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Session: 240. Stewardship: Impact of Diagnostics
Saturday, October 7, 2017: 12:30 PM

Background. Rapid molecular methods have created new opportunities for the clinical microbiology laboratory to affect patient care in the areas of initial diagnosis and therapy. Rapid diagnostic tests provide collaborative opportunities for antimicrobial stewardship Teams (AST) to improve patient outcomes and decrease antimicrobial use. In January of 2017 our institution initiated use of a FDA approved multiplex polymerase chain reaction (PCR) Respiratory Panel. The objective of this evaluation was to assess the clinical impact along with procalcitonin (PCT) on quality of patient care when used in conjunction with antimicrobial stewardship.

Methods. Molecular testing was performed using the BioFire FilmArray® Respiratory Panel (RP) (BioMerieux). The medical staff was encouraged to order an Influenza/RSV PCR test prior to ordering the full RP. The results of RP and PCT were available the same day as ordered. AST recommended the RP as part of its intervention on several patients and provided advice based on results.

Results. From January-April the results of 81 tests for the respiratory panel were evaluated. Of these 30 were positive (+) for virus (most common-Influenza). The most common bacterial pathogen was Pseudomonas aeruginosa (74%). The results of the RP led to a decrease in ABX duration, which most was profound in the patients for whom AST intervened. LOS was also reduced. Utilization of RP and PCT facilitated better ABX use.

Disclosures. T. M. File Jr., BioMerieux: Scientific Advisor, Consulting fee

2139. Impact of PBP2a Assay on Antibiotic Therapy of Patients with Non-Blood, Non-Urine Staphylococcus aureus Infections

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Session: 240. Stewardship: Impact of Diagnostics
Saturday, October 7, 2017: 12:30 PM

Background. Rapid diagnostic tests can reduce time to organism identification and susceptibility results, allowing for more rapid optimization of antibiotic therapy. We sought to determine whether a qualitative immunochromatographic assay (Alere® PBP2a Culture Colony test) that differentiates methicillin-susceptible S. aureus (MSSA) from methicillin-resistant S. aureus (MRSA) could optimize time to appropriate therapy for patients with skin and soft tissue infections (SSTIs) and nosocomial pneumonia caused by S. aureus.

Methods. Adult patients admitted to The Johns Hopkins Hospital with a respiratory or wound culture growing S. aureus between July 2015–2016 were included. The primary outcome was time to optimal antibiotic therapy from specimen collection before and after implementation of the PBP2a assay. Secondary outcomes were (1) time to antibiotic de-escalation from specimen collection, (2) length of hospital stay, and (3) number of vancomycin levels. An unadjusted analysis was conducted using Chi-square or Fisher’s exact test for categorical variables and Wilcoxon rank-sum test for continuous variables.

Results. 189 patients met eligibility criteria (119 baseline, 70 intervention). There were no significant differences in characteristics of patients between periods. Overall time to optimal therapy decreased during the intervention period compared with baseline (IQR 0.24–7.47 hours vs. 1.29–44.2 hours, P = 0.02). In the sub-set of patients with SSTIS, time to optimal and de-escalation of antibiotic therapy was reduced during the intervention period compared with baseline (IQR 0.6 vs. 0.70.8, P = 0.02 and IQR 0.26.5 vs. 0.45.5, P = 0.05, respectively), but not with pneumonia. Length of hospital stay (median 6 days in each, P = 0.60) and number of vancomycin levels (median 0 vs. 1, P = 0.33) were similar before and after assay implementation.

Conclusion. There was a reduction in time to optimal antibiotic therapy after implementation of the PBP2a assay driven by changes in SSTI regimens but not pneumonia regimens. Incorporation of a rapid test to differentiate MSSA from MRSA be a useful addition to antibiotic stewardship initiatives to optimize therapy for patients with MSSA infection.

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2140. Trends of Device Utilization Ratios in Intensive Care Units During 10 Years in South Korea: Results from the Korean National Healthcare-Associated Infections Surveillance System

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Session: 241. HAI: Device-related Infections
Saturday, October 7, 2017: 12:30 PM

Background. Device-associated healthcare-associated infection (DA-HAI) is an important issue related to safety of patients. It is important to implement necessary device utilization in order to decrease DA-HAI rates. Therefore, we investigate the time trend of device utilization (DU) ratios and DA-HAI rates to analyzed collected data for 10 years through the Korean National Healthcare-associated Infections Surveillance System (KONIS) which is voluntarily participating in hospitals.

Methods. We investigate the trend of DU ratios and DA-HAI rates from 2006 through 2015 in KONIS participating intensive care units (ICUs). DA-HAI rates were calculated as the numbers of DU per 1000 patient-days. DU ratios and DU were calculated as a ratio of device-days to patient-days. The pooled incidences of DAs and DU ratios were calculated for each year of participation.

Results. Data were collected on 5,325,176 catheter-days and 6,358,829 patient-days in the 190 participating ICUs between July 2006 and June 2016. From 2006 to 2015, year-wise ventilator utilization ratio (V-UR) per 1000 patient-days significantly decreased from 0.40 to 0.454 (F = 6.27, P < 0.0001), year-wise urinary catheter utilization ratio (UC-UR) showed gradually decreased non-significantly from 0.98 to 0.93 (F = 1.66, P = 0.095) (Fig 1). Year-wise central-line utilization ratio (CL-UR) was gradually decreased non-significantly from 0.55 to 0.52 (F = 1.62, P = 0.1059). In subgroup analysis, Medical ICU (F = 2.79, P = 0.0034) or hospital with more than 900 beds (F = 3.07, P = 0.0015) related to increased significantly V-UR. Rate of ventilator associated pneumonia significantly decreased from 3.48 in 2006 to 1.00 in 2015 (per 1000 ventilator-days, F = 27.62, F < 0.0001). Also, rates of catheter associated UTI and c-line associated blood stream infection significantly decreased from 1.85 to 0.88 (per 1000 catheter-days, F = 10.14, P < 0.0001) and from 3.40 to 2.20 (per 1000 catheter-days, F = 12.75, P < 0.0001).

Conclusion. In Korea, all of the DA-HAIs have shown a significant reduction in the last 10 years, however V-UR has year-wise significantly increased trend for past 10-years, also UC-UR and CL-UR have not decreased trend significantly. We need effort to make reduction of device utilization ratios.

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Figure 1. ICU CVC DUR

Figure 2. Non-ICU IUC

Figure 3. ICU CVC DUR

Table 1. HAI

| CAUTI | CLABSI |
|-------|--------|
| 5     | 12     |
| 1     | 1      |

Conclusion. Hospital-wide reductions in DUR and HAI occurred after DISH. A 90% reduction in HAI occurred with estimated cost savings of $498,000. The impact of DISH was more profound in non-ICU settings, where device use was higher.

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