

Antibiotic Stewardship in Food Animal Medicine

Presidential Advisory Council on Combating Antibiotic-
Resistant Bacteria

What is “Antibiotic Stewardship”?

“Coordinated interventions designed to improve and measure the appropriate use of [antibiotic] agents by promoting the selection of the optimal drug regimen including dosing, duration of therapy, and route of administration”

- Goals of antibiotic stewardship:
 - Improved patient outcomes
 - Reduced adverse events, including *Clostridium difficile* infection
 - Improved rates of antibiotic susceptibility to target antibiotics
 - Optimization of [financial] resources

Barlam TF, Cosgrove SE, Abbo LM, *et al.* 2016. Implementing an antibiotic stewardship program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. Clin Infect Dis: 62.

What is “Antibiotic Stewardship”?

“Effort to measure antibiotic prescribing; to improve antibiotic prescribing by clinicians and use by patients so that antibiotics are only prescribed and used when needed; to minimize misdiagnoses or delayed diagnoses leading to underuse of antibiotics; and to ensure that the right drug, dose and duration are selected”

- Goals of antibiotic stewardship:
 - Maximize the benefit of therapy
 - Minimize the harm to both individuals and communities

Sanchez GV, Fleming-Dutra KE, Roberts RM, *et al.* 2016. Core elements of outpatient antibiotic stewardship. MMWR Recomm Rep: 65.

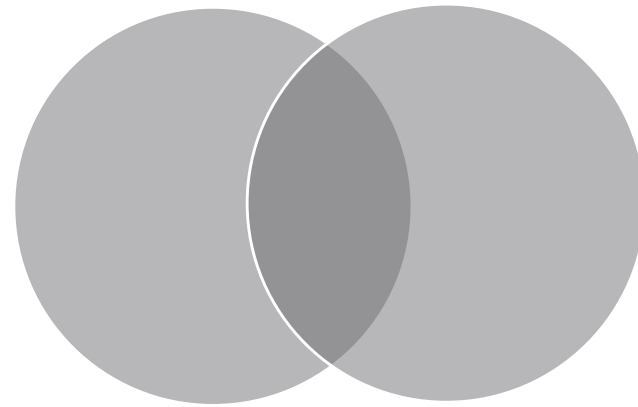
Antibiotic Stewardship in Veterinary Medicine

“Coordinated prospective interventions that minimize operation-specific disease challenges first; seek to improve patient outcomes through judicious antibiotic selection, when necessary, with a commitment to continuously evaluate the efficacy of prevention and treatment strategies.”

The goals of antibiotic stewardship in food animal medicine:

- **Improve patient outcomes**
- **Minimize harm to individuals, populations and communities**
- **Optimize financial resources**

Comparative Antibiotic Stewardship



Barlam TF, Cosgrove SE, Abbo LM, *et al.* 2016. Implementing an antibiotic stewardship program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. *Clin Infect Dis*: 62.

IDSA / SHEA Recommendations that Absolutely Apply in Food Animal Medicine

- Develop clinical practice guidelines for common infectious disease syndromes
- Develop interventions for patients with specific disease syndromes
- Antibiotic cycling is not an effective stewardship strategy
- Use of antibiotic stewardship strategies to decrease inappropriate use in [special populations]:
 - nursing facilities
 - neonatal intensive care units
 - terminally ill patients

IDSA / SHEA Recommendations that Do Not Apply in Food Animal Medicine

- Increased IV to oral conversion



https://en.wikipedia.org/wiki/File:Angry_Bull_in_Pasture.jpg

IDSA / SHEA Recommendations that Do Not Apply in Food Animal Medicine

- PK monitoring and adjustment for aminoglycosides and vancomycin
- PK/PD based alternative dosing strategies for β -lactam and vancomycin
- Implementation of allergy assessments for β -lactam sensitive patients
- Rapid diagnostic testing on blood specimens
- Use of Procalcitonin testing to decrease antibiotic use
- Use of non-culture based fungal marker testing in hematologic malignancy
- Development of clinical guidelines to manage fever & neutropenia in oncology patients
- Antimicrobial stewardship to improve antifungal therapy in immunocompromised patients
- Develop interventions designed to reduce antibiotic therapy associated with CDI

IDSA / SHEA Recommendations that Warrant Discussion in Food Animal Medicine

- Reduce antibiotic therapy to the shortest effective duration
- Measurement of antibiotic:
 - Use - by days of therapy vs. defined daily dose
 - Cost – based on prescriptions vs. purchasing data
- Use measures that consider the goals and size of the interventions
- Use of strategies to encourage routine review of antibiotic regimens
- Incorporation of clinical decision support systems into electronic health records
- Use of rapid viral testing for respiratory pathogens to reduce the use of inappropriate antibiotics

- Work with microbiology laboratories:

- Develop stratified antibiograms
- Selective / Cascaded reporting

- Preauthorization and/or prospective audit & feedback over no such interventions



Stewardship Challenges in Food Animal Medicine

Challenges to Stewardship in ~~Food Animal~~ Medicine

- Clinician perception of client expectations for antibiotics
- Perceived pressure to see patients quickly
- Clinician concerns about decreased client satisfaction when antibiotics are not prescribed

Sanchez GV, Fleming-Dutra KE, Roberts RM, *et al.* 2016. Core elements of outpatient antibiotic stewardship. MMWR Recomm Rep: 65.

Other Challenges to Stewardship in Food Animal Medicine

1. Designing antibiotic stewardship programs that apply “universally” across the variety of animal species and production systems
2. Ideal antibiotic use metric AND systems to capture the data
3. Data supporting dosing strategies that maximize clinical outcomes while minimizing antibiotic resistance development
4. Professional education that addresses the science AND the behavioral aspects of prescribing

Thank You

