ANTIMICROBIAL USE AND RESISTANCE INITIATIVES OF USDA-APHIS NAHMS

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NATIONAL INSTITUTE FOR ANIMAL AGRICULTURE
NOVEMBER 2, 2016
Overview

USDA AMR Action Plan and U.S. National Action Plan (CARB)

Traditional data collection efforts

Proposed data collection initiatives
Traditional NAHMS Commodity Studies

General farm management and veterinary practices
- Based on stakeholder needs assessment
- Antimicrobial use data collected at approximately 5-year intervals

Biological sampling
- Serosurveys
- Bacterial isolation, antimicrobial susceptibility

Rotate 5-10 years, depending on species
- Cross-sectional

<table>
<thead>
<tr>
<th>Year</th>
<th>Study</th>
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<tbody>
<tr>
<td>2016</td>
<td>Equine (2015–16)</td>
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<tr>
<td></td>
<td>Goat and Kid Death Loss</td>
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<td>2017</td>
<td>Cattle and Calves Death Loss</td>
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<td>2017</td>
<td>Beef Cow-calf</td>
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<td></td>
<td>Antibiotic Use (Feedlot and Swine)</td>
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<td>2018</td>
<td>Goats</td>
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<td>2019</td>
<td>Aquaculture</td>
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Escherichia coli on U.S. Swine Sites: Prevalence and Antimicrobial Drug Susceptibility

Use Estimates of In-Feed Antimicrobials in Swine Production in the United States

At least one sample was found culture positive for E. coli on every site and in 99.3 percent of the 608 pens sampled. Additionally, 93.9 percent of the 1,719 specimens were culture positive for E. coli.

Antimicrobial susceptibility

Of the 1,614 E. coli isolates, 1,433 were tested for resistance to a panel of 14 antimicrobial drugs.2 Resistance break points used by the National Antimicrobial Resistance Monitoring System (NARMS) were used to classify isolates as susceptible, intermediate, or resistant.

Table 1 on the following page depicts the percentage of isolates resistant to the 14 antimicrobial drugs tested. Resistance to tetracycline was most common (91.2 percent of isolates). About one-third of isolates were resistant to sulfisoxazole. Less than 2 percent of isolates were resistant to amoxicillin/clavulanic acid, cefoxitin, cefotaxime, nalidixic acid, ciprofloxacin, and azithromycin.
Annual Antimicrobial Use Surveys

Request data on previous year’s antimicrobial use, focusing on feed and water uses

Stewardship

Administered under CIPSEA protection, so confidentiality of respondents is assured

USDA has no regulatory authority over use of antimicrobials
Annual Antimicrobial Use Surveys

Initial contact with operation via NASS
  ◦ Voluntary participant information provided to VS

APHIS-VS collects and controls data
  ◦ VS field veterinarian visits operation/site
  ◦ Works with producers to collect appropriate data
  ◦ Personal information removed
  ◦ NAHMS: data entry, validation, analysis, reporting
Longitudinal Antimicrobial Use and Resistance Studies

- Repeated data collection on farms over longer period can help measure effectiveness of policies and interventions

- Coupled with other data, such as those from slaughter plants and retail meat, can evaluate microbial and gene flow in food production system and the influence of on-farm antimicrobial use on bacterial susceptibility