Abstract PS-320 Table 1

Pollutants and Croup incidence	Areas with traffic load >1.500 motor vehicles/ hour	Areas with traffic load <300 motor vehicles/ hour	P*
SO2 (mg/m^3)	0.148 ± 0.104	0.000 ± 0.000	<0.01
NO2 (mg/m^3)	0.045 ± 0.016	0.009 ± 0.008	<0.01
Particulate matter (mg/m^3)	0.274 ± 0.082	0.190 ± 0.079	<0.05
CO (mg/m^3)	3.317 ± 0.716	2.275 ± 0.411	<0.01
Annual incidence of croup in children (cases per 1000 child population)	10.78	1.08	<0.01

Table. Traffic load, traffic-dependent pollutants and annual incidence of croup in children (Vinnytsya, Ukraine, 2000–2003)

Conclusions Croup in children is related to traffic load and traffic-dependent pollutants (SO2, NO2, particulate matter, CO).

PS-321 BACTERIAL LOAD AND INFLAMMATORY MEDIATORS IN RELATION TO THE SEVERITY OF NECROTIZING PNEUMOCOCCAL PNEUMONIA

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10.1136/archdischild-2014-307384.620

Background and aims The incidence of necrotizing pneumococcal pneumonia has increased over the last two decades. We hypothesized that increased pneumococcal load or augmented inflammatory cytokine production may lead to destructive pneumococcal lung disease.

Methods This study prospectively enrolled children aged 0–18 years with a diagnosis of community-acquired pneumonia with pleural effusion admitted to 6 medical centres. Children were diagnosed with pneumococcal empyema if the pleural fluid tested positive for quantitative pneumococcal (lytA) detection by real-time polymerase chain reaction (RT-PCR). Pneumococcal empyema cases were further divided into four groups accoring to necrosis severity scaled by radiographic image findings: 0) non-necrosis, 1) mild necrosis, 2) cavitation, and 3) bronchopleural fistula (BPF). Nasopharyngeal and pleural pneumococcal load, as well as proinflammatory cytokines (TNF-α, IL-1β, IL-6, IL-8), Th1-(IL-2, IFN-γ), Th2-(IL-4, IL-10), and Th17-cytokines (IL-17) in the pleural fluid were measured.

Results Serotypes 19A and 3 accounted for 65.3% and 4.2% (respectively) of 72 cases of pneumococcal empyema. In multivariate analysis, pleural pneumococcal density (adjusted odds ratio [aOR], 1.79; 95% confidence interval [CI], 1.03–3.06), and IL-8 (aOR, 2.64; 95% CI, 1.21–5.75) were independent factors associated with the severity of lung necrosis. There was a good correlation between nasopharyngeal and pleural pneumococcal density (ρ = 0.42; p = 0.001). A *lyt*ART-PCR pleural density ≥ 50,000 copies/mL had a sensitivity of 88.2% and a specificity of 70.9% for predicting bronchopleural fistula.

Conclusion Evolution of *S. pneumoniae* toward increased fitness in their interaction with host and exaggerated IL-8 expression are responsible for the increase of necrotizing pneumococcal pneumonia.

PS-322 A NEW SCREENING APPROACH FOR THE MANAGEMENT OF RSV INFECTION USING INNOVATIVE COMPUTERISED INFERENCE ALGORITHM TECHNOLOGY

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10.1136/archdischild-2014-307384.621

Background and aims Minimising invasive laboratory testing on children is considered to be the top priority. Respiratory Syncytial Virus (RSV) is the leading cause of lower respiratory tract infection and the hospitalisation in infants. Identifying respiratory pathogens within the population is difficult because numerous invasive sample collections are required. Collecting precise information and estimating the severity of respiratory symptoms using the Innovative Computerised Inference Algorithm (ICIA) technology will minimise RSV screening tests.

Methods Children aged 1 month15 years at Paediatric Emergency Department (PED) of Yokohama Citizen's Hospital (Yokohama, Japan) who were evaluated with respiratory symptoms had swab samples collected for the RSV test. ICIA prompts the guardian to input symptoms at time of registration, assessing the Disease Severity from 3 levels (mild/ moderate/ serious).

Results There were 23,851 PED visits from January 1, 2012 to December 31, 2013. Of those, 6742 patients had respiratory symptoms and swab samples were collected accordingly. There were 654 RSV infected patients. The severity level, over moderate was 632 and, mild was 22. These results proved that the sensitivity and specificity of ICIA were 96.6% and 87.9% respectively, negative and positive predictive values were 99.6% and 46.3% respectively.

Conclusion ICIA decreases 90% of invasive RSV tests. ICIA supports Paediatricians at each phase of their clinical decision making: i.e., diagnosis, severity assessment and treatment that used to depend on the amount of a paediatricians' knowledge and experience. Thus, ICIA leads to minimising the invasive RSV laboratory tests, in addition to shortening the time of clinical decision making process.

PS-323 THE GENE POLYMORPHISM OF IL-17 G-152A IS ASSOCIATED WITH INCREASED COLONISATION OF STREPTOCOCCUS PNEUMONIAE IN CHILDREN

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10.1136/archdischild-2014-307384.622

Background and aims *Streptococcus pneumoniae* is a common respiratory pathogen and up to 50% of children acquire *S. pneumoniae* in their nasopharynx during the first 12 months of life. The cytokine interleukin-17A (IL-17A) plays an important role in host defense against extracellular bacterial pathogens.

We investigated the effect of IL-17 G-152A polymorphism on pneumococcal colonisation and the serum level of IL-17A in children.
Methods Nasopharyngeal swabs (NP) and blood samples were collected from 412 Finnish children at 2.6 months. Of them, 160 had both NP and blood sample available at 12 and 24 months of age. The semi-quantitative culture method was used for bacterial culture, Sequenom iPlex Gold System for IL-17A genotyping and Luminex 200 for serum IL-17A determination.
Results Of 160 subjects, 34% were G/G wild type, 45% G/A heterozygotes and 21% A/A homozygotes. The prevalence of *S. pneumoniae* in the same cohort of 160 subjects increased from 8% to 30% during the 2-year follow-up. Significantly higher pneumococcal colonisation was found in subjects with A/A genotype at both 12 and 24 months of age compared to those with G/G ($p < 0.05$ for both). Of 96 sera randomly selected from 160 subjects at 12 months, only 6% with A/A and 33% with G/A genotypes had detectable IL-17A compared to 75% with G/G ($p < 0.001$, $p < 0.01$).
Conclusions Our data suggest that gene polymorphism of IL-17 G-152A is associated with increased colonisation of *S. pneumoniae* and that lower serum levels of IL-17A were observed in subjects with A/A and G/A genotypes of IL-17A.

PS-324 NOSOCOMIAL RESPIRATORY SYNCYTIAL VIRUS INFECTIONS IN THE PALIVIZUMAB-PROPHYLAXIS ERA

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10.1136/archdischild-2014-307384.623

Background Although respiratory syncytial virus (RSV) infection continues to be a leading cause of infant hospitalisation with a high transmission rate, recent data on nosocomial RSV infection are scarce. This study investigated the clinical and epidemiological characteristics of nosocomial RSV infection in the palivizumab-prophylaxis era.
Methods The database of a tertiary paediatric medical centre was searched for all hospitalised patients with RSV-positive respiratory disease in 2008 through 2010. Data were compared between patients with community-associated and nosocomial disease and the qualification of the latter group for palivizumab was evaluated.
Results Of the 873 children identified, 30 (3.4%) had a nosocomial infection. This group accounted for 0.06% of all admissions during the study period and 0.13 of every 1000 hospitalisation days. The nosocomial-infection group had higher rates of preterm birth and severe underlying disease than the community-associated RSV group, and a longer mean hospital stay. The nosocomial-infection group also had higher rates of intensive care unit admission and mechanical ventilation. Although 73% had underlying conditions, the vast majority (80%) did not qualify for RSV immunoprophylaxis.
Conclusion Nosocomial RSV infection is a significant cause of morbidity among hospitalised infants, especially those with comorbidities and lengthy hospital stay, and is associated with a complicated clinical course. In addition to strict infection-control measures, extending palivizumab prophylaxis to additional selected high-risk populations should be considered.

PS-325 ANTIBIOTIC RESISTANCE OF STREPTOCOCCUS PNEUMONIAE AMONG HEALTHY NASOPHARYNGEAL CARRIERS 6 TO 36 MONTHS OF AGE: DATA FROM A NATION-WIDE SURVEILLANCE STUDY IN CYPRUS

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10.1136/archdischild-2014-307384.624

Background Pneumococcal infections pose a global threat to public health and pneumococcal nasopharyngeal carriage is the main factor of invasive infection development in the community. In addition, the overuse of antibiotics has contributed in the development of antibiotic-resistant pneumococcal strains.
Objectives To determine the pattern of antibiotic susceptibility of isolated Streptococcus pneumoniae strains of healthy nasopharyngeal carriers 6 to 36 months of age in all districts of Cyprus.
Materials and methods A single nasopharyngeal swab was collected with a sterile rayon tip swab from 1105 healthy children 6–36 months of age, between October 2012 and September 2013. Data on possible risk factors was collected using an interview-based questionnaire. Bacteria was characterised by colony appearance, Gram staining, optochin susceptibility and bile solubility tests. Antibiotic susceptibilities were determined by disc diffusion method and MICs for penicillin and cefotaxime were determined by the E test method.
Results 280 strains were isolated. The overall nasopharyngeal carriage rate was 25, 34%. Antibiotic susceptibility pattern was as following: penicillin 21.79% intermediate, 3.21% resistant; cefotaxime 3.21% intermediate, 2.86% resistant; co-trimoxazole 7.14% intermediate 17.14% resistant; erythromycin 0.71% intermediate, 26.79% resistant; tetracycline 1.79% intermediate 12.50% resistant; clindamycin 0.71% intermediate, 19.64% resistant. All isolates were susceptible to chloramphenicol. Six out of the 9 (66.6%) penicillin-resistant pneumonococci were multi-resistant strains. Five were resistant to erythromycin, three to clindamycin and five to cotrimoxazole. Two strains were resistant to all above antibiotics. Seven (4.4%) out of 159 carriers who received at least once antibiotic treatment the last year were resistant to penicillin, whereas the respective percentage for those carriers not receiving any antibiotic treatment was only 1.6% (2 out of 121).
Conclusion The high prevalence of antibiotic-resistant pneumonococci in Cypriot carriers aged 6 to 36 months of age underline the need of continuous surveillance of Streptococcus pneumoniae. Moreover, the results of this study is a useful tool for the Cypriot clinicians to guide the local empiric therapy for pneumococcal infection.

PS-326 TOLL-LIKE RECEPTOR 1(TLR1)GENE SNP RS5743618 IS ASSOCIATED WITH INCREASED RISK FOR TUBERCULOSIS IN HAN CHINESE CHILDREN

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10.1136/archdischild-2014-307384.625