

PACCARB

Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria

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Referral Institution Prescribing Behavior

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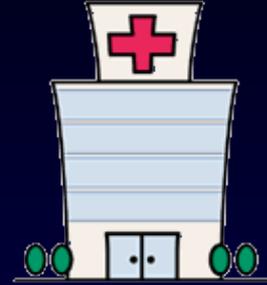
Differences Between Veterinary Practices

General Practice



- Veterinarians engaged in general practice
- Routine diagnosis & treatment
- Complicated cases are referred to specialty practices

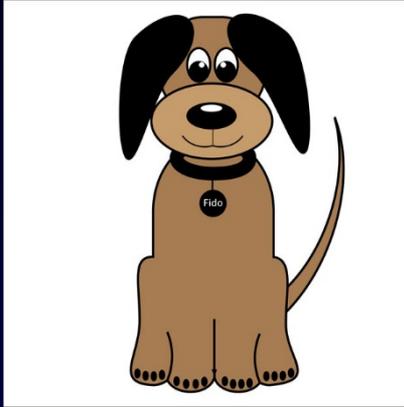
Referral Hospitals (Specialty Practice)



- Veterinarians with advanced specialty training
- Located at veterinary colleges and private hospitals
- Sites for training students and other specialists
- Typically see more complicated cases

Differences Between Patients

General Practice



- General health & wellness visits
- Routine treatment & surgery
- Infections tend to be “routine”

Referral



- Complicated cases
- In most cases, patients have already been prescribed antibiotics
- Infections tend to be more complicated and resistant

What influences our antibiotic selections?



Studies on Antibiotic Prescribing in Referral Hospitals / University Hospitals

Jacob et al. Opinions of clinical veterinarians at a US veterinary teaching hospital regarding antimicrobial use and antimicrobial-resistant infections. *Journal of the AVMA*. 2015 Oct 15;247(8):938-44.

Ekakoro & Okafor. Determinants of antimicrobial use practices among veterinary clinicians at The University of Tennessee Veterinary Medical Center. *PeerJ PrePrints*. 2017 Sep 14.

Weese JS. Investigation of antimicrobial use and the impact of antimicrobial use guidelines in a small animal veterinary teaching hospital: 1995–2004. *Journal of the AVMA*. 2006; 228(4):553-8.

North Carolina State University Survey (2015)

- Survey of hospital clinicians regarding antimicrobial drug prescribing in a referral hospital
- Mean number of antimicrobial prescriptions was 1,678 prescriptions/month and mean monthly accessions (patient load) was 2,399 patients/month
- Most important sources of information were peer-reviewed articles, drug handbooks, and colleagues

North Carolina State University Survey (2015)

- Most clinicians were “very concerned” about antimicrobial-resistant infections
- Most important factor influencing choice of antimicrobial was culture and susceptibility testing
- Most (88%) felt that antimicrobials were overprescribed at the hospital

North Carolina State University Survey (2015)

- 46% were uncomfortable prescribing at least one class of antimicrobials (eg, carbapenems or glycopeptides, chloramphenicol) because of public health concerns
- Most supported restricting use of certain antimicrobial classes in companion animals

University of Tennessee Hospital Survey (2017)

- 76%: bacteriological culture and antimicrobial susceptibility test results were extremely important in their antimicrobial prescription decision-making
- 52%: believed antimicrobials are being over-prescribed
- Cephalosporins were the most preferred antimicrobial class, while the lincosamide class was the least preferred
- Year of graduation from veterinary school was significantly associated with clinicians' degree of concern about AMR

University of Tennessee Hospital Survey (2017)

Conclusions

- The findings suggest a need for more awareness about AMR among veterinary clinicians
- Clinicians who graduated after 1999 tended to be less concerned about AMR than those who graduated before 1999
- Improvements in antimicrobial stewardship are needed, especially among veterinary clinicians who graduated after 1999

Ontario Veterinary College (OVC) Veterinary Teaching Hospital (VTH) Study (2006)

- Guidelines were developed at OVC to reduce the use of carbapenems and fluoroquinolones and restrict use of vancomycin
- Objective of this study was to evaluate patterns of antimicrobial use and the impact of antimicrobial use guidelines on prescriptions at the OVC-VTH

Ontario Veterinary College (OVC) Veterinary Teaching Hospital (VTH) Study (2006)

Results

- Overall, a decrease in antibiotic prescriptions during the study period
- Reductions in some classes were observed: penicillins, cephalosporins, fluoroquinolones, tetracyclines, trimethoprim-sulfas, & carbapenems
- The results suggested that antimicrobial use guidelines can have a positive effect on prudent antimicrobial use

Challenges for Referral Hospitals

- Complicated cases with antimicrobial resistance
- Not enough veterinary-approved antibiotics to meet current needs
- Not enough well-designed clinical trials to examine efficacy for extra-label uses
- Concerns about using human drugs in animals
- Concern about human exposure to resistant bacteria from animals

Problem Bacteria

Resistance Problems

- Methicillin-resistant *Staphylococcus*
 - *Escherichia coli*
 - *Klebsiella pneumoniae*
 - *Enterobacter* spp.
 - *Pseudomonas aeruginosa*
 - *Enterococcus* spp.
- Including ESBL strains
- 

What are the risks?



What do the guidelines say?

ISCAID Consensus Statement Guidelines (www.ISCAID.org)



The image shows a screenshot of the ISCAID website homepage. The header features the ISCAID logo on the left, which consists of a globe with a yellow animal silhouette and the text "ISCAID International Society for Companion Animal Infectious Diseases". To the right of the logo is the tagline "Dedicated to the Animals That Improve Our Quality of Life." Below the header is a yellow navigation bar with links for "Donate", "Join", "Contact", and "Home", a search input field, and a "Search" button. A large banner image below the navigation bar is a collage of four photos: a woman holding a kitten, a man petting a horse, a woman holding a parrot, and a man petting a dog on a beach. Below the banner is a white navigation bar with links for "About Us", "Pet Owners", "Health Scientists", "Links", "Sponsors", "Meeting Info", and "Members". The footer is a dark purple bar with the text "International Society for Companion Animal Infectious Diseases (ISCAID)" on the left and a "Member Sign In" section on the right, which includes a text input field for "Username or Email Address".

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Themes in Task Force / Guidelines / Consensus Documents for Companion Animals

- Promote prudent use / responsible use
- Encourage accurate diagnosis
- Encourage culture / susceptibility testing using approved public standards (CLSI – VAST)
- Discourage “polypharmacy” and “shotgun” approach to treatment
- Discourage long courses of antimicrobial agents
- Encourage better surveillance
- No restrictions on certain classes of antimicrobials proposed

Guidelines for Antimicrobial Agent Selection in Companion Animals

- Classify antimicrobial agents into “tiers” to indicate priority for use.
- **1st – Tier:** Empirical first-choice treatments for routine (wild-type strain) infections
- **2nd – Tier:** Use can be considered when culture and susceptibility testing indicates resistance to other agents, or when other treatment has failed
- **3rd – Tier:** Use discouraged (but not prohibited) because the agent is important for human medicine

Guidelines for Antimicrobial Agent Selection in Companion Animals

- 1st – Tier:

Usually approved antimicrobials.

Susceptibility testing standards developed by drug sponsor

- 2nd – Tier: Many (most) are used extra-label and/or are human-label agents

Susceptibility testing standards developed by CLSI-VAST

Thank you!

Any questions?

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