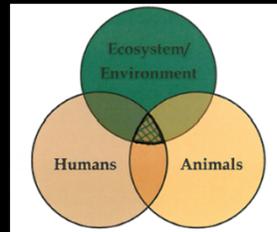


One Health

“One World, One Medicine, One Health”



“The collaborative effort of multiple disciplines
– working locally, nationally, globally—
to attain optimal health for
people, animals, and our environment”

AVMA Task Force, 2008

Marguerite Pappaioanou, DVM, MPVM, PhD
CDC Liaison to FDA for Food Safety

The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention or the Food and Drug Administration

My experience as a One Health Practitioner

- 24 ½ years as epidemiologist (DVM) at CDC (1983-present)
 - Malaria Branch– efficacy of antimalarial drugs developing countries; malaria vaccine
 - HIV/AIDS and other infectious disease surveillance domestically, internationally
 - Director, USAID Data for Decision Making Project
 - Chief, Guide to Community Preventive Services Branch
 - Associate Director for Science and Policy, Office of Global Health
 - CDC Liaison to FDA for Food Safety
 - Member of HHS Team to UK Dept of Health on FMD Outbreak, 2001
- PI, NIAID Center of Excellence of Influenza Research and Surveillance, CDC Coop agreement on avian influenza at human-animal interface, U of MN
- 2005-2006: Course Director, Professor, Instructor-- Avian Influenza at the Human-Animal Interface, Summer and Winter Public Health Institutes, U MN, U FL
- 2009- Co-Chair IOM/NRC Committee and Report on Sustaining Global Surveillance and Response to Emerging Zoonotic Infectious Diseases
- Member, AVMA Task Force on One Health
- 2007-2016: Co-author, speaker, lecturer on One Health, implementing One Health
- Developed session on One Health Approach for Sustainable Consumption, Consortium of Universities for Global Health, 2016
- 2012-present: Established and funded Veterinary Public Health and Applied Epidemiology Scholarship, CDC Foundation



• Food Security
• Food Safety
• Nutrition



• Emerging Infectious Diseases
• Antibiotic Resistance

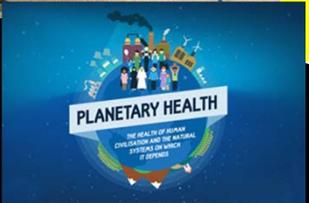
Emergency Response

Bio/Agro-Terrorism

Global Health Security



• Climate change
• Planetary health
• Environmental Health



One Health Opportunities



Biomedical Research

Injuries



Occupational Health



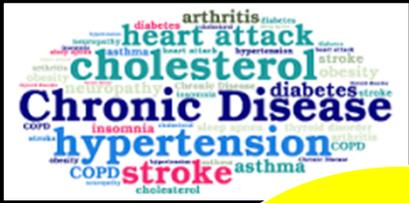
Disability



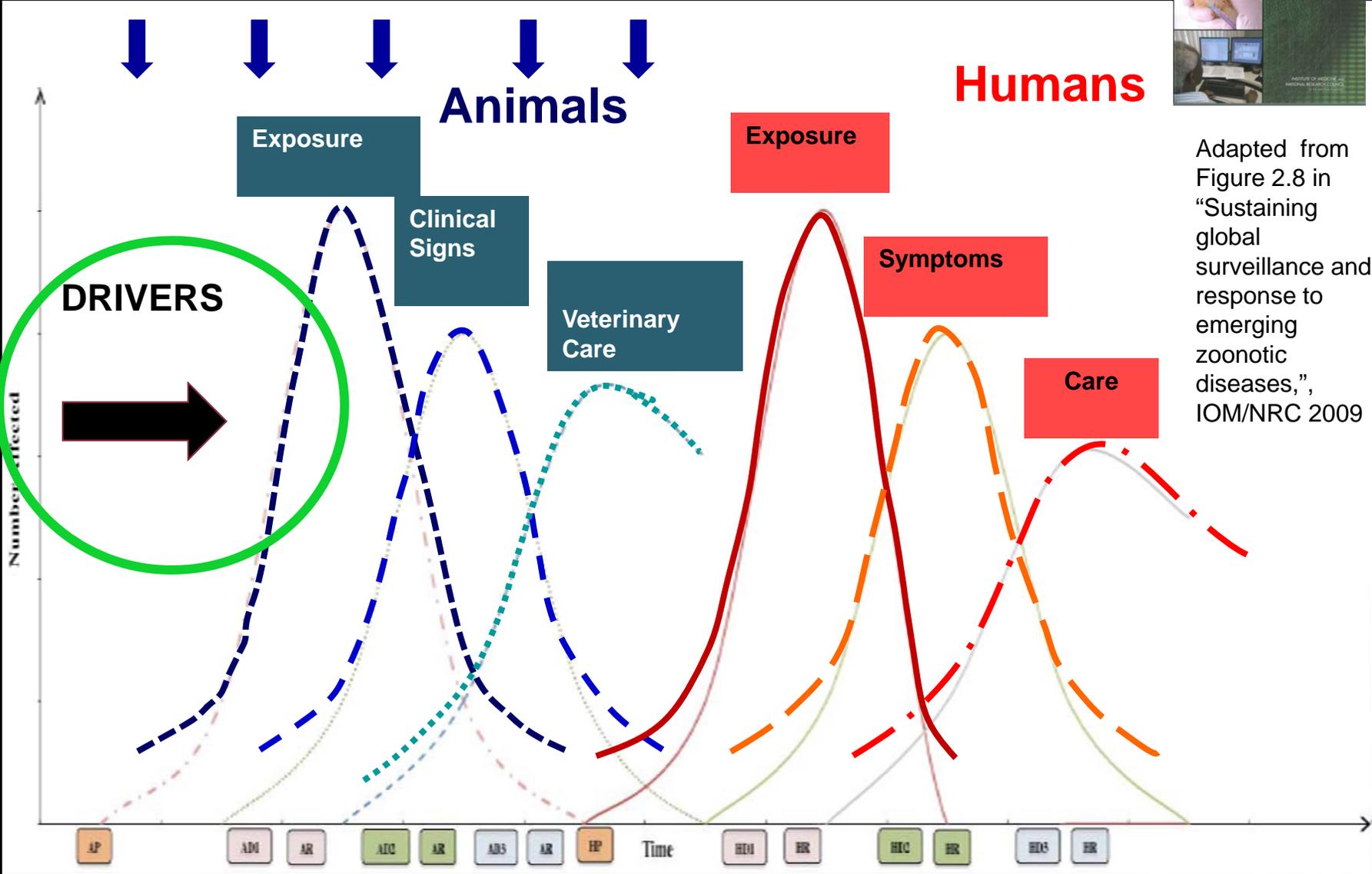
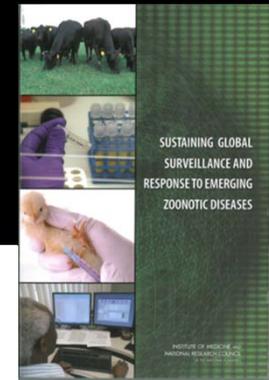
Mental Health



• Obesity
• Physical Activity
• Health Education



Integrated Zoonotic Disease Early Detection and Response System

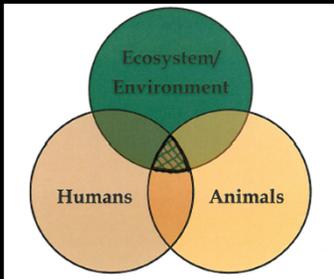
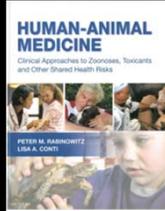


Adapted from Figure 2.8 in "Sustaining global surveillance and response to emerging zoonotic diseases," IOM/NRC 2009

Drivers

- Increasing human population, urbanization
- Feeding human population growing to 9 Billion
 - Aging population growing wealthier
 - Increasing demand for meat
 - Deforestation, Desertification, Pesticides, Water Scarcity, Runoff/ Pollution, Acidic oceans, overfished seas, Biodiversity loss, more
- Climate change, higher temps, increased numbers and distributions of vectors
- Globalization
 - Rapid transit of people, animals, plants
 - Trade
- More

Challenges to Health at Different Levels



**Individual/ Clinical
Disease, injury,
occupational health
issues**

**Ill Populations
(Plants, Animals, Humans)
Cross Pathogen Transmission
Disease Outbreaks/Epidemics
Antibiotic Resistance**

**Unbalanced Ecosystems
Consequences of food and energy production for
growing human population
Loss of biodiversity, Pollution, Climate Change
Sustainability of all species threatened, humans
included**

Most attention
devoted to
individual,
clinical,
population
levels

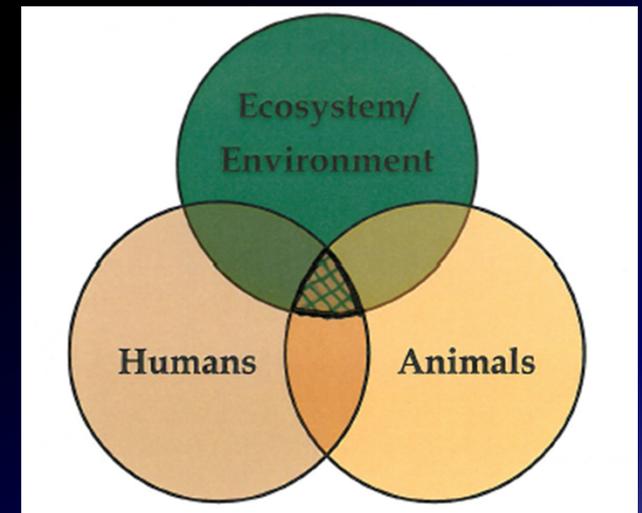
GAP

Additional Areas of Concern, Gaps, Emergent Areas Under-Represented in One Health

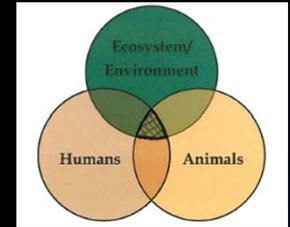
- Comprehensive framework / systems approach with environmental health full partner to identify problems and potential solutions
 - Too often single problem solving utilized, results in other problems
 - Lack of a coordination /coordinating body to develop comprehensive frameworks and bring needed disciplines/expertise together
- Evaluation / appropriate metrics at each level
- Lack of One Health capacities/skills among disciplines

Putting One Health Into Action

- Formulating and implementing One Health **policies, programs that enable**
- Multidisciplinary field-based **workforce, practice (working on the front lines)**
- Multi-disciplinary **integrated research**
- **Educating, training** students, practitioners of multiple disciplines, policymakers, researchers, the public, other stakeholders
- **Evaluating and improving**

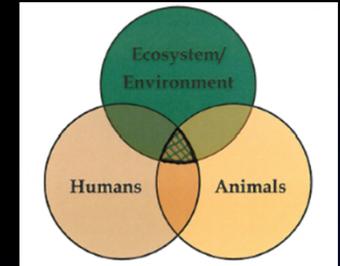


Challenges to Implementing One Health Approach



- **Issues with leadership and vision:** Too few leaders thinking outside traditional discipline, sector, mission boundaries; framing problems in comprehensive terms
- **Benefits of One Health approach not recognized**
- **Lack of enabling environments:** Jurisdictional funding with lack of clear guidance; lack of incentives, rewards
- **Confusion over One Health:** Scope, stakeholders, benefits, how to implement, lack of metrics
 - Cross communication between disciplines difficult, absent
 - Multiple terms – One Health, One Medicine, Planetary Health, Integrated Development, Cross-sectoral Planning, more

Challenges to Implementing One Health Approach



- **Fragmentation within disciplines/agencies**
 - Human Health: Medicine --medical specialties; Public Health
 - Animal Health: Food producing animals- cattle, dairy cows, sheep and goats, swine, poultry, rabbits, fish/other; Wildlife-- marine/aquatic animals, terrestrial; Companion animals and specialties, other)
 - Environmental Health: Plants- agricultural, other; Surface, Ground, Drinking Water, Solid waste; Hazardous waste; Toxicologist; Air pollution; Entomologists
- **Workforce:** numbers, incentives (jobs, pay, debt repayment)

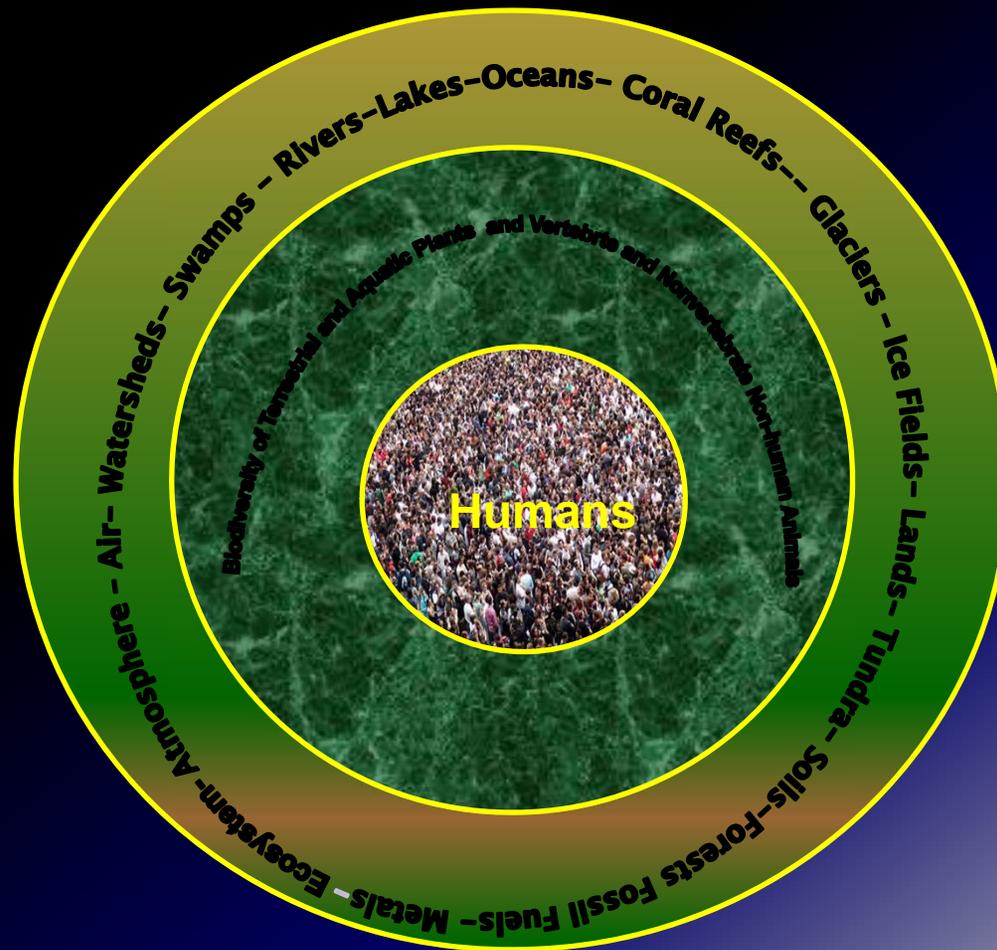
Positive Examples of One Health

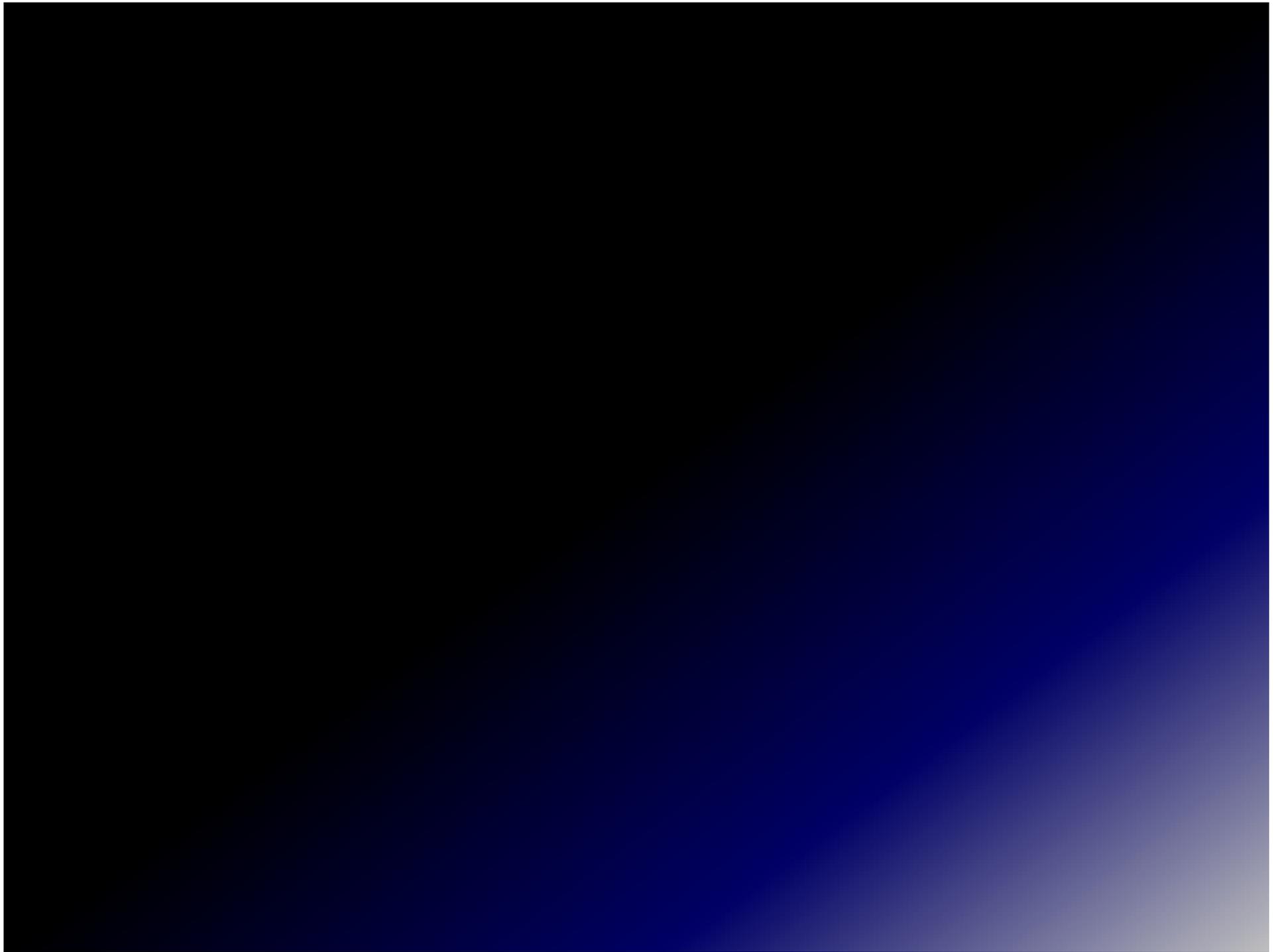
- Increased awareness of One Health opportunities by public and private sectors, e.g., antimicrobial resistance
- International Recognition– WHO, OIE, FAO, World Bank, Donors
- Newly adopted 17 Sustainable Development Goals
- Planetary Health Commission Report/Alliance; Rockefeller Fnd.
- New/increased sources of financial support for One Health approaches (more needed!)—
 - USAID, Pandemic Threat Program
 - CDC- Avian Influenza, human-animal interface, AMR
 - Rockefeller Foundation – One Health, Planetary Health
 - EU Initiatives
 - Welcome Trust
 - Other
- Successful community/regional programs re-establishing human connections to nature, ecosystems, environment

Positive Examples of One Health, Con't.

- GAO Reports-- Efforts Needed to Improve Workforce Planning for Federal Veterinarians (May, 2015– action still needed);
 - USDA and CDC create One Health Offices
 - Veterinarians and PhDs in many federal human health agencies, wide variety of positions, responsibilities (unrecognized)
 - NIH Workshop on One Health, Integrating the Veterinary Scientist into the Biomedical Research Enterprise, April 7-8, 2015, Bethesda
- One Health Academic Programs Established– Academic Health Centers, Consortium of Universities for Global Health, Veterinary Schools/Colleges; USAID Africa and Asia
- One Health Act of 2016 -- Introduced by Senator Al Franken (MN). “To establish an interagency One Health Program (Federal) to address infectious diseases in animals and the environment, and to help prevent the transmission of known and emerging infectious diseases between animal populations and human populations” (CDC, FDA, USDA, USAID, EPA, NIH, DHS, DOI, other departments, agencies)

Thank You!





Dr. Calvin Schwabe

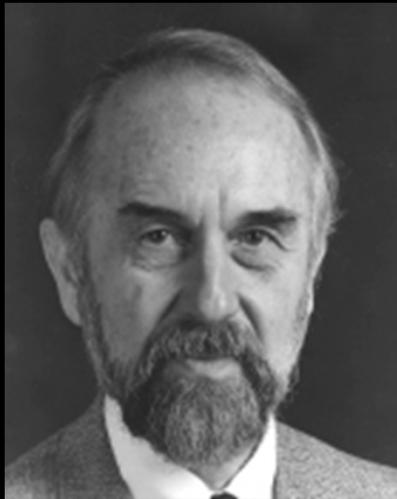
“Human health provides the most logical unifying or apical cause in veterinary medicine’s hierarchy of values”

1964, 1969, 1984

VETERINARY
MEDICINE
AND HUMAN
HEALTH

THIRD EDITION

Calvin W. Schwabe, D.V.M.



Dr. Calvin Schwabe

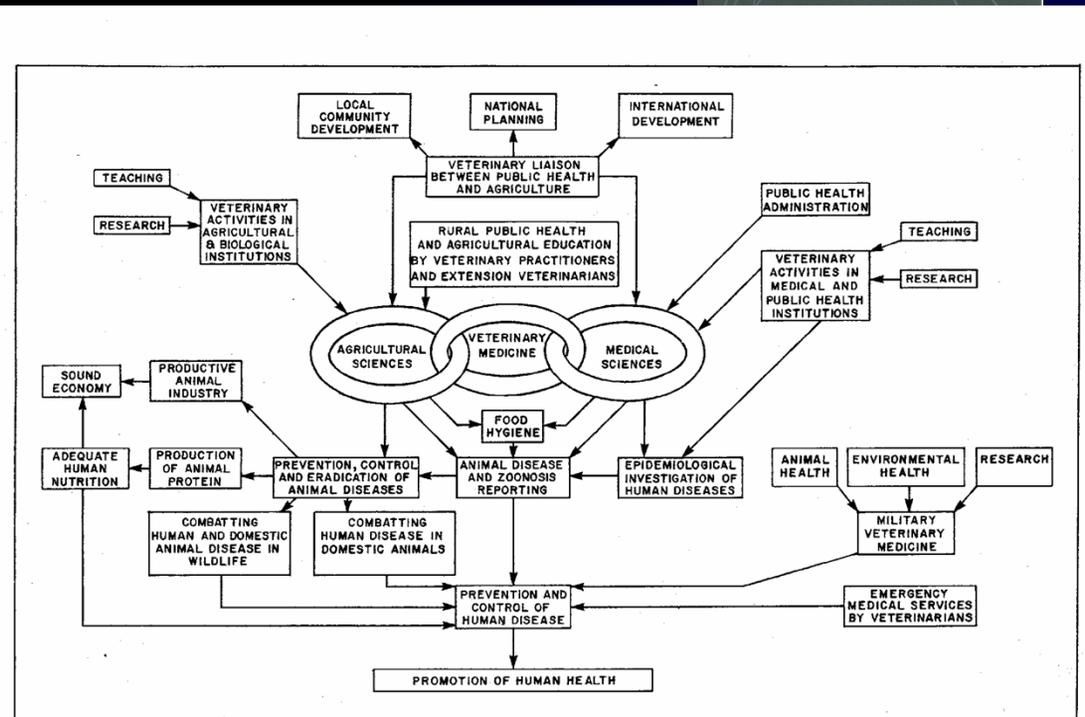
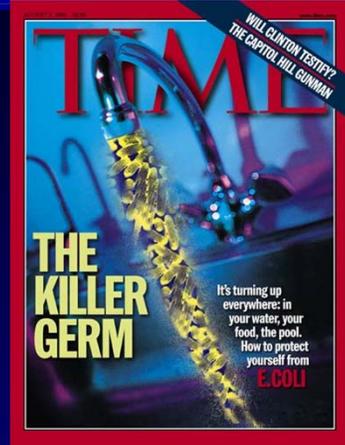


Figure 1.2. The multiple links veterinary medicine provides between medical sciences and agricultural sciences not only promote man's health in a variety of specific ways, but establish a firm basis for more general cross-sectoral cooperation between health and food programs in government.

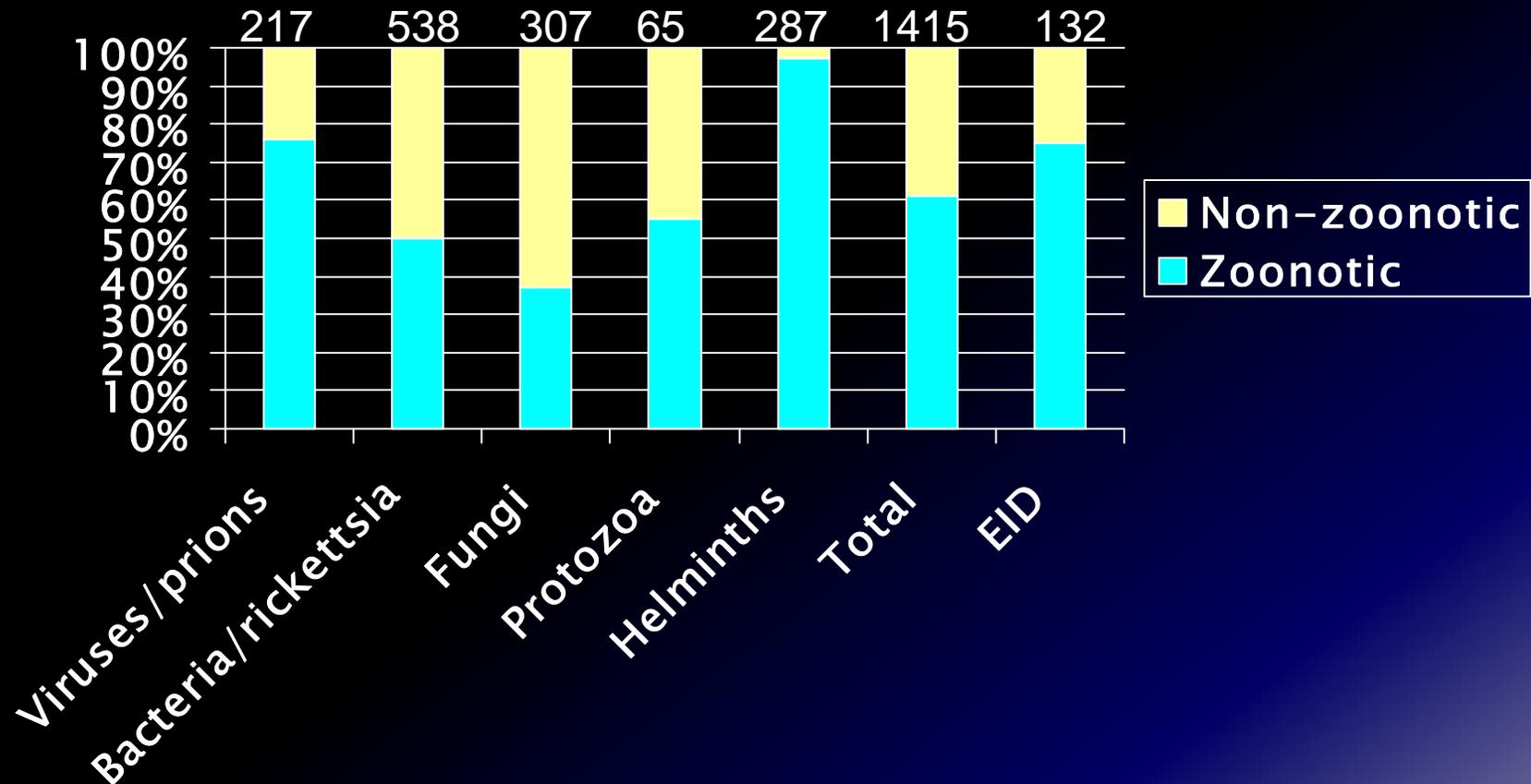
Emerging Infectious Diseases of Global Health and Agricultural Concerns—Links Between Animal and Human Health



Wild pigs suspected as cause of E. coli outbreak



1,415 Infectious Organisms Pathogenic to Humans and Percent Zoonotic



Source, Taylor LH et al. 2001; *Phil. Trans. R. Soc. Lond. B.* Vol. 356:983-989

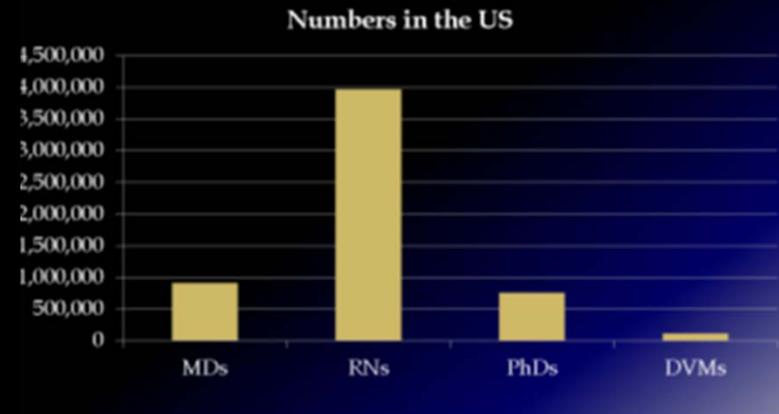
One Health Core Competency Domains–

- **Systems analysis/thinking** (recognizing and articulating complex problems; understanding multiple determinants; breadth of sectors, expertise needed to address problems)
- **Awareness of self-limitations; knowledge of other disciplines** – seeking expertise needed at the table; understanding that no single discipline/sector/perspective can be successful, know risks of not incorporating multiple perspectives
- **Leadership and management to effectively coordinate; advocate for change**
- **Teams and teamwork-** roles , responsibilities, accountability
- **Communication for collaboration**
- **Conflict resolution**
- **Values and ethics**

Challenges to Achieving One Health

- Workforce Issues
 - Number differentials
 - Support to attract different professions (focus of professions, jobs, debt repayment, pay differentials)
 - Example of veterinarians
 - Major emphasis on clinical practice (including those recruited into veterinary schools)
 - Too few in federal, state, public practice coupled with lack of specific demand by HHS, State health departments and perceived/real lack of jobs
 - Under-recognized numbers working in govt (e.g., attention only to 701 series)
 - Pay differential among those doing the same work

Numbers of Health Professionals In the US



Some Benefits / Importance of Multiple Disciplinary Expertise, Perspectives, Sectors

- Increased chance of right questions asked, right timeframes identified
- Increased chance of right/effective/ sustainable interventions/ actions/ outcomes implemented and achieved (synergy)
- Faster/quicker/more effective investigations/studies, response to near term, urgent situations and threats
- Leveraging / more efficient use of information, resources

17 Sustainable Development Goals – I

- **End poverty** in all its forms everywhere
- End hunger, achieve **food security** and **improved nutrition**, and promote **sustainable agriculture**
- Ensure **healthy lives** and **promote wellbeing** for all at all ages
- Ensure **inclusive** and **equitable quality education** and promote lifelong learning opportunities for all
- Achieve **gender equality** and **empower** all **women and girls**
- Ensure **availability & sustainable management** of water and **sanitation** for all
- Ensure access to **affordable, reliable, sustainable** and **modern energy** for all
- Promote **sustained, inclusive** and **sustainable economic growth**, **full** and **productive employment**, and **decent work** for all
- Build **resilient infrastructure**, promote **inclusive** and **sustainable industrialization**, and foster innovation

17 Sustainable Development Goals– II

- Reduce inequality within and among countries
- **Make cities and human settlements inclusive, safe, resilient and sustainable**
- Ensure **sustainable consumption and production patterns**
- Take urgent action to **combat climate change and its impacts**
- **Conserve and sustainably use the oceans, seas and marine resources for sustainable development**
- **Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation, and halt biodiversity loss**
- Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Strengthen the means of implementation and revitalise the global partnership for sustainable development