

# Improving Antimicrobial Prescribing in Companion Animal Medicine

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# Outline

- Antimicrobial resistance (AMR)
- AMR and antimicrobial use in companion animals
- Antimicrobial stewardship (AS)
  - Barriers to AS in companion animal practice
  - Actions and tools



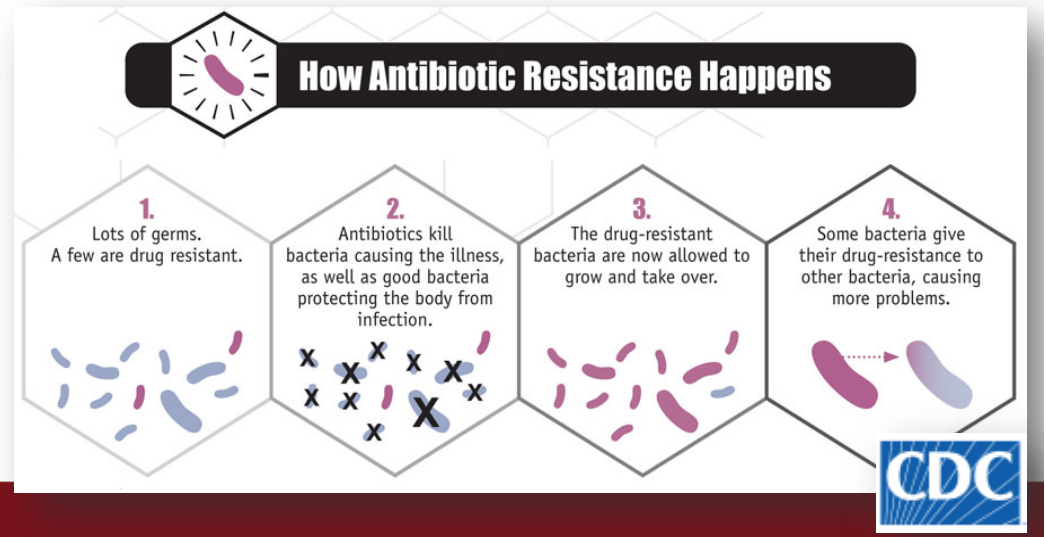


# Antimicrobial Resistance is a One Health Issue

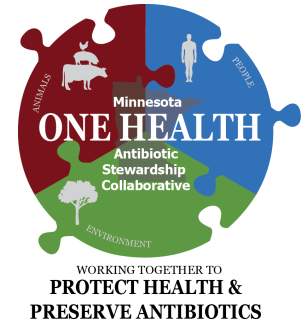


# Drivers of Antibiotic Resistance

- All antibiotic use has potential to drive resistance, whether or not appropriate
  - Selecting and enabling proliferation of resistant strains
- Acquisition of resistant bacteria
  - Direct transfer of resistant bacteria or genes among people, animals
  - Contamination of food and water
  - Contamination of environment



# Why do we care about AMR across One Health disciplines?



- **Human**

- >700,000 deaths worldwide from resistant infections
- >2.8 million resistant infections, 35,000 deaths, \$20 billion in excess direct healthcare costs in U.S.
- Untreatable microbial infections expected to surpass cancer as leading cause of death worldwide by 2050



- **Animal**

- Animal agriculture: clinically relevant resistance in veterinary medicine, impact on animal health and welfare, direct contact transmission from animals to people, foodborne infections of humans (e.g., *Campylobacter*, *Salmonella*)
- Companion animals: share our environment, are treated with antibiotics of human importance, eat meat-based diets




- **Environment**

- Low levels of antibiotic residues in: lakes, rivers, streams, urban ground water
- Lake sedimentary record parallels historical record of antibiotic use (Kerrigan, Science of the Total Environment. 2018)
  - Sediment core samples recovered 10 antibiotics
  - Antibiotic content highest where wastewater contributions highest



# Why is AMR in companion animals relevant to public health?

- 57% of all U.S. households owned a pet in 2016 (AVMA 2019)
- Pets often receive medically important antimicrobials
- Potential spread of antimicrobial resistance



Having a dog in the household adds bacterial diversity to adult skin.

Song et al. Cohabiting family members share microbiota with one another and dogs. *eLife* 2013

Icon by freepik @ flaticon.com





# Antimicrobial Use and Resistance in Companion Animals



RESEARCH ARTICLE

Open Access



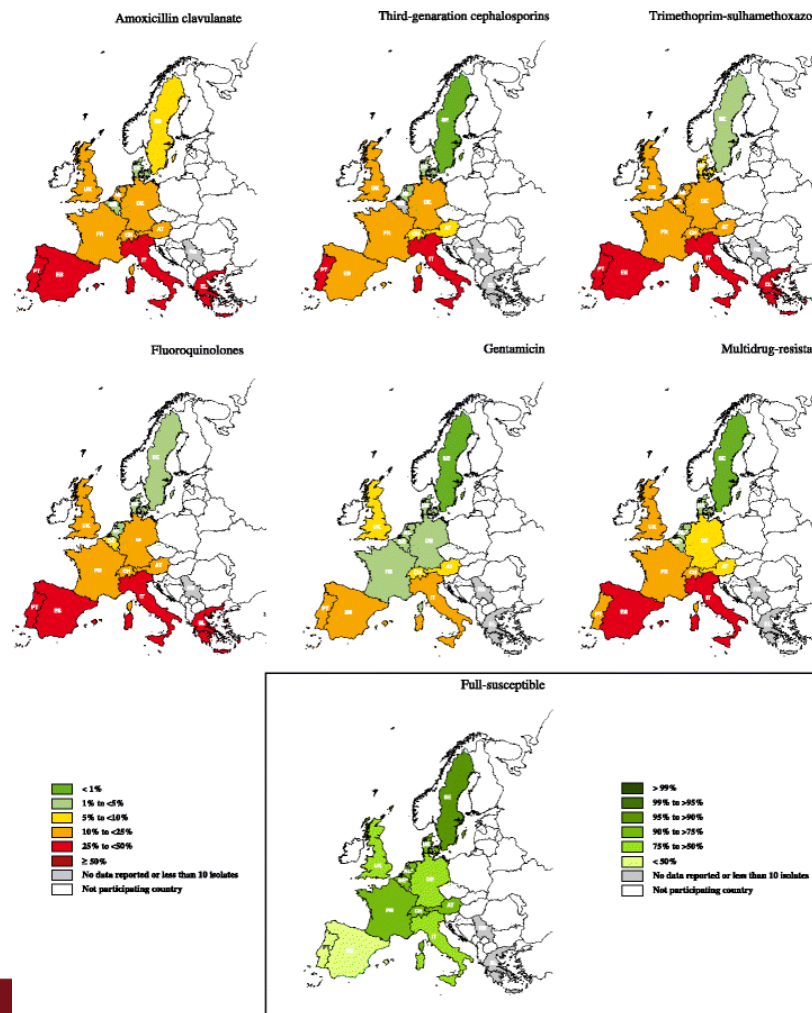
# European multicenter study on antimicrobial resistance in bacteria isolated from companion animal urinary tract infections

In the UK:

- 10-25% of E coli isolates resistant to all antibiotics
- 10-25% pan-resistant
- Only 50-75% fully susceptible

## Isolation of resistant organisms from UMN Veterinary Medical Center

Source	# of E. coli Isolates	Pansensitive n (%)	MDR n (%)
Community Practice	102	70 (69%)	4 (4%)
ICU	113	42 (37%)	42 (37%)



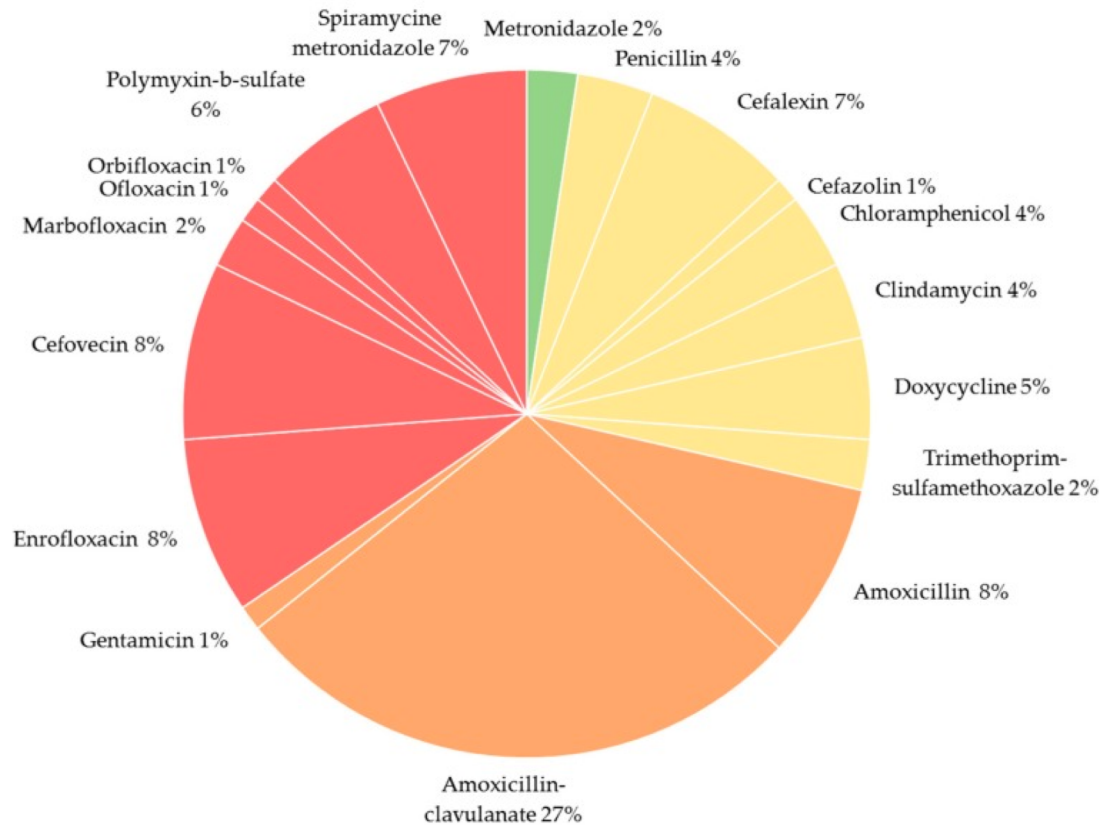


# Little prescribing data available

 **antibiotics** 

Article  
**Antimicrobial Usage and Resistance in Companion Animals: A Cross-Sectional Study in Three European Countries**

Philip Joosten <sup>1,\*</sup>, Daniela Ceccarelli <sup>2,†</sup>, Evelien Odent <sup>1</sup>, Steven Sarrazin <sup>1</sup>, Haiske Graveland <sup>3</sup>, Liese Van Gompel <sup>4</sup>, Antonio Battisti <sup>5</sup>, Andrea Caprioli <sup>5</sup>, Alessia Franco <sup>5</sup>, Iaan A. Waagenaar <sup>2,3</sup>, Dik Mevius <sup>2,3</sup> and Jeroen Dewulf <sup>1</sup>



(Joosten et al. 2020)



# Appropriate use

- $\beta$ -lactams, fluoroquinolones (ciprofloxacin, enrofloxacin), third-generation cephalosporins, others
- AVMA approximates inappropriate is similar to healthcare
- Low adherence to published guidelines:
  - 80% of upper respiratory tract infections
  - 67% of non-recurrent UTI
  - 44% of recurrent UTI
  - 22% of bronchitis





# Combating Antimicrobial Resistance through Antimicrobial Stewardship



# Fighting Resistance

According to the Centers for Disease Control and Prevention, *four core actions* can help fight resistance.

1. Prevent infections
2. Track infections
3. **Improve antibiotic prescribing (stewardship)**
4. Develop new drugs and diagnostics

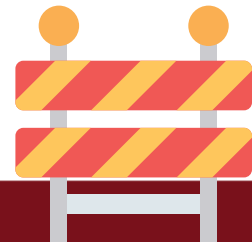
“The primary purpose of stewardship is to **optimize clinical outcomes** while **minimizing unintended consequences** of antimicrobial use, including toxicity, the selection of pathogenic organisms, and the emergence of resistance.”

Fine TM et. al. 2014 Clin Infect Disease

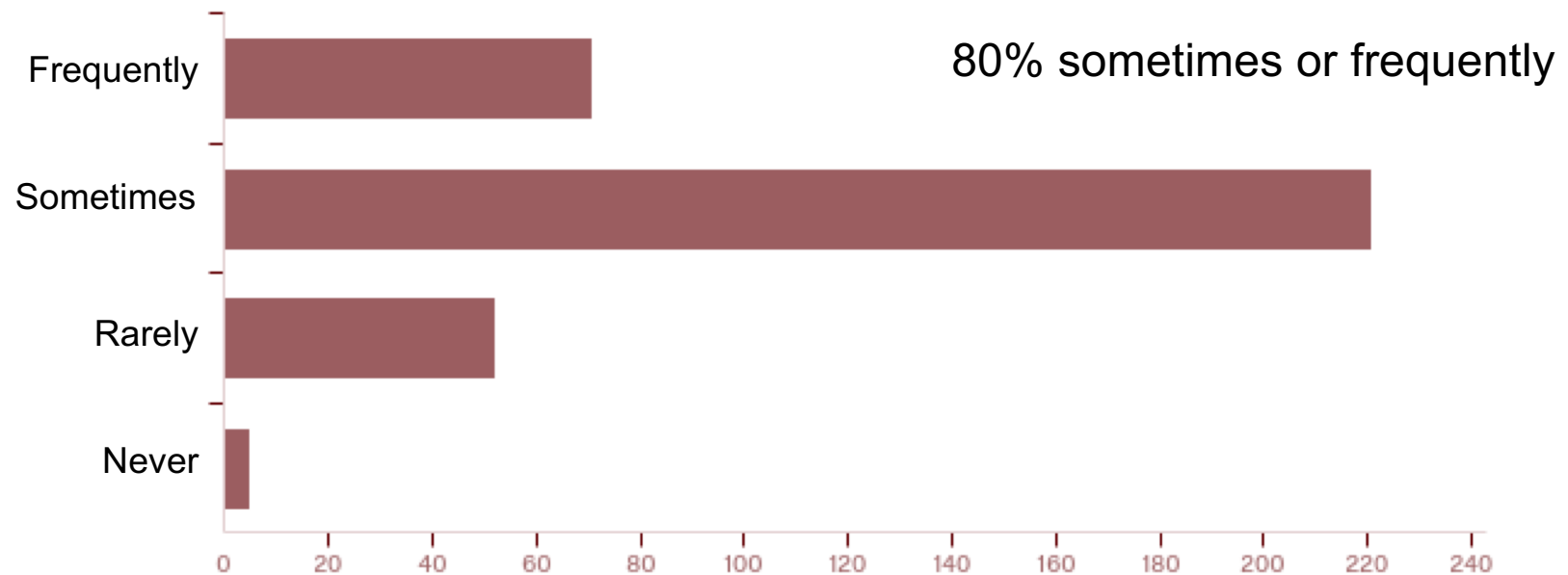


# Barriers to Antimicrobial Stewardship

- Evidence-based protocols in vet med are limited
- Not in my backyard
- Resources lacking (financial, staffing)
- “Antibiotic prescribing is often an emotional decision for veterinarians.” - Jody Lulich
  - Just-in-case antibiotics (perception that antibiotics are safe and pose little risk to patients)



Do you feel that the risk of not treating a patient with antibiotics in the event of diagnostic uncertainty outweighs the potential for adverse effects from antibiotics?



# Organizations supporting stewardship

- **Food and Drug Administration**
  - Five-year action plan to support stewardship in veterinary medicine, including companion animal setting
- **American Veterinary Medical Association**
  - Task force on antimicrobial stewardship in companion animal practice
  - Core Principles of stewardship in veterinary medicine defined
  - Committee on Antimicrobials
- **Centers for Disease Control and Prevention**
  - Core Elements of stewardship defined for hospitals, nursing homes, outpatient clinics, and resource-limited settings
- **Minnesota**
  - Minnesota One Health Antibiotic Stewardship Collaborative ([health.state.mn.us/onehealthabx](http://health.state.mn.us/onehealthabx))
  - University of Minnesota Antimicrobial Resistance and Stewardship Initiative ([arsi.umn.edu](http://arsi.umn.edu))



# Minnesota One Health Antibiotic Stewardship Collaborative

## Collaborative Participants

- **State agencies** of health, agriculture, environment, animal health
- **Healthcare professionals** from inpatient, outpatient, long-term care, dentistry, pharmacy
- **Veterinary professionals** from large and small animal clinical practice
- **University researchers** from veterinary medicine, engineering, chemistry, pharmacy, medicine
- **Industry and professional organizations**, human and animal
- **Pharmaceutical companies**, human and animal

## MOHASC Vision

Minnesota leaders in human, animal, and environment health will work together to raise awareness and change behaviors to preserve antibiotics and treat infections effectively.



WORKING TOGETHER TO  
**PROTECT HEALTH &  
PRESERVE ANTIBIOTICS**









# University of Minnesota Antimicrobial Resistance and Stewardship Initiative

- Established from relationships formed through MOHASC
- One-stop-shop for AMR and AS resources for companion animal medicine
- Conducts research to advance knowledge of companion animal diseases and treatment

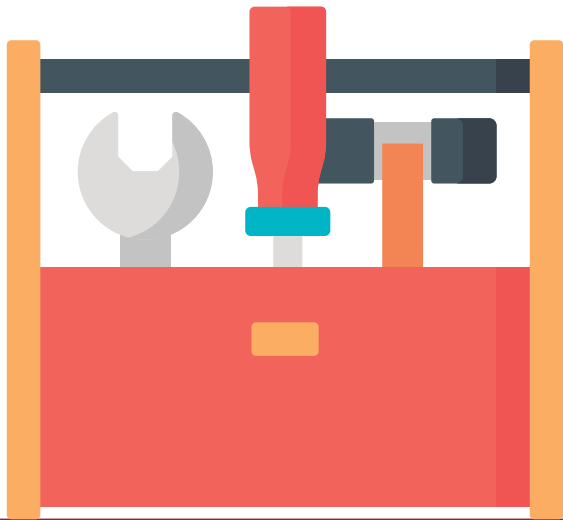


**Featured Resource:** *Handbook of Antimicrobial Stewardship in Companion Animal Veterinary Settings*. A first-of-its-kind comprehensive guide to implementing the AVMA Core Principles of Antimicrobial Stewardship in your clinic.

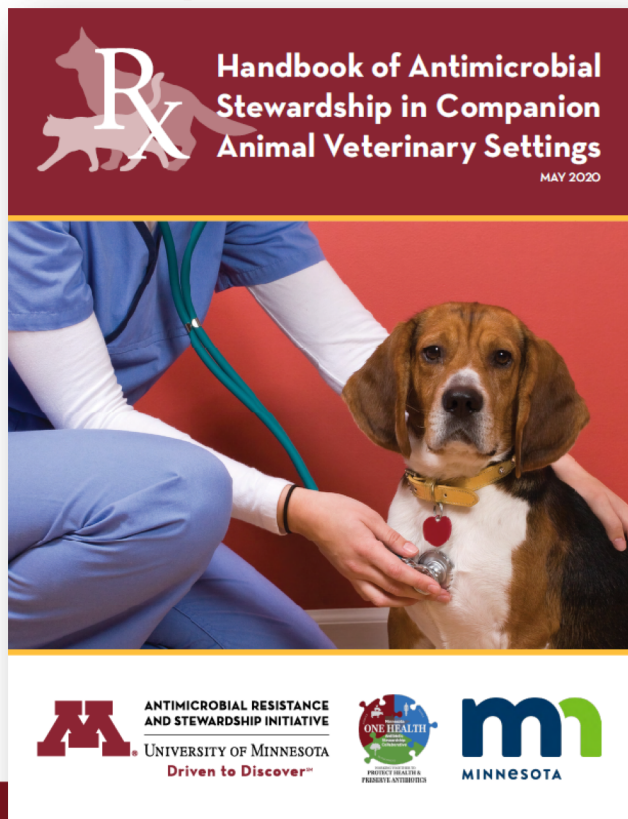
The University of Minnesota Antimicrobial Resistance and Stewardship Initiative (ARSI) provides high-quality and evidence-based resources for antimicrobial resistance and stewardship and conducts research to advance knowledge of companion animal diseases (dogs, cats, horses) and treatment.

 <a href="#">Antimicrobial Resistance and Stewardship Information</a>	 <a href="#">Clinical Resources and Tools for Antimicrobial Stewardship</a>	 <a href="#">Infection Prevention and Control Resources</a>	 <a href="#">Point Prevalence Surveys</a>
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# Tools for Antimicrobial Stewardship



# Handbook of Antimicrobial Stewardship in Companion Animal Veterinary Settings



- First-of-its-kind comprehensive guide to implementing the AVMA Core Principles
- Strategies and tools organized into basic, intermediate, and advanced levels so clinics can take a stepwise approach to stewardship and meet all five Core Principles

[arsi.umn.edu/handbook](https://arsi.umn.edu/handbook)



*Stepwise approach to implementing an antimicrobial stewardship program in a veterinary clinic*

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**5. Implement actions and assess impact**

**4. Educate staff on AMR and AS. Convey importance, methods, and assessment of clinic intervention(s)**

**3. Define protocols or guidelines for priority area(s)**




**2. Identify one or a small number of priority areas**

**1. Form ASC and identify Champion**



## Checklist for Core Principle Implementation - Advanced

■ Basic Antimicrobial Stewardship Interventions
 ■ Intermediate
 ■ Advanced

Core Principle 1: Commit to stewardship 		Target date	✓
<span style="color: green;">■</span> <span style="color: red;">■</span>	Form an ASC. Identify members, meet regularly, and educate staff.		
<span style="color: green;">■</span> <span style="color: red;">■</span>	Identify an AS Champion. Draft a written statement and have a poster identifying the Champion.		
<span style="color: green;">■</span> <span style="color: red;">■</span>	Make a public commitment to clients. Send letters or email, use talking points, display commitment posters, write a commitment statement, and celebrate USAAW.		
<span style="color: green;">■</span> <span style="color: red;">■</span>	Define hospital AS priorities. Find priorities for initial action, identify protocols to support priorities, educate staff on these issues.		
<span style="color: blue;">■</span> <span style="color: red;">■</span>	Draft an AS policy. Draft a document to guide facility action, define staff roles, educate staff about policy, and meet regularly.		
<span style="color: blue;">■</span> <span style="color: red;">■</span>	Formalize AS Champion Role. Include AS responsibilities and effort time in the Champion's job description.		
<span style="color: blue;">■</span> <span style="color: red;">■</span>	Actively promote responsible AU to clients and public. Celebrate USAAW, and download awareness graphics.		
<span style="color: blue;">■</span> <span style="color: red;">■</span>	Define hospital AS priorities. Identify gaps in practice, set AS priorities for intervention, identify supporting protocols, and educate staff.		
Core Principle 2: Prevent common diseases 		Target date	✓
<span style="color: green;">■</span> <span style="color: red;">■</span>	Educate clients on preventative care. Promote wellness care and vaccination, empower owners to keep pets healthy.		
<span style="color: green;">■</span> <span style="color: red;">■</span>	Prevent healthcare-associated infections. Review your infection prevention plan with staff.		
<span style="color: blue;">■</span> <span style="color: red;">■</span>	Develop prevention protocols for high-priority conditions. Identify conditions, develop protocols, and educate staff.		
<span style="color: red;">■</span>	Align infection prevention and quality improvement priorities with AS actions. Ensure communication among staff, identify multidrug-resistant organism of concern, and plan for action if identified. Track healthcare associated infections.		
Core Principle 3: Select and use antimicrobial drugs judiciously 		Target date	✓
<span style="color: green;">■</span> <span style="color: red;">■</span>	Provide clinical guidance for responsible AU. Share broad concepts of responsible AU, use ISCAID guidelines, develop protocols for surgical AU, and identify antibiotic alternatives.		
<span style="color: green;">■</span> <span style="color: red;">■</span>	Develop protocols for use of clinical diagnostics. Ensure best practices for specimen collection.		



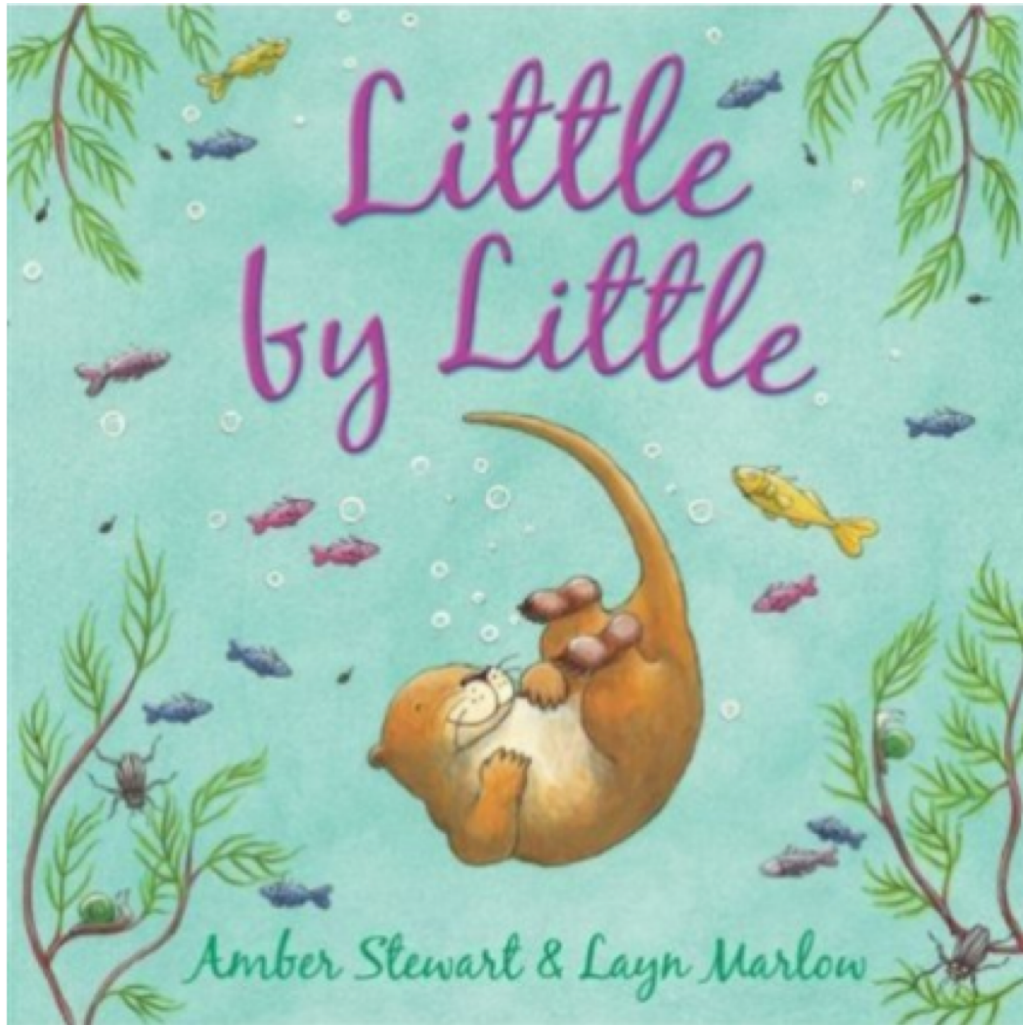
# Core Principles of Antimicrobial Stewardship in Veterinary Medicine by AVMA



## **1. Commit to stewardship**

2. Advocate for a system of care to prevent common diseases
3. Select and use antimicrobial drugs judiciously
4. Evaluate antimicrobial drug use practices
5. Educate and build expertise







start small





# Take one step: Commitment Posters

I pledge to do my part to prevent antibiotic-resistant infections and to keep your pet healthy.



Learn more about antibiotic resistance and stewardship at [www.health.state.mn.us/onehealthabx](http://www.health.state.mn.us/onehealthabx)



## PAWS FOR A SECOND.

Are antibiotics needed in this case?



Learn more about antibiotic resistance at [www.health.state.mn.us/](http://www.health.state.mn.us/)



## KEEP CALM.



Antibiotics aren't always the answer.

When Fluffy isn't feeling well, she might have a viral infection, which can't be fixed with antibiotics.





# Tools: Commit to Stewardship

Ask me questions about antibiotic stewardship!



I am an Antibiotic Stewardship Champion!

Name  
Title  
Contact Info

Our clinic is committed to using antibiotics appropriately. If you have questions about antibiotic stewardship policies or best clinical practice guidelines, please ask me.



For more information, visit [www.health.state.mn.us/onehealthabx](http://www.health.state.mn.us/onehealthabx) and <https://arsl.umn.edu>



## Sample Email to Introduce Antimicrobial Stewardship Champion

INTRODUCE STEWARDSHIP CHAMPION TO VETERINARY CLINIC STAFF

Dear [VETERINARY TEAM MEMBER NAME],

At [VETERINARY CLINIC NAME], we are committed to antimicrobial stewardship, or the improvement of antimicrobial use while effectively treating infections. As you know, antimicrobial resistance is becoming more and more of a problem in our clinical work and is a major public health concern. Widespread use of antibiotics in human and animal health is a major driver of the problem of antimicrobial resistance. Identification of an Antimicrobial Stewardship Champion is essential to success of clinic-based stewardship programs. We are pleased to announce that [CHAMPION NAME] has agreed to take on this role for our clinic.

## Sample Commitment Letter to Clients

AN ANTIBIOTIC USE COMMITMENT FROM VETERINARY CLINICS

[Date]

Dear Valued Client,

Antibiotic resistance, or the ability of bacteria to withstand the effects of antibiotic treatment, is a growing problem for our pets, and it is also a major public health concern. Widespread use of antibiotics in human and animal health is a major driver of the problem of antibiotic resistance. Veterinarians play an important role in the fight to preserve the effectiveness of antibiotics. Just as antibiotics are not appropriate for all infections in people, including the common cold, influenza, and most cases of bronchitis and sinusitis, antibiotics are not always the answer when our pets get sick. In addition, it is important to keep in mind that antibiotics are not themselves without harm, so they should only be used when needed. Antibiotics can lead to drug reactions, diarrhea, or development of new infections that are difficult to treat.

## Sample Letter to Veterinary Staff: Clinic Antimicrobial Stewardship Priorities

USE THIS TEMPLATE TO DEVELOP A LETTER FOR YOUR CLINIC

TO: [All Staff, Relief Veterinarians]  
FROM: [Veterinary Medical Director and Antimicrobial Stewardship Committee, as appropriate]  
RE: [Antimicrobial Stewardship Program Policy and Procedures]  
DATE: [Date]

Dear [Veterinary Team Member Name],

This letter is written to inform you of our clinic's commitment to antimicrobial stewardship. Antimicrobials are important tools and are among the most commonly prescribed pharmaceuticals in veterinary medicine. However, research has shown that a high proportion of antibiotic prescriptions are unnecessary or inappropriately prescribed.<sup>1,2</sup> To improve patient outcomes and reduce pressures leading to antimicrobial resistance, [NAME OF CLINIC] commits to prescribing improvement and staff education on antimicrobial use. Please review [NAME OF CLINIC'S] stewardship commitment statement and protocols developed by the Antimicrobial Stewardship Committee (attached). **We ask you to commit to improved antimicrobial use by supporting these current activities:**



# Core Principles of Antimicrobial Stewardship in Veterinary Medicine by AVMA

1. Commit to stewardship



**2. Advocate for a system of care to prevent common diseases**

3. Select and use antimicrobial drugs judiciously

4. Evaluate antimicrobial drug use practices

5. Educate and build expertise

# Take one step towards prevention

## Your 5 moments for Hand Hygiene

	Examples	When	Why
1	Restraining animal, clinical examination, handling animal	Clean your hands before touching an animal	To protect the animal against harmful germs carried on your hands
2	Wound care, injectable medication preparation, drawing blood, and IV catheter placement and manipulation	Clean your hands immediately before and after any aseptic or clean task	To protect the animal against harmful germs, including its own, from entering its body
3	After contact with urine, feces, blood, saliva, and nasal discharge	Clean your hands immediately after an exposure to body fluids including after glove removal	To protect yourself, the environment, and other people and animals from harmful germs
4	After clinical exams and treatments such as grooming, bandage changes, or administration of any medications or vaccinations	Clean your hands after touching an animal	To protect yourself, the environment, and other people and animals from harmful germs
5	When leaving an exam room, treatment room, barn, kennel or housing area	Clean your hands when leaving the animal's environment, even if the animal has not been touched	To protect yourself, the environment, and other people and animals from harmful germs

## Don't Assume I'm Healthy!

Take steps to protect yourself and your patients from pathogens

Wash your hands after patient contact

Keep food and drinks out of animal and lab areas

Change your clothes and shoes before leaving work

Properly clean and disinfect areas after patient contact

Wear appropriate personal protective equipment

When this dog sneezes or coughs, he could be 'tossing' germs that could be pretty bad...

Have questions about infection prevention and control in your veterinary facility? Call the Zoonotic Diseases Unit at MDH at 651-201-5414 or toll-free at 1-877-676-5414

DEPARTMENT OF HEALTH  
www.health.state.mn.us

## Infection Control Guidelines: Canine & Feline

Disease	Clinical Signs	Transmissions & Precautions	Clean Up	Intra-Hospital Transport	Additional Information
<b>Blastomycosis</b> ( <i>Blastomyces dermatitidis</i> ) (Z)	Cough, fever, lethargy, anorexia, lameness, weight loss, cutaneous lesions	Inhalation of airborne spores	A	Normal	Source is generally in wooded areas along waterways
<b>Campylobacteriosis</b> ( <i>Campylobacter</i> sp.) (Z)	Diarrhea, fever, anorexia	Fecal-Oral	A	If patient has fecal incontinence move directly to exam room or cage, transport on gurney or in a carrier	Many animals are asymptomatic.
<b>Canine Brucellosis</b> (Z)	Reproductive abnormalities, discospondylitis	Contact with contaminated reproductive fluids	B	Normal	Extra precautions w/ handling abortive material
<b>Canine Corona Virus</b>	Fever, vomiting, diarrhea	Direct contact with feces contaminated fomites	A	Move patient directly to exam room or cage, transport on gurney or in a carrier, restrict contact with other canines	Virus is highly virulent, contagious, best prevention is vaccination
<b>Canine Distemper Virus</b>	Coughing, ocular/nasal discharge, vomiting, diarrhea, neurological signs usually begin 1-3 weeks after recovery from systemic illness	Saliva or tears, urine, contaminated fomites, hands, food or water	A	Move patient directly to exam room or cage, transport on gurney or in a carrier, restrict contact with other canines	Vaccination provides good immunity against infection
<b>Canine Parvovirus</b>	Lethargy, anorexia, vomiting, bloody diarrhea	Direct contact with feces or contaminated fomites	B	Move patient directly to exam room or cage, transport on gurney or in a carrier, restrict contact with other canines	Virus is highly virulent and contagious, best prevention is vaccination
<b>Clostridium difficile</b> (Z)	Asymptomatic or diarrhea (may be bloody or with mucus)	Fecal-oral, contaminated hands or fomites	B	Move patient directly to exam room or cage, transport on gurney or in a carrier	Risk of disease increases with antibiotic use, pets are not a likely source for human infections
<b>Cryptosporidiosis</b> ( <i>Cryptosporidium parvum</i> , <i>Cryptosporidium</i> sp.) (Z) (P)	Asymptomatic or prolonged watery diarrhea	Fecal-oral or mucous membranes	B	If patient has fecal incontinence move directly to exam room or cage, transport on gurney or in a carrier	
<b>Feline Calicivirus</b>	Fever, conjunctivitis, stomatitis, oral ulcers, and nasal discharge	Droplets from saliva or nasal discharge, contact with contaminated fomites, hands or clothing	B	Move patient directly to exam room or cage, transport cat in carrier, restrict contact and housing with other cats	



# Tools: Infection Prevention

VETERINARY PRACTICE GUIDELINES

## 2018 AAHA Infection Control, Prevention, and Biosecurity Guidelines\*

Jason W. Stull, VMD, MPVM, PhD, DACVPM<sup>†</sup>, Erin Biorvik, BS, CVT, Joshua Bub, DVM, DABVP (C/F), Glenda Dvorak, MS, DVM, MPH, CVPP


**Compendium of Veterinary Standard  
Precautions for Zoonotic Disease Prevention  
in Veterinary Personnel**

**National Association of State Public Health Veterinarians**

**Veterinary Infection Control Committee  
2015**



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1. Commit to stewardship
2. Advocate for a system of care to prevent common diseases
-  **3. Select and use antimicrobial drugs judiciously**
4. Evaluate antimicrobial drug use practices
5. Educate and build expertise



# One step: use peer-reviewed prescribing guidelines

International Society of Companion Animal Infectious Diseases (ISCAID)

- Urinary tract infections
- Canine superficial bacterial folliculitis
- Respiratory infections



[www.iscaid.org](http://www.iscaid.org)



# Tools: Antibiotic Selection Protocols

**Rx** Pocket guide: antimicrobial prescribing for common small animal diseases

**Ten tenets of antimicrobial prescribing**

- Make a diagnosis.
- Follow antimicrobial guidelines.
- Consider host, likely disease agent, and drug when selecting an antimicrobial.
- Use the correct dose and duration.
- Document indication, drug, dose, frequency, route, and duration.
- Incorporate watchful waiting, as appropriate.
- Regularly review the need for therapy.
- Teach clients to administer antimicrobials.
- Do not prescribe antimicrobials "just in case."
- Use a tiered approach, choosing antimicrobials with lower importance to human medicine first.

**Tips for client satisfaction**

- Recommend specific symptomatic therapy when antibiotics are not needed.
- Provide a plan if symptoms do not improve.
- Educate clients. Combine positive treatment recommendations with explanations for why antibiotics are not needed.
- Answer questions.
- When using delayed prescriptions, write an expiration date on the prescriptions so it can be filled only during the watchful waiting period.

**Watchful waiting:** Delay prescribing for conditions that often self-resolve. Communicate the plan for watchful waiting, letting the client know when to be concerned or contact you for follow-up.

ANTIMICROBIAL RESISTANCE AND STEWARDSHIP IN VETERINARY MEDICINE

**Feline bacterial upper respiratory infection**

Doxycycline 5 mg/kg PO q12hr  
Amoxicillin 22 mg/kg PO q12hr  
7-10 days  
Consider watchful waiting if clinical signs present <10 days.  
If clinical signs present >10 days or worsen over 5-7 days, antibiotic therapy (above) might be warranted.

**Canine infectious respiratory disease**

Doxycycline 5 mg/kg PO q12hr  
Amoxicillin-clavulanate 11 mg/kg PO q12hr  
7-10 days  
Consider watchful waiting if clinical signs present <10 days.  
Treat within 10 day period if fever, lethargy, or inappetence present with mucopurulent discharge.

**Bacterial pneumonia**

Pneumonia without sepsis  
Pneumonia with sepsis  
7-10 days  
Ampicillin, ampicillin-sulbactam, or cefazolin.  
Use oral equivalents if IV is not needed.  
Parenteral fluoroquinolone plus ampicillin  
OR parenteral fluoroquinolone plus ampicillin-sulbactam  
OR parenteral fluoroquinolone plus clindamycin  
OR base on culture and susceptibility testing

**Canine superficial pyoderma**

Cephalexin 15-30 mg/kg PO q12hr  
Clindamycin\* 5.5-10 mg/kg PO q12hr  
± 2 weeks  
Topical treatment with antiseptics alone may be sufficient for mild or focal cases.  
Frequent re-evaluation is needed to determine treatment duration.  
\*Staph. strains resistant to erythromycin may develop resistance to clindamycin during treatment.

**Sporadic bacterial cystitis**

Amoxicillin 10-15 mg/kg PO q12hr  
Trimethoprim-sulfa 15-30 mg/kg PO q12hr  
3-5 days  
UTI is uncommon in young cats. Consider alternative diagnoses, such as urolithiasis and feline idiopathic cystitis.

**Recurrent bacterial cystitis**

Definition: ≥3 UTIs in 12 months or ≥2 in 6 months.  
Perform diagnostics (e.g., urinary tract imaging) to identify predisposing cause.  
Treat as for sporadic bacterial cystitis and/or based on culture and susceptibility testing.

**Pyelonephritis**

Enrofloxacin 5-20 mg/kg PO SID (dog)  
Marbofloxacin 2.7-5.5 mg/kg PO q12hr  
Cefpodoxime 5-10 mg/kg PO q12hr

**Acute diarrhea**

Antibiotics might cause further dysbiosis.  
Consider dietary, prebiotic, or probiotic therapy.



## Your Pet Does Not Need an Antibiotic Today!

Patient Name: \_\_\_\_\_ Date: \_\_\_\_\_

Good news! Based on a complete examination and the history you provided, your pet does not need treatment with an antibiotic. Here are some other recommendations to help your pet feel better.

### FINDINGS FROM TODAY'S VISIT:

- Diarrhea (lasts about 5–7 days)
- Vomiting
- Cough (lasts about 7–10 days)
- Nose discharge, with or without sneezing
- Cat urinary tract inflammation/cystitis (discomfort lasts about 3–5 days)
- Other: \_\_\_\_\_

*Antibiotics will not help these conditions as they are not usually caused by bacteria. Sometimes bacteria do cause diarrhea, but most often it resolves on its own. Antibiotics should be used only when needed, because unneeded antibiotics can cause harmful side effects and promote antibiotic resistance.*

### HELP YOUR PET BY DOING THE FOLLOWING:

- Feed a bland diet. Recommended diet(s): \_\_\_\_\_
- Limit exercise. Your pet needs to rest.
- Ensure your pet drinks enough. Offer a few water sources, and wet the food.
- Use a humidifier or place your pet in the bathroom (not the shower) and run hot water in the shower.
- Warm up food to enhance its smell.
- Other: \_\_\_\_\_
- To prevent sharing a viral infection, keep your pet away from other animals for \_\_\_\_\_ days.
- \_\_\_\_\_

### NON-ANTIBIOTIC MEDICATIONS:

- Prescribed today: \_\_\_\_\_
- Recommended, if needed: \_\_\_\_\_

### FOLLOW-UP:

- Please call or visit the clinic if your pet is not better in \_\_\_\_\_ days, if your pet's condition gets worse, or if you have other concerns.
- Recheck exam: \_\_\_\_\_
- Clinic phone: \_\_\_\_\_
- Other: \_\_\_\_\_

Signed: \_\_\_\_\_

[MDH Antimicrobial Use and Resistance Basics \(www.health.state.mn.us/diseases/antibioticresistance/basics\)](http://www.health.state.mn.us/diseases/antibioticresistance/basics)

[University of Minnesota Antimicrobial Resistance and Stewardship Initiative \(https://arsl.umn.edu\)](https://arsl.umn.edu)

To obtain this information in a different format, contact [caysnet@umn.edu](mailto:caysnet@umn.edu).

1/2020





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1. Commit to stewardship
2. Advocate for a system of care to prevent common diseases
3. Select and use antimicrobial drugs judiciously



**4. Evaluate antimicrobial drug use practices**

5. Educate and build expertise



# Tools to Track Antimicrobial Use

## Low-tech: Manual collection

- Point prevalence survey
  - Minimal equipment or technical expertise needed
  - Some time and effort needed for data collection
  - [arsi.umn.edu/pps](http://arsi.umn.edu/pps)
- Excel-based tracking tool
  - [arsi.umn.edu/tracking](http://arsi.umn.edu/tracking)

## High-tech: Electronic Surveillance

- Data extracted from electronic medical records
- Technical expertise required for network administrators
- Passive—minimal effort for practices

[cavsnet.umn.edu](http://cavsnet.umn.edu)



COMPANION ANIMAL VETERINARY  
SURVEILLANCE NETWORK

UNIVERSITY OF MINNESOTA

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# Small Animal Veterinary Surveillance Network (SAVSNET)

- University of Liverpool
- Data collected automatically from disparate EHRs in >500 U.K. clinics
- Algorithms created to extract data in near real-time
- <6 seconds per consult of veterinarian time



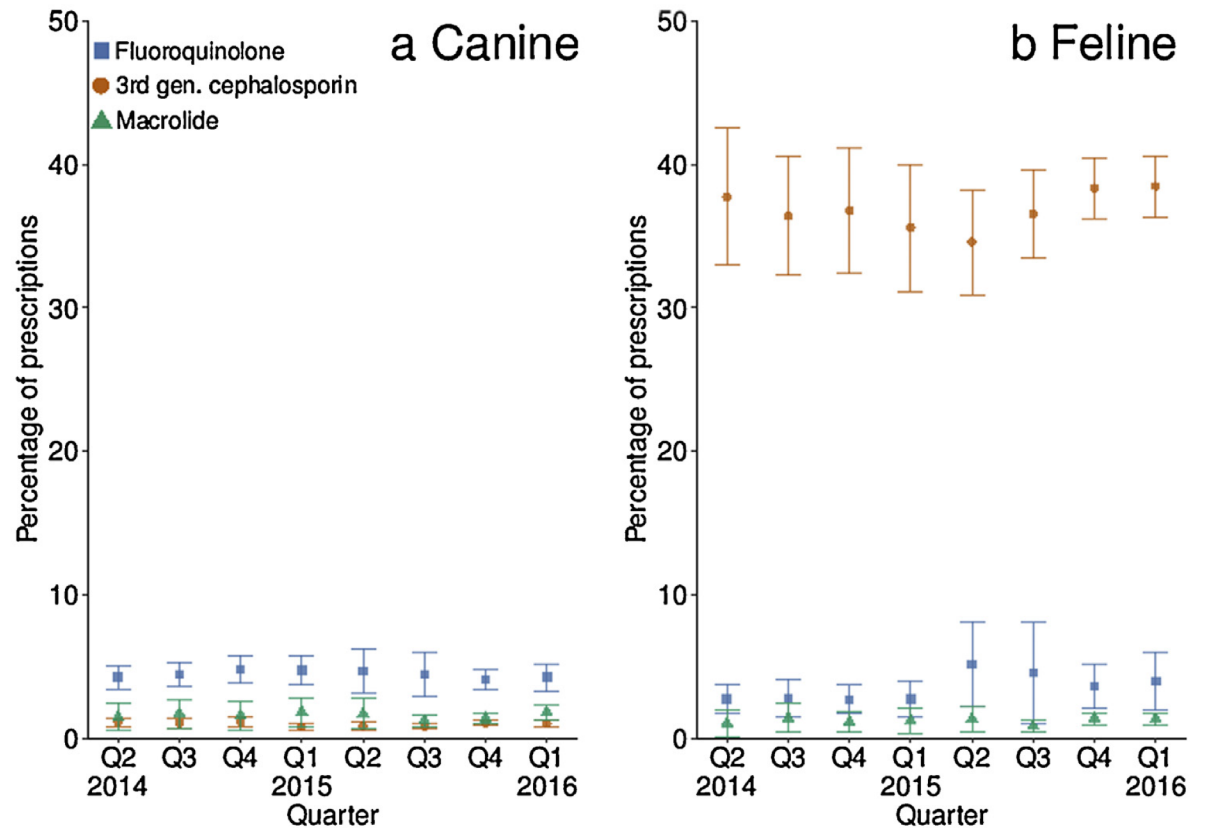
[www.liverpool.ac.uk/savsnet/](http://www.liverpool.ac.uk/savsnet/)



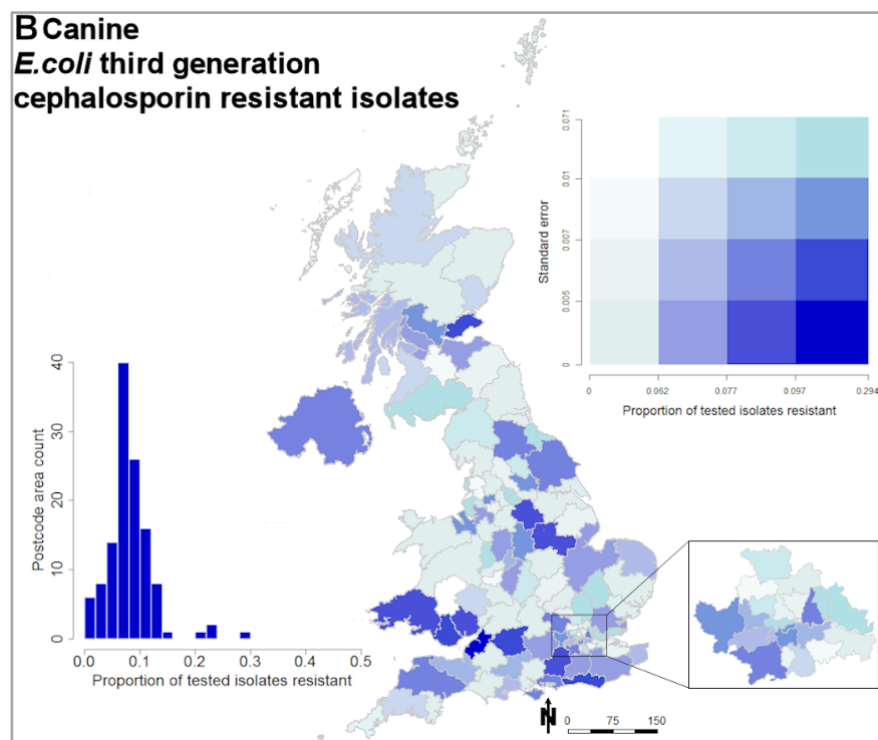
# Value: Identify Targets for Intervention

**Patterns of antimicrobial agent prescription in a sentinel population of canine and feline veterinary practices in the United Kingdom.**  
Singleton et al. *Vet. Record.*

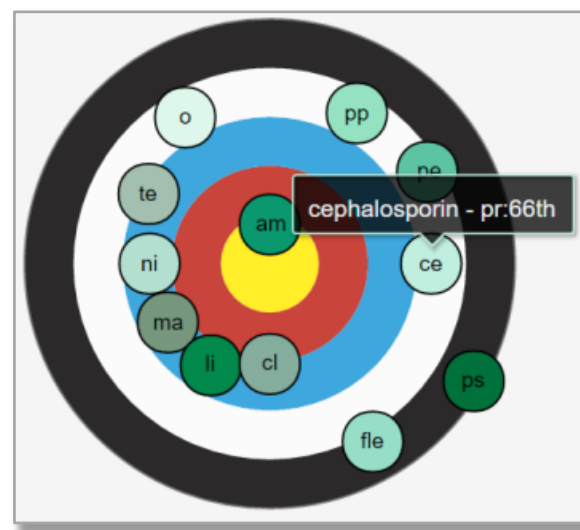
Big data can identify targets for practice changes



## Describe AMR patterns in populations



## Provide Benchmarking



- Clinicians can compare their antibiotic use to their peers
- See changes over time



# Companion Animal Veterinary Surveillance Network

- Sister network to SAVSNET in the UK being created at the University of Minnesota
- In development
- Practice recruitment coming soon



**COMPANION ANIMAL VETERINARY  
SURVEILLANCE NETWORK**

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### Antimicrobial Resistance and Stewardship Initiative

This is an Infection and Antibiotic Use Tracking Tool for Companion Animal Clinics

Use this tool to understand your clinic's antibiotic use, prescribing patterns, and implement antibiotic stewardship initiatives based off tracking results.

#### ARSI Project Background

**Mission:** Provide an environment to foster discussion, exploration, and sharing of data and practices to enhance animal health and engage the veterinary profession.

- Goals:**
1. To provide high-quality and evidence-based resources and materials for practitioners and clients in companion animal medicine.
  2. To establish a comprehensive surveillance system for companion animal disease and treatment.
  3. To understand local and national antimicrobial use and resistance patterns in companion animal practice.

More information at: <https://arsi.umn.edu/>

#### About This Excel Workbook

This workbook contains the total patients, summary tables, tracking tool, and dropdown options.

**The sheets in the workbook include:**

**Data Options.** Lists the type of data expected for each column and the dropdown values that are available for non-free text columns. **Dropdown values can be tailored to your clinic's needs, so additional values can be added on the Data Options Sheet.**

**Month.** Enter patient information for the month (or time period) that you define for data recording. Each time period should be entered in its own sheet.

**Total Patients.** List the total number of patients that were seen each month or during specified time period.

**Summary Tables.** These charts and tables will help to easily visualize antibiotic prescribing. They are automatically generated as information is entered.

**Calculations (hidden).** Formula sheet that generates the Summary Tables. Do not change or edit.

**Please refer to the Instructions Document for more detailed information on proper use of this tool.**

[arsi.umn.edu/tracking](https://arsi.umn.edu/tracking)



Percentage of Patients Prescribed Antibiotics	
January	40.00
February	60.00
March	70.00
April	50.00
May	50.00
June	40.00
July	40.00
August	30.00
September	20.00
October	30.00
November	40.00
December	20.00
<b>Total</b>	<b>40.83</b>

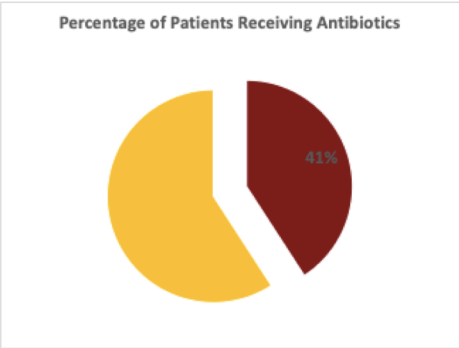


Table 1. This table calculates the percentage of total patients prescribed antibiotics using the manually entered number on the Total Patients sheet and every patient that receives a "Yes" in Patient Prescribed Antibiotic Column for each month.

Figure 1. The total percentage of antibiotic prescriptions for all the months is illustrated by the pie graph.

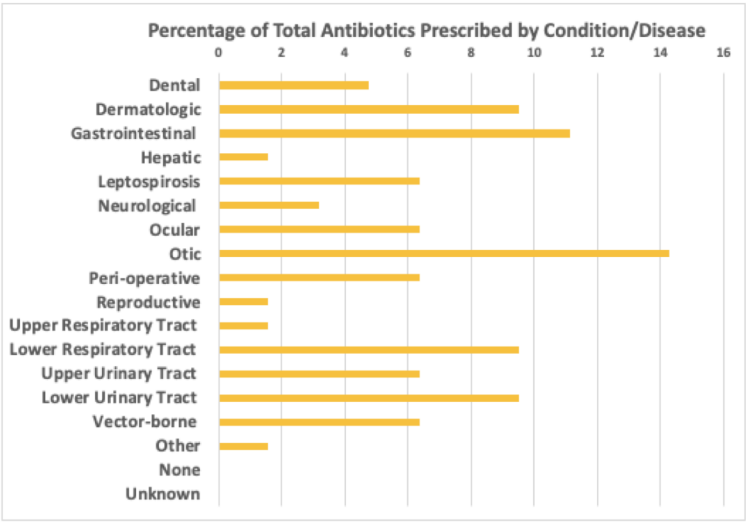
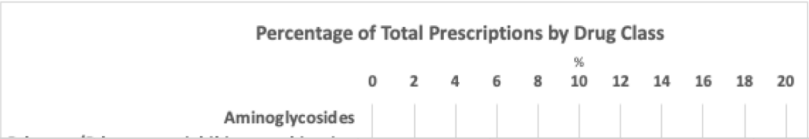
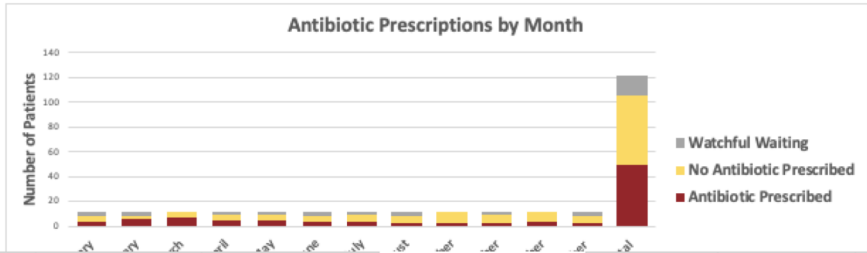


Figure 2. Use this chart to evaluate which conditions are associated with the largest percentage of antibiotic prescriptions.





# Core Principles of Antimicrobial Stewardship in Veterinary Medicine by AVMA

1. Commit to stewardship
2. Advocate for a system of care to prevent common diseases
3. Select and use antimicrobial drugs judiciously
4. Evaluate antimicrobial drug use practices



- 5. Educate and build expertise**



# Tools: Communication as an antibiotic alternative

## Antibiotic Use Talking Points for Vet Clinics

### IMPROVE COMMUNICATION AND CLIENT SATISFACTION

Antibiotics are an important part of veterinary care. However, antibiotic use is a major driver of antibiotic resistance, and antibiotic-resistant infections are a growing problem in clinical veterinary medicine. By using clear language, watchful waiting, and positive recommendations for alleviation of clinical signs, veterinarians can effectively communicate with clients when antibiotics are not needed. Because they are not without risk, antibiotics should only be used when needed. Diagnostic testing, like culture and susceptibility, is an important part of veterinary practice. As a team, discuss these and other talking points that might work in your clinic.

### Strategies and Examples for Counseling Clients

Communication Strategy	Examples
Explain why antibiotics are not needed	<p>"Your dog's diarrhea is not caused by a bacterial infection, so antibiotics will not help in this case."</p> <p>"I'm happy to tell you that you do not need an antibiotic! Your cat has an upper respiratory tract infection caused by a virus, and antibiotics won't help."</p> <p>"Cats do not usually get urinary tract infections. Straining to urinate can be caused by stress or by bladder stones, so antibiotics are not a best first choice."</p> <p><b>Tip: Did you know?</b> Clients are likely more willing to hear that antibiotics are not needed if the message is combined with information on how they can help their pet feel better. This shows that you have heard their concerns and want to help.</p>
Positive treatment recommendations	<p>"Medicated shampoo might resolve your dog's skin issues and help him feel less itchy."</p> <p>"You can make your cat feel better until this upper respiratory tract infection resolves by using appetite stimulants, warming food, and providing humidified air."</p> <p><b>Tip: Did you know?</b> Positive treatment recommendations should always be combined with explanations for why antibiotics are not needed.</p>

[arsi.umn.edu/as-resources](http://arsi.umn.edu/as-resources)

**Antibiotics and Your Pets: What You Should Know**

**TRUTH: Antibiotic-resistant bacteria are a problem in pets.**

- Antibiotics are routinely used to treat bacterial diseases.
- Antibiotic effectiveness is declining as bacteria develop resistance.
- A major driver of antibiotic resistance is the use of antibiotics when they are not needed.
- Bacterial culture and identification lab tests will help your veterinarian to treat your pet more quickly and effectively.

**TRUTH: Viral infections do not respond to antibiotics.**

- Just like in people, most "colds" are not caused by bacteria and will get better without antibiotics within 10 days.
- Talk to your veterinarian about other measures to improve your pet's comfort.
- If your pet does not get better in 10 days or stops eating, a visit to your veterinarian is needed.

**TRUTH: Cats do not commonly get urinary tract infections.**

- Urinary tract infections are uncommon in cats and very rare in young male cats.
- If your cat is exhibiting inappropriate litter box behavior, ask your veterinarian to perform tests to determine the cause of the problem.

**TRUTH: Dogs with diarrhea might not need antibiotics.**

- Many times, mild to moderate diarrhea in dogs will resolve in 3-5

**ONE HEALTH**  
MINNESOTA ANTIMIOTIC RESISTANCE COLLABORATIVE  
WORKING TOGETHER TO PROTECT HEALTH & PRESERVE ANTIMIOTICS

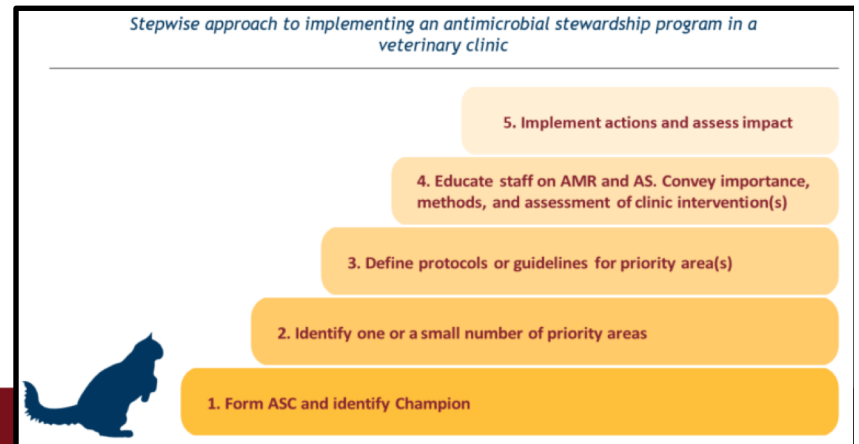
Did you know?  
Antibiotics can be life-saving, but all medications have potential side effects. Talk to your veterinarian about the risks and benefits of giving your pet antibiotics.  
Pets and people can share more than hugs. Once bacteria become resistant, they can spread in clinics and among pets and people in a home. Always wash your hands after handling pets and instruct young children to do the same.

# What can you do?

- Utilize already existing resources at [arsi.umn.edu](https://arsi.umn.edu)
  - Take a stepwise approach
  - Pick one small thing!
  - Then pick another
- Continuing education for AMR/AS
- Participate in research
  - CAVSNET enrollment
  - National PPS in 2021



[arsi.umn.edu/as-resources](https://arsi.umn.edu/as-resources)



# Thank you!

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