



United States Department of Agriculture

# 2012 Stakeholder Workshop

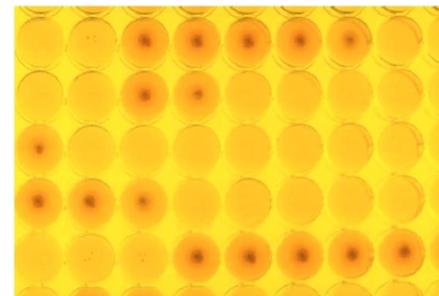
- “ Research
- “ Surveillance
- “ Outreach/education



**Antibiotic Resistance Workshop  
Executive Summary**

George Washington Carver Center  
Beltsville, Maryland

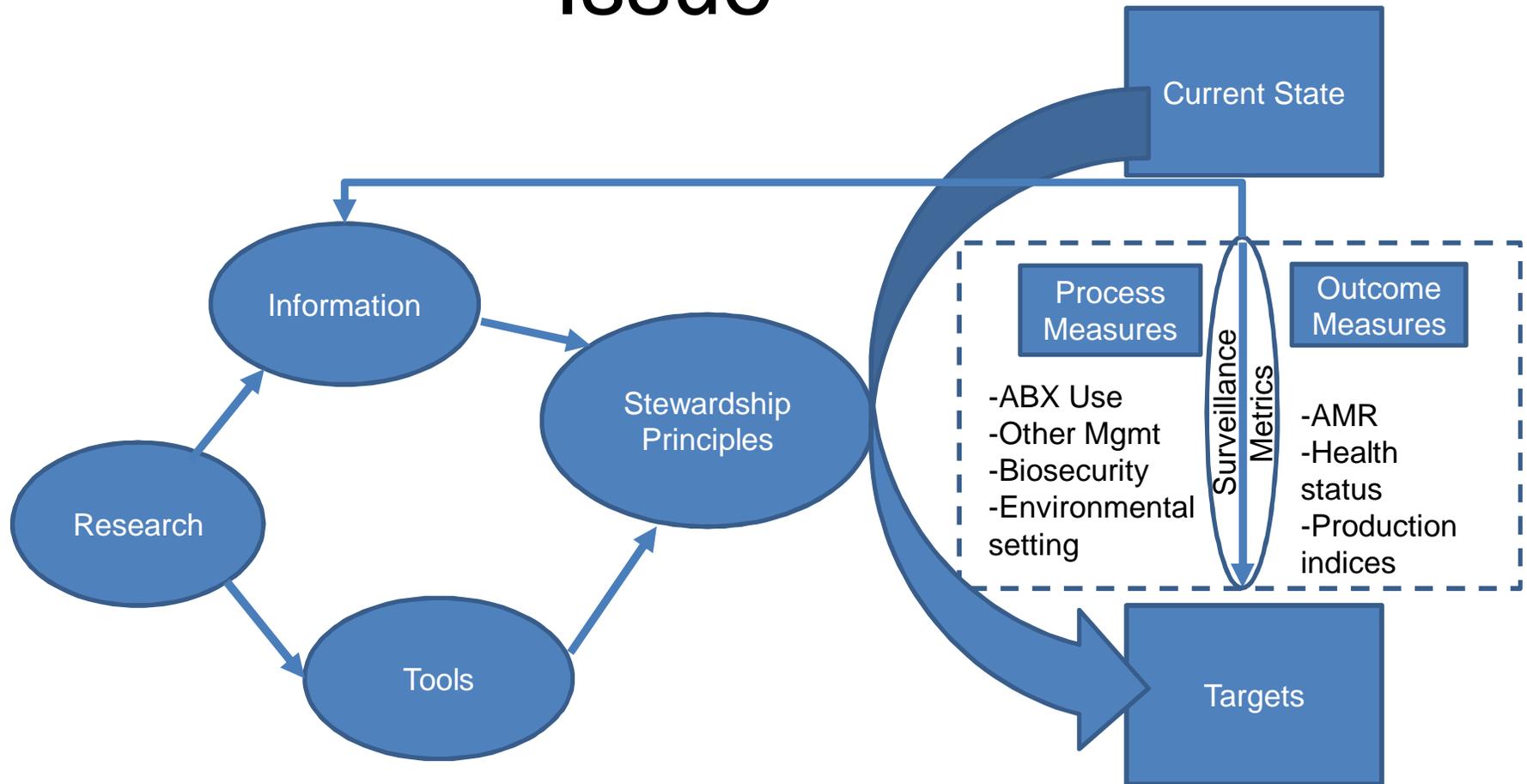
May 15–17, 2012



# Addressing the AMR Issue

- “ **Stewardship** is an ethic that embodies the responsible planning and management of resources
- “ Stewardship is the means to effect change
- “ Stewardship is empowered by
  - . Research
    - “ Technology
    - “ Data to understand ecology
  - . Surveillance
  - . Outreach/education

# Strategy to Address the AMR Issue





# Mission Areas for USDA Agencies

- “ Research
  - . National Institute for Food and Agriculture (NIFA)
  - . Agricultural Research Service (ARS)
  - . Economic Research Service (ERS)
- “ Surveillance
  - . Animal and Plant Health Inspection Service (APHIS)
  - . Food Safety and Inspection Service (FSIS)
- “ Education/Outreach
  - . NIFA
  - . National Agricultural Statistics Service (NASS)

# APHISqRole

*“ To protect the health and value of American agriculture and natural resources.*

- . Surveillance for disease control and monitoring
- . Regulatory approval for vaccines and diagnostics



# Historical and Current APHIS Activity Related to AMR Surveillance

- “ National Animal Health Monitoring System (NAHMS) Surveys
  - . Periodic
  - . National in scope
  - . Questionnaires and biological sample collection
  - . Animal health and management
  - . Participation is voluntary
  - . Responses are confidential
  - . Statistically based for population estimation



# National Study Rotation Plan

<b>Year</b>	<b>Commodity</b>
1990, 1995, 2000, 2006, 2012	Swine
1992, 1996, 2002, 2007, 2011, 2014	Dairy
1993, 1997, 2007-08	Beef cow/calf
1998, 2005, 2015	Equine
1994, 1999, 2011	Beef feedlot
1996, 2001, 2011	Sheep
1997, 2003, 2010	Aquaculture
1999, 2004, 2010, 2013	Poultry
2009	Goats
2014	Cervids
2014	Bison
2017	Stocker cattle



# Limitations of NAHMS Data and Sample Collections

- “ Cross-sectional . difficult to assess cause/effect
- “ Periodic . not timely
- “ Limited depth of data collection



## APHIS

## Info Sheet

Veterinary Services  
Center for Epidemiology and Animal Health

April 2015

### Proposed Initiatives from the USDA Antimicrobial Resistance Action Plan

In December 2014, the U.S. Department of Agriculture (USDA) released an Antimicrobial Resistance Action Plan to guide future activities related to antimicrobial resistance (AMR). The Action Plan outlines USDA's current activities and proposes a comprehensive, integrated approach for future activities that includes surveillance; research and development; and education, extension, and outreach. This info sheet briefly describes initiatives proposed in the USDA's Antimicrobial Resistance Action Plan that the USDA's Animal and Plant Health Inspection Service's (APHIS) National Animal Health Monitoring System (NAHMS) might be involved in and provides a tentative timetable for implementing the proposed initiatives.

#### Background

Antimicrobial resistance is one of the most serious threats to the health of animals and humans worldwide. As such, everyone has a shared responsibility to limit the impact of AMR. Antimicrobial resistance is a multifaceted issue that requires a One Health<sup>1</sup> approach, which recognizes that the health of animals and humans is irrevocably linked and closely connected to the

knowledge of the management practices and technologies associated with animal health, welfare, productivity, and food safety. As such, the USDA is uniquely positioned to contribute to the body of scientific knowledge about AMR and the role of antimicrobial use and other factors that play a part in the health of livestock.

For nearly two decades, the USDA has actively conducted surveillance, basic and applied research, and education and outreach programs related to AMR. Through these efforts, effective mitigation strategies for AMR were developed, and animal producers were advised on how to implement these strategies. The USDA's AMR activities have made important contributions to better understanding the role of animal management in AMR and to reducing its development and spread of AMR. Considerable work remains, however, and there is a growing sense of urgency throughout the world to address the AMR issue.

#### Proposed initiatives

The Action Plan proposes several initiatives that would enable USDA to address recognized knowledge gaps in AMR and develop effective, practical mitigation

Study type	Proposed initiative	Primary purpose	Description	Strengths	Weaknesses
Longitudinal studies	On-farm longitudinal studies	Assess relationships between antibiotic use (and other factors) and the development of resistance in zoonotic pathogens and commensals on farms.	Studies of this type would entail collecting antibiotic-use data and biological samples from feedlots, broiler/turkey operations, and swine operations that volunteer to participate over time (expanding to other commodities eventually). Operations could submit data/samples multiple times per year. Salmonella, Campylobacter, Enterococcus, and E. coli isolated from samples collected on-farm could be tested for AMR.	These studies can assess relationships between antibiotic use, AMR patterns, and management practices on farms over time. Data would be protected from Freedom of Information Act (FOIA) requests.	Due to cost limitations, the number of operations would likely be insufficient to provide national or regional population estimates.
	Collation of AMR data from veterinary diagnostic laboratories	Monitor AMR profiles in animal pathogens.	Veterinary diagnostic laboratories perform AMR testing on samples from clinically ill animals, but these data are rarely collated and reported across multiple labs. A centralized database would allow for collating AMR data across labs. These data could help monitor the continued usefulness of antibiotics against animal pathogens.	These data could help inform producers and veterinarians when making treatment decisions.	These data would represent sick animals, sometimes ones that have already been treated with antibiotics.
National cross-sectional studies	Annual Antibiotic Use Survey	Provide annual national estimates of antibiotic use in feed or water for feedlot cattle, broilers, swine, and, potentially, turkeys.	Questions could be added to existing and proposed NASS surveys. Participation would be voluntary, and data would be protected from FOIA. This could allow for monitoring trends in antibiotic use for feedlot cattle, broilers, swine, and, potentially, turkeys. This could also provide one metric to assess changes in antibiotic-use practices before and after finalization of the Food and Drug Administration (FDA) Guidance for Industry (GFI) #213 and the Veterinary Feed Directive (VFD).	National annual estimates of antibiotic use in feed or water in livestock and poultry are currently unavailable in the U.S. National estimates are needed to assess effects of FDA policy changes.	Estimates would likely be limited in terms of providing percent of animals treated and percent of operations using products, not total kg used or animal daily doses.
	Enhancements to ERS surveys	Assess effects of FDA GFI #213 and VFD Rule on costs, productivity, and production practices.	Questions could be added to ERS Agricultural Resource Management Surveys (ARMS) to investigate the impact of losing medically important antibiotics for growth promotion on outputs and production costs at the farm level.	Could allow economic impacts at the farm level of FDA-GFI #213 to be assessed.	This information would likely be limited to swine and broilers.
	Analysis of Retrospective Data from Past NAHMS Studies	Provide more in-depth analyses of NAHMS data already collected.	Additional analyses could be done on existing NAHMS data. For example, antibiotic-use practices could be broken out by percentage of operations using antibiotics that will be affected by FDA-GFI #213.	More fully utilize existing data to meet current information needs.	NAHMS lacks personnel to perform this analysis.
	Enhancements to NAHMS studies	Provide national estimates of antibiotic-use practices on various types of U.S. livestock and poultry operations.	Questions could be added to NAHMS surveys to provide additional information on antibiotic-use practices. In addition, a sufficient number of operations could be sampled and tested for the presence of zoonotic pathogens (e.g., Salmonella, Campylobacter) and commensals (e.g., Enterococcus, E. coli) to provide national, population-based estimates on prevalence and antimicrobial resistance in these organisms.	NAHMS studies provide national, population-based estimates from survey data.	NAHMS studies are conducted every 5-7 years for each commodity. NAHMS studies do not collect information on quantities of antibiotics used.
Targeted studies	As-needed epidemiological investigations	Enable the investigation of clusters of AMR pathogens identified through NAHMS studies or FSIS sampling.	USDA could collaborate with producers, slaughter plants, and public health officials to conduct voluntary on-farm and/or in-plant biological sampling and complete surveys regarding antimicrobial-use and management practices to determine the source of pathogens and identify mitigation strategies.	There is currently no mechanism within the USDA for conducting as-needed investigations into clusters of AMR pathogens.	Would be a nonregulatory activity performed at the request of producers and slaughter plants.
	Focused NAHMS studies	Provide an opportunity to conduct limited-scope NAHMS studies outside of its planned study rotation.	NAHMS studies are typically conducted every 5-7 years for each major U.S. livestock species. These proposed limited-scope studies could focus on specific, critical issues related to AMR or antibiotic use for the commodity of interest, before the next scheduled NAHMS study.	These limited-scope NAHMS studies would provide timely national estimates without placing an undue burden on respondents.	Resources and costs would be similar to NAHMS studies but would not provide the same breadth of information.
Proprietary data	This was not a proposed initiative in the USDA AMR Action Plan	Serve as an alternative source of data on national estimates of antibiotic use in livestock and poultry operations.	For large companies raising feedlot cattle, poultry, or swine, acquiring proprietary data (e.g., export from databases) may be an easier method of obtaining data on antibiotic use than using a questionnaire. This could complement NASS surveys for smaller operations to obtain national estimates of antibiotic use in feed for feedlot cattle, broilers, swine, and, potentially, turkeys.	Data would remain confidential and protected from FOIA requests due to NAHMS statistical unit status within USDA.	Not all companies may want to share proprietary data, even with the assurance of protection from FOIA requests.



# Where to from here?

- “ Stakeholder engagement to define
  - . Needs
  - . Feasible options
- “ Identify needed funding and resources
- “ Implementation
- “ Reporting
- “ Review status/needs



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# Questions?



<http://www.aphis.usda.gov/nahms>

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