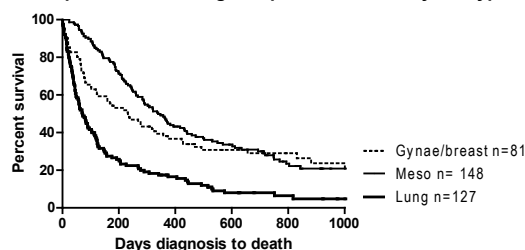


**Figure: Survival of patients with malignant pleural effusion by cell type**

Abstract S16 Figure 1

### S17 PLEURAL IRRIGATION TRIAL (PIT): STANDARD CARE VERSUS PLEURAL IRRIGATION, A RANDOMISED CONTROLLED TRIAL IN PATIENTS WITH PLEURAL INFECTION

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**Background** Pleural infection remains common with an increasing incidence. It is associated with a high morbidity and mortality. Despite chest tube drainage and antibiotic therapy up to 30% of patients will die or require surgery. Case reports suggest that irrigation of the pleural space with saline may be beneficial but this has never been tested in the form of a randomised controlled trial.

**Method** Randomised controlled pilot study comparing saline irrigation (250ml normal saline intra-pleurally over one hour, 3 times a day for 3 days) plus best standard care, with best standard care alone, in patients with pleural infection (microbiology positive or pH<7.2 or purulent pleural fluid and clinical infection) requiring chest tube drainage, who had a residual pleural collection on baseline CT thorax. Primary outcome was percentage change in CT pleural volume from day 0 to day 3. Secondary outcomes included referral for surgery, hospital stay and adverse events.

**Results** 47 patients approached, 38 randomised, 3 excluded (drain fell out/no residual fluid on CT/removal of consent). Saline irrigation results in significant reduction in CT pleural collection volume compared to standard care – Irrigation group 29.15% reduction (95% CI 16.2–62) vs Standard care 13.9% (95% CI –4.1–26.3)  $p<0.04$ . There was also a significant reduction in the need for thoracic surgery in the irrigation group 9/17 vs 2/18  $p=0.01$  (OR 9.0, 95% CI 1.56–51.9). No differences were seen in length of hospital stay or fall in inflammatory markers (CPR, WCC and procalcitonin). The safety profile of saline irrigation was good with no serious complications and adverse events did not differ between groups.

**Conclusion** Saline irrigation improves fluid drainage in pleural infection (as measured by volumetric CT), leading to reduction in referral for surgery. No change in hospital stay was noted. This study now needs to be repeated as a large multicentre RCT powered to look at mortality and length of hospital stay.

## Investigation of lung cancer

### S18 BRONCHOALVEOLAR LAVAGE, TRACHEAL WASH AND INDUCED SPUTUM SURFACTANT PHOSPHOLIPID KINETICS FROM HEALTHY VOLUNTEERS

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**Introduction and Aims:** Pulmonary surfactant is a complex mixture of lipoproteins synthesised and secreted by alveolar type II

cells. The assessment of surfactant synthetic function and metabolism may provide essential information in disease states characterised by surfactant dysfunction. Airway surfactant is thought to be of alveolar origin. However, surfactant kinetics from airway secretions may vary from alveolar surfactant. Stable isotope labelling of surfactant precursors enables dynamic mapping of surfactant PC molecular species. This study aimed to compare three surfactant recovery methods [bronchoalveolar lavage (BAL), tracheal wash (TW) and induced sputum (IS)] to assess surfactant PC kinetics in healthy adults. Surfactant phosphatidylcholine (PC) is synthesised *de novo* from choline via CDP-choline pathway. By labelling choline with deuterium, a naturally occurring isotope of hydrogen, it is possible to assess surfactant PC synthesis and metabolism in humans.

**Methods** Healthy human volunteers had an infusion of methyl- $D_5$ -choline-chloride [3.6mg/kg] for 3 hours. BAL and TW specimens were taken at 24 and 48 hours and induced sputum samples were taken at 0, 8, 24, 48 and 96 hours after choline infusion. The lipid fraction was extracted with chloroform and methanol. The samples were analysed by triple quadrupole electro spray ionisation mass spectrometer (ESI/MS). The results are expressed in mean ( $\pm$  standard error of mean).

**Results** Ten healthy volunteers were recruited. The endogenous PC composition from BAL and TW were similar. The newly synthesised PC fraction mirrored the endogenous composition at 48 hours for both BAL and TW IS PC composition and  $D_5$  labelled PC fraction was variable. The total PC  $D_5$ -incorporation at 48 hours was higher than 24 hours for BAL ( $0.55\pm0.04\%$ ), TW ( $0.56\pm0.04\%$ ) and IS ( $0.58\pm0.06$ ). PC16:0/16:0  $D_5$ -incorporation had significant correlation for BAL and TW ( $r^2=0.8201$ ,  $P<0.05$ ).

**Conclusions** Isotope labelling of choline using ESI/MS analytical method, it is possible to assess surfactant PC metabolism. The tracheal aspirate is an alternative technique to assess surfactant metabolism in patients otherwise unable to tolerate invasive bronchoscopy. This methodology may be utilised to assess surfactant synthetic function in patients with acute lung injury.

### S19 ROLE OF CT IN ASSESSING PLEURAL MALIGNANCY PRIOR TO THORACOSCOPY

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**Introduction** The definitive diagnosis of pleural malignancy depends upon histological proof obtained via pleural biopsy. CT is reported to have a high sensitivity and specificity for the diagnosis of malignant pleural disease, and is part of the routine diagnostic work up of these patients. However, studies assessing the sensitivity of CT for pleural malignancy were carried out in relatively small cohorts of patients, and there remains a need for further data. The aim of this study was to assess the sensitivity and specificity of CT in detecting pleural malignancy (both primary and metastatic) prior to definitive histology obtained via thoracoscopy in a large cohort of patients with suspected malignant pleural disease.

**Methods** Retrospective review of thoracoscopy procedures carried out between 2010 and 2012 at the Churchill Hospital, Oxford, comparing histological results from thoracoscopy with the CT reported diagnosis before the procedure.

**Results** A total of 136 procedures were assessed. Thoracoscopic pleural biopsies were successfully obtained for histological analysis in 121 (89%) cases. Of these, 87 (72%) had CT chest scans prior to the procedure for which reports were available, and were included in this analysis. A total of 45/87 (52%) cases had a diagnosis of malignant pleural disease on the basis of the thoracoscopic biopsies. In those with a final histological diagnosis of malignancy,