ACT/ACT. Of these, 14 had abnormal LCI but only 4 had abnormal FEV₁. 8/28 asthmatics had raised LCI despite normal FEV₁.

Conclusions LCI, a measure of ventilation heterogeneity, is raised in a high proportion of children with severe asthma. Most children with raised LCI had normal spirometry. This suggests that LCI is more sensitive to detect lung function deficits in asthma compared to spirometry. LCI also correlates well with symptom control. MBNW and LCI may be useful in the monitoring of children with severe asthma.

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HOW DOES BMI STATUS INFLUENCE SPIROMETRY AND RESPIRATORY MUSCLE STRENGTH IN CHILDREN?

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Introduction While BMI correlates positively with spirometry during childhood, young children who are overweight or obese have been shown to have a reduced FEV₁/FVC compared to their peers.¹ In childhood, obesity has been shown to have a negative effect upon inspiratory muscle strength.²

Aims To assess whether there are differences in spirometry of children of varying BMI status and whether this relates to respiratory muscle strength.

Methods Within schools, we measured each child's height, weight, and spirometry. Respiratory muscle strength was assessed via maximal inspiratory and expiratory pressures (MIP/MEP). The child breathed through a pneumotachograph attached to a shutter. To measure MIP, the child exhaled maximally and the shutter was activated. The child made an inspiratory effort against the shutter and peak pressure was recorded. The test was repeated several times. Measurements of MEP were similar, except that the child inhaled maximally and then made a forceful expiratory effort. We calculated BMI and grouped children by centile score into underweight, healthy, overweight or obese, using epidemiological cut-offs. Results were adjusted for age and height via an ANCOVA.

Results We studied 297 children (5–11 year). We obtained data for spirometry in 258, MIP in 231 and MEP in 262. Mean adjusted values are shown (Table). All individual parameters showed significant positive correlation with BMI, while FEV₁/FVC was significantly negatively correlated with BMI. The obese group had a significantly greater adjusted mean value for MEP than the healthy group and a significantly greater mean adjusted value for FVC than the underweight group, while having a significantly lower mean adjusted FEV₁/FVC than both healthy and underweight groups.

Conclusion Despite having the greatest adjusted mean value for expiratory muscle strength and vital capacity, the obese group demonstrated the lowest adjusted mean FEV₁/FVC, indicating a potential alteration in respiratory flow dynamics for children of greater BMI.

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Abstract P90 Table 1

	Underweight	Healthy	Overweight	Obese
FEV ₁ (L)	1.55	1.69	1.69	1.67
FVC (L)	1.70	1.90	1.94	1.97
FEV ₁ /FVC (%)	91.2	89.1	87.7	85.7
MIP (kPa)	6.89	7.07	7.68	7.57
MEP (kPa)	6.01	6.29	6.54	7.12

Multi-morbidity in COPD

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HIGH PREVALENCE OF VITAMIN D DEFICIENCY AMONGST PATIENTS WITH COPD IN THE NORTH EAST. HIGHLIGHTING A DEFICIENCY AND NEED FOR IMPROVED ASSESSMENT

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Background Vitamin D plays a key role in osteoporosis and also contributes to sarcopenia, muscle weakness, fatigue and depression. Patients with COPD are likely to be at higher risk of Vitamin D deficiency due to reduced mobility especially outdoors, with previous studies in the London area demonstrating prevalence rates around 60%.¹ However, within our population group in the North East of England, little is known about the prevalence of Vitamin D deficiency.

Aims To identify the prevalence of serum 25-hydroxyvitamin D (25(OH)-D) deficiency in patients admitted with an acute exacerbation of COPD.

Method We identified 50 patients admitted with an exacerbation of COPD. Data on demographics and prescription of vitamin D supplementation was recorded. 25(OH)-D titres were measured.

Results 50 patients included, mean age 73.6 years (age range 45–95 years). 44% of patients were prescribed vitamin D supplementation (95% of supplementation was in the form of combined calcium and vitamin D). Overall 62% of patients were found to have low 25(OH)-D titres. Of those not taking vitamin D supplementation, only 14% of patient had sufficient 25(OH)-D titres (≥ 50 nmol/L). 11% were 25(OH)-D insufficient (30–50 nmol/L), 57% were 25(OH)-D deficient (8–30 nmol/L) and 18% were profoundly deficient (< 8 nmol/L). Of those patients taking vitamin D supplementation, 68% were found to have sufficient 25(OH)-D titres, whilst 32% still had inadequate 25(OH)-D highlighting potential issues with compliance or insufficient replacement.

Conclusions We have demonstrated a very high prevalence of vitamin D deficiency amongst our patients with COPD, with 86% of our patients having inadequate vitamin D titres who were not on vitamin D supplementation. This is leading them to increased exposure to the risks of vitamin D deficiency, including the impact on bone health in at already 'at-risk' population. In response to this, locally we are now measuring 25(OH)-D titres routinely on patients with COPD and prescribing vitamin D supplementation when indicated, forming