

Original Article

Health care professionals' experiences of pain management in the intensive care unit: a qualitative study

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Summary

Despite the existence of evidence-based guidelines for the assessment and management of pain in the critical care setting, the prevalence of acute pain remains high. Inadequate pain management is associated with longer duration of mechanical ventilation, reduced capacity for rehabilitation and long-term psychological sequelae. This study aimed to describe the experiences of pain management from healthcare professionals working in intensive care units. Healthcare professionals were recruited from intensive care units in London, UK using a purposive sampling technique. Semi-structured interviews were transcribed verbatim. Transcripts were analysed using an inductive thematic analysis technique. Thirty participants were recruited from eight diverse intensive care units. Five themes were identified. First, there was a lack of consensus in pain assessment in the ICU where nursing staff described more knowledge and confidence of validated pain measures than physicians, and concerns over validity and usability were raised. Second, there was a universal perception of resource availability impacting the quality of pain management including high clinical workload, staff turnover and availability of certain pain management techniques. Third, acknowledgement of the importance of pain management was highest in those with experience of interacting with critical care survivors. Fourth, participants described their own emotional reaction to managing those in pain which influenced their learning. Finally, there was a perception that, due to the complexity of the intensive care unit population, pain was de-prioritised and there were conflicting views as to whether standardised analgosedation algorithms were useful. This study provides evidence to suggest interdisciplinary training, collaboratively designed decision-making tools, prioritisation initiatives and research priorities are areas that could be targeted to improve pain management in critical care.

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Introduction

It is estimated that 40–77% of patients admitted to the intensive care unit (ICU) experience moderate to severe pain, regardless of the underlying primary pathology [1–3].

Inadequate pain management can lead to both acute and long-term adverse physiological and psychological sequelae [4]. Pain is associated with longer duration of mechanical ventilation, increased duration of ICU stay [5]

and higher rates of wound infection [6]. The memory of pain is a strong predictor for post-traumatic stress disorder (PTSD) following ICU admission [7] and higher pain intensity and frequency during admission may be associated with an increased risk of developing chronic pain [8]. Pain in patients admitted to the ICU is multifactorial and may relate to surgery; trauma; immobilisation; systemic inflammation; critical illness neuromyopathy; discontinuation of long-standing analgesia; and procedures such as tracheal suctioning, insertion of venous access and positioning [9].

Several initiatives have sought to improve pain management in the ICU environment, for example, the Society of Critical Care Medicine's 'ICU Liberation Bundle' [10], and evidence-based guidelines for assessment and treatment of pain in ICU exist, such as the Pain, Agitation/sedation, Delirium, Immobility and Sleep disruption (PADIS) clinical practice guide [11]. These recommend the use of specific pain assessment tools such as the Critical Care Pain Observational Tool (CPOT) [12] and Behavioural Pain Scale (BPS) [13], both of which had been validated in ICU settings.

Despite this, there is evidence of a persistently high prevalence of pain in patients admitted to the ICU, and validated pain assessment tools appear to be underused [14, 15]. This indicates that best practice is not universally adopted. Reported reasons for this are diverse but have largely only been explored from the nursing standpoint [16]. Possible explanations include distrust of the validity of ICU pain assessment tools [17]; lack of knowledge of the aetiology and impact of pain on patients; concern around high-dose opioid use; and low prioritisation of pain in patients who are critically ill [18]. Reported facilitators of good pain management in ICU include protocolisation; education quality improvement initiatives; organisational support; and good communication [19, 20]. There is minimal qualitative evidence of the attitudes and beliefs of the ICU multidisciplinary team surrounding pain management in a critical care context, thus limiting our understanding of possible barriers to good pain management. Qualitative methods, in particular, allow for the identification of novel areas that could be targeted to mitigate such barriers.

This study aimed to explore the barriers and challenges in pain management in ICU through the experiences of nurses and physicians. It is anticipated that findings from this study will be used to inform the development of educational, systems and patient-centred interventions to improve pain management in the unique environment of ICU. There were no set hypotheses before

initiation of the study as it was a qualitative exploration, with the intention of generating themes for further investigation.

Methods

The second Pain Assessment in INTensive care (PAINT-2) study was a multicentre, qualitative interview-based study involving nurses and physicians working in ICU in the UK. This study received the Health Research Authority and local ethical approval. All interviews were conducted between February 2020 and March 2022. The study is presented in accordance with the standards for reporting qualitative research [21].

Participants were eligible if they worked as an ICU nurse or physician (defined as medically qualified clinicians from any speciality background) in one of the selected units at the time of interview. There were no formal exclusion criteria other than the ability to conduct the interview in English. Intensive care units were selected from London hospitals involved in the PAINT-1 study [15]. Data from the PAINT-1 study allowed ICUs to be classified in terms of their pain assessment performance (high, medium and low performing). These were based on the frequency of documented nurse and physician pain assessments, and whether the units used validated behavioural pain assessment tools. This was then used to ensure that selected units represented a cross-section of pain assessment performance.

A purposive sampling technique was used to ensure the participants reflected a range of seniority, roles and environments. Participants were stratified based on the type of ICU they worked in (e.g. medical/surgical/cardiac/burns/trauma); job role (nurse/physician); seniority/experience and (for physicians) training background (anaesthetics/medicine/other).

A nominated local clinical lead within each Trust was responsible for local recruitment via a recruitment email sent to all nursing and medical staff working in the ICUs. All potential participants were provided with written study information and completed written consent before being interviewed. Interviews were initially conducted face-to-face with audio recording. However, due to the COVID-19 pandemic, in June 2020 an amendment was approved to conduct interviews via the Zoom platform (Zoom Video Communications, San Jose, CA, USA). Semi-structured interviews were performed using an interview guide (online Supporting Information Appendix S1) and covered the following topics: personal practices; beliefs towards pain in the ICU environment; experiences of providing pain management; and team dynamics. During the interview,

participants were shown the CPOT to assist in subsequent questioning. Semi-structured interviews were selected as the most appropriate method as they allow detailed exploration of divergent viewpoints and experiences, while ensuring all topics are covered and enable some standardisation between interviews [22]. Interviews were conducted by three physicians who have all worked in ICU environments (HK, HL and FB). Data were continually reviewed throughout collection, informing an iterative process and influencing subsequent interviews using the constant comparative technique [23]. Recruitment ceased when thematic saturation had been achieved based on all themes as assessed by one of the interviewers (HK) [24]. Recordings of the interviews were transcribed verbatim via a secure NHS-approved transcription service (Way with Words, Elgin, UK) and anonymised before analysis. Demographic data including job title, level of seniority and professional qualifications were also recorded.

The written transcripts were analysed by NVivo 12.7.0 (Lumivero, Denver, CO, USA) using an inductive thematic analysis technique [25]. Transcripts were initially repeatedly read during a familiarisation phase leading to the creation of a preliminary thematic framework to allow indexing of all data (codebook available in online Supporting Information Appendix S2). The framework was refined during indexing as required. Higher-order analytical themes were then created, and data were constantly reviewed for appropriateness of allocation to themes, using the constant comparative method. Supporting quotations were identified for all themes and subthemes, with data displayed in thematic tables and concept maps.

All transcripts were coded by one researcher (AB) and continual discussion took place between team members (AB, HK, SB) during coding and analysis to confirm appropriate interpretation and development of themes. To ensure coding reliability, 5% of the transcripts were coded by a second member of the team (HK). Inter-rater reliability was calculated through a coding comparison query using NVivo and κ coefficients are presented.

Regarding qualitative study reflexivity, HK, HL and FB are anaesthetists with current or previous experience practicing in intensive care medicine and who have worked at some of the hospitals included in the study during their careers. HK and HL are pain physicians who worked in ICUs as part of anaesthetic training. FB is an anaesthetist in training. HK, HL and FB knew a minority of participants from the workplace. AB was a medical student who had previously worked for a short period in ICU as a healthcare assistant. SB, an intensive care consultant, was not involved in conducting the interviews. Presuppositions were not

formally assessed but all authors believed that pain management was an important part of care for patients in the ICU. They acknowledge the potential that their own experiences working in ICU may impact the design, analysis and interpretation of the results, but in an attempt to minimise this a member of the team (AB) with limited experience of working in ICU performed the initial analysis. Three authors (SB, HL and HK) were also intimately involved in the PAINT-1 study [15], which highlighted low levels of documentation of pain assessment in ICU, and this may have led to a focus on pain assessment in the study design.

Results

Thirty participants across eight London hospitals were interviewed. The duration of these interviews ranged from 24 to 76 min, with a mean duration of 44 min and a total duration of 24 h 48 min. Details about the included ICUs and recruited participants are outlined in Table 1.

Thematic saturation was deemed to have been achieved using an iterative process when no new codes were added to the thematic framework. This was achieved within the first 28 interviews and a further two interviews were completed to confirm thematic saturation. Two transcripts were selected at random for assessment of agreement in coding across the 61 codes. Across 16 codes there was excellent agreement (κ co-efficient > 0.75 [26]) and in 14 codes there was fair to good agreement (κ co-efficient 0.4–0.75).

During thematic analysis, five main themes were constructed summarising perceptions, values and attitudes towards pain assessment and management. Figure 1 summarises the thematic framework of the themes and main subthemes and each is presented in detail, with supporting quotations, in the remainder of this section.

Pain assessment in the ICU

This theme represents the challenges when assessing painful symptoms in patients who are critically ill. The first subtheme relates to limited training in pain assessment in ICUs for physicians. Many participants explained that their training poorly equipped them with the knowledge and skills needed to assess pain in patients in the ICU. Some mentioned that they felt training curricula did not prioritise symptom management, with many being unaware of pain assessment tools used specifically in ICU, such as the CPOT:

"I don't think my lack of knowledge about various scoring systems is unique. I think I would find that

Table 1 Details of participating intensive care units and interviewee roles.

Hospital code	Main specialism(s) of ICU	Participants (n)	Role of interviewees
A	General and burns	4	ST3–7 trainee (Anaes/ICM) Consultant (Anaes/ICM) Clinical Fellow Junior Nurse
B	General	5	Core Trainee (Anaes) ST3–7 trainee (Anaes) Consultant (Medicine/ICM) Senior nurse Clinical Fellow
C	Trauma and general	2	ST3–7 trainee (Anaes/ICM) Core Trainee (Medicine)
D	General	4	Consultant (Anaes/ICM) Core Trainee (Medicine) Junior nurse Senior nurse
E	Cancer and general	4	FY2 Consultant (Anaes/ICM) ST3–7 trainee (Anaes/ICM) Senior Nurse (Matron)
F	Cardiac	4	Consultant (Medicine/ICM) Consultant (Anaes/ICM/Pain) Core Trainee (Medicine) Junior nurse
G	Cardiac and general	4	ST3–7 Trainee (ICM) Senior nurse Senior nurse Junior nurse
H	Liver and general	3	Clinical Fellow Junior nurse Advance Nurse Practitioner
Total		30	6 Consultants 6 Senior nurses 5 ST3–7 trainees 3 Clinical Fellows 4 Core Trainees 1 FY2 5 Junior nurses

Anaes, training programme (current or past) in anaesthesia; Anaes/ICM, training programme (current or past) in anaesthesia and intensive care medicine; FY2, foundation year 2 doctor; Junior nurse, < 2 y experience as a critical care nurse; Senior nurse, > 2 y experience as a critical care nurse; ST, specialist trainee.

across the entire board...there is a hole in the training in the sense that we don't focus on it" – ST3–7 Specialist Trainee 1

"I haven't ever seen a past paper question [in the intensive care exam] on it [pain assessment], but it is a part of the syllabus and, as a result, I skimmed over it. I couldn't even tell you a name now...It's not that I add less value to it...I'm a cynical reviser, if I don't think I'm going to get examined I won't spend a huge amount of time" – ST3–7 Specialist Trainee 1

However, a discrepancy in training was highlighted. Both physicians and nurses perceived that nurses received more, and better, training in pain assessment:

"I have a good feeling that the nursing training on this is actually pretty good compared to ours" – ST3–7 Specialist Trainee 2

Participants described wanting a broader education around pain and suggested training from non-intensivists such as physiotherapists and pain specialists:

"If you went around with the pain service for a week, that's actually probably a good idea, because

Themes	Sub-themes
1. Pain assessment in the ICU	• Limited training in pain assessment in ICU for physicians • Distrust in pain assessment tool validity • Usability of pain assessment tools • Team member roles in pain assessment • Lack of consensus on conducting pain assessment
2. Resource availability	• High staff turnover • Clinical workload • Environmental barriers to delivery of pain management • Availability of pain management interventions
3. Importance of pain	• Understanding of pain prevalence in the critically ill • The impact of inadequate pain management on acute functional recovery • Lack of awareness of long-term consequences of inadequate pain management in ICU • Challenges in managing chronic pain conditions in the ICU population
4. The emotive experience of staff when acting as pain practitioners	• Confidence in pain management • Embarrassment and fear of incompetence • Impact of challenging pain management on healthcare professional confidence
5. Complexity of ICU population	• De-prioritisation of symptoms due to complexity of patients • Utility of pain management protocols in complex patients • Challenge of managing pain in context of delirium and sedation

Figure 1 Thematic framework main themes and associated sub-themes.

certainly ours are very, very keen to teach you... But I think if you were to go around with them, actually they'd try and talk you through their thought processes and you'd get a lot more information. And then you'd feel more confident when you came to doing it, that that's something you can do. It's something that you have enough experience to make a good attempt at." – Core Trainee 1

The second subtheme is distrust in pain assessment tool validity. Some participants expressed scepticism around the use of recommended pain assessment tools for patients unable to verbalise to provide a reliable, sensitive measure of pain. It was suggested that the components of the tool were not specific to pain and could be confounded by a multitude of factors such as medication, underlying pathology, pre-existing pain and delirium, thus decreasing the validity of the tool:

"I think there could be some false positives... There are lots of reasons for grimacing, there are lots of reasons for agitation" – ST3–7 Trainee 1

"I personally don't know how valid it [CPOT] is in the cancer patients, those with a lot of pain pre-operatively" – Consultant 1

Lack of reliable methods to assess pain in patients receiving neuromuscular blocking drugs was often described as frustrating, with interviewees describing it as guesswork:

"I feel a bit silly highlighting the pain of a paralysed patient to a doctor, especially with a consultant on a ward round because they'll be, 'but what are they doing to show you that they're in pain?' Well, they're not doing anything, but you sort of can query or question the amounts that you're giving them. Is it enough? Do we think it's enough? So, I think that's something that's quite difficult." – Junior Nurse 1

Participants reported having personal biases that they reflected could affect their belief in self-report as a measure of pain. These included not believing patient's self-reporting of pain due to a patient's history; demographic features; or if they reported a pain level that was, in the view of the healthcare professional, out of proportion to the clinical scenario:

"I wasn't convinced his pain was real... he'd had a liver transplant with a history of drug addiction prior... I thought maybe he wasn't in as much pain as he was demonstrating outwardly that he was" – Senior Nurse 1

“The younger generation seem less able to deal, they’re less stoic than your...95-year-old...and you’ll say ‘have you got any pain?’; ‘No dear, I’m fine don’t worry about me’...and yet you get the 17-year-old...and he’s screaming” – Senior Nurse 2

Others acknowledged similar opinions about the pain level reported but described that they would nonetheless administer analgesics titrated to self-report:

“Well, there have been a couple of situations where you second guess, doubt whether it is actually true or not, but we never put our own opinions or thoughts into that...Even if they say pain, we don’t hesitate one minute, we just go and get them the pain medication, nothing asked” – Junior Nurse 2

The third subtheme was the usability of pain assessment tools. There was variety in the perceived difficulty of using pain assessment tools in ICU. Participants who used the tools commonly, predominantly nurses, found them easy to use, while those who were unfamiliar expressed that they would be difficult to use:

“This [the CPOT] takes 10 seconds just going through it, and once you get used to it, it’s the same as knowing what a RASS [Richmond Agitation – Sedation Scale] score is. You can do the same with this and it will take less than ten seconds to put it down each time.” – Senior Nurse 3

The value of pain assessment was described in terms of promoting communication about pain and setting a measurable target, especially by junior members of the team:

“Personally, I quite like having a slightly more objective measure of doing something. And that might not be the same for everyone...I think it’s useful for communicating between different members of staff. I think it almost encourages the use of the target in the first place if it’s a score. Because it’s quite difficult to set a pain target if you don’t have a score or assessment to do so.” – Clinical Fellow 1

However, commonly physicians expressed that interpretation of a score was difficult and many were not able to describe the quantification of the scale:

“I think that you can use it [CPOT], but sometimes it’s hard to know how to interpret it” – Consultant 2

Some mentioned that mandatory electronic documentation prompted pain assessment and made the components of the assessments easier to remember:

“It’s [pain assessment] aided by having an electronic charting system. It’s generally done with the frequency of other observations” – Consultant 1

Others, however, mentioned that with electronic documentation, even though pain was reported as part of mandatory documentation, it could be ‘clicked on’ quickly and not assessed properly:

“Pain is often assessed, because we’re reminded to on the ward round entry, and we can’t complete it [ward round documentation] unless that is assessed...pain is documented, the assessment is documented. Whether it’s actually undertaken...?” – Foundation Year 2 Doctor 1

The fourth subtheme was the team member roles in pain assessment. Universally, participants expressed that nurses were, in practice, responsible for the assessment of pain, but that the whole multidisciplinary team held some responsibility for pain management. Some described a disconnect between nursing assessment and physician ability to interpret documented assessments:

Interviewer: “Do you think your physician colleagues are aware of the CPOT?”. Interviewee: “Well, honestly speaking, not too much...CPOT ends up being only for nurses” – Junior Nurse 3

“I know scoring systems do exist. I know that nurses were generally pretty good at using them. But as doctors we didn’t really do so much of that, so I don’t actually know what they are” – Core Trainee 2

Having senior team members highlight the importance of pain assessment was thought to promote its use:

“I think that we’ve got to get a hefty level of consultant buy-in, because if the consultants ask regularly what the CPOT score is, then the nurses are more likely to do it.” – Consultant 3

The fifth subtheme was lack of consensus on conducting pain assessment. There was little consensus on the practice of pain assessment either within, or between, hospitals. Members of staff working within the same ICU stated different methods, frequency and documentation practice for pain assessment. The following three quotes are taken from healthcare professionals all working in the same unit:

“We use the CPOT scoring system and we tend to do that every four hours” – Nurse 2

“We do an hourly pain score, we use the CPOT tool” – Nurse 3

“I know scoring systems do exist...I don't actually know what they are...It's good to see something new [in response to being shown the CPOT tool]” – Doctor 2

Lack of consistency was a source of confusion and reduced confidence in using pain assessment tools:

“I think sometimes it can be a bit confusing to patients because they might've been on a ward scoring zero to ten, and then they come to us, and we say zero to four, and they're like: 'what?'” – Senior Nurse 3

Resource availability

This theme focuses on resource pressures that were reported to impact on pain management. The first subtheme relates to high staff turnover. Many participants commented on a recent increase in less experienced staff working on their units. This was often attributed to the COVID-19 pandemic with participants describing many staff leaving, high personnel turnover and a predominance of less experienced staff, unfamiliar with ICU practice, including methods of symptom assessment:

“I think there are probably a lot more inexperienced nurses...half of the ITU nurses were not ITU nurses before the start of the pandemic” – ST3–7 Trainee 3

“Since August we've employed an awful lot of F3s, so that we've got bodies on chairs, but I would say that the skill level and the knowledge is pretty poor” – Clinical Fellow 1

High turnover was thought to contribute to a lack of institutional memory for pain assessment skills:

“I think the memory doesn't stay in the unit because the people are changing” – Senior Nurse 4

“I think with the changes in staff, it's hard to keep up the education. When you have something like a pandemic you just can't keep up that level of education for the nursing staff” – Consultant 2

The second subtheme was clinical workload. While some participants felt that their ICUs were well-staffed, this was not universal. Some believed they were understaffed which meant that pain could not be prioritised as the clinical workload was too high:

“The nursing side is desperately short and doubling up patients that, potentially, they shouldn't be doubling up...you sometimes don't get back to your second patient for over an hour, in which case that patient may have had pain symptoms that go unnoticed” – Senior Nurse 1

Some mentioned that pain was being assessed but that documentation of the assessments was not performed due to a lack of time:

“I think sometimes it's the number of patients they look after...So, you just think, actually I know that patient is three [CPOT score] and will not necessarily document when you're writing your evaluation” – Senior Nurse 4

The third subtheme was environmental barriers to delivery of pain management. These were described often as systemic or physical barriers that were difficult for an individual to overcome, creating frustration among nurses and physicians:

“[We nurse] patients in cubicles where nurses actually, physically, can't get pain management. And the lack of staff, because you need someone to come to the cupboard with you to check out a controlled drug” – Senior Nurse 1

“One thing that's really annoying is that the PCAs and epidurals are kept down in theatre, if we had two or three up in the unit, I think that would make a big difference” – Senior Nurse 5

The fourth subtheme is related to the availability of pain management interventions. A lack of uniformity in availability of pharmacological pain interventions was described, with more specialised interventions commonly not available. Trainees, in particular, commented on this as something they had noticed when rotating between hospitals during their training:

“I think sometimes it depends where you work, whether there's a guideline for being able to use things like a lidocaine infusion or being able to start a ketamine infusion or starting de novo neuraxial blocks. It depends on where you work. Sometimes your hands are tied. Which is often how I felt here to be honest.” – ST3–7 Trainee 2

When asked about methods of pain management, some participants discussed non-pharmacological methods. Such interventions were described in a positive manner and

participants were disappointed that funding was not available to use these methods more often:

“Why don’t you listen to some music and divert the focus on the pain...also giving them physical comfort, touch...I’m known for giving foot massages...I feel these are things that they miss” – Junior Nurse 2

“We had a massage therapist who was an ICU nurse...we would certainly love to pursue because, from a nursing point of view, we really felt that that made a difference [to pain]” – Senior Nurse 2

“We have a Cocker Spaniel who comes in...patients are often a lot better after [she’s] been to visit...but there’s just no money for anything extra or nice at the moment” – Senior Nurse 2

Importance of pain in ICU population

This theme discusses participants’ views on the importance of pain management in ICU. The first subtheme related to their understanding of the prevalence of acute pain in patients who are critically ill. Universally, participants understood that these patients experienced a high burden of acute pain and that it was frequently inadequately managed:

Interviewer: *“Do you think pain is a common problem in ICU?”* Interviewee: *“I think it’s an underestimated problem”* – ST3–7 Trainee 1

“And I think that’s true for everyone on the unit. I think everyone struggles with patients in pain more so than any other issue.” – Foundation Year 2 Doctor 1

There was a focus on pain in patients in the surgical ICU and procedural pain. Some described a change in their practice over the course of their training, with an increased appreciation of procedural pain:

“You’re sticking a needle and then a big dilator into someone’s neck or groin. I would want decent analgesia...I certainly did lines where I didn’t consider pain at all” – Core Trainee 2

However, pain was associated less with medical aetiologies, and the peri-operative management of pain was discussed most:

“If they’ve had elective surgery or emergency surgery and I’m seeing them now, then pain is one of the main things to treat. I think if you’re looking at somebody who’s delirious with sepsis or a long ICU stay or a

multitude of other pathologies, it’s difficult to know, but it’s probably not the main problem often” – ST3–7 Trainee 4

The second subtheme was the impact of inadequate pain management on acute functional recovery. Some participants mentioned the impact of poor pain management on immediate functional recovery of their patients. Themes discussed included fewer days receiving mechanical ventilation, increased mobility and shorter durations of stay:

“On the humanistic level, you don’t want your patient to be in pain. Also...you don’t want them to be in ICU longer than need be because you don’t manage things properly and they get a complication...for example if you’ve not got adequate pain relief and you don’t breathe properly and you get pneumonia, then that feels really like something that was potentially preventable” – Consultant 2

The third subtheme was a lack of awareness of the long-term consequences of inadequate pain management in ICU. A few participants discussed the long-term consequences of pain for patients; however, the majority could not describe them in detail or reported that the concept seemed distant from the clinical scenario they were treating acutely:

“I’m aware that patients after they’ve recovered from ICU stays report pain and significant psychological distress which we probably don’t really think about much at the time” – Clinical Fellow 1

The most common theme discussed was the long-term psychological impact of experiencing pain acutely in the ICU environment:

“I’m sure a lot of these patients suffer from PTSD in the post-ICU stage, and of course not controlling the pain is going to result in a higher rate of patients with PTSD who have uncontrolled pain. Things like that will affect length of stay and I’m not sure, but maybe even mortality. And I don’t know the studies behind this, but I think it would affect patient outcomes massively.” – Core Trainee 3

Participants who were involved in ICU follow-up clinics had a greater awareness of these issues and described patient testimony as impactful in changing their views on pain management:

“But for me the real thing was when I started doing follow-up and I felt like I’d let the patients down in not giving them better analgesia” – Consultant 3

“I’ve found the most effective way to get people engaged in it is to get real-life patients to talk about their experience... I asked a patient to talk to the junior doctors about what it’s like to lie in that bed, not being able to turn the alarm off, which goes on for an hour and a half, whatever, and the pain they felt. And that was the most effective set of junior doctors that I had, because it made them human” – Consultant 3

Many participants stated a desire to attend follow-up clinics to deepen their understanding of the chronic sequelae of ICU admission. However, commonly stated reasons for non-attendance were a lack of such clinics within their Trust or inadequate time to attend them:

“I think it would be really interesting to hear that from a patient’s perspective, and I think it would probably alter your management in some ways... I’ve never had the experience of following up a patient over that course of time, But I would like to, for sure” – Foundation Year 2 Doctor 1

The fourth subtheme focused on challenges in managing chronic pain conditions in the ICU population. Many participants discussed difficulties with managing pre-existing chronic pain and reported this as a cause of pain in the ICU population:

“There are patients who’ve already had chronic pain before they came into ICU. Those would be quite difficult to manage. We did have patients who are drug abusers, who were again, of course, quite difficult” – Core Trainee 3

They described how chronic pain can be deprioritised in an ICU environment and the impact this may have on pain management acutely:

“If I’ve done a drugs reconciliation and someone is on some medications that I think might be associated with chronic pain management. Then may be a few lights go on in the back of your head and you think, oh, we should at least put that baseline [analgesia] back in and manage that chronic pain before we manage the acute pain on top.” – ST3–7 Trainee 1

Systemic barriers, such as not having access to long-term analgesic prescriptions were also highlighted:

“...those adjuncts in our analgesic armoury are missed when they get transferred... if we could look at the GP records that would be really useful, and we could start it earlier” – Consultant 4

The emotive experience of critical care staff when acting as pain practitioners

All participants were involved in pain assessment and management as part of their everyday job, caring for patients who are critically ill. This theme explores their thoughts and feelings when they were participating in pain management activities.

The first subtheme focused on confidence in pain management. Commonly, interviewees felt a lack of confidence regarding pain assessment and management. This was attributed to a lack of experience and training. Algorithms and protocols for pain management were described by some as enablers to confidence:

“I suppose, obviously, with experience, you do get used to it, but I still wouldn’t say that I feel confident. For example, between a fentanyl PCA or an oxycodone PCA. I don’t think I could explain the benefits or risks of one against the other, for example.” – Clinical Fellow 1

“I think, for the nurses definitely it [a pain protocol] gives them confidence in their decision making. I think in other scenarios... the nurse would be reluctant to consider swapping the analgesia or discussing it with the doctors. Whereas, actually, if they’ve got the protocol that says, actually, this is a reasonable decision then they will be comfortable or more comfortable bringing it to your attention as a doctor as well.” – Foundation Year 2 Doctor 1

However, some expressed frustration and a hopelessness that even experience and training would not improve their skills:

“I feel I’m probably never going to be brilliant at managing pain” – ST3–7 Trainee 2

Lack of confidence was almost universal among junior physicians and contrasted to the higher levels of confidence expressed by the senior members of the team:

“And I guess in terms of how I assess pain, probably not very well” – Core Trainee 1

“I’m not sure if I got any better at assessing pain [while working on ICU]. I probably got better at knowing what to do with the medication and trialling different things in terms of the medications. But in terms of actually assessing the patient’s pain? I’m not sure if I’m any better.” – Core Trainee 3

More senior participants reported higher levels of confidence and attributed this to having more hands-on experience:

“I’ve been doing this job for 30 years, I’ve got a lot of experience and experience kind of informs things” – Senior Nurse 2

*Interviewer: “And in terms of confidence do you feel pretty confident in managing pain in ICU now?”.
Interviewee: “Yes, relatively yes. . . I think unfortunately just doing loads of ICU” – ST3–7 Trainee 3*

A second subtheme was embarrassment and fear of incompetence. Some participants perceived their ability to manage and assess pain as incompetent and many discussed feelings of embarrassment and guilt surrounding this:

“I find it hugely uncomfortable. Because pain is something, particularly as an anaesthetic intensivist, we should be able to manage, right? . . . I feel like I have failed that patient. . . And there’s a human aspect of just watching your patient in pain as well, thinking, there is absolutely no need for you to be in this pain. And I would say more than nine times out of ten, if a patient is left there in pain, it is through our mismanagement rather than their primary issue” – ST3–7 Trainee 1

“...they can’t voice that they’re in pain for example. You’re making me feel really ashamed now just thinking about it.” – ST3–7 Trainee 2

The third subtheme focused on the emotive impact of difficult scenarios involving pain management on healthcare professionals. We asked interviewees to talk about a scenario in ICU when pain management had been challenging. Many participants described feeling harrowing emotions in situations where they were aware that a patient’s pain was poorly controlled. They described scenarios where pain had been difficult to manage but went on to link this to something new that they had learnt about pain management, highlighting impactful experiential learning:

“I think we were able to respond to his pain in a couple of hours. But that was a horrible experience, I would not put myself in that kind of situation again” – Junior Nurse 3

They used negative descriptions of the impact a patient’s pain had on their own emotions:

“When I see someone in pain it makes me really uncomfortable” – Senior Nurse 3

“I hate seeing people in pain. I find it really difficult” – Core Trainee 4

Complexity of the ICU population

This final theme focuses on the complexity of ICU patients and how this may be a barrier to effective pain assessment and management. The first subtheme was about the de-prioritisation of symptoms due to the complexity of patients. Many participants mentioned that since patients in the ICU are more complex and acutely unwell, pain was often de-prioritised. This was most pertinent in situations where patients were unstable, as participants felt other issues were more pressing:

“If we’re talking about a patient whose. . . immediately life threateningly ill, then no, I wouldn’t say that pain is the first thing that your mind goes to. . . I wouldn’t put it in my top three priorities in a really critically unwell patient” – Foundation Year 2 Doctor 1

“I think there’s less emphasis on pain management on the ITU, I believe it’s more optimising the patient while he’s in; the blood pressures, heart rates, their ability to comply with the ventilator. . .” – Junior Nurse 4

The second subtheme relates to the utility of pain management protocols in patients who have complex needs. Many participants discussed the complexity of patients in the ICU affecting pain management strategies due to considerations such as haemodynamic instability and multiorgan failure:

“On ICU the complexity of the patients mean that a lot of those drugs are out of the question. So you can’t give NSAIDs at all. . . you’re hesitant to give opiates because if you knock off their respiratory drive, you’re in big trouble. . . because they’re so fragile you’re a lot more hesitant with drugs than you might otherwise be” – Core Trainee 2

Participants highlighted positives and negatives to using pain management protocols in the ICU but, in general, structure around targeted analgesia was thought to be important. Lack of consistency in pain management strategies was also viewed as detrimental yet protocols were associated with reduced flexibility to respond to the individual’s needs, particularly in complex clinical situations:

"It might be helpful to have a protocol perhaps on a night shift, for example, if you're by yourself. But actually, recognising that as soon as there's someone more senior there, often you go off protocol" – Core Trainee 4

"I think flexibility works because all patients are not the same and [what worked for] one would not work for another. In terms of setting targets every day we would have a review of patients and setting targets for patients...One particular protocol would not work for all patients." – Junior Nurse 2

Some participants drew on experiences where they thought that pain management was highly complex but then later realised that very simple methods they had forgotten to try, such as repositioning, alleviated pain effectively:

"She was complaining, I got pain, pain, pain, I'm in so much pain...we were thinking she's had this huge rotational flap...and in the rotational flaps if you start getting pain, you start thinking, 'Oh God, is the flap not working properly'...It was actually just as simple as the fact that there was this little spur of plaster and just repositioning and padding the thing completely took the pain away" – Senior Nurse 2

The third subtheme was the challenge of managing pain in the context of delirium and sedation. The overlap of pain with sedation, delirium and agitation was reported as a particular challenge:

"The nuances about sedation and pain, I think, are a massive grey area. Because, actually as I mentioned before, if somebody is in pain they'll be agitated and distressed...then they may just be delirious as a result of multimodal analgesia...So, I think that's a difficult soft skill that I think I can always get better at..." – ST3–7 Trainee 5

"I think nursing staff will frequently find it difficult to separate pain from agitation caused by delirium" – Consultant 5

The lack of clarity in being able to separate sedation and analgesia was also evident in descriptions of analgosedation protocols:

"I think there's a lot of confusion about sedation and analgesia, and actually in some places where I've worked both the analgesia and the sedation would be stopped for the sedation hold..." – Consultant 4

"There are [analgesic] protocols, but I don't think they're really looked at, because it's all engaged in the pain and sedation. So it's actually a sedation protocol really." – Consultant 5

Managing pain in those with a reduced level of consciousness or on mechanical ventilation was described as particularly difficult. A culture of wanting to over-sedate patients to make nursing easier was described and this signalled prioritisation of sedation over analgesia:

"And another thing for the nurses is, they would rather have a deeply sedated patient than an awake patient...but I think if you get the analgesia right, they won't be delirious, they won't be combative, they'll be calmer in the bed. But that culture isn't there yet" – Consultant 4

"I know a few nurses...who don't want their patients to move or anything, so they will over sedate the patient, they will give analgesia, too much analgesia for the patient to be just chilled" – Senior Nurse 6

Some described that the pain of a patient who was sedated was less of a priority than a patient who was not sedated, as the patient is not verbalising their discomfort:

"I think if you've got a patient who's sedated and not able to move and not able to complain, then I'd say the urgency to get that patient painkillers may be...it isn't a priority to the nurse if she's got other things" – Senior Nurse 6

"Probably I'm more alert to asking about pain if they are awake and communicative, which is probably bad" – Clinical Fellow 2

Discussion

This is the first study, to our knowledge, that assesses the barriers to optimal pain management, as described through interviews with physicians and nurses working in ICU. It provides qualitative insight into the perceptions, knowledge and attitudes of healthcare professionals, and offers some suggestions as to how these could be targeted to improve pain management in patients who are critically ill. Uniquely it identifies differences in knowledge and perceptions between physicians and nurses, and highlights the emotional impact of delivering pain management in the ICU.

Pain management was reported as challenging for both physicians and nurses. Despite the publication of the

updated Society of Critical Care Medicine' PADIS guidelines in 2018, studies from many countries (including the UK) continue to show ongoing inadequate pain management in ICU populations [27, 28]. There is a need to identify novel targets for quality improvement initiatives and research priorities to strengthen the evidence base for pain management in ICU. Our results have highlighted several areas where initiatives to improve pain management in ICU could focus.

Pain assessment in ICU

Several studies in nursing settings have highlighted a lack of knowledge and distrust in the validity of tools [16], however, there is little evidence surrounding physician use of ICU-specific pain assessment tools. The PAIN-1 study from the UK identified the lack of validated assessment tool use among physicians [15]. Our results support these findings highlighting that, while validated pain assessment tools have been adopted well by nursing staff, physicians may lack the skills to interpret such assessments and in many cases were not aware of their existence. Reasons for this remain unclear, but our results suggest a lack of physician training may contribute.

Quality improvement interventions at local [29] and national [30] levels have shown some success in increasing the use of appropriate pain assessments in ICU, but these have largely been targeted at nursing staff. Furthermore, the Faculty of Intensive Care Medicine's curriculum for physician training focuses on pain in the context of peri-operative management, with limited practical focus on pain assessment in the patients who are critically ill [31]. Similarly, Gelinas et al. identified that nurses reported validated pain assessments as helpful in facilitating pain communication between nurses, but only half felt it aided communication between nurses and physicians in ICU [32]. Their research did not explore the level of training and experience physicians had in this tool; improving physician knowledge of pain assessment is, therefore, a priority. This is to ensure all staff are 'speaking the same language' and to allow for collaborative decision-making [33].

Some participants queried the validity of behavioural tools in patients who were unable to verbalise, potentially reflecting a lack of evidence penetration regarding the psychometric properties of these tools. It may also represent the need for improved assessment tools that are easier to remember or use, or for more multidimensional forms of assessment that consider pain quality and impact, rather than focusing on pain severity. Participants also stressed the clinical need for better forms of assessment in

patients with neurological disorders or who are receiving neuromuscular blocking drugs, reflecting the recognised research in this patient cohort [34].

Roles of ICU staff in pain management

Consensus on roles and responsibilities in pain assessment was important to our interviewees. A lack of autonomy to act when inadequate pain relief is identified is problematic for nursing staff in settings where nurses are responsible for pain assessment but do not have easy access to alter prescribing [35]. Protocolised analgosedation algorithms that are nurse-led have been trialled in ICU environments [36]; however, our results suggest divergent views on such algorithms. Some physicians described that protocolised pain management impacts on individualised care and may not be appropriate in complex ICU patient populations. This contrasted with the attitude of nursing and junior medical staff, who reported preferring more transparent, consistent pain management plans. These differing opinions are likely to impact on their implementation, especially since senior and physician-led buy-in was described as important by our results and other studies [32, 35]. Decision-making tools require careful design to reflect the desire for algorithms while incorporating agreed cues for escalation to senior clinicians or specialist pain services.

Resource availability

Universally, participants highlighted the lack of time due to nursing clinical workload as a barrier to best practice in pain management. Increased nursing clinical workload is known to negatively impact pain management in ICU [37]; the evidence of this impact on symptom control should be utilised to support initiatives to improve staffing and retention in the ICU. Changes in the ICU workforce during the COVID-19 pandemic are well documented [38] and were thought to have impacted quality of pain management [2]. Methods to assess and deliver high-quality pain management more efficiently must be prioritised, in parallel with systemic changes to workforce planning. Furthermore, our study revealed a desire for more consistent access to pharmacological and non-pharmacological pain management. This could be supported through local quality improvement work to optimise access to controlled drugs, regional anaesthesia practitioners and equipment. However, the lack of evidence for use of specific drugs and interventions, particularly non-pharmacological techniques and regional anaesthesia, in the ICU population represents a further research priority.

Importance of pain

Our results reflect the reported evidence of de-prioritisation of pain in ICU [39]. Strategies for behavioural change to 'force' prioritisation have been incorporated into quality improvement initiatives, for example forced, or prompted, entry of pain assessment on electronic observation charts or ward rounds [40]. However, our participants warn that this method does not necessarily enhance engagement. They described 'alert fatigue' where some kind of assessment or plan is entered but in practice is not discussed or, in some cases, even performed in full. Alert fatigue with electronic systems is well documented [41] and needs to be considered and evaluated when designing interventions to change practice.

Although pain was widely acknowledged as being prevalent by our participants, a reduced awareness in non-surgical patients was observed. This may represent a group of patients for which specialised training is required. Patients with chronic pain before ICU admission were also described as challenging and an area where practitioners were lacking in confidence. Other patient groups have been highlighted as receiving less priority for pain management in ICU, including those with drug misuse issues and certain psychological disorders [42]. Personal biases towards pain perception based on age, ethnicity and subspeciality of the assessor have also been documented in ICU staff, which should be acknowledged in educational interventions [43].

Despite the well-recognised long-term consequences of inadequate pain management (i.e. chronic pain) and psychological sequelae related to painful experiences in ICU [8], our interviewees describe a disconnect between their everyday management of acute pain and potential future consequences. Our data support educational activities that highlight the rehabilitation narrative with patient testimony, either through direct contact in follow-up clinics, or through video material. These could provide more impactful training than standard didactic methods.

The experience of the pain practitioner

This type of learning is supported by the emotive experiences described by many of our participants surrounding incidences of challenging pain management in the ICU. The recall of these events was emotive and very specific, potentially demonstrating significant impact for the interviewee. Described scenarios were associated commonly with an explanation of a new strategy that they, or a colleague, employed to manage pain. This suggested substantial experiential learning in a circumstance associated with their own distress. The role of emotion on

learning is complex [44] but incorporating the sharing of such stories within educational programmes could be a learning aid. This also suggests a need for staff support following such scenarios and that increasing confidence in pain management may influence staff well-being by contributing to a reduction in stressful clinical scenarios.

There was a perceived lack of confidence around pain management, particularly among junior physicians. Low confidence of a practitioner to manage pain has been shown in other settings to make them avoidant of assessing pain due to a feeling of 'dread' that they will not be able to offer a therapeutic solution [45]. Suggestions by our interviewees to improve confidence included more specific pain training, as well as local and national guidelines.

Pain management in the context of sedation and delirium

Our interviews identified a particular challenge in managing pain in patients who are sedated and/or delirious. The reduced ability to communicate with patients in these situations, as well as the overlap in symptoms and fear of therapeutic adverse effects of analgesics, contributed to confusion. Difficulty in discriminating analgesic vs. sedation requirements has been described previously [35]. Our results indicate that physicians perceived a nursing preference for deeper sedation, although this was not reflected as much in nursing interviews. This again shows the need for collaborative decision-making and target-setting for both sedation and analgesia and clearer incorporation of pain management into sedation protocols. Teasing apart the contribution of pain and its management to delirium continues to be problematic, but more eloquently designed studies are emerging that will hopefully be able to guide clinical practice in the future.

Guidelines for pain management in ICU

Guidelines for pain management in ICU have been produced by American, South American, Spanish and German professional societies [11, 46–49] but to our knowledge, there are no UK-specific guidelines. The publication of guidelines from UK-based societies addressing UK-specific barriers may raise awareness of the issue and increase confidence.

The themes highlighted in this work suggest distinct areas that could be targeted at an individual, departmental, institutional and even national levels. Figure 2 summarises four areas that cut across the identified themes, encompassing interdisciplinary training; decision-making tools; research priorities and prioritisation schemes. It also highlights potential

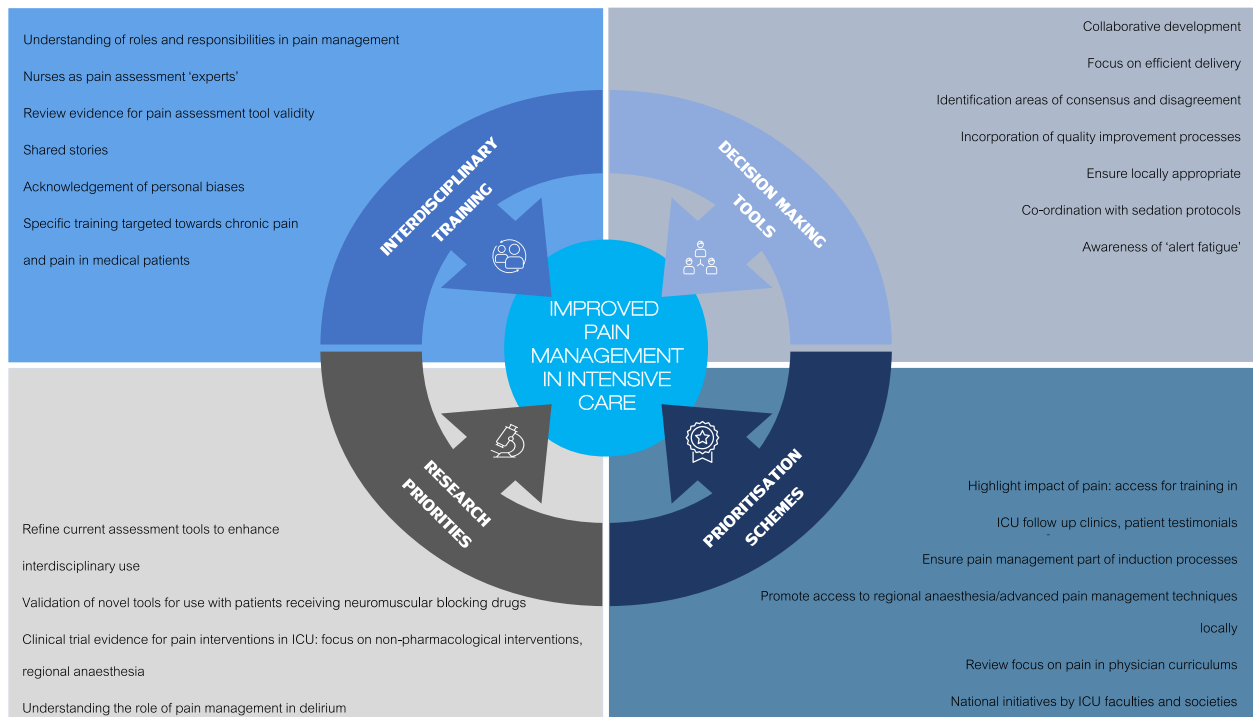


Figure 2 Potential initiatives identified to improve pain management in intensive care.

tangible action points, derived from the subthemes, that could be used to improve pain management in the ICU.

There are several limitations to our study. The qualitative methodology allowed us to explore divergent experiences of pain assessment and management within the ICU, across healthcare professionals from a range of seniority and backgrounds. Semi-structured individual interviews can enable participants to be more uncensored than other methods, particularly when interviewees belong to a hierarchy, or there is a perceived power imbalance. They allow in-depth exploration of views and provide context to perception, enabling interviewers to respond to the narrative, asking previously unconsidered questions while maintaining a level of standardisation provided by the interview framework. However, we are unable to add any quantifiable weight to responses that could be obtained using surveys. Given the focus on workplace role that was identified, focus group or ethnographic methods may also have allowed for further interrogation of the dynamics of the ICU as a team. Since only a limited number of ICUs of each specialty were included, no robust trends could be identified associated with type of workplace other than those described, with respect to surgical vs. medical patients. All interviewers were, or have been, practising intensivists and had worked with a minority of participants. Therefore, some interviewees may have felt that they could

not be completely honest, especially in situations where they were junior to the interviewer. All participants were based in London hospitals and therefore may not fully represent perceptions in different areas of the UK or other national healthcare systems. While including physicians and nurses, the broader ICU team, including professionals involved in pain management such as physiotherapists and pharmacists, were not included. Importantly the study did not include the views of patients; their contribution to understanding the barriers to pain management should be actively sought to enhance the narrative and ensure improvement initiatives are of benefit.

This study provides unique insight into the challenges of pain management in ICU from the perspective of nurses and physicians. It identifies differing knowledge and perceptions based on role and seniority, particularly around the use of ICU-specific pain assessment tools, protocols for pain management and confidence. The emotive experience of the pain practitioner is also described as well as the importance of patient testimony in learning. Resource availability in terms of workforce and access to analgesic interventions represent practical areas of focus to improve pain management in critical care. This work suggests interdisciplinary training, collaboratively designed decision-making tools, prioritisation schemes and research priorities in pain management in critical care are needed.

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Supporting Information

Additional supporting information may be found online via the journal website.

Appendix S1. Interview Guide for PAINT-2.

Appendix S2. Codebook.