886. Pneumococcal Urinary Antigen Testing in US Hospitals: Underutilized and Rarely Acted Upon
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Session: 94. Respiratory Infection Diagnosis
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Background. The IDSA guideline for CAP recommends Pneumococcal urinary antigen testing (UAT) in addition to blood and sputum cultures for patients with severe CAP. In controlled settings, UAT is 50–80% sensitive and >90% specific; however, its utility and performance on a large-scale in real-world use has not been assessed. It is unclear whether UAT is clinically useful or whether the results impact prescribing behavior.
Methods. Retrospective cohort study of adult patients admitted with CAP or HCAP from 2010 to 2015 at 170 US hospitals that submit data to Premier. Date and time-stamped administrative and microbiologic data were assessed. Patients with a principal diagnosis of pneumonia, or sepsis with a secondary diagnosis of pneumonia plus a CXR and antibiotics within the first 24 hours, were included if they had a UAT plus either a blood or respiratory culture within the first 48 hours of admission.
Results. Of 159,894 eligible pneumonia patients, 24,757 (15.5%) had UAT plus either blood or respiratory cultures performed. Of 1,297 (7%) who had a positive UAT, 457 (25%) also grew S. pneumoniae (SP) from blood or respiratory cultures, 1,240 (69%) had negative cultures, and 100 (6%) an organism other than SP, with S. aureus, Pseudomonas spp., and E. coli being the most common pathogens, predominantly from respiratory cultures. Among 22,960 patients with a negative UAT, 429 (2%) had a positive blood or respiratory culture for SP and 2,653 (12%) had a culture positive for another organism. UAT was performed among 18.4% of patients admitted to the ICU, and 15.3% of those admitted to wards. Among patients empirically started on broad-spectrum antibiotics, 35% who had a positive UAT were de-escalated by Day 5, compared with 49% who grew SP in blood cultures and 24% in respiratory cultures.
Conclusion. In a large representative US inpatient database, there was poor concordance between UAT and cultures for SP. A positive UAT decreased the probability of having a non-SP pathogen. Antibiotic de-escalation occurred more often in association with a positive blood culture for SP than for UAT or positive respiratory culture, but occurred in less than half the patients with these markers of pneumococcal pneumonia. Overall, UAT is underutilized and does not appear to have a substantial impact on clinical care.
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887. Impact of Procalcitonin Guidance on the Management of Adults Hospitalized with Pneumonia
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Session: 94. Respiratory Infection Diagnosis
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Background. Community-acquired pneumonia and healthcare-associated pneumonia are often treated with prolonged antibiotic therapy. Procalcitonin (PCT) has effectively and safely reduced antibiotic use for pneumonia in controlled studies. However, limited data exist regarding PCT guidance in real-world settings for management of pneumonia.
Methods. A retrospective, preintervention/postintervention quality improvement study was conducted to compare management for patients admitted with pneumonia before and after implementation of PCT guidance at two teaching hospitals in Pittsburgh, Pennsylvania. The preintervention period was March 1, 2014 through October 31, 2014, and the post-intervention period was March 1, 2015 through October 31, 2015.
Results. A total of 152 and 232 patients were included in the preintervention and postintervention cohorts, respectively. When compared with the preintervention group, the mean duration of therapy decreased (9.9 vs. 6.1 days; P < 0.001). More patients received an average duration of 7 days or less (26.9% vs. 66.4%; P < 0.001). Additionally, mean length of hospital stay decreased in the postintervention group (4.9 vs. 3.5 days; P = 0.006). Pneumonia-related 30-day readmission rates (7.2% vs. 4.3%; P = 0.59) were unaffected. In the postintervention group, patients with PCT levels < 0.25 µg/l received shorter mean duration of therapy compared with patients with levels >0.25 µg/l (8.0 vs. 4.6 days; P < 0.001) as well as reduced hospital length of stay (3.9 vs. 3.2 days; P = 0.02).
Conclusion. In this real-world practice study, PCT guidance led to shorter durations of total antibiotic therapy and abridged inpatient length of stay without affecting hospital re-admissions.
Disclosures. All authors: No reported disclosures.

888. Detection of Respiratory Pathogens in Parapneumonic Effusions by Hypothesis-free, Next-Generation Sequencing (NGS)
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Session: 94. Respiratory Infection Diagnosis
Thursday, October 5, 2017: 2:00 PM
Background. Species-specific polymerase chain reaction (PCR) testing of pleural fluid (PF) from children with parapneumonic effusion (PPE) has increased pathogen identification in pediatric PPE. However, a pathogen is not detected in 25–35% of cases. Hypothesis-free, next-generation sequencing (NGS) provides a more comprehensive alternative and has led to pathogen detection in PCR-negative samples. However, the utility of NGS in the evaluation of PF from children with PPE is unknown.
Methods. Archived PF (n = 20) from children younger than 18 years with PPE and hospitalized at Primary Children’s Hospital, Utah, in 2015 and previously tested by PCR were evaluated. Ten PCR-negative and 10 PCR-positive PF specimens were tested using RNA-sequencing on an average depth of 7.7 x 10⁶ sequencing reads per sample. NGS data was analyzed with Taxonomer. We compared pathogens detected by blood and PF culture, PCR, and NGS.
Results. Overall, compared with blood/PF culture, PF PCR and PF NGS testing of PF increased bacterial identification from 15% to 50% (P = 0.05) and 65% (P = 0.003), respectively. Pathogen detection in PF by PCR and NGS were comparable (50 vs. 65%, p = NS) (Table). However, compared with PF PCR, NGS significantly increased detection of S. pyogenes (20% vs. 55%; P < 0.05), with 100% concordance when detected by PCR and culture. Detection of Fusobacterium spp. (10 vs. 10%) by PF NGS and PF PCR were comparable. In contrast, there was no detection of S. pneumoniae (15 vs. 0%) by PF NGS compared with PF PCR.
Conclusion. PF NGS testing significantly improves bacterial identification and comparable to PF PCR testing, which can help inform antimicrobial selection. However there were differences in detection of S. pneumoniae and S. pyogenes. Further studies of NGS testing of PF of children with PPE are needed to assess its potential in the evaluation of PPE in children.

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889. Utility and Challenges of a Multi-pathogen Diagnostic Platform for Characterizing Public Health Threats of Severe Acute Respiratory Infections in Six Countries
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Session: 94. Respiratory Infection Diagnosis
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Background. Pneumonia causes significant morbidity and mortality worldwide. Comprehensive etiology studies of pneumonia in adults are limited; however, new
diagnostics enable simultaneous detection of multiple pathogens in respiratory specimens. Characterizing the public health threat of severe acute respiratory infection (SARI) may enhance global health security. We studied potential etiologies of SARI among adults in six countries over a 12-month period using multi-pathogen diagnostics.

Methods. We enrolled SARI cases (acute onset of fever and cough, requiring hospitalization, in an adult) from Global Disease Detection sites in Bangladesh, China, Egypt, Guatemala, Kenya, and Thailand and healthy frequency-matched controls (2 controls: 5 cases by time onset), age group (18–49, 50–64, 65+ years), and catchment area. Demographics, clinical data, and nasopharyngeal and oropharyngeal specimens were collected from cases and controls. Specimens were tested for 16 viruses and 14 bacteria using Taqman® Array Card, which uses real-time reverse transcriptase polymerase chain reaction.

Results. We enrolled 2,388 cases and 1,135 controls from Oct 2013 through Oct 2015. Age distribution (Figure) and seasonality varied by site; enrollment peaked in summer months in Bangladesh, Thailand, and China, and in winter months in Egypt, but was stable throughout the year in Guatemala and Kenya. Case fatality rate across all study locations was 2.3% (range 0.7–7.0%). One or more pathogens was detected in 76% of cases and in 67% of controls; ≥2 pathogens were detected in 42% of cases and 37% of controls. Pathogens more commonly detected among cases than controls included influenza A (OR 13.3, CI 7.0–25.2; 12.8% of cases vs. 1.1% of controls), influenza B (OR: 27.0, CI 8.6–84.8; 8.1% vs. 0.3%), and respiratory syncytial virus (RSV) (OR: 9.4, CI 3.4–25.8; 4.0% vs. 0.4%).

Conclusion. In this SARI study, frequent detection of multiple pathogens in the oro- and nasopharynx of both cases and controls made etiology attribution difficult. Influenza and RSV, however, were likely to be causes of SARI. Because upper respiratory tract specimens may not accurately reflect disease in the lung, better specimens are needed to determine pneumonia etiology, particularly for bacteria.

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890. Impact of Antivirals in the Prevention of Serious Outcomes Associated with Influenza in Hospitalized Canadian Adults: A Pooled Analysis from the Serious Outcomes Surveillance (SOS) Network of the Canadian Immunization Research Network (CIRN)

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Session: 94. Respiratory Infection Diagnosis

Thursday, October 5, 2017: 2:00 PM

Background. Antiviral treatment of influenza in outpatient settings is associated with a significant reduction in patient morbidity and cost. These findings support current recommendations for antiviral use in hospitalized adults and suggest increased compliance with these guidelines may reduce morbidity and cost.

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891. Antibiotic Consumption and Antibiotic Resistance Across Organisms, Drugs, and Consumer Groups

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Session: 95. Use ‘em and Lose ‘em: Preventing Antibiotic Overuse

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Background. Antibiotic consumption is considered a major driver of antibiotic resistance, but it remains unclear whether the consumption–resistance relationship is apparent for many organisms and drugs, and whether aggregate consumption is the best predictor of resistance.

Methods. We conducted a landscape assessment of the consumption–resistance relationship by comparing a 20% sample of Medicare Part D outpatient antibiotic pharmacy...