

The Role of Academic Veterinary Medicine in Combating Antimicrobial Resistance

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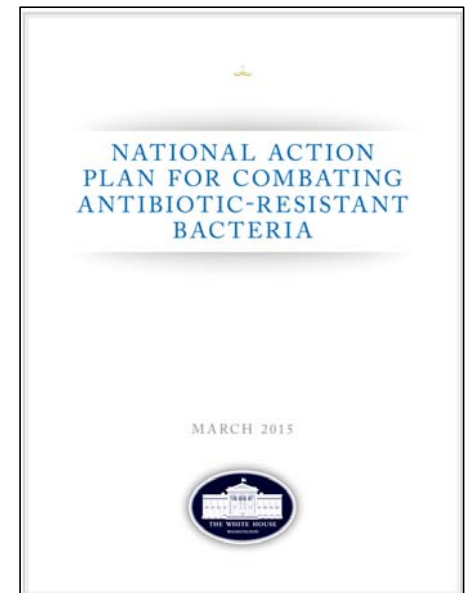
PACCARB Public Meeting
Washington, DC
May 3, 2017

One Health Approach

- Global Health Security Agenda
 - Human, animal, agricultural, food, environmental aspects – One Health approach
- WHO Global Action Plan
 - Whole-of-Society, One Health Approach
- National Action Plan
 - Strengthen national One Health surveillance efforts to combat resistance



Global Health Security Agenda





AAVMC- APLU Task Force

- 49 Veterinary Medical Colleges accredited by AVMA-COE
 - 30 in the United States
 - 5 in Canada
 - 6 in Europe
 - 5 in Australia and New Zealand
 - 3 in Mexico and the Caribbean
- Key mission areas
 - Education
 - Research
 - One Health



The member institutions of the Association of American Veterinary Medical Colleges promote and protect the health and well being of people, animals and the environment by advancing the profession of veterinary medicine and preparing new generations of veterinarians to meet the evolving needs of a changing world.



AAVMC- APLU Task Force

- North America's oldest higher education association (1887)
- Represents 237 public universities
 - All 50 U.S. states
 - Canada, Mexico
- APLU member institutions annually:
 - Enroll 6.1 M undergraduate and graduate students
 - Award 1.1 M degrees
 - Employ 1.3 M faculty and staff
 - Conduct \$41 B in university based research



Focused on increasing degree completion and academic success, advancing scientific research, and expanding engagement, APLU undertakes a wide array of projects and initiatives along with its members while providing a forum for public higher education leaders to work collaboratively to better meet the challenges and opportunities facing public universities.



AAVMC- APLU Task Force

- Agriculture and Veterinary Medical Colleges
 - U.S., Canada, Mexico
- American Veterinary Medical Association
- Government
 - CDC, FDA, USDA
- Industry
 - Animal Health Institute
 - National Cattlemen's Beef Association
 - National Chicken Council
 - Pork Producers Council



**National Cattlemen's
Beef Association**





AAVMC- APLU Task Force

Charge to the Task Force

- Propose recommendations and activities for academic institutions related to production agriculture
 - Education
 - Research
 - Stewardship
- Advise and assist government agencies and the Interagency Task Force on Combating Antimicrobial Resistant Bacteria (CARB)

Addressing Antibiotic Resistance

A REPORT FROM THE JOINT APLU | AAVMC TASK FORCE
ON ANTIBIOTIC RESISTANCE IN PRODUCTION AGRICULTURE





Education and Outreach

- Determine core competencies for diverse group of learners and audiences
- Design and implement a model curriculum for students at all levels
 - Vocational, undergraduate, graduate, professional
 - Continuing education for veterinarians, producers
 - Case studies and inter-professional education
- Distribute widely
 - On-line, active learning network
 - Train-the-trainer packages



AAVMC / APLU National Action Plan to Address Antibiotic Resistance
Antimicrobial Resistance Core Competencies Working Group

»» AMR LEARNING OUTCOMES



ANTIMICROBIAL STEWARDSHIP

	Developmental Level		
	Novice (4H/FFA/Youth)	Developing (animal science undergraduate or graduate)	Advanced (veterinary medical students)
Definition	Define antimicrobial drug stewardship	Define antimicrobial drug stewardship	Define antimicrobial drug stewardship
Societal resource	Recognize that there is increasing societal concern about bacterial resistance to antimicrobials and potential reduction or loss of effectiveness	Recognize that there is increasing societal concern about bacterial resistance to antimicrobials and potential reduction or loss of effectiveness. Cite examples of antimicrobial stewardship that might be helpful	Describe specific examples of resistance in pathogenic and non-pathogenic bacteria that are commonly found in a specific animal species and in important human pathogens
Common uses of antimicrobial drugs	Identify common situations in which antimicrobials are needed to address animal health and welfare and minimize suffering	Recognize that there are common situations in which antimicrobials are needed to address animal health and welfare and minimize suffering and those in which antimicrobial drugs will not make a difference	Distinguish common or important situations in which antimicrobials are needed to address animal health and welfare and minimize suffering, and those in which antimicrobial drugs will not make a difference
Complexity of bacterial infections	Recognize that infectious diseases can be caused by a variety of microorganisms, and that disease risks can vary among different animals	Recognize that infectious diseases can be caused by a variety of microorganisms, and describe how disease risks can vary among different animals	Describe the epidemiology and pathogenesis of the most common and the most significant bacterial disease challenges in major domestic species of animals; describe the organism or patient factors that may impact treatment options
Need for antimicrobial drugs	Recognize that there may be a need to use antimicrobial drugs in cases of infectious disease where subsequent health and life or lives of animals are threatened	Recognize that there is a need to use antimicrobial drugs in cases of infectious disease where subsequent health and life or lives of animals are threatened, and understand that antimicrobial drugs may not be required	Explain to animal owner or manager why an antimicrobial drug is or isn't recommended based upon the perceived need and benefit to the animal, including differentiating an infection requiring treatment and a contaminant not requiring treatment



Education and Outreach

- Develop key messages and communication strategy
 - Producers and veterinarians
 - FDA Veterinary Feed Directive and other guidance
 - Disease prevention strategies
 - Antimicrobial stewardship
 - Agriculture youth groups
 - 4-H, FFA
 - General public

Antimicrobial resistance: Public policy implications

Hellen Gelband

March 23, 2017

Antimicrobial Resistance and One Health



Antimicrobial Resistance and One Health: Educational Needs



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VETERINARY MEDICINE TEACHING
and RESEARCH CENTER

Antimicrobial Resistance and One Health: Research Needs



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Basic Research

- Host immune response function
- Transfer of resistance across species and in the environment
- Metagenomic data analysis to determine baseline values and variability estimates
- New antibiotics and alternative products



Studies and Methodology

- Evaluate the impact of eliminating antibiotics for growth promotion
 - Incidence of disease, animal welfare
 - Changes in resistance patterns
- Develop models and metrics to predict attributable risk to human health
- Evaluate stewardship programs and assess best practices to reduce antibiotic usage
- Characterize incentives and motivations for antibiotic use across agricultural systems

