Title:

Implementation of pharmacist-driven antibiotic time out program and its effect on antibiotic prescribing in patients admitted with suspected community acquired pneumonia and urinary tract infections

Purpose:

Data from the Centers for Disease Control and Prevention (CDC) indicates that over half of antibiotic prescribing in hospitals may be inappropriate. Inappropriate antibiotic duration promotes antibiotic resistance, increases risks for adverse events, and increases drug expenditures. Antibiotic time-outs (ATO) are a CDC-recommended stewardship intervention designed to stop unneeded antibiotic therapy and ensure appropriate duration of therapy. The purpose of this study is to develop and implement a hospital-wide pharmacist-driven ATO program and to evaluate its impact on duration of antibiotic therapy for patients admitted for inpatient care of community acquired pneumonia (CAP) or urinary tract infection (UTI).

Methods:

This IRB approved quality improvement project will consist of: (1) a retrospective chart review of patients admitted pre-ATO for suspected CAP or UTI from May 2021-August 2021; (2) a pharmacist educational program describing ATOs and the processes for conducting them (i.e., screening potential time-out patients, applying guidelines for recommendation of discontinuing therapy or continuing for an appropriate duration, communication with prescribers, and ATO documentation); and, (3) collection of data post-ATO implementation from December 2021-March 2022. Patients in the pre-ATO group were identified through an electronic medical record report based on receipt of common empiric antibiotics for suspected CAP and UTI including the following: cefepime and azithromycin, cefepime and doxycycline, ceftriaxone and azithromycin, ceftriaxone and doxycycline, levofloxacin, cefepime, ceftriaxone, and piperacillin-tazobactam. The post-ATO group will include patients 18 and older who are started on similar antibiotics. Patients who receive an Infectious Disease team consultation as part of care will be excluded from both the pre- and post-ATO groups.

Results:

Final analysis included 66 CAP patients and 84 UTI patients in pre-ATO versus 77 CAP patients and 73 UTI in the post-ATO group. Baseline characteristics including age, gender, ICU admission, and number of antibiotics inpatient were similar between pre- and post ATO groups for both CAP and UTI. Number of outpatient antibiotics prescribed were lower in both post ATO groups. Mean total duration of antibiotic therapy was similar between pre- and post ATO with a slight reduction observed from 7 to 6 days for CAP and 7.2 to 6 days for UTI. Secondary outcomes including proportion of patients with discontinuation or de-escalation of broad-spectrum therapy, 30 day readmission, and length of stay were similar between groups; however, the proportion of de-escalation was lower and length of stay was higher in the post-ATO group. Within 150 ATOs for CAP and/or UTI, 61 pharmacy interventions were made and included recommendations for IV to PO, duration confirmation or clarification, dose optimization, change, addition, and deletion of therapy. Limitations of this study include the retrospective study design, errors in EMR reporting, limited ability to verify administration of antibiotic duration outpatient, variability in provider and pharmacist practice, and small sample size with limited intervention time.

Conclusion:

The difference in total duration of antibiotic therapy was modest between the pre- and post-ATO groups and largely driven by a reduction in antibiotic duration outpatient. The development of a hospital wide ATO program led to the standardization of antibiotic review and documentation by pharmacists. Antibiotics prescribed at discharge presents an opportunity for therapy optimization at the transition of care. Further ATO education and process refinement may provide a better understanding of pharmacist ATOs on antibiotic practices.