

ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES

Antibiotic Stewardship Principles

In the prior edition of *Montana One Health*, we discussed how antibiotic resistance is tracked and the steps federal organizations are taking to combat resistance in human and veterinary medicine. In this edition, we will discuss what clinical professionals (both human and animal) can do to prevent or minimize antibiotic resistance.

Human Health

Four main steps health care providers can take to improve antibiotic use are:

1. Follow clinical guidelines when prescribing antibiotics including: using the correct antibiotic for the infection, the correct dose, appropriate duration, and prescribing at the right time. Here is a helpful link for healthcare providers: <https://www.cdc.gov/antibiotic-use/community/for-hcp/index.html>.
2. Communicate with patients and families about when antibiotics are needed and when they are not, as well as possible adverse drug events (ADEs). At least 30% of antibiotics prescribed in the outpatient setting are deemed unnecessary, meaning no antibiotic was required; most were prescribed to treat acute respiratory conditions. About 1 out of 5 emergency department visits are due to ADEs and are the most common cause of emergency department visits in children.
3. Be aware of antibiotic resistance patterns in your facility and community. This information can help inform prescribing practices.
4. Ensure you and other health care staff adhere to hand hygiene and other infection prevention measures with every patient.

The Centers for Disease Control and Prevention (CDC) currently has a national campaign called, “Be Antibiotics Aware: Smart Use, Best Care” that helps fight antibiotic resistance and aims to improve prescribing and use. Through this campaign, challenges faced by clinicians are addressed. For example, a clinician may feel pressured to give their patients antibiotics. However, most patients will still be satisfied without antibiotics if a clinician can effectively communicate the following information. First, review the physical findings from the exam. Second, deliver a diagnosis in a way that is understood by the patient. Third, discuss if antibiotics are needed; if not, state why they are not. Fourth, discuss if a patient should seek medical care if they are not getting better. This communication is key to avoiding unnecessary antibiotic use and to provide the right quality of care.

Another way to combat antimicrobial resistance is to practice good stewardship. In Montana, the Department of Public Health and Human Services is involved with supporting the implementation of antimicrobial stewardship into acute care facilities throughout the state. One of the core elements of antimicrobial stewardship is having a multidisciplinary stewardship team. By having a multidisciplinary team, decisions about stewardship can be supported through the individuals that have a direct effect on them. The work of stewardship leaders is greatly enhanced when supported by other key groups within hospitals. Other core elements of stewardship include: accountability, drug expertise, action, tracking, reporting and education.

When moving forward to address the issue of antimicrobial resistance and what providers can do, keeping in mind the importance of appropriate use is valuable. Additionally, educating both patients and other providers about antimicrobial resistance and stewardship will lead to a coordinated, multidisciplinary approach. State, national, and international efforts are helping to track antibiotic infections and are implementing interventions to fight against antimicrobial resistance.

Animal Health

In early 2018, the American Veterinary Medical Association established Core Principles for Antimicrobial Stewardship for veterinarians that adapted language from CDC’s Core Elements of Outpatient Antibiotic Stewardship Programs. The AVMA recommends veterinarians implement one or more of these principles in their practices. The principles of the policy are:

1. Commit to stewardship
 - a. Engage practice members in stewardship efforts, develop stewardship plans that incorporate disease prevention, identify high-priority conditions to focus stewardship efforts, and assess outcomes of antibiotic therapy
2. Advocate for a system of care to prevent common diseases
 - a. Identify barriers to improving disease prevention, work with clients to adopt preventive strategies to minimize the need for antibiotic drugs, and consider antibiotic alternatives

3. Select and use antibiotic drugs judiciously
 - a. Use veterinary guidelines for judicious therapeutic use of antibiotics and assess outcomes of antibiotic use
4. Evaluate antibiotic drug use practices
 - a. Develop a program for evaluation of antibiotic prescribing, support analyzing and sharing of antibiotic use data while preserving veterinarian-client confidentiality, and engage clients in identifying barriers to

- implementation of stewardship programs
5. Educate and build expertise
 - a. Keep up-to-date on strategies for disease prevention, use of antibiotic alternatives, and provide client education on appropriate use of antibiotics

The University of Minnesota developed key points a veterinarian should consider when making antibiotic treatment decisions:

To Treat or Not to Treat	When Treatment is the Best Option
1. Does the condition necessitate treatment?	1. Which drug would be best against the condition of interest?
2. Are there other options besides antibiotic treatment?	2. What is the optimal dosage, duration of action, and route of administration for the drug of choice?
3. Will the potential drawbacks outweigh the benefits of treatment?	3. What are the host's attributes? Is the drug safe, given these?
4. What is the host species involved? Does the treatment make economic sense?	4. What are the pathogen's attributes and where is the infection located? Will the drug achieve an effective concentration at the site of infection?
5. Will the treatment work against the pathogen involved?	5. Will the use of the drug negatively impact public health?
6. Are there any risks to public health with this treatment?	6. Will the treatment be cost-effective?

Antibiotic Stewardship- Key Points

- Use antibiotics as a last possible option
- Consider non-antibiotic alternatives to prevent, control, or treat
- Ensure the condition necessitates antibiotic therapy
- If antibiotic therapy is needed, use the appropriate one for the pathogen and the site of infection, at the appropriate concentration, route of administration, and duration
- Ensure the antibiotic is not associated with significant side effects or adverse drug reactions

References available on web version. Visit <http://www.dphhs.mt.gov/publichealth/publications.shtml>.

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