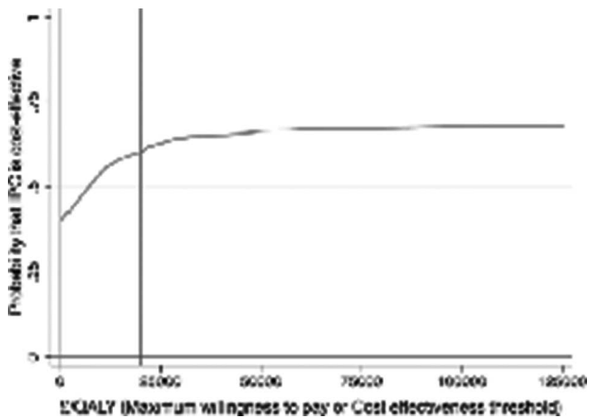
Background The TIME2 Trial[1], a randomised clinical trial comparing indwelling pleural catheter (IPC) with talc pleurodesis for malignant pleural effusion, included a prospective economic analysis.
Methods 106 patients at 7 UK medical centres were randomly assigned to IPC or talc pleurodesis following chest drain insertion and followed at biweekly, monthly and q3month intervals for one year or until death. Costs associated with the drain insertion, follow up drainage, and adverse events were captured during the trial. Costs for outpatient and inpatient visits, diagnostic imaging, nursing and doctor time were derived from the NHS reference costs and University of Kent's Unit Costs of Health and Social Care 2011. Procedure supply costs were obtained from the manufacturer. The number of quality adjusted life years (QALYs) was determined by adjusting patient survival by the utility weight obtained from the EQ5D questionnaire at each follow up period. Cost effectiveness was calculated over the duration of the trial given that most patients died during the 1 year follow up (14% alive at 1 year). Confidence intervals were calculated using bootstrap analysis.
Results Average cost in the IPC group over the trial period was £3087(3504) versus £2892(2706) in the talc pleurodesis group with a mean cost difference of £195(95% CI -1072 to 1463). Average QALY in the IPC group was 0.354(0.29) and 0.328(0.3) in the talc group with a mean QALY difference between groups of 0.026 (95%CI -.08 to. 138). The cost per QALY gained for IPC as compared with talc pleurodesis was £7390 at 1 year. Bootstrap analysis revealed substantial uncertainty around this estimate.
Conclusions There is no significant difference in cost or QALYs between IPCs and talc pleurodesis. Although the predictions are subject to substantial uncertainty, the probability that IPCs may be cost effective compared with talc pleurodesis is moderately high (60%) using a threshold of willingness to pay of £20,000/QALY.

REFERENCES

1. Davies H, Mishra E, Kahan B, *et al*. Effect of an Indwelling Pleural Catheter vs. Chest Tube and Talc Pleurodesis for Relieving Dyspnea in Patients with Malignant Pleural Effusion. The TIME2 Randomised Controlled Trial. *JAMA*. 2012;307(22): 2383–2389.



Abstract S79 Figure 1.

S80 POST-THORACOSCOPY LUNG RE-EXPANSION: PILOT DATA USING DIGITAL SUCTION DEVICE

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Introduction Current practice for diagnostic only thoracoscopy varies from day-case procedures to routine overnight stays. Radiographic evidence of lung re-expansion and underwater seal evidence of lack of on-going air leak are required before patient discharge. Use of a digital suction device which accurately measures air leak may allow earlier identification of lung re-expansion and hence earlier discharge.

Patients pleurodesed at thoracoscopy are admitted for 3–4 days, however the presence of trapped lung preventing re-expansion after thoracoscopy reduces the chance of successful pleurodesis, and measurement of air leak with a digital device may allow prediction of trapped lung.
Aim To determine whether initial air leak measurement can predict trapped lung and whether use of digital device can reduce time to chest radiograph post thoracoscopy.
Methods Data was prospectively collected (November 2012 to May 2013), on patients undergoing thoracoscopy in a specialist respiratory centre. Post-procedure, the "air leak" was measured using a digital suction device (Thopaz, Medela UK), and time to chest radiograph (CXR) was compared to LAT in the preceding three months.
Results 32 patients were investigated. Results were non-normally distributed so non-parametric analysis was undertaken. Median initial flow rate post-thoracoscopy was 108ml/min. Nine (28%) had trapped lung: median air flow rate was significantly lower in this group 45ml/min (IQR 39–118ml/min) vs 118ml/min (IQR 75–179ml/min), using Mann-Whitney U Test ($p = 0.01$). Those with trapped lung had larger effusions drained during procedure: 1739ml vs 1332ml ($p = 0.48$).

Fourteen (44%) patients were successfully managed as day-cases with the digital suction device: mean time to CXR was 2.1 hours (SD 1.1); less than the 8 preceding day-case thoracoscopies (mean 2.9, SD 1.6 hours) ($p = 0.2$).
Conclusion This pilot data suggests that digital air flow measurement has the potential to predict which patients are likely to have trapped lung and lack of air leak, and may potentially identify the group of patients in which to use indwelling pleural catheters. Use of the device may also allow earlier identification of full re-expansion, earlier CXR and hence more rapid discharge home.

S81 A RANDOMISED CONTROLLED STUDY COMPARING THE OUTCOMES OF PLEURAL NURSE PRACTITIONER VERSUS DOCTORS TRAINED TO PERFORM PLEURAL PROCEDURES FOR MANAGEMENT OF PLEURAL EFFUSIONS

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Background Following the National Patient Safety Agency alert in the UK thoracic ultrasound (TUS) is strongly recommended for all pleural procedures. This places strains on clinical service delivery. The role of the Nurse Practitioner (NP) in this setting is not established. We undertook a randomised control study to test the hypothesis that a Nurse Practitioner trained to Royal College of Radiologist level 1 TUS and in performing pleural procedures independently is equivalent to doctors trained in undertaking pleural procedures.
Method In this prospective ethically approved un-blinded non-inferiority study we assessed pleural procedures as carried out by a Nurse Practitioner (Group A) in comparison with doctors

trained in pleural procedures (Group B) in 32 patients. Primary endpoints were success of the pleural procedure, procedural pain using visual analogue score (VAS), patient anxiety using short form State Trait Anxiety Index (STAI). Secondary outcome measures were complications. Non parametric statistical tests were used for analysis.

Results There was no statistically significant (NS) difference between groups as assessed by primary endpoints (Table 1). There was one failure to undertake therapeutic pleural aspiration in Group B. Delayed complications were drain dislodgement in Group A and re-expansion pulmonary oedema in Group B.

Conclusion We believe this is the first randomised control study to test if after appropriate training a Pleural Nurse Practitioner is able to safely and effectively undertake pleural procedures with equivalence in practice to trained doctors.

	Group A (NP)	Group B (Dr)
Pleural procedures	Total 17	Total 15
• Diagnostic pleural aspiration	8	2
• Therapeutic pleural aspiration	4	3
• Chest drain insertion	3	6
• Indwelling Pleural Catheter (IPC) insertion	2	4
Pleural procedure success (%)	100	93.75
Procedural pain median VAS score (range)	2* (0-7)	3* (0-7)
Patient STAI (range)	3.4* (1-4)	3.5* (1-4)

(* = NS)

Abstract S81 Figure 1. Graph representing the changes in comfort and neural respiratory drive with increasing trigger delay

S82 MULTI-CENTRE PROSPECTIVE COMPARISON OF THE BTS AND ACCP GUIDELINES TO DETERMINE SIZE IN PRIMARY SPONTANEOUS PNEUMOTHORAX

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Introduction and Objectives Attempts to develop standardised guidelines in the management of primary spontaneous pneumothorax (PSP) have been severely hampered by a lack of high quality clinical research. The American College of Chest Physicians (ACCP) and BTS guidelines are based on non-analytical studies and expert opinion. Remarkably, no consensus regarding the definition of PSP severity exists, with the ACCP and BTS each using different arbitrary measurements: hilar size > 2cm (BTS) versus apical size >3cm (ACCP). The objective of this study is to define the critical size of PSP.

Methods A multi-centre prospective comparison of 168 consecutive patients presenting with PSP was performed in 13 NHS hospitals in the East of England over a period of 15 months. We compared the ability of the BTS and ACCP definitions to predict the eventual need for intercostal chest drain (ICD) insertion. Since current BTS guidelines state that pleural aspiration should be attempted prior to drainage in non-compromised PSP patients, we reasoned that ICD insertion was a valid endpoint. Using a logistic regression model that included hospital, age, hilar size, apical size and the hilar-apical interaction, we generated receiver operating characteristic (ROC) curves reflecting the probability of either measure correctly predicting the eventual need for ICD.

Results One hundred and sixteen of 168 patients for whom data were collected had been treated according to BTS guidelines. Of these, 39 eventually required ICD insertion. The correlation between hilar and apical distances was high (0.7). The logistic regression showed that hilar distance was statistically significant ($p < 0.001$), but apical distance and the interaction were not. The sensitivity and specificity from using BTS guidelines were 0.667 (95% CI 0.510–0.794) and 0.805 (0.703–0.878) respectively, whereas the same values using the ACCP guidelines were 0.948 (0.831–0.986) and 0.351 (0.253–0.462).

Conclusion Guidelines based on hilar distance, such as the BTS's, are likely to be more informative in predicting the eventual need for ICD. However, the two distances are highly correlated. This study, for the first time, provides an evidence-based clinically relevant definition of PSP requiring ICD that will guide treatment and serve as the foundation for subsequent trials.

S83 THE USE OF INDWELLING PLEURAL CATHETERS (IPC) WITH OR WITHOUT CONCURRENT TALC POUDRAGE (TP) AT MEDICAL THORACOSCOPY (MT) FOR CASES OF SUSPECTED TRAPPED LUNG (TL)

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Background Recurrent symptomatic non-infectious pleural effusions can be effectively treated with MT and TP with pleurodesis rates approaching 85% in variety of malignant and benign aetiologies. When TL is likely at MT, management is uncertain.

Aim We report on a single centre experience of inserting an IPC at MT with or without talc poudrage for suspected trapped lung. TL was suspected if any of the following were observed (a) failure of lung to inflate on voluntary coughing at MT, (b) visceral involvement of more than 25%, (c) radiological evidence of endobronchial compromise and (d) hydropneumothorax following previous thoracocentesis.

Method A review of all IPC insertions at MT performed at our institution between March 2009 and Feb 2013 assessing indications, length of stay (LoS) after procedure, use of concurrent TP, IPC removal rates and recorded complications. All cases had been performed using rigid thoracoscopy. TP was performed with 4g sterile graded talc. Rocket 16F IPC were used in all cases.

Results All IPCs were inserted during MT for likely or possible TL. N = 36cases. 14 male. Diagnoses–10 benign recurrent effusions; 26 malignant. See table 1 for details. Median age 73yrs (45–92). Median LoS post procedure–non-elective 7 days (1–23); elective 2.5 days (0–6). 22 (56%) had concurrent TP (18 for malignancy). 14 (36%) had their IPC removed with median time to removal 40 days (28–119) and of these, 11 had received