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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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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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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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.