Right Place, Right Time, Right Team

A review of the quality of the care provided to children and young people needing emergency surgery

EXTENDED REPORT

NCEPOD

Improving the quality of healthcare

RIGHT PLACE, RIGHT TIME, RIGHT TEAM

A review of good practice and remediable factors in the delivery of care provided to children and young people under 18 years old undergoing emergency (non-elective) surgery under anaesthetic or sedation.

A report published by the National Confidential Enquiry into Patient Outcome and Death (2025)

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Cohort: All children and young people who underwent an emergency (non-elective) procedure between: Monday 17th June 00:00 to Sunday 30th June 23:59 2024 and Monday 12th February 00:00 to Sunday 25th February 23:59 2024.

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LINKS TO ADDITIONAL REPORT SECTIONS

NOTES FOR READERS

This report relates to patients undergoing non-elective procedures, including emergency, urgent and expedited procedures. For ease of reading, we refer to all three as emergency procedures as the category did not affect the findings.

INTRODUCTION FROM OUR CHAIR

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Since NCEPOD last reviewed children's surgery in 2011, the quality of care provided has improved despite increased demand.[1-3] This review highlights much good practice but there is still room for improvement, in both district general hospitals and specialist centres. Many of the findings appear reassuring – there was no delay in arrival at the admitting hospital in over 92% of cases; 84% of hospitals are part of networks for non-elective procedures; and up to 90% of surgeons and anaesthetists in non-specialist hospitals feel supported by their local paediatric centres for the acceptance of referrals and provision of advice. However, this means that around 10% of hospitals/surgeons/anaesthetists, are not utilising networks or feeling supported, which could translate into thousands of patients potentially affected. We found that increased centralisation of elective surgical services for children has resulted in some healthcare staff in non-specialist units feeling less confident about providing emergency surgical care for critically ill children.

To improve this relevant training and the development of regional networks are essential so that children can be admitted or transferred to hospitals where staff have appropriate expertise. Pathways of care should be established for different conditions and age groups, with clinical networks available for advice when required. Transfer should only happen when necessary to minimise delays, with many conditions being most appropriately managed locally.

Once admitted to hospital, it is vital that children have timely access to operating theatre lists. The appointment of an emergency theatre co-ordinator has been shown to improve care and reduce delays but only half the hospitals reviewed had this role, despite it being recommended in existing guidance. Making this role a requirement would ensure that breaches are identified and escalated to avoid prolonged delays.

Pre-surgery fasting policies are often not applied to children, resulting in 18% of children fasting for longer than is necessary. All efforts should be made to minimise fasting, for example by developing and following fasting protocols and avoiding delays to surgery where possible.

Alongside updating local networks and policies, audits should be carried out regularly to assess compliance and identify further areas for improvement. Good practice should be shared to continue to improve care for children and young people.

With many thanks to all involved at every stage of the production of this report, particularly the local clinicians, members of the study advisory group, clinical coordinators, NCEPOD staff and trustees.

Dr Suzy Lishman CBE, NCEPOD Chair

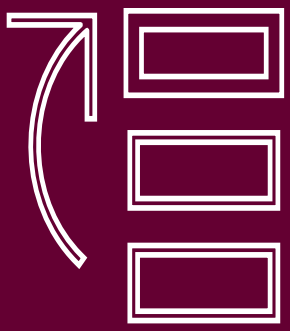
TO IMPROVE THE CARE PROVIDED TO CHILDREN AND YOUNG PEOPLE UNDERGOING NON-ELECTIVE SURGERY

NCEPOD reviewed the care of children and young people who underwent an emergency (non-elective) procedure between two time frames to account for seasonal variation (17th June to 30th June 2024 and 12th February to 25th February 2024). Care was reviewed using 853 sets of case notes, 679 surgical questionnaires, 760 anaesthetic questionnaires, and 143 organisational questionnaires, as well as >600 survey responses.

1. Provide prompt access to emergency surgical and anaesthetic care by specialists with the relevant training and experience in providing care to children and young people.

THIS IS BECAUSE WE FOUND THAT

Networks were not always in place and there was an absence of structured pathways or procedures to transfer patients when needed, despite transfers being common.	There were 19/143 (13.3%) hospitals not part of a network of care for non-elective procedures in children and young people. Most hospitals reported transferring patients out for surgery (133/143; 93.0%).	Only 287/629 (45.6%) patients were commenced on a dedicated pathway for emergency surgery in children and young people. Many of the patients who were not, should have been (83/255; 32.5%).



2. One or more emergency surgery co-ordinators should be in place to ensure that children and young people needing emergency surgery can access a theatre.

THIS IS BECAUSE WE FOUND THAT

Care was shown to be better in centres where an emergency surgery co-ordinator was available, but there was not always someone in this role and furthermore, theatre booking systems rarely highlighted breaches.	Reviewers reported that while the majority of patients had their procedures booked without delays (722/756; 95.5%) (unknown for 97), 19/34 patients experienced delays with/in the surgical team.	Theatre co-ordinating managers or clinicians were only available in 60/143 (42.0%) hospitals. Only 52/143 (36.4) hospitals had a clinician responsible for assessing capacity in theatres on a daily basis.

3. Prevent children and young people who are waiting for emergency surgery from being fasted for any longer than necessary.

THIS IS BECAUSE WE FOUND THAT

Fasting was infrequently recorded in hospital policies for emergency procedures for children and young people, with many patients being fasted for too long prior to surgery.	In the opinion of the reviewers, 125/718 (17.4%) patients were fasted for too long, with those who underwent an expedited procedure most likely to be in this category.	Pre-procedure preparation was adequate for most patients (798/853; 93.6%), however, fasting (10/55) was the most common area for optimisation.

RECOMMENDATIONS

These recommendations have been formed by a consensus exercise involving all those listed in the acknowledgements. The recommendations have been independently edited by medical editors experienced in developing recommendations for healthcare audiences to act on.

The recommendations in this report support those made previously by other organisations, and for added value should be read alongside the guidance listed with the recommendation:

1	Provide prompt access to emergency surgical and anaesthetic care by specialists with the relevant training and experience in providing care to children and young people by: ▪ Formalising organisational networks[i] to define where children and young people are assessed and/or undergo an emergency procedure[ii], and to agree pathways of care based on age and condition. ▪ Formalising clinical specialist networks for advice as needed. *i Utilising existing operational delivery networks or equivalent where possible.* *ii For example, whether the procedure can be undertaken locally or whether the patient needs to be transferred to a specialist centre. This will require local and regional networks working together to ensure co-ordination of services.*
RATIONALE FOR THE RECOMMENDATION	Networks were under used and surgeons/anaesthetists who were not specialists often did not feel skilled to treat patients in the non-specialist centres but had no formal transfer option. Joined-up care is important in the recognition of the deteriorating patient and the escalation of care.
FOR ACTION BY	Operational delivery networks or equivalent, commissioners and integrated care boards working with trusts/health boards.
ADDITIONAL STAKEHOLDERS	Hospital trusts/health boards, ambulance trusts, transport teams, Getting it Right First Time, British Association of Paediatric Surgeons, Association of Paediatric Anaesthetists of Great Britain and Ireland, Royal College of Surgeons of England, Royal College of Anaesthetists, Association of Surgeons of Great Britain and Ireland, Association of Anaesthetists, Royal College of General Practitioners, Royal College of Paediatrics and Child Health, Royal College of Nursing, Royal College of Emergency Medicine, Association of Paediatric Emergency Medicine, Royal College of Radiologists, British Society of Paediatric Radiology, College of Paramedics, Joint Royal Colleges Ambulance Liaison Committee, Association of Ambulance Chief Executives, British Society of Neurosurgeons, British Paediatric Neurology Association, British Association of Oral and Maxillofacial Surgeons, British Orthopaedic Association, British Society for Children's Orthopaedic Surgery, British Association of Urological Surgeons, British Association of Paediatric Urologists, British Association for Paediatric Otorhinolaryngology, ENT UK, Royal College of Obstetricians and Gynaecologists, British Association of Plastic, Reconstructive and Aesthetic Surgeons.
ASSOCIATED GUIDANCE	▪ Royal College of Anaesthetists, 2025. Guidelines for the provision of Anaesthetic Services. Chapter 10, Guidelines for the provision of Paediatric Anaesthesia Services. ▪ Royal College of Paediatrics and Child Health, 2025 5th Ed. Facing the Future: Standards for acute general paediatric services.

	▪ Royal College of Surgeons, 2015. Standards for non-specialist emergency surgical care of children. ▪ GIRFT, 2021. Paediatric General Surgery and Urology ▪ GIRFT, 2022. Paediatric Trauma and Orthopaedic Surgery ▪ The Regulation and Quality Improvement Authority, 2019. Review of General Paediatric Surgery in Northern Ireland ▪ National Confidential Enquiry into Patient Outcome and Death, 2024. Twist and Shout ▪ NHSE, 2019 Paediatric Critical Care and Surgery in Children Review ▪ North East and North Cumbria Paediatric Critical Care and Surgery in Children Operational Delivery Network ▪ North West Surgery in Children Operational Delivery Network Guidelines ▪ East Midlands Surgery in Children Operational Delivery Network ▪ West Midlands Children's Network ▪ East of England Surgery in Children Operational Delivery Network Guidelines ▪ North Thames Paediatric Network Surgery in Children ▪ South Thames Paediatric Network Guidelines and resources ▪ South West Surgery in Children Operational Delivery Network Tools and resources ▪ Yorkshire and Humber Surgery in Children Network ▪ Thames Valley and Wessex – no website
IMPLEMENTATION SUGGESTIONS: CLICK HERE	

2	One or more co-ordinators should be in place to ensure that: ▪ Children and young people needing emergency surgery have timely access* to a theatre **NCEPOD classification of intervention* ▪ Patients who were not operated on within their prioritisation period are highlighted and the issue escalated to senior management with responsibility for patient safety/governance* **If there are regular breaches for urgent and expedited patients due to emergency operating demands exceeding available resources, then alternative ways of dealing with this should be considered (e.g. planned urgent lists (hotlists) to prevent recurrence of future delays).*
RATIONALE FOR THE RECOMMENDATION	Care was shown to be better in centres where there was a co-ordinator. Anaesthetic guidelines recommend having theatre co-ordinating managers or clinicians. Theatre booking systems did not highlight breaches.
FOR ACTION BY	Commissioners and integrated care boards working with their trusts/health boards.
ADDITIONAL STAKEHOLDERS	Hospital trusts/health boards, NHS England (urgent and emergency care), Getting it Right First Time (perioperative care and paediatric surgery) British Association of Paediatric Surgeons, Association of Paediatric Anaesthetists of Great Britain and Ireland, Royal College of Surgeons of England, Royal College of Anaesthetists, Association of Surgeons of Great Britain and Ireland, Association of Anaesthetists, College of Operating Department Practitioners, Association for Perioperative Practice, British Society of Neurosurgeons, British Paediatric Neurology Association, British Association of Oral and

	Maxillofacial Surgeons, British Orthopaedic Association, British Society for Children's Orthopaedic Surgery, British Association of Urological Surgeons, British Association of Paediatric Urologists, British Association for Paediatric Otorhinolaryngology, ENT UK, Royal College of Obstetricians and Gynaecologists, British Association of Plastic, Reconstructive and Aesthetic Surgeons.
ASSOCIATED GUIDANCE	▪ Royal College of Anaesthetists, 2025. Guidelines for the Provision of Anaesthetic Services. Chapter 5, Guidelines for the provision of Emergency Anaesthesia Services. ▪ Royal College of Anaesthetists, 2025. Anaesthesia Clinical Services Accreditation standards ▪ NHS England. Urgent and Emergency Care ▪ GIRFT, 2021. Paediatric General Surgery and Urology ▪ GIRFT, 2022. Paediatric Trauma and Orthopaedic Surgery ▪ GIRFT. Perioperative Care
IMPLEMENTATION SUGGESTIONS: CLICK HERE	

3	Prevent children and young people who are waiting for emergency surgery from being fasted for any longer than necessary. *In the absence of likely gastric stasis, 'Sip til Send' could be considered but note that this was not developed for emergency procedures nor in children and young people. There is new evidence around fasting in paediatric care e.g. the EUROFAST study.*
RATIONALE FOR THE RECOMMENDATION	Children and young people were often fasted for too long and fasting was infrequently recorded in hospital policies for emergency procedures for children and young people.
FOR ACTION BY	Commissioners and integrated care boards in discussion with their hospital trusts/health boards
ADDITIONAL STAKEHOLDERS	Members of the Centre for Perioperative Care in addition to the Association of Paediatric Anaesthetists of Great Britain and Ireland, British Association of Paediatric Surgeons, and Association of Surgeons of Great Britain and Ireland, Royal College of Surgeons of England, Royal College of Anaesthetists and Association of Anaesthetists, Royal College of Nursing, British Society of Neurosurgeons, British Paediatric Neurology Association, British Association of Oral and Maxillofacial Surgeons, British Orthopaedic Association, British Society for Children's Orthopaedic Surgery, British Association of Urological Surgeons, British Association of Paediatric Urologists, British Association for Paediatric Otorhinolaryngology, ENT UK, Royal College of Obstetricians and Gynaecologists, British Association of Plastic, Reconstructive and Aesthetic Surgeons.
ASSOCIATED GUIDANCE	▪ Centre for Perioperative Care: 'Sip til Send' ▪ EUROFAST study
IMPLEMENTATION SUGGESTIONS: CLICK HERE	

SUGGESTION FOR FUTURE RESEARCH

A UK consensus needs to be developed on fasting children needing surgery.

1 METHODS

DETAILED FINDINGS ABOUT THE METHODS ARE AVAILABLE HERE

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Study advisory group

A multidisciplinary group of clinicians was convened to steer the study from design to completion, define the objectives of the study and advise on the key questions. The group comprised lay and parent carer representatives along with healthcare professionals in paediatric and adult surgery (generalists and specialists), anaesthetics (generalists and specialists), neonatology, intensive care, radiology, nursing and allied healthcare.

Study aims and objectives

To identify good practice and remediable factors in the care provided to children and young people under the age of 18 years who underwent emergency (non-elective) procedures under anaesthetic or sedation.

Study population and case ascertainment

Inclusion criteria

All children and young people aged 0–18th birthday who underwent an emergency (non-elective) procedure under anaesthetic or sedation were identified between 00:00 Monday 17th June to 23:59 Sunday 30th June 2024 and from 00:00 Monday 12th February to 23:59 Sunday 25th February 2024. Patients were identified across two-time frames to account for seasonal variation.

Exclusion criteria

Children and young people who died prior to arrival in theatre/the procedure area.

Identification of a sample population

Two pre-set spreadsheets were provided to every local reporter to identify all patients meeting the study criteria during the two defined time frames, from which a maximum of seven patients from each hospital were randomly sampled for inclusion.

Data collection

An organisational questionnaire collected hospital-level data on the organisation of emergency and surgical services.

Surgical (operator) and anaesthetic questionnaires collected data on the procedure.

A transfer questionnaire was sent to the clinician caring for the patient prior to transfer.

A real-time clinician survey gathered data on delays to surgery during the initial sample period

An anonymous online clinician survey collected data on how confident and competent clinicians felt about providing emergency intervention for children and young people.

Case notes were requested for the included admission of each patient for peer review.

Data analysis rules

- Small numbers have been suppressed if they risk identifying an individual (usually <5)
- Any percentage under 1% has been presented in the report as <1%
- Percentages were not calculated if the denominator was less than 100 so as not to inflate the findings, unless to compare groups within the same analysis
- There will be variation in the denominator for different data sources and for each individual question as it is based on the number of answers given.

2 DATA RETURNED AND THE STUDY POPULATION

DETAILED FINDINGS IN THE STUDY POPULATION ARE AVAILABLE HERE

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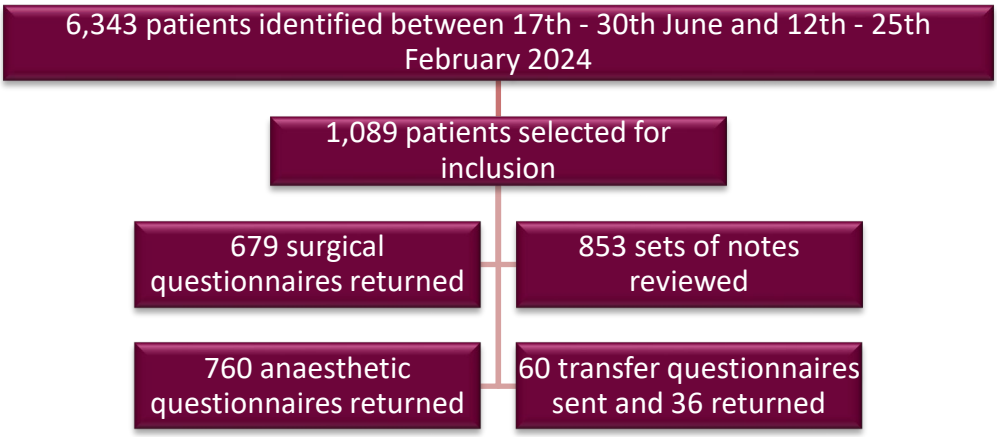
Data returned



Organisational data

Organisational questionnaires were returned from 143/222 (64.4%) hospitals.

Survey data

Clinician survey (confidence and competency) – 564 responses

Clinician survey (real-time) – 991 responses

Age and sex

The average age of all patients identified during the two sampling periods was 8.6 years, and the average age of patients included in the small sample for review was 9.8 years (F2.1). While there was a higher proportion of children under one year old in the wider study population, these younger patients were more likely to undergo a procedure in a specialist tertiary paediatric hospital, and so were less likely to be included in the sample for review (134/467; 28.7% admitted to a district general hospital vs. 333/467; 71.3% admitted to a tertiary hospital).

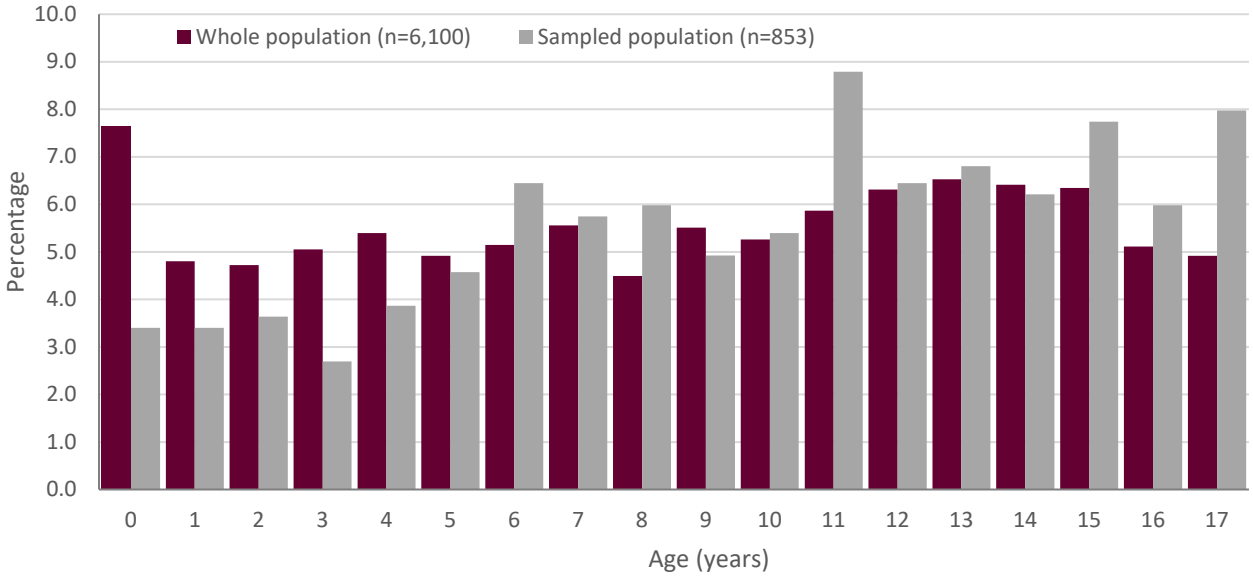


Figure 2.1 Age of the patient at the time of the procedure (years)

Database and reviewer assessment form data

In total, 565/853 (66.2%) patients included in the sampled study population were male and 288/853 (33.8%) patients were female. This was representative of the total patients identified in the wider dataset (F2.2).

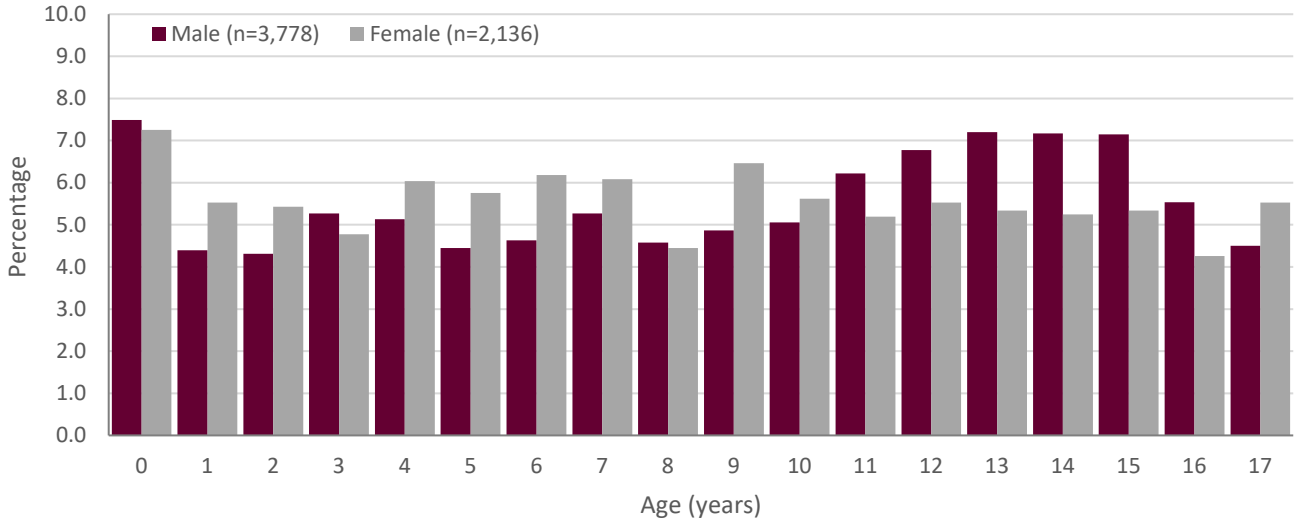


Figure 2.2 Age of the patient at the time of the procedure (years) by sex
Database data

The most commonly performed procedures were the manipulation/fixation of joints (T2.1), and this was similar to the sampled population (T2.2) with only slight variation in in some of the procedures included (T2.2) *(see Appendix 1 for a complete list of procedures undertaken).*

Table 2.1 Most common procedures undertaken by sex (whole population)	Male		Female	
	Number of patients	%	Number of patients	%
Manipulation/fixation of joints	845	22.3	407	19.0
Suture laceration/wound washout/debridement	423	11.2	273	12.7
Scrotal exploration/orchidectomy/orchidopexy	411	10.9	0	0.0
Appendicectomies	393	10.4	265	12.4
Incision/drainage of abscesses	152	4.0	135	6.3
Oral and maxillofacial surgery procedures	123	3.2	75	3.5
Nail bed repairs	113	3.0	66	3.1
Insertion/removal of lines	98	2.6	77	3.6
Removal of foreign bodies	88	2.3	84	3.9
Endoscopies/colonoscopies	54	1.4	46	2.1
Other procedures	1087	28.7	717	33.4
Total	**3,787**		**2,145**	

Database data (not answered for 204 patients)

Table 2.2 Most common procedures undertaken by sex (sampled population)	Male		Female	
	Number of patients	%	Number of patients	%
Manipulation/fixation of joints	167	29.6	61	21.2
Appendicectomies	97	17.2	74	25.7
Scrotal exploration/orchidectomy/orchidopexy	85	15.0	0	0.0
Suture laceration/wound washout/debridement	55	9.7	32	11.1
Incision/drainage of abscesses	31	5.5	20	6.9
Removal of foreign bodies	17	3.0	15	5.2

Nail bed repairs	11	2.0	3	1.0
Oral and maxillofacial surgery procedures	8	1.4	8	2.8
Tendon/ligament/nerve repairs	5	<1	6	2.1
Gynaecological procedures	0	0.0	9	3.1
Other	89	15.8	60	20.8
Total	**565**		**288**	

Reviewer assessment form data

Ethnicity

Ethnicity data were available in the case notes for 670/853 (78.5%) patients. The majority of patients sampled for inclusion in the study were White British or White other (555/670; 82.8%) which is consistent with the general population (T2.3). United Kingdom census data[4] show that 12.1% of 0-17-year-olds are in the Black/African/Caribbean/Black British or mixed/multiple ethnic groups and were therefore potentially underrepresented in this study. Previous research has shown that children from Black and 'other' minority ethnic groups are at a significantly higher risk of poor outcomes, with data from the Children's Acute Surgical Abdomen Programme (CASAP) showing that ethnicity, but not socio-economic status, was associated with an increased risk of postoperative complications in children having surgery for acute appendicitis.[5]

Table 2.3 Ethnicity	Sampled population		Census data	
	Number of patients	%	Number of patients	%
White British/White - other	555	82.8	9,096,920	73.4
Asian/Asian British (Indian, Pakistani, Bangladeshi, Chinese, other Asian)	74	11.0	1,472,100	11.9
Black/African/Caribbean/Black British	24	3.6	679,255	5.5
Mixed/Multiple ethnic groups	15	2.2	823,415	6.6
Other	2	<1	320,550	2.6
Subtotal	**670**		**12,392,240**	
Unable to answer	183			
Total	**853**			

Reviewer assessment form data

Comorbidities

Within the group of patients sampled for inclusion, 192/838 (22.9%) had an additional health condition (comorbidity); 124/838 (14.8%) patients had one comorbidity reported and 70/838 (8.4%) had two or more reported. The most common were asthma (51/838; 6.1%), autism (37/838; 4.4%) and attention deficit hyperactivity disorder (ADHD) (23/838; 2.7%) (unknown for 15).

Reviewers indicated that 64/853 (7.5%) patients had a communication difficulty. Thirty patients had a language difficulty and four had a hearing difficulty; 36 patients were reported as having another communication difficulty, and in 12 of these patients autism was given as the reason. There were 45/853 (5.3%) patients who had a learning difficulty and 19/853 (2.2%) had a physical disability.

Previous research has shown that children and adolescents face inequalities in accessing healthcare services.[6,7] Within the group of patients sampled for inclusion in this study, reviewers found evidence of at least one characteristic associated with healthcare inequality or bias and this negatively impacted the care provided to 12/853 (1.4%) patients. The most common reasons given were learning/cognitive disability (5/12) and geographic deprivation/travel time to hospital (3/12).

3 ARRIVAL AT THE HOSPITAL

Before the admission to hospital that resulted in surgery, 331/853 (38.8%) patients sought medical advice. This was most commonly from another hospital (97/331; 29.3%), with 80 patients subsequently transferred to the hospital where the surgery was carried out. Advice was also frequently sought from general practitioners (94/331; 28.4%). There were 68/331 (20.5%) patients who had had a previous presentation to this hospital for the same condition (including a previous emergency department attendance, outpatient department appointment or admission). Where there had been a previous presentation, this was part of the normal pathway of care for this condition for 44/68 patients, and there was a delay in treatment for 12/68 patients. The reviewers considered that there was a delay in arrival at the admitting hospital for 53/772 (6.9%) patients.

Self-referral to the emergency department of the hospital in which the procedure was undertaken (556/813; 68.4%) was the most common mode of admission (T3.1).

Table 3.1 Mode of admission	Number of patients	%
Self-referral (via the emergency department)	556	68.4
Transfer from another hospital	100	12.3
GP referral	67	8.2
Via a specialist clinic	27	3.3
111 referral	15	1.8
Via an urgent treatment centre	14	1.6
Other	34	4.2
Subtotal	**813**	
Unable to answer	40	
Total	**853**	

Reviewer assessment form data

Inter-hospital transfer

All surgical services for children should aim to work within regional networks involving local and regional services. Children presenting with common emergency surgical conditions should, ideally, be treated locally and not transferred to specialist centres, unless this is necessary for safe treatment. Good communication between 'hubs and spokes' of care is essential.[8] Furthermore, it has been documented that the increased centralisation of elective surgical services for young children has reduced the proportion of staff who are confident in the emergency management of critically ill or injured children.[9]

There were 19/143 (13.3%) hospitals not part of a network of care for non-elective procedures in children and young people. Most hospitals reported transferring patients out for surgery (133/143; 93.0%). Data from the clinician survey showed that 313/564 (55.5%) clinicians transferred patients depending on hospital expertise. Fewer anaesthetists than surgeons stated that they would transfer children requiring emergency surgery due to age (140/257; 54.5% vs 157/272; 57.7%) (T3.2).

Table 3.2 Children who require emergency procedures are transferred to another hospital because of their age	Surgeon		Anaesthetist		Medicine	
	Number of respondents	%	Number of respondents	%	Number of respondents	%
Yes	157	57.7	140	54.5	16	72.7
No	115	42.3	117	45.5	6	27.3
Subtotal	**272**		**257**		**22**	
Not answered	6		6		0	
Total	**278**		**263**		**22**	

Clinician survey data

As the reported hospital specialisation increased, the number of survey respondents willing to transfer children who required emergency procedures decreased (T3.3).

Table 3.3 Children who require emergency procedures are transferred to another hospital because of their age	A standalone tertiary paediatric centre		A tertiary paediatric centre in a trust/health board that also treats adults		A university teaching hospital in a trust/health board that delivers surgical care to children		A district general hospital that delivers surgical care to children	
	n	%	n	%	n	%	n	%
Yes	1	1.9	8	7.8	92	50.8	221	87.4
No	53	98.1	94	92.2	88	49.2	32	12.6
Subtotal	**54**		**102**		**180**		**253**	
Not answered	0		0		3		8	
Total	**54**		**102**		**183**		**261**	

Clinician survey data. Answers may be multiple by hospital type; n=number of responses

Existing standards state that hospitals without a suitable paediatric or neonatal intensive care bed should obtain the advice of the local paediatric intensive care unit (PICU) transport team as soon as possible during the management of sick or critically injured children or young people. Specialist tertiary paediatric centres with PICU facilities should provide clinical advice and help in locating a suitable PICU bed once a referral has been made. The management of children and young people requiring transfer should have input from all clinicians involved in their care.[9,10]

Respondents to the clinician survey who worked outside of tertiary paediatric centres were asked about the levels of support they received from those centres. Anaesthetists reported feeling more supported than surgeons in the acceptance of referrals (123/135; 91.1% vs 126/153; 82.4%) (T3.4). However, this meant that 8.9% and 17.6% of anaesthetists and surgeons did not feel supported.

Similar proportions of support from the tertiary centre was found regarding the provision of advice (surgeons: 137/161; 85.1% vs. anaesthetists: 141/155; 91.0%) (T3.5). The most common reasons for not feeling supported were a lack of clear referral pathway and lack of beds in the receiving centre.

Table 3.4 Clinicians working outside tertiary paediatric centres felt supported by their local paediatric centre in the acceptance of referrals	Surgeon		Anaesthetist		Physician	
	Number of respondents	%	Number of respondents	%	Number of respondents	%
Yes	126	82.4	123	91.1	12	75.0
No	27	17.6	12	8.9	4	25.0
Subtotal	**153**		**135**		**16**	
Unknown	20		45		0	
Not applicable - consultant	8		7		1	
Not answered	97		76		5	
Total	**278**		**263**		**22**	

Clinician survey data

Table 3.5 Clinicians working outside tertiary paediatric centres felt supported by their local paediatric centre to provide advice	Surgeon		Anaesthetist		Physician	
	Number of respondents	%	Number of respondents	%	Number of respondents	%
Yes	137	85.1	141	91.0	13	76.5
No	24	14.9	14	9.0	4	23.5
Subtotal	**161**		**155**		**17**	
Unknown	20		32		0	
Not applicable	95		75		5	
Not answered	2		1		0	
Total	**278**		**263**		**22**	

Clinician survey data

The 'Guidelines for the Provision of Paediatric Anaesthesia Services' state that all anaesthetists at with a certificate of completion of training (CCT) should be competent to provide safe perioperative care for common non-complex elective and emergency procedures in children aged one year and older.[9] There were 713/853 (83.6%) patients who underwent their procedure in the hospital to which they first presented. There were 100/853 (11.7%) patients who were transferred from another hospital. The most common reason for the transfer, given in 61 cases, was a lack of surgeon competent to undertake the procedure (T3.6).

Table 3.6 The reason for the transfer	Number of patients
No surgeon competent to undertake procedure	61
No anaesthetist competent to anaesthetise patient	28
No emergency surgical services at the referring site	18
No appropriate critical care bed or facilities	14
Specialist surgery undertaken in another trust/health board	11
Other	5
Subtotal	**88**
Unknown	12
Total	**100**

Reviewer assessment form data. Answers may be multiple; n=88

Non-specialist paediatric centres should have arrangements for managing and treating simple surgical emergencies in children, such as acute appendicitis. In addition, they should be able to

resuscitate and stabilise critically ill infants and children of all ages prior to transfer to a specialist centre for surgery and/or critical care.[9] On completion of training, anaesthetists are expected to demonstrate competence in providing safe perioperative care for common non-complex elective and emergency procedures in children aged one year and older.

Within the group transferred to another hospital, 49/100 (49.0%) patients underwent simple surgical procedures and 70/100 (70.0%) were over the age of two years.

Surgeons and anaesthetists who do not treat children in their elective workload may feel that they become deskilled following completion of their training. Many anaesthetic departments maintain a core group of consultants who anaesthetise children regularly and will support on-call teams either formally or informally.[9] This is by no means mandated, we were unable to establish whether those transferred originated in such departments.

Where there was evidence of a transfer in the case notes, the reviewers identified a delay in the transfer of 10/100 (10.0%) patients, and that this impacted the outcome for one patient. Reviewers considered the transfer to be inappropriate for 4/100 (4.0%) patients. Where there was a delay in transfer, this occurred almost exclusively over the weekend (Friday 1/10; Saturday 3/7; Sunday 4/10). Where a questionnaire from the referring hospital had been returned, there was a delay in the transfer for 3/36 patients; mostly due to the availability of imaging.

Anaesthetists reported that five patients who were transferred were unstable on arrival at the receiving hospital, with two deteriorating during the transfer.

4 ASSESSMENT AND INVESTIGATION

Initial assessment

Just under half of the patients were first assessed by an emergency medicine specialist (307/679; 45.2%), with trauma and orthopaedics as the next most common (106/679; 15.6%), which would be expected for this group of patients (T4.1).

Table 4.1 Specialty of the clinician who first assessed the patient on arrival in the operating hospital	Number of patients	%
Emergency medicine (paediatric and adult)	307	45.2
Trauma and orthopaedics	106	15.6
General surgery	65	9.6
Other specialist surgery	45	6.6
Paediatric medicine	34	5.0
Paediatric surgery	26	3.8
Plastic surgery	26	3.8
Urology	24	3.5
Otorhinolaryngology (ear, nose and throat)	23	3.4
Specialist medicine	13	1.9
General medicine	2	<1
Other	8	1.2
Subtotal	**679**	
Unable to answer	174	
Total	**853**	

Reviewer assessment form data

The grade of clinician responsible for undertaking the first assessment in the operating hospital did not appear to affect the overall quality of care, or whether there was any delay in treatment (F4.1 and T4.2). However, the reviewers considered that the initial assessment was not performed by the most appropriate grade of clinician for 229/853 (26.8%) patients.

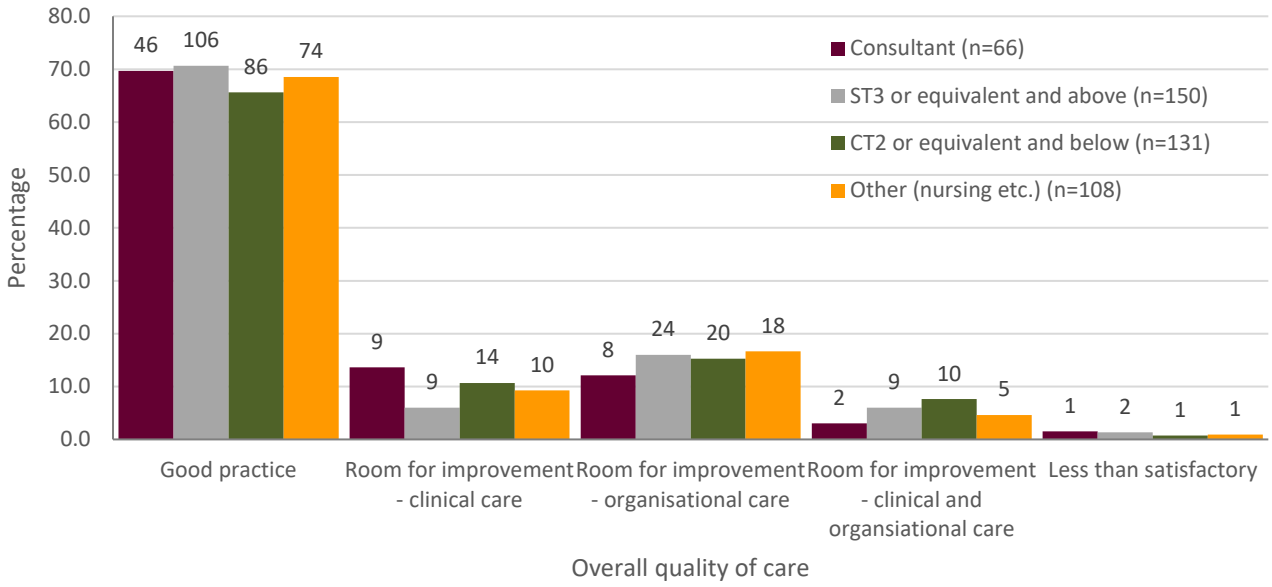


Figure 4.1 The grade of clinician who undertook the first assessment on arrival in the operating hospital by overall quality of care

Reviewer assessment form data

Table 4.2 Grade of the clinician who first assessed the patient and whether there was any delay	Consultant		ST3 or equivalent and above		CT2 or equivalent and below		Other (e.g. nursing)	
	Number of patients	%	Number of patients	%	Number of patients	%	Number of patients	%
Yes	9	13.6	30	19.9	19	14.5	25	23.1
No	57	86.4	121	80.1	112	85.5	83	76.9
Subtotal	**66**		**151**		**131**		**108**	
Unable to answer	3		0		1		1	
Total	**69**		**151**		**132**		**109**	

Reviewer assessment form data

The reviewers considered that there was a delay in assessment for 37/748 (4.9%) patients, and a delay in recognising the need for surgical intervention for 30/748 (4.0%) patients (unknown for 105), with delay in recognising the need for intervention impacting negatively on five patients.

Fracture and appendicitis were the most common diagnoses (T4.3) *(see Appendix 2 for the full list of diagnoses)*. The reviewers stated that an incorrect diagnosis contributed to delays for 33/776 (4.3%) patients (T4.4), and the most common missed diagnosis was appendicitis (12/33) (T4.5).

Table 4.3 The diagnosis	Number of patients	%
Fracture	227	26.6
Appendicitis	168	19.7
Laceration	85	10.0
Testicular torsion/scrotal pain	79	9.3
Abscess	64	7.5
Ingestion/insertion of foreign body	31	3.6
Other	199	23.3
Total	**853**	

Reviewer assessment form data

Table 4.4 An incorrect diagnosis contributed to a delay	Number of patients	%
Yes	33	4.3
No	743	95.7
Subtotal	**776**	
Unknown	10	
NA - no incorrect diagnosis made	67	
Total	**853**	

Reviewer assessment form data

Table 4.5 The incorrect diagnosis	Number of patients
Appendicitis	12
Testicular torsion/scrotal pain	4
Abscess	4
Fracture	2
Other	11
Total	**33**

Reviewer assessment form data

The reviewers identified a small group of patients who should have been seen by a consultant but were not (12/156; 7.7%). Of these, 6/12 underwent an appendicectomy. A lack of consultant review did not appear to be associated with a delay in treatment. However, reviewers considered that a quarter of the patients with an incorrect diagnosis resulting in delay (3/11) would have benefited from an earlier consultant review.

From the case notes a total of 689/853 (80.8%) patients were admitted to a ward prior to surgery, and in the view of the reviewers 617/689 (89.6%) were admitted to the appropriate ward and 670/689 (97.2%) patients were admitted under the correct specialty.

Joint care with paediatricians and surgeons

Despite national guidelines recommending that all patients undergoing surgery should have immediate access to a consultant paediatrician either in person or by telephone.[9] Only 190/512 (37.1%) patients were under the joint care of a paediatrician and surgeon (T4.6). This is particularly important in hospitals with no paediatric surgical specialists on site. The provision of joint care was unrelated to the operation performed and hospital type.

Table 4.6 The patient was under the joint care of a paediatrician and a surgeon	Number of patients	%
Yes	190	37.1
No	322	62.9
Subtotal	**512**	
Unknown	32	
Total	**544**	

Surgical questionnaire data 544/679 (80.1%) patients identified as admitted to a ward prior to surgery

Five- to nine-year-olds were more likely to be under the joint care of a paediatrician and a surgeon, while this was less likely in the 15- to 17-year-old age group (F4.2).

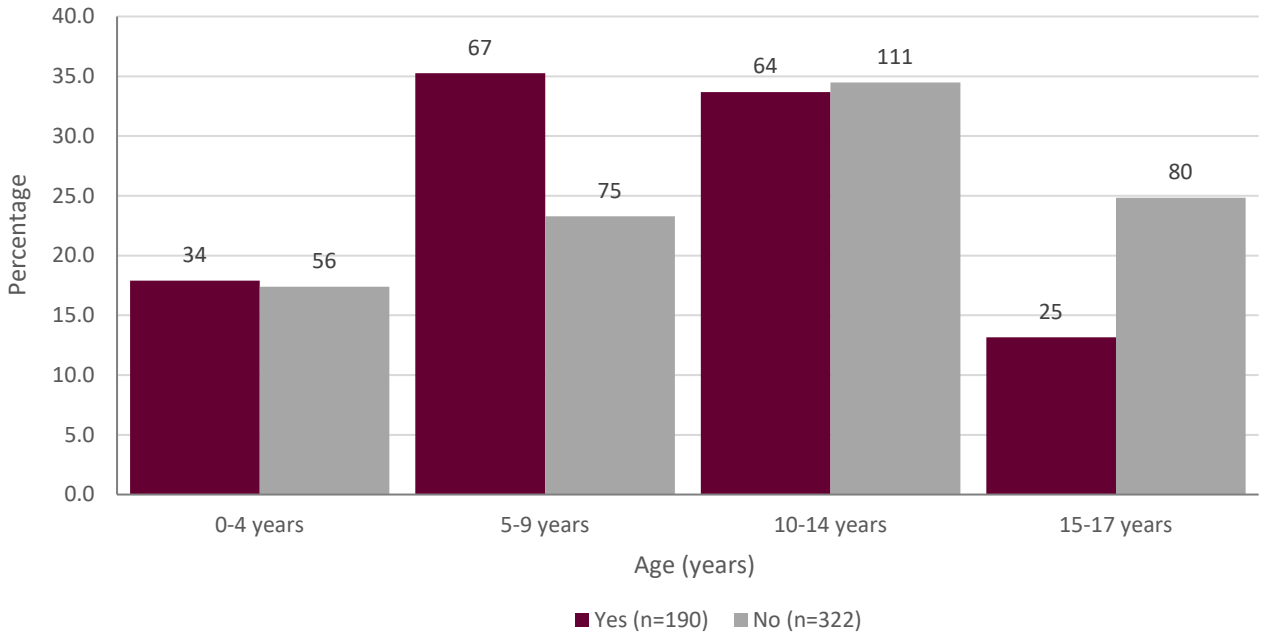


Figure 4.2 The patient was under the joint care of a paediatrician and a surgeon by age of the patient at the time of the procedure

Surgical questionnaire data

Use of national paediatric early warning scores

The National Paediatric Early Warning System (NPEWS) was not used pre-operatively for 129/532 (24.2%) patients in our study; it was unknown whether they were used for 228/760 (30.0%) patients (F4.3). NPEWS provides a standardised approach for identifying clinical deterioration in children, however, it has not yet been adopted by all hospitals. If deterioration is assessed in different ways this may present challenges when patients are moved between hospital sites.[11]

Anaesthetists considered 52/760 (6.8%) patients to be high-risk, and surgeons considered 69/679 (10.2%) patients to be high-risk. The surgeons reported all relevant investigations were performed for 652/679 (96.0%) patients. However, in the view of the case reviewers there were delays in performing investigations in 35/853 (4.1%) patients, both factors that might contribute to the deterioration of a patient admitted as an emergency.

Assessment of the use of NPEWS in different operation groups (F4.3) and for different urgencies of procedures (T4.7) showed usage was higher where the patient was under the joint care of a paediatrician and a surgeon (T4.8).

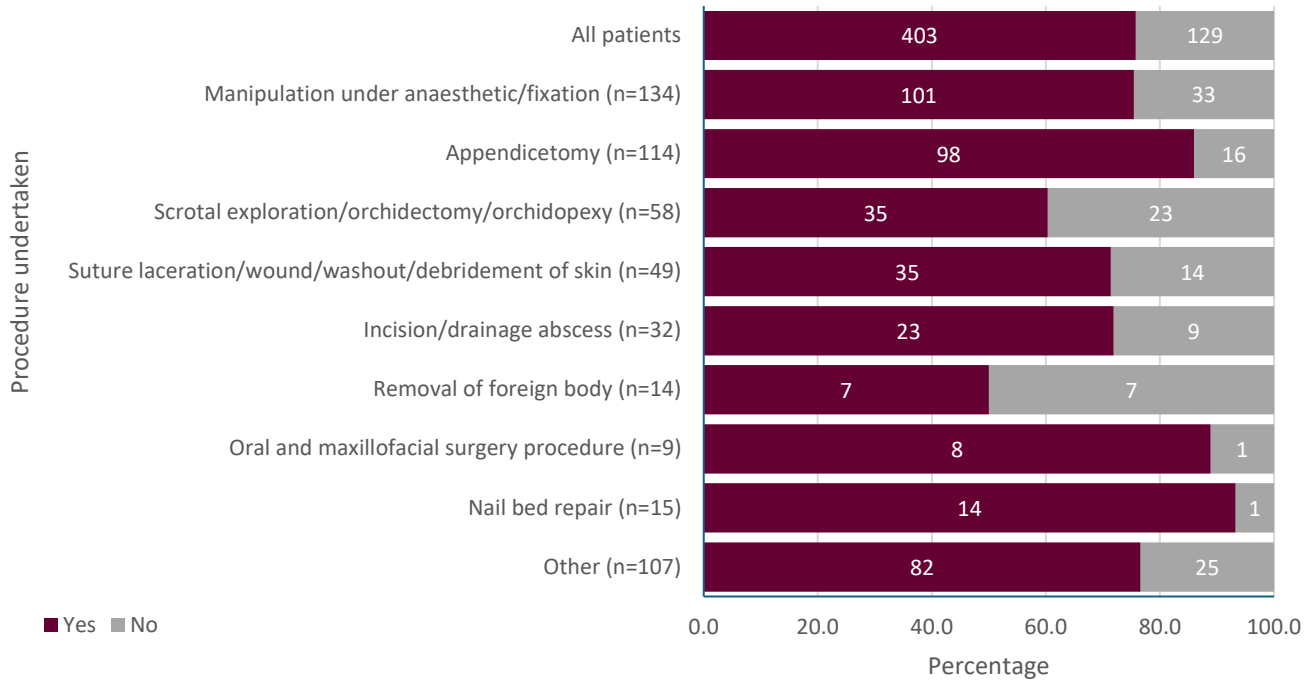


Figure 4.3 Formal paediatric early warning scores used were used by operation undertaken

Anaesthetic questionnaire data

Table 4.7 Formal paediatric early warning scores used	Immediate		Urgent		Expedited	
	Number of patients	%	Number of patients	%	Number of patients	%
Yes	29	64.4	170	78.7	183	74.4
No	16	35.6	46	21.3	63	25.6
Subtotal	**45**		**216**		**246**	
Unknown	12		93		110	
Total	**57**		**309**		**356**	

Anaesthetic questionnaire data

Table 4.8 The patient was under the joint care of a paediatrician and a surgeon	Yes		No	
	Number of patients	%	Number of patients	%
Paediatric early warning score used	93	86.1	143	74.5
Paediatric early warning score not used	15	13.9	49	25.5
Subtotal	**108**		**192**	
Unknown	50		67	
Total	**158**		**259**	

Surgical and anaesthetic questionnaire data

Management plans

The majority of patients had a management plan written following their initial assessment (624/760; 82.1%) and while it was noted that fasting was commonly recorded, it was not part of the plan for 174/599 (29.0%) patients (T4.9). Aspects of the care marked as 'other' included details of medications (35/133), investigations (34/133), and treatment plans (32/133).

Table 4.9 Aspects of care included in the management plan	Number of patients	%
Fasting	425	71.0
Urgent referral to a surgeon	340	56.8
Monitoring vital signs	307	51.3
Other	133	22.2
Subtotal	**599**	
Unknown	25	
Total	**624**	

Anaesthetic questionnaire data. Answers may be multiple; n=599 (unknown for 25)

In the opinion of the reviewers, 125/718 (17.4%) patients were fasted for too long, with those who underwent an expedited procedure most likely to be in this category (T4.10).

Table 4.10 The patient was fasted for too long	Immediate		Urgent		Expedited	
	Number of patients	%	Number of patients	%	Number of patients	%
Yes	3	6.3	37	13.5	70	22.8
No	45	93.8	238	86.5	237	77.2
Subtotal	**48**		**275**		**307**	
Unable to answer	5		23		49	
Not applicable - not fasted	16		11		3	
Total	**69**		**309**		**359**	

Reviewer assessment form data

Stabilisation is of paramount importance before undertaking surgery. The reviewers reported that 54/836 (6.5%) patients needed optimisation pre-operatively due to abnormal physiology. Among these, 9/54 patients had appendicitis, making it twice as common as any other condition. Appendicitis is a serious medical condition that should not be underestimated. Prompt diagnosis and treatment are essential to avoid potentially severe complications. The anaesthetists reported 23/760 (3.0%) patients required respiratory support prior to surgery.

5 DECISION-MAKING

Children and young people requiring emergency surgery are a mixed group, appearing on emergency, elective, adult and paediatric theatre lists due to a range of medical, neurological and trauma factors. They do, however, share a commonality in the need for prompt assessment, diagnosis and immediate, urgent or expedited access to treatment.[12] The last NHS Long Term Plan committed healthcare organisations to provide timely interventions and accurate delivery of emergency interventional care to mitigate lifelong complications. The new '10 Year Health Plan' builds on this by improving emergency care pathways, increasing the availability of same day emergency care services, and improving triage systems and patient flow.[13]

Pre-operative senior review

Most patients (617/641; 96.3%) were seen by a senior decision-maker (ST3+ or equivalent) (T5.1) but there was a delay in assessment in 64/570 (11.2%) patients (T5.2). Reviewers were unable to identify the grade of clinician conducting the review in 212/853 (24.9%) patients due to inadequate documentation.

Table 5.1 There was an ST3+ or equivalent review	Number of patients	%
Yes	617	96.3
No	24	3.7
Subtotal	**641**	
Unable to answer	212	
Total	**853**	

Reviewer assessment form data

Table 5.2 There was a delay in ST3+ or equivalent assessment	Number of patients	%
Yes	64	11.2
No	506	88.8
Subtotal	**570**	
Unable to answer	47	
Total	**617**	

Reviewer assessment form data

Most patients were seen by a consultant (427/597; 71.5%) although poor documentation meant that reviewers could not identify this in many patients (256/853; 30.0%). Where it could be assessed, the reviewers identified a delay in consultant assessment in 34/427 (8.0%) patients. Ideally all patients should be seen by a consultant within 14 hours of admission.[14] This was the case for 139/187 (74.3%) patients in our study (F5.1). Patients who were reviewed promptly by a consultant were more likely to receive good care (F5.2).

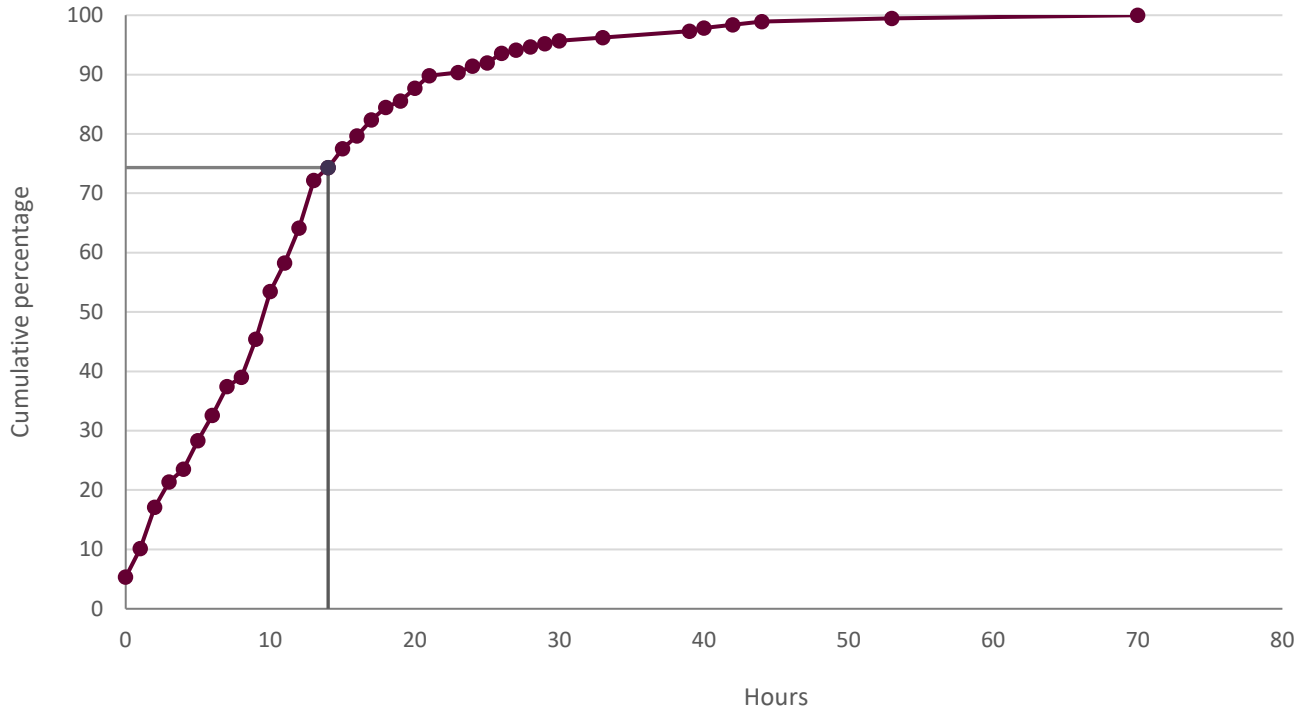


Figure 5.1 Time from admission to first consultant review (n=187)
Reviewer assessment form data (vertical line at 14 hours)

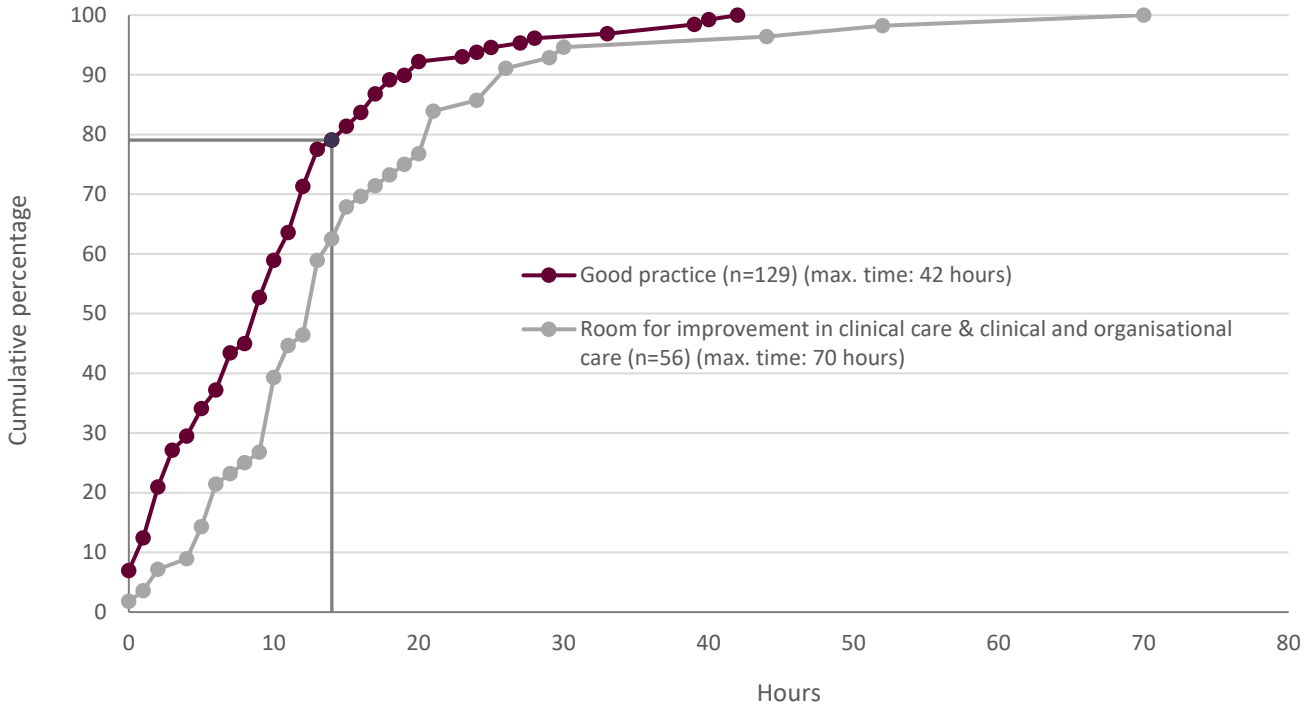


Figure 5.2 Time to the first consultant review by overall quality of care
Reviewer assessment form data (vertical line at 14 hours)

Delays in decision-making

A senior clinician made the decision to perform the procedure for 399/575 (69.4%) patients (unknown for 278) (T5.3). Reviewers noted there was a delay in decision-making in 64/853 (7.5%) patients and this had a negative impact on patient care in 32/60 patients due to the delayed surgery.

Table 5.3 The grade of the clinician who made the decision to perform the procedure	Number of patients	%
Consultant	270	47.0
Doctor at ST5+ or equivalent	129	22.4
Doctor ST1/2 or core trainee equivalent	71	12.3
Doctor at ST3/4 or equivalent	65	11.3
Specialty and associate specialist (SAS) doctor	30	5.2
Advanced nurse practitioner	3	<1
Resident doctor with a certificate of completion of training (CCT)	2	<1
Specialist nurse	2	<1
Other	2	<1
Physician associate	1	<1
Advanced clinical practitioner	0	<1
Senior staff nurse	0	0
Subtotal	**575**	
Unable to answer	278	
Total	**853**	

Reviewer assessment form data

Delays in the decision to perform the procedure appeared to be more likely if the decision was made by more senior staff (F5.3), but this likely reflects the fact that more complex procedures will require consultant input and additional investigations, and that more consultants were the decision-makers. There was no apparent delay in consultant decision-making reported out-of-hours (F5.4).

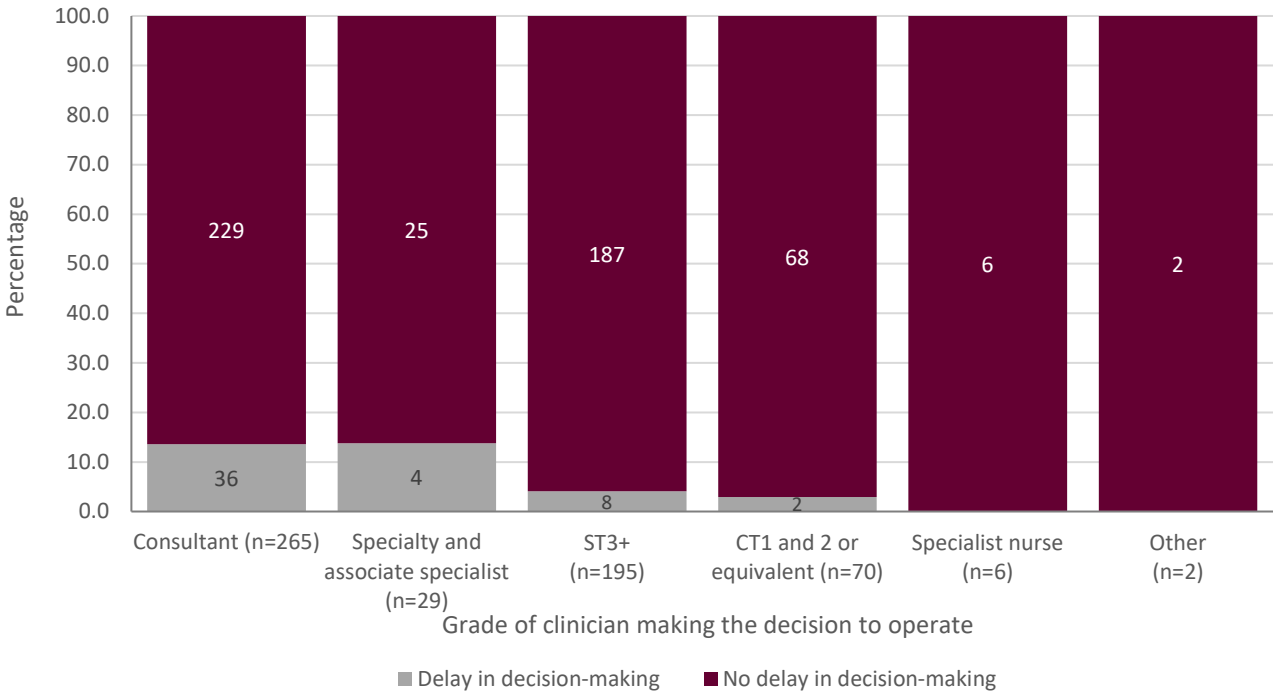


Figure 5.3 The grade of clinician who made the decision to perform the procedure by presence of a delay

Reviewer assessment form data

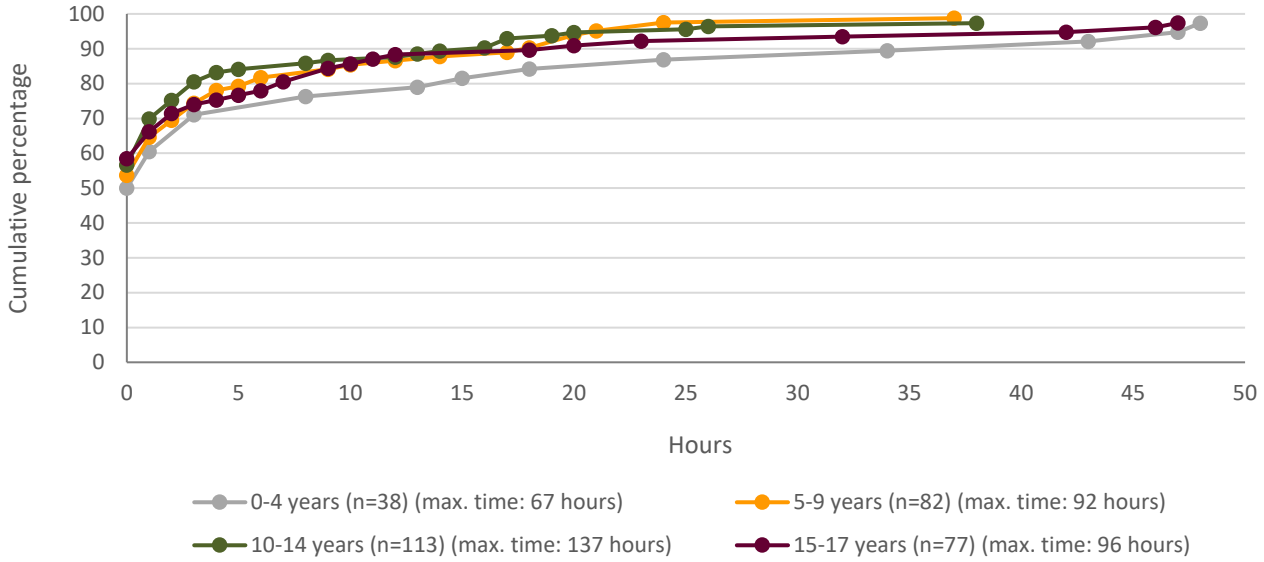


Figure 5.4 Time from first ST3+ or equivalent review to decision to operate
Reviewer assessment form data (data not shown for 7 patients)

Reviewers noted that there was an inappropriate delay in treatment for 77/853 (9.0%) patients and this impacted negatively on the care of 43/68 patients.

Theatre access and urgency

Reviewers reported that while the majority of patients had their procedures booked without delays (722/756; 95.5%) (unknown for 97), 19/34 patients experienced delays with/in the surgical team. Where grade could be determined the fact that some patients were booked by less experienced staff did not appear to affect delays in booking procedures (T5.4). However, patients undergoing less urgent procedures were more likely to wait longer from the decision to operate to the time of theatre booking (F5.5), suggesting that these patients could be treated more effectively on non-urgent lists.

Table 5.4 There was a delay from booking the case to the start of the procedure	ST3 or equivalent and above		CT2 or equivalent and below		Subtotal
	Number of patients	%	Number of patients	%	Number of patients
Yes	48	12.0	12	10.7	**60**
No	351	88.0	100	89.3	451
Subtotal	**399**		**112**		**511**
Unable to answer	17		2		19
Total	**416**		**114**		**530**

Reviewer assessment form data

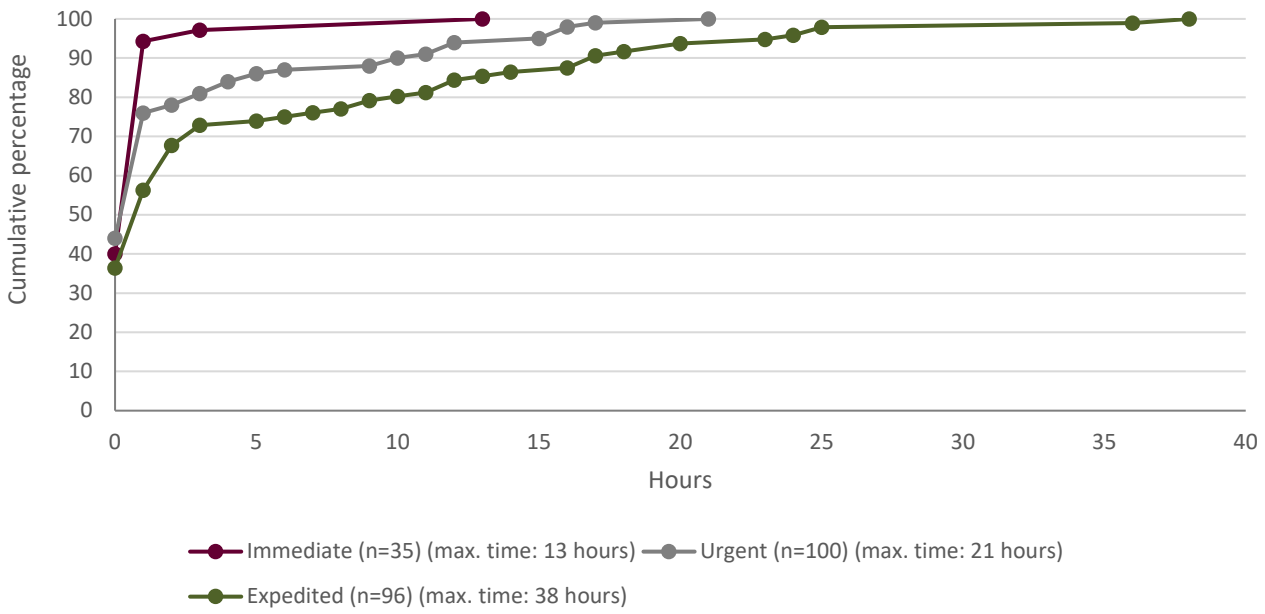


Figure 5.5 Time between the decision to operate and the theatre booking
Reviewer assessment form data

Pre-procedure preparation was adequate for most patients (798/853; 93.6%). However, fasting (10/55) was the most common response to the question about what should have been optimised.

Following anaesthetic review, most patients (369/407; 90.7%) had their anaesthetic commenced within six hours (F5.6). Reviewers reported that many patients in the less urgent categories could have had scheduled surgery rather than being placed on a CEPOD list (F5.7).

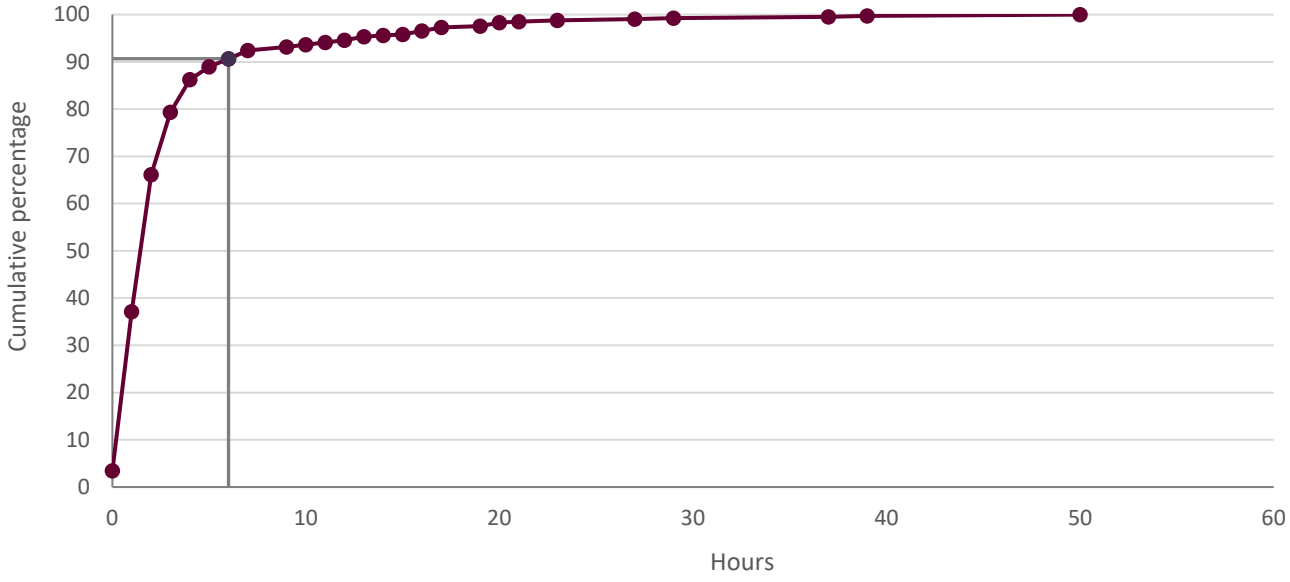


Figure 5.6 Time from first anaesthetic review to commencement of anaesthetic (n=407)
Reviewer assessment form data (vertical line at 6 hours)

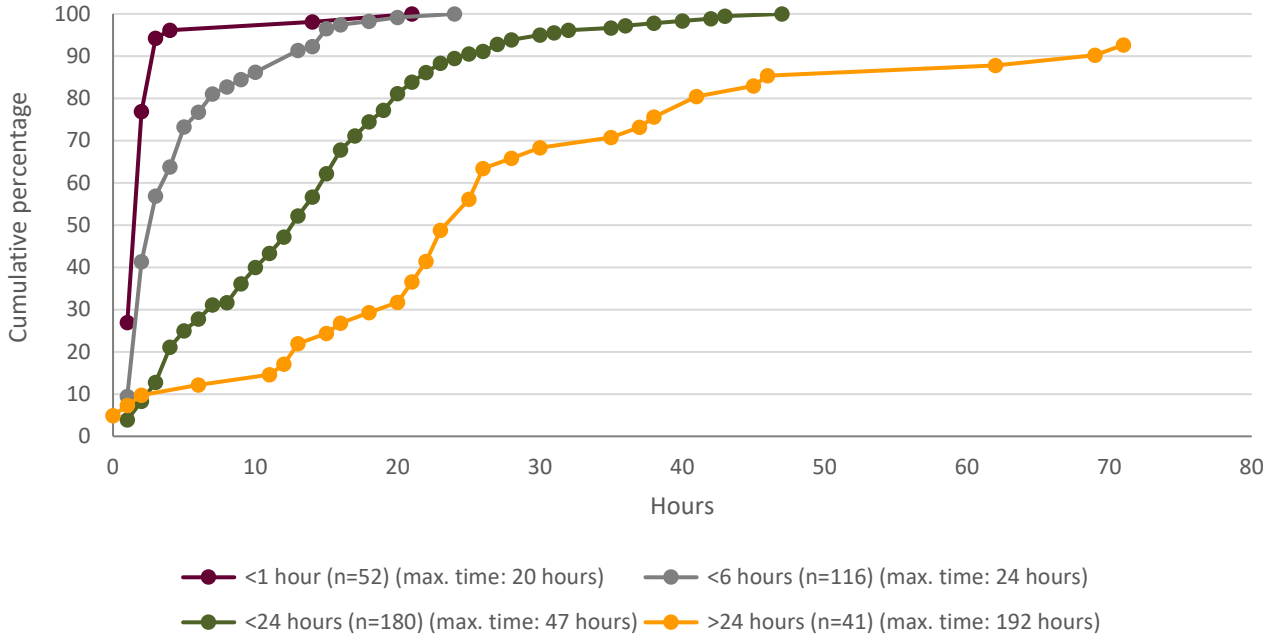


Figure 5.7 Time from decision to operate to commencement of anaesthetic by urgency of surgery
Reviewer assessment form data (data not shown for 3 patients)

Reviewers noted that consultants and senior resident doctors were involved in anaesthetising most patients (F5.8). They considered the grade of the operator to be appropriate for 719/722 (99.6%) patients, and the grade of the anaesthetist to be appropriate for 681/690 (98.7%) patients.

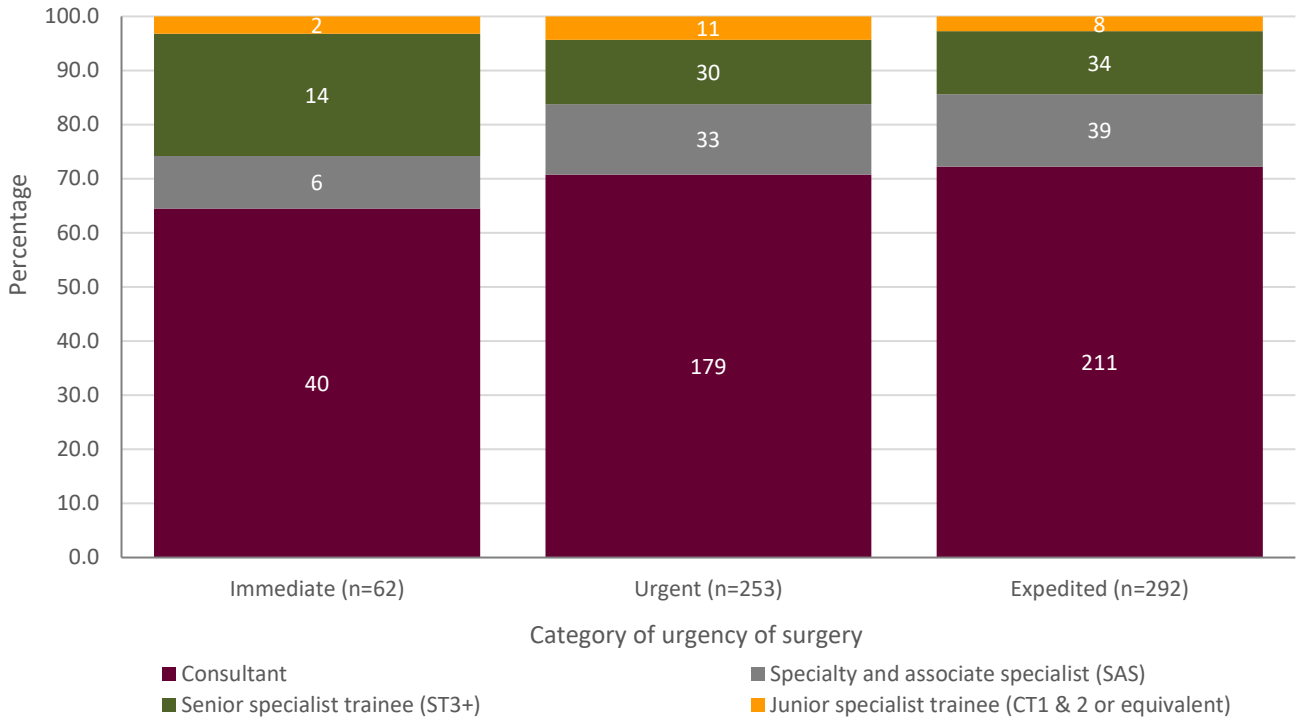


Figure 5.8 Grade of anaesthetist by category of urgency of surgery
Reviewer assessment form data

Younger patients were more likely to be anaesthetised by a consultant (F5.9). However, some patients under four years of age and patients undergoing immediate surgery had anaesthetic performed by a CT1-2 doctor or equivalent.

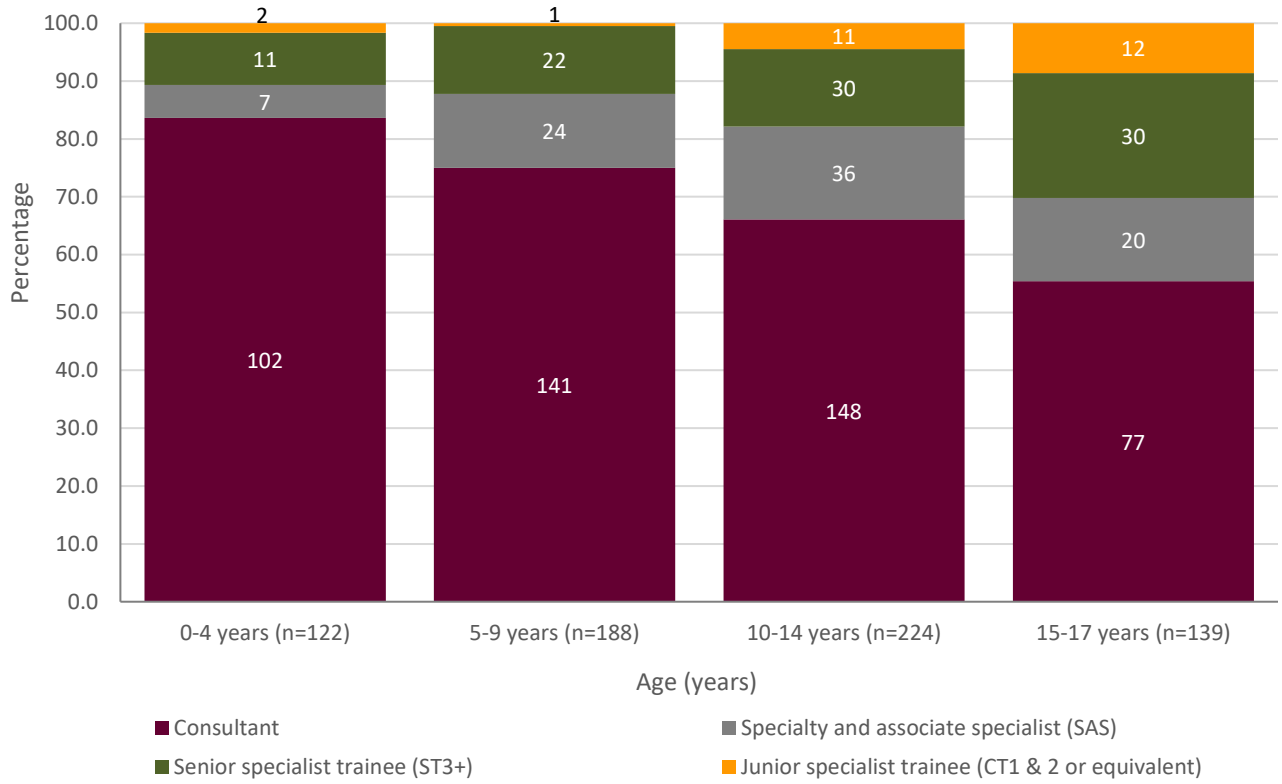


Figure 5.9 Grade of anaesthetist by age of patient at the time of procedure

Reviewer assessment form data

Pathways

Reviewers noted that only 287/629 (45.6%) patients were commenced on a dedicated pathway for emergency surgery in children and young people (T5.5) and that many of those who were not (83/255; 32.5%) should have been (T5.6). Reviewers also noted that the pathways for treating patients as a planned urgent procedure demonstrated good practice. These included abscess pathways, fracture pathways and plastic surgery pathways. Another example of this would be 'hot lists' for urgent procedures separate to emergency (CEPOD) lists.

Table 5.5 The patient was commenced on a dedicated pathway for emergency surgery in children and young people	Number of patients	%
Yes	287	45.6
No	342	54.4
Subtotal	**629**	
Unable to answer	224	
Total	**853**	

Reviewer assessment form data

Table 5.6 The patient was not commenced on a dedicated surgical pathway but should have been	Number of patients	%
Yes	83	32.5
No	172	67.5
Subtotal	**255**	
Unable to answer	87	
Total	**342**	

Reviewer assessment form data

It was reported that 92/143 (64.3%) hospitals had a specific protocol for the children and young people who may require emergency procedures under anaesthetic, but with variability in the content (F5.10). Notably, many protocols did not include fasting requirements for surgery and importantly, arrangements around theatre access and escalation were often not included.

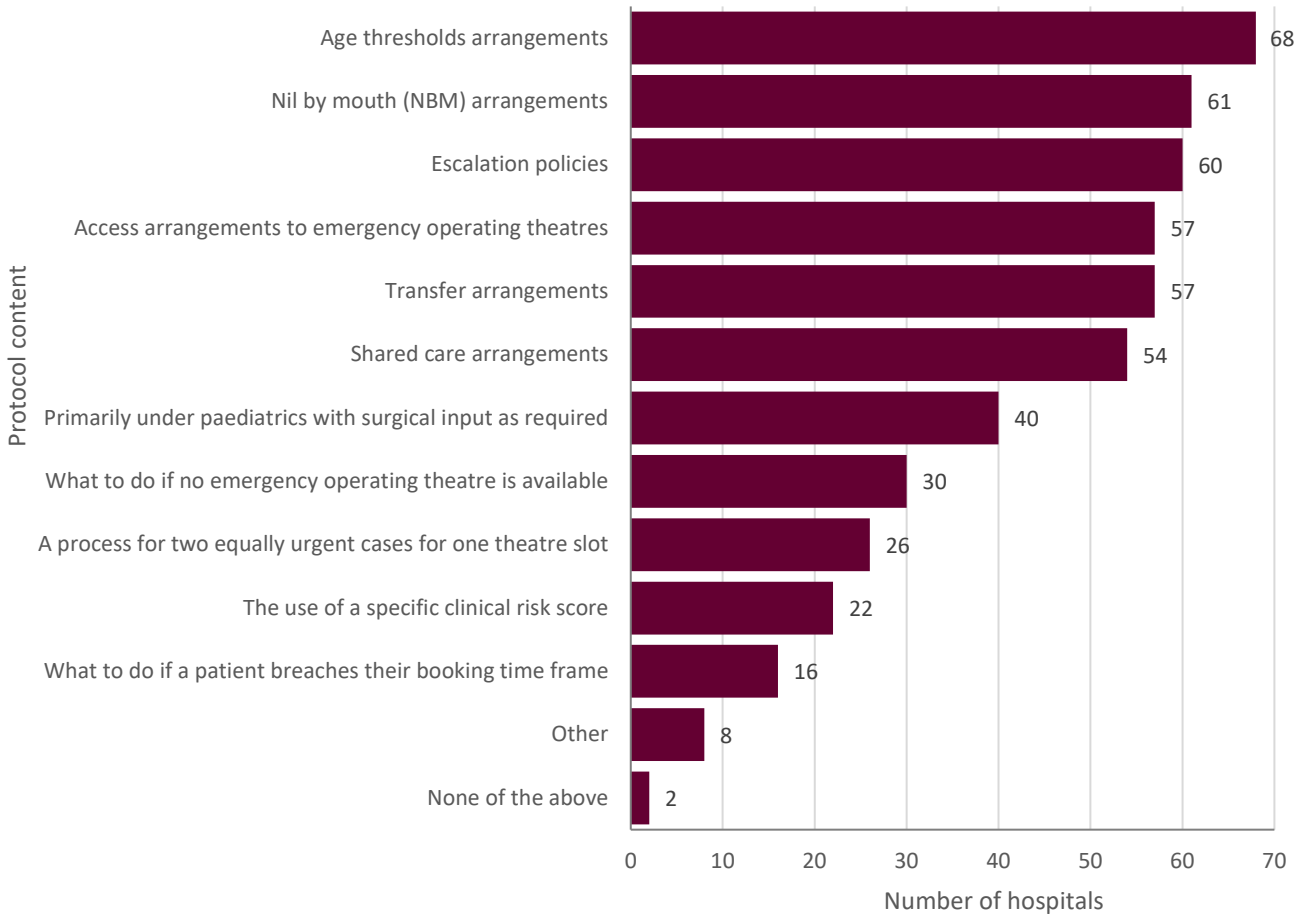


Figure 5.10 Elements of the protocol for children and young people needing emergency procedures
Organisational questionnaire data. Answers may be multiple; n=84 (unknown for 8)

6 ACCESS TO THEATRES

Emergency (CEPOD) theatre access

One dedicated emergency (CEPOD) theatre (for all patients) was the most common arrangement among hospitals that had such theatres (T6.1). It was of note that in ten hospitals emergency procedures were carried out on children and young people but there was no dedicated emergency theatre (10/137; 7.3%).

Table 6.1 The number of emergency (CEPOD) theatres available	Number of hospitals	%
1 emergency CEPOD theatre	83	68.0
1.5 emergency CEPOD theatres	1	<1
2 emergency CEPOD theatres	25	20.5
3 emergency CEPOD theatres	9	7.4
4 emergency CEPOD theatres	3	2.5
Subtotal	**122**	
Unknown	21	
Total	**143**	

Organisational questionnaire data

In the hospitals that had dedicated emergency (CEPOD) theatres 119/122 (97.5%) had access for children and young people, and in all but two, the theatre was open and staffed on a 24/7 basis.

Lack of access to a 24/7 emergency theatre could lead to unnecessary delays in hospitals that provide emergency surgery for children and young people. Elective procedures were undertaken in emergency theatres in 22/119 (18.5%) hospitals. However, this is not their intended purpose, and the usage should be reviewed locally. Multidisciplinary emergency theatre handover meetings could facilitate better use of theatres, but these occurred daily in only 90/116 (77.6%) hospitals (F6.1).

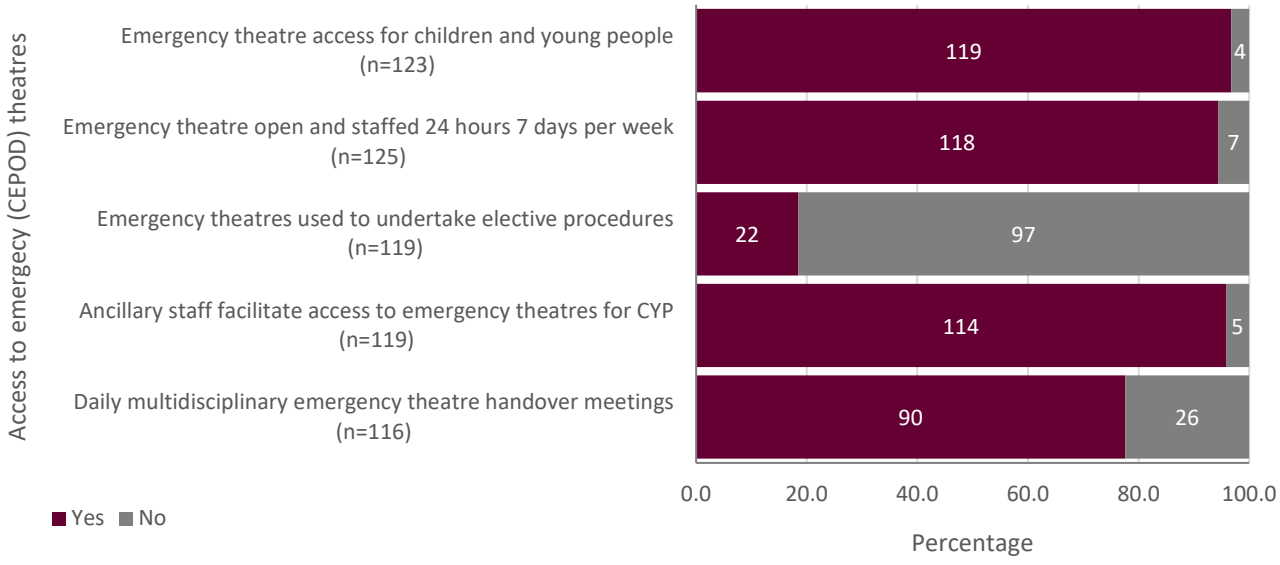


Figure 6.1 Access to emergency (CEPOD) theatres

Organisational questionnaire data

Booking systems

A theatre booking system was available in 135/143 (94.4%) hospitals, although six were unable to comment on this. Only 39/135 (28.9%) of those hospitals were able to confirm that the booking

system flagged patients who breached their allocated timeframe to surgery. This indicates that most hospitals are unable to accurately identify when children and young people are waiting too long for surgery, which has implications, such as fasting and risk of deterioration for all patients awaiting emergency surgery, including adults. Regardless of whether the booking system could flag a breach, only 24/135 (17.8%) hospitals with any booking system audited breaches to allocated booking times for emergency procedures in children and young people.

Theatre co-ordination

Theatre co-ordinating managers or clinicians were only available in 60/143 (42.0%) hospitals despite guidelines recommending this.[9] When present there was still variation by hospital type with regard to the provision of a manager (F6.2). Only 52/143 (36.4%) hospitals had a clinician responsible for assessing capacity in theatres on a daily basis (F6.3).

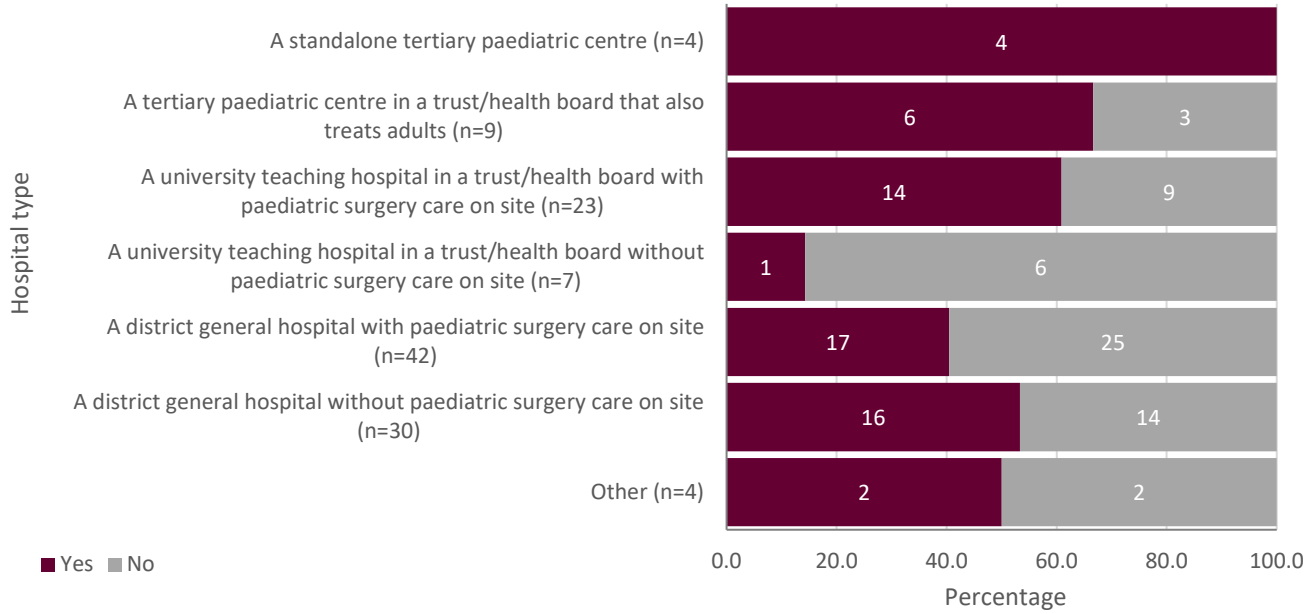


Figure 6.2 Presence of a manager responsible for co-ordinating non-elective procedures in children and young people by hospital type

Organisational questionnaire data

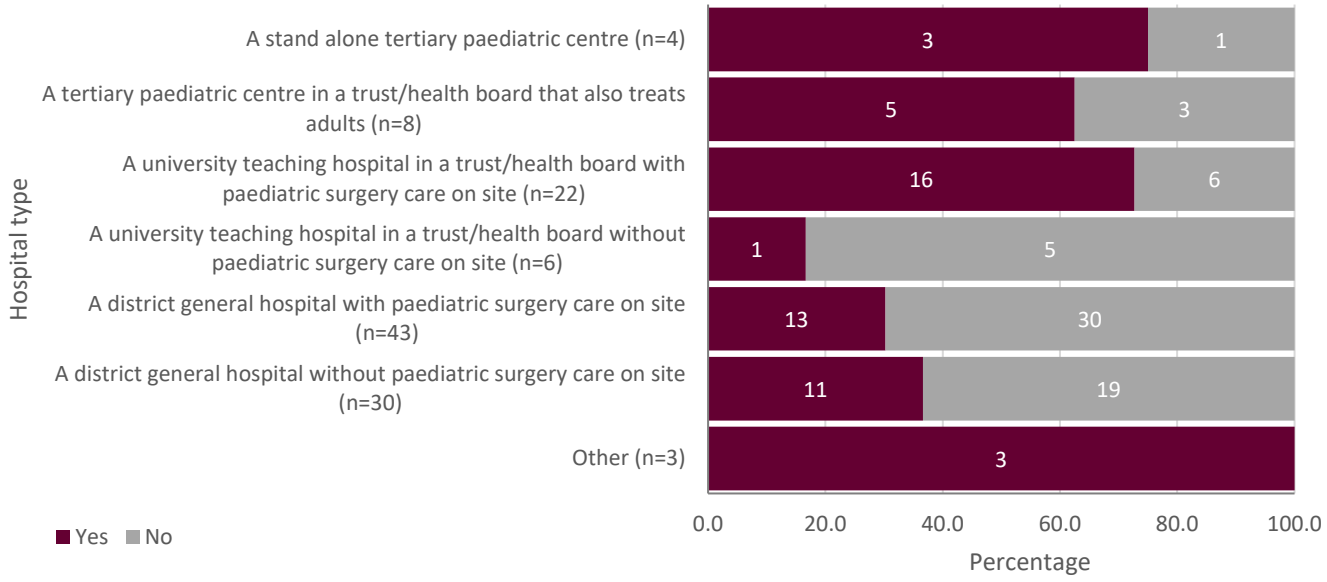


Figure 6.3 Presence of a clinician responsible for assessing capacity in theatres on a daily basis by hospital type

Organisational questionnaire data

Data from the real-time survey highlighted that not all patients had an emergency surgery co-ordinator involved in their care, with only 556/821 (67.7%) patients having one (T6.2).

Table 6.2 An emergency surgery co-ordinator was involved in the care of this patient	Number of patients	%
Yes	556	67.7
No	265	32.3
Subtotal	**821**	
Unknown	151	
Not answered	19	
Total	**991**	

Real-time survey data

Theatre co-ordination is important. Our data show that procedures were delayed less often when an emergency co-ordinator was involved (87/440; 19.8%) compared with when they were not involved (69/229; 30.1%) (F6.4).[9]

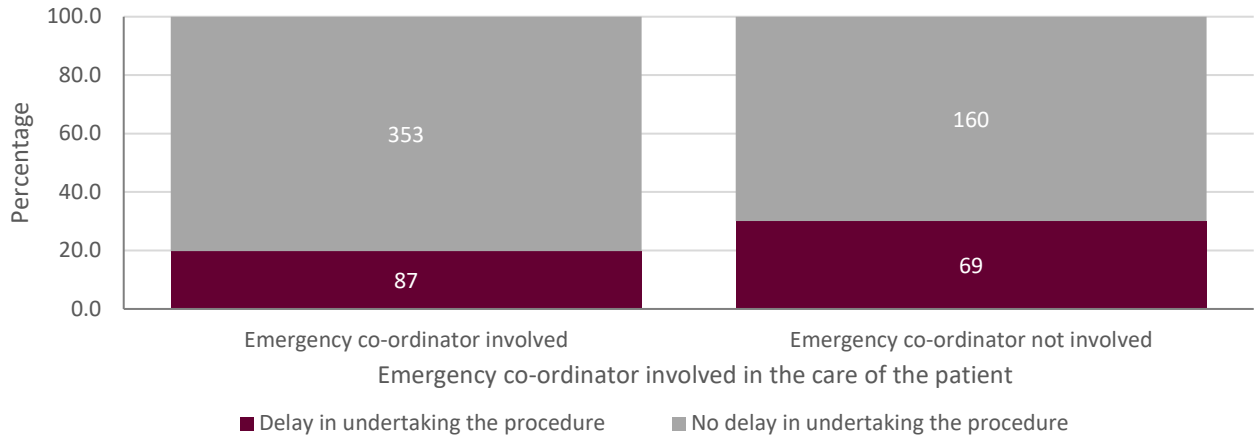


Figure 6.4 An emergency surgery co-ordinator was involved in the care of this patient and the impact on delays in the procedure

Real-time survey data

Booking urgency

The majority of patients in the study sample period were booked as urgent or expedited procedures (718/814; 87.9%) (T6.3). There were 732/897 (81.6%) who needed a procedure in under 24 hours, with 120/897 (13.4%) needing surgery in under one hour (T6.4).[12]

Table 6.3 The booking urgency	Real-time survey		Reviewer assessment form	
	Number of patients	%	Number of patients	%
Immediate	70	8.6	69	9.4
Urgent	364	44.7	309	41.9
Expedited	354	43.5	359	48.7
Other	26	3.2	0	0.0
Subtotal	**814**		**737**	
Unable to answer or not answered	177		116	
Total	**991**		**853**	

Real-time survey and reviewer assessment form data

Table 6.4 The proposed time frame for procedure commencement from the time of booking	Real-time survey		Reviewer assessment form	
	Number of patients	%	Number of patients	%
<1 hour	120	13.4	74	11.1
<6 hours	206	23.0	193	28.9
<24 hours	406	45.3	297	44.5
>24 hours	165	18.4	103	15.4
Subtotal	**897**		**667**	
Unable to answer	94		186	
Total	**991**		**853**	

Real-time survey and reviewer assessment form data

The booking urgency was appropriate for the majority of patients (865/909; 95.2%) (T6.5). There were nine patients booked as urgent who reviewers reported should have been booked as immediate, seven booked as expedited who should have been urgent and 12 booked as urgent who should have been expedited. Overall, 17 patients should have been booked as a more urgent procedure and 12 as less urgent.

Table 6.5 The booking urgency was appropriate	Real-time survey		Reviewer assessment form	
	Number of patients	%	Number of patients	%
Yes	865	95.2	675	95.3
No	44	4.8	33	4.7
Subtotal	**909**		**708**	
Unable to answer	82		145	
Total	**991**		**853**	

Real-time survey and reviewer assessment form data

Reviewers reported delays from booking a case to the start of the procedure for 82/853 (9.6%) patients. This was more likely to affect patients who were booked for a more urgent procedure than those booked for a less urgent procedure (F6.5) and had an impact on the outcome for 6/82 patients. Age did not influence the likelihood of a delay to starting the procedure.

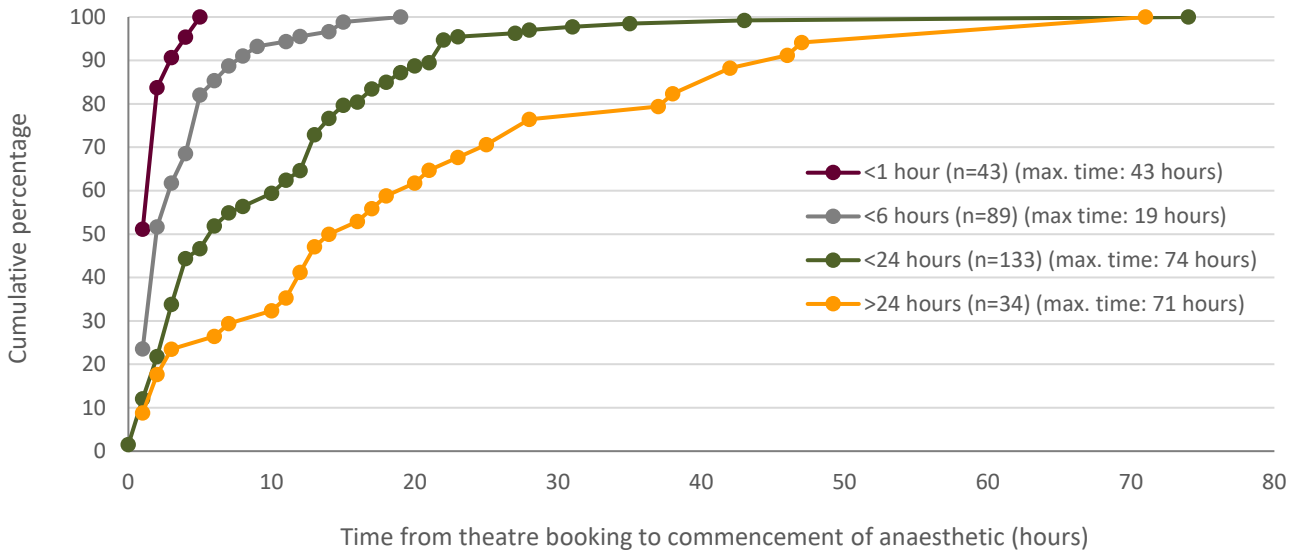


Figure 6.5 Time from booking to the start of the procedure

Reviewer assessment form data

Procedure delays

The most frequently reported delays from booking to starting a procedure were related to organisational issues including lack of theatre availability and emergency workload.

Clinicians reported that emergency procedures often displaced other emergency work and sometimes elective work (T6.6 and T6.7). These observations suggest that lack of organisation of emergency theatre workload often impacted on other patients. In particular, patients were not operated on within the expected timeframe and adequate escalation did not occur. Reviewers were of the opinion that hospitals should adopt processes that ensure robust monitoring of emergency theatre access, including proactive escalation if delays are foreseen.

Table 6.6 The emergency procedure displaced other surgery	Displaced elective work		Displaced emergency work	
	Number of patients	%	Number of patients	%
Yes	28	3.1	146	16.7
No	872	96.9	728	83.3
Subtotal	**900**		**874**	
Unknown	28		74	
Not answered	63		43	
Total	**991**		**991**	

Real-time survey data

Table 6.7 The operation undertaken displacing other surgery	Number of patients	%
Manipulation/fixation of joints	22	17.9
Suture laceration/wound washout/debridement	21	17.1
Appendicectomies	11	8.9
Scrotal exploration/orchidectomy/orchidopexy	10	8.1
Incision/drainage of abscesses	7	5.7
Oral and maxillofacial surgery procedure	5	4.1
Removal of foreign bodies	4	3.3
Nail bed repairs	4	3.3
Other	39	31.7
Subtotal	**123**	
Not answered	23	
Total	**146**	

Real-time survey data

Data from the real-time survey indicated that there was a delay in undertaking the procedure for 201/795 (25.3%) patients (F6.6). These data reflect those seen in the peer review (163/821; 19.9%).

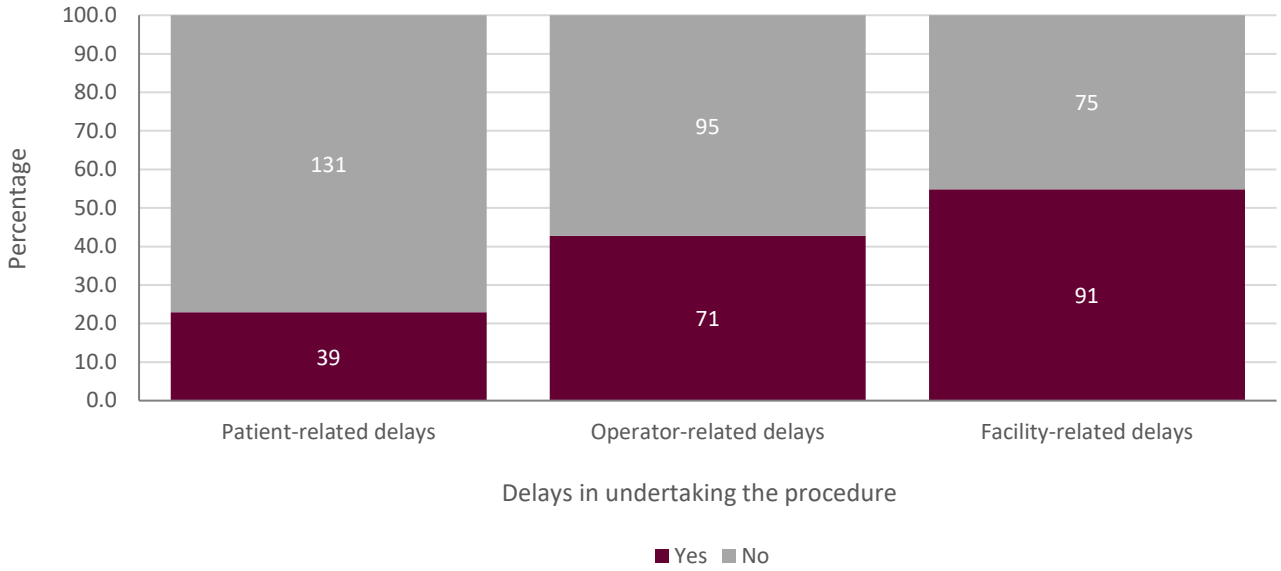


Figure 6.6 Causes of delay in undertaking the procedure
Real-time survey data

Facility-related delays were the most common cause of delay, primarily due to the emergency theatre being occupied or a more urgent case taking priority (F6.7).

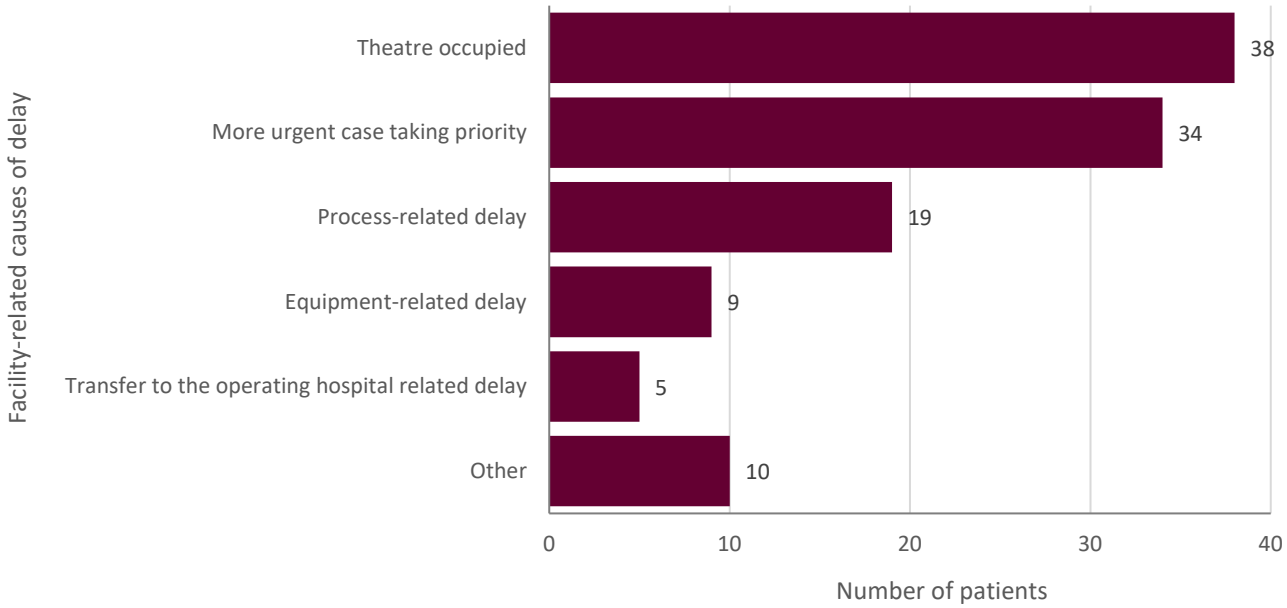


Figure 6.7 The facility-related causes of delay
Real-time survey data. Answers may be multiple; n=92

Where patient-related delays were identified, both the clinician real-time survey (11/39) and the reviewer assessment (9/30) identified lack of fasting as a cause of the delay to the procedure starting (F6.8 and F6.9). The differences were intentionally highlighted by collecting data at the time of the procedure where information may not get written in the case notes. The need for blood products being a good example.

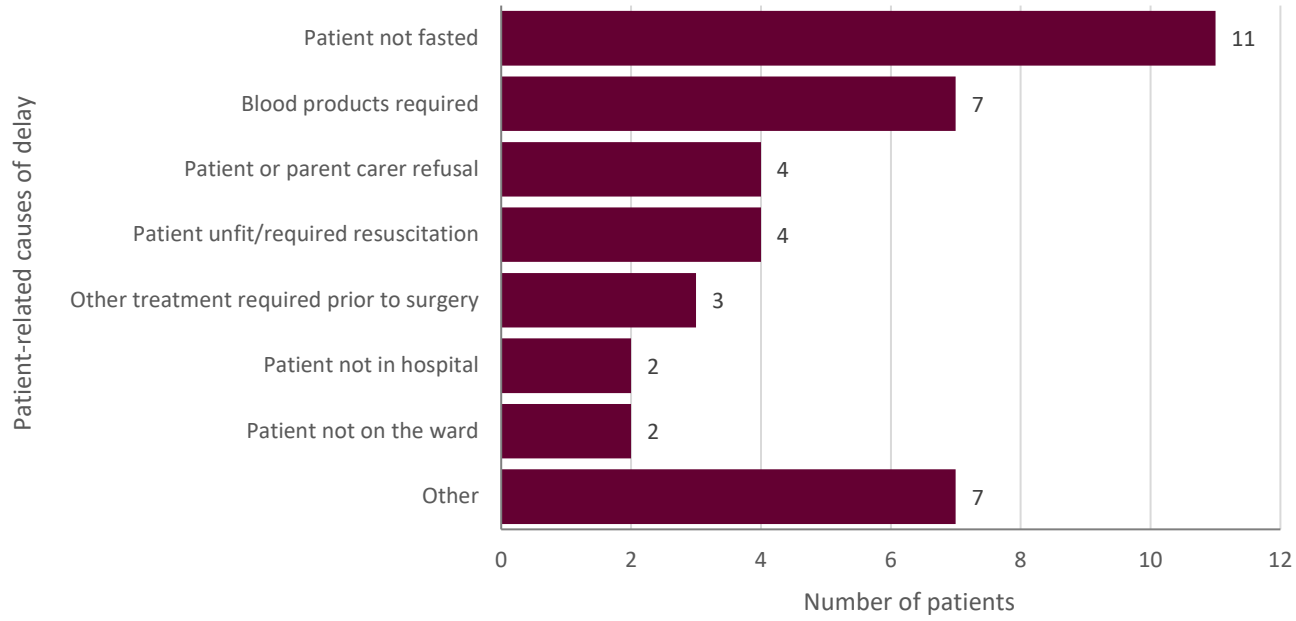


Figure 6.8 Patient-related causes of delay

Real-time survey data. Answers may be multiple; n=39

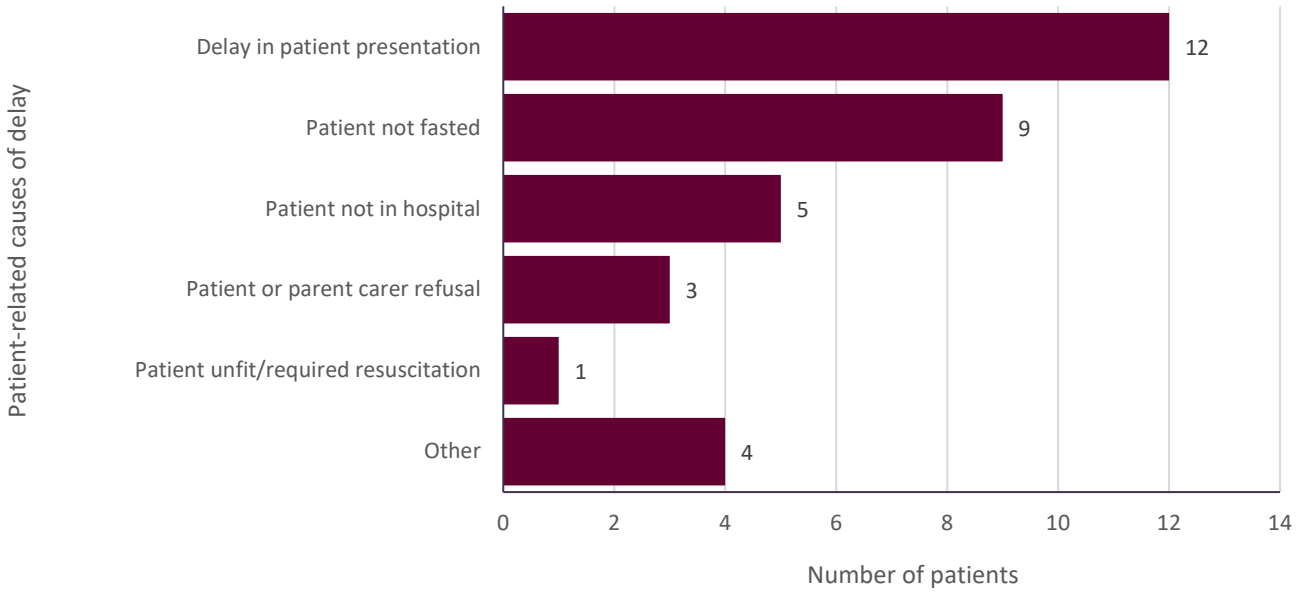


Figure 6.9 Patient-related causes of delay

Reviewer assessment form data. Answers may be multiple; n=30 (unable to answer for 10)

Operator-related delays included lack of consent (14/71), essential investigations not being undertaken (12/71), and the surgeon not being available (7/71) (F6.10 and F6.11).

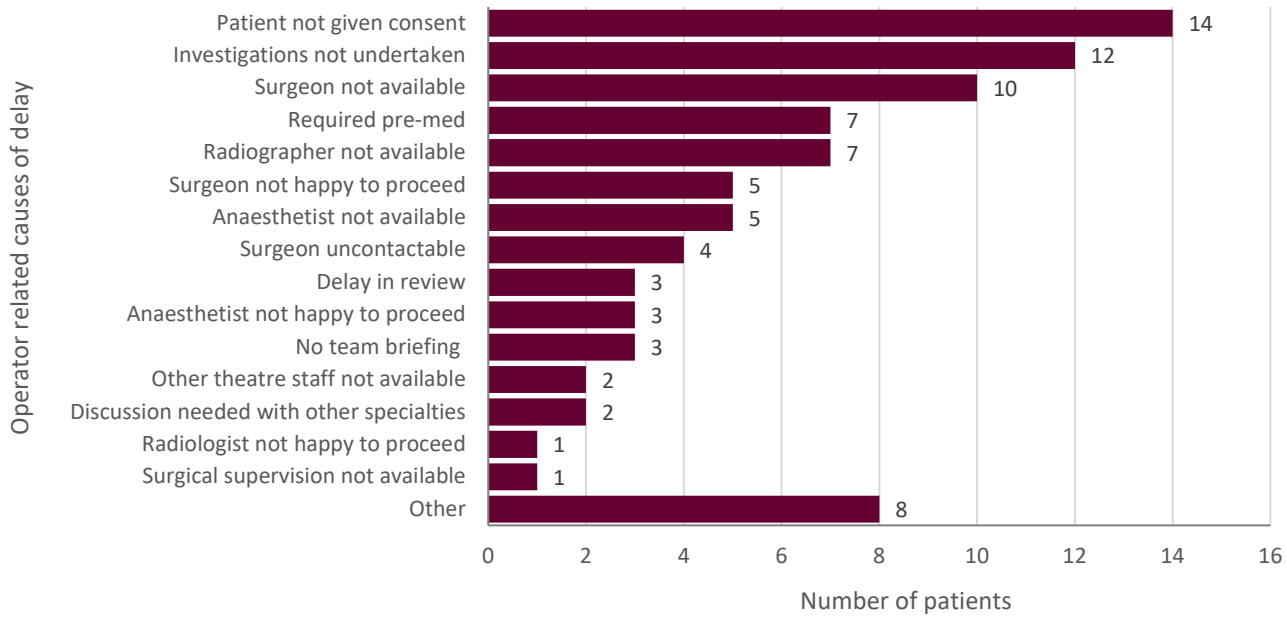


Figure 6.10 Operator-related causes of delay

Real-time survey data. Answers may be multiple; n=71

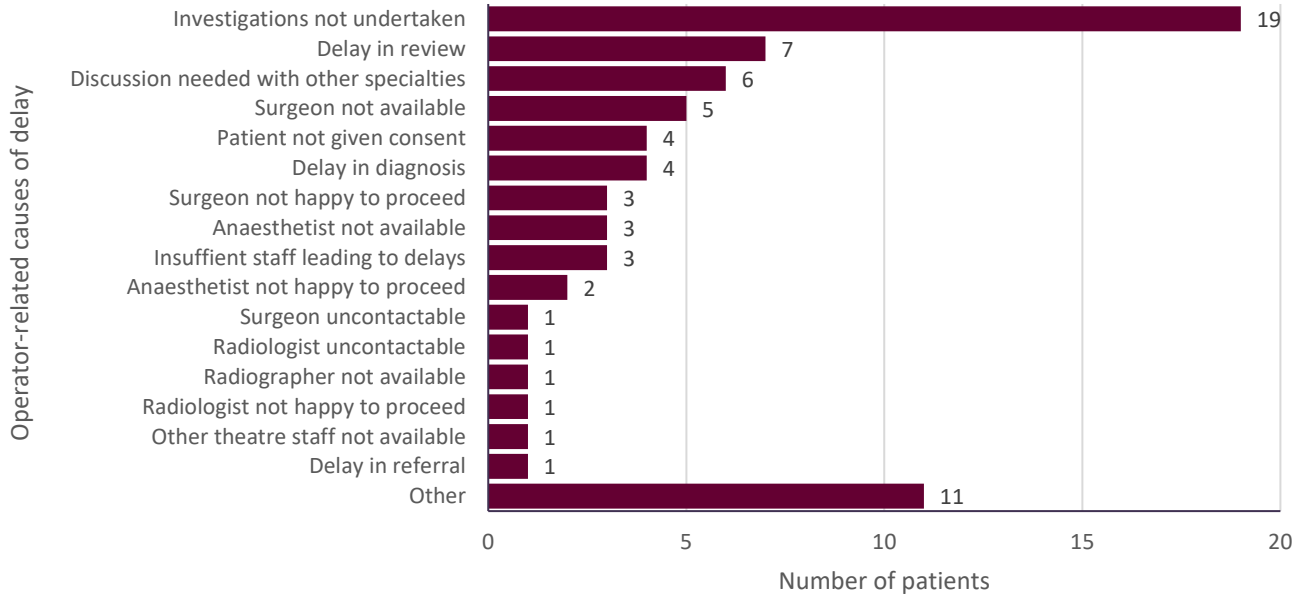


Figure 6.11 Operator-related causes of delay

Reviewer assessment form data. Answers may be multiple; n=65 (unable to answer for 22)

Where there was a delay, only 12 patients had documented evidence that there was escalation of care to the theatre team. The reviewers expressed concern about the number of cases (50 patients) where they were unable to determine whether there had been an escalation of care when a delay occurred. It was noted that electronic records can record data on booking and escalation and should be used to facilitate audit and quality improvement.

There were more likely to be delays during the early part of the week compared with later in the week and at weekends, suggesting capacity mismatch at certain times (F6.12). This could be due to batching as a result of lack of provision of 24/7 resources for investigation particularly at weekends and out of hours or inadequate theatre access such as hot (urgent) lists.[15]

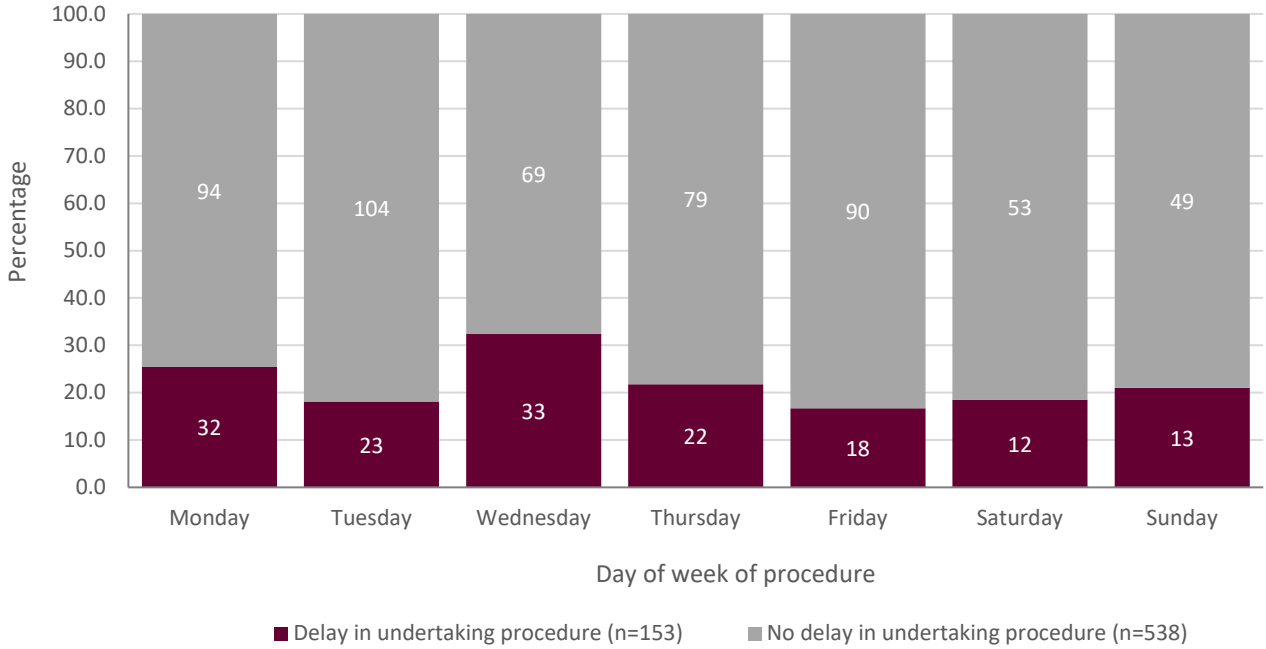


Figure 6.12 Delays in undertaking the procedure by the day of procedure
Real-time survey data

Nearly a fifth of patients experienced delays, with 141/163 (86.5%) experiencing multiple delays (T6.8).

Table 6.8 Cumulative number of delays	Number of patients	%
1 delay	22	13.5
2 delays	53	32.5
3 delays	30	18.4
4 delays	23	14.1
5 delays	12	7.4
6 delays	12	7.4
7 delays	4	2.5
8 delays	5	3.1
9 delays	1	<1
11 delays	1	<1
Total	**163**	

Reviewer assessment form data

Surgeons indicated that the care could have been improved in some way for 81/679 (11.9%) patients, while anaesthetists identified room for improvement in the care of 103/760 (13.6%) patients.

Reviewers rated the overall quality of care as being good for most patients (559/810; 69.0%) (F6.13). *(see Appendix 3 for some additional case studies of good practice.)* However, there was room for improvement in 31% of patents, which mainly involved only slight amendments to the existing pathways of care to improve the quality of care provided.

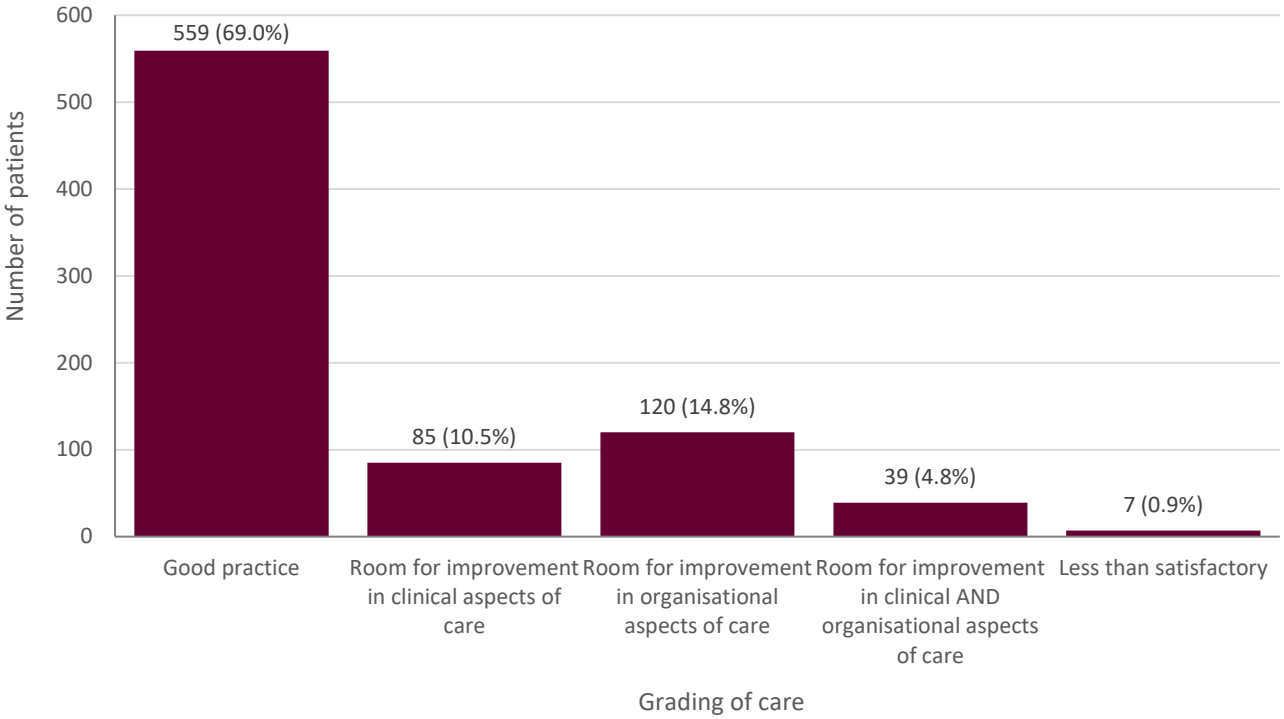


Figure 6.13 The overall quality of care provided to patients undergoing emergency surgery
Reviewer assessment form data

Reviewers identified organisational care as the area with the greatest room for improvement (F6.14), noting the fact that access to emergency theatres was often limited by the theatre being occupied or more urgent cases taking priority. Reviewers noted that good care was provided when specialties used planned lists for less urgent cases.

Emergency procedures are the 'stress-test' of a system and can reveal areas where care could be improved. Auditing these procedures can help to ascertain whether the system is working. However, such audits were undertaken in only 45/108 (41.7%) hospitals.

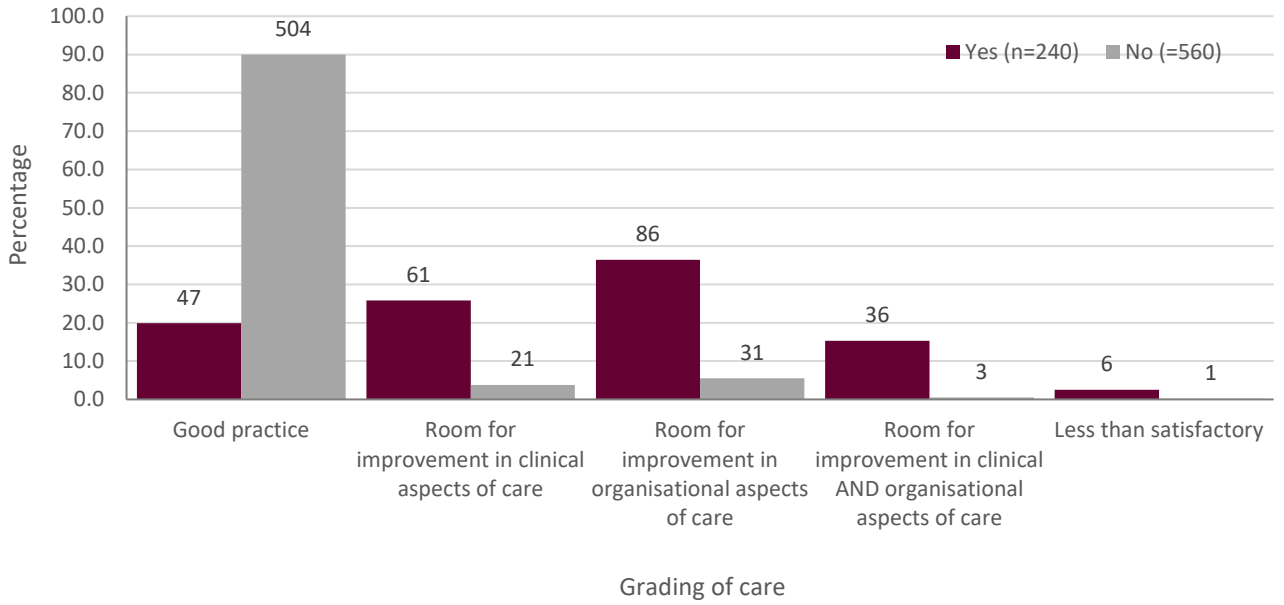


Figure 6.14 Reviewers' opinion on whether care could have been improved
Reviewer assessment form data

7 TRAINING, CONFIDENCE AND EXPERIENCE

(BACK TO CONTENTS)

CASE STUDY – GOOD CARE

A baby with an abscess in their armpit was brought to a district general hospital that did not usually operate on patients under four years old. No specialist unit within a reasonable distance had beds available so the patient was kept at the district general hospital. The next day an anaesthetist and surgeon who were confident in caring for small children were available and the operation was successfully performed.

Reviewers felt that this was a good example of how knowledge of the skill sets of surgeons and anaesthetists allows therapy to be delivered at a district general hospital.

CASE STUDY – ROOM FOR IMPROVEMENT

A neurodivergent patient with learning difficulties presented unwell. The patient was seen by paediatricians and then by surgeons, but the patient had difficulty articulating their symptoms. The absence of support for the patient contributed to a delay in appendicitis being diagnosed. Access to theatre was delayed and the patient's condition deteriorated before they eventually had surgery for a ruptured appendix.

Reviewers felt that this was an example of how communication difficulties can have an impact on the care received. Barriers can exist due to language differences, or as in this example, due to a child being neurodivergent, and highlights the need for staff training to prevent future delays.

Delivering care to children and young people in emergency situations demands knowledge, skill, experience, competence and confidence. The patient population presents across a wide spectrum of ages with associated changes in physiology and patients who present as emergencies can often have significant comorbidities that contribute to their presentation. Furthermore, as for all areas of healthcare, patients or their parents/carers may present with language barriers, may be neurodivergent, or have intellectual/developmental disabilities or difficulties which may make them more vulnerable in the healthcare setting. These communication difficulties may impede the ability for patients to express discomfort, complicating pre-operative assessments and postoperative care. The fast pace and unfamiliarity of an emergency care setting may make the situation more challenging for everyone. With this increased complexity it is vital that staff delivering care have access to suitable training and support.

Clinicians who delivered surgical care to children and young people in tertiary paediatric centres commonly used both internal and external continuing professional development (CPD) opportunities, while those in university teaching hospitals and district general hospitals used them less frequently (F7.1).

Resident doctors in tertiary centres not only had better access to internal CPD, but also to external CPD compared to their colleagues in district general hospitals, indicating that those in district general hospitals had less access to CPD overall. Changes in location of care will result in some units operating on relatively small numbers of patients, underscoring the importance of relevant CPD and refresher training.

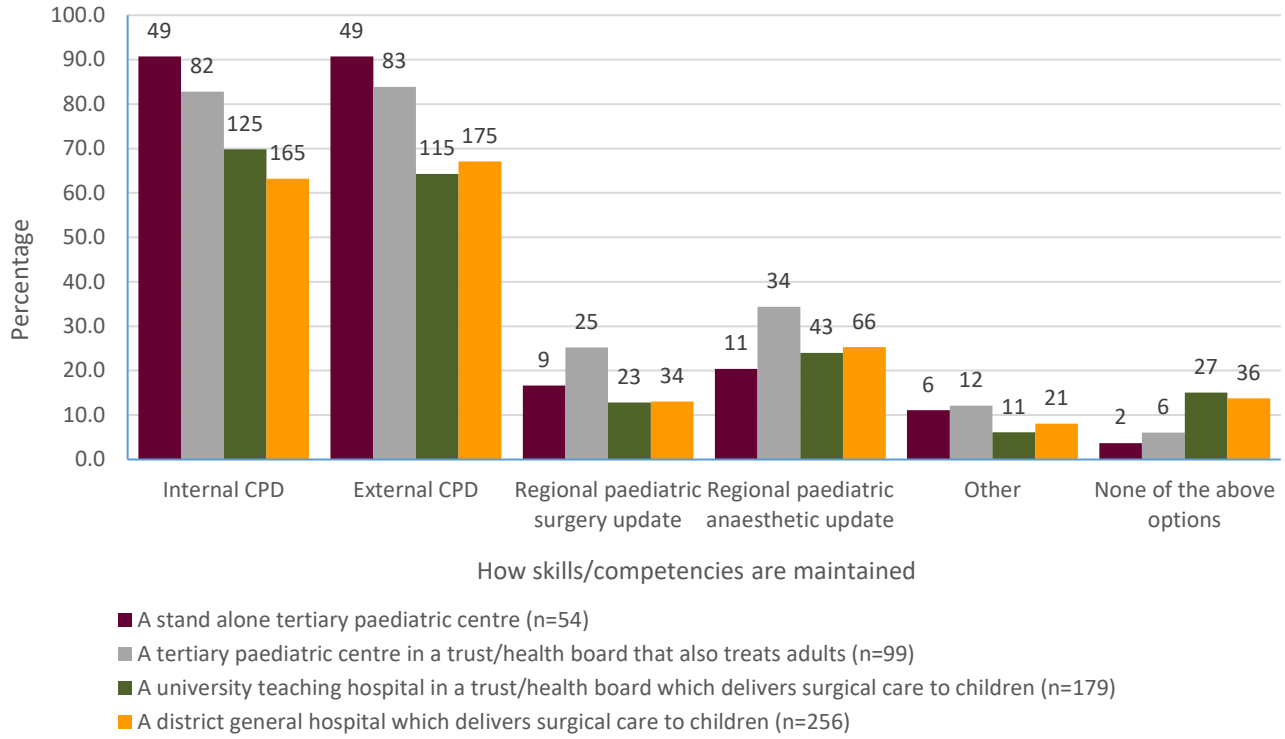


Figure 7.1 How clinicians maintained their skills/competencies in providing care to children and young people undergoing emergency procedures by hospital type

Clinician survey data. Answers may be multiple

Access to training is important, but making the diagnosis, operating and managing the postoperative care of a sufficient number of patients is of equal or even greater importance.[3] The average number of emergency procedures undertaken per annum was 39 for surgeons and 58 for anaesthetists, with a median of 15 and 30 respectively. When asked whether they thought this was enough to maintain competency, 213/254 (83.9%) surgeons and 192/242 (79.3%) anaesthetists thought that it was. Consultants and resident doctors in less specialised hospitals tended to feel less confident about their competence (T7.1).

Table 7.1 Enough surgery undertaken to maintain skill/competency	A standalone tertiary paediatric centre		A tertiary paediatric centre in a trust/health board that also treats adults		A university teaching hospital in a trust/health board that delivers surgical care to children		A district general hospital that delivers surgical care to children	
	n	%	n	%	n	%	n	%
Yes	50	94.3	98	99.0	135	81.3	177	75.6
No	3	5.7	1	1.0	31	18.7	57	24.4
Subtotal	**53**		**99**		**166**		**234**	
Unknown	1		3		17		27	
Total	**54**		**102**		**183**		**261**	

Clinician survey data; n=number of responses. Answers may be multiple (hospital type)