

10 randomly selected questions. (2) Practical oxygen management session including demonstration of oxygen delivery systems and blood gas sampling in a Clinic Skills Department. (3) Ward based supervised skills including completion of five oxygen prescriptions and blood gas samples.

**Results** The CBKT score was low with an average of 6.2 of 10 questions answered correctly after the first attempt. After 10 attempts only 72% students passed thus 28% (94 students) were unable to reach the pass threshold. The Abstract P75 table 1 relates the pass rate to the numbers of attempts shows only a modest incremental increase in the cumulative pass rate. In contrast, all students rapidly gained the skills to undertake blood gas sampling and were able to write oxygen prescriptions based on SpO2 results.

Abstract P75 Table 1 Pass rates related to number of attempts

Attempts	1	2	3	4	5	6	7	8	9	10
Numbers passing	92	36	3	12	15	1	15	6	10	52
Cumulative %	27	38	39	43	47	47	52	54	56	72

**Conclusions** This study confirms that medical students, like other staff, have a poor basic knowledge about the use of emergency oxygen. The Liverpool PSP is addressing this knowledge gap but in view of the results further education (eg, seminars and e-learning) will be provided prior to the CBKT. We recommend this type of programme to other Medical Schools and clinical staff.

## Paediatric asthma

### P76 LONG-TERM EFFECTIVENESS OF A STAGED ASSESSMENT FOR PROBLEMATIC SEVERE ASTHMA

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**Background** Children with problematic severe asthma (PA) may have genuine therapy-resistant disease, or may be difficult-to-treat because of unaddressed potentially modifiable factors.

**Objectives** Evaluate the long-term efficacy of a structured protocol including a nurse-led assessment<sup>1</sup> (Stage 1) in identifying modifiable factors and differentiating difficult asthma (DA) from severe therapy-resistant asthma (STRA) in children with PA. As a secondary aim, we determined whether DA and STRA could be identified without the detailed assessment.

**Methods** 78 children, median age 11.8 years (range 5–17 years), that underwent Stage 1 assessment between 2005 and 2008 were included. Lung function, medications, symptoms and exacerbations were obtained at 1 year, 2 years, and up to 6 years (current status) after initial assessment. Children in whom modifiable factors were identified were classified as DA and those that progressed to further investigations (Stages 2 & 3) as STRA.

**Results** Median duration of follow-up was 3.9 years (range 2.5–6.1 years). 31/78 (40%) children were classified as DA, and did not proceed to Stages 2 & 3. Children with DA had significantly lower dose inhaled corticosteroids prescribed at follow-up compared to STRA (DA vs STRA: median [IQR] 800 µg [400 µg–1425 µg] vs 1600 µg [800 µg–2400 µg], p<0.05), and significantly fewer oral corticosteroid bursts per year (DA vs STRA: median [IQR] 1 [0–2] vs 4 [1.5–8], p<0.001). DA children had improved lung function at follow-up compared to baseline (median [IQR] FEV<sub>1</sub> % predicted: 91% [86.5%–102.5%] vs 80% [73%–86%], p<0.01) despite lower

dose inhaled corticosteroids. DA and STRA had different characteristics at baseline: DA children had a higher FEV<sub>1</sub> % predicted (p<0.01), less bronchodilator reversibility (p<0.05), lower fractional exhaled nitric oxide (p<0.05), and less sensitisation to food and aeroallergens (both p<0.05) compared to STRA. However, there was considerable overlap between the groups and the two could not reliably be distinguished in advance of the detailed Stage 1 assessment.

**Conclusion** As a result of our assessment, 40% of children with PA did not undergo invasive investigations and escalation of therapy. Up to 6 years later, children with DA had a significant improvement in lung function and fewer exacerbations despite reduced maintenance medication.

## REFERENCE

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### P77 LUNG CLEARANCE INDEX (LCI) IN CHILDREN WITH SEVERE, THERAPY RESISTANT ASTHMA (STRA)

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**Introduction** Spirometry is often normal in children with STRA, and is thus a poor outcome measure (1). Lung Clearance Index is a sensitive, non-effort dependent measure of distal airway gas mixing, which has been shown to be more sensitive than spirometry in Cystic Fibrosis (2). We hypothesised that LCI would be a better marker of steroid response in STRA than spirometry.

**Patients and Methods** 22 STRA children (Mean age 11.9 years, 15 male) had LCI and spirometry measured before and 4 weeks after intramuscular triamcinolone.

**Results** LCI was elevated in 18/22 prior to triamcinolone and 12/22 at the follow-up; in contrast FEV<sub>1</sub> was only abnormal in 10/22 and 6/22 pretriamcinolone and posttriamcinolone respectively. Mean LCI fell from 7.86 to 7.25 (p<0.05) but there was no statistically significant decrease in FEV<sub>1</sub> after triamcinolone.

**Conclusion** LCI is a better discriminant of STRA than FEV<sub>1</sub>, and is more responsive to steroid treatment. LCI may thus be a better outcome measure in STRA.

Abstract P77 Table 1

	Pre-triamcinolone	4 weeks post-triamcinolone
Mean FEV <sub>1</sub> z-score (normal >−1.64)	−1.39 (SD 2.02)	−1.15 (SD 1.22)
Mean LCI (normal <7.1)	7.86 (SD 1.18)	7.25 (SD 1.44)

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### P78 LUNG CLEARANCE INDEX IN CHILDREN WITH ACUTE EXACERBATION OF ASTHMA

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**Introduction** Lung clearance index (LCI) can detect small airways disease in asthma; however there is no published LCI data collected