



British Thoracic Society 2009 Pilot Pleural Procedures Audit

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Background

In May 2008, the National Patient Safety Agency (NPSA) issued a Rapid Response Report (RRR) on chest drain insertion (1), following report of a number of patient safety incidents. In November 2008, the BTS Pleural Disease Guideline Group prepared a statement to provide information on chest drain insertion (2) in advance of the publication of the revised Pleural Disease Guidelines in Spring 2010. (3)

In early 2009, BTS and NPSA agreed to work together on an audit which would aim to provide a snapshot of pleural procedures across a range of trusts, particularly comparing chest drain insertion practice to NPSA guidance and both the 2003 and 2010 BTS guidelines (1,3,4). This also incorporated a number of questions from NPSA specifically targeted at assessing the dissemination and implementation of the RRR.

Methods

The audit questions were produced and approved by the BTS Professional and Organisational Standards Committee, and the audit was set up on the new BTS audit tool website which provided the facility for online data entry.

BTS wrote to the lead respiratory physicians in approximately 50 trusts of varying sizes across the UK, inviting them to contribute to the pilot audit. Trusts who confirmed that they wished to participate were given special access to the online audit tool (via the BTS audit system).

The audit tool was designed in three parts:

Part 1: General information about the Trust

This section contained general information about the Trust (each Trust was invited to provide one response).

Part 2: Retrospective data collection about all chest drains placed within the Medical Directorate in the month of July 2009.

This section allowed trusts to enter a number of records, one for each patient who had a chest drain inserted within the medical directorate in the month of July 2009. Those patients who had drains inserted in A and E and who were subsequently admitted to medical wards were included, while patients whose drains were placed as part of a local anaesthetic thoracoscopy procedure were excluded.

Part 3: Prospective data collection about all pleural disease procedures and activity within the medical directorate in the month of September 2009.

This section requested summary of data collected for the month of September 2009. The questions included in each section of the audit are given in Appendix 1.

Trusts were invited to contribute to each part of the audit and data entry closed on 30 November 2009.

Results (summary)

A total of 12 Trusts responded to Part 1, 14 Trusts (covering a patient population of approximately 5million) to part 2 and 8 Trusts to Part 3.

To put the following data into context, the responding trusts were a mix of district general and teaching hospitals serving populations of between 225,000 and 680,000 and having between 126 and 1235 medical beds. Amongst these trusts, 1 respiratory department has a dedicated pleural disease clinic and 4 have a local anaesthetic thoracoscopy service. No responding trust has on-site thoracic surgery.

Response to the 2008 NPSA RRR

Bedside ultrasound access and training

Results suggest that contributing centres have responded to the 2008 NPSA report and the consequent publicity regarding safe chest drain insertion practice .

75% (9/12) of responding trusts have nominated a chest drain safety lead clinician. Access to ultrasound for the safe guidance of pleural procedures is also promising, with 75% (9/12) of responding respiratory departments having purchased their own machines. In 8/12 (67%), at least one member of the respiratory team has been trained to level 1 competence in thoracic ultrasound (of those with level 1 competence, 65% were SPRs and 35% Consultants).

While access to ultrasound is reasonable, its use for chest drain procedures in this audit was less reassuring (see table 1), being used in only 50% (34/68) of chest drain insertions for pleural fluid. Of these guided procedures, thoracic ultrasound was used at the time of chest drain insertion in 24/34 , with the less accurate remote 'X marks the spot' approach (which has little advantage over an unguided procedure (4)) being used in 6/34 procedures.

Table 1: ultrasound guidance for chest drains inserted for fluid (n= 68)

No ultrasound guidance	34 (50%)
Bedside ultrasound at time of procedure	12 (18%)
Remote 'X marks the spot' ultrasound technique	6 (8%)
Ultrasound in radiology department at time of procedure	12 (18%)
Ultrasound guidance – unspecified location	4 (6%)
Total	68 (100%)

Chest drain insertion data

112 records of chest drain placements fulfilling the inclusion criteria were submitted. - 86% (96/112) were seldinger type drains of 6-18F in size with the remaining 14% being of the Argyle type. Table 2 summarises these records.

Overall, the complication rate from this series of drain placements was low, with drains falling out in 5% of cases and iatrogenic pleural infection occurring in 2%. There were no reported incidents of organ trauma.

Of particular concern is a complete lack of documented patient consent in 42% (47/112) of procedures with formal written consent taken in only 22% (25/112).

Most drains (52%) were placed at the patient's bedside (a practice that is discouraged by the 2010 BTS pleural procedures guideline (3)) but two responding trusts demonstrated exclusive use of a dedicated procedure room.

79% (88/112) procedures took place within normal working hours and the majority of those performed in the 'out of hours' period were conducted in A and E for pneumothoraces which may often be considered an indication for more urgent drain placement.

The indications for drain placement also deserve a mention here. It is notable that almost half of the drains placed for fluid were in patients with currently undiagnosed pleural effusions. First line chest tube drainage often results in a delay in diagnosis and additional invasive procedures for such patients, particularly in light of the poor sensitivity of pleural fluid cytology for malignancy. A therapeutic aspiration is frequently a more appropriate first step (5).

In this series, lack of rapid access to thoracoscopy as well as initial management by general medical teams (who may be less aware of the optimum management of undiagnosed effusions) in 71% (80/112) of cases and general medical management from admission through to discharge in 40% (45/112) may have contributed to this.

There is some evidence that chest drains were also used too frequently for the initial treatment of primary spontaneous pneumothorax, with no attempt at simple aspiration prior to chest drain placement in 41% (7/17) of such cases.

Table 2. Chest drain insertion data

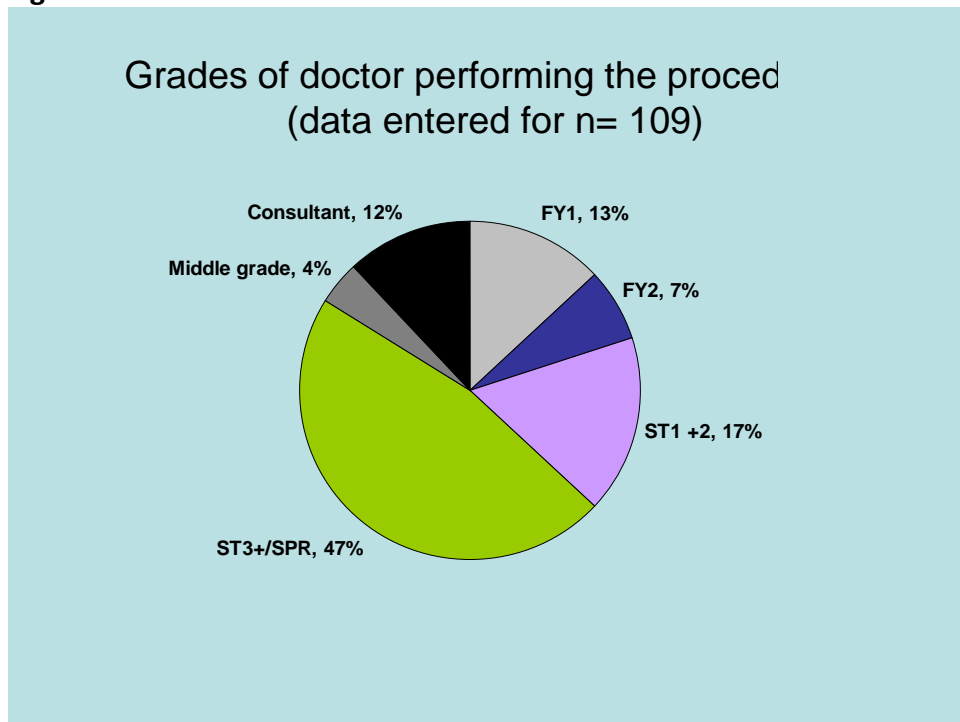
Reason for chest drain	<p>Pleural effusion 68 Undiagnosed pleural effusion 33 Known benign symptomatic effusion 1 Pleural infection 9 Haemothorax 2 Malignant pleural effusion 23</p> <p>Pneumothorax 44 Traumatic 7 Primary 17 (prior aspiration attempted in 10 (59%)) Secondary 13 (prior aspiration attempted in 2 (15%)) Iatrogenic 4 Not stated 3</p>
Documented patient consent	<p>No consent documented 47/ 112 (42%) Verbal consent only 28/112 (25%) Written consent 25/ 112 (22%) Not specified 12/112 (11%)</p>
Procedure location	<p>At the patient's bedside 59/112 (52%) Dedicated procedure room 20/112 (18%) Radiology department 12/112 (11%) Not specified 21/112 (19%)</p>
Time of drain placement	<p>Mon-Fri 9-5 88/112 (79%) Out of hours 24/112 (21%)</p>
Documented complications	<p>Drain fell out 6 (5%) Pleural infection 2 (2%) Significant pneumothorax 2 (2%) Re-expansion pulmonary oedema 1 (1%) Procedure failure 1 (1%) Organ trauma 0 (0%)</p>

Training and competency assessment

Data relevant to training and competency assessment in chest drain insertion were also collected. 75% (9/12) of responding trusts provide simulated practice and 58% (7/12) additionally deliver didactic lectures regarding the procedure to their trainee doctors. The majority of this training is delivered to FY2 and ST1-2 trainees but in 50% of trusts it was also available to FY1 and ST3+/SPRs. There were inconsistencies in data entry regarding means of competency assessment that make this difficult to interpret in detail, but in the majority of trusts (10/12) competency is assessed by other junior doctors and non-respiratory specialists using DOPS forms as a component of core medical training. No trust surveyed assesses the competence of consultants to insert chest drains.

As seen in figure 1, most drains (47%) in this series were appropriately placed by senior trainees but 13% were placed by the most junior of trainees – FY1 doctors. The appropriateness of this should be questioned as these doctors are unlikely to have sufficient training and experience to put the procedure into context and only a small proportion will progress to specialties where maintenance of competence of this skill is required. 85% FY1 procedures were supervised by a more senior doctor whereas senior supervision was documented for only 56% of drain insertions conducted by an ST1-2 trainee.

Figure 1.



Conclusion

This small pilot audit suggests that the first steps towards improving the safety of chest drain insertion have been taken in the majority of trusts who responded to this survey. The degree to which these results can be generalised is of course not clear, it being likely that better organised centres have contributed this data. Access to bedside ultrasound guidance is improving, and respiratory physicians are taking up the challenge of training to level 1 standard. Training enough members of the respiratory team to allow all procedures to be ultrasound assisted will, of course take time. Few drains were inserted during the 'out of hours' period reflecting a welcome change in practice towards the careful planning and timing of such significant procedures. The indications for drain placement in this series suggest that drains continue to be placed too readily. Earlier specialist respiratory team involvement with patients presenting with pleural disease might improve this practice. 40% of patients who had a chest drain placed were not under the care of a respiratory consultant at any point during their admission.

Inadequacies in the taking of written consent should be addressed by inclusion in formal training of junior doctors and consent practice should be the subject of local audit.

There are many questions regarding who should be trained to insert chest drains in the future, how training should be delivered and competency assessed. Work is currently underway to provide clearer guidance and facilitate a nationally consistent approach. The pilot data provides an interesting snapshot of activity ahead of such guidance. BTS plans to conduct a national pleural procedures audit later in 2010, following the publication of the new BTS Guidelines for the Management of Pleural Disease. This will take the form of a significantly simplified version of the pilot audit and will use the online data collection tool. It is planned that data will be collected in a single 2-3 month period with prospective case identification and retrospective data entry.

References

1. NPSA Rapid Response Report on chest drain insertion, May 2008 (NPSA/2008/RRR03, www.nrls.npsa.nhs.uk/resources/?entryid45=59887)
2. British Thoracic Society. Guidance for the implementation of local trust policies for the safe insertion of chest drains for pleural effusions in adults, following the NPSA Rapid Response Report—NPSA/2008/RRR003. 2008. www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pleural%20Disease/chestdrain-adults.pdf
3. Havelock T, Teoh R, Laws D on behalf of the British Thoracic Society Pleural Disease Group. British Thoracic Society Guideline for Pleural Procedures. *Thorax* 2010 (in press).
4. Laws D, Neville E, Duffy J, on behalf of the British Thoracic Society Pleural Disease Group. British Thoracic Society guidelines for the insertion of a chest drain. *Thorax* 2003;58(suppl II):ii53-9
5. Raptopoulos V, Davis LM, Lee G, Umali C, Lew R, Irwin RS. Factors affecting the development of pneumothorax associated with thoracentesis. *American Journal of Roentgenology* 1990; 156: 917-920.
6. Maskell NA, Medford A, Gleeson FG. Seldinger chest drain insertion: simpler but not necessarily safer. *Thorax* 2010;65 (1):5-6.

Appendix 1

PART 1

Question Number		Question
Section 1. Information about the Trust as a whole		
1.1		What is the size of the population served by the Trust?
1.2		How many medical beds are there in the Trust?
1.3		On average, how many emergency medical admissions are seen in the Trust per week?
1.4		How many NHS consultant respiratory physicians are there (WTEs)?
1.5		How many academic consultant respiratory physicians are there (WTEs)?
1.6		How many respiratory ST3/SPRs are there (WTEs)?
1.7		How many dedicated respiratory beds are there?
1.8		Is there a specialist pleural disease clinic?
1.9		Does the Trust have a designated chest drain safety and training lead (pleural lead)?
1.10		Is there a cardiothoracic surgery service within the Trust?
1.11		Do respiratory physicians in the Trust perform local anaesthetic thoracoscopy?
1.12		Where are chest drain insertions usually performed?
1.12.1		Other - please state
Section 2. Training in chest drain insertion		
2.1		What training in chest drain insertion is provided to training grade doctors?
2.1.1		Lecture/didactic sessions
2.1.2		Simulated practice
2.1.3		Supervised practice with patients
2.1.4		None
2.1.5		Other - please specify

2.2		If formal training is provided (lecture and/or simulated practice, please indicate which grades of doctors receive this?)
2.2.1		F1
2.2.2		F2
2.2.3		ST 1-2
2.2.4		ST3+
2.2.5		SPR
2.3		How is the competency of junior doctors to insert chest drains assessed (select all that apply).
2.3.1		Using DOPS forms, as a component of core medical training. Assessed by other junior doctors and non-respiratory specialists.
2.3.2		Using DOPS forms, as a component of core medical training. Assessed only by respiratory consultants.
2.3.3		Using an assessment form specific to the Trust. Assessed by other junior doctors and non-respiratory specialists.
2.3.4		Using an assessment form specific to the trust. Assessed only by respiratory consultants
2.3.5		All junior doctors are assessed by a respiratory consultant before they insert chest drains unsupervised in this Trust.
2.3.6		Other assessment - please specify
2.3.7		Not aware of formal competency assessment
2.4		Is bedside ultrasound available?
2.5		How many portable ultrasound machines do the respiratory department have access to?
2.6		How many members of the respiratory team are trained to level 1 standard in thoracic ultrasound?
2.6.1		Please state if the level 1 standard personnel are consultants or ST3/SPR level?
2.7		How many members of the respiratory team are trained to level 2 standard in thoracic ultrasound?
2.7.1		Please state whether the level 2 standard personnel are consultants or ST3+/SPR level
2.8		Are the skills and competencies of consultants for inserting chest drains assessed in your Trust?
2.8.1		If the answer to the above question is yes, please state how this is done?
2.8.2		If the answer to question 2.8 is yes, please state period between reviews?

2.90		Please indicate all makes of seldinger chest drain that are used in the Trust
2.9.1		Rocket
2.9.2		Smiths
2.9.3		Cook
2.9.4		Other - please specify
Section 3. Information about the NPSA Rapid Response Report		
Response report "Risks of chest drain insertion" May 2008		
3.1		Have you seen the Rapid Response report "Risks of chest drain insertion" issued in May 2008 by NPSA?
3.2		If you received the RRR by email where did the email originate?
3.2.1		From NPSA?
3.2.2		From another external source - please specify?
3.2.3		From an individual within the Trust - please give job title of that person.
3.3		If the RRR was posted on a noticeboard in Trust - where was the noticeboard situated?
3.4		If the RRR was the subject of a team briefing, what was the job title of the individual who briefed on the RRR?
3.5		Do you think the volume of information contained in the RRR was:
3.6		Do you think the technical/clinical content of the RRR was pitched at:
3.7		Did you refer to the supporting information?
3.7.1		If yes, was the supporting information:
3.8		Did you need to refer to another source for further information?
3.9		Please describe the specific impact (if any) you perceive from the 2008 NPSA RRR publication regarding chest drain insertion.
3.10		Please describe the process for incident reporting and review of chest drain incidents at your Trust.

PART 2

Question Number	Question	Variables
Section 1. Patient Information		
1.1	Hospital Number	
1.2	Age	
1.3	Admission Date	dd/MM/yyyy
1.4	Discharge date	dd/MM/yyyy
1.5	Sex	Male Female No data/ Not recorded
Section 2. Indication for Chest Drain: Pleural effusion		
only complete this section if the chest drain was inserted for a pleural effusion		
2.1	Indication for chest drain (pleural effusion)	Haemothorax Pleural infection Known malignant pleural effusion Undiagnosed pleural effusion Symptomatic pleural effusion, known benign cause No data / Not recorded
2.2	Which hemithorax?	Right Left Bilateral No data / Not recorded
2.3	How big was the effusion on the PA/AP chest x-ray before drain insertion?	Small (1/4 or less of the hemithorax obscured) Moderate (> 1/4 but less than 1/2 of the hemithorax obscured) Large (> 1/2 hemithorax) No data / Not recorded
2.4	Has the patient undergone previous pleural procedures on the ipsilateral side for this disease episode?	please select correct response from list below
2.4.1	Therapeutic aspiration	Yes No No data / Not recorded
2.4.2	If the patient has undergone therapeutic aspirations before drain placement, please state how many?	
2.4.3	Intercostal chest drain?	Yes No No data/ Not recorded
2.4.4	If intercostal chest drain was used, state how many?	

2.4.5	Local anaesthetic thoracoscopy?	Yes No No data/ Not recorded
2.4.6	Pleurodesis with talc slurry?	Yes No No data/ Not recorded
2.4.7	Pleurodesis with talc poudrage?	Yes No No data/ Not recorded
2.4.8	VATS?	Yes No No data/ Not recorded
2.4.9	Surgical pleurodesis?	Yes No No data/ Not recorded
Section 3. Indication for Chest Drain: Pneumothorax		only complete this section if the chest drain was inserted for a pneumothorax
3.1	Indication for chest drain (pneumothorax)	Primary pneumothorax Secondary pneumothorax Iatrogenic pneumothorax Traumatic pneumothorax No data / Not recorded
3.2	Which hemithorax?	Right Left Bilateral No data / Not recorded
3.3	How big was the pneumothorax on the PA/AP chest x-ray before drain insertion?	≥ 2 cm < 2cm No data / Not recorded
3.4	Was an aspiration attempted before drain placement?	Yes No No data / Not recorded
3.5	If an aspiration was attempted before drain placement, how many attempts were made?	
3.6	What were the presenting symptoms?	please select correct responses from list below
3.6.1	Pain?	
3.6.2	Breathlessness?	
3.6.3	Cough?	
3.6.4	None - incidental radiological finding	
Section 4. Information about the Procedure		

4.1	What grade of doctor was performing the procedure?	F1 F2 ST1 ST2 ST3+ SPR/LAT Staff Grade Consultant No data/ Not recorded
4.2	Was there supervision by another doctor?	Yes - documented No - documented No data / Not recorded
4.3	If the procedure was supervised, what was the grade of the supervisor?	F1 F2 ST1 ST2 ST3+ SPR/LAT Staff Grade Consultant No data/ Not recorded
4.4	Was a member of nursing staff present during the procedure?	Yes No - documented No data/ Not recorded
4.5	Where did the procedure take place?	A and E department Medical Admissions Ward General Medical Ward Respiratory Ward Designated procedure room No data / Not recorded Other
4.5.1	If "Other" please specify.	
4.6	When did the procedure take place?	Monday - Friday Weekend No data / Not recorded
4.7	At what time did the procedure take place?	0900 - 1700 Out of Hours No data / Not recorded
4.7.1	Give time of procedure	HH:MM
4.8	Is there documented evidence of patient consent?	Yes - documented No No data / Not recorded
4.8.1	If evidence of consent, was this?	Written Verbal

4.9	Was premedication used?	Yes No No data / Not recorded
4.10	If premedication was used please give details of Drug, Dose and Route	
4.11	Where was the chest drain sited?	Mid clavicular line Anterior axillary line Mid axillary line Posterior axillary line Back of chest No data / Not recorded
4.12	What type of insertion technique was used?	Seldinger Blunt dissection No data / Not recorded
4.13	How was the drain secured to the skin?	Sutures Adhesive dressing only No data / Not recorded
4.14	Was the drain size documented?	Yes No No data/not recorded
4.14.1	Please give drain size (_____F)	
4.15	How long before the drain was inserted was the last chest x-ray taken?	Within 24 hours 24-48 hours 48-72 hours >72 hours No data / Not recorded
4.16	For a pleural effusion: was ultrasound guidance used to place the drain?	Yes No No data/Not recorded
4.16.1	If yes, where did ultrasound guidance take place?	Ultrasound in radiology department with "x marks the spot" Ultrasound guided drain insertion in radiology department Bedside ultrasound at time of drain insertion No data / Not recorded
4.17	Were any of the following complications relating to drain insertion documented?	please indicate all that apply from list below
4.17.1	Bleeding	
4.17.2	Pain during procedure	
4.17.3	Vasovagal syncope/hypotension	
4.17.4	Organ puncture	
4.17.5	Iatrogenic pneumothorax	
4.17.6	Failure to place drain in pleural space	
4.17.7	Death	

Section 5. Post Drain Insertion		
5.1	How long after drain placement was a chest x-ray performed?	Within 1 hour 1-6 hours 6-12 hours 12-24 hours >24 hours No post drain chest x-ray done No data / Not recorded
5.2	What volume of fluid was drained in the first hour following insertion?	< 1 litre 1 - 1.5 litres 1.5 - 2 litres > 2 litres No fluid (pneumothorax) No data / Not recorded
5.3	Where was the patient nursed following drain insertion?	Medical admissions unit Specialist respiratory ward General medical ward Other No data / Not recorded
5.3.1	If other, please specify	
5.4	Was a chest drain record chart kept?	Yes No No data/ Not recorded
5.5	Was the drain flushed with saline?	Not at all Four times a day Three times a day Twice a day Once a day As required No data / Not recorded
5.6	Was suction applied to the drain?	Yes No No data/ Not recorded
5.7	Were any of the following complications related to the chest drain documented?	please indicate all that apply.
5.7.1	Pain?	
5.7.2	Drain fell out	
5.7.3	Drain blockage?	
5.7.4	Pleural space infection	
5.7.5	Skin infection at insertion site?	
5.7.6	Re-expansion pulmonary oedema	
5.7.7	Surgical emphysema?	
5.7.8	Death	

5.8	Did the drain fall out before a decision was made to remove it?	Yes No No data/ Not recorded
5.9	If the drain fell out, what was the outcome?	Another drain was placed Talc pleurodesis delayed until fluid reaccumulates Referred for cardiothoracic surgery No adverse consequences - drainage was complete when the drain fell out No data / Not recorded
5.10	Was the drain repositioned following initial placement?	Yes No No data/ Not recorded
5.11	How long did the drain remain in situ?	1 day or less 2 days 3 days 4 days 5-7 days > 7 days No data / Not recorded
5.12	Was talc slurry administered prior to drain removal?	Yes No No data/ Not recorded
5.13	How long (in days) following drain removal was the patient discharged from hospital?	If less than 1 day, put 1 day as the answer
5.14	Which medical team was responsible for the patient's care during this admission?	Admitted under a general medical team (or medical specialty other than respiratory) but care transferred to the respiratory medicine team during admission Managed by a general medical team (or medical specialty other than respiratory) throughout admission Managed by the respiratory medicine team throughout admission. No data/ Not recorded
5.15	Was the patient reviewed by a respiratory consultant during the admission?	Yes No No data/ Not recorded
Section 6. Pneumothorax Questions		only complete this section if the chest drain was inserted for a pneumothorax
6.1	Did the patient require a further chest drain for this pneumothorax?	Yes No No data/ Not recorded
6.1.1	If yes, what size was the second drain?	

6.2	Was the patient referred to a cardiothoracic surgeon?	Yes No No data/ Not recorded
6.2.1	If yes, how long after drain insertion was a surgical referral made?	< 24 hours 24-48 hours 48-72 hours 3-5 days 5-7 days > 7 days
6.3	Did the patient undergo cardiothoracic surgery acutely for this pneumothorax prior to discharge?	Yes No No data/ Not recorded

PART 3

Question Number	Question
Section 3. Prospective record of all pleural disease activity within the medical directorate during September 2009	
1	How many diagnostic pleural aspirations were performed?
2	How many therapeutic aspirations were performed?
3	How many blind (eg. Abrams' needle) pleural biopsies were performed?
4	How many CT guided cutting needle pleural biopsies were performed?
5	How many ultrasound guided cutting needle biopsies were performed?
6	How many local anaesthetic thorascopies were performed?
7	How many chest drains were inserted (not including those placed following local anaesthetic thoracoscopy)?
8	How many indwelling pleural catheters were inserted?
9	How many acute admissions were there because of pneumothoraces?
10	How many acute admissions were there because of a pleural effusion?
10.1	Of these how many were New Undiagnosed effusions?
10.2	Of these how many were Reaccumulation of known malignant effusions?
10.3	Of these how many were Reaccumulation of recent pleural infection?
10.4	Of these how many had another cause that is not listed? - Please state.
11	How many new pleural effusion cases were seen in respiratory out-patient clinics - provide number seen in each clinic type?
11.1	Lung cancer clinic as a 2 week wait
11.2	admission avoidance respiratory clinic
11.3	general respiratory out-patient clinic
11.4	pleural clinic

12	What is the total number of confirmed and presumptive diagnoses of the patients with new pleural effusions seen both as in and out patients during the audit month? Please also complete the following questions (each patient should only be counted once with diagnosis either presumed or confirmed).
13.1.1	How many patients had a presumed diagnosis of Malignant Pleural Mesothelioma (MPM)?
13.1.2	How many patients had a confirmed diagnosis of Malignant Pleural Mesothelioma (MPM)?
13.2.1	How many patients had a presumed diagnosis of Malignant effusion - lung primary?
13.2.2	How many patients had a confirmed diagnosis of Malignant effusion - lung primary?
13.3.1	How many patients had a presumed diagnosis of Malignant effusion - other primary?
13.3.2	How many patients had a confirmed diagnosis of Malignant effusion - other primary?
13.4.1	How many patients had a presumed diagnosis of Pleural infection?
13.4.2	How many patients had a confirmed diagnosis of Pleural infection?
13.5.1	How many patients had a presumed diagnosis of Parapneumonic effusion?
13.5.2	How many patients had a confirmed diagnosis of Parapneumonic effusion?
13.6.1	How many patients had a presumed diagnosis of Cardiac failure?
13.6.2	How many patients had a confirmed diagnosis of Cardiac failure?
13.7.1	How many patients had a presumed diagnosis of Tuberculosis?
13.7.2	How many patients had a confirmed diagnosis of Tuberculosis?
13.8.1	How many patients had a presumed other benign diagnosis?
13.8.2	How many patients had a confirmed other benign diagnosis?

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