



Point Prevalence Survey of Antibiotic Use in a Veterinary Teaching Hospital

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PURPOSE

- To describe antibiotic use at a small animal teaching hospital and identify areas for antibiotic stewardship intervention.
- To develop a user-friendly data collection tool for other teaching hospitals.

BACKGROUND

Measurement and reporting of antimicrobial use (AU) and antimicrobial resistance (AMR) is a core component of antimicrobial stewardship (AS). In human health, the point prevalence survey (PPS) approach has been used to investigate and establish national estimates of AU in hospital and long-term care settings.¹⁻³

Small animal veterinary and public health professionals lack data to evaluate AU and AS practices. Inappropriate AU is likely as prevalent in small animal veterinary medicine as it is in human medicine; ~38% of antibiotics in a veterinary teaching hospital were prescribed without documented evidence of infection.⁴ International Society for Companion Animal Infectious Diseases (ISCAID) has published guidelines for AU in superficial bacterial folliculitis, urinary tract disease, and respiratory tract disease in dogs and cats.⁵⁻⁷ Collecting AU data is required to verify use of these guidelines and identify additional opportunities for AS intervention.

To address this need, we designed a PPS tool to collect AU data in a small animal teaching hospital.

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METHODS

- The study was conducted at University of Minnesota Veterinary Medical Center (UMN VMC) during November 2018-April 2019.
- Data were collected on the first Monday of each month from:
 - All inpatients present in study units at 4 pm
 - All outpatients seen on study services
- Data recorded include:
 - Demographics, visit reason, comorbidities
 - Diagnostics (results, availability on date of survey)
 - Antibiotics prescribed (indication, drug, route, duration)
- Services included were primary care, urgent care, emergency, internal medicine, and surgery.
- Standardized definitions were applied to categorize patients receiving antibiotics as having confirmed, suspected, or no evidence of infection.
- Data sources included electronic medical records, laboratory reports, and treatment sheets.
- Microsoft Excel version 16.23 was used to organize and analyze the data.

RESULTS

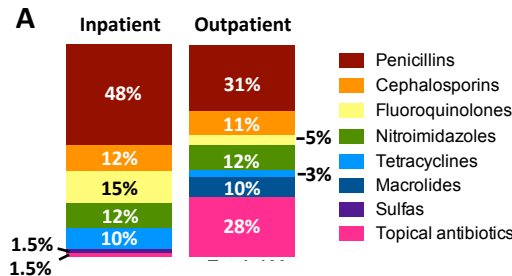
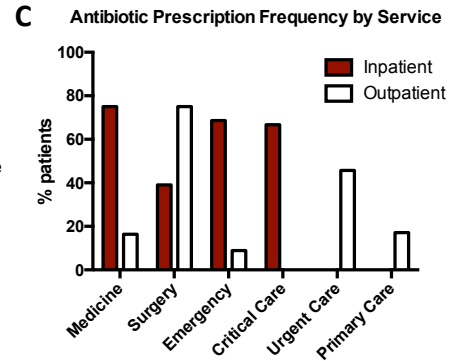
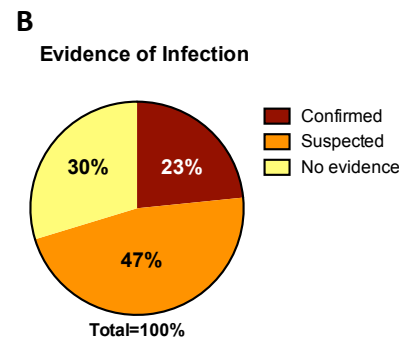


Figure A. Frequency of prescriptions by drug class among all inpatient or outpatient antibiotic prescriptions.

Figure B. Proportion of patients receiving antibiotics in which there was a confirmed bacterial infection (documented diagnostic test with clinical signs of infection at site of specimen collection), suspected bacterial infection (physical exam or cytologic findings consistent with infection in the absence of culture results), or no evidence of infection.

Figure C. Proportion of patients seen by each surveyed service receiving antibiotics on an inpatient or outpatient basis. Note, outpatient surgery includes *only* bandage change visits.



RESULTS

- 390 patients: 291 dogs, 99 cats
- 54/113 (47.8%) inpatients and 55/277 (19.9%) outpatients received at least 1 antibiotic.
- 13 inpatients, 6 outpatients received 2 antibiotics.
- Most common inpatient antibiotics: ampicillin-sulbactam (38.8%), enrofloxacin (13.4%), metronidazole (11.9%), doxycycline (10.4%), and cephalexin (9.0%)
- Most common outpatient prescriptions: amoxicillin-clavulanic acid (21.3%), metronidazole (11.5%), amoxicillin (9.8%), gentamicin-betamethasone-clotrimazole (otic/topical, 9.8%), and cephalexin (9.8%)
- Most common indications for inpatient antibiotics: lower respiratory tract disease (22.4%), peritonitis (10.4%), lower urinary tract disease (9.0%), surgical site infection prevention (7.5%), and infectious hepatitis (7.5%)
- Most common outpatient indications: skin wounds (18.0%), lower urinary tract disease (14.8%), otitis externa (11.5%), gastrointestinal dysbiosis (9.8%), and superficial corneal ulcers (9.8%)
- No indication was found in the medical record for 7.5% (5/67) of inpatient and 4.9% (3/61) of outpatient prescriptions.

CONCLUSIONS

The proportion (47.8%) of hospitalized patients receiving antibiotics in our study was similar to that found in a human PPS (51.9%).³ The high proportion (29.7%) of patients receiving antibiotics without evidence of infection highlights an area for AS intervention.

FUTURE GOALS

- Complete 12 months of data collection and analysis at UMN VMC.
- Fine-tune the data collection tool for use at interested teaching hospitals nationwide.
- Adapt the data collection tool for use at general practice and smaller referral clinics.

Conflict of Interest Declaration: Authors disclose no conflict of interest.

