

Meeting Summary



Multisector Collaboration— “One Health” Approach to Addressing Antibiotic Resistance

Nov. 5, 2015

The One Health concept recognizes that the health of humans is connected to the health of animals and the environment. ASTHO, with support from CDC, convened an invitational session, “Multisector Collaboration—One Health Approach to Addressing Antibiotic Resistance,” to explore collaborative actions public health and agriculture partners can take to address the issue of antibiotic resistance. The meeting also continued the discussion from the National Institute of Animal Agriculture’s (NIAA) annual Antibiotics Symposium to examine next steps for states to collect and analyze data and develop metrics.

State Roles in Addressing Antibiotic Resistance

At the NIAA Symposium, Tom Chapel, chief evaluation officer, CDC, presented a logic model that draws from the National Action Plan for Combating Antibiotic-Resistant Bacteria, as well as previous NIAA Symposium discussions. Participants had the opportunity to further discuss the logic model in small groups at the ASTHO meeting and to provide input on which activities and outcomes would most benefit from state involvement.

For states, participants identified roles in activities related to stewardship and surveillance, which can support National Action Plan Goal 1 (Slow the Emergence of Resistant Bacteria and Prevent the Spread of Resistant Infections) and Goal 2 (Strengthen National One Health Surveillance Efforts to Combat Resistance). For example, participants identified a state role in the activity labelled “identify and educate on best stewardship practices.” If this work is done collaboratively with public health and agriculture partners, it can lead to the outcomes of “strong antibiotic stewardship in human healthcare” and “strong antibiotic stewardship and veterinary oversight in food production and animal husbandry.”

There is also a state-level role in integrated, One Health surveillance; participants indicated that analyzing and interpreting surveillance data could benefit from public health expertise. Participants concluded that information sharing between state public health labs and veterinary labs could be improved. A minimum data set might be created to share data between settings and track the movement of resistance to target interventions.

States can also have a role in the activity labelled “mobilize, advocate, and engage across sectors” to lead to the outcome of “more regional cross-sectoral cooperation.” Participants noted that public health engages in activities, such as outreach and education to the public, with the goal of changing public perception of antibiotics. There is sometimes a disconnect between public perception and science-based information (e.g., fluoridation, pasteurization); the state role in public outreach has the capacity to affect public perception of the importance of antibiotic resistance and judicious use.

State-level One Health Approach to Addressing Antibiotic Resistance

One meeting objective was to explore next steps for joint leadership and collaboration among public health and agriculture at the state level to address antibiotic resistance. One Health is a strategically important concept for moving this work forward, and a state-level One Health Committee can coordinate a multisector approach. Ideally, a One Health Committee would have a dedicated, funded leader.

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Funding

While states may not currently receive dedicated funding for One Health coordination and activities, they can map One Health concepts to relevant funding sources to identify potential small amounts of seed funding. Potential funding sources identified by the group include CDC's Epidemiology and Laboratory Capacity cooperative agreement, CDC's Public Health Emergency Preparedness cooperative agreement, FEMA grants, USDA funding, or Preventive Health and Health Services block grants. State public health and agriculture departments can also partner on One Health activities with external groups that are receiving relevant funding, such as hospital associations or quality improvement organizations.

Engaging Partners

Several states provided examples of past or ongoing work to engage relevant partners in One Health efforts, either specifically around antibiotic resistance or more broadly. Two examples are highlighted below.

Tennessee previously received funding from CDC's Get Smart on the Farm initiative and used it to support the Tennessee Team on Antimicrobial Resistance. Partners included the state veterinarian, state public health veterinarian, Tennessee Cattlemen's Association, University of Tennessee College of Veterinary Medicine, and the cooperative extension program. The team worked with the USDA National Agricultural Statistics Service to survey beef cattlemen, support changes to the Beef Quality Assurance program, and present on stewardship to partners. If continued funding had been available, the next step would have been a survey to assess knowledge. This work was successful due to partnerships based on trust.

Georgia has convened a group to develop a plan in case highly pathogenic avian influenza afflicts the state. The Georgia Departments of Public Health and Agriculture are involved, along with other partners such as USDA, Georgia Poultry Laboratory Network, University of Georgia College of Veterinary Medicine, Cooperative Extension Service, Georgia Poultry Federation, and poultry industry partners. This group could possibly transition to discuss antibiotic resistance and stewardship. They also engage in multi-agency collaboration and planning around potential bioterrorism or large-scale zoonotic disease events (related to BioWatch). Georgia has found it can be difficult to keep this cross-sectoral work moving, and that such efforts would benefit from having one dedicated position to work between the departments of public health and agriculture.

Throughout the discussion, meeting participants raised other partners to include in a state's One Health collaborative efforts to address antibiotic resistance, including:

- One Health Commission
- Farm Foundation
- Farm Bureau
- Beef Council
- Cooperative extension
- Medical or veterinary students
- Environmental Health
- Association of Public Health Laboratories

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In addition, participants suggested engaging state veterinarians and HAI coordinators to identify other relevant partners.

Data Collection and Analysis – Antibiotic Use and Resistance

The group discussed considerations and priorities for collecting and analyzing data. Data collection requires resources, so it is important to ensure the antibiotic use and resistance data collected can be used to inform action. Data can be used to evaluate the effects of federal guidance or state initiatives to ensure they are being adopted as intended, to provide greater transparency regarding antibiotic use practices in food-producing animals, and to inform understanding of how antibiotic use practices may be associated with resistance.

Needs

- Baseline data and information on normal variability to determine trends in resistance.
 - e.g., for animal populations, data on the proportion of isolates resistant/susceptible from different animal commodities at different stages
- Information on indications for antibiotics given to animal populations.
- Standardized way to compare resistance across human and animal populations – demographics, minimum inhibitory concentrations (MICs).
- Data sharing across human and animal settings.
- Understanding of how antibiotic resistance is transmitted in the environment.

Data Sources

- FDA and CDC have released extensive information publically through the National Antimicrobial Resistance Monitoring System (NARMS) that can be used to identify trends – but that data is not timely.
- Veterinary Feed Directives (VFDs) could be a potential source of use and indication information. VFDs are managed by veterinary boards and can be paper or electronic.
- Specific information is included on sample submission forms for veterinary laboratory analysis.
- The requirements under the new California law present an opportunity to collect baseline data and perhaps pilot concepts to see impact.

State Example – California Law on Antibiotic Use in Livestock

California recently passed a law ([SB27](#)) that codifies [FDA Guidance for Industry #213](#) and provides additional context and requirements, such as defining allowable prevention uses of medically important antibiotics for livestock. It requires the California Department of Food and Agriculture (CDFA), in consultation with partners, to develop antimicrobial stewardship guidelines and best management practices and to gather information on drug sales and usage, resistance data, and livestock management practice data.

CDFA is currently determining implementation strategies and actions and sees a role for meeting participants to help inform implementation planning. It sees a strong opportunity to learn from stewardship efforts in human settings. CDFA also plans to ensure the information it collects is useful to producers so the producers have incentive to share data and make progress. The department plans to work collaboratively with producers to enhance transparency so the producers' stewardship efforts are shared with the public.

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State Example – Washington State One Health Surveillance

Washington State's One Health Surveillance and Data Systems Workgroup is looking at integrating antibiotic resistance data. It is working to collect information from various data sources, but access can be complicated. The workgroup is trying to access and compile state-level data collected through NARMS (animal isolates through USDA, retail meat through FDA, and human isolates through CDC). It also will collect data on companion animals from the Washington Animal Disease Diagnostic Laboratory and private labs. The workgroup's initial focus will be on *E. coli*, but it intends to also collect data on *Campylobacter*, *Salmonella*, and MRSA. It plans to look at resistance across the state and similarities and differences across categories to gauge where to focus efforts.

Analyze Use and Resistance Together

To truly inform and evaluate action, the health community needs to analyze antibiotic use and resistance data together to see the impact of use on resistance. However, this is an extremely complex issue and there is not an ecologic model to map out the relationships between use and resistance. Changes in antibiotic use practices may prompt a shift from one type of resistance to another. Any data would take a long time to collect and would require funding (e.g., through academic research projects).

Some suggestions for looking at use and resistance together include:

- Connecting antibiotic use patterns with identified resistance in the same geographic area.
- Linking pathogenic bacteria and antibiotic residues identified in processed meat at one source.
- Examining what is found in the environment (e.g., in wastewater).

Stewardship Metrics

Meeting participants discussed metrics for stewardship and judicious use in human and animal populations. One metric participants identified that would be particularly useful for tracking public health efforts to address antimicrobial stewardship involves assessing how many facilities or producers in a state have implemented core elements of a stewardship program. CDC has developed core elements for hospitals and long-term care facilities, and there are guidelines and quality assurance programs for stewardship for different animal commodities.

Tools

Meeting participants brainstormed tools that are needed and that ASTHO can help develop or support, including:

- Messaging/educational tools: how to communicate the One Health concept as it relates to antibiotic resistance and determine if there can be a common One Health messaging platform, with tweaks to target to specific audiences.
- Discussion board or group to share information, e.g., community of practice, learning collaborative.
- Information from the veterinary side "adapted" or "translated" for public health.
- Policy options or framework that include considerations from public health and agriculture.

Next Steps

ASTHO will continue to engage meeting participants, share best or promising practices, and develop tools to further this work. Additional information on ASTHO's antimicrobial resistance activities may be found on [ASTHO's antimicrobial resistance website](#).

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