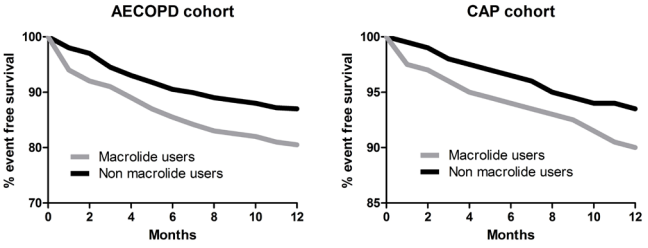
events. The effect of macrolides was most evident in patients with pre-existing cardiovascular disease or at high risk of cardiovascular disease according to the QRISK2 score.

Conclusions The use of clarithromycin in the setting of AECOPD or CAP is associated with increased cardiovascular events.



Abstract S27 Figure 1

S28 INCREASED INCIDENCE OF COPD EXACERBATIONS FOLLOWING INFLUENZA VACCINATION

doi:10.1136/thoraxjnl-2012-202678.034

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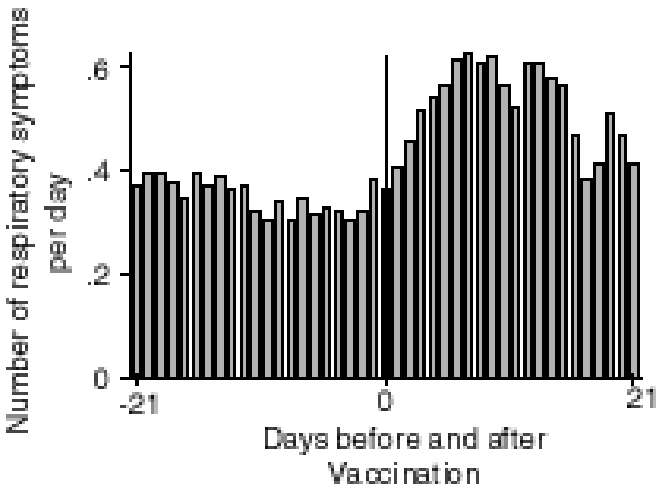
Introduction Influenza vaccination prevents substantial morbidity, and mortality, and the spread of infection, but patients still sometimes refuse vaccinations due to concerns over adverse reactions. Our aim was to determine the relative risk of COPD exacerbations post-vaccination.

Methods We analysed data before and after 162 vaccinations given to 112 patients in the London COPD cohort between 2009 and 2011. Patients recorded on daily diary cards increase in respiratory symptoms. Exacerbations were defined as ≥2 days of 2 major symptoms (new or increased breathlessness, sputum volume or purulence) or 1 major and 1 minor symptom (cold, increased cough, increased wheeze, sore throat). Patients were telephoned in Oct 2011 and asked about recent or forthcoming vaccinations; other dates were known from previous years when recorded diary cards or reported at clinic visits.

The risk of COPD exacerbation in the two post-vaccination periods, days 1–2 and 3–14 were calculated relative to the patient's baseline risk assessed over the year before and after vaccination using a self-controlled case series approach. The data was also simply analysed with a Chi-squared test of the proportion of exacerbations in the two weeks before and after vaccination.

Results There was a 3.31 fold (95% CI 1.5–7.4; P=0.004) increased risk of COPD exacerbation 1–2 days post influenza vaccination, and a 1.8 fold risk (1.2–2.9; p=0.007) 3–14 days afterwards. In the two weeks prior to vaccination there were 5/162 exacerbations and 26/162 in the two weeks post vaccination (p<0.001). All 5 of the exacerbations before and 17/26 exacerbations after vaccination were treated with antibiotics and/or oral steroids. Using thie healthcare utilisation definition of COPD exacerbations, there were still significantly more events post vaccination (p=0.008). Figure 1 shows the average number of new or increased respiratory symptoms recorded by the patients during the 3 weeks before and after vaccination.

Conclusion The incidence of COPD exacerbation increases immediately after influenza vaccination. COPD patients should be warned about increased respiratory symptoms after their influenza vaccination. Future studies should investigate the mechanisms underlying these increased symptoms in order to intervene and prevent them effectively.



Abstract S28 Figure 1

S29 THE PROPOSED NATIONAL EARLY WARNING SYSTEM (NEWS) COULD BE HAZARDOUS FOR PATIENTS WHO ARE AT RISK OF HYPERCAPNIC RESPIRATORY FAILURE

doi:10.1136/thoraxjnl-2012-202678.035

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Introduction Early Warning Scoring systems (EWS) identify critical illness at an early stage. The Royal College of Physicians has proposed use of a 'National Early Warning Score' (NEWS) across UK hospitals. The NEWS allocates EWS points for oxygen saturation <96% (see Table) and does not take account of target oxygen saturation range which should be set for each patient according to the BTS oxygen guidelines. This is particularly important for patients at risk of hypercapnic respiratory failure (T2RF) who are safest with a target range of 88–92% or less. We compared the NEWS with a proposed alternative based on the Salford Royal Hospital EWS system (AltNEWS, see Table) to identify how many patients with COPD would be placed at risk of hyperoxaemia using the NEWS system.

Methods We calculated EWS scores using the NEWS and AltNEWS for 108 unselected acute medical patients at a single time point.

Results 34/108 general medical patients (31%) had risk factors for T2RF (30 COPD, 4 obstructive sleep apnoea). Nineteen of these 34 patients had saturations within their target range of 88–92% either on air or oxygen. The NEWS system allocated these patients 2 or 3 EWS points for "low" oxygen levels which could prompt nursing staff to increase supplemental oxygen, potentially precipitating dangerous hypercapnia. Three of these 34 patients had saturations >92% on oxygen. The NEWS did not alert nursing staff that supplemental oxygen should be reduced for these patients; saturations of 93–94% were actually scored as "too low". This could prompt nursing staff to further increase supplemental oxygen which could harm these patients. The AltNEWS allocated EWS points according to whether patients were in or out of range and no patients were placed at risk of T2RF.

Conclusion The NEWS system makes no allowance for patients at risk of T2RF. This may lead to potentially dangerous use of oxygen in this substantial group of patients. We recommend that a target oxygen saturation range should be set for all hospital patients on admission and oxygen scores within EWS systems should be adjusted to alert clinicians to scores above and below the target range.

Abstract S29 Table 1 NEWS Scoring system for oxygen saturation levels (SpO_2) and our proposed alternative oxygen scoring system

EWS Score for SpO_2	3	2	1	0	1	2	3
NEWS System	≤91%	92–93%	94–95%	≥96			
Proposed modification to NEWS system	≥5% Below target range	3–4% Below target range	1–2% Below target range	In target range	1–2% Above target range on oxygen*	3–4% Above target range on oxygen*	≥5% Above target range on oxygen*

*Patients do not score for high oxygen saturation if breathing air.

Determinants of lung disease in children

S30 DOES OBESITY MAKE FOR WORSE CHILDHOOD ASTHMA?

doi:10.1136/thoraxjnl-2012-202678.036

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Introduction Obesity may be important to asthma causation but the relationship between obesity and outcomes within populations of children with established asthma is inconsistent across studies. This study tested the hypothesis that obese children who have asthma have worse asthma outcomes in comparison with non-obese, non-overweight children with asthma.

Methods Cross-sectionally, children with asthma were recruited from hospitals across Scotland using published methods.[1] A respiratory questionnaire and quality of life questionnaire (PAQLQ) were completed with measured height, weight, spirometry and exhaled NO. Obesity was defined as body mass index (BMI) >95th% and non-obese or overweight as BMI<85th%. Asthma outcomes were categorised as severity (emergency prednisolone treatment, BTS treatment step, spirometry) and control (PAQLQ).

Results There were 693 children recruited in whom BMI was determined in 501 including 103 who were obese and 71 overweight (ie BMI >85th% but ≤95th%). In unadjusted comparisons and compared to non-obese non-overweight children, obese children had higher %FVC (mean difference 6.0% [95% CI 0.7, 11.2] p=0.026), reduced %FEV_1/FVC (mean difference 4.5% [95% CI 1.2, 7.8] p=0.007), a trend for lower PAQLQ score (4.8 versus 5.8, p=0.071) and were less likely to have co-existent eczema or hayfever (OR 0.8 [0.7, 0.9] p=0.001). In the multivariate analysis and compared with non-obese non-overweight children, obese children had reduced %FEV_1/FVC and also reduced risk for eczema or hayfever but not for other outcomes.

Conclusion This is the first study of associations between obesity and asthma outcomes in a UK paediatric population. Although children with asthma may have slightly different physiology (i.e., obstructed lung function and reduced atopy) compared to non-obese, non-overweight individuals, these differences are unlikely to be of clinical relevance. Weight reduction interventions targeted specifically at obese children with established asthma are unlikely to improve asthma severity or control.

References

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S31 VARIATION AT GLCCI1: ASSOCIATION WITH INCREASED STEROID DOSE BUT NOT ADRENAL SUPPRESSION IN ASTHMATIC CHILDREN

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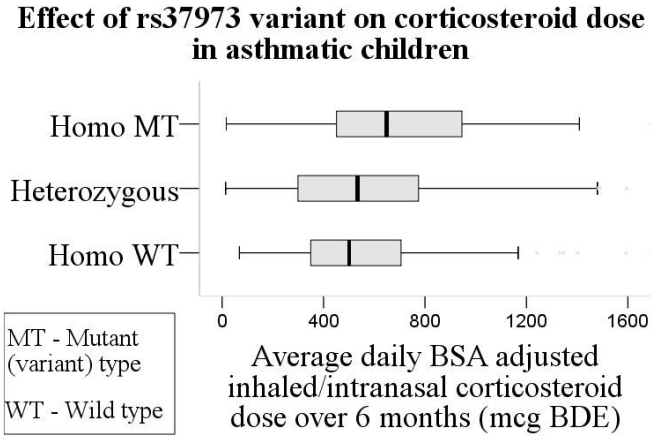
doi:10.1136/thoraxjnl-2012-202678.037

Introduction Corticosteroids are the main stay of preventative therapy for asthma-related symptoms. There is a wide range of inter-patient variability both in terms of response to therapy, and suppression of the HPA axis leading to potentially fatal adrenal suppression. A recently undertaken GWAS identified the GLCCI1 variant rs37973 as a biomarker for corticosteroid efficacy using FEV_1 response as the outcome measure. The aim of this study was two-fold: (a) to replicate the association with corticosteroid efficacy (using steroid dose and an increase in asthma exacerbations as surrogate measures) and (b) to determine whether the same variant is associated with adrenal suppression in asthmatic patients on inhaled corticosteroids.

Methods The study included data on 402 asthmatic children (age 5–18yrs), who were recruited to the Pharmacogenetics of Adrenal Suppression with inhaled Steroids (PASS) study, all of whom were on long term corticosteroid therapy (>6 months), and had a clinically indicated low dose short Synacthen test (LDSST). Detailed history of their medication use and exacerbations were recorded for the 6 months prior to LDSST. Regression models, adjusted for significant clinical factors, were used to test for association between the SNP and each outcome.

Results The rs37973 variant was associated with an increase in prescribed total inhaled/intranasal corticosteroid doses both before and after adjustment for body surface area. This association was significant when assuming both an additive mode of inheritance (p-value=0.020 for BSA adjusted total) as previously reported, and a recessive model (p-value =0.006 for BSA adjusted total). The variant was also associated with increased hospital admissions over the 6 month period (OR 2.16, 95% CI:1.10–4.33 when comparing homozygous states). There was no association with adrenal suppression (baseline or peak) or the number of rescue oral steroid courses.

Conclusion In the first replication study in a European population, we have shown that the rs37973 SNP is associated with increased corticosteroid dose and an increase in asthma-related hospital admissions, further supporting the evidence that GLCCI1 is a determinant of steroid efficacy in asthma. However, this SNP was not associated with steroid-induced adrenal suppression, divorcing efficacy from toxicity, at least with respect to this gene.



Abstract S31 Figure 1