asthma, four studies demonstrated no relationship. Evidence from one uncontrolled study suggested symptoms of severe asthma may improve following combined surgical and medical management. Another uncontrolled study showed that allergic rhinitis symptoms improved following treatment of severe asthma with omalizumab.

Conclusions Though a unified airways model supports the relationship between rhinitis and asthma, evidence regarding severe asthma specifically is of low quality and Results are varied. Although it is likely that rhinitis symptoms improve alongside successful treatment of severe asthma, adequately powered randomised studies are necessary to substantiate this relationship.

P230 DOES THE GLOBAL ASTHMA VISUAL ANALOGUE SCALE RELATE TO THE ASTHMA CONTROL QUESTIONNAIRE?

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Control based asthma management results in improved asthma outcomes. The Asthma Control Questionnaire (ACQ-6), is a widely used and well validated metric which strongly predicts future exacerbations.¹ It demarcates between controlled (C), partially controlled (P), and uncontrolled (U), based on cut point scores of <0.75, 0.75<1.5, and ≥ 1.5 respectively. The global asthma visual analogue scale (VAS) is a 10 cm continuum indicating the overall symptom burden.² It discriminates GINA categories of C, P and U as <1.5, 1.5<7.19, and ≥ 7.19 respectively. We evaluated how VAS relates to ACQ in terms of predefined GINA cut points. We analysed n=87 patients who attended for asthma screening into clinical trials. 90% of patients were receiving ICS(mean BDP equiv 675 μ g/day), of whom 80% received ICS/LABA, 42% with LTRA, mean FeNO 45 ppb, mean FEV1 89%, and mean number +ve skin prick tests were 2. Overall Spearman's correlation was 0.62, $p < 0.001$. Mean VAS levels for ACQ were: C: 2.2 cm (95% CI 1.35–3.06), P: 2.56 cm (95% CI 2.61–4.50), U: 5.27 cm (95% CI 4.46–6.08), i.e., <7.19 cm GINA defined cut off (figure 1). There was no significant difference between patients with ACQ ≥ 1.5 vs <1.5 for FeNO (51 ppb vs 41 ppb), or BDP equiv dose (674 μ g vs 543 μ g). Chi-square test demonstrated a weak relationship between ACQ ≥ 1.5 and GINA defined VAS cut off ≥ 7.19 cm. A VAS ≥ 7.19 had a sensitivity of 29% and specificity of 92% for detecting an ACQ ≥ 1.5 . ROC analysis, using ACQ to compare C vs U/P revealed an optimal cut point for VAS of 1.95 (AUC 0.8, sensitivity 88%, specificity 68%). Comparing U vs P/C revealed VAS cut point of 3.2 cm (AUC 0.7, sensitivity 71%, specificity 57%). We conclude that the GINA defined VAS cut off (≥ 7.19) is a poor predictor of control in relation to an ACQ ≥ 1.5 . Hence, further evaluation is required to define the VAS threshold in relation to control defined by ACQ rather than GINA.

Figure Legend Distribution of ACQ control categories relative to VAS levels.

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Closing the flood gates of the pleura

P231 THE USE OF INDWELLING PLEURAL CATHETERS IN PATIENTS WITH MALIGNANT PLEURAL EFFUSION AND UNEXPANDABLE LUNG

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Introduction British Thoracic Society (BTS) guidelines suggest that Indwelling Pleural Catheters (IPCs) are the best treatment for malignant pleural effusion (MPE) associated with unexpandable lung (UL), where pleurodesis is contraindicated. Although, comprehensive data highlight the benefit of IPCs in MPE, their efficacy in patients with UL is less well known.

Method We conducted a systematic review following searches of the MEDLINE, EMBASE and Web of Science databases up until June 2017. Studies specifically reporting IPC use in patients with MPE and UL were identified.

Results 24 studies using IPCs in MPE in general were analysed, 15 of which stated the proportion with UL. Only 3 trials specifically reported outcomes in patients with UL, ranging from 11–52 patients. 77%–94% of UL patients had symptomatic benefit with IPC. Complication rate ranged from 15%–56% depending on criteria used, common complications reported included pain, cellulitis, catheter leak and occlusion. Self-pleurodesis in the largest trial occurred in 42.3% Mean hospital stay was three days, however only one study reported this. Mortality was mentioned in two papers, with a mean survival of 126 days post-IPC insertion. Incidence of UL in the MPE population undergoing IPC was calculable in five studies, and ranged from 7.5%–41%. Differences were evident depending on criteria for diagnosing UL. One study using video-assisted thoracoscopy in 127 patients had an incidence of 41% whereas another study using post-procedure radiography found UL in 40/295 IPCs (13.6%).

Conclusion There appears to be symptomatic benefit in using IPCs in UL patients. Although complications tended to be relatively minor, their rates appear increased compared to the broader IPC population. However, the lack of consensus in diagnostic criteria for UL, reflected by the varied incidence reported, makes application harder to interpret. Further evidence is needed to establish a consistent approach to UL diagnosis, along with more robust studies addressing incidence. The use of IPCs in this population also needs further, prospective, study, with a focus on patient-centred outcomes and device efficacy. This would ideally include further validation of the finding that IPC's in UL can lead to pleurodesis in a large number of patients.

P232 FACTORS PREDICTING OUTCOMES OF TALC PLEURODESIS IN THOSE WITH MALIGNANT PLEURAL EFFUSIONS AT A BELFAST TEACHING HOSPITAL

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Introduction Malignant pleural effusions (MPE) are a frequent consequence of advanced malignancy, associated with poor prognosis. The British Thoracic Society endorse intercostal drainage and talc pleurodesis as first line management of MPE

in patients without evidence of trapped lung. However, talc pleurodesis is unsuccessful in 10%–40% of cases, with implications in relation to cost and morbidity.¹ Yet ambiguity exists regarding the factors affecting success in MPE talc pleurodesis. **Aim** This study aims to investigate the predictive factors relating to successful talc pleurodesis in MPE and the impact of a positive outcome on patient mortality.

Methodology Retrospective analysis of patients admitted for management of MPE to the Belfast City Hospital between September 2015 – October 2016 was conducted. Demographic and clinical data relating to drain size, volume of fluid drained and grade of the doctor performing talc pleurodesis was collected. Survival at 18 months post procedure was reviewed through electronic patient records. A positive outcome was defined as successful pleurodesis with the lack of recurrence of pleural effusion.

Results Twenty-seven patients were identified (♂/♀: 40.8/59.2%; age 72.4+/-12.3 years). Two thirds (n=18) received pleurodesis with a 44.4% success rate (n=8). Pleurodesis was precluded in one third of patients (n=9) with displaced and blocked drains the predominant causative factor (n=4). In those receiving talc pleurodesis, drain size (12 F vs 18 F) was not a predictive factor of positive outcomes. Similarly, the grade of doctor performing talc pleurodesis did not affect efficacy. However, compared to 18 F drains, 12 F drains were associated with a significant complication rate precluding pleurodesis (p=0.02). Critically, achieving a successful outcome with talc pleurodesis was associated with improved 18 month mortality (p=0.004).

Conclusion Promoting the exclusive utilisation of 18 F drains in the management of MPE could potentially alleviate the propensity for intercostal drain failure to preclude talc pleurodesis, conceivably improving patients' short term mortality.

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THORACIC ULTRASONOGRAPHY AS A PREDICTOR OF PLEURODESIS SUCCESS IN MALIGNANT PLEURAL EFFUSION

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Background Over 50 000 patients with malignant pleural effusion (MPE) are seen annually in the UK. The majority develop recurrent symptomatic disease requiring definitive treatment. MPE is most frequently managed with talc slurry pleurodesis via intercostal chest drain. This involves a lengthy inpatient stay and has a success rate of around 70%, with no means of predicting which patients will suffer pleurodesis failure. Thoracic ultrasound (TUS) is widely used by respiratory physicians, and data from animal and human studies suggest it can identify pleural adhesions (through the absence of normal lung sliding) in a range of conditions. By extension, TUS may allow clinicians to diagnose the presence or absence of adhesions post-pleurodesis in MPE, identifying patients suitable for discharge or needing further intervention.

Method We recruited 18 adult patients with MPE undergoing drainage and talc slurry pleurodesis to a prospective single-centre cohort study. Patients underwent standardised TUS assessment pre- and post-pleurodesis, evaluating pleural sliding and adhesions at nine points (three anterior, three lateral, three posterior) across the affected hemithorax. Lung sliding was graded as per Zhu *et al.*,¹ creating a total pleurodesis score out of 18. Pleurodesis failure was defined as radiological and symptomatic fluid recurrence in the same hemithorax requiring further intervention at any point up to 3 months post-pleurodesis. Patients also completed a questionnaire addressing satisfaction with TUS assessment.

Results 3/18 patients (16.7%) died before 1 month follow-up. Of 15 patients seen at one month, 11 (73.3%) had successful pleurodesis and 4 (26.7%) had failed. No patient had delayed pleurodesis failure between 1 and 3 month follow-up. There was a significant difference observed in the day 1 TUS pleurodesis score between patients who went on to have successful pleurodesis and those who failed during follow-up (table 1). TUS assessment was acceptable to patients, with none considering it either time-consuming or unwilling to have it again if needed.

Conclusion Our data suggest TUS assessment 24 hours post-pleurodesis for MPE predicts success or failure of this intervention, with significant implications for clinical care. A larger randomised study is now underway to further evaluate this hypothesis.

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Abstract P233 Table 1 Ultrasonographic pleurodesis score at day 0 (pre-pleurodesis) and day 1 (24 hours post-pleurodesis) in patients being treated for malignant pleural effusion

	Successful pleurodesis n=11/15 (73.3%) patients	Failed pleurodesis n=4/15 (26.7%) patients	p value unpaired t- test
Day 0 pleurodesis score (mean ±SD, total out of 18)	10.89±3.98	6.50±1.29	0.054
	Difference=4.39 (95% CI -0.09 to 8.86)		
Day 1 pleurodesis score (mean±SD, total out of 18)	13.45±2.63	6.75±2.94	0.002
	Difference=6.70 (95% CI 3.08 to 10.33)		
Change from day 0 to 1 (mean±SD)	2.57±3.98	0.25±3.59	0.326
	Difference=2.32 (95% CI -2.59 to 7.23)		

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PATIENT AND FLUID CHARACTERISTICS ASSOCIATED WITH NON-DRAINING MALIGNANT PLEURAL EFFUSION

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Introduction TIME3, a randomised controlled trial of intra-pleural urokinase versus placebo for patients with non-draining malignant pleural effusion (MPE), demonstrated that these patients appear to be a distinct subgroup of patients with a poor prognosis (median survival 58 days). The aim of this study was to identify patient and fluid characteristics