2001–2 to 16% in 2005–6, p<0.001) for children at all treatment steps including those prescribed short acting beta agonist only. Only 27 children were prescribed LABA without concurrent ICS and of the 710 children prescribed LABA/ICS combination, 176 (25%) had not been prescribed ICS in the previous year.

Conclusions Revisions of the BTS/SIGN guidelines do modify prescribing practice in children. The greater use of LABA, LTRA and reduction in ICS dose has been accompanied by a greater use of OCS that may reflect poorer control of acute episodes or a lower threshold and greater confidence by prescribers in the use of OCS.

Abstract P74 Table 1 Change (%) in asthma medications prescribing by age group

	2001–2002	2005–2006	p-value
LABA			
0–4	2.5	3.8	NS
5–11	10.1	16.8	<0.001
12–18	11.1	14.7	<0.001
LTRA			
0–4	2.8	8.4	<0.001
5–11	3.3	7.3	<0.001
12–18	2.8	3.8	NS
OCS			
0–4	9.0	16.0	<0.001
5–11	6.7	9.6	<0.01
12–18	5.3	6.5	NS

P75 CLINICAL PREDICTORS OF CONTINUOUS POSITIVE AIRWAY PRESSURE REQUIREMENT IN BRONCHIOLITIS

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Background Bronchiolitis is the commonest respiratory viral illness in infants with the potential for significant morbidity. There is growing evidence for the use of continuous positive airway pressure (CPAP) non-invasive ventilation in the most seriously affected of these children. Despite the increasing literature regarding the use of CPAP there are currently no studies which identify clinical predictors of requirement for CPAP using the UK bronchiolitis age limit of 12 months, leaving the decision to clinical judgement alone.

Objective To identify clinical factors in infants with bronchiolitis at the time of presentation to the emergency department, which might predict a requirement for CPAP following admission.

Methods Retrospective review of paediatric emergency department case notes was conducted on all bronchiolitis admissions to one tertiary paediatric emergency department in a 12-month period (April 2009–March 2010). Inclusion criteria consisted of a clinical diagnosis of bronchiolitis in those 12 months of age or under. Potential clinical predictors were identified through an extensive literature review. Data extraction of these predetermined potential clinical predictors was carried out and recorded for each case. Logistic regression was then conducted for each variable to identify statistically significant independent predictors of CPAP requirment.

Results During the study period 163 infants were admitted with acute bronchiolitis. Of the 163 infants admitted 28 (17%) received CPAP. The most significant predictors of CPAP requirement in those admitted were as follows: lower oxygen saturation (mean 92.7% vs 97.1%, p<0.001), oxygen requirement in the emergency department (89.3% vs 24.4%, p<0.001), lower weight at presentation (mean 4221 g vs 6668 g, p<0.001), higher capillary blood gas $PaCO_2$ (mean 8.32 kPa vs 6.05 kPa, p<0.001) and higher capillary blood gas HCO_3^- (mean 30.5 mmol/l vs 26.5 mmol/l, p<0.001).

Conclusion We have identified a number of clinical variables which may be assessed within the emergency department, each independently predictive of CPAP requirement in those who are admitted with bronchiolitis. These findings are of particular importance as an aid to clinical assessment of bronchiolitis severity. They are also likely to have a useful role in logistical management decisions, allowing early planning for non-invasive ventilation.

P76 GENERAL AND RESPIRATORY HEALTH OUTCOMES IN ADULT SURVIVORS OF BRONCHOPULMONARY DYSPLASIA: A SYSTEMATIC REVIEW

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Introduction and objectives Bronchopulmonary dysplasia (BPD) is the most common form of chronic lung disease in infancy and the second most common after asthma in children. With the improved survival of extremely preterm infants the incidence of BPD has increased. Currently there is only limited information on the health of BPD survivors who have reached adulthood. The purpose of this systematic literature review was to examine current empirical research on adult survivors of BPD.

Methods Six electronic databases were searched between 1950 and February 2010 (Medline, PubMed, Embase, PsycINFO, Cumulative Index of Nursing and Allied Health Literature (CINAHL Plus) and Web of Knowledge. Studies were independently screened and were only included if they related to the assessment of outcome measures in adult survivors of BPD. From a total of 1453 search results, 14 eligible studies were included in the review. Data on methodological design and findings were extracted from each included study; in addition the methodological quality of each study was assessed using the *Critical Appraisal Skills Programme* (*CASP*) checklist.

Results 14 cohort studies met the review criteria. 12 scored highly on the CASP checklist, with a score >10 out of 12. No study scored less than 7. Nine studies included a control group and only four studies in total had a singular focus on BPD outcomes. Six controlled studies found differences between the groups on respiratory symptoms. 11 studies carried out lung function testing and found evidence of airflow obstruction. Of these, one study found no difference between preterm and controls. However, there were only seven adults who were born preterm with BPD in this study. Five studies in total examined radiographical outcomes, and all found evidence of abnormalities. Those with moderate-severe BPD were found to be most affected compared to mild BPD subjects.

Conclusions The effects of BPD on pulmonary function do not diminish over time. This may reflect issues related to means of testing, differing definitions and classification of BPD, and the adaptation of individuals to their circumstances over time.

P77 CHILDREN'S EXPOSURE TO AIRBORNE FINE PARTICULATE MATTER AT HOME AND ASTHMA OUTCOMES

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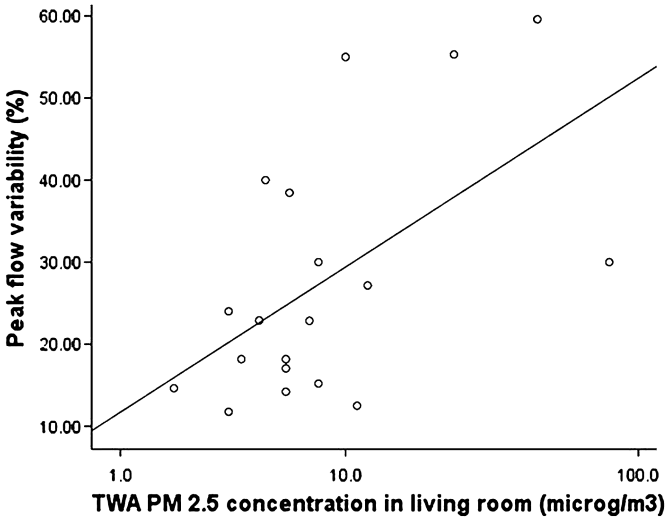
Objectives The relationship between indoor air exposure to fine particulate ($PM_{2.5}$) and asthma symptoms in children is uncertain. The aim of the present study was to relate $PM_{2.5}$ exposure to indices of asthma severity and control.

Methods Children with asthma were recruited. Disease severity was determined by questionnaire and spirometry. Asthma control was assessed by 5-day peak flow variability and children's asthma control test (CACT) on the first and fifth day of peak flow testing. Concentrations of $PM_{2.5}$ were measured over a 24-h period in the living room and the child's bedroom.

Results 22 children were recruited, mean age 11.0 years. Across the 22 homes the median time weighted average (TWA) $PM_{2.5}$ concentration (range) in the living room was 7.4 mg/m3 (2.0–150.0) and for the bedroom was 5.6 (3.1, 11.1) mg/m^3 (p=0.04 for comparison with living room). As expected, there was a significantly higher mean TWA $PM_{2.5}$ in the living rooms and bedrooms of the seven homes where smoking was reported; 22.0 mg/m^3 for living rooms in smoking homes and 4.7 mg/m^3 for non-smoking homes, p=0.001. There was a positive association between TWA $PM_{2.5}$ in the living room and peak flow variability (r=0.51, p=0.027, see Abstract P77 Figure 1) and a negative association between TWA $PM_{2.5}$ in the living room and CACT on day 5 (r=−0.48, p=0.037). TWA $PM_{2.5}$ exposure was not related to indices of asthma severity including FEV_1 and treatment. Peak $PM_{2.5}$ concentration was not associated with any outcome.



Abstract P77 Figure 1

Conclusions This small study suggests that even at relatively low concentrations, there is an exposure-response relationship between increasing indoor air $PM_{2.5}$ concentrations, increased airway variability and poorer asthma control in children.

P78 IMPACT OF SEVERE ALLERGIC ASTHMA IN CHILDREN: HIGHLIGHTING A ROLE FOR UNDERSTANDING THE FAMILY PERSPECTIVE

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Introduction and objectives Current understanding of paediatric severe allergic asthma tends to focus on the impact of the disease on the child in isolation from the impact on the wider family. We aimed to characterise a paediatric severe asthma population and assess the practical, financial and emotional burden on the family.

Methods Case-note review of children (6–18 years) with severe, allergic asthma (BTS treatment step 4–5) was performed; identifying treatments, disease characteristics and practical limitations (e.g. missed schooldays, impingement on activities). Interviews with the primary care-giver of a child with severe allergic asthma were conducted and aimed to explore the impact of severe asthma on the overall family (e.g. missed workdays, time dedicated to care). Family profiles and cost-modelling will be performed to assess the emotional and economic impact on families of having a child with severe allergic asthma.

Results 35 children from a severe asthma clinic between 2007 and 2010 were identified. Despite being on maximum or near-maximum treatment, nearly 50% of children reported symptoms that impacted on daily activities, or were troublesome at night. Furthermore, 40% reported poor school attendance due to asthma symptoms. When performed, the Asthma UK Asthma Control Test identified a mean score of 15 (range 10–25); with 5/6 patients reporting a score below 20 (very poor control). Data also suggests that the unpredictable nature of severe asthma has an impact on the child and family unit. For example, it was documented how a child felt 'constantly… frightened of these episodes of shortness of breath'. Parents used the words 'catastrophic' and described how they were simply 'fed-up with poor asthma control', highlighting the perceived impact and frustration at caring for a child with severe asthma. Further work on family profiles and cost-modelling is being undertaken to assess the emotional and economic impact on a family of having a child with severe asthma.

Conclusion These preliminary findings suggest that caring for a child with severe asthma has a considerable impact on the functioning of the family unit. A better understanding of the family perspective on the impact of severe allergic asthma in children may help improve outcomes by enabling the development of specific strategies.

P79 IMPULSE OSCILLOMETRY FOR THE ASSESSMENT OF LUNG FUNCTION DEFICITS ASSOCIATED WITH PRESCHOOL WHEEZING

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Introduction Preschool wheezing affects over 1/3 of children, and is associated with lung function deficits. There is a need for a clinical tool to evaluate lung function in preschool children, which is able to detect pathology associated with wheezing. Spirometry is the most common measurement of lung function in school aged children and adults, however spirometry measurements are a challenge in preschool children when conducted outside of specialised labs due to the complexity of the manoeuvres needed. Impulse oscillometry (IOS) is able to measure the resistance and resonant frequency of the lungs from normal breathing, and may be a suitable tool for assessing lung function in preschool children. This study aimed to measure the success rate of IOS for acquiring high quality lung function data in preschool children, and to evaluate the ability of the technique to detect differences between children with and without a history of wheezing.

Methods We recruited 66 children aged 3–4 years from a hospital paediatric outpatients department. Parents were interviewed about their child's health using a structured questionnaire. Children underwent allergy skin prick testing and lung function assessment using IOS pre- and post-bronchodilator. Variables recorded were resistance across 5–25 Hz, resonant frequency (Fres), reactance at 5 Hz and the percentage change in resistances across all frequencies post-bronchodilator.

Results 42 (64%) of 66 children successfully completed lung function assessment using IOS. Younger children were less likely to successfully complete IOS readings (3–3.5 years children 41% success; 3.5–4 years children 71% success; p=0.03). We found a significant increase in Fres in children with a history of wheezing (mean 23.4 Hz wheeze, 19.4 Hz no wheeze; p=0.01). Furthermore,