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

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

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10.1136/thoraxjnl-2015-207770.281

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.

Funding GSK Clinicaltrials.gov: NCT01328444, NCT01323660

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)

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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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10.1136/thoraxjnl-2015-207770.282

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.

Results Within the 40 patients there were 23 non-suppressors (ie adherent patients) and 17 suppressors (ie non-adherent patients). With the patients using the INCA technology, the server highlighted technique errors; for example, not activating the drug blister or exhaling into the mouthpiece, as well as erratic timing issues. At subsequent follow up appointments these issues were emphasised and addressed by using patient-friendly print outs showing the usage of the inhaler, with the addition of alarm reminders and behavioural cues to encourage adherence.
Conclusion FeNO Suppression and INCA testing is an effective method of identifying and managing non-adherence with the capability of encouraging improved technique and timing also having the capability to be used as a long term behavioural assistance to adherence to ICS.

P146 PRESCRIBING RESPIRATORY MEDICINES WITHOUT MAKING A DIAGNOSIS OF ASTHMA IN UK PRIMARY CARE

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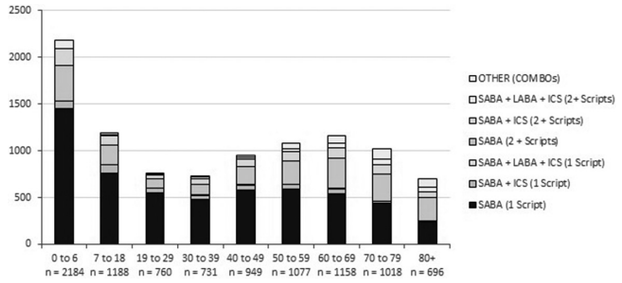
10.1136/thoraxjnl-2015-207770.283

Introduction and objectives Despite asthma being one of the most prevalent worldwide chronic diseases, there remains a wide variation in prevalence.[1] The United Kingdom's (UK) National Review of Asthma Deaths[2] suggests avoidable factors play a part in as many as three-quarters of cases of asthma death. There is need to highlight and address many aspects of asthma care including the variation in diagnosis across all ages to enable appropriate treatment and improve symptom control. Here we investigate the relationship between prescribing respiratory medications and making the diagnosis of asthma, in UK primary care.
Methods GP recorded data were collected from 72 UK general practices participating in the pilot British Lung Foundation asthma management program in 3 health authority areas, (two Clinical Commissioning Groups in England and one Health Board in Scotland). A retrospective analysis was undertaken of the Optimum Patient Care Research Database. This included data on child and adult patients (aged between 0 and 89) in receipt of asthma medication without a diagnosis of a chronic respiratory disease, classified by the absence of a QoF recorded asthma diagnosis. Asthma medications prescribed in the previous 12 months were identified (beta2-agonists, inhaled corticosteroids, cromones or montelukast).
Results 39,124 patients received at least one respiratory medication in the 12 months prior to data collection. Of these, 9,761 (25.0%) had no clinical diagnosis ever recorded for asthma or COPD. 3,655 patients were prescribed 2 or more respiratory prescriptions without a coded respiratory disease and 982 patients had a lower respiratory tract infection recorded within the same period.
Conclusion These results raise concern about over and under-treatment of children and adults in whom no diagnosis of asthma or any other chronic respiratory disease has been made. It is important that future Primary Care studies highlight the importance of early accurate diagnosis before starting treatment. Also, we suggest the present UK national prevalence and morbidity data are likely to underestimate the total burden of asthma within the Primary Care setting.



Abstract P146 Figure 1

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P147 EVIDENCE OF MODIFIABLE PRESCRIPTION FACTORS IN PRIMARY ASTHMA CARE

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10.1136/thoraxjnl-2015-207770.284

Background In 2014, the Royal College of Physicians published the National Review of Asthma Deaths. This confidential enquiry into 195 confirmed asthma deaths in the UK highlighted that two thirds of these deaths were associated with potentially modifiable prescription factors including excessive short-acting beta agonist (SABA) use without review and prescription of long acting beta agonists (LABA) without inhaled corticosteroids (ICS), the latter of which have been associated with higher mortality.[1]
Aim The aim of this project was to determine how widespread these two modifiable prescription factors are in the treatment of asthma in UK general practice.
Methods Primary Care data were obtained from the Optimum Patient Care Research Database (OPCRD). Extraction criteria included patients with a current diagnosis of asthma, at least two years of continuous medical records and at least one asthma prescription in the preceding 12 months. Those who: had a comorbid diagnosis of COPD, had received no treatment for the past 12 months and children <4 years of age were excluded. Asthma prescription data for the previous 12 months were extracted, and patients who had been prescribed LABAs with no ICS, or