

# One Health and the Idaho One Health Consortium

IMA Annual Meeting  
Sun Valley, Idaho



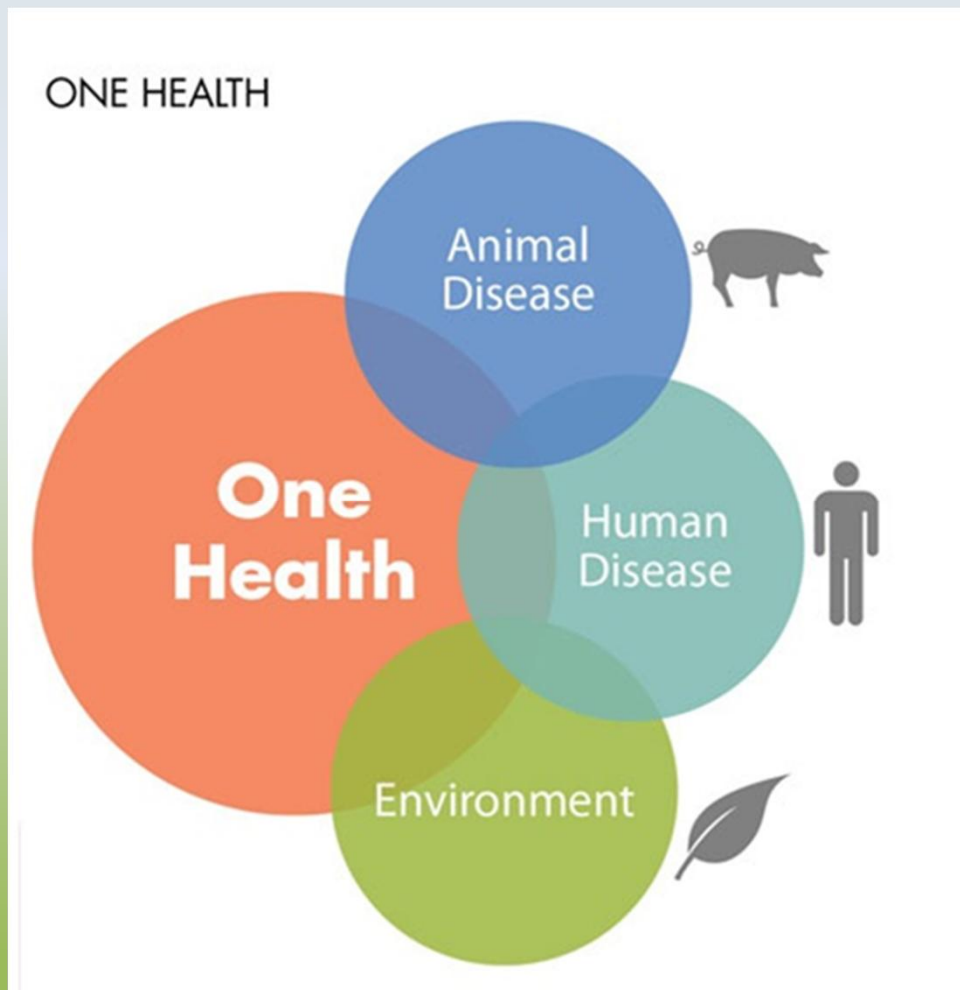
Leslie Tengelsen, PhD, DVM  
State Public Health Veterinarian  
Chair, Idaho One Health Consortium  
Division of Public Health  
Idaho Department of Health and Welfare

# Goals

- Define One Health
- Discuss 3 Hot Topics in One Health
  - Emerging pathogens, challenges associated with climate change
  - Food safety and security
  - Antimicrobial stewardship
- Describe what's happening in Idaho
  - One Health Consortium
    - Areas of focus
    - Call to action

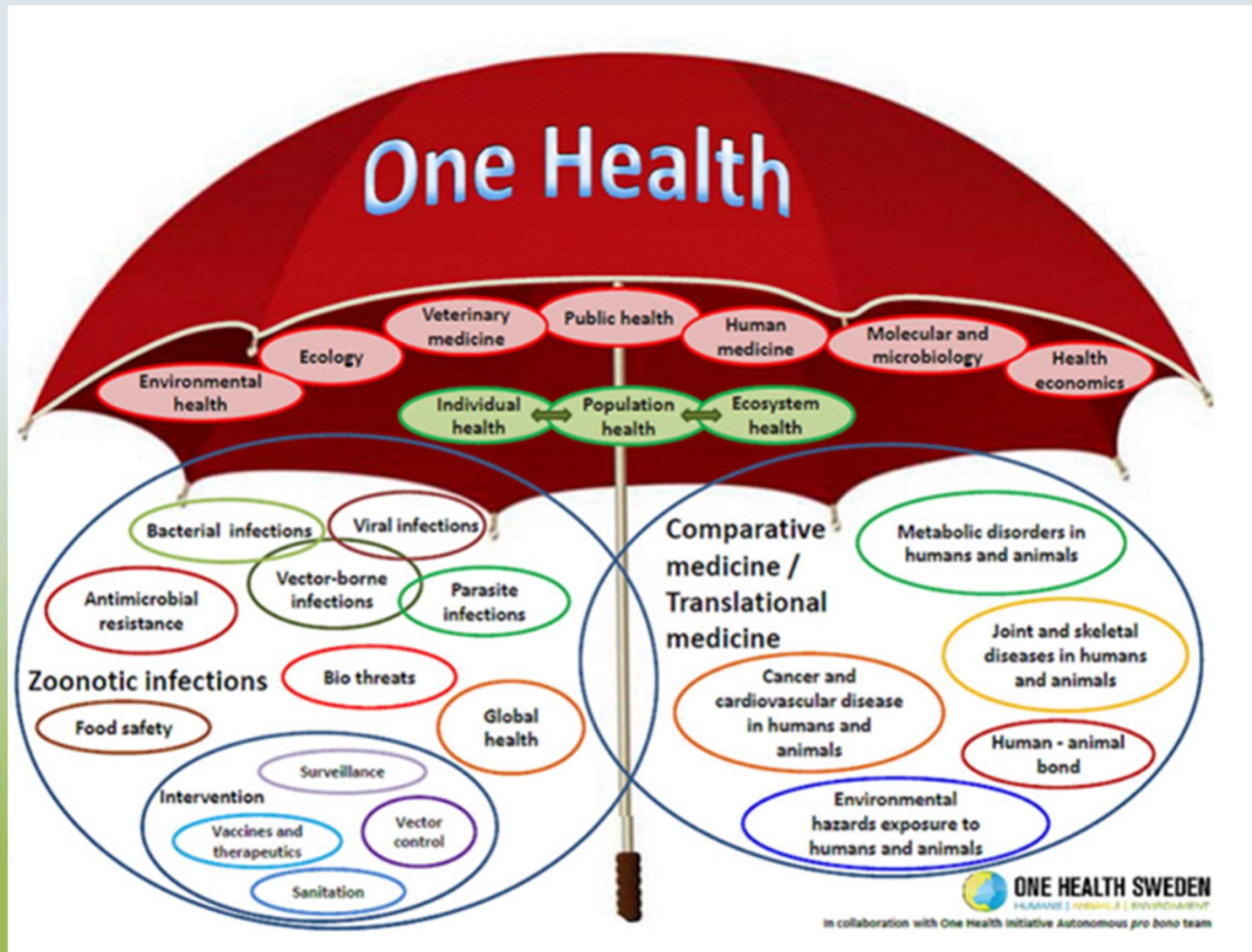
## ONE HEALTH

“One Health seeks to promote, improve, and defend the health and well being of all species by enhancing cooperation and collaboration between physicians, veterinarians, other scientific health and environmental professionals”



<http://www.onehealthinitiative.com/>

7/30/2016



# One Health/One Medicine Origins

- Hippocrates recognized that environmental factors can impact human health in his 400 B.C. text "On Airs, Waters, and Places" where he discussed the likelihood of a causal connection between a place, including its climate, season, water, and food, and the people "born into it".
- German physician and pathologist Rudolf Virchow coined the then unpopular term "zoonosis" in the mid-1800s, stating "...between animal and human medicine there are no dividing lines – nor should there be".
- In 1947, veterinarian James H. Steele furthered the concept in the U.S. by establishing the field of veterinary public health at the CDC.
- The phrase "One Medicine" was developed and promoted by Calvin W. Schwabe, a veterinary epidemiologist and parasitologist, in his 1984 textbook "Veterinary Medicine and Human Health".

# One Health Goes Mainstream

- 2007-2008: AVMA and AMA both passed resolutions to bring human and animal medicine communities together, recognizing the important One Health contributions of both disciplines.
- Joined with APHA to create the One Health Commission (OHC).
  - To improve health outcomes and well-being of humans, animals and plants and to promote environmental resilience through a collaborative, global One Health approach.
- Sounds good...now what?
- OHC created the One Health Initiative Task Force.
  - Created recommendations for advancing and realizing the One Health concept.





## One Health Goals

1. *Connect* - One Health Stakeholders
2. *Create* - Strategic Networks / Partnerships
3. *Educate* – Professionals and the public about One Health issues to support a paradigm shift in information sharing, active health interventions, collaborations, and demonstration projects

## Desired Outcomes Across Disciplines

1. Increased Interdisciplinary Programs / Teams
2. Increased Information Sharing / Networking
3. Improved Disease Prevention / Interventions
4. Improved Approaches to Therapy
5. Improved Public Health
6. Improved Environmental and Plant Health
7. More focused research on One Health issues





Over 1000 Member Organizations / Institutions financially support the One Health Commission's work to 'Connect, Create, Educate'

<https://www.onehealthcommission.org/>





- In 2008 the One Health Initiative, not to be confused with the One Health Initiative Task Force of the OHC, formed.
- Pro bono group, 5 individuals (MDs, DVMs, PhD)
- Created a One Health news feed which serves as a global repository for all news and information pertaining to One Health. (NYT of OH topics)
- Collaborate with the OHC

<http://onehealthinitiative.com/about.php>

# Realization of concept is slow-going, but gaining traction!

## Many federal agencies have created One Health Offices and Missions

CDC Home  
**CDC** Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Division of High-Consequence Pathogens and Pathology (DHCPP)

**DHCPP**  
About DHCPP  
Office of the Director  
One Health Office  
► **Mission Statement**  
Prion and Public Health Office  
Bacterial Special Pathogens Branch  
Chronic Viral Diseases Branch  
Infectious Diseases Pathology Branch  
Poxvirus and Rabies Branch  
Viral Special Pathogens Branch  
Feature Stories  
Diseases and Specialty Areas

[NCEZID > DHCPP > One Health Office](#)

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**One Health Office (OHO) Mission Statement**

The mission of the One Health Office is to facilitate, sponsor and coordinate research activities that seek to attain optimal health for people and animals through an integrated approach considering the interrelatedness among humans, animals, and the environment. In carrying out its mission, OHO:

1. Serves as the agency focal point and provides the programmatic home for One Health Activities;
2. Builds and organizes a portfolio of One Health activities, plans, and accomplishes the efforts to promote and accomplish the activities through NCEZID and partnerships;
3. Builds partnerships and facilitates collaboration both within and external to CDC;
4. Manages and allocates NCEZID extra-budgetary resources from DOS/USAID, DOD/BTEP, NCEH/Climate Change, and others as appropriate;
5. Facilitates the exchange of information and enhances communication across disciplines by sponsoring visiting scientists and fellows, lectures, and meetings.



## Veterinary Services 2015 Project

### One Health Strategic Direction



# State-based One Health Efforts

- One Health groups established in most states
  - Multidisciplinary approach to local issues
- Difficult to step outside of our silos!
- Regional efforts
  - Enhancing multi-species surveillance and data systems
  - Addressing antimicrobial stewardship
  - *Coccidioides immitis* workgroup
  - School for Global Animal Health (WSU), UW and Universidade Federal de Viçosa (UFV), Brazil, developing collaborative ONE HEALTH research and training programs.
- In 9/2015 the Idaho One Health Consortium was established to examine One Health issues in Idaho!



<http://globalhealth.wsu.edu/newsletter/the-allen-school-update/archives/jan-feb-2014>



The background of the slide is a modified version of Leonardo da Vinci's Vitruvian Man. The man is inscribed within a circle and a square. A dog skeleton is superimposed on the lower half of the man's body, with its head near the man's waist and its legs extending to the bottom of the circle. The dog skeleton is facing left.

# Hot Topics in One Health

1. Emerging/reemerging infectious diseases, influence of climate change
2. Food safety and security
3. Antimicrobial stewardship



Zoonotic pathogens cause more than 2 billion illness and 2 million deaths per year globally.



Since 1980, more than 87 new zoonotic and/or vector-borne diseases have emerged!



# Zoonotic Disease Emergence/Reemergence

## Contributing Factors

- Global travel (humans, animals, microbes)
- Economic development and expanding land use (deforestation)
- Trade and transportation (legal?)
- Microbial adaptation
- Injudicious use of antibiotics
- Changes in host susceptibility
- Climate change/vectors



- Cultural practices
- Changes in human and animal population densities
- Poverty, social inequity, famine, conflict
- Breakdown of public and animal health infrastructure
- Lack of political will
- ?

Institute of Medicine "The Perfect Microbial Storm"

7/30/2016

The One Health paradigm for global health recognizes that most new human infectious diseases will emerge from animal reservoirs



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# Human Health Surveillance

Varied local, state and federal (CDC) surveillance efforts occur to identify zoonotic disease cases and clusters in people:

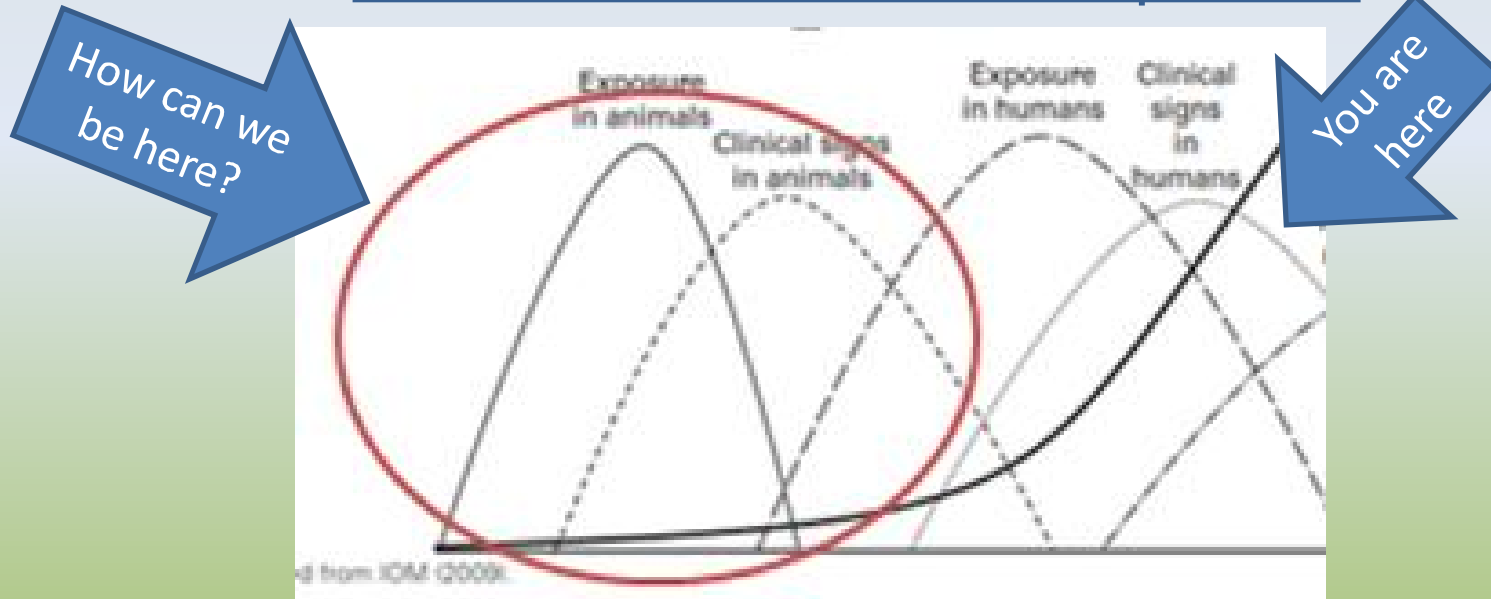
- Standard reporting by healthcare providers
- Laboratory surveillance, reporting
- Public health investigation, exposure histories
- Heightened passive surveillance in the absence of local disease transmission (Ebola and Zika)

Information from external partners can compliment public health surveillance:

- Reporting by partners in veterinary and wildlife professions (cases, morbidity and mortality events)
- Reporting of environmental disruptions by environmental partners (flooding, problems with water systems, food recalls) suggesting an increased risk for disease

## Focus on Early Warning

How do we know about zoonotic disease events in animal species?



- Are early warning opportunities missed?
- Surveillance gaps currently exist across human and animal disciplines
- Huge One Health challenge



## Wildlife Reservoirs



Zoonotic disease risks exist from rain forests to ponderosa forests

- Often pathogens exist in complex life cycles; sometimes poorly understood
- Examples of animal reservoirs of PH importance:
  - Palm Civets and SARS
  - Bats and rabies
  - Wild waterfowl and avian (novel) influenza
  - Ground squirrels and plague
- Spill-over events, although rare, can be significant
- Investigations involve public health and state and federal (or international) wildlife partners

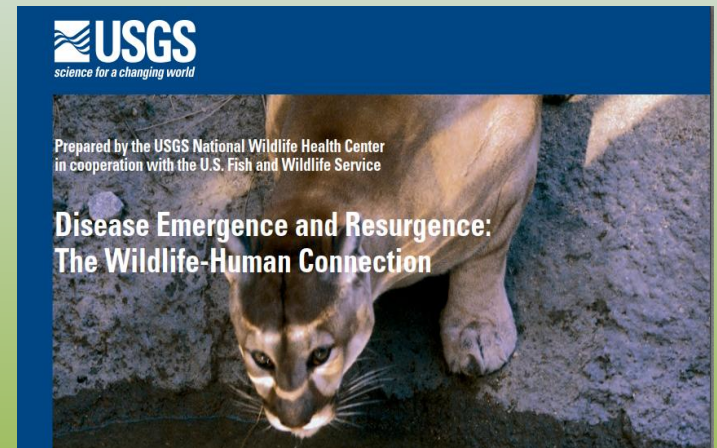




# Wildlife Surveillance

## One Health Challenges

- Wildlife surveillance partners:
  - Good partners with AI, rabies, plague, and WNV
    - USGS National Wildlife Health Center
    - USDA Wildlife Services (FLYWAY surv)
    - Idaho Department of Fish and Game
- Some efforts exist to address the wildlife-human connection (2006 document)
- Gaps in zoonotic surveillance abound:
  - International challenges, illegal wildlife trade
  - Mission (focused less on zoonotic disease):
    - Wildlife diseases
    - Mortality events
- Test availability issues
- Unofficial, inconsistent reporting to public health partners



[http://www.nwhc.usgs.gov/publications/disease\\_emergence/](http://www.nwhc.usgs.gov/publications/disease_emergence/)



# Agriculture Animal Zoonotic Disease Reservoirs



- Ag Animals:
  - Economic importance: cattle, dairy, swine, sheep, goats, domestic poultry
  - Produce food, food products, skins, by-products, sometimes companions
- Reportable disease list:
  - Focus on diseases that are economically important to agriculture (domestic and FAD)
  - Program Diseases: Bovine TB, Brucella
- Responsible agencies:
  - USDA-APHIS-Veterinary Services
  - Idaho State Department of Agriculture
    - Division of Animal Industries
    - Milk Program

# Agriculture Surveillance

## One Health Challenges

- Mission is 'stamping out' Ag diseases and economic stability, less about public health implications (although that is evolving)
- Silent carriage for some zoonotic pathogens (STEC), not a priority for animal medicine
- Infrequent testing, financial concerns, culling options
- Many zoonotic diseases are not reportable to Ag, gap
- Zoonotic disease data sharing with public health informal, voluntary, infrequently executed
  - Confidentiality concerns
  - USDA One Health Coordinating Office working on this
  - USDA-CDC liaison works on shared mission



# Companion Animals

## Zoonotic Disease Reservoirs

- Primarily kept for social benefit (i.e., companionship, showing) or utilitarian purposes (i.e., hunting, military, or police activity; support for blind or deaf persons; guarding; and herding)
- Arthropods, caged birds, cats, chinchillas, dogs, ferrets, fish, guinea pigs, hamsters, horses, mice, poultry, rabbits, rats, and reptiles.
- Dogs and cats are very popular!

	Dogs	Cats	Birds	Horses
Percent of households owning:	36.50%	30.40%	3.10%	1.50%
Number of households owning	43,346,000	36,117,000	3,671,000	1,780,000
Average number owned per household	1.6	2.1	2.3	2.7
Total number in United States	69,926,000	74,059,000	8,300,000	4,856,000

AVMA US Pet Ownership Statistics, 2012 <https://www.avma.org/KB/Resources/Statistics/Pages/Market-research-statistics-US-pet-ownership.aspx>

# Companion Animals

## One Health Challenges

- Direct sources, intermediate hosts between wildlife reservoirs and humans, or as sentinel or proxy species for emerging disease surveillance
- Often treated like family members, close contact in the home
- Largest GAP in surveillance; NO national agency systematically tracking companion animal diseases (zoonotic or otherwise). Rabies is the exception
- 2012 EID article highlighted the lack of coordinated global surveillance for zoonotic disease in companion animals
- Some management recommendations from CDC, NASPHV, AVMA



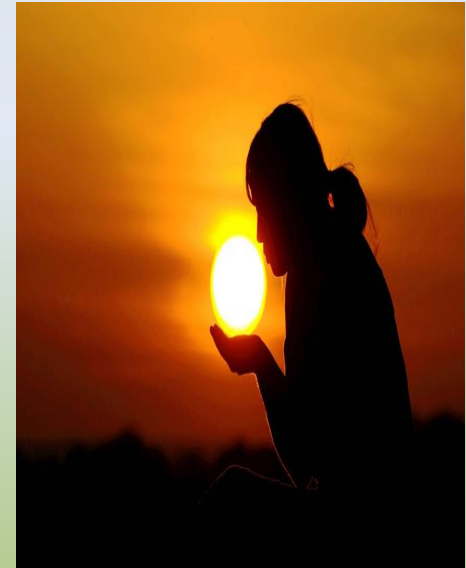
[http://wwwnc.cdc.gov/eid/article/18/12/12-0664\\_article](http://wwwnc.cdc.gov/eid/article/18/12/12-0664_article)



# Environmental Pressures on Disease Emergence

## Climate Change and Vector-borne Disease

- Climate affects the distribution and abundance of vectors, reservoir hosts, and pathogens
- Variables (temp and rainfall) affect transmission efficiency by impacting vector-pathogen physiology, host interaction, and survival
- Climate change results in changes in incidence and distribution of environmentally-associated diseases
- Perturbations (weather events [acute and chronic]) can drive disease outbreaks



# Vector-borne Disease

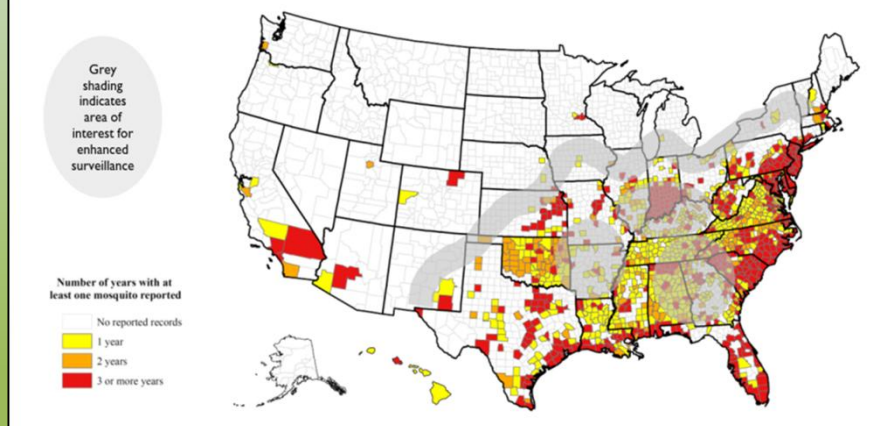
## One Health Challenges

- Viremic travelers could create local foci of transmission if competent vectors exist outside normal reservoir host range
- Climate influence on vector lifecycles in new ecosystems could have surprising public health impacts
- Documenting geographic expansion of vectors hard
  - Environmental partners working on vector surveillance and control
  - Existing infrastructure may not support surveillance efforts
    - Recent Zika monies will help

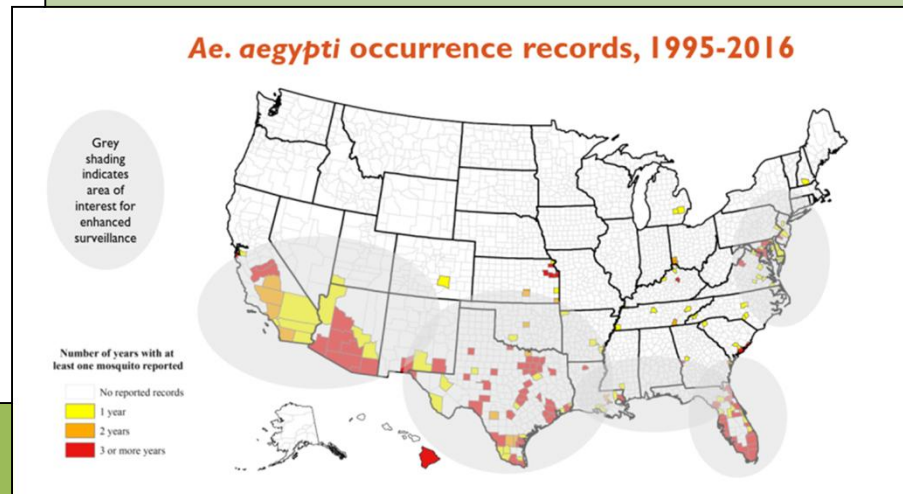
## Example: Distribution of Zika, Dengue, CHIK Vectors

- Exotic *Aedes* (*aegypti* and *albopictus*): extent of their US distribution was not clear until Zika stimulated renewed interest in mapping geographic boundaries in 2016. Updated maps show broader boundaries than initially known, expansion still under scrutiny.
- Challenges to northerly states: one time introductions of exotic *Aedes* with tires and lucky bamboo die in cold climates, but could be important temporary vectors when viremic travelers are present.

***Ae. albopictus* occurrence records, 1995-2016**



***Ae. aegypti* occurrence records, 1995-2016**



# Animal and Vector Surveillance

## One Health Challenges

### Common themes across animal type surveillance

- Silent carriage
- Early warning opportunities missed.
  - Cross-discipline data sharing obstacles, voluntary reporting challenges
- Missed opportunities with illegal trade (domestic and international) and distribution (pets, products)
- Different agency missions, poor understanding of their contribution to other agency missions
- Challenges encountered with joint outbreak investigations
- Lack of laboratory testing options in some species/some agents
- Poorly understood science for some emerging pathogens
- Multifaceted effects of climate change and role of existing and imported vectors

## 2. Food Safety and Security

The health of humans, animals, and crops plays a pivotal role in ensuring the safety of the world's food supply.

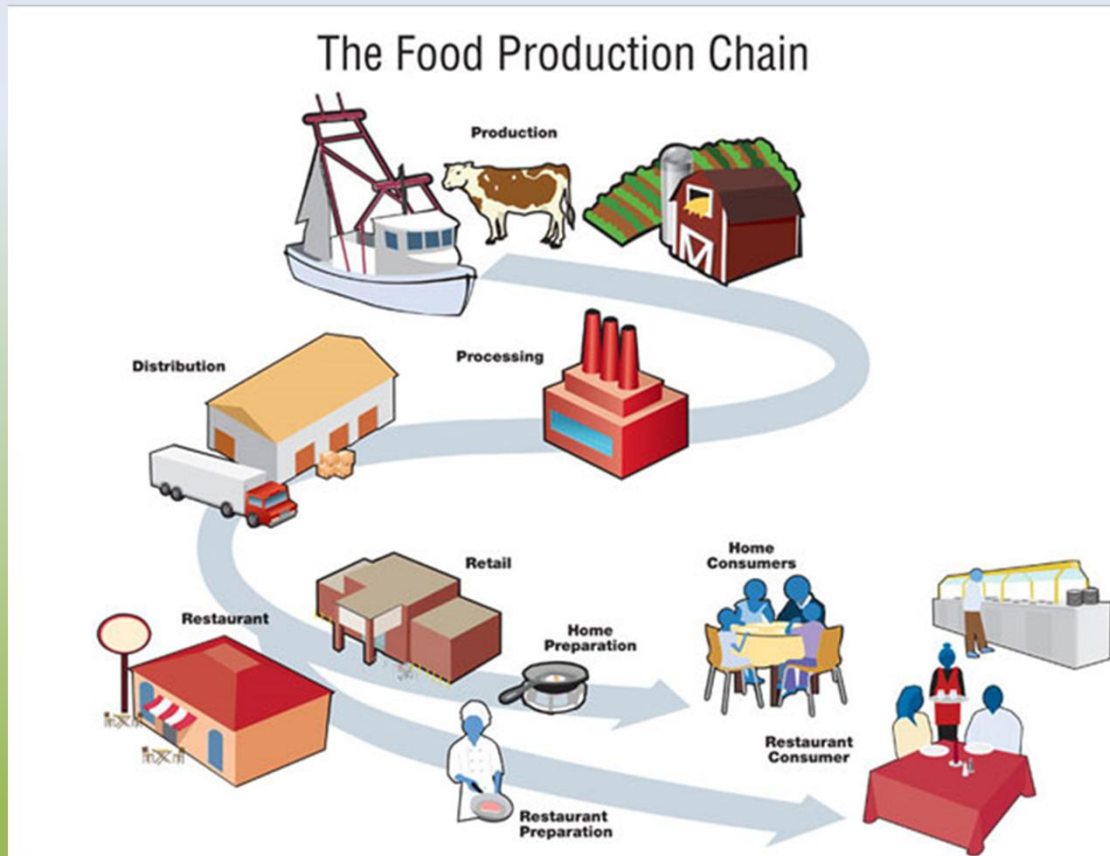


\*IOM 2012 Food Safety Through a One Health Approach



# Food Safety and Security, cont'd

Over the past century the distance between “farm” and “table” has gone global

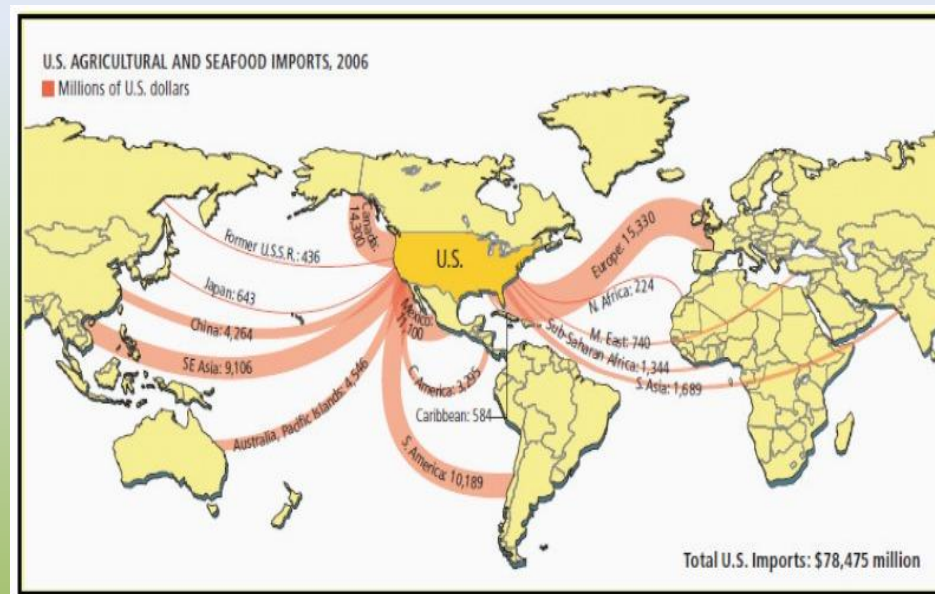


Changes in livestock feeding/ crop production practices, harvesting, processing, and handling can introduce new routes of infection and new pathogens into the food supply at any point along the food production chain.

## Major One Health Food Safety Challenges

### Globalization of Food Production and Distribution

- A single contamination incident can have amplified health and economic impacts across the globe.
- FDA: In 2010, the United States imported an estimated 10% to 15% of all food consumed by U.S. households, including more than 75% of the fresh fruits and vegetables and more than 80% of fresh or frozen fish and seafood
- Year-round demand-less stringent food production and safety regulations in some countries



Ingredients in a single meal often combine ingredients from local and global sources. The well-traveled salad's 10 ingredients originate in more than 37 countries and typically meat travels over 1000 miles from farm to table (FDA)!



This underscores the need for a comprehensive One Health approach to food safety.

## Major Trends Affecting Food Safety, cont'd

- Increasing global need for protein, less than ideal husbandry practices to meet the high demand
- Growing public appetite for fresh, unprocessed foods (produce, raw dairy), some lacking HACCP plans
- Microbial adaptation and emerging pathogens in foods
- Integration and consolidation of agricultural practices and centralization of food processing in giant farming conglomerates (US and abroad)
  - 73% of U.S. spinach comes from one small region of S. California
  - The 4 largest slaughter companies control 56% of broilers and 84% of beef
  - Peanut Corporation of America produced *Salmonella* Typhimurium-contaminated peanut butter in one facility, distributed nationwide and integrated their product into secondary products leading to 700 human cases in 46 states.



# Food Safety Modernization Act (2011)

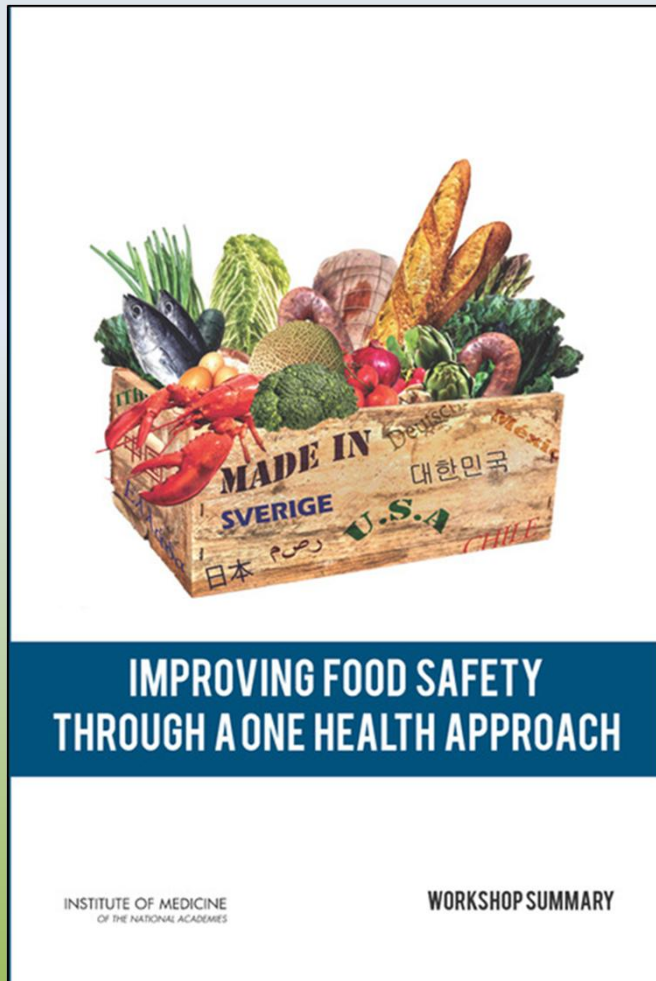
- Addressing some gaps
- FSMA: creation of a new food safety system in the U.S.
- Broad prevention mandate and accountability, including development of new HACCP standards for various food commodities (applies to domestic and imported foods)
- Emphasizes One Health farm-to-table responsibility
- Still rolling out in stages
- There is currently no single organization responsible for coordinating all food surveillance data (USDA, FDA, NARMS, CDC)



Web site is at <http://www.fda.gov/fsma>



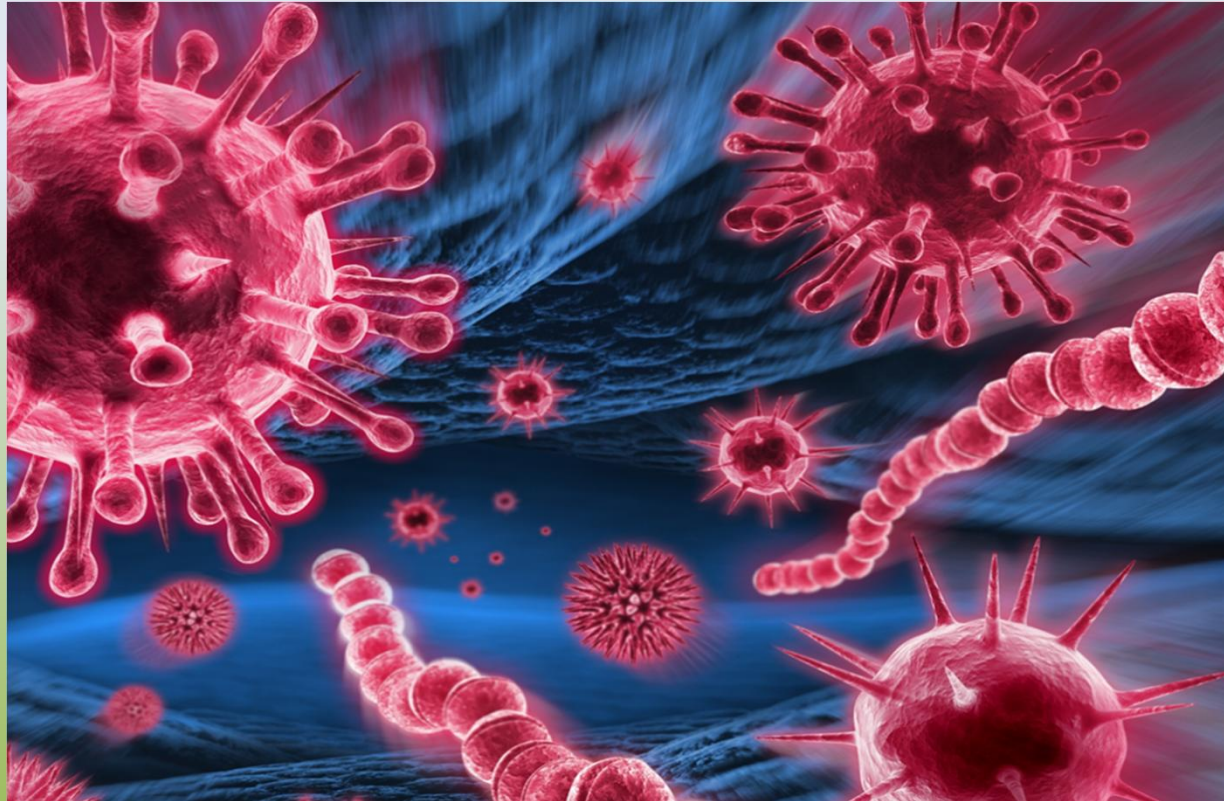




Institute of Medicine held a workshop in 2012 addressing the Improvement of Food Safety Through a One Health Approach.

Food safety is an ongoing One Health challenge from farm to table.

### 3. Antimicrobial Stewardship



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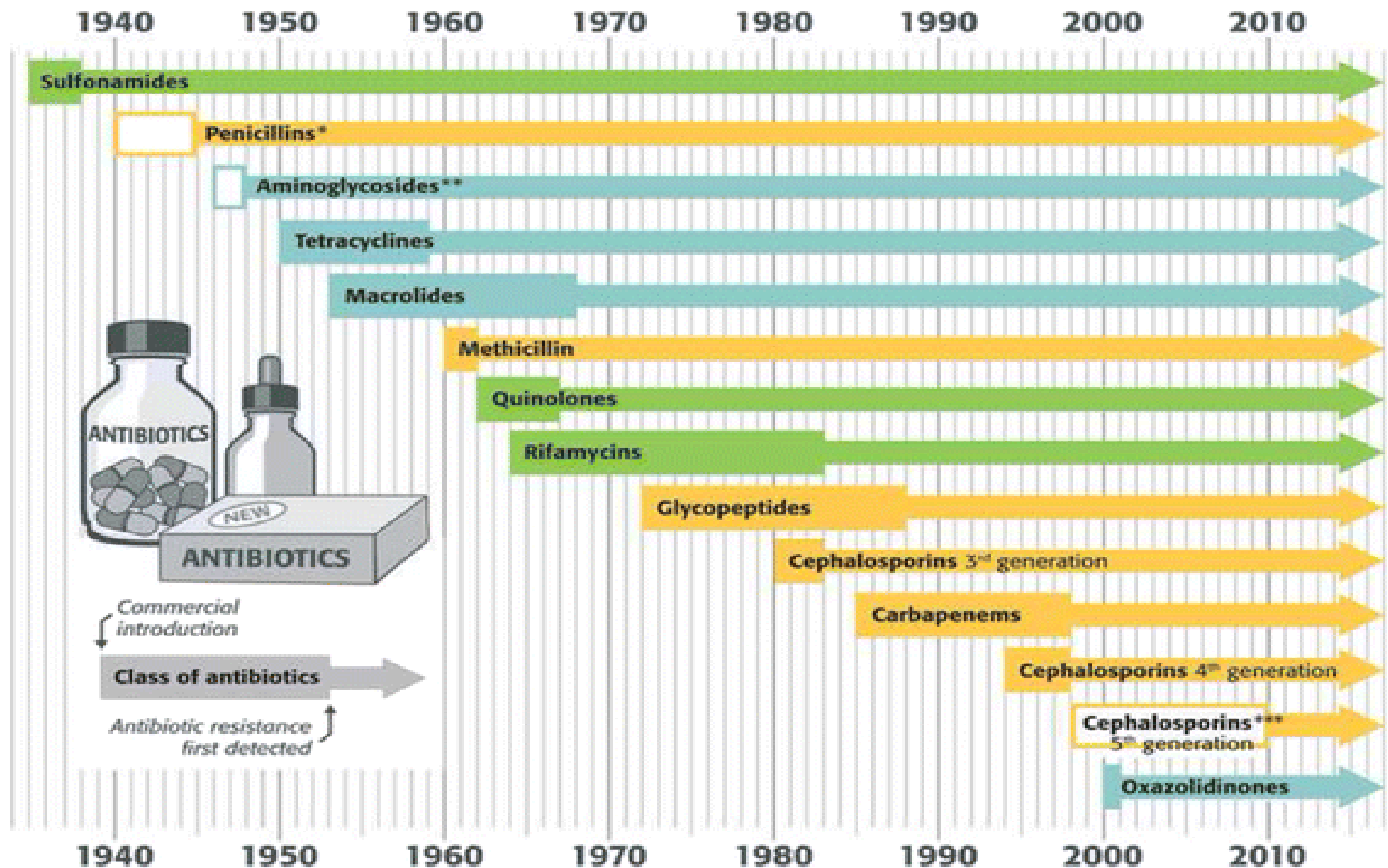
# ANTIMICROBIAL RESISTANCE

- CDC: Each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 people die each year as a direct result of these infections.
- Antimicrobial resistance is a complex, multifaceted, urgent global health problem.
- Emergence of multi-drug resistant organisms (MDROs) evoke concerns about a post-antibiotic era

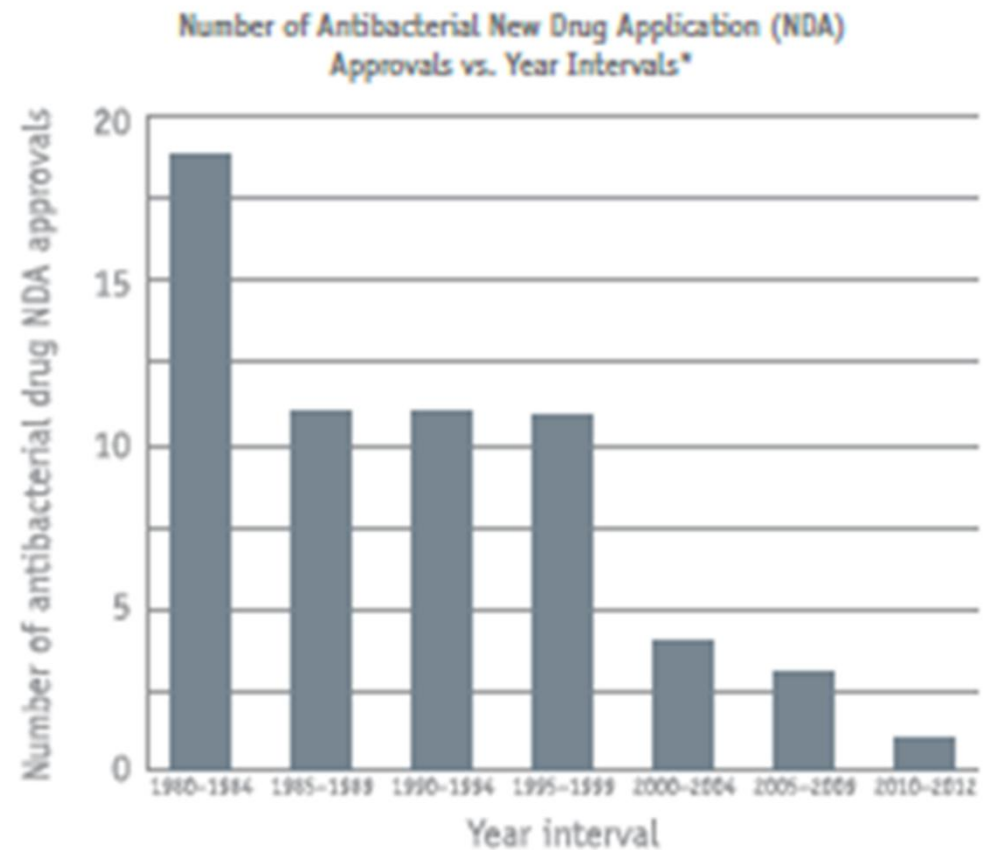


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## Commercialization and first detection of resistant bacteria , by class



The number of new antibiotics developed and approved has steadily decreased in the past three decades, leaving fewer options to treat resistant bacteria.

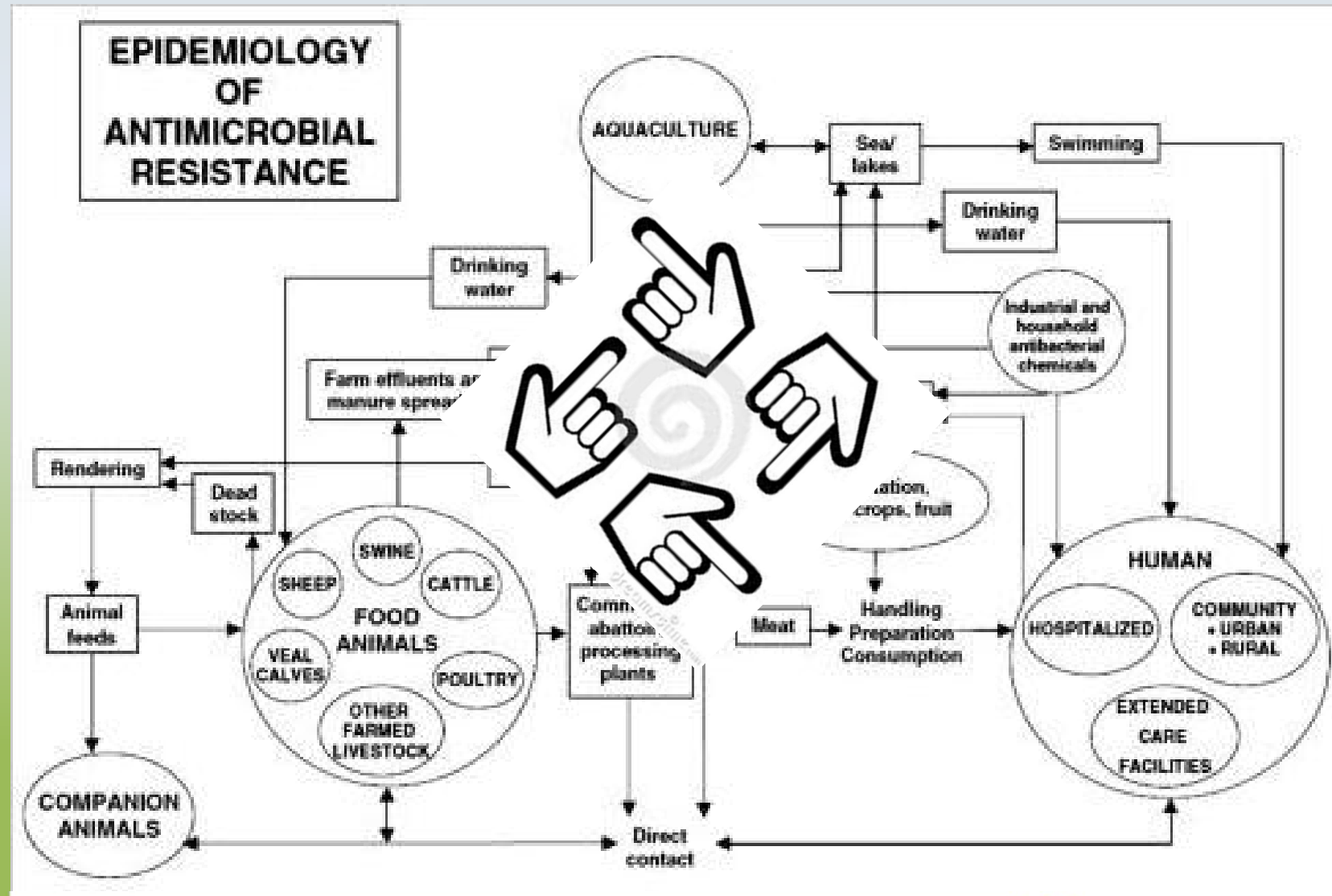


\*Intervals from 1980-2009 are 5-year intervals; 2010-2012 is a 3-year interval. Drugs are limited to systemic agents. Data courtesy of FDA's Center for Drug Evaluation and Research (CDER).



# Complex One Health Problem

## Multifaceted Influences

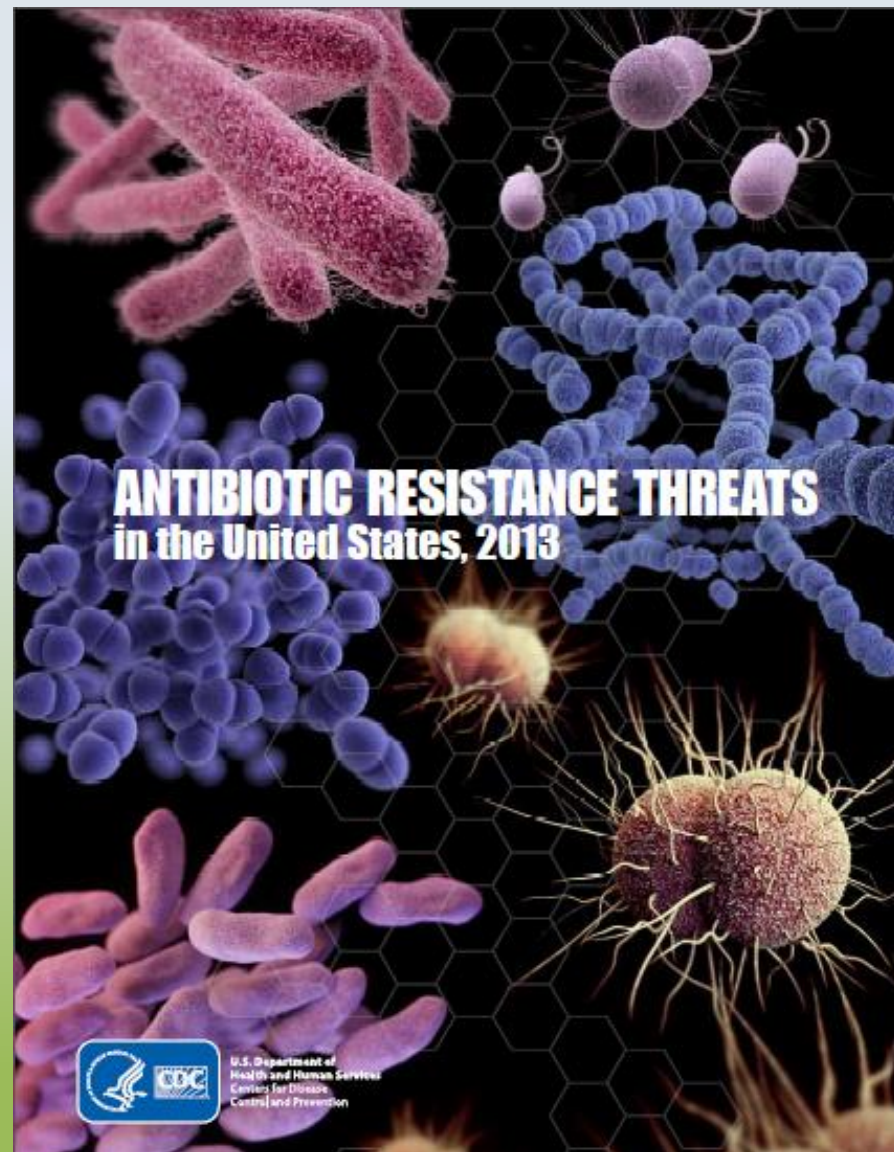


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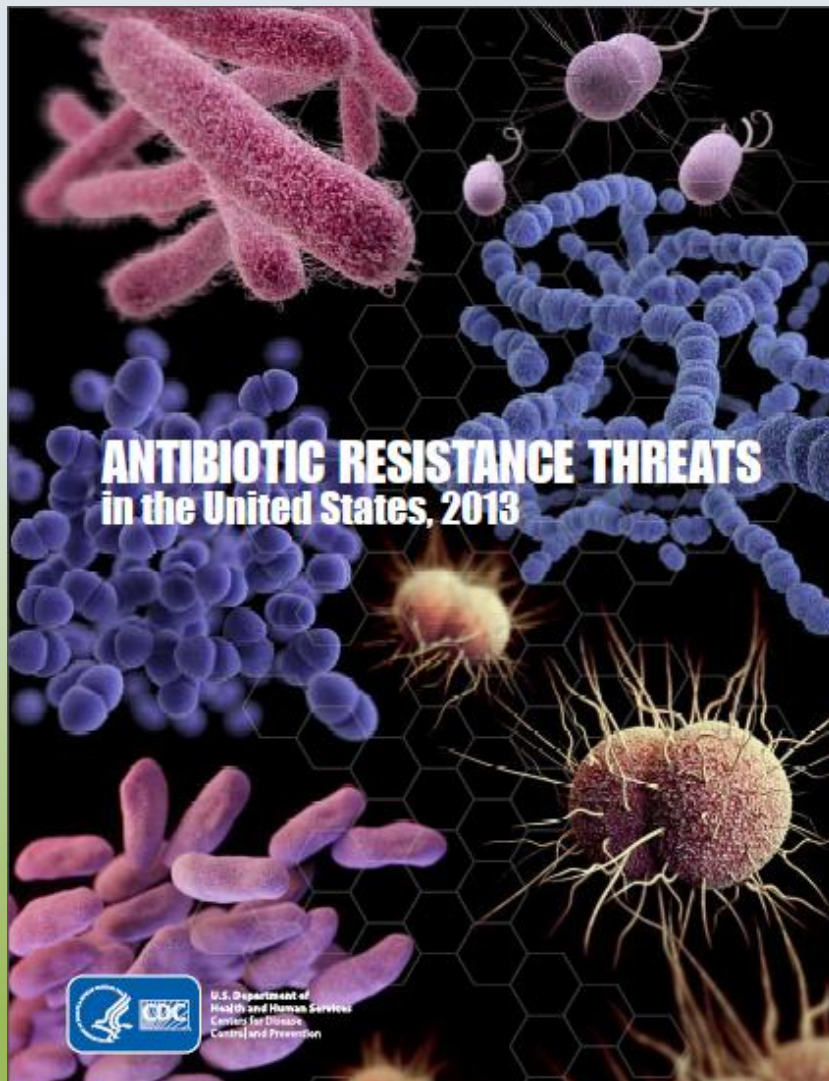
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DIVISION OF PUBLIC HEALTH

- Landmark report from CDC in 2013 sounded alarm bells on the top drug resistant threats to human health. (e.g., CRE, r-N. gonorrhea, *C. difficile*, MRSA, VRE, MDR/XDR TB)
- Gives a first-ever snapshot of the burden and threats posed by the antibiotic-resistant pathogens having the most impact on human health.



<http://www.cdc.gov/drugresistance/threat-report-2013/>

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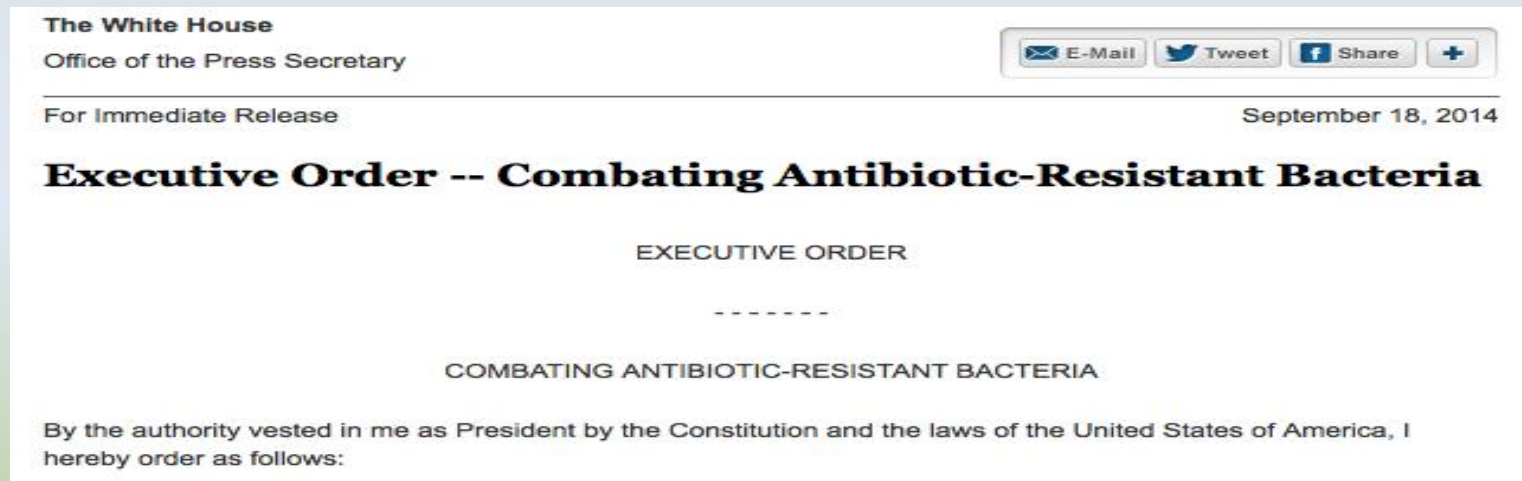


## FOUR CORE ACTIONS

1. Prevent infections and the spread of resistance
2. Track resistant bacteria
3. Improve use of antibiotics
4. Promote the development of new antibiotics and diagnostic tests for resistant bacteria

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# 2014 Executive Order

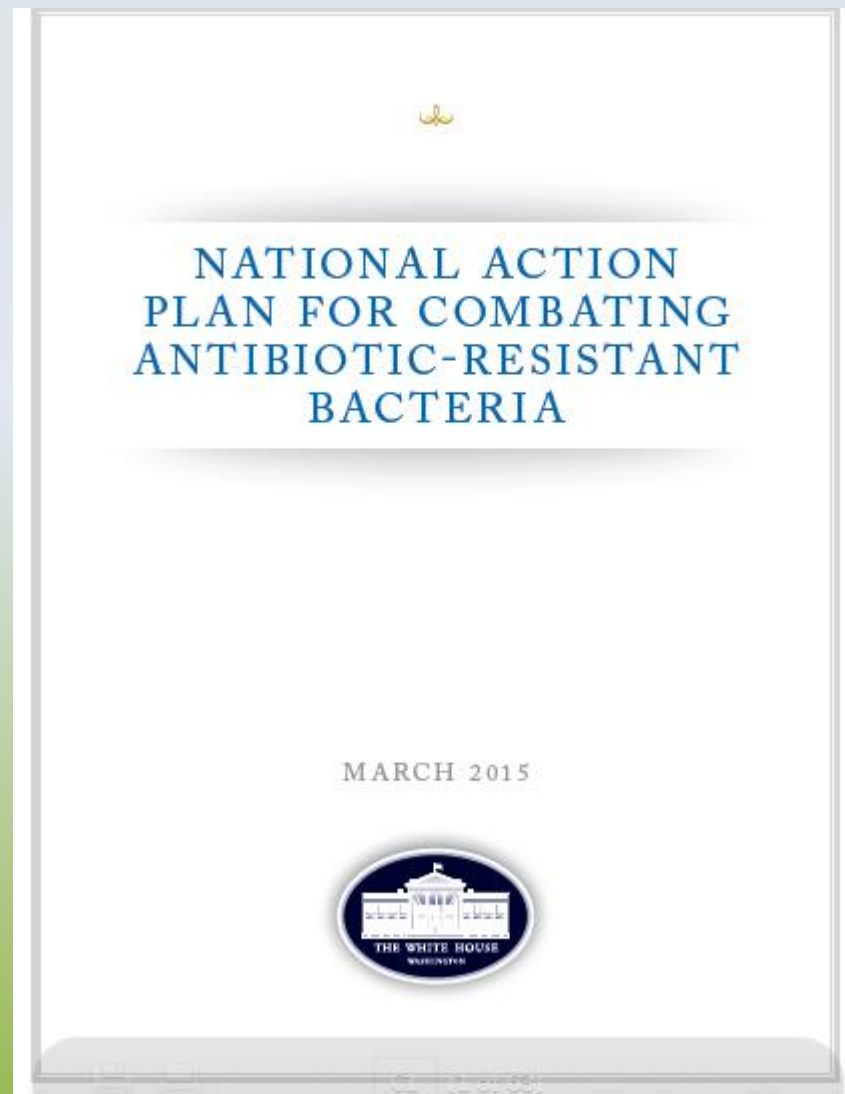


- In response to CDC report, Executive Order released in 2014
- Stating that Combating Antibiotic Resistant Bacteria (CARB) is a national security priority
- Federal task force and a Presidential advisory council were established to guide implementation of a national strategic plan.

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- 2015 National Action Plan for CARB was released
- Addresses various areas relevant to AMR, including stewardship
- Strengthen national One-Health Surveillance Efforts to Combat Resistance.



[https://www.whitehouse.gov/sites/default/files/docs/national\\_action\\_plan\\_for\\_combating\\_antibiotic-resistant\\_bacteria.pdf](https://www.whitehouse.gov/sites/default/files/docs/national_action_plan_for_combating_antibiotic-resistant_bacteria.pdf)

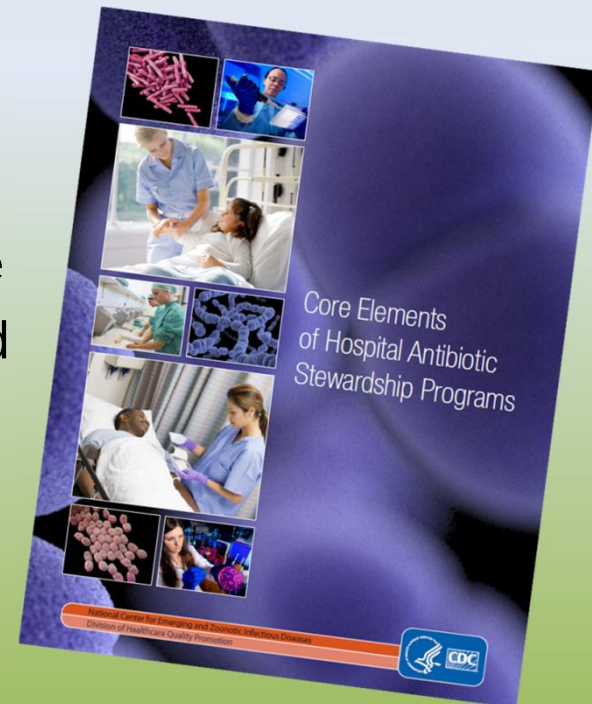
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# Human Stewardship Efforts

## 7 Core Elements of CDC Hospital Recommendations

- Leadership support
- Accountability
- Drug expertise
- Actions to support optimal antibiotic use
- Tracking: Monitoring Prescribing Use and Resistance
- Reporting information to staff on improving use and resistance
- Education
- Community stewardship efforts as well

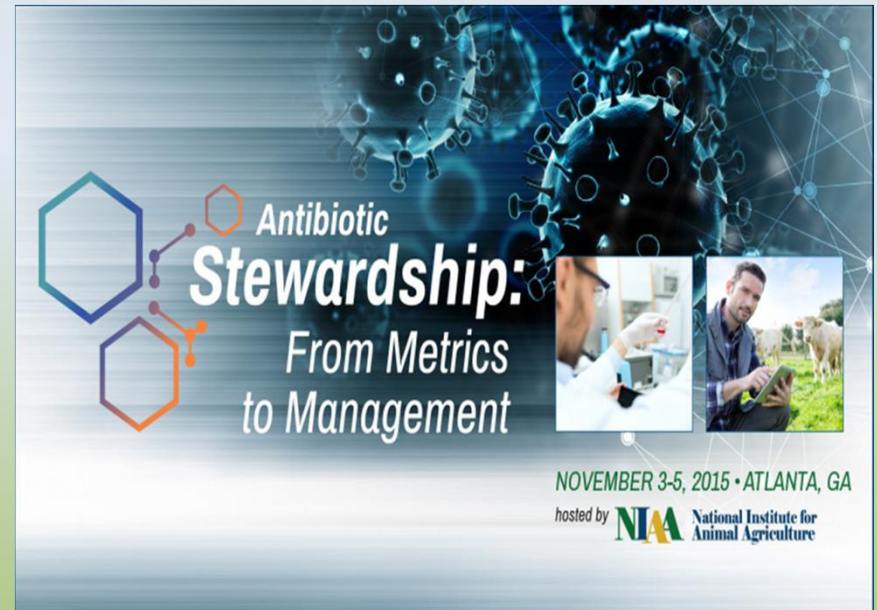


<http://www.cdc.gov/getsmart/healthcare/pdfs/checklist.pdf>

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# CARB: Animal Stewardship Efforts

- USDA's National Action Plan and National Animal Health Monitoring Studies (NAHMS) programs
- AVMA antimicrobial stewardship task force for companion animal medical practice
- FDA 's 2016 Veterinary Feed Directive: Efforts underway to protect the nations food supply



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## Antimicrobial Drugs Approved for Use in Food-Producing Animals: 2009 Sales and Distribution Data Reported by Drug Class

drug class	Kilograms	pounds	% of total
<b>FOOD-ANIMAL USE</b>			
aminoglycosides	339,678	748,862	2%
cephalosporins	41,328	91,113	0%
ionophores	3,740,627	8,246,671	23%
lincosamides	115,837	255,377	1%
macrolides	861,985	1,900,352	5%
penicillins	610,514	1,345,953	4%
sulfas	517,873	1,141,715	3%
tetracycline	4,611,892	10,167,481	28%
NIR	2,227,366	4,910,501	14%
sub-total	13,067,100	28,808,024	<b>79.8%</b>
<b>HUMAN MED USE</b>			
	3,300,000	7,275,255	<b>20.2%</b>
<b>TOTAL</b>	<b>16,367,100</b>	<b>36,083,279</b>	<b>100%</b>

Source: FDA

Note: not all antibiotics used in production animals are relevant in human health, but the level of usage is concerning.

[http://www.foodsafetynews.com/2010/12/animals-consume-lions-share-of-antibiotics/#.V48QUE2V\\_IU](http://www.foodsafetynews.com/2010/12/animals-consume-lions-share-of-antibiotics/#.V48QUE2V_IU)

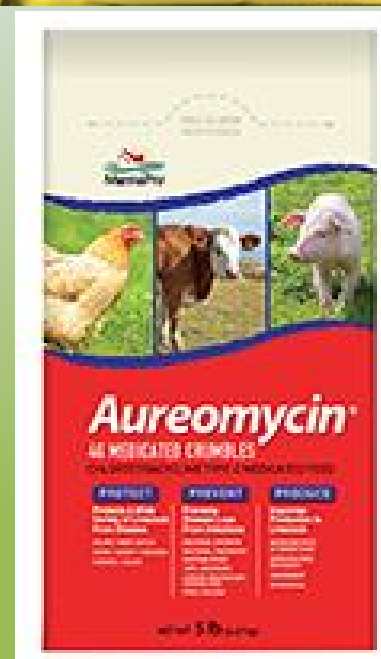
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# FDA Veterinary Feed Directive

Exciting stewardship activity happening in the U.S. starting January 1, 2017!

VFD: fundamental change in how “medically important (human) antibiotics” can be legally used in feed or water for food-producing animals- changes that are critical to ensure these drugs are used judiciously and only when appropriate for specific animal health purposes.

Eliminate the use of such drugs for growth promotion and feed efficiency.



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# Antimicrobial Stewardship

## One Health Challenges

- Provider education about judicious use (MD, DO, DVM, DDS)
- Combating pressure from clients (human and veterinary) to over-prescribe, client education
- Overcoming nosocomial opportunities
- Implementation of VFD (huge), push-back
- Establishing metrics to measure value in stewardship efforts (human and animal)
- Ongoing research into new antimicrobials and alternative therapeutic approaches



## ONE HEALTH IN ACTION

- No single sector of society nor professional discipline has enough knowledge or resources to effectively manage all risks associated with emergence or resurgence of infectious diseases.
- No nation alone is able to reverse patterns of extinction and habitat loss that undermine the health of the world's people and animals.
- Today's threats of EID's and tomorrow's problems of new pandemics and ineffective antibiotics cannot be managed with yesterday's solutions.
- The scale of problems requires interdisciplinary collaboration and communication and requires we move beyond the confines of our own disciplines, professions, and mindsets and explore new organizational models of "Team Science".

King L. 2014. Combating the Triple Threat: The Need for a One Health Approach, p 3-15. *In* Atlas R, Maloy S (ed), *One Health*. ASM Press, Washington, DC. doi: 10.1128/microbiolspec.OH-0012-2012

# One Health in Practice in Idaho

- One Health is important to healthcare providers in Idaho.
- 49% of reportable infectious diseases are zoonotic, risk factors are often unknown!
- Top 5 zoonotic diseases are enteric (2010 – 2015, annual average):
  - Campylobacter: 304 (range 235 - 409)
  - Salmonella: 223 (range 134 - 588)
  - Giardia: 166 (range 137 - 215)
  - Cryptosporidiosis: 138 (range 95 - 267)
  - STEC: 115 (non-O157=80, range 30 - 61, O157=44, range 66 - 96)

# Idaho One Health Consortium

- One Health challenges are everywhere.
- Management of One Health situations require multidisciplinary input and collaboration.
- In 9/2015 the **Idaho One Health Consortium** was established by IDHW and partners!

# Idaho One Health Consortium

## Focus Areas

- **Focus on education:**
  - Creating partnerships (Ag, PH, human health, DEQ, university)
  - Stepping outside the silo and focusing on topics (3 meetings so far)
  - Learning a new 'language', mission
- **Focus on global issues affecting Idaho:**
  - Antimicrobial stewardship
  - Cross-species data-sharing challenges
- **Focus on areas that have historically proven problematic in Idaho:**
  - Joint outbreak investigations with animal mortality events (zoonotic) and exposed humans (no human illness)
  - Human clusters pointing to contaminated foods (raw milk) or large animal species (cattle) (not necessarily any ill animals)
  - Joint communication and 'safe' data sharing practices

# OHC Progress

Workgroups forming around identified areas of need for Idaho:

- **Foodborne pathogens are common:** Workgroup to improve joint outbreak investigations involving raw and pasteurized milk products (IDHW, ISDA, PHD)
- **Emerging pathogens:** Improving multidisciplinary approach to zoonotic disease outbreak investigations by outlining cross-agency collaboration practices (IDHW, USDA, ISDA, IDFG)
- **Antimicrobial stewardship:** State recently hired a HAI program manager who is working with healthcare systems on antimicrobial stewardship issues. OHC planning an antimicrobial stewardship work group to focus on the adoption of the VFD in Idaho
- **Climate change:** Expanding vector surveillance efforts for exotic *Aedes* species
- **Participated in IVMA One Health Conference held in Pocatello this summer**



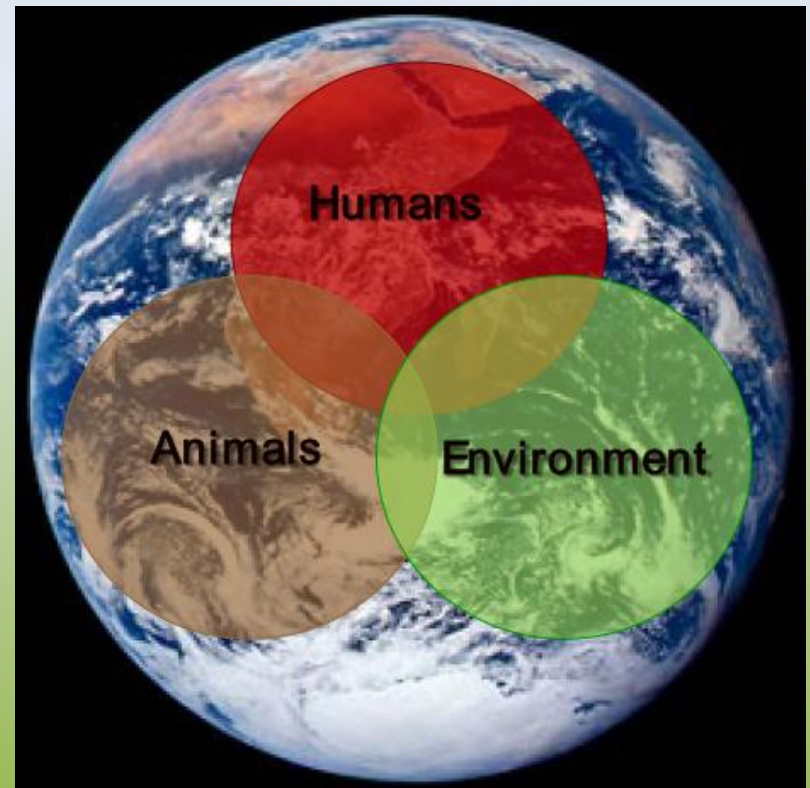
# Call to Action

- Are you interested in a One Health conference?
- Expanding participation, working on statewide videoconferencing and a web repository for past ppt presentations!
- WHAT CAN THE OH CONSORTIUM DO FOR YOU and MEDICAL PRACTICE? Ideas?

# Thank you

## Contact information:

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Extra slides

# 2016 Idaho OH Highlights...

- Plague epizootic (6 cats)
- Canine brucellosis (*B. canis*) epizootic in multiple households
- FAD investigation into suspected avian influenza outbreak in a backyard chicken flock
- Suspected tularemia in person handling escaped domestic rabbits
- Bats swooping in on rafters on the Middle Fork of the Salmon
- Improving cross-species zoonotic disease surveillance is an Idaho OHC, NASPHV, and USDA area of focus.

# Climate Change in Idaho

- Regarding emerging pathogens:
  - Unclear the impact, multifactorial, complex
  - CDC will likely fund specific mosquito traps to collect exotic *Aedes* species in Idaho
  - Consider new environmental approaches to integrated pest management if *Aedes* are detected
- Considering expanding human reportable disease list to include all arboviral diseases.
- Idaho One Health Consortium includes environmental health professionals that can bring their views to zoonotic disease discussions.



# One Health Convergence Model for Emergence

