1549. Impact of Procalcitonin (PCT)-Guided Antibiotic Management on Antibiotic Exposure and Outcomes: Real World Evidence

Michael Brodys, PharmD; Pharmacy, Five Rivers Medical Center, Pocahontas, Arkansas

Session: 168. Stewardship: Improving Outcomes
Friday, October 6, 2017: 12:30 PM

Background. Antibiotic overuse and misuse, the main causes of antibiotic resistance, often result from lack of diagnostic clarity. Delayed pathogen identification paired with nonspecific clinical findings may leave clinicians with insufficient evidence to make definitive decisions regarding the need for antibiotics. The dual stimulus of bacterial toxins and inflammation make Procalcitonin (PCT) unique in its ability to differentiate bacterial infection from other causes of inflammation and thus useful for antibiotic management. The objective of our study was to evaluate the impact of a PCT-guided algorithm (PCT-A) on current practice.

Methods. A single-center, retrospective cohort study was conducted to evaluate the impact of adding PCT-A to current stewardship practices. Patient data from four years prior to and four years after PCT-A implementation was compared in critical care patients of all ages receiving parenteral antibiotics for a DRG coded for a 2-year period. During this time, the hospital infection control committee also launched a hand-washing campaign.

Results. A total of 7644 patients met all inclusion criteria, with 3664 having early, mid, and 1586 with late de-escalation. Patient information from 7/1/2007 through 10/1/15 was collected from the University of Kentucky Center for Clinical and Translational Sciences Enterprise Data Trust. Patients were included if they received VAN and TZP in combination for ≥48 hours. Patients with history of CKD, who presented with AKI outside the treatment window or at baseline, or who were pregnant were excluded from this analysis. AKI was assessed with the Risk, Injury, Failure, Loss, End stage (RIFLE) criteria. De-escalation was defined as discontinuation of one or both agents. Patients were categorized based on time to de-escalation from treatment initiation with 53 days being early, 4 to 7 days being mid, and >7 days being late de-escalation.

Conclusion. Early antimicrobial de-escalation was associated with significant decreases in AKI incidence in patients receiving empiric VAN and TZP therapy. Controlled studies of early antimicrobial de-escalation and AKI are warranted.

Disclosures. All authors: No reported disclosures.

1550. Economic and Clinical Outcomes of Antimicrobial Stewardship Program Implementation at a Community Hospital Affiliated with a Regional Health System
Jin Hong, PharmD and Stephen Weinroth, MD, FIDSA2, Department of Pharmacy, Inova Fair Oaks Hospital, Fairfax, VA, Infectious Disease Consultants, Fairfax, Virginia

Session: 168. Stewardship: Improving Outcomes
Friday, October 6, 2017: 12:30 PM

Background. In 2015, ASP rounding structure was expanded to include retrospective review of all inpatient antibiotics. Additionally, the clinical pharmacist reviewed restricted antimicrobials and all vancomycin orders daily. For patients requiring interventions, the pharmacist communicated recommendations with the treating physicians. Primary objectives of the ASP team were reduction of inappropriate use of antibiotics and optimization of pharmacy vancomycin dosing guidelines. Clinical and economic data was compared with the 2014 baseline; the outcomes were reviewed for a 2-year period. During this time, the hospital infection control committee also launched a hand-washing campaign.

Results. Direct antimicrobial purchasing costs decreased from 2014 baseline of $852,835 per year to $754,335 in 2015 and $569,042 in 2016. An associated decrease in overall antibiotic utilization was observed, as measured by days of therapy per 1,000 patient-days. Baseline and current drug acquisition costs were reviewed; except for the reduction in linezolid cost, the purchasing cost change does not account for all cost savings realized by the ASP.

During the 2-year period, the percentage of Staphylococcus aureus resistant to methicillin decreased from 42% to 38%. Additionally, improved antibiotic susceptibility of gram-negative organisms were noted. Specifically for Pseudomonas aeruginosa, susceptibility for aztreonam, cefepime, ciprofloxacin, and levofloxacin improved by an average of 20%. For Escherichia coli, quinolone susceptibility improved by an average of 7%.

Conclusion. Expansion of ASP monitoring at a community hospital demonstrated favorable clinical and economic outcomes. The investment in personnel resources required to maintain ASP is offset by the clinical and economic benefit ASP provides. How long these beneficial effects are sustained remains to be determined.
1551. Clinical Outcome Evaluation of an Antimicrobial Stewardship Program in an Accountable Care Organization
Meredith Baumgartner, MPH 1; Julie Giddens, PharmD BCPs 2; Carl Asche, PhD 2; Jinna Ren, PhD 2; Saqib Walayat, MD 2; Muhammad Ashgar, MD 2; and John Cotter, MD 3. 1Medicine, University of Illinois College of Medicine at Peoria, Peoria, Illinois, 2Pharmacy, OSF Saint Francis Medical Center, Peoria, Illinois, 3Centers for Outcomes Research, University of Illinois College of Medicine at Peoria, Peoria, Illinois, 4Infectious Disease, University of Illinois College of Medicine at Peoria. OSF Saint Francis Medical Center, Peoria, Illinois

Session: 168. Stewardship: Improving Outcomes
Friday, October 6, 2017: 12:30 PM

Background. On a national level it is known that the daily misuse of antibiotics leads to delayed recovery, increased hospital length of stay, recurrent infection and even death. At the organization-level, antimicrobial stewardship programs have been developed to tackle these issues. As these programs develop, research is greatly needed to assess the associated clinical outcomes. This study was conducted to compare such clinical outcomes as length of stay (LOS), 30-day readmission and mortality pre and post implementation of a formal antimicrobial stewardship program.

Methods. Retrospective review of randomized adult patients at a large community teaching facility receiving meropenem, linezolid, daptomycin, tigecycline, micaflunigin, vancomycin, piperacillin/tazobactam, levofloxacin, between April 2010 to March 2011 (Pre Intervention: n = 228) and April 2012 to March 2013 (Post Intervention: n = 219).

Results. The assessment of clinical outcomes was achieved using logistic regression for 30-day readmission and status of deceased on discharge, and a generalized linear model with gamma distribution for ICU LOS and inpatient LOS.

The Pre Intervention group had a 30 day readmission rate of 16.7% (38/228), a Status on Discharge of Deceased of 10.5% (24/228), an ICU LOS of 13.4% (14/228), and an Inpatient LOS of 11.6% (10.5/228). In contrast, the Post intervention group had a 30 day readmission rate of 7.3% (16/219; P = 0.001), a Status on Discharge of Deceased of 3.7% (8/219; P = 0.002), an ICU LOS of 9% (7.9/219; P = 0.01), and an Inpatient LOS of 8.8% (7.6/219; P = 0.018).

Conclusion. The multidisciplinary efforts of the program were associated with statistical significant decreases in 30 day readmission rates, mortality on discharge and ICU and inpatient LOS. These results assist in validating the true clinical outcome benefits of antimicrobial stewardship programs.

Disclosures. All authors: No reported disclosures.

1552. The effect of the preauthorization system on oral antimicrobials at a maternal and children's hospital in Japan
Noriko Kinoshita, MD 1; Makoto Komura, PharmD 2; Yusuke Okubo, MD. MPH 1; Kensuke Shoji, MD 1 and Isao Miyairi, MD, 1Infectious Disease, National Center for Child Health and Development, Tokyo, Japan, 2Pharmaceutical Department, National Center for Child Health and Development, Tokyo, Japan, 3Social Medicine, National Center for Child Health and Development, Tokyo, Japan

Session: 168. Stewardship: Improving Outcomes
Friday, October 6, 2017: 12:30 PM

Background. Antimicrobial stewardship programs (ASP) for oral antibiotics is limited, despite the fact that oral antibiotics account for 90% of total antibiotic consumption in developed countries. We aimed to analyze the effectiveness of ASP for oral antibiotics in a pediatric population.

Methods. We conducted a prospective study at a tertiary maternal and children's hospital in Japan, consisting of 490 beds, with approximately 13,000 hospitalizations and 240,000 outpatient visits annually. Outpatient data on oral antimicrobial prescription, costs and proportions of resistant bacteria between 2013 and 2016 were analyzed. We conducted preauthorization and feedback as a means of intervention from October 2015 for targeted antimicrobials; vancomycin, linezolid, quinolones, faropenem, tebipenem pivoxil, polymyxin B. Antibiotic use density (AUD) was measured using days of therapy (DOT) /1000 visits. Interrupted time-series (ITS) analysis was performed to evaluate the effects of intervention.

Results. The main indications for use of targeted antimicrobials were urinary tract infections, pneumonia, and prophylactic administration in malignancy and were inappropriate in the majority prior to intervention. AUD and cost of targeted oral antimicrobials decreased from 11.0 DOT /1000 visits and 7.176 US dollar (USD) to 2.1 DOT /1000 visits and 1.665 USD, respectively (P < .001). ITS analysis showed that prescriptions for targeted antimicrobials decreased rapidly after initiation of preauthorization (7.1 DOT /1000 visits; P < .001) (Figure 2-a).

Prescriptions for non-targeted oral antimicrobial increased temporarily (+28 DOT /1000 visits; P < .001), but a decreasing trend was found after the initiation (P < .001) (Figure 2-b). During this study period, the susceptibility against quinolones did not change for E.coli, K.pneumoniae, and Paeruginosa.

Conclusion. Introduction of the preauthorization system for selected oral antimicrobials decreased the AUD of both targeted and non-targeted antimicrobials.

Disclosures. N. Kinoshita. Standardization and dissemination of a community based network of infection control targeting children MHLW H29-SHINKOGYOSEI-IPPAN-002: Board Member, Salary. I. Miyairi. Standardization and dissemination