4 ADMISSION, INVESTIGATION AND DECISION MAKING

Admission to hospital

Opportunity to prevent admission

There were 168/929 (18.1%) patients who had a previous admission to hospital where a chest drain was indicated (59 with a pneumothorax and 109 with infection or effusion) (unknown for 49). Of these, 41 had been admitted within the previous two weeks (and 73 in the previous four weeks).

Reviewers identified opportunities to improve care prior to the admission in 68/563 (12.1%) patients, most commonly through rapid access to a specialist pleural clinic, which could help to prevent the emergency admission and take pressure off the acute care pathway.

The GIRFT report on respiratory medicine makes recommendations about the workforce and infrastructure required to reduce acute admissions and length of stay for patients with pleural disease.[9] These recommendations are designed to support organisations to deliver high-quality services with sufficient capacity for patients with pleural disease.

Route of admission

The majority of patients were admitted via the emergency department (739/954; 77.5%) (T4.1). Overall, 497/954 (52.1%) patients in the study were admitted outside of weekday working hours (08:00–17:59). The out of hours admissions were split between weekdays (232/497; 46.7%) and weekends (265/497; 53.3%). As would be expected, admission from an outpatient clinic was more frequent on weekdays in working hours.

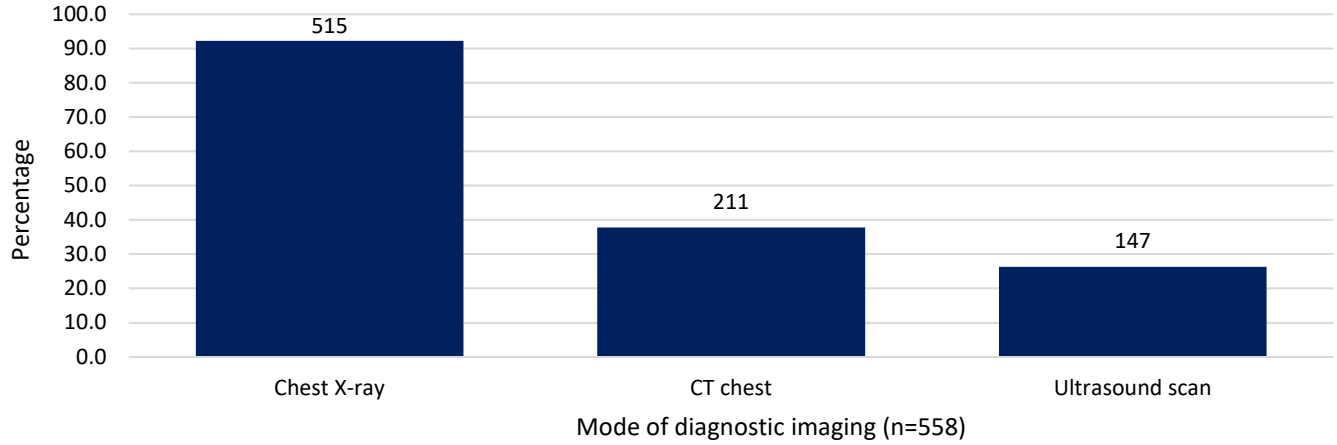
T4.1 Route of admission	Number of patients	%
Via the emergency department	739	77.5
Referral from attendance at outpatient clinic	73	7.7
Referral from primary care	58	6.1
Hospital transfer	42	4.4
Other	42	4.4
Subtotal	**954**	
Unknown	24	
Total	**978**	

Clinician questionnaire data

Initial assessment

Due to the route of admission, the initial clinical assessment generally took place in the emergency department. The reviewers considered that there was a delay in assessment for 47/563 (8.3%) patients.

Imaging is an essential part of the clinical assessment used to diagnose pleural abnormalities (fluid or air in the pleural cavity) suggested by the clinical examination and which will require intervention. At least one imaging modality was used in 558/563 (99.1%) patients (unable to answer in three, and the remaining three patients were treated for pneumothorax) (F4.1).



F4.1 Imaging performed prior to the procedure

Case review data; *n=558*

Ultrasound is an imaging modality that is specifically recommended to improve safety in the peri-procedural care of patients with a pleural effusion. In the diagnostic process, chest X-ray, computed tomography (CT) and ultrasound scanning were all used in combination, the most common investigation being the chest X-ray, which was used in 515/558 (92.3%) patients.

Reviewers found room for improvement in pre-procedure imaging in 49/536 (9.1%) patients. This was mainly due to a lack of ultrasound scanning facilities.

Other than imaging, there are no specific tests required before chest drain insertion. Reviewers also considered that all necessary investigations were undertaken in 499/563 (88.6%) patients and that all of the necessary information was captured by the investigations undertaken in 508/563 (90.2%).

In the small number of patients where information was missing, this mostly related to assessment of bleeding risk, which could have been anticipated in patients taking anticoagulants and those with low platelet counts. Documentation that bleeding risk has been considered is an important step in preparing for all invasive procedures.

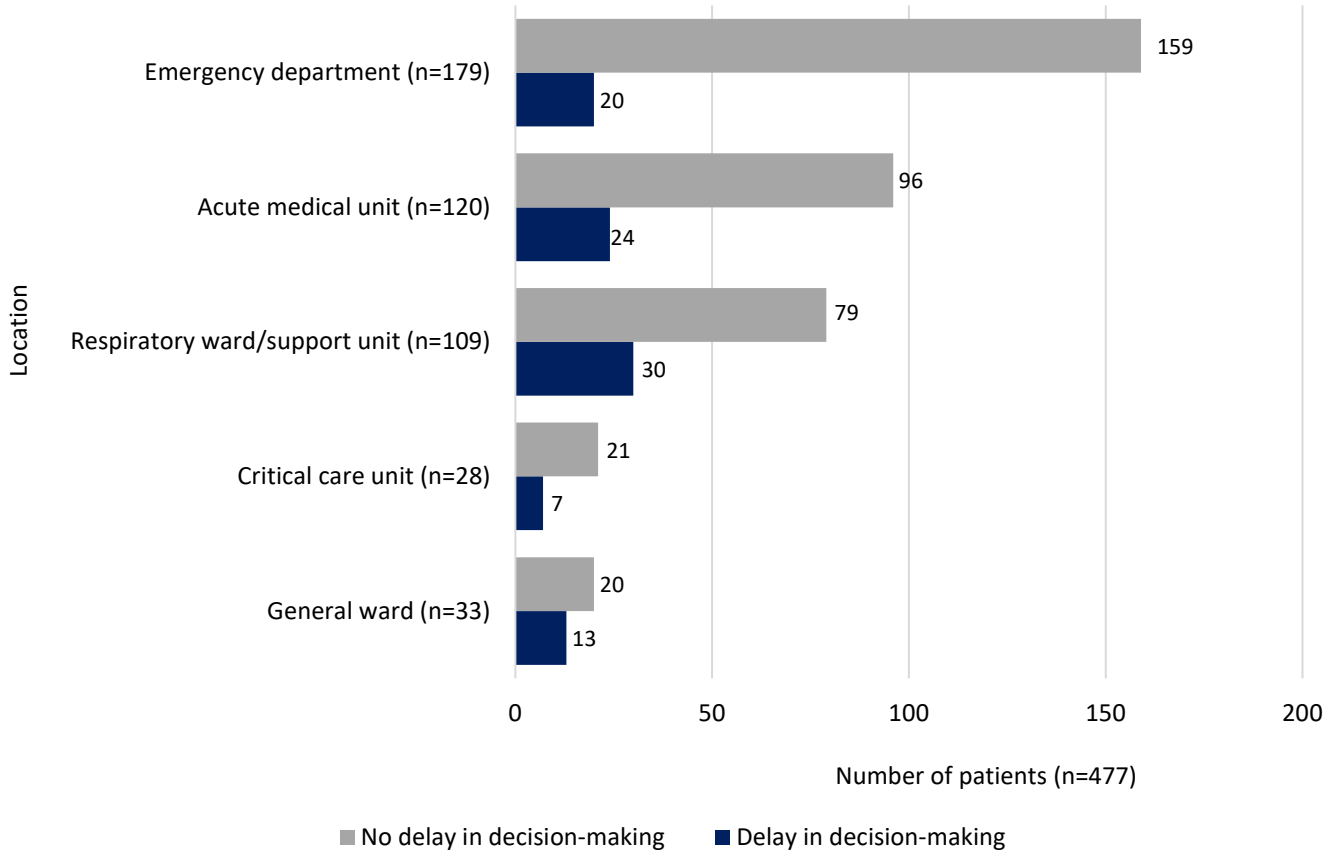
Timing of the procedure, decision making and delays

The decision to undertake a pleural procedure was most frequently made in the emergency department (300/978; 30.7%) and on the respiratory ward (231/978; 23.6%) (F4.2).

T4.2 Location of the patient when the decision made that pleural procedure was required	Number of patients	%
Emergency department	300	30.7
Respiratory ward	231	23.6
Acute medical unit	178	18.2
General ward	63	6.4
Critical care unit	51	5.2
Respiratory support unit	14	1.4
Outpatient department	11	1.1
Other	130	13.3
Total	**978**	

Clinician questionnaire data

There was a delay in the decision to insert a chest drain in 106/563 (18.8%) patients. Delays in decision making occurred in all the wards where patients were located (F4.2) (unknown in 85). They were also distributed both within and outside of normal working hours.



F4.2 Location of decision and delay in decision making
Case review data; n=478

The reviewers considered that the grade and specialty of the person making the decision was appropriate in 449/563 (79.8%) instances. There were only 21/513 (4.1%) cases reviewed where the person making the decision made it remotely (unknown in 50). Advice was sought from another healthcare professional about the pleural procedure in 176/492 (35.8%) cases (unknown in 71). Again, this advice was sought by doctors in all specialties.

There were further delays in carrying out the procedure after the decision had been made in 139/563 (24.7%) instances. They occurred when the patient was under the care of all clinical specialties and the reasons for delay were frequently not documented.

To help reduce delays, GIRFT recommends using procedure packs, which keep all the equipment required for the procedure in one place. Organisational data showed that 121/173 (69.9%) hospitals used pleural procedure packs or their equivalent. There is therefore room to improve this in more than a quarter of hospitals.

Overall, reviewers considered that 400/524 (76.3%) procedures were undertaken at the appropriate time, while 102/524 (19.5%) procedures should have been undertaken sooner (unknown in 39). The main reasons given for inappropriately delayed procedures included waiting for specialist review, imaging delays, anticoagulation and missed diagnosis.

There were 22/524 (4.2%) instances where the reviewers thought the procedure should have been delayed. The time of arrival in hospital did not appear to have an impact on whether the timing of procedure was considered inappropriate, neither did the specialty of the operator.

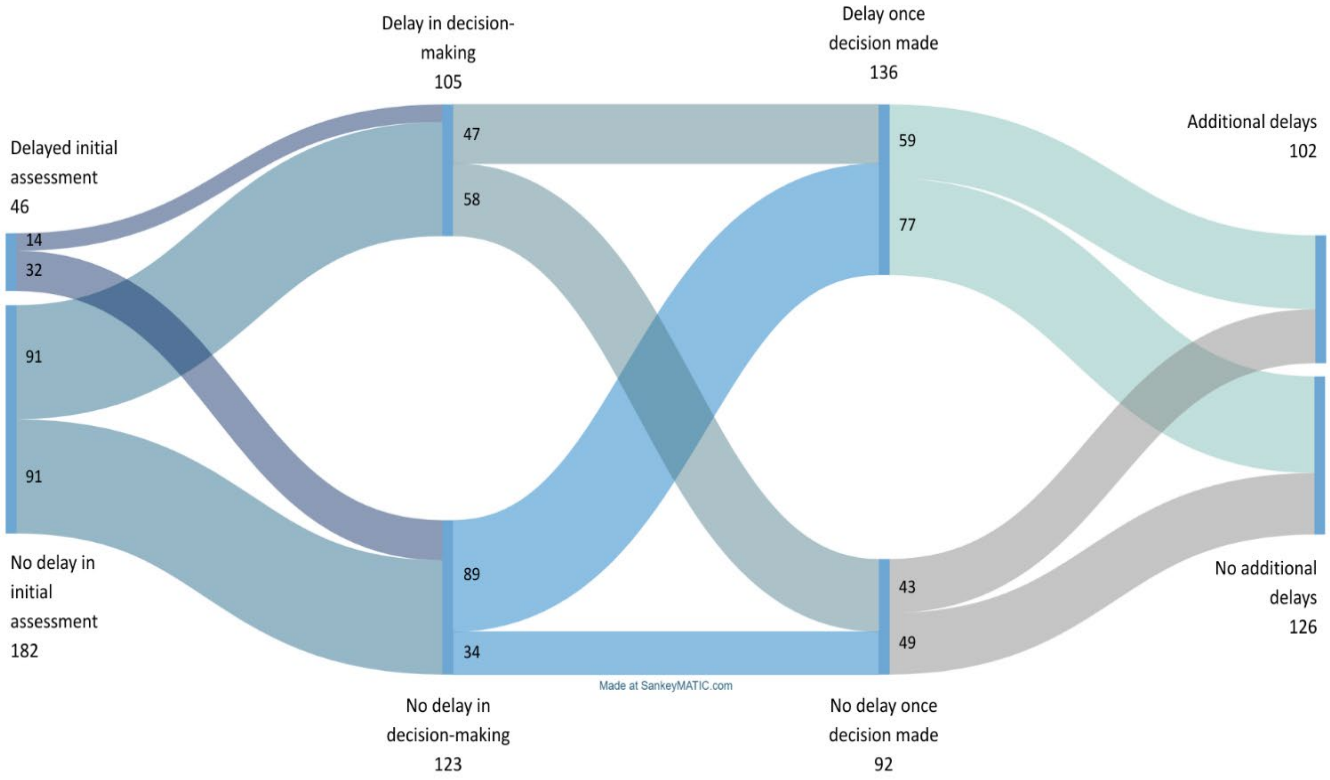
Clinical questionnaire data showed that 186/936 (19.9%) patients required transfer to a new location for their procedure (unknown in 42). The transfer contributed to a delay for 37/186 (19.9%) patients.

Across the whole clinical pathway, 228/563 (40.5%) patients experienced a delay at one or more step from initial assessment to the procedure itself. There were six patients who experienced a delay at every step of the pathway (T4.3 and F4.3).

T4.3 Additive and multiple delays in the pathway	Number of patients
Delayed initial assessment	46
Additional patients who experienced delay in decision making	90
Additional patients who experienced delay once decision made	81
Additional patients who experienced delay in their pleural procedure (not elsewhere specified)	11
Total number of patients experiencing delay in the pathway	**228**
No delay/unknown	335
Total	**563**

Case review data

Figure 4.3 focuses on the 228 patients who had a delay at some point in the pathway and shows how the delays at different points in the pathway intersected.

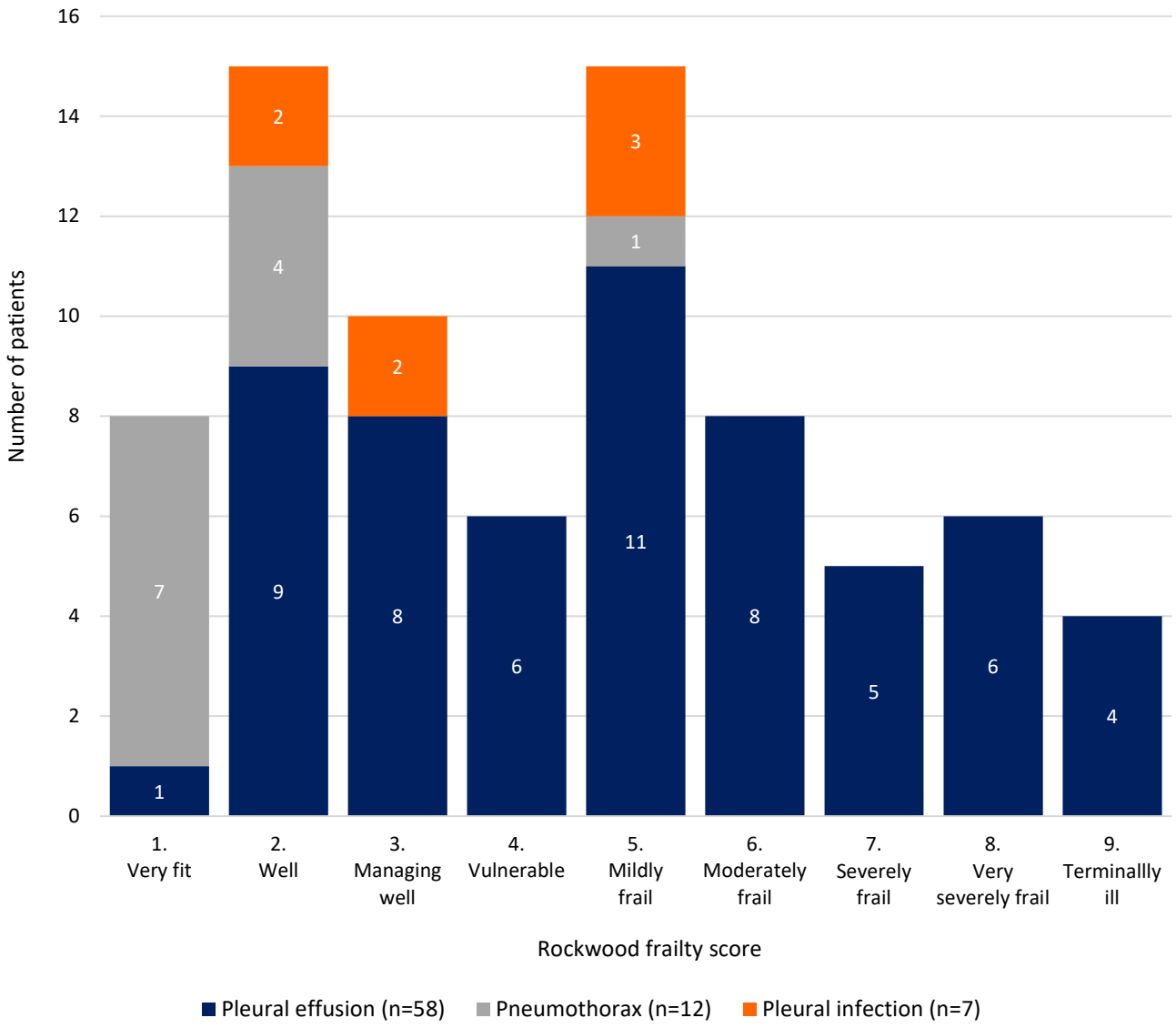


F4.3 Patients experiencing delays
Case review data; n=228

Using the least invasive procedure can both improve patient safety and reduce acute length of stay. Reviewers identified 82/563 (14.6%) patients for whom a less invasive approach could have been taken with better decision making and considered that the quality of care was affected in 39/82 patients. In this group, 19/82 patients died during the admission, and a further two died within 30 days of discharge.

For patients with a pleural effusion, these data describe a group with severe frailty for whom reviewers felt that intervention should have been avoided and palliative care would have been more appropriate. This is particularly relevant when previous attempts at drainage have provided little or no symptomatic relief.

For the patients with a primary spontaneous pneumothorax, guidelines have moved away from treatment based on the size of pneumothorax.[10] Less invasive approaches result in shorter length of stay and lower recurrence and complication rates.[11] For ten fit and well patients, an invasive procedure could have been avoided, potentially shortening their length of stay as well as improving their experience of care (F4.4).



F4.4 Rockwood frailty score of patients believed by the reviewers to have had an inappropriately invasive procedure or indication

Case review data; n=77

Case study: good practice

A fit young patient presented with chest pain and breathlessness. The chest X-ray showed a large pneumothorax. Conservative management was considered but a decision was made to aspirate. The patient improved and was managed with early review as an outpatient, with X-rays showing slow, progressive resolution of the pneumothorax.

The reviewers thought that this was an example of guideline-based good practice. No admission was required, and the less invasive approach (aspiration rather than drainage) was appropriate based on the patient's symptoms and level of fitness.

Case study: room for improvement

A frail older patient with extreme weight loss and underlying advanced malignancy was admitted with breathlessness and a moderate pleural effusion. A chest drain was inserted and drained four litres of blood-stained fluid over the next two days. There was no improvement in breathlessness, the patient remained bed bound and died before the drain was removed.

The reviewers thought that the course of this patient's deterioration was predictable and that a less invasive approach to treatment (aspiration or more likely, no intervention) and active palliative care would have been more appropriate.