886. Pneumococcal Urinary Antigen Testing in US Hospitals: Underutilized and Rarely Acted Upon
Sarah Haessler, MD, Jennifer Schimmel, MD1; Pei-Chun Yu, MS2; Michael Rothberg, MD, MPH3; Infectious Diseases, Baystate Medical Center, Springfield, Massachusetts; 1Quantitative Health Sciences, Cleveland Clinic, Cleveland, Ohio; 2Medicine Institute for Center for Value-Based Care Research, Cleveland Clinic, Cleveland, Ohio

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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, Pneumococcal spp., and E. coli being the most common pathogens, predominately 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 less in 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
Thomas Walsh, MD; Briana DiSilvio, MD; Crystal Hammer, MD; Moezullah Beg, MD; Swati Vishwanath, MD; Daniel Speredelozzi, MD; Matthew Moffa, DO; Kurt Hu, MD; Rashia Abdulmashh, MD; Jina Makadia, MD; Rikinder Sandhu, MD; Mosahib Naddour, MD; Noreen Chan-Tompkins, PharmD, BCPS - AQID; Tamara Triensi, PharmD; Courtney Watson, MPH; Derek Bremmer, PharmD, BCPS; Allegheny Health Network, Pittsburgh, Pennsylvania

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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 appropriate 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 = 0.099) 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.

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888. Detection of Respiratory Pathogens in Parapneumonic Effusions by Hypothesis-free, Next-Generation Sequencing (NGS)
Krow Ampofo, MD, FIDSA, FFID1; Andrew Pavia, MD, FIDSA, FSHEA, FFID2; Xime J. Blaschke, MD, PhD, FIDSA, FFID3; Robert Schlaberg, MD, MPH4; 1Department of Pediatrics, Division of Pediatric Infectious Diseases, University of Utah School of Medicine, Salt Lake City, Utah; 2Department of Pathology, University of Utah, Salt Lake City, Utah

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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-seq at an average depth of 7.7 x 10⁶ sequencing reads per sample. NGS data were analyzed with Taxonomer. We compared pathogen 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 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. 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
Jennifer Milanick, MPH and International TAC Working Group; Division of Bacterial Diseases, CDC, Atlanta, GA

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Background. Pneumonia causes significant morbidity and mortality worldwide. Comprehensive etiologic studies of pneumonia in adults are limited; however, new