**Title** (< 25 words)

Impact of pharmacist intervention on antibiotic prescribing at hospital discharge for community-acquired pneumonia, urinary tract infection, and skin and soft tissue infections

**Background** (~100 words)

Community-acquired pneumonia (CAP), urinary tract infection (UTI), and skin and soft tissue infections (SSTIs) rank among the most common reasons for hospital visits and have been highlighted by the Center for Disease Control and Prevention’s (CDC) Core Elements of Hospital Antimicrobial Stewardship as key opportunities for improved antimicrobial utilization. While relatively unexplored compared to inpatient settings, the overall volume of discharge prescribing and high incidence of suboptimal antibiotic use at transitions of care represent a novel area for antimicrobial stewardship efforts. The objective of this study was to investigate the role of an interventional pharmacist in improving antibiotic use at discharge.

**Methods** (~225 words)

This was a single-center, retrospective, IRB-approved crossover analysis of patients admitted to general medicine units at Hartford Hospital between November 1, 2021 and March 31, 2022 with a diagnosis of CAP, UTI, or SSTI. Exclusion criteria included pregnancy, cystic fibrosis, hospital-acquired pneumonia or ventilator-associated pneumonia, complicated UTI with instrumentation beyond Foley catheterization, receipt of antibiotics for > 48 hours prior to admission, or receipt of antibiotics for concurrent infection outside of CAP, UTI, or SSTI. The study was divided into two phases separated by a one-month washout. Each two-month phase included two pre-specified units, an intervention and control. During phase 2, the intervention and control units were switched. Patients identified by the EMR system for discharge with active antibiotic orders for the above indications were reviewed, with interventions for the active group made by the pharmacist directly to providers. Interventions were made based on predefined guidance for oral step-down therapy and total duration. Data included patient demographics, admission labs and vitals, radiographic imaging, microbiologic findings, and antimicrobial data. The primary outcome, discharge antibiotic days of therapy (DOT), was compared between the intervention and control cohorts. Secondary outcomes included total DOT, hospital length of stay (LOS), 30-day readmission, and appropriateness of drug selection, dose, and duration.

**Results** (~200 words)

Records of 161 patients were included in this study, 85 in the intervention cohort (47 in phase 1, 38 in phase 2) and 76 in the control (41 in phase 1, 35 in phase 2). Overall discharge DOT was 3 (IQR 0-4.5) in the intervention cohort and 3 (IQR 0-5) in the control cohort (P = 0.8), and overall total DOT was 7 (IQR 5-9) and 7 (IQR 5-10) respectively (P = 0.27). Patients in the intervention group were more likely to have appropriate total duration (61.2% vs 44.7%, P = 0.001) and discharge duration of antibiotics (67.1% vs 53.9%, P = 0.013) for all three indications based on predefined guidance. When examined across specific indications, intervention patients were more likely to have appropriate total duration for CAP (56.3% vs 40%, P = 0.018) and UTI (78.4% vs 67.7%, P=0.042), and more appropriate discharge duration for CAP (65.6% vs 53.3%, P=0.017). Hospital LOS was 4 (IQR 3-5) vs 5 days (IQR 3-6.3) in the intervention and control cohorts (P = 0.001) respectively, and a lower 30-day readmission (14.1% vs. 23.7%, resp.).

**Conclusion** (~100 words)

Despite similar antibiotic DOTs, pharmacist intervention at discharge appeared to improve appropriateness of overall antibiotic total duration and discharge duration for CAP, UTI, and SSTI. Additionally, hospital LOS and 30-day readmission appeared to be lower in patients with pharmacist intervention. These findings support the value in investigating further opportunities to improve transitions of care stewardship processes with the intention of expanding stewardship impact at hospital discharge.