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

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

“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

• Didactic education, alone, does little to change prescribing behavior
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

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

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