

Results. A total of 3,776 patients were included in the final analysis (2,706 with CAP; 1,070 with HCAP). 69% (2,586/3,776) of patients received excess antibiotic duration (Figure 1). Antibiotics prescribed at hospital discharge accounted for 52% of total and 94% of excess antibiotic days. Factors associated with excess duration included: identification of bacterial pathogen (OR 1.9, 95% CI: 1.3, 2.8), more signs of pneumonia (OR 1.2, 95% CI: 1.1, 1.3 per sign), and uncomplicated CAP (OR 2.7 vs. HCAP). Comorbid heart failure was protective (OR 0.8, 95% CI: 0.6, 0.9). Hospitals varied widely with even the top performing hospital over-treating half of patients (Figure 2). There were no differences in any outcome for patients receiving excess vs. appropriate antibiotic duration.

Conclusion. Most hospitalized patients with pneumonia receive an excess antibiotic duration. CAP and antibiotics prescribed at discharge are major sources of excess use and thus key targets for stewardship.

Figure 1. Proportion of Patients Who Received an Excess Antibiotic Duration

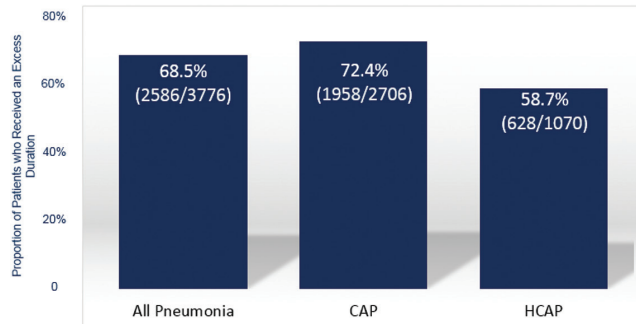
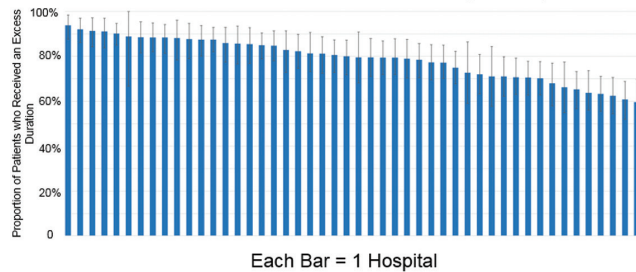


Figure 2. Proportion of Patients who Received an Excess Antibiotic Duration by Hospital



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1871. Identifying Time Periods of High and Low Vancomycin Use

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Background. A national goal has been set to decrease inappropriate antibiotic use by 2020. To quantify decreases in use, consumption metrics and benchmarking strategies are implicit. However, while tracking and reporting antimicrobial use is widely recommended, these data do not address appropriateness. Accordingly, we developed a methodology to identify and report high and low vancomycin use periods which may represent inappropriate or unsafe antimicrobial use.

Methods. This is an observational, retrospective study of facility-wide vancomycin consumption data, aggregated, and examined on a hospital level from three academic medical centers: Northwestern Medicine (NM), Michigan Medicine (UM), and Henry Ford (HF) Hospital. Utilization was quantified as antimicrobial days (AD) per 1,000 days present (DP) on a monthly basis, recorded over 46 consecutive months (January 2014 through October 2017) for NM and HF, and 40 consecutive months (July 2014 through October 2017) for UM. Linear regression models and prediction intervals were generated to identify high-usage months. Use exceeding the upper bound of a prediction interval of 80 percent in a given month was used to define increased use, and the lower bound was used to define decreased use.

Results. Vancomycin use averaged 70.3 AD per 1,000 DP at NM, 89 at UM, and 153.8 at HF. Regression models indicated HF and UM consumption decreased at a monthly rate of 1.2 AD per 1,000 DP and 0.1 AD per 1,000 DP, respectively, whereas NM use increased at a rate of 0.1 AD per 1,000 DP over the study period. Overall, we identified $n = 6$, $n = 5$ and $n = 6$ vancomycin increased use months and $n = 7$, $n = 6$ and $n = 5$ decreased use months at NM, UM and HF, respectively.

Conclusion. Our methodology identified a total of 17 potential instances of increased and 18 decreased use periods for vancomycin. Patient-specific and/or hospital-level factors may contribute to inappropriate vancomycin use and requires further study. The relationship between increased or decreased antibiotic use and appropriateness should be a focus in future efforts. Once the link between use and appropriateness is known, interventions can target specific use periods to maximize benefit of the intervention.

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1872. Antimicrobial Utilization Variability Among Training Services at an Academic Medical Center

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Background. The general medicine (GMed) and hospitalist (Hosp) services use antimicrobials at a relatively high rate among our teaching services. It is currently unknown if there is a difference in antimicrobial prescribing between various learner levels or attending type at our institution.

Methods. We measured antimicrobial utilization between January 1, 2016 to April 22, 2018 (2.25 years) in our GMed services. Services are divided by resident-led and hospitalist only services. The GMed1 service is staffed by outpatient internists, the GMed2 service is split between geriatricians and hospitalists, and the GMed3 service is only hospitalists. The "A" service is junior residents while "B" is senior residents. We measured utilization using the WHO defined Days of Therapy (DOT) definition normalized per 1,000 patient-days (PD). Secondary analysis based on antibiotic breadth and route were analyzed by average DOT/1,000 patient-days.

Results. GMed services prescribed at a higher rate of DOT than hospitalist services over the study timeframe (809 vs. 645, $P < 0.0001$). Junior resident-led services (A) used more antimicrobials than senior resident-led services (B) (894 vs. 606, $P < 0.0001$). There were no significant prescribing differences between the 1, 2, and 3 services by different attending roles (840 vs. 775 vs. 797). Similar trends continue in secondary analysis with hospitalists prescribing a lower average DOT/1,000 PD of broad-spectrum antibiotics and A services prescribing higher rates of broad-spectrum, anti-MRSA, and anti-Pseudomonal therapy compared with B services (Table 1).

Table 1: Secondary Analysis of Antimicrobial Breadth by Service (Mean Days of Therapy/1,000 PD)

	Hospitalist	Gen Med (All)	Gen Med 1	Gen Med 2	Gen Med 3	Gen Med A	Gen Med B
Broad spectrum	10.9	11.5	13.4	13.0	12.0	13.5	9.8
Narrow Spectrum	10.1	11.7	11.9	12.2	11.5	11.8	8.8
Anti-MRSA therapy	9.7	12.7	13.2	12.0	14.9	14.9	9.4

Conclusion. Antimicrobials were prescribed at a significantly higher rate in services associated with trainees than those without. Junior resident-led services prescribed at a significantly higher rate than services-led by a senior resident. Interventions to reduce unnecessary antimicrobial exposure should be targeted toward learners, especially junior trainees.

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1873. Next Steps in Predicting Anti-MRSA Antibiotic Prescribing

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