

**Presentation Type:**

Poster Presentation - Oral Presentation

**Subject Category:** Antibiotic Stewardship**Factors associated with antimicrobial drug prescription among inpatient dogs and cats at an academic veterinary hospital**

Emma Price; Claire Fellman; Annie Wayne; Manlik Kwong; Kirthana Beaulac and Shira Doron

**Background:** Widespread antimicrobial use in dogs and cats drives antimicrobial resistance in both animals and humans. Knowledge of the factors associated with antimicrobial use is limited in veterinary medicine. We examined factors associated with antimicrobial drug prescription among inpatient dogs and cats at an academic veterinary hospital. **Methods:** A veterinary-adapted observational medical outcomes partnership common data model was utilized to extract demographic, clinical, and prescription data from the electronic medical record system in this descriptive observational study. Using generalized estimating equations, we assessed the association between demographic and clinical factors and systemic antimicrobial drug prescription among inpatient dogs and cats at a small-animal teaching hospital between 2018 and 2020. **Results:** Across 11,685 dogs with 14,328 admissions (mean age, 7.4 years; 47% females), the following factors were associated with increased odds of any antimicrobial drug prescription: female, longer admission, a history of chemotherapy within 30 days of hospital admission, surgery upon admission or within the last 30 days, urinary catheterization, ICU admission, and oxygen support. In 3,371 cats with 4,088 admissions (mean age, 8.6 years; 39% females), the following factors were associated with increased odds of any antimicrobial drug prescription: female, longer admission, increased age (>8 years), admission into the ICU, surgery upon admission, and feline that did not require oxygen support or urinary catheterization. **Conclusions:** This study identifies multiple patient and clinical factors associated with increased risk of antimicrobial drug use in inpatient dogs and cats that can inform veterinary antimicrobial stewardship efforts and may be useful for antimicrobial use benchmarking on an institutional or multi-institutional scale.

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**Presentation Type:**

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**Subject Category:** Antibiotic Stewardship**Prior cultures predict subsequent susceptibility in patients with recurrent urinary tract infections**

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**Background:** Patients with recurrent urinary tract infections (rUTI) experience frequent exposure to antimicrobial regimens, leaving them at higher risk for developing antibiotic resistance. Little information on the prevalence of antibiotic resistance among patients with rUTI has been published. Although the IDSA recommends using a prior culture to guide empiric treatment, studies have not examined the predictive ability of a prior culture among patients meeting rUTI criteria. We constructed an antibiogram and evaluated test metrics, including sensitivity, specificity, and positive predictive value (PPV) and negative predictive values (NPV) of a prior culture (any organism), on predicting resistance (PPV) or susceptibility (NPV) of a future culture among patients with uncomplicated rUTI in an outpatient setting. **Methods:** We retrospectively extracted electronic health record data from outpatients aged  $\geq 18$  years who had an ICD-10 code for cystitis listed twice in 6 months or thrice in 12 months between November 1, 2016, and December 31, 2018. Patients sought care at either urology or primary care practices within an academic medical center in Houston, Texas. Patients with functional or structural abnormalities of the genitourinary tract, signs or symptoms of pyelonephritis, or pregnancy were excluded. Antibiogram data were reported for uropathogens with  $\geq 30$  isolates, and intermediate results were considered resistant. Test metrics

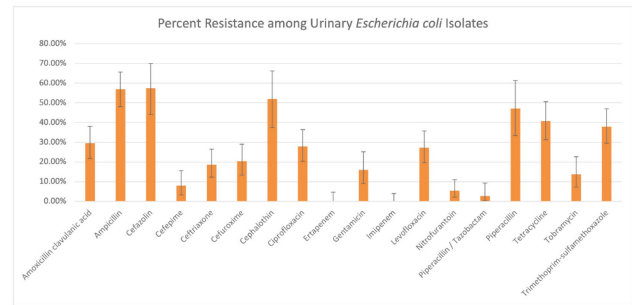


Fig. 1.

and Bayes' PPV and NPV were calculated using standard formulas. **Results:** We included 597 visits from 232 unique patients. Most were White (63%) and female (92%), and the cohort had a median age of 58 (IQR, 41–68). Among 310 rUTI episodes with a urine culture, 189 (61%) had at least 1 uropathogen isolated, and *Escherichia coli* ( $n = 130$ , 66%) was most common among all 196 uropathogens. *E. coli* isolates had >20% resistance to 10 of 18 antibiotics (Fig. 1). *E. coli* resistance to ciprofloxacin was 27.9%, resistance to nitrofurantoin was 5.5%, and resistance to trimethoprim-sulfamethoxazole was 38.0%. The PPVs for predicting resistance were highest for ceftriaxone (0.86; 95% CI, 0.60–0.96), ciprofloxacin (0.84; 95% CI, 0.63–0.94), and levofloxacin (0.84; 95% CI, 0.63–0.94). NPVs of resistance were highest for gentamicin (0.97; 95% CI, 0.83–1.00), ceftriaxone (0.94; 95% CI, 0.86–0.98), and cefepime (0.94; 95% CI, 0.84–0.98), whereas NPVs for cefuroxime, ciprofloxacin, levofloxacin, and nitrofurantoin were all >0.83. **Conclusions:** We detected considerable antibiotic resistance among patients with rUTI to commonly prescribed antibiotics. Prior urine culture susceptibility demonstrated moderate-to-high PPVs for predicting future resistance to ceftriaxone and fluoroquinolones as well as high NPVs for several cephalosporins and fluoroquinolones, which could inform empiric prescribing choices.

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**Presentation Type:**

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**Subject Category:** Antibiotic Stewardship**The effect of gender bias on acceptance of antibiotic stewardship recommendations by clinical pharmacists**

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**Background:** Clinical pharmacists are a critical part of antibiotic stewardship. Stewardship often relies on relationships and persuasion, which may be affected by gender bias. Thus, we aimed to assess the association of sex with the acceptance of antibiotic stewardship recommendations. **Methods:** Between May and October 2019, medicine pharmacists at single hospital reviewed patients on antibiotics and—when a discharge was anticipated—led an antibiotic discussion (or “timeout”) prior to discharge. To explore differences in antibiotic timeout effectiveness by gender, we assessed the association of pharmacist sex with suggestion and acceptance of antibiotic changes using logistic regression controlling for patient characteristics. We also assessed whether hospitalist sex was associated with or moderated the effect of pharmacist sex on acceptance of timeout recommendations.

**Results:** Between May 1, 2019, and October 31, 2019, pharmacists conducted 295 timeouts (patient characteristics in Fig. 1). Overall, 54% of timeouts were conducted by 12 female pharmacists and the remaining 46% were conducted by 8 male pharmacists. Overall, 82 (29%) of 295 timeouts resulted in a pharmacist recommending an antibiotic change, and male pharmacists were more likely to recommend a change: 52 (38%)