1454. B-Hemolytic Non-Group A *Streptococcus* Pharyngitis in Children

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Background. Non-Group A *Streptococci* (NGAS) are common isolates from patients with pharyngitis. Few studies have assessed the epidemiology and clinical features of these infections in children.

Methods. The epidemiology, clinical features, and antibiotic prescribing patterns for NGAS among children with throat cultures obtained for pharyngitis were assessed at a large community-based health system over 10 years. Children with NGAS were compared with children with Group A *Streptococcus* (GAS) and negative cultures using uni- and multi-variate analysis. Antibiotic prescribing patterns were evaluated.

Results. A total of 224,328 rapid *Streptococcus* tests and 116, 578 throat cultures were performed. Clinical analysis was completed for 602 GAS patients, 535 NGAS patients, and 480 patients with negative cultures. Incidence of NGAS did not vary annually or by season, but increased with age from 2% at ≤ 5 years to 7% at 18 years. Patients with NGAS were more likely than those with negative cultures to have exudates (20.3% vs. 13.1%, $P = 0.003$) and enlarged tonsils (28.6% vs. 19.3%, $P < 0.001$). Modified Centor scores did not differ between groups (score>2, $P = 1.0$; score>3, $P = 0.50$). Patients with GAS were more likely than those with NGAS to have fever (32.6% vs. 24.5%, $P = 0.003$), petechiae (14.0% vs. 3.1%, $P < 0.001$) and modified Centor score >2 (47.8% vs. 27.1%; $P < 0.001$). Of patients with NGAS 65% were prescribed antibiotics.

Conclusion. NGAS likely exists in both a carriage and infectious state and the incidence increases with age. When NGAS causes infection the infection is milder than GAS and complications are rare. Laboratory reporting of NGAS results in high antibiotic use, despite current recommendations against treatment.

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This abstract has been withdrawn at the author's request.

1456. Biomarkes in Different Etiologies of Pneumonia in Pediatrics in Indonesia

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Background. Pneumonia remains the leading killer with an estimated of 922,000 fatalities or 15% of all deaths in <5-year-old children in 2013. Mortality can be reduced by providing appropriate treatment to the pathogens. The objectives of this study were to describe the causes of pneumonia that may change after the introduction of vaccines and to identify biomarkers to differentiate between bacterial and viral infection.

Methods. A 2-year multicenter cohort study of children between 2-month–5-year old with pneumonia has been conducted in three hospitals in Indonesia since July 2017. Demographics, clinical, laboratory, radiology, treatment data, have been recorded. Blood, urine, nasopharyngeal swab, sputum/induced sputum, specimens have been collected for biomarkers, culture, molecular and serological tests.

Results. Three-thirty from 99 pneumonia subjects screened were enrolled in this study since July 2017. 20 (60.6%) subjects had bacterial and viral coinfection, 10 (30.3%) subjects with bacterial infection, two (6.0%) subjects with viral infection, and one (3.0%) subject had unknown etiology. Demography, clinical signs and symptoms, disease and vaccination history, laboratory, and radiological evaluation are shown in Table 1. The etiologies of pneumonia are described in Figure 1.

Conclusion. Mixed viral and bacterial infection were predominant. Several atypical pathogens were identified. No significant different in biomarkers between viral, bacterial and mixed infection groups was found. This finding highlights the need to improve diagnostic capacity to aid clinicians in pneumonia management.

	Bacterial (n=10)	Mixed (n=20)	Viral (n=2)	Unknown (n=1)
Demography				
Age (month old), median (range)	7.5 (2-20)	15 (2-53)	2.5 (2-3)	2
Gender : Male , n(%)	8 (80)	13 (65)	2 (100)	1 (100)
Vital sign, Median (range)				
Temperature (°C)	37 (36-38)	38 (36-39)	37.8 (37-38.6)	37.6
Pulse (times/minute)	120 (78-152)	120 (100-186)	130 (128-132)	194
Respiratory rate (times/minute)	36 (26-50)	38 (24-64)	49 (46-52)	63
Severity, n				
Mild (chest indrawing neg)	1	1	2	0
Severe (chest indrawing pos)	9	19	0	1
Vaccination history, n				
Hep B	9	16	2	1
BCG	8	13	2	1
DPT	5	12	2	0
HIB	4	9	2	0
Breast-feeding history, n				
Breast-feeding ≥ 6 months	5	11	2	0
Underlying diseases, n				
Development delay	1	2	0	0
Congenital heart diseases	1	3	2	0
Asthma	1	0	0	0
Recurrent Pneumonia	1	5	2	0
Sign & symptom, n				
Diarrhea	3	9	0	1
Decrease of consciousness	1	3	0	0
Skin rash	1	3	0	1
Nasal Flaring	2	12	0	1
Retraction	9	19	0	1
Prolonged expiration	2	3	0	0
Ronchi	10	18	0	1
Wheezing	2	3	0	1
Sat O2	55.9 (41.7-79.7)	135 (45.1-200)	--	70.3
PaO2	82.6 (59.6-94.7)	96.9 (74-99.3)	--	94
Radiology, n				
Infiltrate	3	10	2	1
Cavity	0	2	0	1
Haematology*				
HB, median (range)	6.6 (7.2-12)	10.6 (7.3-12.7)	10.8 (9.6-12)	10.5
Leucocyte, median (range)	17200 (10800-36300)	12800 (3400-29200)	20745 (7690-33800)	13600
Leukopenia, n	0	2	0	0
Normal Leucocyte, n	6	15	1	1
Leucocytosis, n	4	7	1	0
Lymphocyte, median (range)	42.5 (12-51)	30 (8-50)	30	19
Lymphopenia, n	6	18	0	1
Normal Lymphocyte, n	4	5	1	0
PMN median (range)	46 (38-41)	64 (34-84)	58	75
Neutropenia, n	2	2	0	0
Neutrophilia, n	6	16	1	1
Biomarker , median (range)				
CRP	3.4 (0.3-343)	15 (0.16-300)	3.3 (0.19-6.4)	175.3
Procalcitonin	2.3(0.2-200)	5.3 (0.01-200)	0.8 (0.1-1.5)	6.9
Fatalities	2	1	0	1

Table 1. Demography and clinical evaluation of pneumonia patients
*** adjusted by age**

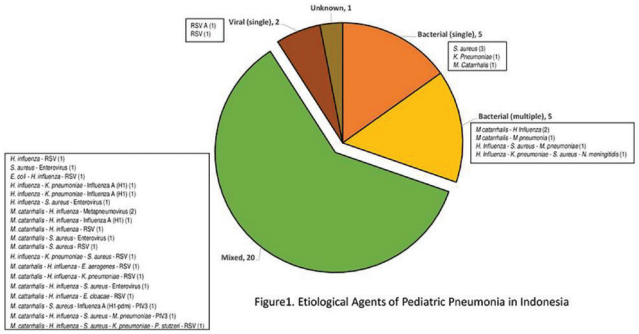

Figure1. Etiological Agents of Pediatric Pneumonia in Indonesia

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1457. *Escherichia coli* Community Acquired Pneumonia

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Background. *Escherichia coli* has been thought to be an uncommon cause of community-acquired pneumonia (CAP). Large epidemiological data on *E. coli* CAP (E-CAP) and its comparison to *pneumococcal* CAP (P-CAP) are lacking.

Methods. A multi-center retrospective cohort study of adult patients (aged ≥ 18 years) admitted to 140 US hospitals with pneumonia and/or sepsis from 2010–2015, included in the Premier Research database. Patients with community-onset infection, antibiotic treatment beginning within the first 2 hospital days, and continued for at least 3 consecutive days were included. Patients were excluded if they had been transferred from another acute care facility, had cystic fibrosis, had a hospital length of stay of 1 day or less, co-existent urinary tract infection, gastrointestinal/ intra-abdominal infection, or simultaneous presence of other CAP pathogens. Pneumonia and sepsis were identified by ICD-9 codes.

Results. A total of 13,165 patients met the inclusion criteria, of which 1,247 had *E. coli* CAP. Majority of patients with E-CAP were nonnursing home residents (90.2%, 1,125/1,247). 69.3% (864/1,247) patients with E-CAP presented with"sepsis syndrome' compared with only 48.1% in other Gram-negative CAP and 62.5% in P-CAP. Aspiration pneumonia was diagnosed in 5.9% (73/1,247) with E-CAP. Blood cultures were positive in 59.9% (748/1,247) of patients with E-CAP with 84.8% positivity in patients with sepsis syndrome. Patients with E-CAP compared with P-CAP were more likely to require ICU-level care (42.6% vs. 38.2%), mechanical ventilation (19.3% vs. 15.7%), and require vasopressors (21% vs. 13.8%). In-hospital mortality was 14.8% in E-CAP compared with 7.4% in P-CAP. The median cost of hospitalization was great in E-CAP than P-CAP ($12,420.1 vs. $9,857.5) Re-admission within 30 days was greater among patients with E-CAP than P-CAP (5.4% vs. 4%). 36.8% of isolates were resistant to fluoroquinolones, 10.4% to ceftriaxone and 18.1% to aminoglycosides. Only 10/1,247(0.8%) were multi-drug-resistant.

Conclusion. *E. coli* is an important cause of severe CAP, with higher mortality, greater need for ICU-level care, and higher re-admission rates than patients with *pneumococcal* pneumonia. The rate of fluoroquinolone resistance was high and empiric quinolones should be used with caution for patients who are critically ill due to E-CAP

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1458. A Single-Center Quasi-Experimental Study to Evaluate the Impact of Utilizing Rapid Diagnostic Technology to Detect Methicillin-Resistant *Staphylococcus aureus* in Respiratory Culture Samples

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Background. Methicillin-resistant *Staphylococcus aureus* (MRSA) is a relevant pathogen for patients with pneumonia in the presence of certain risk factors. Empiric broad-spectrum antimicrobial therapy, including anti-MRSA therapy, is frequently initiated in patients hospitalized with pneumonia. The low yield of respiratory cultures makes antimicrobial de-escalation difficult, potentially leading to extended durations of anti-MRSA therapy and increasing risk for significant drug-related adverse effects. A polymerase chain reaction (PCR) test that was previously utilized for nasal MRSA screening was internally validated to identify the presence of MRSA in respiratory specimens within 2 hours of sample collection. The primary objective of this study was to determine the effect of this respiratory PCR test on duration of anti-MRSA therapy in nonintensive care unit (ICU) patients hospitalized with pneumonia.

Methods. Implementation of the PCR test in non-ICU units occurred December 1, 2017. During the post-intervention (INT) period (December 1, 2017–March 31, 2018), PCR results were evaluated daily by antimicrobial stewardship and decentralized staff pharmacists for therapy de-escalation opportunities, with recommendations communicated to prescribers. The pre-INT group (December 1, 2016–March 31, 2017) consisted of non-ICU patients hospitalized with pneumonia who received anti-MRSA therapy for at least 48 hours, or who qualified for anti-MRSA therapy per institutional guidelines.

Results. A total of 169 patients were evaluated; 109 in the post-INT group and 60 in the pre-INT group. Anti-MRSA therapy was administered to 74 patients (68%) in the post-INT group, compared with 56 patients (93%) in the pre-INT group. The median duration of anti-MRSA therapy post-INT was 23.5 hours, which was significantly shorter than the pre-INT duration of 55.5 hours ($P < 0.0001$). The post-INT group also had significantly less vancomycin-induced nephrotoxicity ($P < 0.0383$) and a shorter time to targeted therapy ($P < 0.0001$). No difference in 30-day all-cause mortality was observed ($P < 0.1338$).

Conclusion. Utilization of a PCR test to detect MRSA in respiratory specimens decreased duration of anti-MRSA therapy in non-ICU patients hospitalized with pneumonia.

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1459. The Scope of *Mycoplasma Pneumoniae* Pneumonia Diagnosed by Multiplex Polymerase Chain Reaction Respiratory Viral Panel in Pediatric Patients in Hawaii

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Background. *Mycoplasma pneumoniae* pneumonia (MPP) is classically associated with an infection in older children with mild virulence in younger children. The multiplex polymerase chain reaction (PCR) respiratory viral panel (RVP) allows for diagnosis of multiple viruses and bacteria.

Methods. A retrospective study was performed in patients 0–18 years old with positive MPP RVP from January 1, 2013 to June 30, 2017. Clinical cases of patients hospitalized with positive MPP testing by RVP PCR were reviewed for clinical, radiologic and laboratory data.

Results. A total of 3,621 RVPs were tested with 49 positive for MPP. In regard to age of patients, 27/49 (incidence 2.7%) positive for MPP were under 5 years old as compared with 22/49 (incidence 1%) between 5–18 years old. 75% of RVPs obtained were in patients under 5 years of age. Cough and fever were present for a mean of 8.3 and 7.6 days, respectively prior to RVP. Of the MPP positive patients, 21/49 patients (43%) were treated with scheduled although only 16 had a history of wheezing. Of the MPP positive patients, 38/48 patients had radiological findings of a pulmonary infiltrate (not perihilar) with 30/38 patients (79%) had bilateral infiltrates. Admission antimicrobial therapy was the following: 8 on no antibiotic, 21 on nonmacrolide, 11 macrolide and nonmacrolide, and 9 on macrolide therapy alone. Pediatric intensive care unit (PICU) admission occurred in 8 patients: 4 direct PICU admissions and 4 patients transferred from wards to PICU. All four PICU transfers had initially nonmacrolide therapy; 3 of 4 were under 5 years of age.

Conclusion. Over half of Pediatric MPP was diagnosed by rapid molecular diagnostics in patients under 5 years of age. Bilateral pulmonary infiltrates and new onset wheezing responsive to β agonists were commonly noted in patients who had MPP. A small subset of those younger patients required higher level of care after initial therapy with nonmacrolide therapy. While MPP has a lower incidence among younger children, the infection is not rare and can have a significant clinical impact. MPP should be considered in all patients, especially younger patients who are nonresponsive to treatment of community acquired pneumonia.

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1460. Community-Acquired Bacteremic Pneumonia in Post-pneumococcal Vaccination Era in a Pediatric Hospital

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Background. From January 2012 PCV13 was introduced into immunization program in Argentina, 2 + 1 schedule for <2 years. The aims of this study were to describe epidemiological-clinical pattern of community-acquired bacteremic pneumonia (CABP) in the post-vaccination period and the risks factors of CABP occurrence, complications and lethality.

Methods. Cross-sectional study was performed in children with CABP diagnosis, hospitalized in Ricardo Gutierrez Children's Hospital from January 2012 to December 2017.

Results. A total of 135 CABP cases were included; 63% male; 31.1% <2 years; 75% of <5 years received PCV13; 30.4% had underlying diseases. The pathogens isolated were (n = 136): *Streptococcus pneumoniae* (Sp) 44.9% (all susceptible to Penicillin), *Staphylococcus aureus* (Sa) 37.5% (Methicillin-Resistant 90.2%), *Haemophilus*