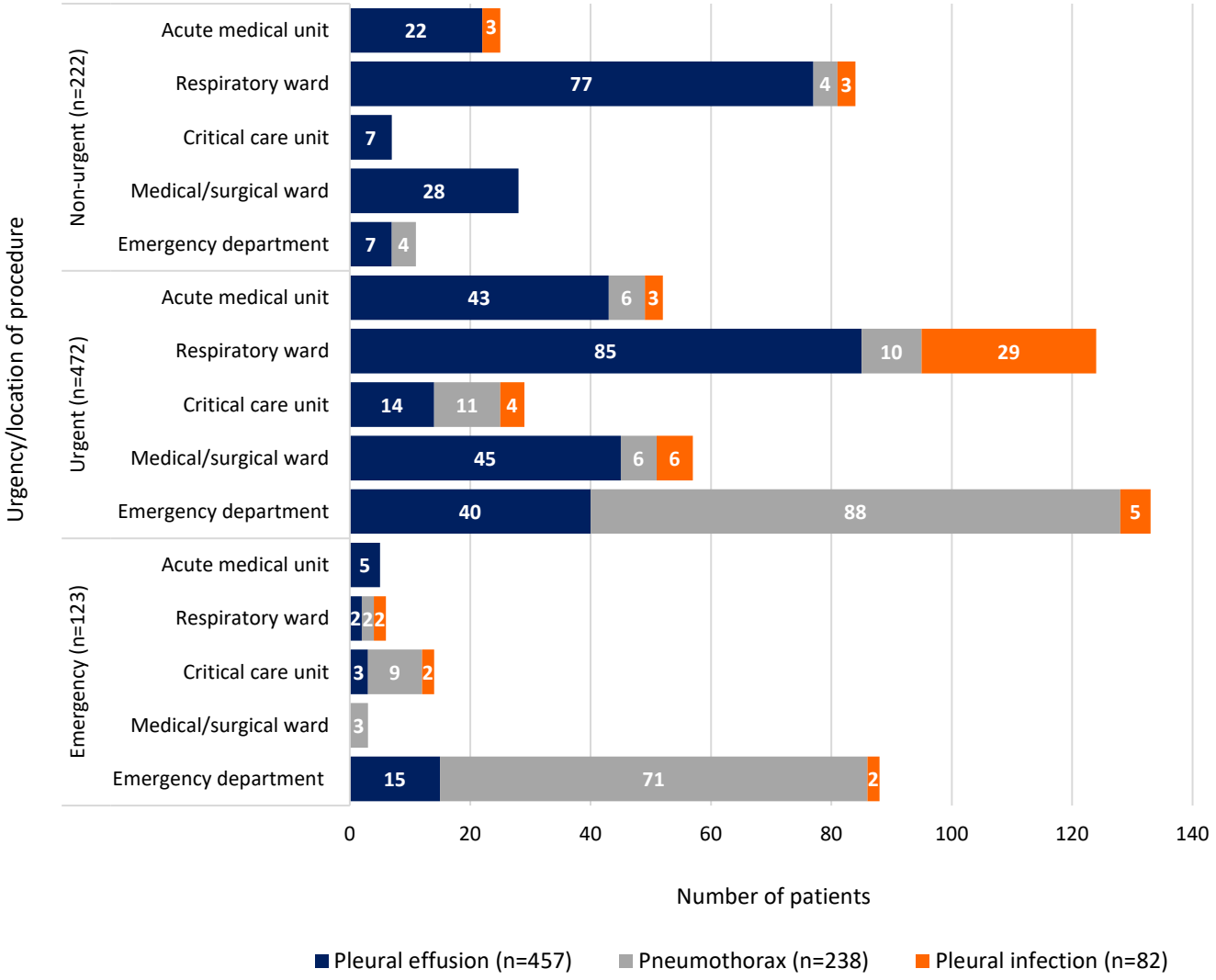
5 PERI-PROCEDURAL CARE

Specialty, grade and location

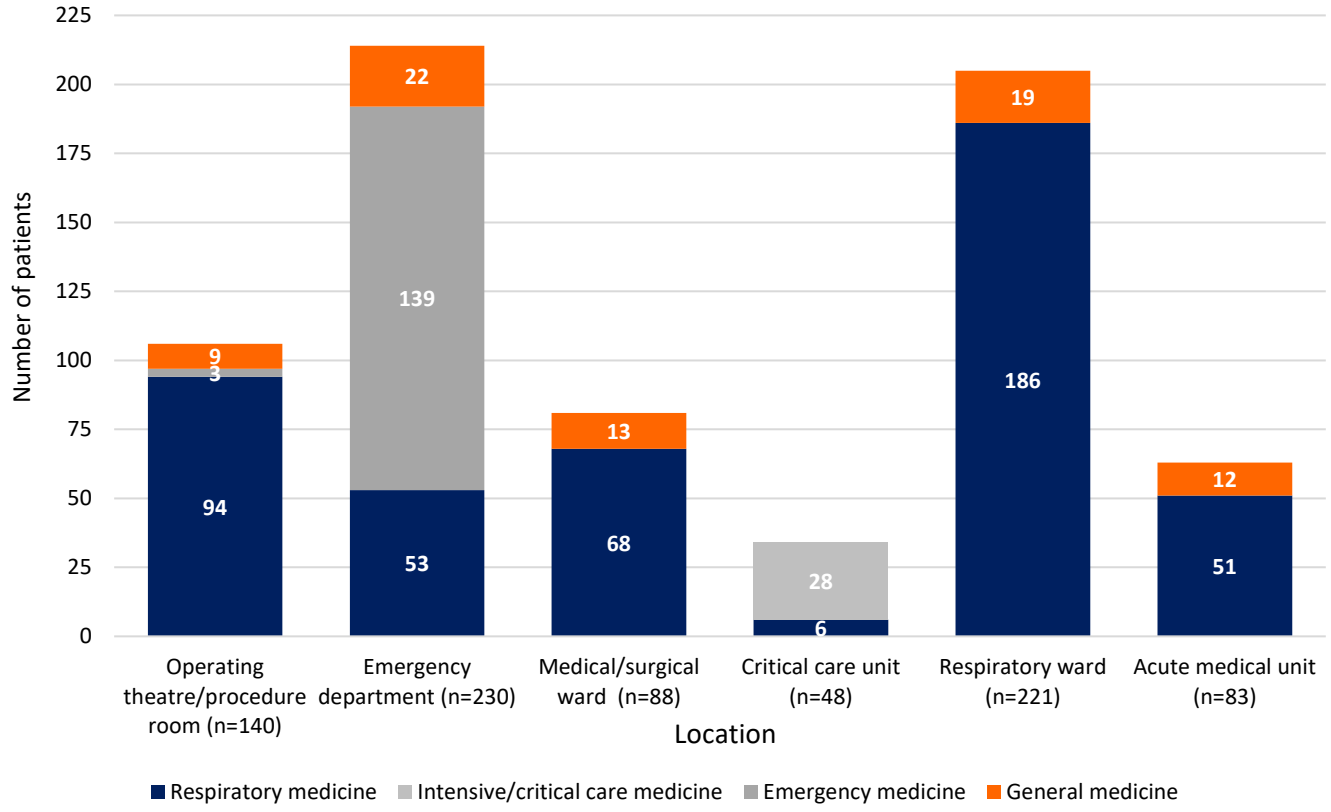
Pleural procedures are undertaken across multiple clinical environments, including respiratory wards, general medical wards, procedure areas and the emergency department (F5.1). This variation reflects differences in indication, with pleural effusion/infection work more commonly occurring in inpatient and specialist settings, and pneumothorax managed in emergency settings, including the emergency department.



F5.1 Indication for pleural procedure and urgency and location of procedure
Clinician questionnaire data

Emergency departments also manage a higher percentage of emergency and urgent procedures: mainly for pneumothorax. However, the distribution across settings and specialties highlights that pleural procedures are not delivered within a single, coordinated service (F5.2).

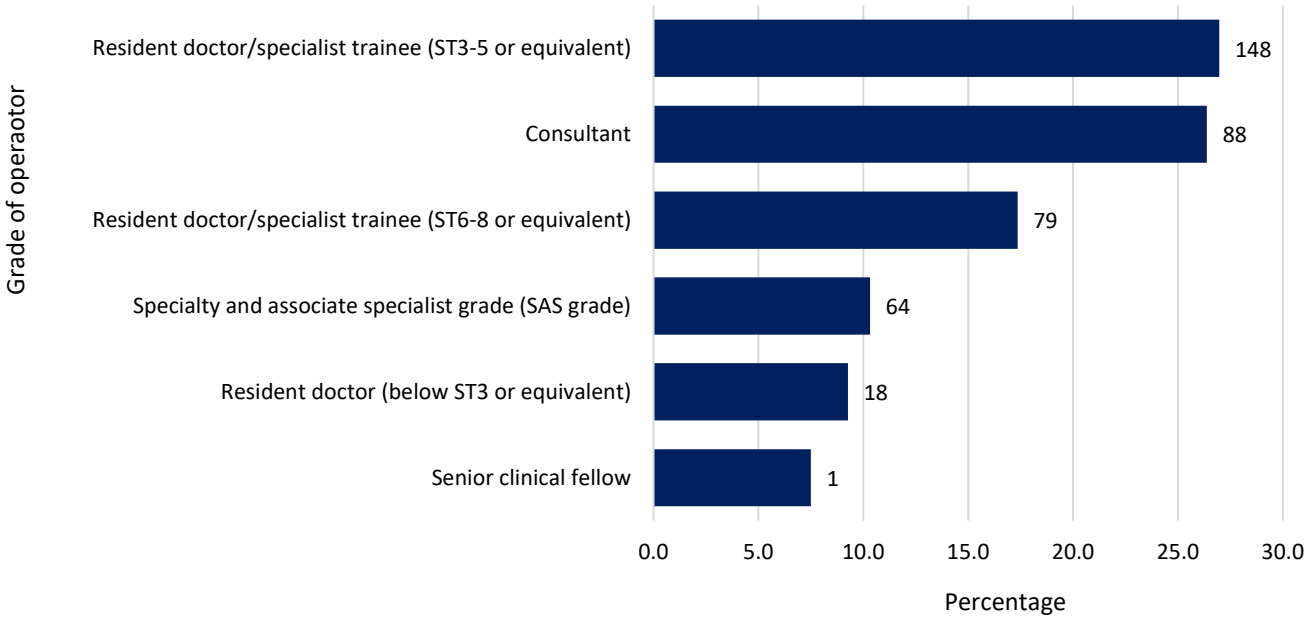
This fragmentation increases the risk of variation in processes, documentation and safety practices, reinforcing the need for standardised processes and pathways that can be consistently applied regardless of location. These processes are documented in guidelines that represent the specialties commonly performing these procedures, including the use of checklists.[11-13] It was of note that formal policies for chest drain insertion were not available in 22/173 (12.7%) hospitals.



F5.2 Location of procedure and specialty of operator

Clinician questionnaire data

In the opinion of the reviewers the grade and specialty of operators were appropriate for the majority of patients (418/427; 97.9%) (unknown in 136). Most procedures were undertaken by consultants, senior resident doctors or specialty and associate specialist (SAS) grade doctors (F5.3). This indicates that procedural performance is not primarily limited by operator seniority. Instead, reviewers found that system-level factors, particularly variation in processes and documentation, were the more significant determinants of care quality.



F5.3 Grade of operator

Clinician questionnaire data; n=853

Consent process

Consent processes showed considerable variation across cases reviewed. Written consent was documented in only 314/563 (55.8%) cases reviewed, with the remainder comprising verbal consent, best-interest decisions or undocumented consent (T5.1).

This variation suggests that consent is not consistently standardised, increasing the risk of incomplete documentation and variable patient understanding.

T5.1 How consent was taken	Number of patients	%
Written	314	55.8
Form 4/'Lacks capacity'	131	23.3
Verbal – documented in notes	88	15.6
Not documented	30	5.3
Total	**563**	

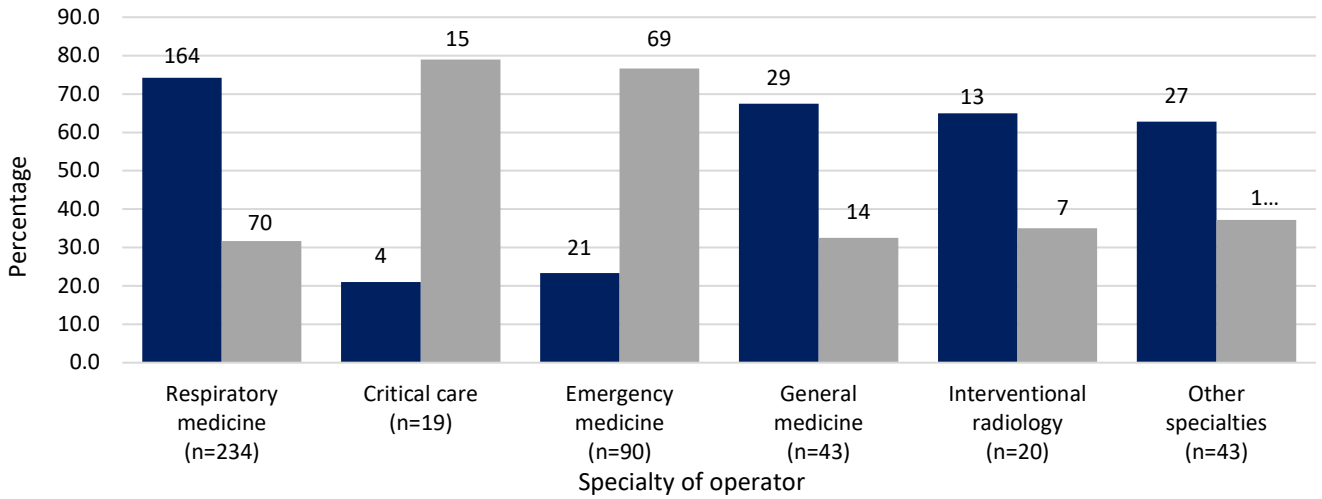
Case review data

At an organisational level, the use of procedure-specific consent forms were used in only 68/173 (39.3%) hospitals (T5.2).

T5.2 How consent for pleural procedures was recorded	Number of hospitals	%
Via the completion of standard surgical/procedure consent form	121	69.9
Via completion of a 'Best Interest' form/'Form 4'	79	45.7
Via completion of a specific pleural procedures consent form	68	39.3
Verbally and recorded in the notes	64	37.0
Other	15	8.7
Unknown	9	5.2

Organisational data. Answers may be multiple; n=173

Documentation of consent varied by clinical setting, with more consistent recording in procedural and respiratory areas, and less reliable recording in emergency and critical care settings (F5.4). This suggests that process reliability varies by clinical setting, with urgent and time-pressured environments more prone to incomplete documentation.



F5.4 The proportion of patients with written consent in different locations where the pleural procedure was performed

Case review data; n=563

In urgent, time-pressured settings such as the emergency department and critical care, patients may be acutely unwell, sedated, ventilated or otherwise lack capacity, meaning written self-consent may not be feasible or appropriate.

Lower rates of written consent in these areas may therefore reflect appropriate use of best-interests or emergency decision making processes, including Form 4 (a consent form for adults who lack mental capacity) documentation where relevant, rather than simply indicating poor process reliability or incomplete documentation.

This context should be acknowledged, with reference to guidance on consent for patients who lack capacity or require urgent treatment.[13,14]

Royal College of Emergency Medicine and Intensive Care Society guidance, which recognises chest drain insertion as an invasive emergency department procedure, advises that verbal or written consent should be obtained wherever the patient has capacity and the clinical situation allows.[12-14]

In urgent or emergency circumstances, guidance does not require a signed consent form if this would delay necessary treatment; however, the consent discussion, or the reason consent could not be obtained, should be clearly documented as soon as reasonably possible.

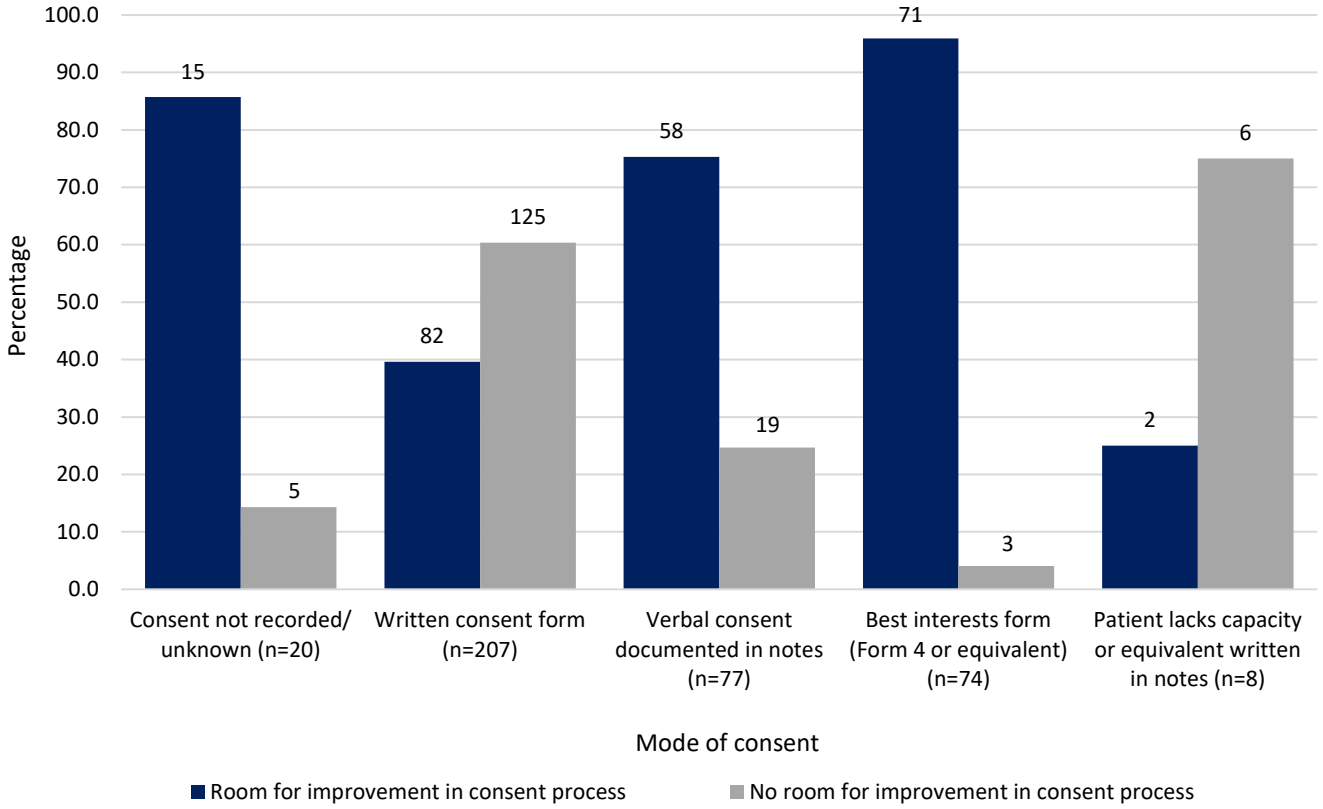
All clinicians should ensure that, before chest drain insertion, the record includes the indication, urgency, capacity assessment where relevant, risks and benefits discussed, alternatives considered, consent obtained or best-interests rationale, and any procedural safety checks such as correct side/site confirmation. This should be embedded as expected practice for chest drain insertion in all locations, supported by use of local checklists, senior oversight and audit of documentation quality.[11,15]

Reviewers identified room for improvement in more than half of assessable case notes (278/483; 57.6%), most commonly due to incomplete documentation rather than complete absence of consent (T5.3). This indicates that the issue is not only whether consent is obtained, but also how thoroughly it is recorded.

T5.3 Reviewer was of the opinion that the consent process could have been improved	Number of patients	%
Yes	278	57.6
No	205	42.4
Subtotal	**483**	
Unknown	80	
Total	**563**	

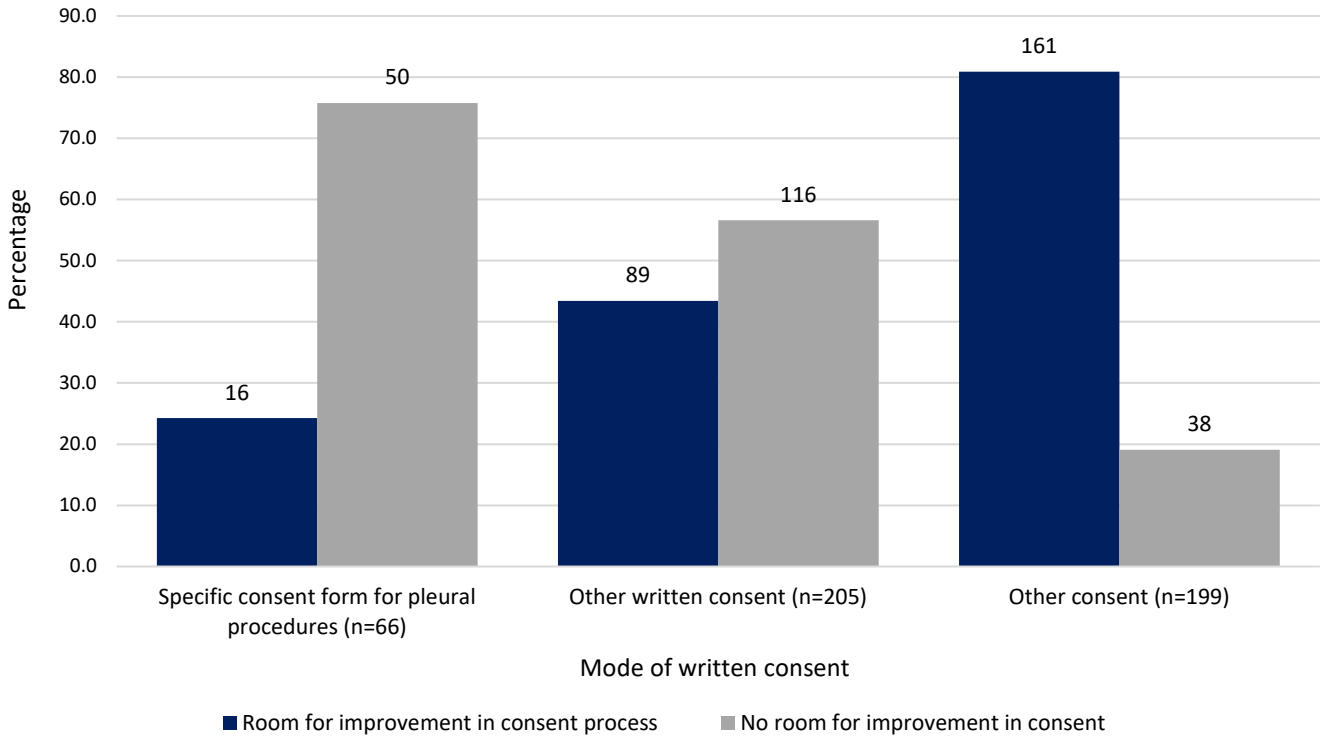
Case review data

Reviewers were more likely to identify room for improvement in the consent process if the consent was not written (F5.5). Where written consent was obtained, room for improvement was less common if a specific consent form for pleural procedures was used (16/66; 24.2%) compared with other forms of written consent (89/205; 43.4%). This suggests that where the process is standardised, this supports better judged consent.



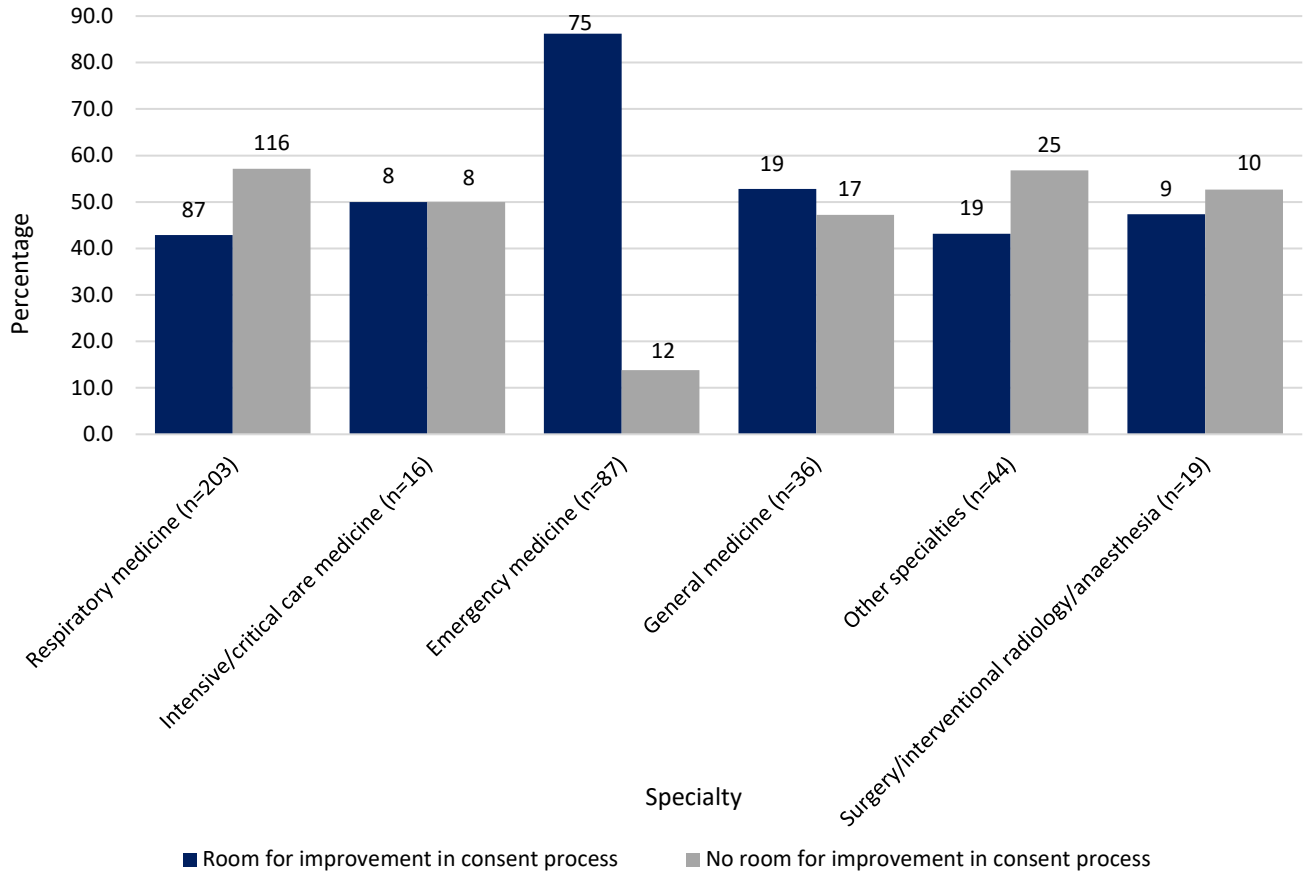
F5.5 Room for improvement in the consent process and the mode of consent taking
Case review data

The use of procedure-specific consent forms was associated with fewer reviewer concerns (F5.6). This indicates that standardised documentation may function as a safety intervention, supporting more consistent and complete consent processes.



F5.6 Use of pleural-procedure-specific consent form vs room for improvement in the consent process
Case review data

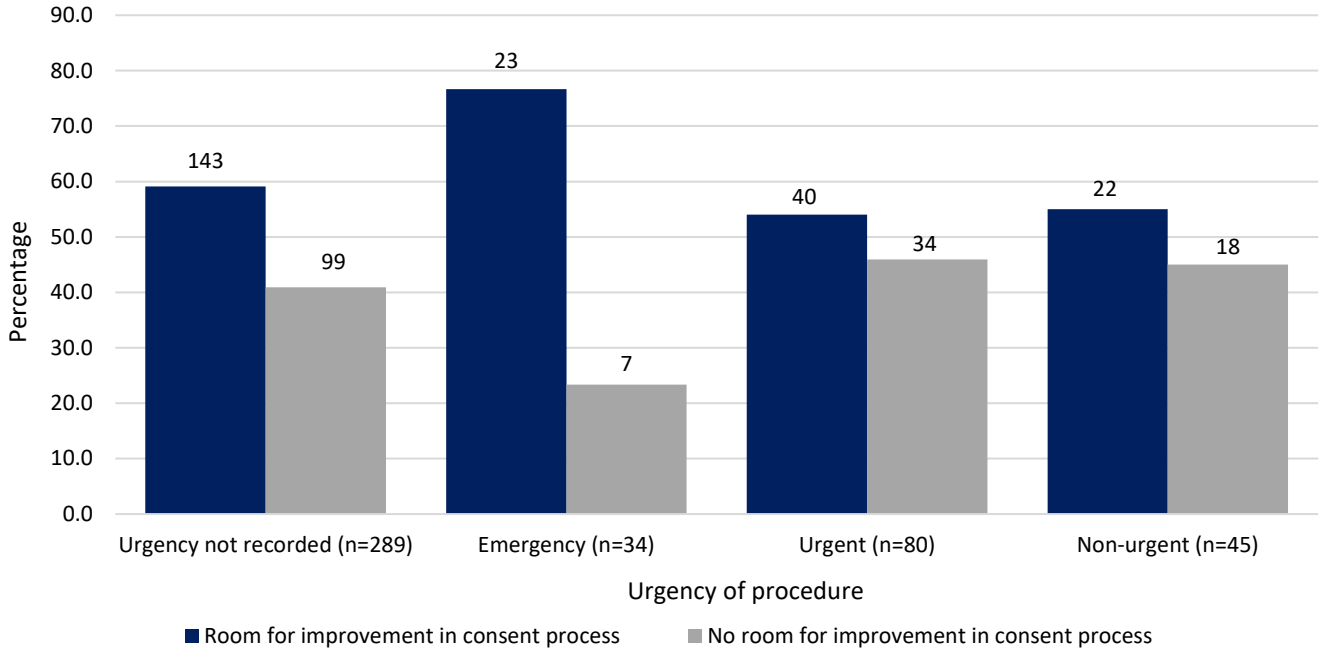
Consent processes also varied by specialty (F5.7). This may reflect differences in casemix and urgency but may also be due to less standardised processes. Some specialties may have more established pleural pathways with better standardisation. This approach has been applied to most elective procedures where standardisation has been introduced to improve safety.[16]



F5.7 Specialty of operator and room for improvement in consent
Case review data

Procedural urgency must not be used to excuse poor safety practice but should be recorded to describe the context in which processes were applied. In 289/448 (64.5%) cases, urgency was not recorded, and in emergency cases reviewers identified room for improvement in more than two-thirds of cases (F5.8). This reinforces the need for streamlined, standardised processes that can be replicated when care is time-pressured.

Royal College of Emergency Medicine, and Intensive Care Society guidance on invasive procedures specifically recommend accurate documentation even in emergency settings where informed consent may be taken verbally.[12,14]

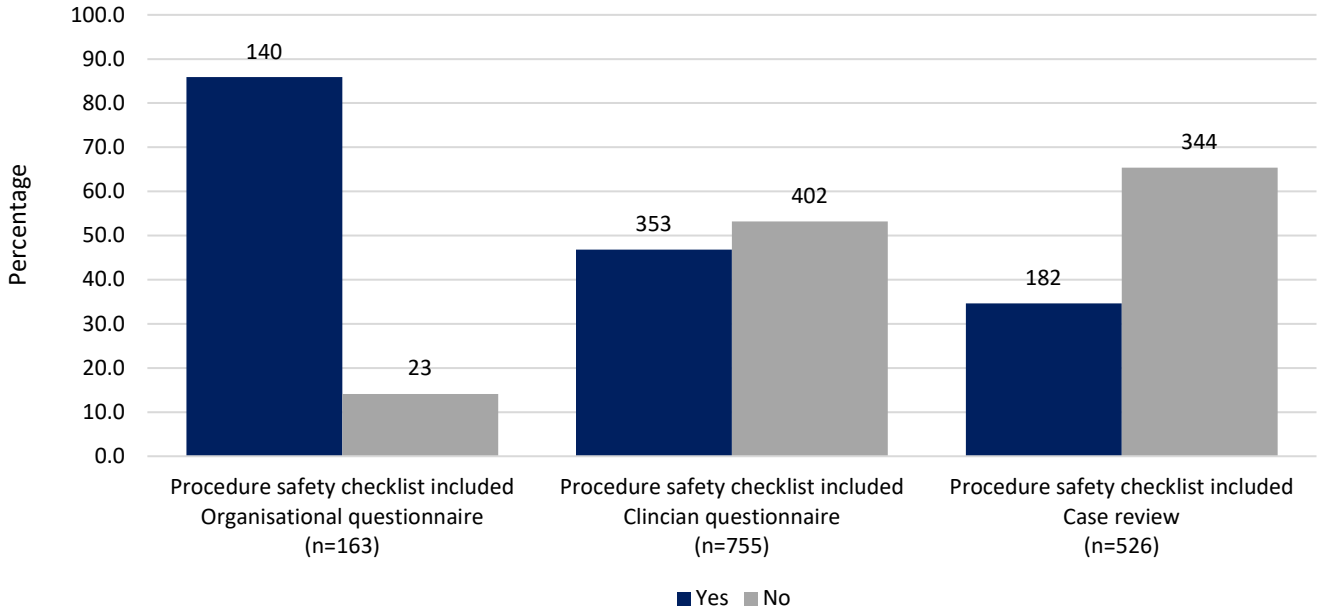


F5.8 Room for improvement in consent associated with the urgency of the procedure

Case review data

Procedural preparation: Local Safety Standards for Invasive Procedures (LocSSIPs)

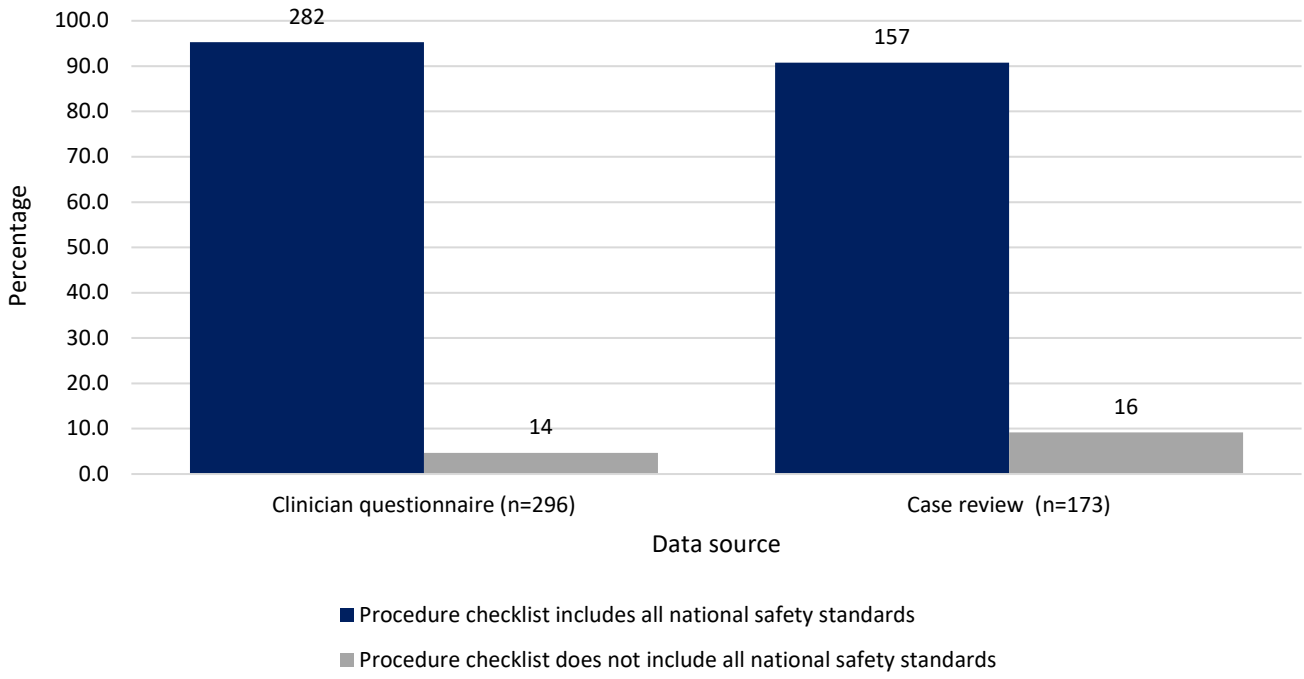
Safety standards for invasive procedures were designed to improve patient safety and to reduce the incidence of harm caused by 'never events'. They were introduced in the NHS in 2015 and their use is subject to regular audit to ensure that they are reliably used and regularly updated.[16] These should be the next stage in the process for safe chest drain insertion. It was reported from 23/163 (14.1%) hospitals that they did not routinely employ LocSSIPs for chest drain insertion. Procedure safety checklists (LocSSIPs) were not routinely documented, being present in only 182/526 (34.6%) cases reviewed and reported by clinicians for 353/755 (46.8%) patients (F5.9). This demonstrates that checklist recording is not yet embedded as standard practice across settings.



F5.9 Inclusion of a procedure safety checklist

Organisational questionnaire, clinician questionnaire and case review data

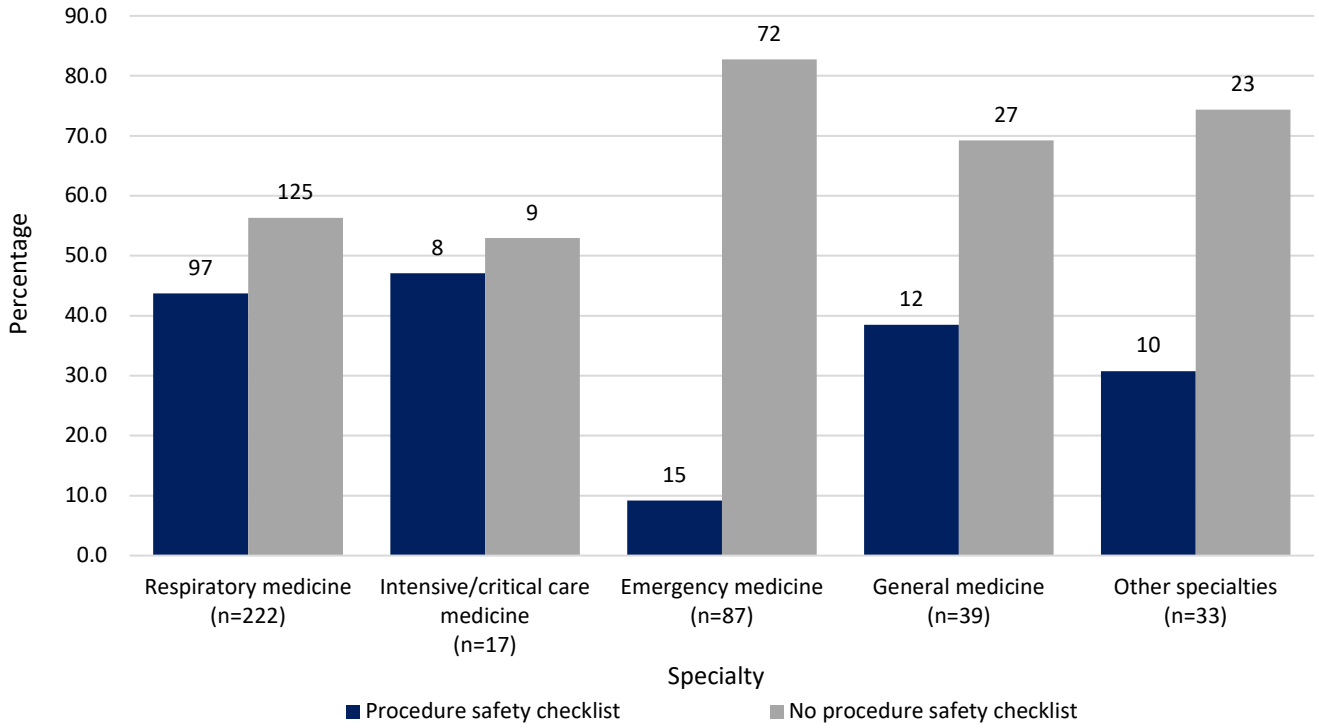
When a checklist was present, it generally (>90% from both case review and clinician questionnaire data) included all relevant standards, and their use would therefore be likely to result in safer care (F5.10).



F5.10 Inclusion of all national safety standards in LocSSIPs

Clinician questionnaire data

The use of a safety checklist varied significantly by specialty. It was most commonly used in respiratory medicine (125/222; 56.3%) and the intensive care unit (8/17) and was much less commonly used in other specialties (F5.11).



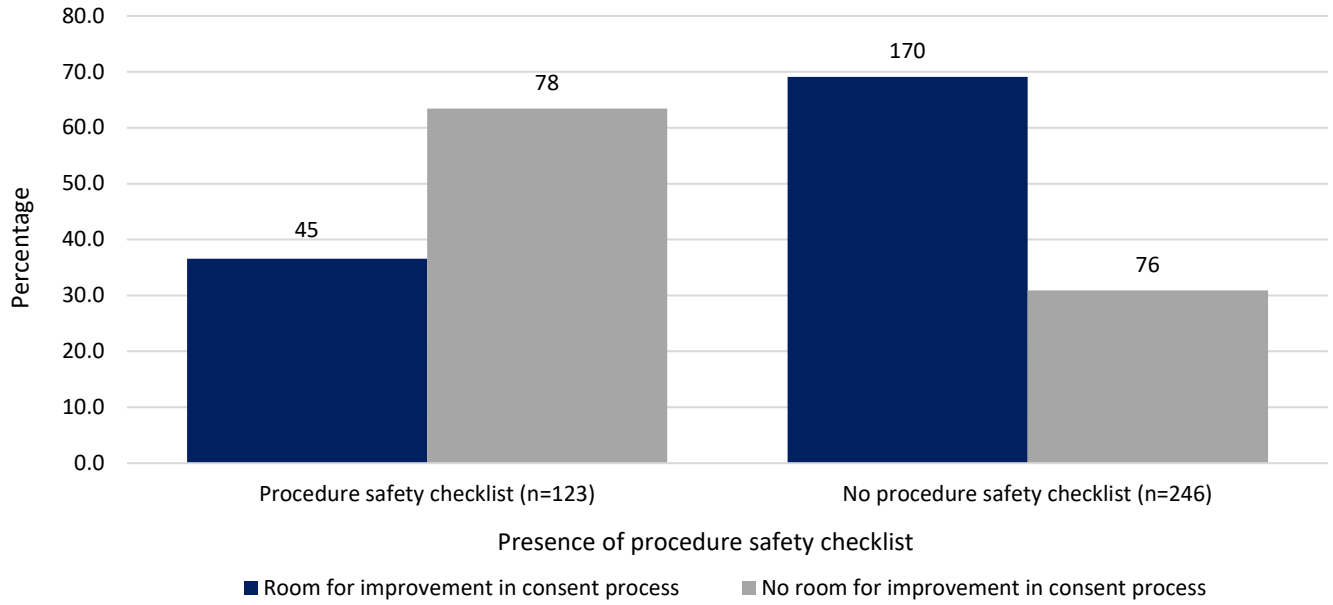
F5.11 Use of LocSSIPs by clinical specialty

Case review data

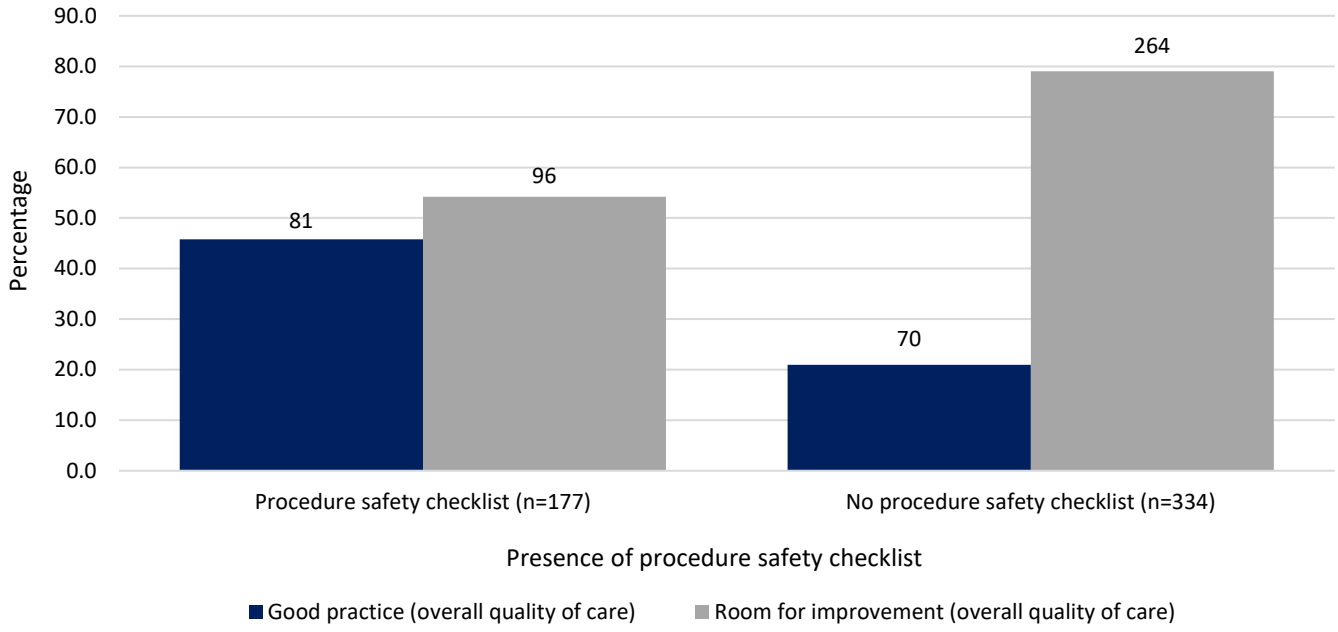
Checklists should be used for all invasive surgical procedures. When implemented correctly these have been shown to reduce patient harm and improve patient outcomes in healthcare. Invasive pleural procedural checklists facilitate standardisation, harmonisation and education across different specialties in different settings across organisations.[16]

Both the Royal College of Emergency Medicine guidelines for invasive procedures including chest drains and the British Thoracic Society Quality Standard specifically recommends the use of LocSSIPs.[12,17-19]

The presence of a safety checklist was associated with fewer consent-related concerns (F5.12) and improved overall quality of care (F5.13). This suggests that checklist use is a marker of a more structured and safety-focused pathway, rather than simply a documentation exercise.



F5.12 Room for improvement in consent associated with the use of a procedure safety checklist
Case review data



F5.13 Use of a procedure safety checklist and rating of overall quality of care
Case review data

Procedure documentation

Documentation of aspects of the pleural procedure were incomplete in the majority of cases, with only 79/978 (8.1%) containing all expected elements (T5.4). Key technical and safety information was frequently omitted including drain size (202/978; 20.7%) drain position (200/978; 20.4%), drain secured (264/978; 26.7%) and sampling recorded (153/978; 15.6%).

Incomplete documentation limits the ability to assess procedural quality, identify complications and ensure continuity of care. This represents a significant gap in the safety framework surrounding pleural procedures.

T5.4 Aspects of the procedure that were not documented	Number of patients	%
Maximum depth of pleural fluid*	483	49.4
Drain secured*	264	27.0
Size of drain*	202	20.7
Appropriate position*	200	20.4
Samples sent for analysis	153	15.6
Analgesia/anaesthetic	133	13.6
Consent	108	11.0
Technique employed*	100	10.2
Grade of proceduralist	83	8.5
Pre-procedure tests completed	73	7.5
Ultrasound guidance used*	64	6.5
Post-procedure plan	58	5.9
Specialty of proceduralist	53	5.4
Complications of the procedure	29	3.0
Chest X-ray to confirm position*	22	2.2

*Clinician questionnaire data. *Answers may be multiple; n=978. **Aspiration/pneumothorax not included in calculation as appropriate*

Anticoagulation and bleeding risk

Assessing bleeding risk and managing anticoagulation at the time of the procedure are important aspects of care. A substantial minority of patients had bleeding-related risk factors before the procedure (T5.5).

T5.5 Risk factors for bleeding that were present pre-procedure	Number of patients	%
Anti-coagulants	125	23.9
Anti-platelet agents	25	4.8
Other coagulopathy	14	2.7
Other	13	2.5
Low platelets	8	1.5
None	352	67.4

Case review data. Answers may be multiple; n=522

Without clear documentation of anticoagulation management, it is not possible to determine whether bleeding risks were appropriately assessed or mitigated. This represents a potential patient safety concern, particularly given the proportion of patients with identifiable risk factors. This finding supports the need for checklists to improve pre-procedure risk assessment and procedural care.

Ultrasound

The 2008 NPSA Rapid Response Report on the risks of chest drain insertion highlighted serious avoidable harm, including cases where the absence of ultrasound guidance contributed to organ injury.[20] In this study, ultrasound use for drainage of pleural effusions, which was recommended in the safety alert, appears to have become embedded in practice.

Ultrasound guidance was used for 344/369 (93.2%) patients (T5.6). However, among the 25 patients who did not have an ultrasound, case reviewers considered this appropriate in seven patients. In the 18 patients where reviewers believed ultrasound should have been used, 15 had no LocSSIPs used and three had complications.

This reinforces the role of ultrasound as a core safety component of pleural procedures rather than an optional adjunct.

T5.6 Ultrasound guidance was used during the procedure	Number of patients	%
Yes	344	93.2
No	25	6.8
Subtotal	**369**	
Unclear from notes	43	
N/A: Pneumothorax	151	
Total	**563**	

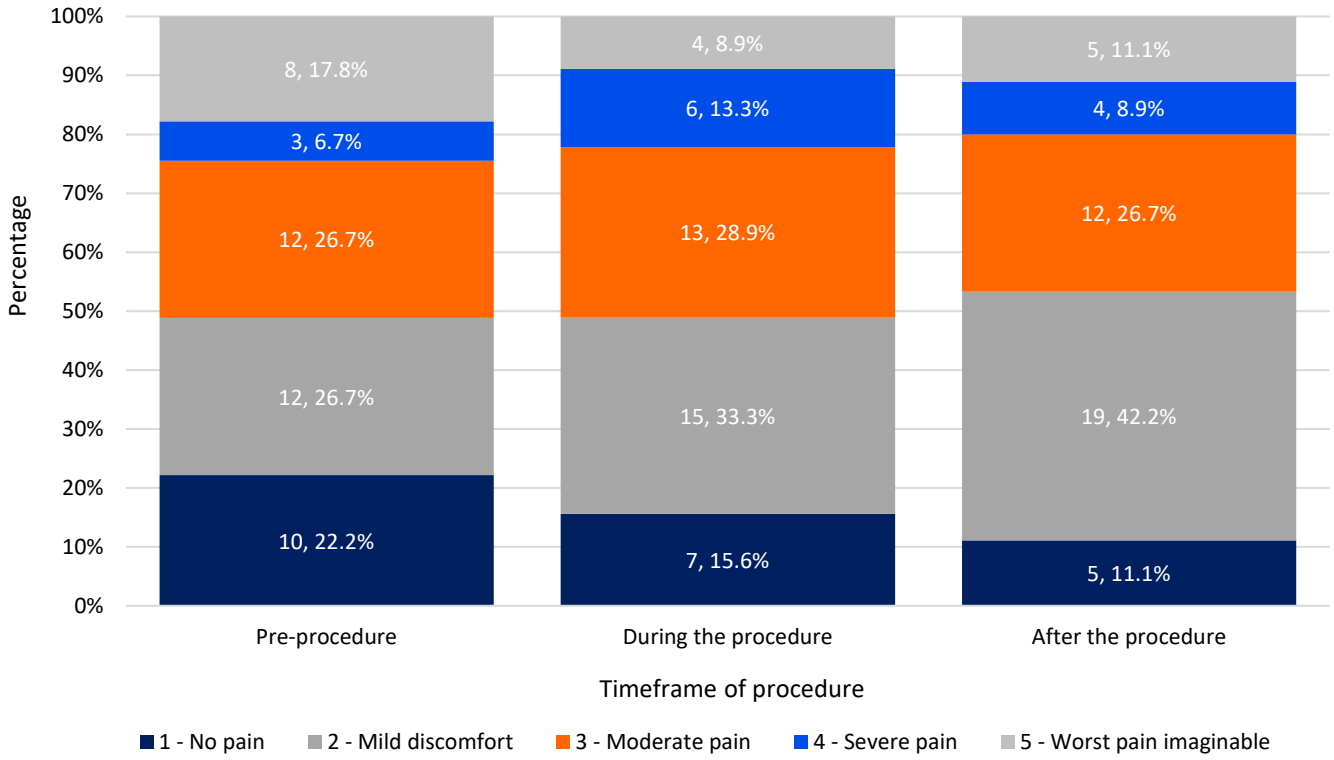
Case review data

These data suggest that the standard use of ultrasound is now recognised, even if not universally delivered.

Pain management

Pain management around the time of insertion is fundamental from a patient perspective. This was highlighted by responses in the patient questionnaire. Data from the patient survey showed that 23/45 patients experienced at least moderate pain during the procedure and 21 post-procedure, suggesting that pain is a significant issue for patients (F5.14).

"I felt that this procedure should not have been undertaken on a ward with just the curtain around my bed. While I agreed for this procedure, I did not feel at all confident with the process, the person who inserted the drain was supervised, but I was not prepared for such a brutal intervention, and several times I thought I would lose consciousness. If I was to have a chest drain inserted again I would not be at all happy to have this at ward level, furthermore I don't feel I had sufficient pain relief prior to the intervention, this left me feeling nervous, scared, apprehensive and I might say even frightened."



F5.14 Patient rating of pain pre-, peri- and post-procedure

Patient survey data; n= 45

Although local anaesthetic was used for most patients (T5.7), documentation of pain assessment and additional analgesia was inconsistent. Pain at the time of the procedure was documented in 91/831 (11.0%) patients (T5.8), likely reflecting under-documentation rather than absence of symptoms.

T5.7 Type of anaesthesia/analgesia used	Number of patients	%
Local anaesthetic	771	91.2
Opioids (e.g. codeine)	98	11.6
Paracetamol	78	9.2
General anaesthetic	36	4.3
NSAIDs	7	0.8

Clinician questionnaire data. Answers may be multiple; n=845

T5.8 Documentation of pain	In pain at time of procedure	%	Room for improvement in any aspect of pain management/analgesia	%
Yes	91	11.0	65	17.4
No	740	89.0	308	82.6
Subtotal	**831**		**373**	
Unknown	147		190	
Total	**978**		**563**	

Clinician questionnaire data

The high proportion of cases where reviewers were unable to assess pain management further supports the conclusion that pain is not being consistently assessed or recorded. Although electronic records around pain management were not always available to reviewers, standardised documentation of pain

management at the time of the procedure is likely to improve documentation and the consideration of appropriate pain relief at this time.

In the view of the reviewers there was room for improvement in the pain management of 65/373 (17.4%) patients. Furthermore, reviewers were unable to answer in 190 cases, suggesting that documentation was often insufficient to judge the quality of pain management.

Standardised recording of pain at the time of the procedure is important to ensure that appropriate pain relief is considered and administered. Excessive pain during a procedure that should not cause significant discomfort should prompt review by a more senior member of the team.

Procedure proforma

A procedure proforma is standardised documentation for recording the entire peri-procedural care of patients undergoing chest drain insertion. This differs from a LocSSIPs (pre-procedural checklist) as it often contains consent, procedure note and post-procedure care instructions **(SEE APPENDIX)**.

It was reported from 44/167 (26.3%) hospitals that standardised documentation for chest drain insertions was not used (T5.9).

T5.9 A standardised documentation template for the insertion of chest drains	Number of hospitals	%
Yes	123	73.7
No	44	26.3
Subtotal	**167**	
Unknown	6	
Total	**173**	

Organisational data

Reviewers reported that peri-procedural care was managed using a specific proforma in only 141/518 (27.2%) patients (T5.10).

T5.10 Evidence that the patient's peri-procedural care was managed using a specialised proforma	Number of patients	%
Yes	141	27.2
No	377	72.8
Subtotal	**518**	
Unknown	45	
Total	**563**	

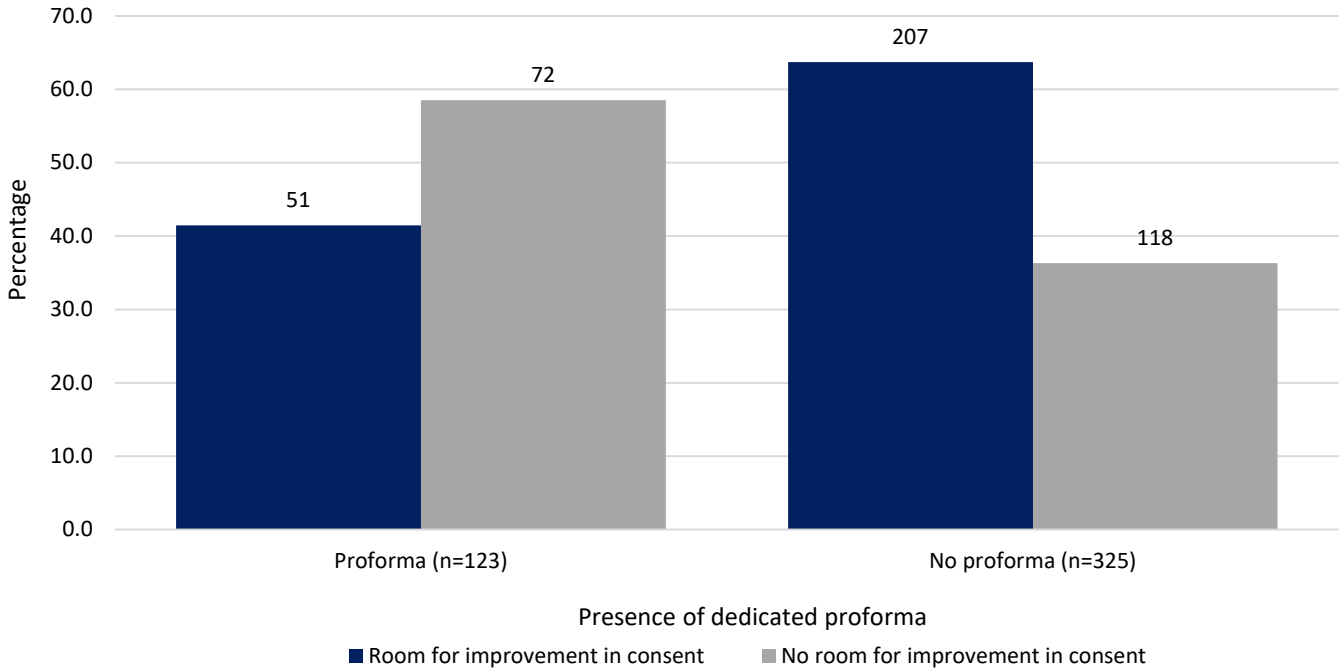
Case review data

At organisational level, clinicians recorded that a proforma for pleural procedures was used for 353/863 (40.9%) patients (T5.11). For 127/863 (14.7%) patients without a completed proforma, one was available in the organisation but not used. This suggests that lack of proforma use is both a provision and implementation issue.

T5.11 A specific proforma for pleural procedures was used in the care of this patient	Number of patients	%
Yes	353	40.9
No, this does not exist locally	221	25.6
No, this was not completed (unknown if this exists locally)	138	16.0
No, this is available locally, but was not completed for this patient	127	14.7
This was not fully completed for this patient	24	2.8
Subtotal	**863**	
Not documented	115	
Total	**978**	

Clinician questionnaire data

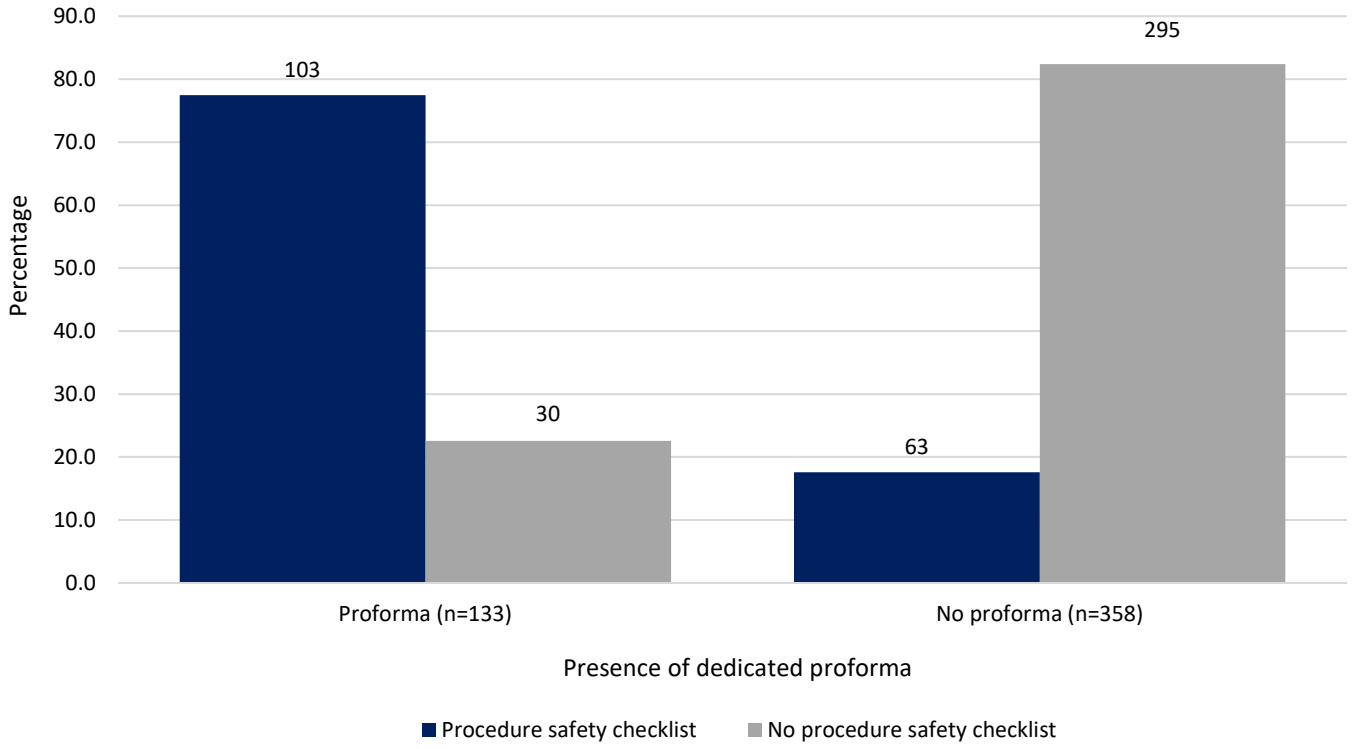
Cases reviewed where a proforma had been used showed fewer consent-related concerns than those without one (118/325; 36.3% vs 72/123; 58.5%) (F5.15).



F5.15 Use of a dedicated proforma and room for improvement in consent

Case review data

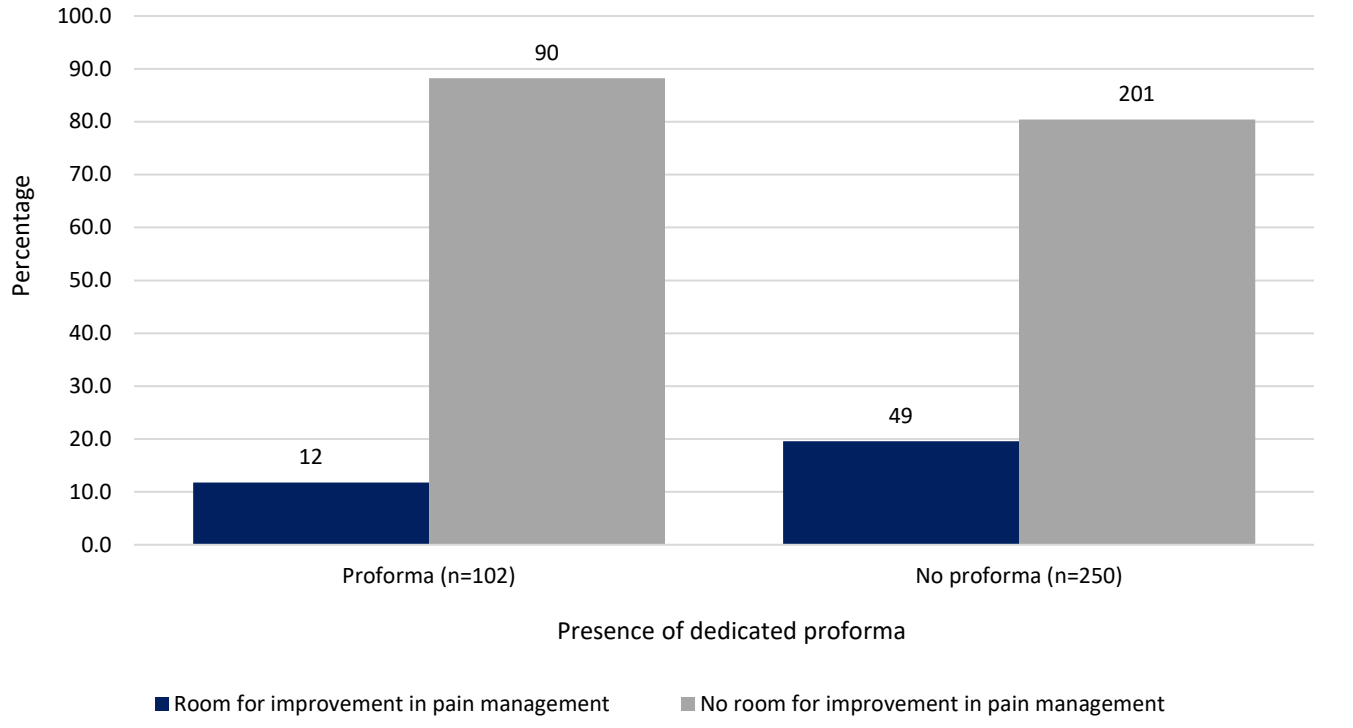
Use of a proforma was also associated with increased LocSSIPs use (103/133; 77.4%) compared with cases without a proforma 63/358 (17.6%) without (F5.16).



F5.16 Use of a proforma and use of LocSSIPs

Case review data

When a proforma was used there was also less room for improvement in pain management (12/102; 11.8% vs 49/250; 19.6%) (F5.17).



F5.17 Use of a proforma and room for improvement in pain management

Case review data

These effects translate into overall quality of care. Where a proforma was used, good care was identified much more often than where no proforma was used (58/140;41.4% v 85/367; 23.2%).

The use of a proforma was also consistently associated with improved consent processes, greater use of safety checklists, better pain management, and higher overall quality of care. A proforma represents a practical and scalable intervention that addresses multiple areas of variation identified throughout the pathway.

Pleural service

Specialist pleural input can improve consistency, expertise and pathway adherence.[11] However, not every pleural procedure requires specialist involvement. Pleural services were involved for 143/522 (27.4%) patients (T5.13). For the 379 patients where a service was not used reviewers believed it should have been for 144/357 (40.3%) but identified 213 patients where this was considered appropriate (T5.14).

T5.13 Evidence that a specialised pleural service was involved in the care of this patient	Number of patients	%
Pleural service	143	27.4
No pleural service	379	72.6
Subtotal	**522**	
Unknown	41	
Total	**563**	

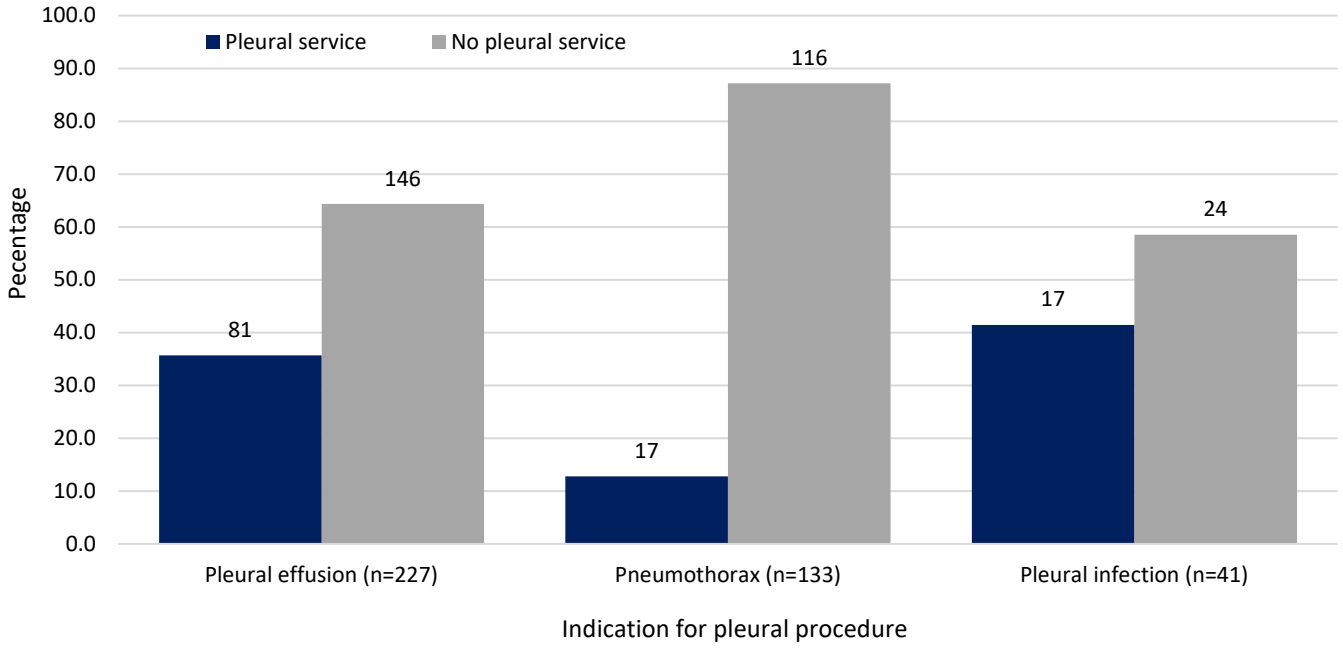
Case review data

T5.14 Where a pleural service was not involved, the patient would have benefitted from this	Number of patients	%
Yes	144	40.3
No	213	59.7
Subtotal	**357**	
Unknown	22	
Total	**379**	

Case review data

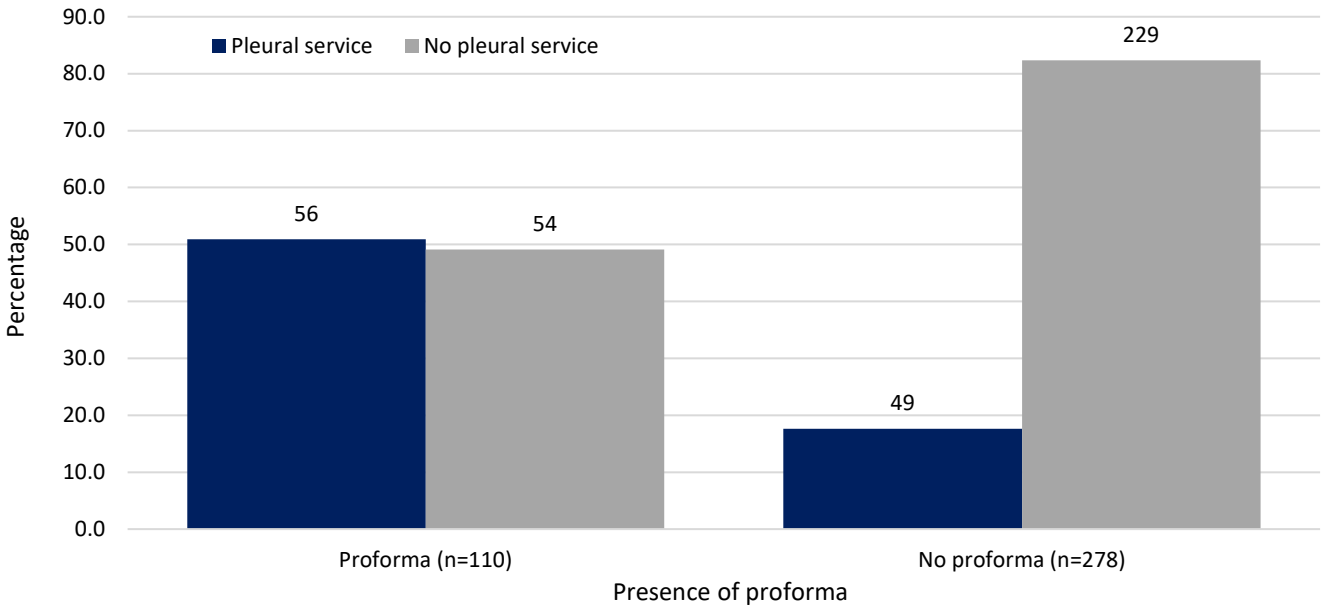
Reviewers commented that the reasons for specialist pleural involvement included reducing diagnostic delays and ensuring that preferred treatment was chosen at the correct time. This underlines the need for consistent core standards in all clinical settings and supports the recently published British Thoracic Society Quality Standard, which recommends that all hospitals treating pleural disease have access to specialist pleural advice.[1]

Specialist pleural input was more likely to be required for patients with pleural effusion or infection than for pneumothorax (F5.18). This is to be expected, as pneumothorax more commonly requires urgent treatment in an emergency department.



F5.18 Pleural service involvement and the indication for a pleural procedure
Case review data

The pleural service was more likely to be involved in patients for whom a proforma was used (F5.19). This may reflect that better developed pathways were used once the pleural team is involved. However, a proforma could also serve as a prompt to involve the pleural team.



F5.19 Pleural service involvement and use of proforma
Case review data

These findings suggest that access to specialist pleural expertise is variable, and that earlier involvement may improve decision making and pathway efficiency.

This reinforces the need for systems that facilitate timely specialist input, particularly for complex pleural disease.