limited added value of a combined "SEP" was evident. The clinical meaning of endurance measures remain unclear.


**REFERENCES**

1 Van't Hul A, Harlaar J, Gosselink R, *et al*. Quadriceps muscle endurance in patients with chronic obstructive pulmonary disease. *Muscle Nerve* 2009;**29**(2):267–74

2 Vilaro J, Rabinovich R, Gonzalez-deSuso JM, *et al*. Clinical assessment of peripheral muscle function in patients with chronic obstructive pulmonary disease. *Am J Phys Med Rehabil*. 2009;**88**(1):39–46


## P144 A COMPARISON OF SHUTTLE WALKING TEST ENDPOINTS IN EXERCISE STUDIES IN PATIENTS WITH COPD


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**Background** The Minimal Clinically Important Difference (MCID) for pharmacotherapy for the endurance shuttle walking test (ESWT) has been reported by Pepin *et al*.[1] Two performance measures, change in time (45–85 s), and percentage change from baseline (13–15%) are investigated here.

**Objective** To review endurance outputs in two exercise studies combined in this post-hoc analysis, and compare two different measures of performance MCID, exercise time in seconds and as a percentage change.

**Methods** The effect of umeclidinium (UMEC 62.5 mcg)/vilanterol (VI 25 mcg), VI (25 mcg) and UMEC (62.5 mcg) compared with placebo on exercise endurance, using the ESWT across two 12-week cross-over studies enrolling hyperinflated COPD patients (FRC >120%) was investigated. All ESWTs were performed at 80% $VO_2$ max derived from a baseline incremental SWT. ESWT time (in seconds) and% change from baseline were reported and compared at Day 2 and 84, 3 h post-dose. Analysis was performed using a repeated measures model with covariates of study, period walking speed, mean walking speed, period, treatment, visit, smoking status, centre group, visit by period walking speed, visit by mean walking speed and visit by treatment interactions.

**Results** Baseline exercise endurance times (EET) and on-treatment change from baseline as seconds and percentage are presented in Table 1. UMEC/VI showed mean changes (95% CI) from placebo at Day 2 of 53.0s (33.4, 72.6) and 18.4% (10.1, 26.8) both $p < 0.001$ and at Day 84 of 43.7s (15.5, 72.0) $p = 0.002$ and 16.4% (4.8, 27.9) $p = 0.005$. Adverse events were similar between treatments.

**Conclusions** UMEC/VI was associated with improvements in both measures of exercise endurance, as were UMEC and VI to a lesser magnitude. An improvement greater than the MCID for percentage change from baseline was observed for UMEC/VI vs placebo at both timepoints, whereas for change from baseline EET only the Day 2 analysis vs placebo showed a result greater than the MCID. MCID as percentage change from baseline may be a more meaningful measure of response to bronchodilators than MCID in seconds because it reflects a patient's baseline exercise tolerance. No additional safety concerns were identified.

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**Abstract P144 Table 1**

| | UMEC (62.5mcg) N = 89 | VI (25mcg) N = 140 | UMEC/VI (62.5/25mcg) N = 282 | Placebo N = 321 |
|---|---|---|---|---|
| Baseline EET, seconds (SD) | 297.1 (159.4) | 303.5 (130.4) | 307.7 (162.6) | 328.1 (182.1) |
| **Day 2** | | | | |
| LS mean change from baseline EET, seconds (SE) | 36.4 (13.7) | 37.5 (11.1) | 66.8 (7.9) | 13.8 (7.4) |
| LS mean change from baseline EET, % (SE) | 15.7 (5.8) | 14.9 (4.7) | 26.5 (3.3) | 8.1 (3.1) |
| **Day 84** | | | | |
| LS mean change from baseline EET, seconds (SE) | 44.6 (18.9) | 27.9 (15.5) | 62.9 (10.8) | 19.2 (10.4) |
| LS mean change from baseline EET, % (SE) | 20.4 (7.7) | 12.6 (6.3) | 27.3 (4.4) | 10.9 (4.2) |


**REFERENCE**

1 Pepin V, *et al*. *Thorax* 2011;**66**(2):115–20


# Asthma treatment

## P145 USING FRACTIONAL EXHALED NITRIC OXIDE (FENO) SUPPRESSION AND INHALED COMPLIANCE ASSESSMENT (INCA) TO IDENTIFY AND MANAGE NON-ADHERENCE IN DIFFICULT ASTHMATICS


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**Introduction** The identification of intentional and non-intentional non-adherence in patients with "difficult" asthma and establishing who should respond well to inhaled steroid treatment is essential to prevent the inappropriate escalation of inhaled corticosteroids (ICS) and the initiation of complex biological therapies. One week FeNO suppression testing can identify non-adherence and ascertain which patients who should achieve good asthma control with better adherence to standard treatment. Combining this test with simple remote technology it can be determined whether they are intentionally or non-intentionally non-adherent, and can show technique and timing errors.

**Methods** The INCA device was developed by Professor Richard Costello in conjunction with Vitalograph and is designed to work with the Accuhaler inhaler. The INCA device time and date stamps the activation of a microphone and records a sound file of the inhaler being used; these sound files can then be transferred to the computer and uploaded onto a server where they are analysed by an algorithm. Within the Belfast City Hospital 40 patients have carried out the one week FeNO suppression testing, 20 of those in combination with INCA technology. This testing is relatively simple and is part of the Medical Research Council funded Refractory Asthma Stratification Programme and is currently being piloted in five specialist Difficult Asthma Centres in the UK.