



The Royal College of
Emergency Medicine

PAIN IN CHILDREN

CLINICAL AUDIT 2017/18

National Report

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Foreword

Dr Taj Hassan, RCEM President

Seeing a child in acute pain is certainly a distressing sight. Paediatric attendances account for 25% of Emergency Department attendances. Many of those are children with limb injuries and arrive with significant pain.

Paediatric Emergency Medicine is particularly challenging in the assessment of pain as children complain less and use distraction techniques to manage pain. They are often very stoical when in pain and unlikely to ask for analgesia and indeed even then may withdraw and interact poorly.

We also know that in the paediatric population standardised assessment such as the pain score, is a valuable tool for clinicians to assess the level of pain a child is in and provide a baseline for ensuring the efficacy of analgesia given.

From the data in this excellent audit it is clear that there is still much work to be done in ensuring such standardised tools are used consistently and that there is a more aggressive response to providing intervention at an early stage.

The audit confirms that there is also much good practice in Emergency Departments that needs to be shared more widely both in terms of assessment methods and treatments for these patients. The RCEM Audit committee and Quality in Emergency Care committee will liaise with other expert bodies such as the Royal College of Paediatrics and Child Health to help promote greater standardisation.

We strongly recommend that Lead Clinicians for Paediatric Emergency Departments work with nursing colleagues and other clinicians to ensure that they have the tools in place to assess and manage this important group of patients well.



Dr Taj Hassan, RCEM President

Co-signed:



Dr Adrian Boyle, Chair of Quality in Emergency Care Committee



Dr Jeff Keep, Chair of Quality Assurance and Improvement Subcommittee

Executive Summary

Overview

A total of 12621 patients presenting to 190 Emergency Departments were included in this audit. This was the seventh time this audit has been conducted. The chart on the following page is a summary of the performance against standards.

The purpose of the audit is to monitor documented care against the standards published in July 2017. The audit is designed to drive clinical practice forward by helping clinicians examine the work they do day-to-day and benchmark against their peers but also recognise excellence. There is much good practice occurring and we believe that this audit is an important component in sharing this and ensuring patient safety and good clinical care.

Key findings

The audit shows nearly half (45%) of children presenting with limb injuries did not have a pain score recorded at all. Although pain may have been assessed in another way, using a pain score has been shown to reliably indicate pain levels and is recommended for use in the initial assessment.

Only 1/3 (32%) of pain scores recorded were within 15 minutes of arrival in ED.

As expected most children (85%) with severe pain were offered analgesia, however only 50% received this within 30 minutes and 69% within an hour. Timely administration of analgesia has therefore reduced since previous audits.

There are a worrying proportion of children who are not receiving analgesia despite a documented significant pain score approximately 12% in severe pain and 28% in moderate pain.

More children are receiving pre-hospital analgesia than in previous audits which is a positive change.

However, fewer children are receiving analgesia within 60 minutes of arrival in the hospital. This may be a reflection of the underlying pressures nationally on ED capacity leading to longer times for children to be assessed and medication administered. There is a need to address this locally in EDs to ensure that pressure on the system does not impact the quality and safety of patient care.

In almost all cases in this audit there is no re-evaluation of the pain score and so it is unclear whether children's pain is being adequately managed.

Key findings against standards

Standard 1: Pain is assessed within 15 minutes of arrival.

- Pain scores were not taken in 45% of children.
- Approximately 1/3 (or 32%) of pain scores taken were within 15 minutes.
- This is a new standard, so no comparatives were available.

Standard 2: Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia in accordance with local guidelines (unless documented reason not to).

- Only 33% of patients in severe pain received analgesia within 20 minutes, down by 20% since previous 2 audits.
- Only 50% of patients in severe pain received analgesia within 30 minutes, down from 71% in past 2 audits.

- Only 69% of patients received analgesia within 60 minutes, down from 92% and 90% in previous 2 audits.

Standard 3: Patients with moderate pain (pain score 4 to 6) should be offered or receive appropriate analgesia in accordance with local guidelines (unless documented reason not to).

- 26% of patients in moderate pain were offered or received appropriate analgesia within 20 minutes, down from 48% and 42% in past 2 audits.
- 40% of patients in moderate pain were offered or received appropriate analgesia within 60 minutes, down 80% and 78% in previous 2 audits.

Standard 4: 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic.

- The standard was not achieved.
- This is a new standard, so no comparatives were available.

Standard 5: If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.

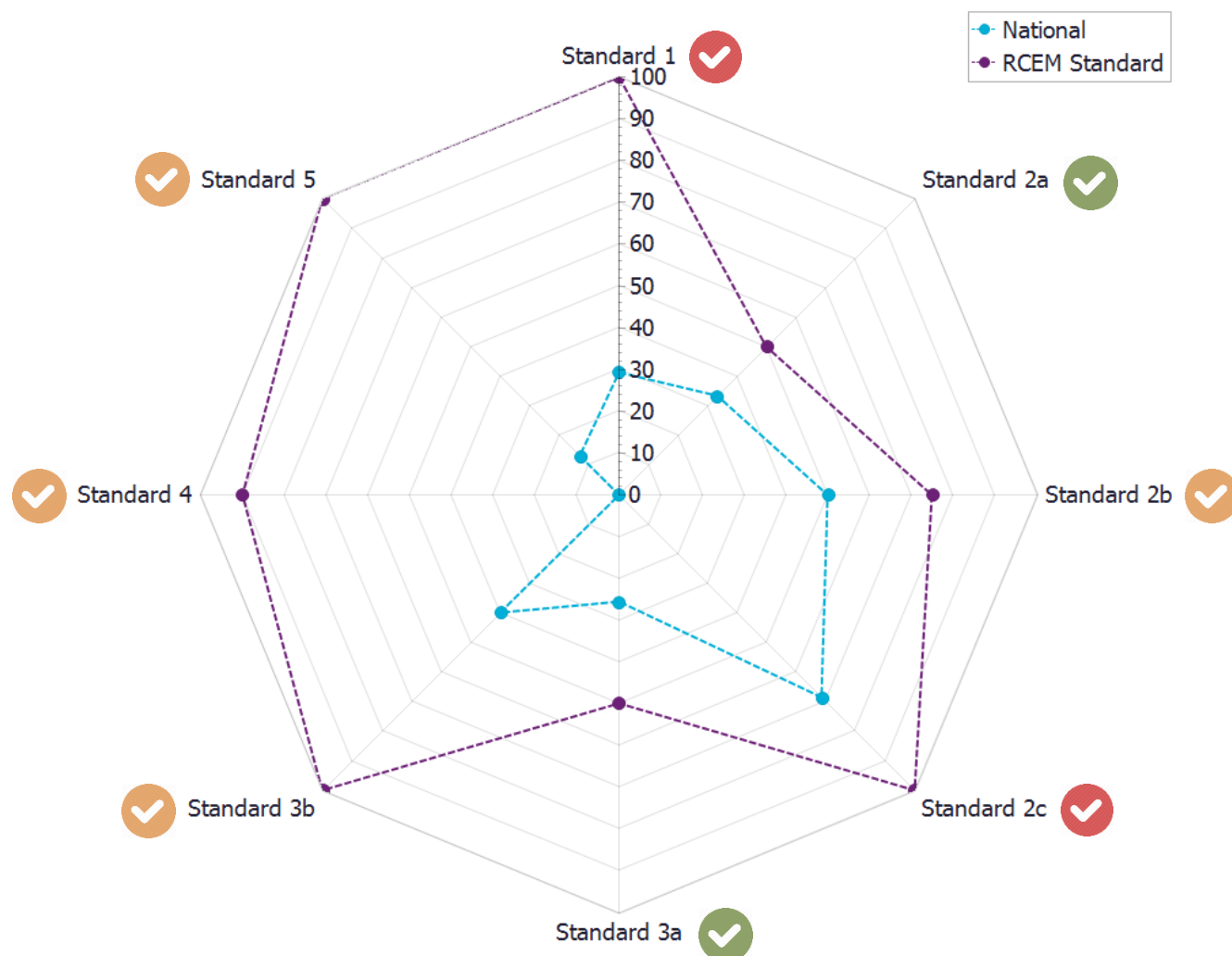
- The standard was not achieved.
- This was 7% in 2009/10 and 8% in 2011/12.

Key recommendations

1. It is recommended that the administration of analgesia pre-hospital is documented in the notes, to prevent medication errors and ensure patient safety.
2. It is recommended that pain level is assessed and documented using a pain score. Staff are trained and aware of how to use pain scores.
3. It is recommended that departments investigate utilising the existing systems, such as nurse led prescribing (PGDs) to ensure timely administration and documentation of analgesia to children with moderate or severe pain.
4. It is recommended that departments develop a system to ensure re-evaluation of pain after analgesia. Such mechanisms may empower parents and children to self-report pain and assist in re-evaluation of efficacy of analgesia in a patient-centric timeframe.

Performance Summary

This graph shows the median national performance against standards for this audit.



Standards:



Fundamental



Developmental











Aspirational

↑ **Higher scores (e.g. 100%)** indicate higher compliance with the standards and better performance.

↓ **Lower scores (e.g. 0%)** indicate lower compliance with the standards and EDs may wish to investigate the reasons.

Summary of national findings

		RCEM Standards (%)	National Results				
			2017/18 (12621 cases)			2011/ 12	2009/ 10
			Lower quartile	Median	Upper quartile	Median	Median
STANDARD 1: Pain is assessed within 15 minutes of arrival							
	Pain is assessed within 15 mins of arrival	100%	9%	29%	52%	This is a new standard, so no comparatives available	
STANDARD 2: Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia, according to local guidelines (unless documented reason not to)							
	a. 50% within 20 mins of arrival or triage whichever is the earliest	50%	0%	33%	53%	50%	53%
	b. 75% within 30 mins of arrival or triage whichever is the earliest	75%	25%	50%	67%	71%	71%
	c. 100% within 60 mins of arrival or triage whichever is the earliest	100%	42%	69%	86%	92%	90%
STANDARD 3: Patients with moderate pain (pain score 4 to 6) should be offered or receive analgesia, according to local guidelines (unless documented reason not to)							
	a. 50% within 20 mins of arrival or triage whichever is the earliest	50%	4%	26%	50%	48%	42%
	b. 100% within 60 mins of arrival or triage whichever is the earliest	100%	11%	40%	67%	80%	78%
STANDARD 4: 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic							
	90% of patients with severe or morderate pain should have documented evidence of re-evaluation and action within 60 mins of receiving the first dose of analgesic	90%	0%	0%	3%	This is a new standard so no comparatives are available	
STANDARD 5: If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes							
	Reason documented in the notes	100%	0%	13%	50%	8%	7%

NOTE: these national figures present the **median** and **quartiles**, which may differ from other results quoted in the body of this report which are **mean** (average) values calculated over all audited cases due to the distribution of data.

Introduction

This report shows the results from an audit of children between the ages of 5 and 15 arriving at Emergency Departments (EDs) in moderate or severe pain with a fractured elbow, forearm, wrist, ankle, tibia, fibula or femur against the clinical standards of the Royal College of Emergency Medicine (RCEM) Quality in Emergency Care Committee. Departments were asked to exclude patients who were only in mild pain.

Emergency Medicine (EM) is a rapidly developing specialty. Over the past 40 years the Emergency Department (ED) has become the “front door” of the acute hospital, responsible for the management of 15 million patients every year in England alone. A significant proportion of children attend the ED due to injuries and fractures to their arms and legs. These injuries are painful and distressing, and children require analgesia and review in a timely fashion.

Published research (Wong and Baker, 1987) define several myths about the management of pain in children that are still relevant in today's busy EDs and they documented the evidence base countering them. The common myths surrounding pain management in children are:

- “Children tolerate pain better than adults”. In fact, children's tolerance increases with age.
- “Children cannot tell where they hurt”. They can accurately point to the site of pain.
- “Children always tell the truth about pain”. Children may not admit to pain in fear of having an injection.
- “Children become accustomed to pain or painful procedures”. Again, the opposite happens.
- “Active children are not in pain”. Whereas pain actually is the cause of increased activity.
- “Opioids are dangerous drugs for children and cause addiction”. There is no increased risk over that of adults.

There are few areas in medicine where we initiate therapy without a specified endpoint. This audit demonstrates the issue that analgesics are prescribed routinely in the ED without measuring the initial pain severity or re-evaluating the effect of the analgesic on the level of pain.

Mounting evidence suggests that formal pain measurement reveals unrecognised or under-treated pain, improves pain management and reduces return visits to the emergency department (Lee, 2008) (2).

In the ED, the ideal pain measurement tool would be practical, reliable, sensitive, valid, and possess ratio-scale properties. Pain tools such as the Wong and Baker faces scale, the Visual Analogue Scale, Numeric Rating Scale and the simple Verbal Rating Scale, to name a few, have been commonly used as pain scores within Emergency Departments and numerous studies have demonstrated their usability in measuring children's pain.

RCEM advocates that pain management in children is audited yearly by Emergency Departments.

This topic was previously audited Nationally in 2009/10 and 2011/12.

RCEM recommends that pain management is a good topic for a quality improvement project.

Background

Pain in children is one of three Royal College of Emergency Medicine (RCEM) clinical audit topics for 2017/2018.

It follows on from the successful earlier audits of the Emergency Department (ED) management of children in pain in 2003, 2004-6, 2007, 2008, 2009/10 and 2011/12.

Participants were asked to collect data retrospectively from the ED notes of 50 consecutive children between the ages of 5 and 15 inclusive who present to their ED at any time in the period 1 January 2017 to 31 December 2017 who were in moderate or severe pain with a fracture to the clavicle, shoulder, humerus, elbow, forearm, wrist, ankle, tibia, fibula or femur.

The purpose of the audit is to identify current performance in EDs against RCEM clinical standards and show the results in comparison with other departments.

Full results of the audit are published here as part of RCEM's work on clinical quality. This audit is listed in the Quality Accounts for 2017/18, which require providers in England to report on their participation in identified national clinical audits.

Once data has been submitted, RCEM becomes custodian of that data and will be sharing data from the 2017/18 audits with the CQC, the healthcare regulator for England, and reserves the right to share with other organisations if approved by College Council. Named ED level data will be made public to enable and encourage quality assurance and quality improvement.

Aims

This audit was conducted for the seventh time to continue the work of the 2009/10 and 2011/12 data collections. It identifies current performance against RCEM clinical standards, showing the results in comparison with other departments. The results of 2009/10 and 2011/12 are presented for comparison. Also, where available, data was also shown for previous audit years dating back to 2003.

The objectives of this audit were:

1. To benchmark current performance in EDs against the five standards
2. To allow comparison nationally and between peers
3. To identify areas in need of improvement
4. To compare against previous performance in 2009/10 and 2011/12

Methodology

Participation summary

Nationally, **12621** cases from **190** EDs were included in the audit.

Country	Number of relevant EDs	Number of cases
National total	190/233 (82%)	12621
England	164/179 (92%)	10927
Scotland	5/26 (19%)	405
Wales	13/13 (100%)	807
Northern Ireland	6/9 (67%)	388
Isle of Man /Channel Islands	2/3 (67%)	94

Pilot methodology

A pilot of the audit was carried out prospectively from 5th to 14th June 2017 with the help of six sites. The pilot period was used to test the audit questions and the quality of data collected.

Pilot sites

We are grateful to contacts from the following Trusts for helping with the development of the audit:

- Northampton General Hospital NHS Trust
- Queen Victoria NHS Foundation Trust
- Ulster Hospital Emergency Department
- Royal Belfast Hospital for Sick Children
- Salisbury District Hospital
- Western Sussex Hospitals NHS Foundation Trust

Audit history

All EDs in the UK were invited to participate in July 2017. Data were collected using an online data collection tool.

Participants were asked to collect data from ED patient records on consecutive cases who presented to the ED and were subsequently discharged home between 1st January 2017 and 31st December 2017.

Sample size

RCEM recommends auditing a different number of cases depending on the number of the patients seen within the data collection period. If this was an area of concern, EDs were able to submit data for more cases for an in depth look at their performance.









Basing the audit sample size on the number of cases in this way increases the reliability of your ED's audit results.

RCEM recommended that audited cases were collected consecutively during the data collection period (1 January 2017 to 31 December 2017).

Expected number of cases	Recommended audit sample
< 50	All eligible cases
50-250	50 consecutive cases
>250	100 consecutive cases

Standards

The audit asked questions against standards published by RCEM in July 2017:

Standard	Standard type
1) Pain is assessed within 15 minutes of arrival	 Fundamental
2) Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia, according to local guidelines (unless documented reasons not to)	
a. 50% within 20 mins of arrival or triage whichever is the earliest.	 Aspirational
b. 75% within 30 mins of arrival or triage whichever is the earliest.	 Developmental
c. 100% within 60 mins of arrival or triage whichever is the earliest.	 Fundamental
3) Patients with moderate pain (pain score 4 to 6) should be offered or receive analgesia, according to local guidelines (unless documented reasons not to)	
a. 50% within 20 mins of arrival or triage whichever is the earliest.	 Aspirational
b. 100% within 60 mins of arrival or triage whichever is the earliest.	 Developmental
4) 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic	 Developmental
5) If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes	 Developmental

About this report

Notes about the results

The **median** value of each indicator is that where equal numbers of participating EDs had results above and below that value. The median figures in the summary table may differ from other results quoted in the body of this report which are mean (average) values calculated over all audited cases.

The **lower quartile** is the median of the lower half of the data values.

The **upper quartile** is the median of the upper half of the data values.

Understanding the different types of standards



Fundamental: need to be applied by all those who work and serve in the healthcare system. Behaviour at all levels and service provision need to be in accordance with at least these fundamental standards. No provider should provide any service that does not comply with these fundamental standards, in relation to which there should be zero tolerance of breaches.



Developmental: set requirements over and above the fundamental standards.



Aspirational: setting longer term goals.

For definitions on the standards, refer to appendix.



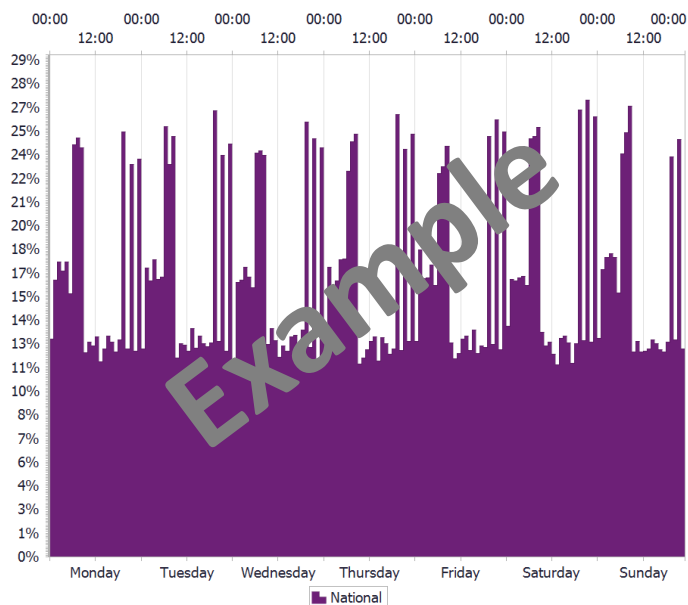
Quality Improvement Project

This symbol identifies an area that would be a good topic nationally for a QIP. Local QIP priorities may vary depending on performance.

Understanding the charts

There are different types of charts within this report to present the data. The example graphs below show the type of charts you will encounter.

Time and date



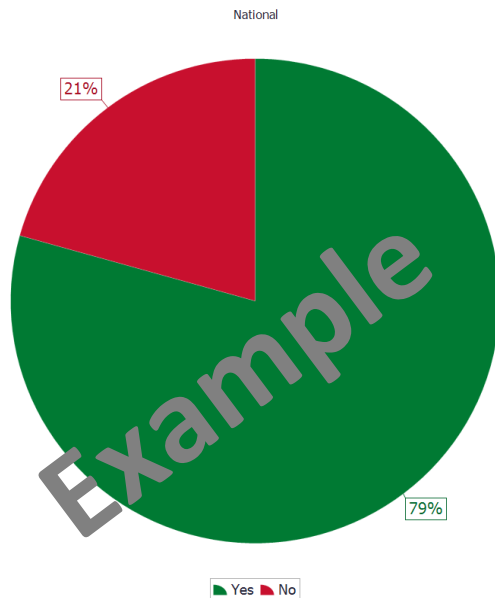
This chart shows the day and time of patient arrivals. Higher bars show when a lot of patients are arriving in the ED, whereas lower bars show quieter arrival times.

Stacked Bar Chart



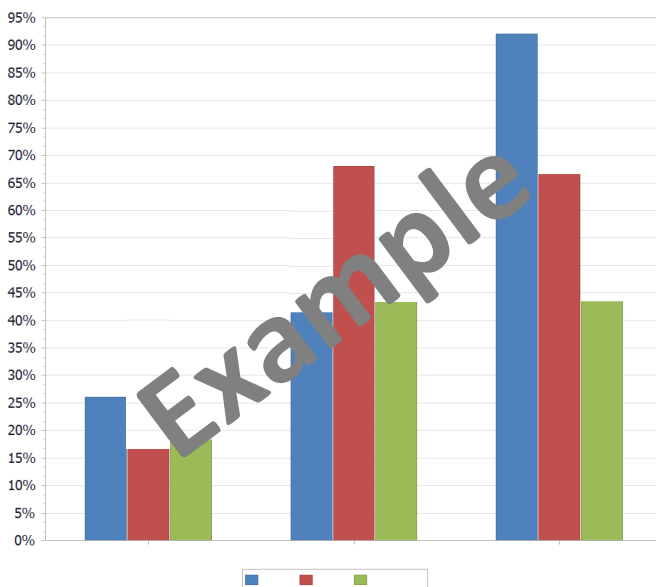
Stacked bar charts show the breakdown of a group nationally. These are used when it will be helpful to compare two groups side by side, for example comparing local data with the national data.

Pie Charts



Pie charts show the breakdown of a group nationally. They help you understand the composition of a sample and which subgroups are largest.

Clustered Column Charts

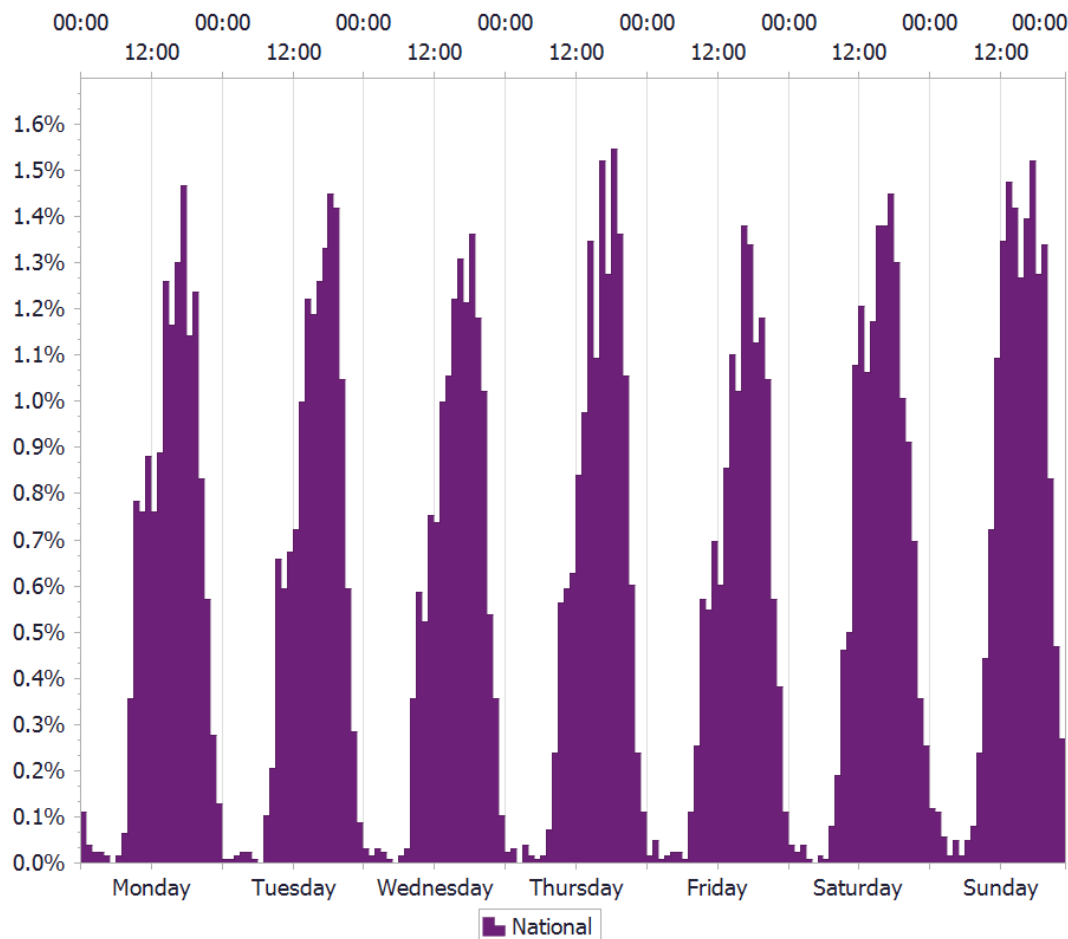


Clustered column charts show the breakdown of a group nationally. They help you understand the composition of a sample.

Section 1: Casemix

National casemix and demographics of the patients

Q2) Date and time of arrival – all patients



Sample: all patients. (n = 12621)

This graph demonstrates the presentation of children (between the ages of 5 and 15) presenting to the ED throughout the week in moderate or severe pain and with a fracture to the clavicle, shoulder, humerus, elbow, forearm, wrist, ankle, tibia, fibula or femur.

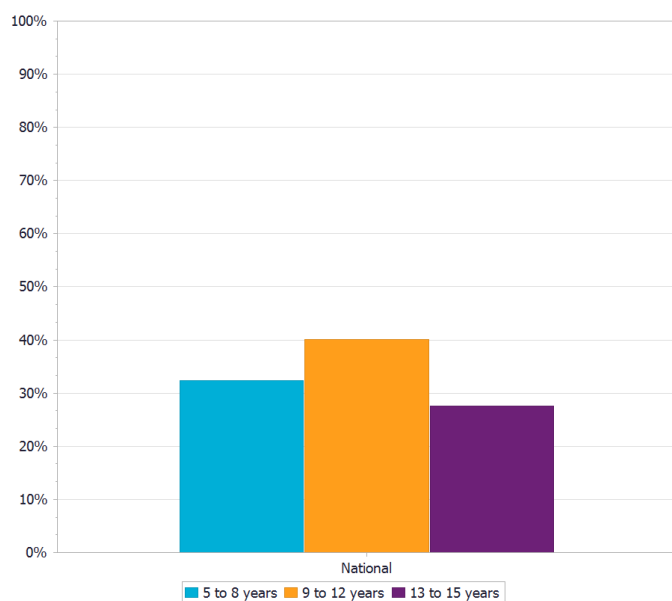
The attendance is broadly regular throughout the week with slightly more patients in the evening on Thursdays and during the days at the weekends.

The increase at the weekend is likely due to increased sports and leisure activities at these times leading to an increase in injuries. The daily peaks appear to be in the evenings after school and could also be related to after school activities or to accidents in the course of going home, however the audit did not collect this data.

Q3) Age Group

Sample: all patients (n=12621)

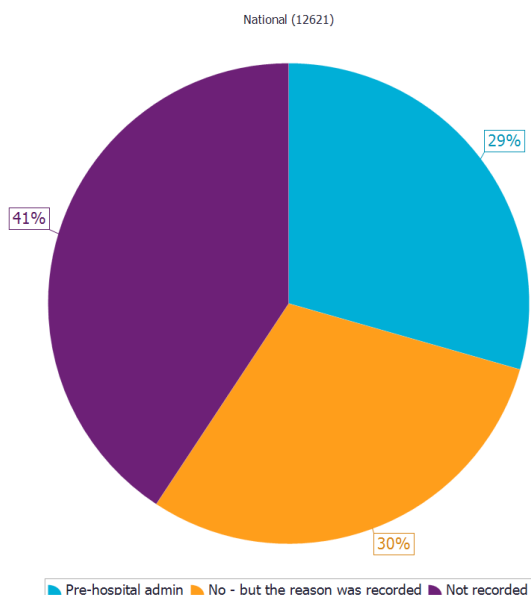
The chart shows a roughly equal age group breakdown of patients attending the ED. The third group, 13-15 years is a smaller age band than 5-8 years or 9-12 years.



Section 2: Pre-hospital care

This section gives details about pre-hospital care.

Q4) Was analgesia administered pre-hospital?



Sample: all patients (n=12621)

The pie chart shows whether analgesia was given prior to attending the hospital.

Analgesia was given in 29% of patients, and not given but the reason recorded in 30%. There is often a view that analgesia should not be given until someone reaches hospital. This is not the case and analgesia should be given as soon as possible, by parents, carers or ambulance crews.

Concerningly, there was no recording of whether analgesia was given pre-hospital in 41% of cases. This leaves the potential for patient safety issues where further medication could be given by hospital staff leading to medication errors or overdose.

It is recommended that the administration of analgesia pre-hospital is documented in all notes.

Section 3: Pain and analgesia

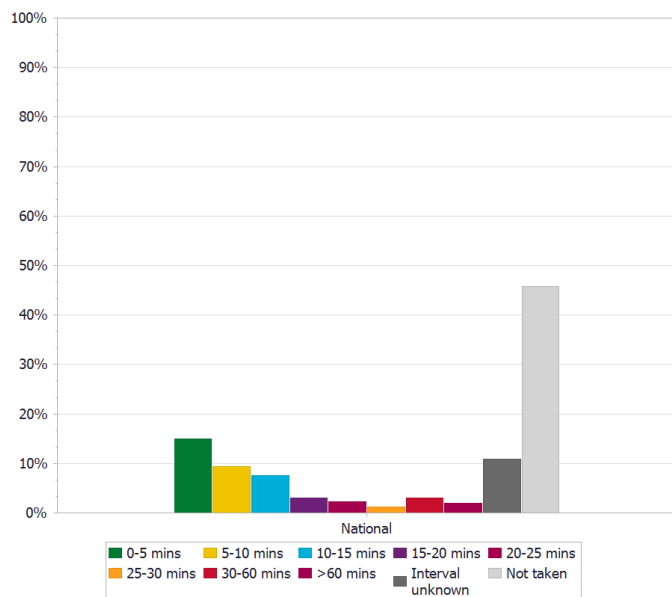
Q5) Was a pain score taken on arrival (within 15 minutes)

Sample: all patients (n=12621)

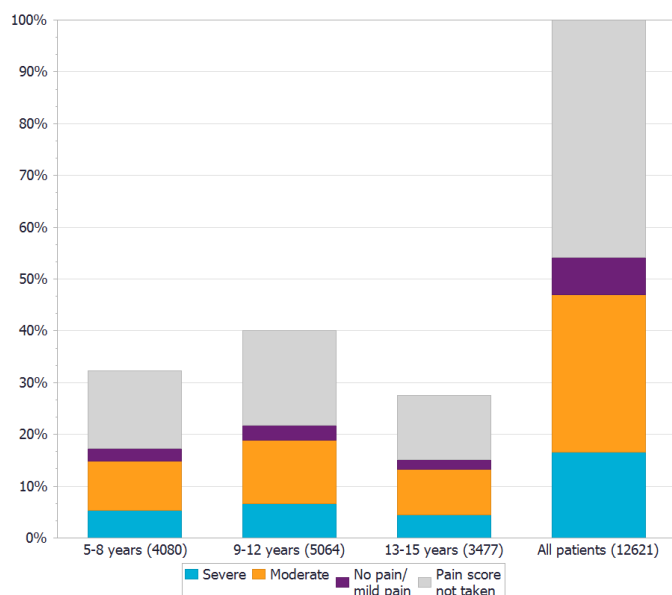
(F) STANDARD 1 100%: Pain score is assessed within 15 minutes of arrival.

This chart shows the speed of taking a pain score and assessing pain level. The pain score is a reliable and validated method of assessing the degree of pain a child is in and gives an indication of the analgesia requirement. The pain score should be assessed on arrival (defined as within 15 minutes of arrival or triage).

For those children who had a pain score, it is taken in 15 minutes in the majority of cases. This is likely to be performed by nursing staff at the initial assessment. A pain score was not taken in 45% of patients and in approximately 10% the time was not documented.



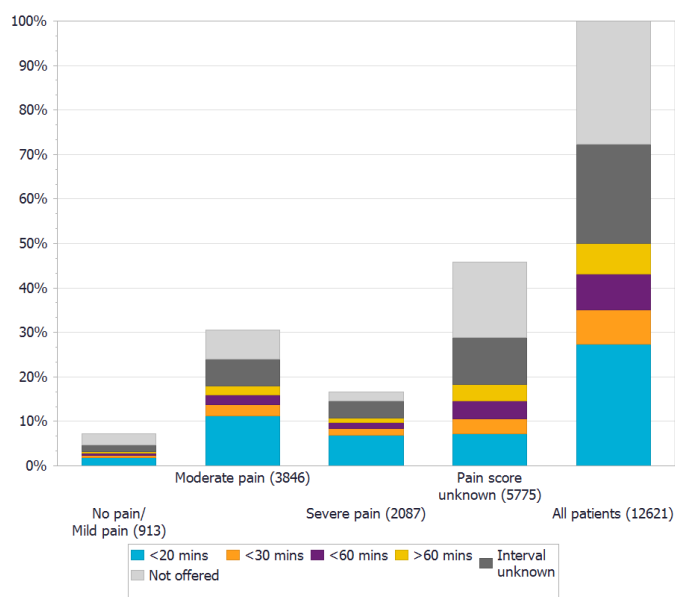
What was the pain score on arrival?



Sample: all patients (n=12621)

This chart looks at the pain score level of patients on arrival.

Looking across the age groups, there is a similar distribution of documented pain scores, with severe pain occurring in approximately 1/5 of cases within each age group.

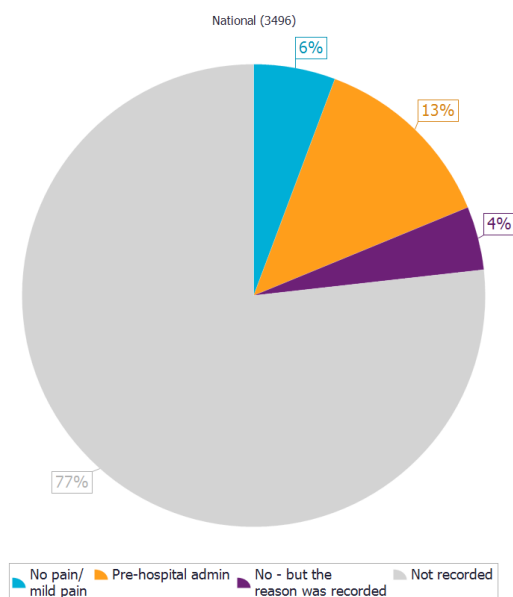
Q6) Was analgesia **offered** in the ED?

Sample: all patients (n=12621)

This is pain score vs offered analgesia (Q5 vs Q6 time and 'yes' vs 'no').

The chart shows the speed of offering analgesia in patients grouped by initial pain score. Recognising that pain score should be assessed within 15 minutes then realistically pain relief should be offered after this, so the times reflect this target. i.e. within 20, 30, and 60 minutes from arrival.

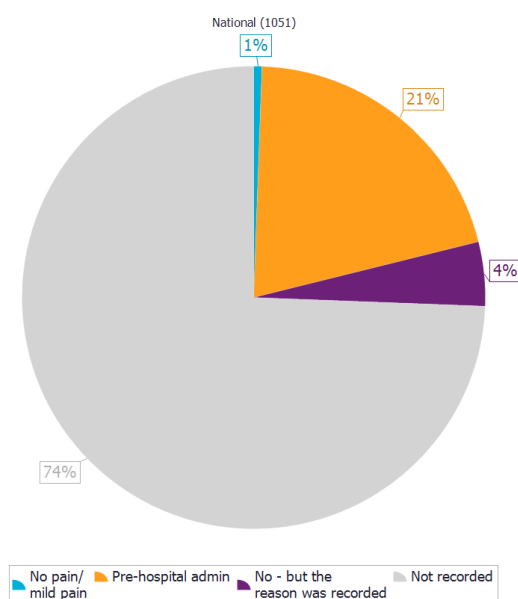
As would be expected the majority of children with severe pain were offered analgesia with over half documented as receiving this within an hour, similarly for moderate pain levels. Looking at all patients almost $\frac{3}{4}$ were offered analgesia whilst in the department. This audit standard is determined by the time of the action. In many cases the time has not been documented. Having electronic systems in place will help document time more accurately and allow for monitoring of quality improvement processes.

Why analgesia **was not offered** in the ED?

Sample: excluding Q6 (n=3496)

(D) STANDARD 5 100%: If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.

In this audit in over ¾ of cases where analgesia was not offered (27% of all cases) the reason was not documented. It is not clear why analgesia is not offered to children, whether it is assumed they do not require it or the need is overlooked. Children can be stoical and may not overtly demonstrate that they are in pain. A pain score aids the pain assessment and should be augmented with verbal offering of analgesia.

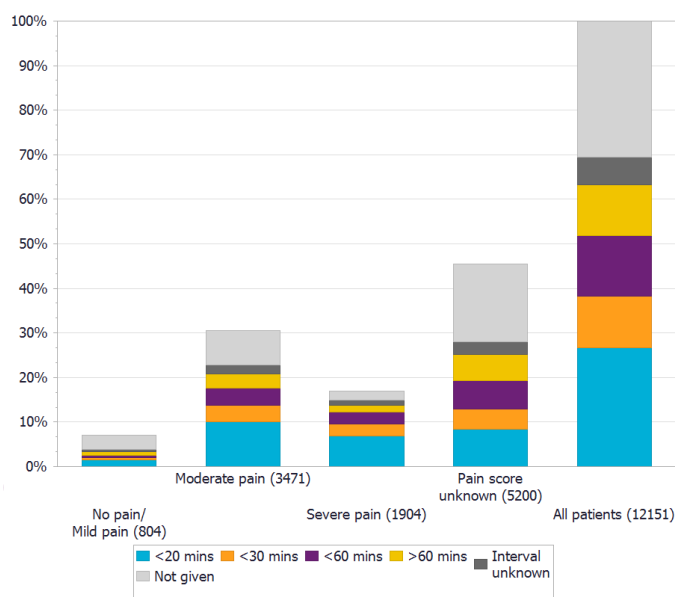
Why analgesia **was not offered** in the ED for **severe and moderate pain**?

Sample: Moderate and severe Q5 and excluding yes to Q6 (n=1051)

(D) STANDARD 5 100%: If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.

75% of patients with moderate or severe pain, for which no analgesia was offered, no reason was recorded.

QIP Again, it is not clear why this occurs, and this should be investigated in departments where this presents to facilitate improvement.

Q7) Was analgesia **administered** in the ED?

Sample: all patients excluding Q7= no but the reason was recorded (n=12151)

This chart shows time to analgesia and closely mirrors the time to offered analgesia in the graph above, albeit proportionally longer times which will be a function of the time taken to get and administer the medication after prescribing it.

Specifically, for severe pain approximately 70% received analgesia within 1 hour and for moderate pain this is 60%.

There are some cases where the giving of analgesia was not recorded. This has patient safety consequences and where it occurs should be addressed.

This chart shows the time in which analgesia was administered to patients, grouped by the initial pain score. Both standards were not achieved across the board.

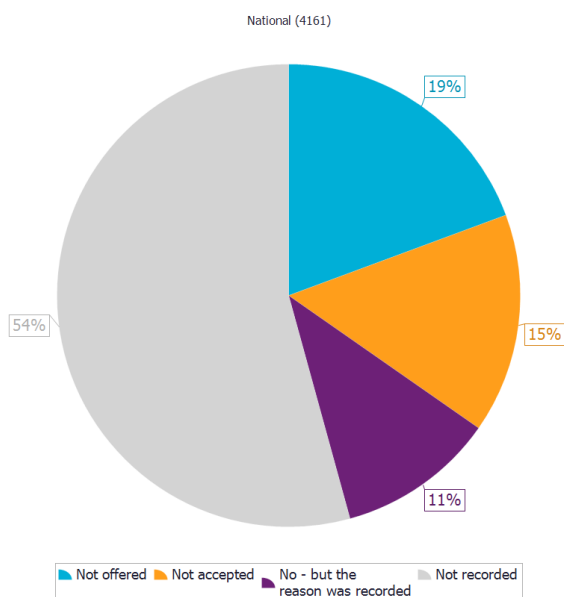
STANDARD 2: Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia in accordance with local guidelines (unless documented reason not to)

- (a) 50% within 20 mins of arrival or triage whichever is the earliest. **(A)**
- (b) 75% within 30 mins of arrival or triage whichever is the earliest. **(D)**
- (c) 100% within 60 mins of arrival or triage whichever is the earliest. **(F)**

STANDARD 3: Patients with moderate pain (pain score 4 to 6) should receive appropriate analgesia in accordance with local guidelines (unless documented reason not to)

- (a) 50% within 20 mins of arrival or triage whichever is the earliest. **(A)**
- (b) 100% within 60 mins of arrival or triage whichever is the earliest. **(D)**

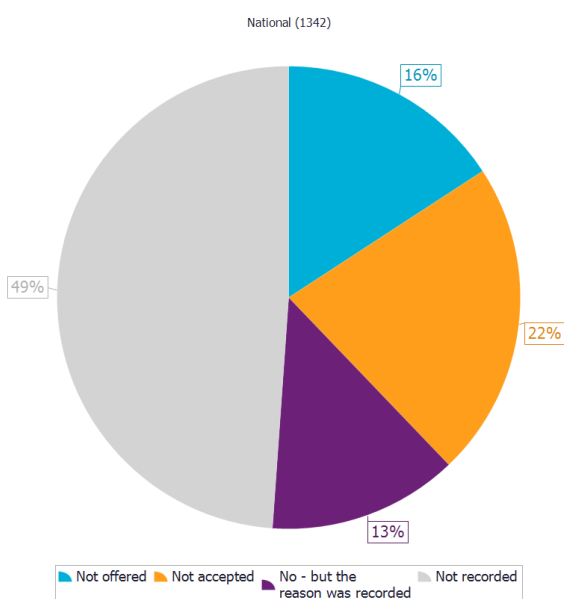
Giving analgesia for pain, as determined by the quality standards above, shows that where the analgesia is offered 50% of the time within 20mins (as in the charts above), administration can be delayed, and the targets were not achieved. There is a worrying proportion of children who are not receiving analgesia despite a documented pain score, approximately 12% in severe pain and 28% in moderate pain. This is further looked at in the following charts.

Why analgesia **was not administered** in the ED?

Sample: Q7=no (n=4161)

This chart looks at the reasons why analgesia was not offered to patients in the ED.

This is the combined data and in over half of cases there is no reason recorded for not giving analgesia.

Why analgesia **was not administered** in the ED for **severe** and **moderate** pain?

Sample: moderate and severe to exclude Q7 yes's (n=1342)

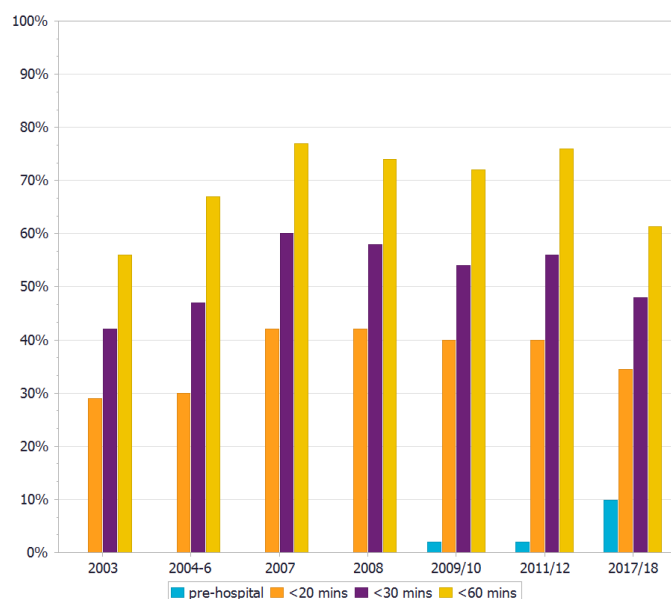
The lack of documentation as to why analgesia was not given persists for children with documented severe or moderate pain, for approximately 650 children it was not recorded and a further 16% it was not offered.

Administration of analgesia comparison over time – **moderate and severe**

Sample: Q5= moderate and severe (n=5933)

This chart shows the proportion of patients who received analgesia for the current audit period and the previous six audits.

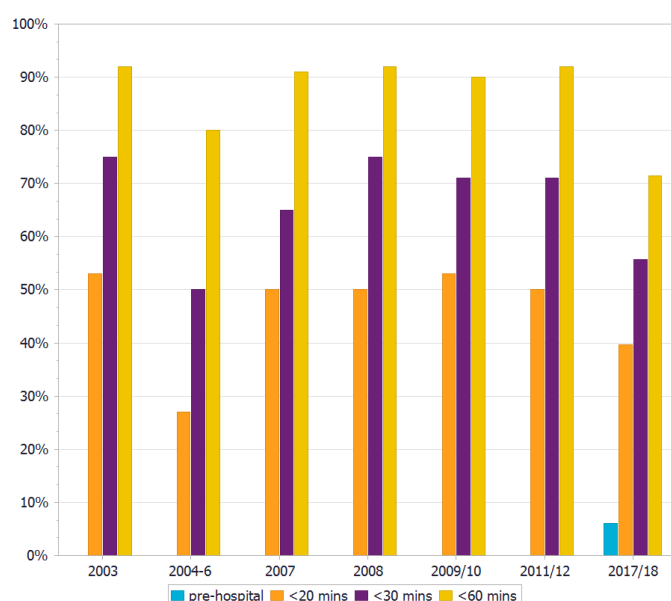
The graph shows that although more children are receiving pre-hospital analgesia than in previous audits, fewer children are receiving analgesia in <60 minutes in the hospital. This is likely a reflection of the underlying pressures that EDs in the NHS are under causing delays in times to be triaged, seen and assessed and administration of medication.

How promptly after arrival was analgesia administered for patients in **severe pain**?

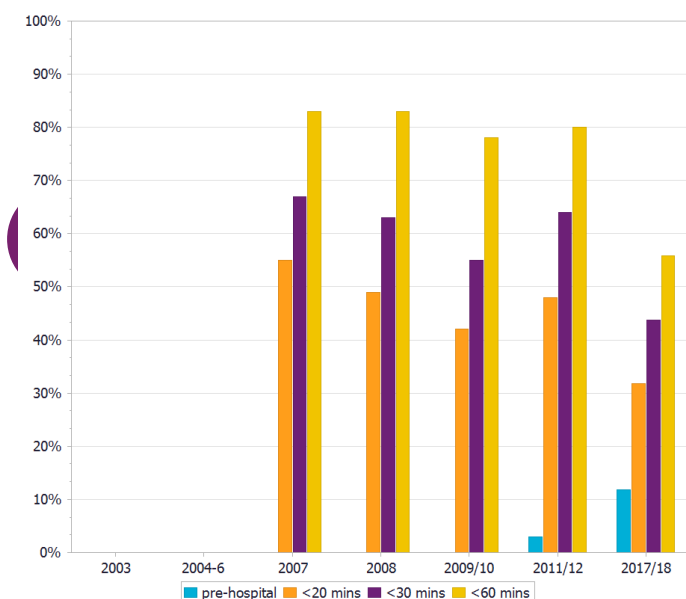
Sample: Q5= severe pain (n=2087)

This chart shows the proportion of patients reporting **severe pain** who received analgesia for the current audit period and the previous six audits.

This reduction in the adherence to RCEM quality standards is marked for those in severe pain with a clear drop in the times to analgesia admission.



How promptly after arrival was analgesia administered for patients in – **moderate pain**?

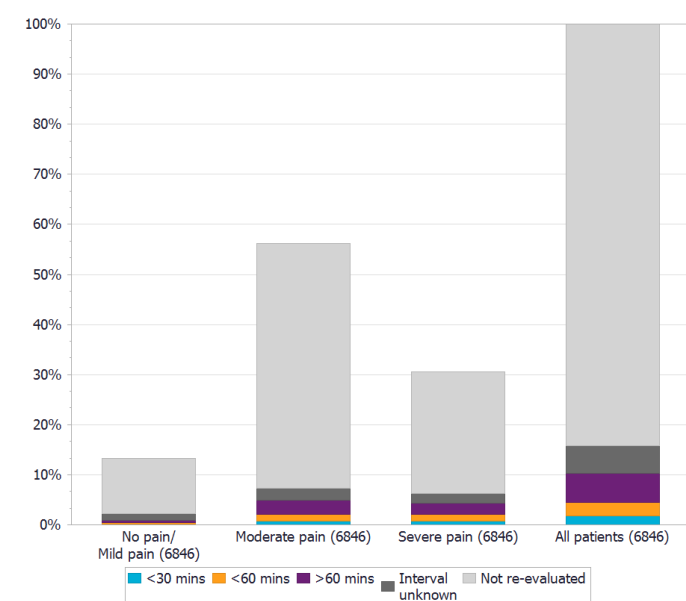


Sample: Q5=moderate pain (n=3846)

This chart shows the proportion of patients reporting **moderate pain** who received analgesia for the current audit period and the previous six audits.

As for severe pain, this year's audit shows that children in moderate pain are not receiving timely analgesia compared to previous years.

Q8 Was pain score re-evaluated in the ED?

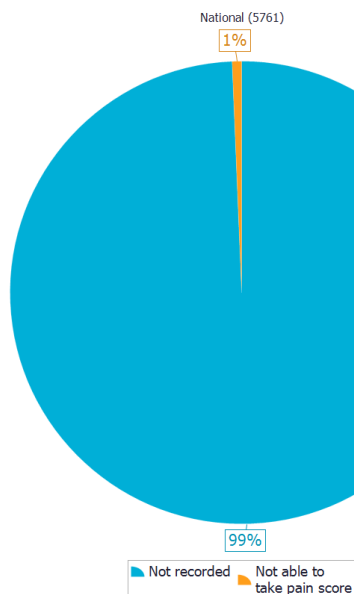


Sample: Q5=yes (n=6846)

This chart looks at whether analgesia was re-evaluated whilst the patient was in the ED. It is broken down by the patient's initial pain score for those who had one taken.

Once analgesia is given the pain should be reassessed to ensure that adequate analgesia has been administered. The pain score aids this evaluation. In the majority (85%) of cases in this audit there was no re-evaluation of the pain score and where it was re-evaluated the time of re-evaluation was not recorded so the standard of 're-evaluation within 1 hour' could not be clearly audited against. On a positive note there is some documentation of re-evaluation of pain level or score and this is an area for Quality Improvement.

There may be learning from those EDs that have re-evaluated pain scores that could be shared to help other departments improve their management of pain in children.

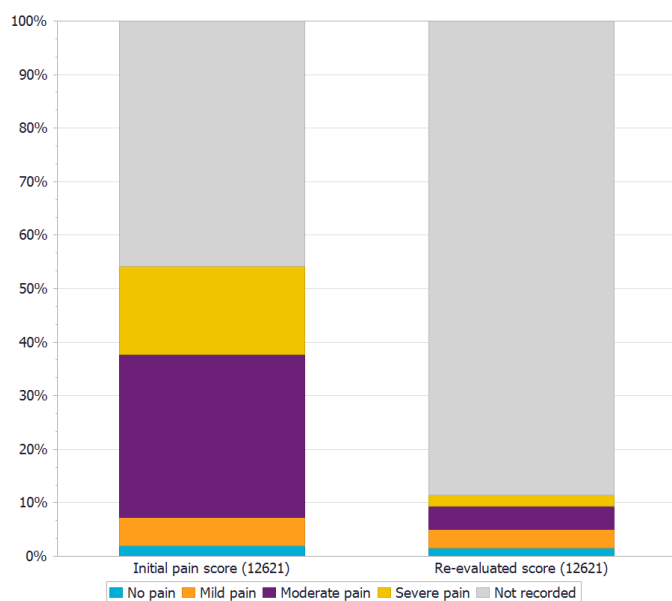
Why pain score was **not re-evaluated** in the ED?

Sample: Q5=yes AND Q8=no (n=5761)

This chart looks at why analgesia was not re-evaluated in the ED.

There was no documentation as to why the pain score was not re-evaluated.

This chart shows the change in pain score from the first assessment to re-evaluation.

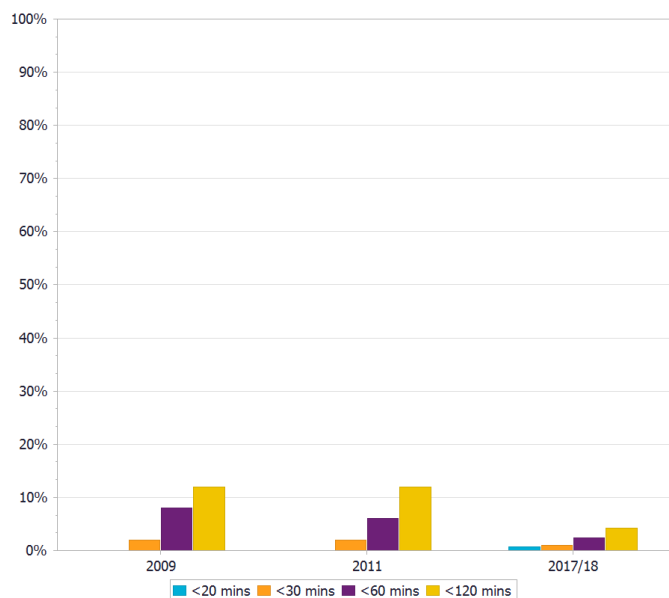


Sample: All patients (n=12621)

Of the 12% of children who had a pain score re-evaluated there are still children in severe pain. This iterates the importance of reassessment and facilitating the administration of further analgesia.

Re-evaluation of pain score comparison over time – **all patients**

QIP

*Sample: all patients (n=12621)*

This chart shows the timelines of analgesia re-evaluation for the current audit period, and in the two previous audits.

Where in previous years the pain score was re-evaluated and in some cases in a timely fashion, it is evident this has stopped completely this year.

There may be many reasons for this, for example, immense pressure on ED capacity across UK departments.

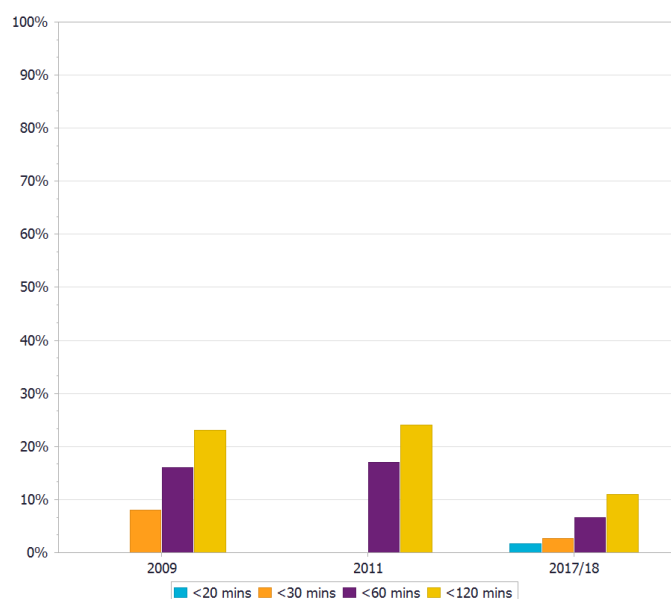
Given that when reassessed pain scores often remain high, this has implications on the quality of care for patients and should be an area EDs look to improve. EDs should look to improve by learning from those departments that manage to do this well and exploring within their teams what the issues that need to be addressed are.

Assessment of pain in children and documentation is notoriously poor as this audit shows and is an area of concern.

Re-evaluation of pain score comparison over time – **severe pain***Sample: Q5= severe pain (n=2087)*

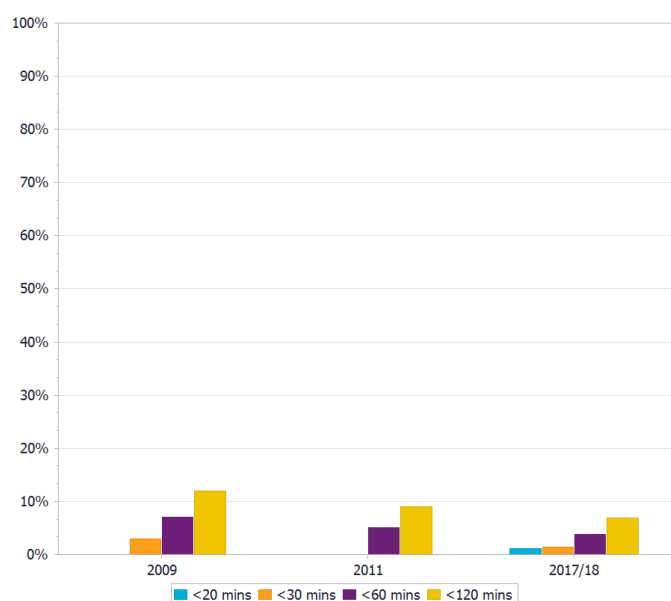
This chart shows the timelines of analgesia re-evaluation for patients in severe pain for the current audit period, and in the two previous audits.

As noted above, this year's audit shows no clear documentation of re-evaluation of pain. There is no change in the situation for severe pain or moderate pain (see below).

Re-evaluation of pain score comparison over time – **moderate pain***Sample: Q5= moderate pain (n=3846)*

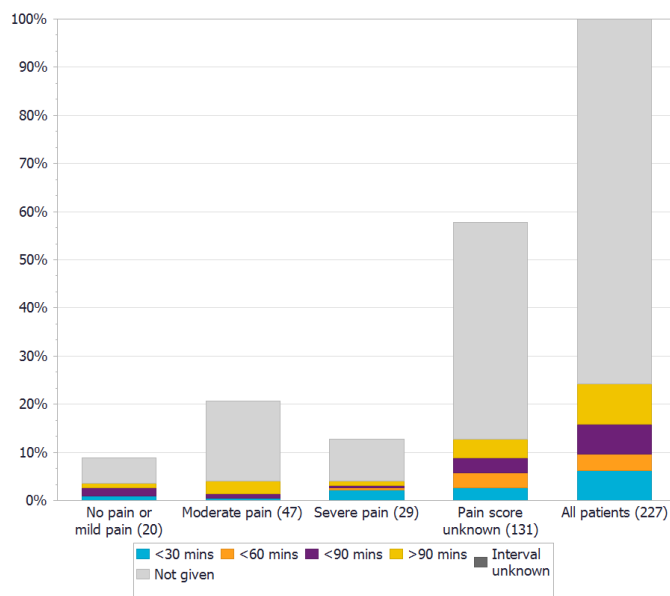
This chart shows the timelines of analgesia re-evaluation for patients in moderate pain for the current audit period, and in the two previous audits.

As noted above, this year's audit shows no clear documentation of re-evaluation of pain.



Q9) Was a second dose of analgesia administered in the ED?

QIP

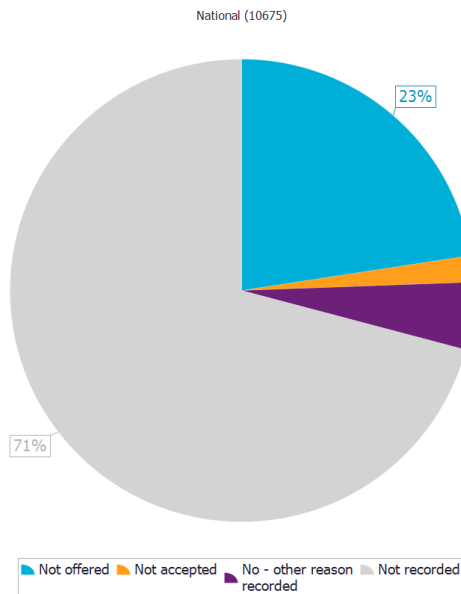


Sample: All patients Q7=yes (n=227)

This chart shows the speed of analgesia administration following the initial dose, in patients grouped by their initial pain score.

Despite pain scores not been recorded, further analgesia was given in some children. Almost a 1/3 of children required further analgesia and as expected this was required more frequently for those that had presented with severe pain. It is important to note that a second dose of analgesia was required for those without pain scores (In 1/5 approximately). The thought arises that if the pain score had been taken initially, would adequate analgesia have been given in the first instance, saving time and resources?

Why a second dose of analgesia was not administered in the ED?

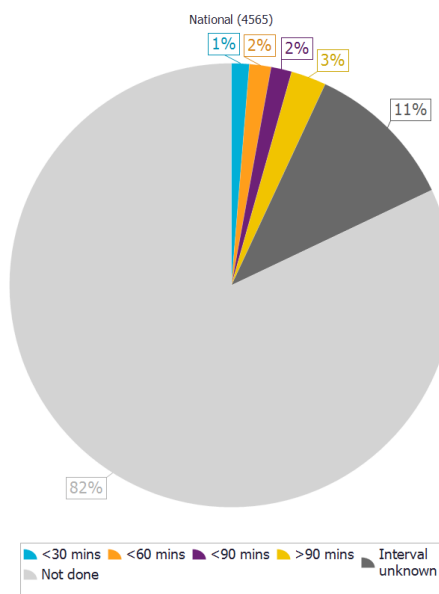


Sample: Q9 No answers (n=10675)

This chart looks at why a second dose of analgesia was not administered in the ED.

For those patients who did not receive further analgesia, the reason for this was not recorded in the majority of cases. In many cases the patients pain would have been adequately controlled, but the possibility that many of these children continued to have pain cannot be denied.

Was the pain score re-evaluated and actioned within 60 minutes of receiving the first dose of analgesia?



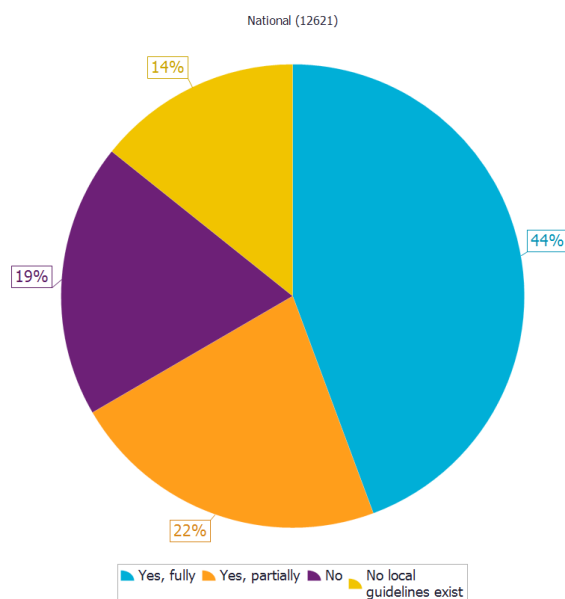
Sample: Q5=moderate or severe and Q7=yes, excluding Q8 = not able to take pain score (n=4565)

STANDARD 4 (D): 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic.

Looking specifically at children with severe or moderate pain, only 19% had a pain score re-evaluated and only 3% had this documented within an hour. It is likely that the 14% here represented children with more overtly significant pathology.

Q10) Was analgesia in accordance with local guidelines?

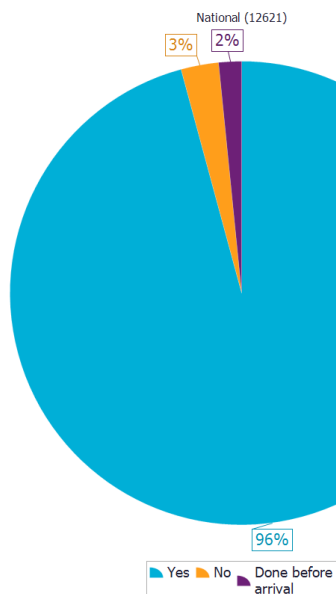
QIP

*Sample: all patients (n=12621)*

There is a small proportion (14%) of hospitals without local guidelines. For those that do use local guidelines, less than half followed them fully. Without a level baseline, such as a pain score, it is difficult to use a guideline that requires categorisation of pain level into mild, moderate and severe pain. Most local guidelines, as do those from RCEM, rely on a clear documented assessment of pain level and recommend analgesia accordingly. It is therefore not surprising that the guidelines are not fully followed.

Section 4: Treatment and outcomes

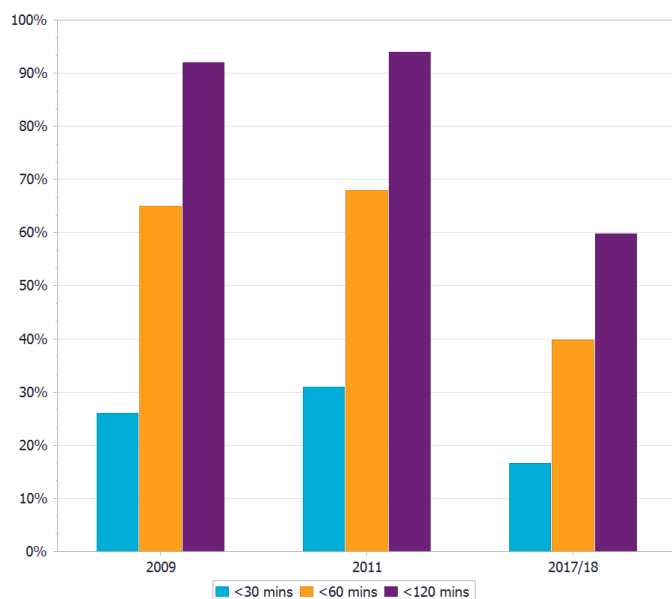
Q11) Was an x-ray completed whilst patient was in the ED?



Sample: all patients (n=12621)

The audit asked for the outcomes for these children, an x-ray was determined necessary in nearly all patients. When this is compared with the proportions who received analgesia or had a pain score at assessment, the number of x-rays required would suggest that more children were in pain.

How quickly did the patient go to X-ray?



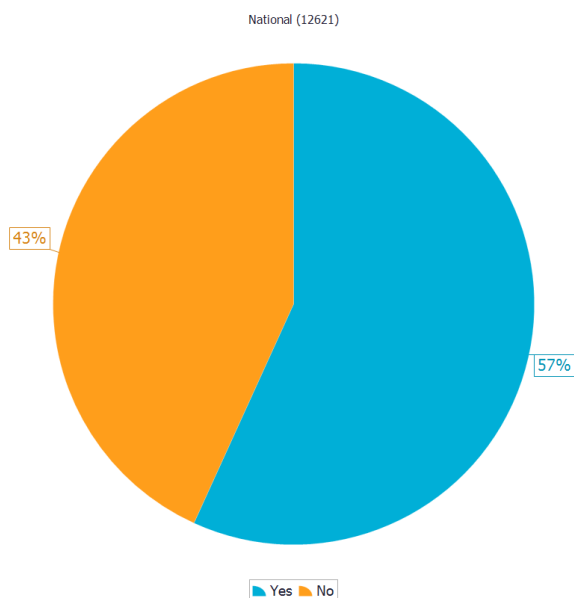
Sample: all patients (n=12621)

This chart shows the time to x-ray for the current audit period, and in the two previous audits.

As in the time to administration graph earlier there has been a drop off in times to x-ray, mirroring pressure on capacity in the majority of EDs across the country in the last year.

Q12) Is there documented evidence that non-accidental injury was considered in the ED?

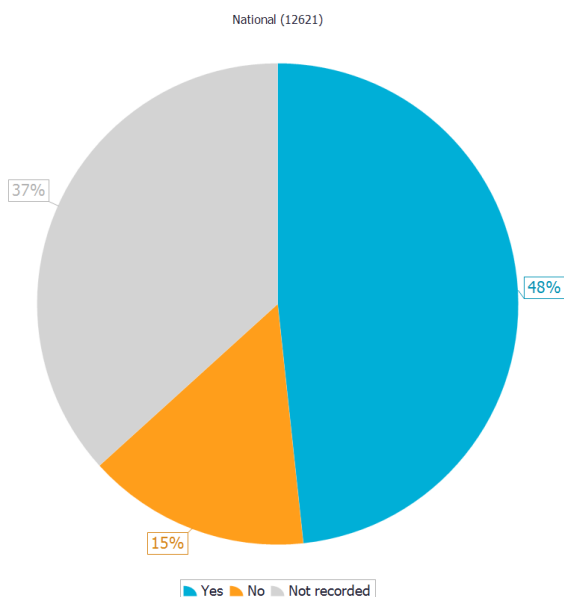
QIP



Sample: all patients (n=12621)

For those departments with electronic systems this is becoming a mandatory field. The possibility of NAI should be considered in all children who present to the ED whether they have sustained an injury or not and this consideration should be documented.

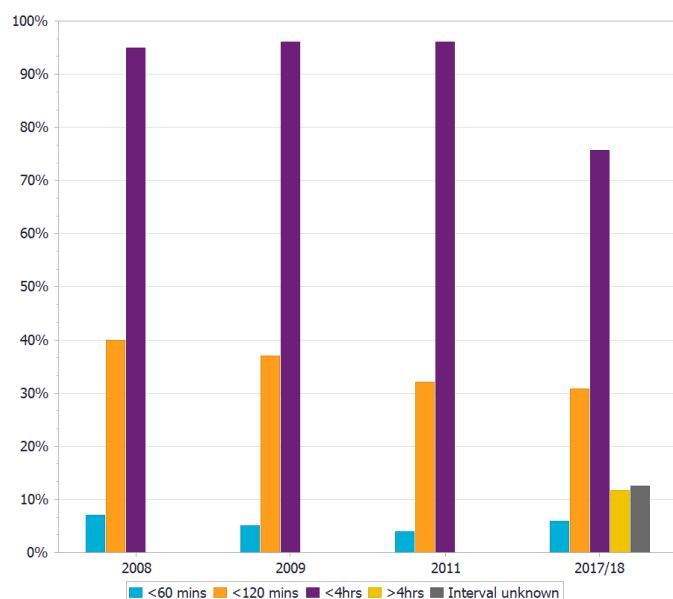
Q13) Was discharge analgesia advice given?



Sample: all patients (n=12621)

Discharge advice is good practice and should be recorded when given. It was given in half of the cases, although the audit did not specify whether discharged home or whether admitted to the ward where the advice would be different.

Q14) Time at which the patient left the ED



Sample: all patients (n=12621)

This graph confirms the increased pressures the departments have been under in the last year with patients 'breaching' the 4-hour target to be seen. There has been a slight increase in those been discharged earlier, less than 1 hour, and this could be a reflection of new streaming pathways in EDs such as to urgent care centres, minor injury units or being seen by Advanced and Emergency Care Practitioners or equivalent.

Analysis

One third of children in pain from fractures received a pain score assessment within 15 minutes of arrival. This shows the vital role of nursing staff who are often responsible for the assessment of pain during the initial assessment or triage.

There is an overall need for improvement in documentation of pain assessment in children, both in recording pain scores as well as in the safety aspect of recording time of administration of analgesia to avoid overdose. This could be achieved by utilising existing technologies (e.g. electronic observations and electronic record systems) to prompt staff to record pain scores in a similar way to current improved prompts for sepsis.

In addition, there is a need for improvement in re-assessment of children's pain following initial management (e.g. administration of analgesia). This mirrors a department wide need for documentation of re-review following initial management plans. This could be facilitated within existing systems e.g. requiring clinicians to complete a 2nd review of patients including repeat pain scores prior to them being able to be discharged from the department.

Encouraging and empowering children and their parents to self-report pain to staff within the emergency department may help to improve recognition of pain severity. This could be achieved with local campaigns of visual or written prompts within departments. This may also improve education on the administration of analgesia prior to arriving in the emergency department.

Limitations

A limitation is that this audit included only patients presenting limb fractures and not all painful conditions. EDs may wish to conduct a local audit including other paediatric patients.

A further limitation is that the age range started at 5-year olds and the assessment of pain in the non-verbal and younger children has not been addressed. There are pain score tools for this age group and EDs may consider auditing this age group.

Finally, future research efforts may wish to look at a wider section of the paediatric urgent and emergency care e.g. Walk in Centres, GP out of hours and check whether these standards should inform a uniform paediatric assessment process.

Summary of recommendations

1. It is recommended that the administration of analgesia pre-hospital is documented in the notes, to prevent medication errors and ensure patient safety.
2. It is recommended that pain level is assessed and documented using a pain score. Staff are trained and aware of how to use pain scores.
3. It is recommended that departments investigate utilising the existing systems, such as nurse led prescribing (PGDs) to ensure timely administration and documentation of analgesia to children with moderate or severe pain.
4. It is recommended that departments develop a system to ensure re-evaluation of pain after analgesia. Such mechanisms may empower parents and children to self-report pain and assist in re-evaluation of efficacy of analgesia in a patient-centric timeframe.

Using the results of this audit to improve patient care

The results of this audit should be shared with all staff involved in the assessment and management of children in pain. Although this audit looked at the specific conditions of limb fractures, the issues of using a pain score, giving analgesia in a timely fashion and re-evaluation are relevant to all children with painful conditions who present to the Emergency Department.

Discussing the results of this audit with colleagues is a good way of demonstrating the ED's commitment to improving care. Engaging staff in the action planning process will lead to more effective implementation of the plan.

EDs may wish to consider using a rapid cycle audit methodology, which can be used to track performance against standards, as a tool to implement the action plan. For further resources, please visit the [RCEM Quality Improvement webpage](#).

Further Information

Thank you for taking part in this audit. We hope that you find the results helpful.

If you have any queries about the report, please e-mail audit@rcem.ac.uk or phone 020 0674812.

Details of the RCEM Clinical Audit Programme can be found under the [Current Audits section of the RCEM website](#).

Feedback

We would like to know your views about this report and participating in this audit. Please let us know what you think by completing our feedback survey:

www.surveymonkey.co.uk/r/RCEMaudit17

We will use your comments to help us improve our future audits and reports.

Useful Resources

- Site-specific report – available to download from the [clinical audit website for registered users](#)
- Site-specific PowerPoint presentation – developed to help you disseminate your site-specific audit results easily and efficiently – available to download from the [clinical audit website for registered users](#)
- Local data file – a spreadsheet that allows you to conduct additional local analysis using site-specific data for this audit. Available to download from the [clinical audit website for registered users](#)
- [National data file](#) – you can also access data from other EDs to customise your peer analysis

Report authors and contributors

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Appendices

Appendix 1: Audit questions

Patient details

Q1	Reference (do not enter identifiable data)	
Q2	Date and time of arrival or triage, whichever is earlier (Use 24-hour clock e.g. 11.23pm = 23:23)	dd/mm/yyyy HH:MM
Q3	Age of patient	<ul style="list-style-type: none"> • 5-8 years • 9-12 years • 13-15 years

Pre-hospital

Q4	Was analgesia administered pre-hospital?	<ul style="list-style-type: none"> • Yes • No • Not recorded
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Pain and analgesia

		Yes (select option where applicable)	Time (leave blank if unknown)	Date (for use if different to date of admission)	No (select option where applicable)
Q5	Was a pain score taken on arrival (within 15 mins?)	<ul style="list-style-type: none"> • No Pain/mild pain • Moderate (4-6) • Severe (7-10) 	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> • Not recorded • Not able to take pain score
Q6	Was analgesia offered in the ED?	<ul style="list-style-type: none"> • Yes 	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> • No pain/mild pain • Pre-hospital admin • No – but the reason was recorded • Not recorded
Q7	Was analgesia administered in the ED?	<ul style="list-style-type: none"> • Yes 	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> • Not offered • Not accepted • No – but the reason was recorded • Not recorded
Q8	Was pain score re-evaluated in the ED?	<ul style="list-style-type: none"> • No Pain/mild pain • Moderate (4-6) • Severe (7-10) 	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> • Not recorded • Not able to take pain score
Q9	Was a second dose of	<ul style="list-style-type: none"> • Yes 	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> • Not offered • Not accepted

	analgesia administered in the ED				<ul style="list-style-type: none"> No – but the reason was recorded Not recorded
Q10	Was analgesia in accordance with local guidelines?				<ul style="list-style-type: none"> Yes, fully Yes, partially No, it was not No local guidelines exist

Treatment

Q11	Was an x-ray completed whilst patient was in the ED?	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> Yes No Done before arrival
Q12	Is there documented evidence that non-accidental injury was considered in the ED?			<ul style="list-style-type: none"> Yes No
Q13	Was discharge analgesia advice given?			<ul style="list-style-type: none"> Yes No Not recorded
Q14	Time at which the patient left the ED:	HH:MM	dd/mm/yyyy	<ul style="list-style-type: none"> Not recorded

Notes

Appendix 2: Participating Emergency Departments

Aberdeen Royal Infirmary	Glan Clwyd Hospital
Addenbrooke's Hospital	Glangwili General Hospital
Airedale General Hospital	Gloucestershire Royal Hospital
Alder Hey Hospital	Good Hope Hospital
Alexandra Hospital	Grantham & District Hospital
Antrim Area Hospital	Hairmyres Hospital
Arrowe Park Hospital	Harrogate District Hospital
Barnet Hospital	Heartlands Hospital
Barnsley Hospital	Hereford County Hospital
Basildon University Hospital	Hillingdon Hospital
Bassetlaw Hospital	Hinchingbrooke Hospital
Bedford Hospital	Homerton University Hospital
Birmingham Children's Hospital	Horton Hospital
Blackpool Victoria Hospital	Huddersfield Royal Infirmary
Bradford Royal Infirmary	Hull Royal Infirmary
Bristol Royal Hospital for Children	Ipswich Hospital
Bronglais General Hospital	James Paget Hospital
Broomfield Hospital	John Radcliffe Hospital
Calderdale Royal Hospital	Kettering General Hospital
Causeway Hospital	King George Hospital
Chelsea & Westminster Hospital	Kings College Hospital
Cheltenham General Hospital	King's Mill Hospital
Chesterfield Royal Hospital	Kingston Hospital
Chorley and South Ribble Hospital	Leeds General Infirmary
City Hospital (Birmingham)	Leicester Royal Infirmary
Colchester General Hospital	Leighton Hospital
Conquest Hospital	Lincoln County Hospital
Countess of Chester Hospital	Lister Hospital
County Hospital Stafford	Luton and Dunstable University Hospital
Craigavon Area Hospital	Maidstone District General Hospital
Croydon University Hospital	Manor Hospital
Daisy Hill Hospital	Medway Maritime Hospital
Darent Valley Hospital	Milton Keynes Hospital
Darlington Memorial Hospital	Monklands Hospital
Derriford Hospital	Morriston Hospital
Diana, Princess of Wales Hospital	Musgrove Park Hospital
Doncaster Royal Infirmary	Nevill Hall Hospital
Dorset County Hospital	New Cross Hospital
Dr Gray's Hospital	Newham General Hospital
East Surrey Hospital	Noble's Hospital
Eastbourne District General Hospital	Norfolk & Norwich University Hospital
Epsom General Hospital	North Devon District Hospital
Fairfield General Hospital	North Manchester General Hospital
Forth Valley Royal Hospital	North Middlesex University Hospital
Frimley Park Hospital	Northampton General Hospital
Furness General Hospital	Northumbria Specialist Emergency Care Hospital
George Eliot Hospital	Northwick Park Hospital

Ormskirk & District General Hospital	South Tyneside District General Hospital
Peterborough City Hospital	Southampton General Hospital
Pilgrim Hospital	Southend Hospital
Pinderfields Hospital	Southmead Hospital
Poole General Hospital	St George's
Prince Charles Hospital	St Helier Hospital
Princess Alexandra Hospital	St Mary's Hospital
Princess of Wales Hospital	St Marys Hospital (Newport, IOW)
Princess Royal University Hospital	St Peter's Hospital
Queen Alexandra Hospital, PO	St Richard's Hospital (Chichester)
Queen Elizabeth Hospital (Birmingham)	St Thomas' Hospital
Queen Elizabeth Hospital (Gateshead)	Stepping Hill Hospital
Queen Elizabeth Hospital (Woolwich)	Stoke Mandeville Hospital
Queen Elizabeth The Queen Mother Hospital	Sunderland Royal Hospital
Queen's Hospital (Burton)	Tameside General Hospital
Queen's Hospital, Romford	The Cumberland Infirmary
Queen's Medical Centre, Nottingham	The Great Western Hospital
Rotherham District General Hospital	The James Cook University Hospital
Royal Albert Edward Infirmary	The Princess Elizabeth Hospital
Royal Alexandra Children's Hospital	The Queen Elizabeth Hospital (King's Lynn)
Royal Belfast Hospital for Sick Children	Torbay Hospital
Royal Berkshire Hospital	Tunbridge Wells Hospital
Royal Blackburn Hospital	Ulster Hospital
Royal Bolton Hospital	University College Hospital
Royal Bournemouth General Hospital	University Hospital Lewisham (Children)
Royal Cornwall Hospital	University Hospital of North Durham
Royal Derby Hospital	University Hospital of North Tees
Royal Devon and Exeter Hospital (Wonford)	University Hospital of Wales
Royal Free Hospital	University Hospital, Coventry
Royal Glamorgan Hospital	Warrington Hospital
Royal Gwent Hospital	Warwick Hospital
Royal Lancaster Infirmary	Watford General Hospital
Royal London Hospital (The)	West Cumberland Hospital
Royal Manchester Children's Hospital	West Middlesex University Hospital
Royal Oldham Hospital	West Suffolk Hospital
Royal Preston Hospital	Wexham Park Hospital
Royal Stoke University Hospital	Whipps Cross University Hospital
Royal Surrey County Hospital	Whiston Hospital
Royal United Hospital	Whittington Hospital
Royal Victoria Infirmary	William Harvey Hospital
Russells Hall Hospital	Withybush General Hospital
Salford Royal Hospital	Worcestershire Royal Hospital
Salisbury District Hospital	Worthing Hospital
Sandwell General Hospital	Wrexham Maelor Hospital
Scarborough General Hospital	Wythenshawe Hospital
Scunthorpe General Hospital	Yeovil District Hospital
Sheffield Children's Hospital	York Hospital
Solihull Hospital	Ysbyty Gwynedd

Appendix 3: Definitions

Grade definition

F - Fundamental: need to be applied by all those who work and serve in the healthcare system. Behaviour at all levels and service provision need to be in accordance with at least these fundamental standards. No provider should provide any service that does not comply with these fundamental standards, in relation to which there should be zero tolerance of breaches.

D - Developmental: set requirements over and above the fundamental standards.

A - Aspirational: setting longer term goals.

Standards definitions:

Standard	Term	Definition
All	Discharge	Discharge home (or to the patient's usual place of residence) from the ED. Do not include patients discharged from another specialty. Include patients who die in the ED.
2	Fever	Temperature of $\geq 38^{\circ}\text{C}$ at triage/ED arrival, not prior to arrival or subsequently.
3	Unscheduled return	Do not include patients who leave before being seen and then re-attend within 72 hours
3	Unscheduled return	Do not include patients who leave before being seen and then re-attend within 72 hours

Question and answer definitions:

Question	Definition
Q1c-d	Do not include shifts by staff working pre-hospital unless this is part of this trust Do not include non-clinical activity in the clinical shifts e.g. management, teaching (even if on the floor)

Appendix 4: Evidence base for standards

STANDARD	EVIDENCE
1. Pain is assessed within 15 minutes of arrival	<p><u>RCEM Management of Pain in Children July 2017. Best Practice Guideline</u></p> <p>Recognition and alleviation of pain should be a priority when treating ill and injured children. This process should start at the triage, be monitored during their time in the ED and finish with ensuring adequate analgesia at, and if appropriate, beyond discharge. Level 5 evidence.</p> <p><u>NICE Fractures (non-complex): assessment and management (NG38) 2016</u></p> <p>Assess pain regularly in people with fractures using a pain assessment scale suitable for the person's age, developmental stage and cognitive function.</p>
2. Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia in accordance with local guidelines (unless documented reason not to)	
a. 50% within 20 mins of arrival or triage whichever is the earliest.	<p><u>RCEM Management of Pain in Children July 2017. Best Practice Guideline</u></p>
b. 75% within 30 mins of arrival or triage whichever is the earliest.	<p>The RCEM Quality in Emergency Care Committee (QEC) standard of analgesia for moderate & severe pain within 20 minutes of arrival in the ED should be applied to children in all Emergency Departments.</p>
c. 100% within 60 mins of arrival or triage whichever is the earliest.	<p><u>RCEM 2011 Pain in children standard</u></p> <p>Patients in severe pain (pain score 7 to 10) or moderate pain (pain score 4 to 6) receive appropriate analgesia, according to local guidelines or CEM pain guidelines, a. 50% within 20 mins of arrival b. 75% within 30min of arrival c. 100% within 60min of arrival.</p>
3. Patients with moderate pain (pain score 4 to 6) should receive appropriate analgesia in accordance with local guidelines (unless documented reason not to)	
a. 50% within 20 mins of arrival or triage whichever is the earliest.	<p><u>RCEM Management of Pain in Children July 2017. Best Practice Guideline</u></p>
b. 100% within 60 mins of arrival or triage whichever is the earliest.	<p>The RCEM Quality in Emergency Care Committee (QEC) standard of analgesia for moderate & severe pain within 20 minutes of arrival in the ED should be applied to children in all Emergency Departments.</p> <p><u>RCEM 2011 Pain in children standard</u></p> <p>Patients in severe pain (pain score 7 to 10) or moderate pain (pain score 4 to 6) receive appropriate analgesia,</p>

	according to local guidelines or CEM pain guidelines, a. 75% within 30mins of arrival b. 100% within 60mins of arrival.
4. 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic. (Please note standards are reviewed annually. This has been modified since 2011 where this was 75% of patients with moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic).	<p><u>RCEM Management of Pain in Children July 2017. Best Practice Guideline</u></p> <p>Patients with severe or moderate pain should have the effectiveness of analgesia re-evaluated within 60 minutes of the first dose of analgesia. Level 5 evidence.</p> <p><u>NICE Fractures (non-complex): assessment and management (NG38) 2016</u></p> <p>Assess pain regularly in people with fractures using a pain assessment scale suitable for the person's age, developmental stage and cognitive function.</p> <p><u>RCEM 2011 Pain in children standard</u></p> <p>90% of patients with severe pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic.</p>
5. If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.	<p><u>RCEM 2011 Pain in children standard</u></p> <p>If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.</p>

Appendix 5: Calculations

Data cleaning

All submitted data were cleaned centrally to ensure high quality data. To help you understand the potential impact of data cleaning, the following gives details of the situations where data may have been cleaned and how this may affect your results.

The data entry error report was discussed, and the committee decided that records with missing times should not be excluded from the analysis. Where a time category must be allocated (e.g. to assess compliance with the standard), missing times should be allocated to the maximum time category if data indicates that it was performed whilst the patient was in the ED.

Data error	Cleaning undertaken
Data was entered to show something had been done whilst the patient was in the ED (e.g. x-ray), but no time was entered.	<p>Patient record retained in the analysis.</p> <p>Where a time category must be allocated (e.g. to assess compliance with the standard), missing times were allocated to the maximum time category if data indicates that it was performed whilst the patient was in the ED.</p>

Pain in Children analysis plan

Standards, summary chart, summary table

STANDARD	GRADE	Analysis sample	Analysis plan – conditions for the standard to be met	Comparison with previous data
1) Pain is assessed within 15 minutes of arrival	F	All patients	Q5 ≤ 15mins after Q2 (time of arrival)	Not available
2) Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia, according to local guidelines				
a) 50% within 20 mins of arrival or triage whichever is the earliest.	A	Q5 = severe EXCLUDE: Q7 = No – but the reason was recorded	<p>Met: Q7 = 'yes' AND Q7 ≤ 20 mins after Q2 AND Q10='yes, fully' OR 'yes, partially' OR 'no local guidance'</p> <p>Not met: all other cases</p>	Figures provided by RCEM
b) 75% within 30 mins of arrival or triage whichever is the earliest.	D	Q5 = severe EXCLUDE: Q7 = No – but the reason was	<p>Met: Q7 = 'yes' AND Q7 ≤ 30 mins after Q2 AND Q10='yes, fully' OR</p>	Figures provided by RCEM

		recorded	'yes, partially' OR 'no local guidance' Not met: all other cases	
c) 100% within 60 mins of arrival or triage whichever is the earliest.	F	Q5 = severe EXCLUDE: Q7 = No – but the reason was recorded	Met: Q7 = 'yes' AND Q7 <= 60 mins after Q2 AND Q10='yes, fully' OR 'yes, partially' OR 'no local guidance' Not met: all other cases	Figures provided by RCEM
3. Patients with moderate pain (pain score 4 to 6) should be offered or receive analgesia, according to local guidelines				
a) 50% within 20 mins of arrival or triage whichever is the earliest.	A	Q5 = moderate EXCLUDE: Q7 = No – but the reason was recorded	Met: Q7 <= 20 mins after Q2 AND Q10='yes, fully' OR 'yes, partially' OR 'no local guidance' Not met: all other cases	Figures provided by RCEM
b) 100% within 60 mins of arrival or triage whichever is the earliest.	D	Q5 = moderate EXCLUDE: Q7 = No – but the reason was recorded	Met: Q7 <= 60 mins after Q2 AND Q10='yes, fully' OR 'yes, partially' OR 'no local guidance' Not met: all other cases	Figures provided by RCEM
4) 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic.	D	Q5 = moderate OR Severe AND Q7=yes EXCLUDE: Q8 = not able to take pain score	Met: Q8 <= 60 mins after Q7 AND Q9 <= 60 mins after Q7 Not met: all other cases	Not available
5) If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.	D	Q5 = moderate OR Severe EXCLUDE: Q6 = Yes	Met: Q6= No pain/mild pain OR pre-hospital admin OR no – but the reason was recorded Not met: Q6=Not recorded	Figures provided by RCEM

Casemix and pre-hospital

QUESTION	Analysis sample	Analysis plan	Comparison with previous data
Q. date of arrival Q. time of arrival	All	Combine to present data in 1-hour bars as per chart	Not needed
Q3 Age Group	All	Stacked bar showing age range <ul style="list-style-type: none"> • 5-8 years • 9-12 years • 13-15 years 	Not recorded in previous years
Q4 Was analgesia administered pre-hospital?	All	Pie showing: Slice 1: yes, pre-hospital admin Slice 2: no – other reason was recorded Slice 3: not recorded	Not needed

Audit results

QUESTION	Analysis sample	Analysis plan	Comparison with previous data
Q5) Was a pain score taken on arrival (within 15 minutes)	All	Histogram chart of time from 0-5mins, 5-10, 10-15, 15-20, 20-25, 25-30, 30-60, >60mins, interval unknown, not taken	Not needed
What was the pain score on arrival?	All	Bar chart showing: no pain/mild pain, moderate, severe, pain score not recorded v's three age groups.	Not needed
Q6) Was analgesia offered in the ED?	All	Stacked bar chart showing: no pain/mild pain, moderate pain, severe pain, pain score unknown, all patients. Stacks: time from arrival to Q6 offer of analgesia: <20 mins, <30, <60, >60, not offered	Not needed
Why analgesia was not offered in the ED?	<i>Sample: All patients and Excluding Q6 yes</i>	Pie showing: No pain/mild pain, pre-hospital admin, no – other reason was recorded, not recorded	Not needed
Why analgesia was not offered in the ED for severe pain and moderate pain	Moderate and severe Q5 and Excluding yes to Q6	Pie showing: No pain/mild pain, pre-hospital admin, no – other reason was recorded, not recorded	Not needed
Q7) Was analgesia administered in the ED?	Sample: All pts Excluding Q7=no but the pain was recorded	Stacked bar chart showing: Stacks: <20mins, <30, <60, >60, interval unknown. Bars: no pain/ mild pain, moderate, severe, pain score unknown, all pts.	Not needed

Why analgesia was not administered in the ED?	Q7= no	Pie showing: Not offered, not accepted, no other reason recorded Not recorded	Not needed
Why analgesia was not administered in the ED for severe pain and moderate	Moderate and severe: To exclude Q7 yes's	Pie showing: No pain/ mild pain, pre-hospital admin, no other reason was recorded, not recorded	Not needed
Administration of analgesia comparison over time	Moderate and severe (exclude no pain/mild pain).	Stacked bar chart showing: STACKS: pre-hospital, <20mins, <30, <60 BARS: audit years.	Figures provided by RCEM
How promptly after arrival was analgesia administered for patients in severe pain – comparison overtime	Sample Q5= severe pain	Stacked bar chart showing: STACKS: pre-hospital, <20mins, <30, <60 BARS: audit years	Figures provided by RCEM
How promptly after arrival was analgesia administered for patients in moderate pain – comparison overtime	Sample: Q5= moderate pain	Stacked bar chart showing: STACKS: time pre-hospital, <20mins, <30, <60	Figures provided by RCEM
Q8: Was pain score re-evaluated in the ED?	Sample: Q5 = yes	Stacked bar chart showing: STACKS: time <30mins, <60mins, >60mins. Not re-evaluated. No pain or mild pain, moderate pain, severe pain, pain score unknown	Not needed
Why pain score was not re-evaluated in the ED?	Sample: Q5= yes and Q8=no	Pie showing why analgesia was not re-evaluated in the ED: Not recorded, not able to take pain score	All pts
This chart shows the change in pain score from the first assessment to re-evaluation	All patients	Column Chart: STACKS: no pain, mild pain, moderate, severe, not recorded showing initial pain score and re-evaluated score	Not needed
Re-evaluation of pain score over time – all patients	All	Column Chart: STACKS: time <20mins, <30mins, <60mins, <120mins comparison overtime 2009, 2011 and 2017/18	Figures provided by RCEM
Re-evaluation of pain score over time – severe pain	Severe	Column Chart: STACKS: time <20mins, <30mins, <60mins, <120mins comparison overtime 2009, 2011 and 2018/18	Figures provided by RCEM
Re-evaluation of pain score over time – moderate pain	Moderate	Column Chart: STACKS: time <20mins, <30mins, <60mins, <120mins Comparison overtime 2009, 2011 and 2017/18	Figures provided by RCEM
Q9) Was a second dose of analgesia administered in the ED?	Sample: All patients Q7=yes	Stacked bar chart showing: Stacks: <20mins, <30, <60, <90, >90, not given. Bars: no pain/ mild pain, moderate, severe, pain score unknown, all pts.	Not needed

Why a second dose of analgesia was not administered in the ED?	Q9 No answers	Pie Chart Slice 1: Not offered Slice 2: Not accepted Slice 3: No – other reason recorded Slice 4: Not recorded	Not needed
Was the pain score - re-evaluated and actioned within 60 minutes of receiving the first dose of analgesia?	<i>Sample:</i> Q5= <i>moderate or severe AND</i> Q7= <i>yes, excluding</i> Q8= <i>not able to take pain score</i>	Pie Chart 5 slices showing: <30mins, <60mins, <90mins, >90mins and not done, interval unknown.	Not needed
Q10) Was analgesia in accordance with local guidelines	All	Pie Chart Slice 1: Yes, fully Slice 2: Yes, partially Slice 3: No, it was not Slice 4: No local guidelines exist	Not needed

Treatment and outcomes

QUESTION	Analysis sample	Analysis plan	Comparison with previous data
Q11 Was an x-ray completed whilst patient was in the ED?	All	Pie showing: Slice 1: Y Slice 2: N Slice 3: Done before arrival	Not needed
How quickly did the patient go to X-ray	All	Stacked bar chart showing the time to x-ray for the current audit year and previous two audits: 2009/10, 2011/12, 2017/18 Stacks time: <30mins <60mins <120mins	Figures provided by RCEM
Q12) Is there documented evidence that non-accidental injury was considered in the ED?	All	Pie showing: Slice 1: Y Slice 2: N	Not needed
Q13) Was discharge analgesia advice given?	All	Pie showing: Slice 1: Y Slice 2: N Slice 3: Not recorded	Not needed
Q14) Time at which the patient left the ED	All	Stacked bar chart showing the time at which the patient left the ED. Time shows: <60 mins, <120 mins, <4 hrs, >4hrs Interval unknown.	Figures provided by RCEM

Appendix 6: Inclusion and exclusion criteria

Inclusion criteria

- Children between the ages of 5 and 15 (inclusive)
- Presenting to the ED in moderate or severe pain
- Presenting to ED with a fracture to the clavicle, shoulder, humerus, elbow, forearm, wrist, ankle, tibia, fibula or femur
- Presenting with a single fracture but include related fractures (e.g. tibia & fibula, or radius & ulna)

Exclusion criteria

- Children aged 4 or under
- Children aged 16 or over
- Presenting to the ED with mild pain or no pain

Patient groups

- 5-8 years
- 9-12 years
- 13-15 years

Search Terms





The ICD 10 codes below can be used to help initially identify potential cases. This is not an exhaustive list; other search terms can be used but all potential patients should then be reviewed to check they meet the definitions & selection criteria before inclusion in the audit.

Search Term	ICD10	SNOMED	Unified Diagnostic Dataset (UDDA) identifier	CDS code	CDS_sub1	CDS_area	CDS_Side
closed fracture clavicle	S4200	33173003		05	3	10	y
closed fracture humerus	S4230	43295006		05	3	12	y
closed fracture shoulder	S4290	704210003		05	3	10	y
closed fracture elbow joint	S5200	309464009	040106	05	3	13	y
closed fracture radius ulna	S5290	75857000	040107	05	3	14	y

closed fracture carpal bones	S6280	263208005	040108	05	3	18	y
closed fracture femur	S7290	71620000	040116	05	3	30	y
closed fracture tibia fibula	S8290	414292006	040117	05	3	32	y
closed fracture ankle	S8288	16114001	040118	05	3	27	y
open fracture clavicle	S4201	111637008		05	2	11	y
open fracture humerus	S4231	89294002		05	2	12	y
open fracture shoulder	S4291	275337006		05	2	10	y
open fracture elbow joint	S5201	302232001	040206	05	2	14	y
open fracture radius ulna	S5291	91296001	040207	05	2	15	y
open fracture carpal bones	S6211	29014003	040208	05	2	18	y
open fracture femur	S7291	28576007	040215	05	2	30	y
open fracture tibia fibula	S8291	414942001	040216	05	2	32	y
open fracture ankle	S8281	48187004	040217	05	2	33	y

Appendix 7: Assessment of acute pain in children in the Emergency Department

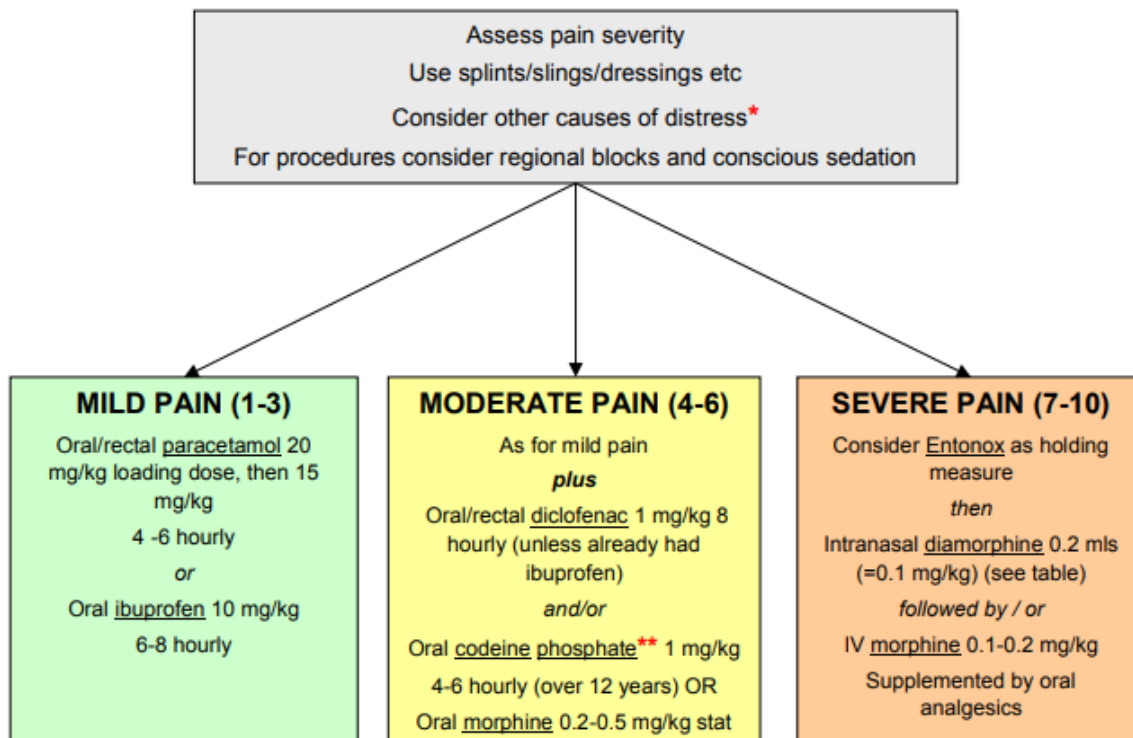
Assessment of acute pain in children in the Emergency Department

Degree of pain (Numerical score)	No Pain (0)	Mild Pain (1)	Moderate Pain (2)	Severe Pain (3)
Faces Scale Score				
Behaviour	<ul style="list-style-type: none"> * Normal Activity * No ↓ movement * Happy 	<ul style="list-style-type: none"> * Rubbing affected area * Decreased movement * Neutral expression * Able to play/talk normally 	<ul style="list-style-type: none"> * Protective of affected area * ↓ movement/quiet * Complaining of pain * Consolable crying * Grimaces when affected part moved/touched 	<ul style="list-style-type: none"> * No movement or defensive of affected part * Looking frightened * Very quiet * Restless/unsettled * Complaining of lots of pain * Inconsolable crying
Injury Example	Bump on head	Abrasion Small laceration Sprain ankle/knee # fingers/clavicle Sore throat	Small burn/scald Finger tip injury # forearm/elbow/ankle Appendicitis	Large Burn # Long bone/ dislocation Appendicitis Sickle crisis
Category chosen (tick)				

Using this composite method of pain scoring it should be possible to group children into one of four categories.

- In some children, it will not be possible to obtain a value for each of the indicators; however a generalised, majority score may be obtained.
- Once the category has been established, appropriate analgesia may be prescribed according to the flow chart.
- An example of injury is only intended as a guide. However based on the professional's own knowledge, it is possible to infer the likely severity of the pain experienced.

Algorithm for treatment of acute pain in children in the Emergency Department



*Other causes of distress include: fear of the unfamiliar environment, parental distress, fear of strangers, needle phobia, fear of injury severity etc.

** The MHRA has restricted use of codeine to those over 12 years of age ⁽¹⁰⁾

Appendix 8: References

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