P4649
Secular trends in childhood obesity, asthma, eczema and hayfever over 45 years
Sarah Smith1, Lorna Aucott2, Nara Tagniya3, Leone Craig4. 1Child Health, University of Aberdeen, United Kingdom; 2Public Health, University of Aberdeen, United Kingdom; 3Public Health Nutrition Research Group, University of Aberdeen, United Kingdom

Background: The childhood asthma “epidemic” which took place during the 1980s and 1990s is at least partly explained by changes in lifestyle. Childhood obesity prevalence has also risen, reflecting lifestyle changes. Here we tested the hypothesis that the rise in asthma prevalence in the population paralleled that in obesity.

Methods: A history of asthma, hayfever, eczema and wheeze in the last three years was obtained in 1964, 1989, 1994, 1999, 2004 and 2009. Prevalence of overweight and obesity (IOTF BMI cut-offs equivalent to 25 and 30 at age 18 years) were determined from a separate whole population survey of height and weight at school entry in children in Aberdeen and Aberdeenshire born between 1969 and 2005.

Results: Asthma and related outcomes were determined in 17,951 children in the six surveys and in these years height and weight were available in 29,348 children in the separate study. The prevalence of asthma was between 4 and 28%, for eczema between 5 and 34%, for hayfever between 3 and 27%, for recent wheeze between 10 and 28% and for obesity between 1 and 4%. There were correlations between prevalence at each time point for obesity and asthma (rho 0.83, p=0.042), eczema (rho 0.94, p=0.005) and hayfever (rho 0.94, p=0.005) but not for wheeze. There were no correlations between overweight and outcomes.

Conclusions: The simultaneous rise in both obesity and asthma might suggest a common underlying mechanism.
immaturity per se, and of the underlying pathology causing preterm birth. The role of prenatal infection on increasing the risk of bronchopulmonary dysplasia (BPD) is still undefined.

**Aim:** To test the hypothesis that infection/inflammation disorders (I) (prelabor premature rupture of membranes, spontaneous preterm labor, infection and hemorrhage) and hypertensive disorders (H) (maternal hypertension and intrauterine growth restriction) are differently associated to in-hospital mortality and BPD.

**Methods:** A population-based prospective cohort of 2085 singleton infants 23 to 31 weeks gestational age (GA) born in 6 Italian regions in 2003-2005 (ACTION study), was analyzed.

Infants born of mothers with H (31%) were contrasted with those born after I (63%) with respect to mortality and BPD. Multivariable logistic analyses (generalized estimating equations) were used.

**Results:** Mortality was 14.9%, with 48.7% of deaths occurring in the first 5 days of life, largely due to respiratory causes. Infants born after H had more respiratory distress syndrome than the I group (odds ratio (OR)=1.41, 95% confidence interval (CI): 1.13-1.74, adjusted for GA, sex and antenatal steroids). 12.8% of neonates had BPD. After adjustment for GA, H disorders had a higher risk of mortality (OR=1.4; 95% CI 0.2, 2.5) and of BPD (OR=2.5; CI 1.8, 3.6). Further adjustment for maternal age, education, citizenship, and antenatal steroids did not change results.

**Conclusions:** Our results support the hypothesis that pathogenetic mechanisms involving the regulation of lung/airway size and vessels are more important than I in the development of BPD.

---

**P4655**

**Paracetamol in pregnancy and risk of wheezing in offspring: Caution or bias?**

Franca Rusconi1, Lorenzo Richiardi, Enrica Migliore, Daniela Zagna2, Claudia Galassi1, Triziana Nannelli. 1Unit of Epidemiology, A Meyer Children’s University Hospital, Florence, Italy; 2Unit of Cancer Epidemiology, University of Turin, CERM, CPO-Piemonte, Turin, Italy; 3Unit of Epidemiology, C. Giovanni B University Hospital, CPO-Piemonte, Turin, Italy; 4Department of Public Health, University of Florence, Italy

**Background:** Many but not all studies have suggested an association between paracetamol (P) use in pregnancy and wheezing in childhood.

**Objective:** To assess the relationship between P use in pregnancy and wheezing in offspring, in an Italian mother and child cohort (%NFRA cohort: www.progettoninfnea.it). To evaluate the potential role of confounding by indication of P use.

**Methods:** Infants born from 1076 mothers who used P were contrasted with those born from mothers with no use of P (701) with respect to wheezing at 6-18 months of life. P use was assessed during pregnancy and 6 months after delivery, while wheezing was assessed 18 months after delivery.

**Results:** The overall prevalence of wheezing was 25% and it was more common among infants exposed to P in pregnancy (Relative Risk (RR)=1.23, 95% confidence interval (CI): 0.98-1.54). Adjustment for ever diagnosis of maternal asthma (prevalence: 7.6%) did not change the association. After further adjustment for maternal respiratory diseases in pregnancy (asthma episodes, influenza like illness, bronchitis), maternal smoking and education, child sex and siblings, the RR for wheezing was 1.06 (CI: 0.84-1.34). When we analyzed women who suffered from headache, migraine or backache versus all the others, the risk of wheezing in offspring was similar for mothers who used and for those who did not use P in pregnancy for these diseases (RR=1.28; CI: 0.85-1.91 versus 1.35; 1.03-1.76).

Consistently with other studies, an association found between P use in pregnancy and wheezing in offspring disappeared after adjustment, raising a problem of confounding. A non-causal relationship is also suggested by the lack of increased risk of wheezing for P use in "non-respiratory" diseases.

---

**P4656**

**How do patterns of wheeze change over the first 14 years of life?**

Amina Pescatori1, Marie-Pierre Strippoli1, Ben Spycher2, Caroline Beardsmore1, Clara Fiaschi1, Alessandra Pierangeli2, Carolina Scagnolari1, Jole Rabasco1, Serena Salvadori1, Ilaria Cajazzo1, Ambra Nicolai1, Fabio Mihuida1, 1Department of Pediatrics, “Sapienza” University, Rome, Italy; 2Molecular Medicine Department, “Sapienza” University, Rome, Italy

**Introduction:** We have previously demonstrated the association between bronchiolitis from Rhinovirus (RV) and recurrent wheezing after 1 year follow-up

**Aims and methods:** Identify risk factors for persistent wheezing (PW) after 5 yrs follow-up

**Results:** After 5 yrs follow-up 99 (61.1%) families answered to phone calls. Children were divided in: never wheezing (NW, n=33), transient wheezing (TW, n=31) and PW (n=26). The percentage of children with an absolute number of blood eosinophils greater than 400 cells/μl was higher in children with PW than those with PW and N (0, 0.1, 11.4%; p=0.02). The percentage of children with blood CRP concentration lower than 0.8 mg/dl and absence of chest X ray consolidations differed between children with PW, TW and NW (48.5% vs 66% vs 74.3%; p=0.03 and 11.1% vs 17.9% vs 31.4%; p=0.06). 17.1% of children with PW had bronchiolitis from RV compared to 6.5% of children with TW and 3% of children with NW (p=0.06). 66.7% of infants with bronchiolitis from RV developed PW comparing to 50% of infants with bronchiolitis from hBoV, 27% of infants with bronchiolitis from RSV and 12.5% of infants with bronchiolitis from RSV without hBoV.

**Conclusions:** Atopic predisposition and RV infection seem to predict which infant will have PW after bronchiolitis.
Background: Recent studies have suggested that asthma in adulthood has its origin in early childhood.

Aims: To evaluate asthma occurrence and respiratory health related quality of life in adults after bronchiolitis or pneumonia in infancy.

Methods: A group of patients were followed since hospitalized for bronchiolitis or pneumonia at age <24 months in 1981-82. At the age of 28-31 yrs, data on respiratory symptoms was collected by a posted questionnaire and Saint George's Respiratory questionnaire (SGRQ), from 60/78 former bronchiolitis and 24/46 pneumonia patients, and from 166 matched controls. The clinical study consisted of bronchiolitis test and home peak expiratory flow monitoring: 48(62%) and 22(48%) study subjects and 138 controls attended. Asthma was defined by two ways: current doctor-diagnosed and current self-reported (childhood asthma and current asthma-suggestive symptoms in adulthood, doctor diagnosed asthma included).

Results: Both current doctor-diagnosed asthma (31.9% vs. 11.6%; adjusted p<0.003) and self-reported asthma (36.2% vs. 15.2%; 0.004), as well as repeated-on-demand use of bronchodilators (35.4% vs. 14.5%; 0.002) and regular use of inhaled corticosteroids (20.8% vs. 8.7%; 0.023) were more common in the former bronchiolitis group than in controls. Both former bronchiolitis and pneumonia patients had higher total scores in SGRQ than controls: bronchiolitis (median 4.3, IQ25-75 0.9-8.3; p<0.001), pneumonia (4.9, 1.5-15.5; 0.002), controls (1.0. 0.5-3).

Conclusion: After hospitalization for bronchiolitis in infancy, an increased risk of asthma, more use of asthma medication and impaired quality of life by SGRQ can be demonstrated in adults at age 28-31 yrs.

Conclusions: In infants who had DN during the 1st year of life, there are some risk factors which are different for WZ- and WZ+.

P4660 Risk factors for severe bronchiolitis – A retrospective study
Ionca Ana Plesca, Felicia Cora, Eugenia Buzoianu, Mariana Moleceanu, Victoria Burduc, Paediatrics, Children’s Hospital “Dr. Victor Gomușa”, Bucharest, Romania

Introduction: Bronchiolitis is a common disease in children under 2 years old causing ER presentation and sometimes admission. Severity of bronchiolitis (do to acute respiratory failure) accounts for admission criteria. Children with one or more risk factors for severe bronchiolitis (prematurity, dysmaturity, environmental factors, neurological disease, cardiac disease, airways anomalies, immune deficiency, chronic lung disease, age under 3 months, formula feeding, RSV infection) are among these usually admitted.

Objectives: To reveal the correlation between admissions do to bronchiolitis and the presence of the risk factors.

Methods: A retrospective study was conducted, including 96 children under 2 years old, admitted in our hospital between November 2011 and January 2013. The admission criteria were Wang severity score for bronchiolitis (over 6). We have correlated the hospitalization lasting more than 5 days and/or the Wang score for severity over 10 with the number of risk factors.

Results: All 96 children admitted had at least one risk factor for severe bronchiolitis. Children with Wang score over 10 and hospitalization lasting more than 5 days (34 children) associated at least 2 risk factors, most frequent of them being being overcrowded living condition (42%), sex male (73.5%), prenatality (50%), age under 3 months (47%) and other comorbidities (29%).

Conclusion: Severity of bronchiolitis correlates with number of risk factors that coexist for the same child.

P4661 Correlation between nasal symptoms and lung function parameters in preadolescent children
Domnios Spyrras, Anastasios Tsiotsonos, Diamantis Chloros, Evagelia Nena, Anna-Bettina Harlich, Lazaros Sichletidis.

Introduction: Allergic rhinitis is a frequent medical condition worldwide and it also influences considerably the children’s performance at school.

Aim: Correlation between the ISAAC (International Study of Asthma and Allergies in Children) questionnaire’s data and respiratory system functional parameters in children between 10 and 12 years old.

Methods: Parents of elementary school pupils in the Municipality of Polichni, Thessaloniki, Greece were asked to fill in the ISAAC questionnaire. All students between spriometry, rhinometry, Ige and eosinophils in the peripheral blood, fraction of exhaled NO (FeNO) and skin prick tests. The control group consisted of those children with no rhinitis symptoms.

Results: 1150 children of 11 elementary schools were included in the study. 971 questionnaires were completed (participation rate: 84.4%). One hundred forty four students had at least one positive answer regarding rhinitis (14.8%). Of those, 20.8% presented with elevated IgE levels, 25.4% had increased blood eosinophils, 20.8% had high FeNO (>20ppb) and 45.1% had at least one positive skin prick test. Body mass index was higher in the rhinitis group (21.1±3.3 vs 20.1±1.8)

Conclusions: In infants who had DN during the 1st year of life, there are some risk factors which are different for WZ- and WZ+.
Asthma (dn) 1.4% 2.1% 4.3%
Chronic bronchitis (dn) 11.7% 11.6% 18.1%
Spastic bronchitis (dn) 6.9% 6.8% 2.9%
Hay fever (dn) 5.7% 3.8% 18.7%
Atopic dermatitis (dn) 10.4% 6.8% 9.7%
Any allergy (dn) 14.5% 12.7% 20.2%
Chest wheeze – last year 9.8% 16.6% 15.1%
Attacks of dyspnea after exertion – last year 3.9% 6.3% 4.2%

P4664 Chest pain in children – Evaluation of 136 consecutive cases
Tatiana Butenko, Marina Pragnotkin, Melena Aleeco, Dzina Lopez, Urol Krivcic. Unit of Pulmonary Diseases, University Children's Hospital, Ljubljana, Slovenia

Chest pain (CP) is a common complaint among children. In many cases the source of pain can be identified by a thorough history and physical examination. Further diagnostic evaluation is warranted in doubtful cases.
Aim: To identify the causes of CP in children referred to the emergency department (ED) and to compare results with the published data. Potentially fatal conditions were diagnosed in 6 (4.4%) children. None died or suffered significant sequelae.
Conclusion: Our study showed significant positive correlation between the ISAAC questionnaire's data and allergic parameters. Therefore the ISAAC questionnaire is strongly recommended as a useful tool in primary pediatric care practice.

P4666 Predisposing factors for recurrent wheezing in toddlers
Ioana Ciupa1, Liviu Popa2, Zagarca Popa2, Monica Marc2, Voicu Tudorache2, Ioan Popa1, 1Pediatric II Department, 2Pulmonology Department, University of Medicine and Pharmacy ‘Victor Babes’, Timisoara, Timiso, Romania

Background: Recurrent wheezing is frequently found among toddlers and obesity seems to be associated with asthma. In our country early introduction of wheat products in infant’s alimentation is a habit, associated obesity/parapathy and vitamin D deficiency. The aim of the study is to evaluate the relationship of mentioned factors with recurrent wheezing in a pediatric group with positive familial history of asthma.
Methods: Seventy four preschool children (2-5 years), with median age 2.8 years, monitored for recurrent wheeze (more than 4 episodes per year) were included in the study. Retrospective analysis about feeding period, vitamin D supplementation and history of rickets was done. Specific diet anamnesis regarding early introduction of wheat products (before 8 months) was obtained by individual questionnaire. During two summer months, we assessed nutritional status, vitamin D levels and calcium metabolism; investigating also the association of cow’s milk allergy.
Results: A considerable percent of 70.2% of wheezing children had a strong association with early introduction of wheat products in diet, 65.38% of them associating obesity. Parathrophic children with wheezing were also deficient in vitamin D (64.7%). In seventeen children (16.36%) we found rickets sequelae, despite vitamin D supplementation, according our national recommendations. Cow milk allergy was found in 32.43% children.
Conclusion: Early introduction of wheat products in children alimentation pre-disposes to obesity associating vitamin D deficiency. Exchange of alimentary tradition and vitamin D supplementation might have a positive role in preventing the recurrent wheezing.

P4667 Occurrence of obstruction of respiratory tracts among acute respiratory diseases in children hospital
Evelina Loshkina1, Olga Zaytseva1, Lola Ravysharova1. 1Department of Pediatrics, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation; 2Department of Respiratory Infections, Saint Vladimir Children’s City Hospital, Moscow, Russian Federation

Acute respiratory infections (ARIs) are the most common diseases among children and adults in Russia. Persistent wheezing and laryngotraeitis occupy the leading part among ARIs in children of early age.
The aim of our work was to evaluate occurrence of obstruction of respiratory tract among acute respiratory diseases in children’s hospital.
Methods: We performed a retrospective analysis of histories of children admitted at Department of respiratory infections of Saint Vladimir Childrens City Hospital in 2006-2007 and 2010-2011 years.
Results: Our cohort included children with ARIs aged from 1 months to 15 years old (in 2006 – 2220, 2007 – 2455, 2010 – 3200, 2011 – 2960 children). Children with obstruction were mainly early age (from 1 months to 3 years old). We revealed higher prevalence of TV-watching/PC-playing time ≥3 hours daily (39.1% vs. 28.8%. p<0.00).
Conclusion: As the diet and sedentary lifestyle may contribute to higher asthma, allergic rhinitis and eczema prevalence rates, adequate diet and regular physical activity should be propagated among young adolescents living in urban area.
high frequency of obstruction upper and lower respiratory tracts, most of these children had recurrent episodes in history. We have found reduction frequency of wheezing in different years of observation from 23.1% to 21.5% (2006 – 23.1%, 2007 – 38.3%, 2010 – 39%, 2011 – 21.5% of children with AIRs). Also we registered high occurrence children with obstructive laryngotracheitis (in 2006 – 42.5%, 2007 – 65.7%, 2010 – 50.4%, 2011 – 47% of children with AIRs). All children with obstruction received standard treatment.

**Conclusion:** Reduction of frequency of wheezing and obstructive laryngotracheitis in children admitted at children’s hospital is connected with introduction of modern principles of therapy obstruction of respiratory tract at a pre-hospital stage.