

Results All subjects flew without the use of oxygen, and no adverse events were recorded in-flight. Air travel caused significant desaturation ($p < 0.001$) (mean pre flight SpO₂ 95 ± 1%; mean in-flight SpO₂ 90 ± 3%). The HCT caused mean desaturation ($p \leq 0.001$) that was comparable to that of air travel (90 ± 3%). The pre flight FEV₁ and in-flight SpO₂ showed weak correlation ($r = 0.41$ $p = 0.125$). The HCT SpO₂ showed strong correlation with in-flight SpO₂ ($r = 0.74$ $p < 0.001$). The HCT showed the strongest correlation with the lower SpO₂ value measured from both outward and inward flights ($r = 0.92$ $p < 0.001$).

Conclusions Significant in-flight desaturation can be expected in passengers with CF. The HCT results compare favourably with air travel data and may be considered the best widely available laboratory test to predict in-flight hypoxaemia in adults with CF.

P251 DOES FRACTIONAL EXHALE NITRIC OXIDE AND METHACHOLINE CHALLENGE TEST HELP IN THE DIAGNOSIS OF AIRWAYS DISEASE?

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Introduction With proposed NICE changes to the diagnosis of asthma,¹ which recommend the use of fractional exhaled nitric oxide (FeNO) at a positive value of ≥ 35 ppb and a change in direct challenge test (Methacholine) from 16 to 8 mg/ml as a cut off for positive responses, we have reviewed our data to assess the impact of these changes.

Methods A retrospective review of results from 2009 to 2016 where methacholine challenge tests (MCT) and FeNO were performed simultaneously in patients with normal spirometry in the assessment of airways disease.

Results Results were available on 145 patients and are tabulated below for both the cut off for MCH of 16 mg/ml (current)² and the new cut off value of 8 mg/ml.

Conclusions Altering the threshold for MCT produces 10 less positive results (7%) reducing the clinical assumption of airways disease. Likewise, 17 had a positive FeNO and a negative challenge test irrespective of the MCT threshold. However, adopting this change reduced the number of negative FeNO and positive MCT from 32 to 22.

In our population, patients referred for a diagnosis of airways disease with normal spirometry showed a large number of patients were both negative for FeNO and MCT and changing the MCT threshold does not significantly impact our group.

Abstract P251 Table 1

	FeNO +ve	FeNO -ve
PC20 +ve (≤ 16 ml/mg)	6	32
PC20 -ve (> 16 ml/mg)	17	90
Pearson Chi-Square = 0.000, DF = 1, P = Value = 0.989		
PC20 +ve (≤ 8 ml/mg)	6	22
PC20 -ve (> 8 ml/mg)	17	100
Pearson Chi-Square = 0.806, DF = 1, P = Value = 0.369		

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P252 ACCURATE MEASUREMENT OF LUNG FUNCTION IN THE WORKPLACE AND POTENTIAL EFFECTS OF UNDERESTIMATION

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Introduction Accurate workplace spirometry measurement is key to giving workers the best clinical assessment of their respiratory health. We were interested in the underestimation of spirometry that occurs if best practice is not adhered to and the significance of this on assessment of health at work.

Methods 667 stone, brick and foundry workers (with varying spirometry experience), carried out lung function testing as part of a larger cross sectional workplace study. Each performed a minimum of 3 forced expirations. Testing continued until each worker had met the ATS/ERS guidance. The final FEV₁ and FVC recorded was the maximum value attained from 3 technically acceptable blows, and that the two highest FEV₁ and FVC values were within 150 mls. Using the final FEV₁ and FVC for each worker, it was then possible to calculate the underestimate of both measures, had only the first blow, or the maximum of the first two blows, been used for interpretation.

Results 613 of the 669 (91.6%) attained the ATS/ERS criteria based on FEV₁. Analysis of the first actual blow, regardless of technical quality, showed an FEV₁ mean underestimate of 250 mls (median = 80 mls, IQR = 210 mls). If only the first technically acceptable blow had been carried out, the FEV₁ would have been underestimated by a mean of 114 mls (60 mls, 150 mls). If only two technically acceptable blows had been carried out, and the maximum of these used, the FEV₁ would have been underestimated by a mean of 36 mls (0 mls, 50 mls). Similarly, the FVC would have been underestimated by a mean of 131 mls (75 mls, 180 mls) if only the first technically acceptable blow had been used for interpretation. If only two technically acceptable blows were carried out, the FVC would have been underestimated by a mean of 43 mls (0 mls, 50 mls).

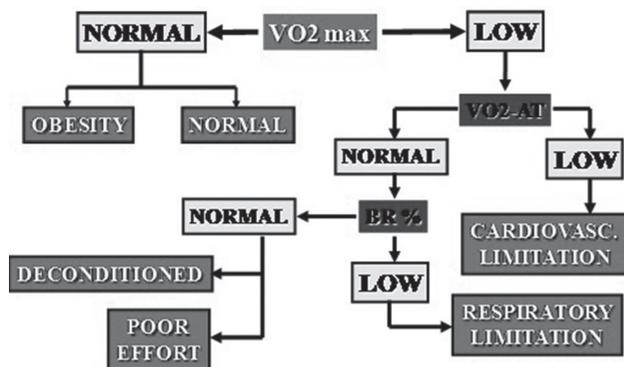
Conclusion Non adherence to ATS/ERS lung function testing guidance at work can cause the FEV₁ and FVC to be underestimated by clinically significant amounts.

P253 COULD APPLICATION OF SIMPLE DIAGNOSTIC ALGORITHM AID ONWARD REFERRAL FOR OPTIMISATION OF PRE-EXISTING CONDITIONS IN PATIENTS BEING CONSIDERED FOR MAJOR SURGERY?

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Introduction Cardiopulmonary exercise testing (CPET) is used to identify physiological limitation to exercise and aid diagnosis of cardiorespiratory, psychological and muscle disorders.¹ It is also frequently used to stratify operative risk thereby aiding decision making in patients considered for major surgical procedures.²



Abstract P253 Figure 1

The evidence for risk stratification is based on the oxygen consumption at anaerobic threshold (VO₂ AT) along with metabolic equivalence.² Attention is therefore generally paid to the numerical value of these measures rather than full interpretation of the data. Further interpretation may allow further diagnosis and optimisation of pre-existing conditions.

Methods We retrospectively applied a simple diagnostic algorithm (Figure 1) to CPETs undertaken by patients considered for major surgery in the Victoria Infirmary, Glasgow between 2014–2016.

Results The records of 39 patients who had a pre-operative CPET testing were analysed: 22 male, 17 female, age range 43–88, median 73. A total of 26 patients were classified as high risk, 23 achieved an AT <11 mls/kg/min and 3 with a metabolic equivalent <4.0mlsO₂/kg/min. Both parameters were low in 13 patients. Ten patients had their procedures cancelled due to this. Eleven high risk patients had a normal VO₂ max.

Upon applying the diagnostic algorithm; 15 patients were deconditioned, 6 had cardiovascular limitation, 3 had respiratory limitation and 15 were normal.

In the ‘high risk’ population: 2 patients had respiratory limitation with pre-existing respiratory conditions and were cancelled. Six patients had cardiovascular limitation with 3 patients having pre-existing cardiac diagnosis, 3 were cancelled. Seven of the patients were ‘deconditioned’; 5 were cancelled as a result.

Conclusion This algorithm suggests that 8 patients were considered high risk as a result of cardiorespiratory disease and a further 7 as a result of deconditioning. Appropriate speciality review and intervention or an exercise prescription pre-operatively might allow patients to improve their operative risk and therefore to proceed to major surgery.

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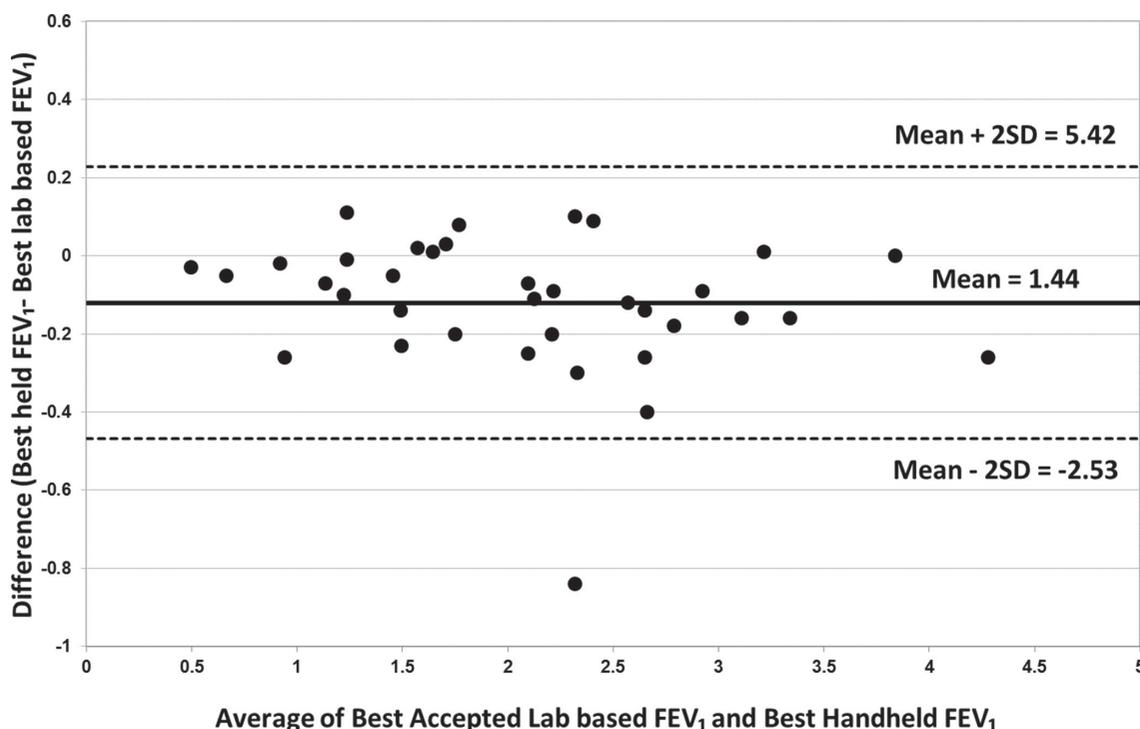
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P254 VALIDATION OF TELEMEDICINE SPIROMETRY

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Introduction Spirometry is considered one of the most important tests for the monitoring of CF and is commonly performed at each clinic visit. With the emerging appetite for telemedicine as a viable alternative to traditional hospital outpatient visits, the suitability of an inexpensive handheld spirometer was assessed for home use.



Abstract P254 Figure 1 Bland-Altman plot