histopathologist for two years so I, I think there is.

Okay, so are you (laughter), you, you'll be biased, yeah?

Yeah, I'm biased, so I think there is. The, at the UCH we have slides presented, the pathology slides, and Bart's we don't. And I actually think, at Bart's, because the pathologist is reading out his report, rather than reviewing a slide it feels an incomplete MDT. And I think I, maybe that's just for educational purposes. But the MDT is not just about decision making, it's also about education, the juniors are sitting there, the, the nurse specialists are sitting there, consultants are there. So, you know, I feel that there's some lack of education there.

Patient's wishes. Are they presented in the MDT?

Very rarely.

Very rarely, so the, the standard you do, decide on a patient and then you discuss with them and then –

And then discuss with them.

You'll, you'll see his wishes?

Yeah.

Do you think if they are addressed in the meeting the decisions will be more accurate?

Yeah. If we knew what the patient's bias or opinion was, I think we would come out, it would save time actually, it would save time. That, we wouldn't necessarily have to go back and have another discussion and say, "actually we're giving you these three options." We could probably just say, "actually we agree. Then actually we can go ahead with whatever you want to go ahead with."

You mentioned some of the people you'd been discussing, you haven't seen before, probably your registrar have seen or somebody else on the team has seen. What about attendance of the person who knows a patient?

That's –

Is their case being discussed without?

Yes. Which is, so that the consultant often only knows about 10% to 20% of the patients. And often a patient is presented who no-one at the MDT has seen before because someone may be away. The person who dealt with them may be on holiday, on study leave, or whatever. And so that does happen quite often. And also the nurse specialist puts on cases at the MDT and they're not there for every MDT.

What about the time for the MDT? How long does your MDT normally last?

Usually about… an hour and a half at UCH and about two and a half hours at Bart's.

Is it enough time to discuss everybody?

Yes it is, yeah.

Is there a chair person in the MDT?

Yeah.

Is that a fixed chair or it rotates?

It's… it's, yeah, I, it's a, I think at the, the UCH site it's a fixed chair and it will only rotate if that person is away.

Is it a surgeon or is it an oncologist?

It's a, at the moment it's a surgeon.

Surgeon, okay?

Yeah. At the Bart's site it's not, tends to be, I'm not sure actually, it's a bit confusing actually, who actually chairs it (laughter).

Let's comment on the UCL then, if you, if, if there's a confusion on that.

Yeah.

Do you think the chair enhances the decision making in, in?

Yes it does. I, I think it focuses it, gets through the case quicker, focuses the discussion. And the time for discussion is much shorter.

So bring back everybody to the?

Yeah, to the (inaudible 00:10:36)

I'm going to show you one of the, our, well, draft preparing MDTs. I mean, this is cancer specific, prostate kidney and bladder. And then comorbidity and psycho social. Do you think such a proforma, which is available for everybody preparing the cases, is a, is a helpful prep?

It would be helpful, prep, but just looking at this, it looks, well –

Too much?

It's too much. And I think, as I said earlier, if we're going to do this, which would be ideal, then you actually need one junior to spend half his week preparing these cases. Because there are a lot of cases at the MDT, often there are 100 cases. So, yes they may be from different hospitals, but there may be a junior at each hospital preparing, say, 30 of those. And the prepare 30 cases in this sort of detail, that's a lot, lot of time.

Although it is cancer specific, so patients got cancer, prostate, he don't need to fill them out, he just one and this, these two. And probably he, if, if you –

But even then, you know, if a junior is preparing prostate, kidney and bladder, usually it's only one junior preparing it. So he'll end up preparing the whole MDT. So, and I think, yes it's good –

So we need a, probably a shorter, a shorter checklist?

Yeah. This would be ideal, but I'm here, I'm having a look here, which says "blood tests", say for example, I mean, you, I think in that sort of situation you're just going to have to presume that blood tests are not abnormal unless you're told otherwise. Because otherwise he's going to be checking every blood test on the computer –

That will take ages.

It's, it's, I mean, you just can't, there's no time to do that kind of thing on the NHS. You know, family history, ethnicity, you know, okay, ethnicity you can tell from the name. But, I mean, to be looking at family history and stuff is, if it's not readily available it's, it's not easy.

So probably an abbreviated version of that or a tick boxing?

Yeah, I think, I think, yeah, it's got to be, it's got to be abbreviated. And I think the two things which are often missing are the patient's opinion, because that will influence the end result, and comorbidity. My personal view is, if you have the patient's opinion and you have the comorbidity, then what we have right now, with a short clinical history, the pathology and the radiology is enough.

Is enough?

Yeah. So just, I, I would just have the comorbidity and whatever else.

Your wishes, yeah?

And their opinion, I think that's important.

If we, if we say we decided on, on a patient, on, on a, we have a plan, and we went out to discuss him, to discuss the plan in the, in the clinic. Do you think all the decisions from MDT are, get implemented?

No. I think –

Percentage roughly?

I think 90% to 95% are implemented. But you do get 5% to 10% which are overruled. Partly because, I can, in my personal experience, but sometimes you disagree with the MDT. If I'm away at the MDT –

You mean, you mean the, the treating clinician disagrees, okay?

Yeah, yeah. So, for example, I was away at an MDT a few weeks ago. The MDT recommended not to treat the person with salvage therapy for recurrent prostate cancer. They hadn't seen the patient. The patient was 81 but he was a very, very fit guy.

Very fit?

No comorbidity whatever, whatsoever. And the patient wanted treatment, he was insistent he wanted treatment. And that didn't come up at the MDT, I was away. So again, that patient opinion was missing and the comorbidity was missing at the MDT and I actually overruled it. And I say no, we will, and I documented it. Obviously you have to then document it clearly, that actually the patient wants to go ahead and I agree with him that he should go ahead.

Any other reasons of not implementation? I mean, probably patients' wishes comes there?

Yeah, patients' wishes, yeah.

Which one, a part of, you?

And comorbidity, yeah.

And so missing information from the start?

Yeah, yeah.

What do you think, I mean, going back to the first, the first, the previous question, this question, if decision are not made, what's the implication on, on the, on the patient and on the meeting?

I mean we, well, I think we miss the targets initially, so that's important in a hospital, that's important in –

So fines and charge, okay?

Yeah, financial implications against the hospital, in that targets, but I think more importantly, to the patient, illicit(?) delays in their treatment. Because something like renal cancer, or aggressive bladder cancer, if it was a relative of mine, I wouldn't want a delay of even a few weeks. So, and I know, yes, it's easy to say "we'll bring him back next week or within two weeks." But actually, that two weeks translates into… it, it, it, a much longer delay in the long term, because that two weeks, extra to make a decision, then you have to see the patient back. And it, it just added steps in the cycle of, of delays.

Of delays, okay. Can you suggest anything to improve first, decision making and second, implementation? One thing will, will do.

Sorry, to improve?

So, to improve decision making at the MDT.

To improve decision. I think it would, just one thing or can I say two things?

Well, you can, you can.

Well I think, as we've said already, put down the comorbidity and that, and if possible, that's not always going to be possible, the patient's opinion. I think those two things should be there. But also, you have to have a clinician, ideally, who's actually seen the patient, I think that's very, very important. And, you know, we're, we're making decisions without actually having seen many of these patients.

Do you think these recommendations can apply to improve the implementation as well?

Yes. Because it will, it will, it will help both… And also, actually, one other thing is documentation at the MDT, occasionally patients get lost. Just in my own experience, I've seen two patients I remember who, who, the recommendation of the MDT was actually that they needed treatment, radiotherapy, one of them was radiotherapy for bladder cancer. Eight months later it, it transpired, he came back with metastasis, he'd never had the radiotherapy. So actually, you know, these are odd cases but they have serious consequences at an MDT because they're all cancer cases. So I'm not quite sure that –

How do you, how, how do you record your decision, is it paper or is it data that?

It's, it's, well it's typed up. But then the, the typing is done by the nurse specialist. So, or the MDT co-ordinator or a combination of both. So actually, when a decision is made at the

MDT, then the nurse specialist and the MDT co-ordinator will get together at the end and just confirm that that was a plan. And then that plan then has to be implemented, and some, you know, occasionally patients do get lost in the system. But maybe, I'm not quite clear exactly where that, where those couple of patients got lost, whether it was –

So they, in the, in the process?

In the process that eight months later, they hadn't had radiotherapy, or this one person hadn't, the other one was a slightly different case. But again, both presented metastasis and had had no treatment.

Do you currently have a database?

Database as in?

When you present cases, is it like, is it written on the screen at all or is it projected?

No, no, it's, it's typed up and then –

It's typed up, okay, in summaries?

Yeah. I think that's an important point to bring up because it, that, that's, even though these are occasional patients –

Well one is, one is enough, isn't it?

Yeah, they're, they're coming back. I mean, basically, it's, it's a missed cancer which has metastasised and they're, they're incurable at that stage. And the time they were curable. And a similar thing happened with the kidney cancer which was meant to be treated, and he came back six months later with metastasis. For some reason, you know, both of them had not had treatment. So I think it's a translation from actually –

So, so, so we can, we can add this as a reason for not implementation, I mean, it's a very significant reason –

Yeah, precisely, yeah.

It's very risky, but I'd say there's a big –

It is, it's, and I think it's, you'll see it at every MDT. Every surgeon will have experience with these patients. And it's somewhere at the problem occurring between the MDT making a decision and actually either the patient's not given an appointment to the clinic, or the, the MDT decision is not relayed, or actually the patient DNAs and then no-one follows him up.

Discharge the patient or?

Yeah, exactly, the patient DNAs and actually, you know. I, I don't know exactly where that problem was, it could be any of those. I'm not sure actually whether we, whether we actually ever addressed that.

Interesting. Well, I'll ask you another question which is not really related to decision making, well it is a bit, what do you think about recruitment for trials in the MDT? Are they perfect?

No, because often, you can only recruit for trials, and I experienced, from my, for example you see, at Bart's, I recruit for trials which are held at UCH. But actually, to counsel for trials, the patient is seen at Bart's or Whipps Cross, but to counsel for the trials, that hospital has to be designated as one of the trial centres. And if it's not a trial centre you can't actually recruit, you can't actually counsel for those trials. The surgeon is not allowed to do it, so –

Do you think every patient who is eligible for a sort of trial which is available at that time is, is being highlighted in the MDT? Which is one of the functions of the MDT.

No, because then you have to know. You have to, you have to have surgeons and other clinicians there who are aware of the trial –

Aware of the trial.

And not all, not all surgeons and other clinicians, you know, the oncologists. And the oncologists are better than the surgeons actually, often. They know their own trials for advanced disease. And I think surgeons are not great unless they're in, in an academic institution. Even the academic institutions are very variable, depending on how interested the surgeon is in trials. So I think it's very, it, it depends on the individuals, so.

And there are cases forgotten?

Forgotten?

Well, about the trial –
Yeah.

Let's say nobody, nobody remembers the trial?

Yeah, nobody mentions, yeah, nobody remembers.

Well, don't you think we should, we should dedicate this job, or it's one of the duties of a research nurse to do this?

It is a duty of the research nurse, but then not every centre is going to have a research nurse because that's an extra salary. In these, in NHS, I don't think it's going to happen. But it may be that you have one research nurse and, if you have a teleconference, then she's available to the three or four hospitals at that conference, teleconference.

She knows in advance who's?

She knows advance, in advance. And you only need one nurse then, who's… but then the problem is, even if you want to recruit them for the trial, the patient has to go to one of the centres which is designated for the trial to get counselled for it.

Oh, that's another problem?

So for example, if a patient at Homerton is suitable for a trial, they would have to come to UCH to get counselling for it. So are they really going to make that trip to get counselled for the trial, because there's no-one at Homerton who would be allowed to counsel them for the trial.

Well, a very significant reason.
Mmmm.
Last question, do you think the patient should be involved in the MDT, like there are a few, in the (inaudible 00:22:23), there are a few calls that the patient should be involved in the decision making, well, at the same time?

No, I don't think so. I think it would make the MDT… it, it wouldn't be practical. I think mainly for practical reasons, it just, the, that would be, that would happen in an ideal world. And it really does happen, when you make the decision at the MDT and you go and counsel them for it, then you're having that discussion. But if they were present for the MDT, the, practically, the MDT would take all day. It would be ideal, but it's not going to happen.

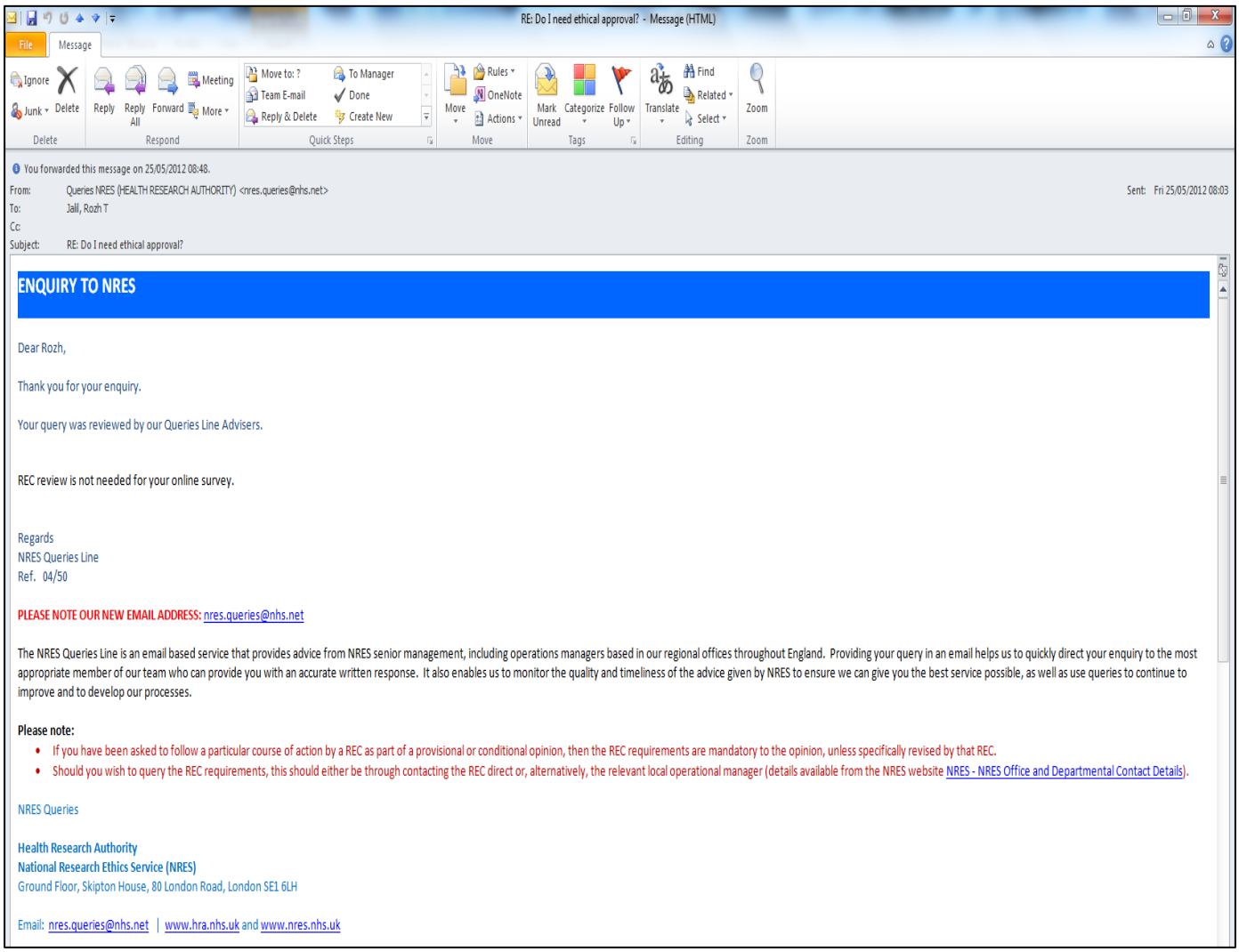
So (inaudible 00:22:58) is not, it's not going to be practical. Okay, great, do you have any questions at all, or you, do you like to add anything?

No, I think I'll (overspeaking)

Oh great, thanks very much.

[End of Transcript]

Appendix 5: An email reply from NRES waiving the REC review for the online survey.



RE: Do I need ethical approval? - Message (HTML)

File | Message

Ignore | Delete | Reply | Reply All | Forward | Meeting | More | Delete | Respond | Move to: ? | To Manager | Team E-mail | Done | Reply & Delete | Create New | Quick Steps | Move | Rules | OneNote | Actions | Move | Mark Unread | Categorize | Follow Up | Tags | Translate | Find | Related | Select | Editing | Zoom | Zoom

You forwarded this message on 25/05/2012 08:48.

From: Queries NRES (HEALTH RESEARCH AUTHORITY) <nres.queries@nhs.net>
Sent: Fri 25/05/2012 08:03
To: Jalil, Rozh T
Cc:
Subject: RE: Do I need ethical approval?

ENQUIRY TO NRES

Dear Rozh,

Thank you for your enquiry.

Your query was reviewed by our Queries Line Advisers.

REC review is not needed for your online survey.

Regards
NRES Queries Line
Ref. 04/50

PLEASE NOTE OUR NEW EMAIL ADDRESS: nres.queries@nhs.net

The NRES Queries Line is an email based service that provides advice from NRES senior management, including operations managers based in our regional offices throughout England. Providing your query in an email helps us to quickly direct your enquiry to the most appropriate member of our team who can provide you with an accurate written response. It also enables us to monitor the quality and timeliness of the advice given by NRES to ensure we can give you the best service possible, as well as use queries to continue to improve and to develop our processes.

Please note:

- If you have been asked to follow a particular course of action by a REC as part of a provisional or conditional opinion, then the REC requirements are mandatory to the opinion, unless specifically revised by that REC.
- Should you wish to query the REC requirements, this should either be through contacting the REC direct or, alternatively, the relevant local operational manager (details available from the NRES website NRES - NRES Office and Departmental Contact Details).

NRES Queries

Health Research Authority
National Research Ethics Service (NRES)
Ground Floor, Skipton House, 80 London Road, London SE1 6LH

Email: nres.queries@nhs.net | www.hra.nhs.uk and www.nres.nhs.uk

Appendix 6: The survey of the MDT coordinators

1. About you

1. What is your professional group?

- ◯ Administrator
- ◯ Cancer Manager
- ◯ Chaplaincy
- ◯ Clinical Nurse Specialist
- ◯ Dietician
- ◯ MDT Coordinator
- ◯ Medical Oncologist
- ◯ Oncologist
- ◯ Palliative Care Specialist Nurse
- ◯ Pathologist
- ◯ Physician
- ◯ Radiologist
- ◯ Research Nurse
- ◯ Social Worker
- ◯ Surgeon
- ◯ Other (please specify)

2. If you are an MDT Coordinator, what is your job title?:

- ◯ MDT Coordinator
- ◯ Other
- ◯ Pathway Navigator

Other (please specify)

3. What is your gender?

- ◯ Female
- ◯ Male

4. How old are you?

- ◯ 18-29
- ◯ 30-39
- ◯ 40-49
- ◯ 50-59
- ◯ 59+

5. Where do you work?

- ◯ At the specialist cancer centre
- ◯ At a satellite hospital
- ◯ Both

6. Do you consider your hospital to be:

- ◯ A Teaching Hospital
- ◯ A Tertiary Referral Centre
- ◯ A District General Hospital

Other (please specify)

2. Training for the MDT

1. Have you had formal training in your current role in the following:

	Yes	No
Anatomy/physiology	◯	◯
Audit and research	◯	◯
Brief induction course	◯	◯
Coding	◯	◯
Communication skills	◯	◯
Data protection and sharing	◯	◯
Data system and IT	◯	◯
General oncology	◯	◯
Leadership	◯	◯
Medical terminology	◯	◯
Negotiation skills	◯	◯
Other	◯	◯
Patient pathways	◯	◯
Peer review	◯	◯
Specialist oncology	◯	◯
Taking complex minutes	◯	◯
Videoconferencing	◯	◯

Other (please specify)

2. In which areas do you think you need further training:

	Yes	No
Anatomy/physiology	◯	◯
Audit and research	◯	◯
Brief induction course	◯	◯
Coding	◯	◯
Communication skills	◯	◯
Data protection and sharing	◯	◯
Data system and IT	◯	◯
General oncology	◯	◯
Leadership	◯	◯
Medical terminology	◯	◯
Negotiation skills	◯	◯
Other	◯	◯
Patient pathways	◯	◯
Peer review	◯	◯
Specialist oncology	◯	◯
Taking complex minutes	◯	◯
Videoconferencing	◯	◯

Other (please specify)

3. Do you think your job plan reflects what you actually do?

◯ Yes

◯ No

If not, why not?

4. What was your previous job?

◯ None

◯ Non NHS

◯ MDT Coordinator, same trust

◯ MDT Coordinator, different trust

◯ Administrative, same trust

◯ Administrative, different trust

◯ Clinical, same trust

◯ Clinical, different trust

Other (please specify)

3. Administering the MDT

1. Which Clinical Staff help with the preparation of the MDT meeting?

	None	Review case notes	Confirm clinical information	Prepare agenda	Select cases	Prepare summary	Retrieve case notes	Retrieve results
Clinical Nurse Specialist	◯	◯	◯	◯	◯	◯	◯	◯
Consultant Oncologist	◯	◯	◯	◯	◯	◯	◯	◯
Consultant Pathologist	◯	◯	◯	◯	◯	◯	◯	◯
Consultant Physician	◯	◯	◯	◯	◯	◯	◯	◯
Consultant Radiologist	◯	◯	◯	◯	◯	◯	◯	◯
Consultant Surgeon	◯	◯	◯	◯	◯	◯	◯	◯
Junior Oncologist	◯	◯	◯	◯	◯	◯	◯	◯
Junior Pathologist	◯	◯	◯	◯	◯	◯	◯	◯
Junior Physician	◯	◯	◯	◯	◯	◯	◯	◯
Junior Radiologist	◯	◯	◯	◯	◯	◯	◯	◯
Junior Surgeon	◯	◯	◯	◯	◯	◯	◯	◯
Palliative Care Specialist Nurse	◯	◯	◯	◯	◯	◯	◯	◯
Research Nurse	◯	◯	◯	◯	◯	◯	◯	◯

Other (please specify)

2. How EASY or DIFFICULT is it to coordinate the following TEAMS:

	1 (Very easy)	2	3	4	5	6	7 (Very difficult)
Local	◯	◯	◯	◯	◯	◯	◯
Network/Specialist	◯	◯	◯	◯	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯	◯	◯	◯	◯

3. How EASY or DIFFICULT is it to administer the following MEETINGS:

	1 (Very easy)	2	3	4	5	6	7 (Very difficult)
Local	◯	◯	◯	◯	◯	◯	◯
Network/Specialist	◯	◯	◯	◯	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯	◯	◯	◯	◯

4. Do you use any patient tracking software?

	Yes- In-house developed	Yes- Somerset	Yes- Other commercial	No
Local	◯	◯	◯	◯
Network/Specialist	◯	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯	◯

Other (please specify)

5. Do you transpose information to other association databases (e.g. British Association of Urological Surgeons,Association of Coloproctology?)

	No	Yes- manually	Yes- Automatically using software
Local	◯	◯	◯
Network/Specialist	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯

6. Do you input data from the MDT meeting...

	In real time during an MDT	After the meeting from notes	Other
Local	◯	◯	◯
Network/Specialist	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯

Other (please specify)

7. Are you (or one of your team) able to book radiological investigations during the MDT meeting?

	No	Yes- on paper	Yes- electronically in real time
Local	◯	◯	◯
Network/Specialist	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯

8. How quickly are you able to send out decisions/minutes from the MDT meeting

	Immediately	Later the same day	Within 48 hours	1 week	Other
Local MDT	◯	◯	◯	◯	◯
Network/Specialist MDT	◯	◯	◯	◯	◯
Supra-Network/Supra-Specialist	◯	◯	◯	◯	◯

Other (please specify)

9. To who and by what means do you communicate the MDT outcomes?

	I do not tell them	Telephone	Fax	Email	Letter	In person
Administrative staff	☐	☐	☐	☐	☐	☐
Clinicians	☐	☐	☐	☐	☐	☐
Managers	☐	☐	☐	☐	☐	☐
GPs	☐	☐	☐	☐	☐	☐
Patients	☐	☐	☐	☐	☐	☐

10. Do you have an assistant?

- ◯ Yes
- ◯ No

If yes, what is their title and what do they do?

11. What are the arrangements for covering your responsibilities when you are away?

- ◯ No cover
- ◯ Covered by another MDT Coordinator
- ◯ Covered by another member of staff, but not a MDT coordinator
- ◯ Other

Other (please specify)

4. Decisions at the specialist MDT meeting

1. At the specialist MDT meeting how frequently is a clear plan made at the FIRST presentation of a case?

	Always	nearly always	usually	half of the time	sometimes	not often	never
Patients from satellite hospitals	◯	◯	◯	◯	◯	◯	◯
Patients from specialist center	◯	◯	◯	◯	◯	◯	◯

2. What are the barriers to reaching a decision?

- ☐ Disagreement among team members
- ☐ Interruptions or distractions
- ☐ Lack of imaging results
- ☐ Lack of information on co-morbid health problems
- ☐ Lack of information on patient choice
- ☐ Lack of information on psychological or social problems
- ☐ Lack of pathology results
- ☐ Lack of patient records
- ☐ Lack of time
- ☐ Non-attendance of key personnel

3. At the specialist MDT meeting whose opinion carries significant weight in deciding treatment plans?

	always	nearly always	usually	half of the time	sometimes	not often	never
Administrator	◯	◯	◯	◯	◯	◯	◯
Cancer Manager	◯	◯	◯	◯	◯	◯	◯
Chaplaincy	◯	◯	◯	◯	◯	◯	◯
Clinical Nurse Specialist	◯	◯	◯	◯	◯	◯	◯
Dietician	◯	◯	◯	◯	◯	◯	◯
MDT Coordinator	◯	◯	◯	◯	◯	◯	◯
Medical Oncologist	◯	◯	◯	◯	◯	◯	◯
Oncologist	◯	◯	◯	◯	◯	◯	◯
Palliative Care Specialist Nurse	◯	◯	◯	◯	◯	◯	◯
Pathologist	◯	◯	◯	◯	◯	◯	◯
Pathway Navigator	◯	◯	◯	◯	◯	◯	◯
Physician	◯	◯	◯	◯	◯	◯	◯
Radiologist	◯	◯	◯	◯	◯	◯	◯
Research Nurse	◯	◯	◯	◯	◯	◯	◯
Social Worker	◯	◯	◯	◯	◯	◯	◯
Specialist Cancer Nurse	◯	◯	◯	◯	◯	◯	◯
Surgeon	◯	◯	◯	◯	◯	◯	◯

Other (please specify)

4. Does anyone ever disagree with the plan made at the specialist MDT meeting?

◯ Always ◯ nearly always ◯ usually ◯ half of the time ◯ sometimes ◯ not often ◯ never

5. If anyone disagrees with the proposed treatment plan at the specialist MDT meeting, what does actually happen in the end?

5. About your MDT meeting

1. At the Specialist MDT meeting, how many other MDTs link in via videolinks?

◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 6+

2. How many different satellite hospitals refer patients to the specialist MDT?

◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 6+

3. How often do you attend MDT meetings?

◯ more than once a week ◯ about once a week ◯ every two weeks ◯ monthly ◯ less than once a month ◯ never

4. Is the venue of your MDT meeting fit for purpose?

◯ Yes ◯ No

If not, what could be improved?

5. In which specialties do you coordinate MDTs?

☐ Breast
☐ Colorectal
☐ ENT/Head and Neck
☐ Gynaecology
☐ Lung
☐ Other
☐ Upper GI
☐ Urology

Other (please specify)

6. Which MDT(s) do you coordinate?

☐ Local
☐ Network/Specialist
☐ Supra-network/Supra-specialist

7. How frequently do you coordinate the following MDTs?

	More than once a week	Once a week	Less than once a week, but more than once a month	Once a month or less
Local	◯	◯	◯	◯
Network/Specialist	◯	◯	◯	◯
Supra-network/Supra-specialist	◯	◯	◯	◯

8. Where do you attend MDT meetings?

- [ ] At the specialist cancer centre
- [ ] Via telemedicine at the satellite hospitals
- [ ] I do not attend MDT meetings

6. Discussion at the specialist MDT meeting

1. Specialist MDT meeting: how frequently are the pathology images displayed?

	Always	nearly always	usually	half of the time	sometimes	not often	never
At satellite hospitals	◯	◯	◯	◯	◯	◯	◯
At specialist center	◯	◯	◯	◯	◯	◯	◯

2. Specialist MDT meeting: how frequently are the radiological images displayed?

	Always	nearly always	usually	half of the time	sometimes	not often	never
At satellite hospitals	◯	◯	◯	◯	◯	◯	◯
At specialist center	◯	◯	◯	◯	◯	◯	◯

3. Specialist MDT meeting: how frequently is the full case history presented by someone who knows the patient?

	always	nearly always	usually	half of the time	sometimes	not often	never
At satellite hospitals	◯	◯	◯	◯	◯	◯	◯
At the specialist center	◯	◯	◯	◯	◯	◯	◯

4. Specialist MDT meeting: how frequently are the patients' wishes presented?

	always	nearly always	usually	half of the time	sometimes	not often	never
At satellite hospitals	◯	◯	◯	◯	◯	◯	◯
At the specialist centre	◯	◯	◯	◯	◯	◯	◯

5. Specialist MDT meeting: how frequently are the patients' psychological or social issues presented?

	always	nearly always	usually	half of the time	sometimes	not often	never
At satellite hospitals	◯	◯	◯	◯	◯	◯	◯
At the specialist centre	◯	◯	◯	◯	◯	◯	◯

6. Specialist MDT meeting how frequently are the patients' co-morbid health problems presented?

	always	nearly always	usually	half of the time	sometimes	not often	never
At satellite hospitals	◯	◯	◯	◯	◯	◯	◯
At the specialist centre	◯	◯	◯	◯	◯	◯	◯

7. At the specialist MDT meeting who contributes to the discussion?

	always	nearly always	usually	half of the time	sometimes	not often	never
Administrator	◯	◯	◯	◯	◯	◯	◯
Cancer Manager	◯	◯	◯	◯	◯	◯	◯
Chaplaincy	◯	◯	◯	◯	◯	◯	◯
Clinical Nurse Specialist	◯	◯	◯	◯	◯	◯	◯
Dietician	◯	◯	◯	◯	◯	◯	◯
MDT Coordinator	◯	◯	◯	◯	◯	◯	◯
Medical Oncologist	◯	◯	◯	◯	◯	◯	◯
Oncologist	◯	◯	◯	◯	◯	◯	◯
Palliative Care Specialist Nurse	◯	◯	◯	◯	◯	◯	◯
Pathologist	◯	◯	◯	◯	◯	◯	◯
Pathway Navigator	◯	◯	◯	◯	◯	◯	◯
Physician	◯	◯	◯	◯	◯	◯	◯
Radiologist	◯	◯	◯	◯	◯	◯	◯
Research Nurse	◯	◯	◯	◯	◯	◯	◯
Social Worker	◯	◯	◯	◯	◯	◯	◯
Surgeon	◯	◯	◯	◯	◯	◯	◯

Other (please specify)

7. Specialist MDT Leadership

1. Who is the chair of your Specialist MDT?

	Yes	No
Administrator	◯	◯
Cancer Manager	◯	◯
Chaplaincy	◯	◯
Clinical Nurse Specialist	◯	◯
Dietician	◯	◯
MDT Coordinator	◯	◯
Medical Oncologist	◯	◯
Oncologist	◯	◯
Palliative Care Specialist Nurse	◯	◯
Pathologist	◯	◯
Pathway Navigator	◯	◯
Physician	◯	◯
Radiologist	◯	◯
Research Nurse	◯	◯
Social Worker	◯	◯
Specialist Cancer Nurse	◯	◯
Surgeon	◯	◯

Other (please specify)

2. Does the chair of the specialist MDT meeting rotate?

◯ Yes ◯ No

If yes please specify how frequently

3. COULD the chair of the specialist MDT meeting rotate?

◯ Yes ◯ No

If yes please specify how frequently

4. Who could chair the Specialist MDT?

	Yes	No
Administrator	◯	◯
Cancer Manager	◯	◯
Chaplaincy	◯	◯
Clinical Nurse Specialist	◯	◯
Dietician	◯	◯
MDT Coordinator	◯	◯
Medical Oncologist	◯	◯
Oncologist	◯	◯
Palliative Care Specialist Nurse	◯	◯
Pathologist	◯	◯
Pathway Navigator	◯	◯
Physician	◯	◯
Radiologist	◯	◯
Research Nurse	◯	◯
Social Worker	◯	◯
Specialist Cancer Nurse	◯	◯
Surgeon	◯	◯

Other (please specify)

5. If the usual chair is ever away how does the meeting run?

◯ better ◯ the same ◯ worse

8. Final page

1. What are the things your MDT does well?

2. How could you improve your MDT?

3. What resources would you need to do this?

4. If you would like to receive feedback on the results of the 2010 survey please give your email address below.

Appendix 7: The survey questionnaire for chapter 6: Srategies to improve the utility and efficiency of the urology MDT meeting

1. What is your professional group?

- ◯ Palliative care doctor
- ◯ Physician
- ◯ GP
- ◯ Medical Oncologist
- ◯ Clinical Oncologist
- ◯ Clinical Nurse Specialist
- ◯ Palliative Care Nurse Specialist
- ◯ Research Nurse
- ◯ Urologist
- ◯ Other Surgeon

Other (please specify)

2. How much time do you spend in MDT meetings each week?

	None	1 Hr	2 Hrs	3 Hrs	4 Hrs	5 Hrs	6+ Hrs
Urology	◯	◯	◯	◯	◯	◯	◯
Others	◯	◯	◯	◯	◯	◯	◯

3. How much of your time spent at the Urology MDT meeting is useful?:

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
For your patients	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
For your colleagues' patients	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
For you- making your life easier	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

4. Does attending the MDT meeting save you time later?

- ◯ No
- ◯ Yes

If yes, how?

5. Describe three things your MDT does well

6. Describe three things your MDT could improve

7. Some urology cases that are currently discussed in full at the urology MDT meeting could be treated by previously agreed protocol, and be put through the MDT as "chair's action".

	Strongly disagree	Disagree	Neither Agree nor disagree	Agree	Strongly agree
Local	◯	◯	◯	◯	◯
Specialist	◯	◯	◯	◯	◯

If you agree, which tumour types and stages?

8. Do you currently do this for urology patients?

	Yes	No
Local	◯	◯
Specialist	◯	◯

If yes, which tumour types and stages?

9. In my trust, all cases of suspected or diagnosed urological cancer that should be discussed are being discussed.

	Strongly disagree	Disagree	Neither Agree nor disagree	Agree	Strongly agree
Local	◯	◯	◯	◯	◯
Specialsit	◯	◯	◯	◯	◯

If you disagree, which are not?

10. Could/should cases at the urology MDT meeting be prioritised or ordered?

	Yes	No
By tumour type	◯	◯
By complexity	◯	◯
By team members' availability	◯	◯

Other (please specify)

11. Could/should the urology MDT meeting be split into separate smaller meetings?

	Yes	No
By tumour type	◯	◯
By complexity	◯	◯
By team members' availablility	◯	◯

Other (please specify)

12. What might be the disadvantages to spliting the urology MDT meeting?

Appendix 8: Favourable ethical opinion for the substantial amendment

NHS
Health Research Authority

NRES Committee London - Bromley
Bristol Research Ethics Committee Centre
Whitefriars
Level 3, Block B
Lewins Mead
Bristol
BS1 2NT

Tel: 0117 342 1387
Fax: 0117 342 0445

01 August 2012

Mr Benjamin Lamb
Room 504, 5th Floor
Medical School Building
St Mary's Campus
W2 1PG

Dear Mr Lamb

Study title:	**The effect of training on MDT decision making: an interventional study**
REC reference:	**10/H0805/32**
Amendment number:	**Amendment one July 2012**
Amendment date:	**19 July 2012**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The Committee found there to be no items of ethical concern.

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Part D of original IRAS form signed by new Chief Investigator		19 July 2012
Investigator CV		
Notice of Substantial Amendment (non-CTIMPs)	Amendment one July 2012	19 July 2012

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

10/H0805/32:	**Please quote this number on all correspondence**

Yours sincerely

Pp 

Ms Carol Jones
Chair

E-mail: ubh-tr.BromleyREC@nhs.net

Enclosures: *List of names and professions of members who took part in the review*

Copy to: *Mr James Green, Whipps Cross University NHS Trust*
Lucy Parker, Imperial College London

NRES Committee London - Bromley

Attendance at Sub-Committee of the REC meeting on 02 August 2012

Name	*Profession*	*Capacity*
Ms Carol Jones	Management Consultant	Lay
Ms Jayne Steadman	Consultant Physiotherapist	Expert

Appendix 9: Chairing tool content validation survey

About you

***1. what is your professional group?**

- ◯ Administrator
- ◯ Cancer manager
- ◯ Clinical Nurse Specialist
- ◯ MDT coordinator
- ◯ Dietician
- ◯ Oncologist
- ◯ Pathologist
- ◯ Palliative Care Specialist Nurse
- ◯ Pathway Navigator
- ◯ Physician
- ◯ Radiologist
- ◯ Research Nurse
- ◯ Social Worker
- ◯ Surgeon
- ◯ GP
- ◯ Other

Other (please specify)

***2. What is your grade?**

- ◯ Consultant
- ◯ Associate specialist
- ◯ Staff grade
- ◯ Trainee
- ◯ Registered nurse

Other (please specify)

3. What is your gender?

- ◯ Female
- ◯ Male

***19. Please rate the importance of the following charactersitics of a MDT chairperson?**

	Extremely Important	Important	Doesn't matter much	Least important	N/A
Time management	◯	◯	◯	◯	◯
Communication	◯	◯	◯	◯	◯
Team working	◯	◯	◯	◯	◯
Making sure all discussed cases have clear treatment plans	◯	◯	◯	◯	◯
Ability to summarise	◯	◯	◯	◯	◯
Case prioritisation	◯	◯	◯	◯	◯
Keeping meeting focused	◯	◯	◯	◯	◯
Facilitate discussion	◯	◯	◯	◯	◯
Conflict management	◯	◯	◯	◯	◯
Leadership	◯	◯	◯	◯	◯
Creating good work environment	◯	◯	◯	◯	◯
Recruiting for clinical trials	◯	◯	◯	◯	◯