Veterinarian’s Oath

“Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health, the relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge…”
Public Health and Veterinary Medicine

- **Public Health** ~ “What we do as a society, collectively, to assure the conditions for people to be healthy” (Institute of Medicine, 1988)

- **Veterinary Public Health** ~ “The contribution to the complete physical, mental, and social well being of humans through an understanding and application of veterinary medical science” (WHO, 1999)

“One Health”
How does public health apply to me, I am going to be working with ______________?

You may be on the front lines of public health no matter what area of veterinary medicine you practice...
Public Health and Veterinary Medicine

- Veterinary pathologist in NYC in 1999 links diseases between animals and humans
  - West Nile Virus
- 60-70% of emerging infection in past 50 years have had a zoonotic component
- Recent epidemics have been zoonotic agents
Unique Training and Expertise

- Extensive education on zoonoses, vector-borne diseases, and antimicrobial resistance
- Focus on herd health and population dynamics
- Understand climatic and environmental factors influencing pathogens
Unique Training and Expertise

- Understand role of animals in epizootics and reemergence of diseases
- Training on non-traditional animals
  - Wildlife
  - Pocket pets
  - Avian
  - Reptiles
  - Amphibians
Roles of Veterinarians in Public Health

- Infectious Diseases/Zoonoses
- Food safety/Security
- Environmental health
- Chronic diseases
- HIV and AIDS
- Injury
- Immunizations
- Migration and Quarantine
- Health Education
- Toxicology
Location of Veterinarians in Public Health

Public Health Veterinarian

Federal
- HHS
- NIH
- CDC
- FDA

Military

State
- Dept of Health
  - State PH Vet
  - Regional or Local
- Dept of Ag
  - State Vet
  - Regional or Local

Academia
- Research
  - Professor/Clinician

Industry

Private Practice
Department of Health and Human Services

- National Institutes of Health (NIH)
- Centers for Disease Control and Prevention (CDC)
- Food and Drug Administration (FDA)
National Institutes of Health

- Primary federal agency for conducting and supporting medical research
- Help prevent, detect, diagnose, and treat disease and disability
- From the rarest genetic disorder to the common cold
- Funds millions of dollars in research each year
Centers for Disease Control and Prevention

“Promote health and quality of life by preventing and controlling disease, injury and disability”

- Monitor health
- Detect and investigate health problems
- Conduct research to enhance prevention
- Develop and advocate sound public health policies
- Implement prevention strategies
- Promote healthy behaviors
- Foster safe and healthful environments

Louisa Castrodale bleeding sheep in Bosnia for Q fever and brucellosis
Food and Drug Administration

- Food (except meat and poultry) is safe, wholesome, sanitary
- Drugs are safe, labeled properly, manufacturing standards
- Medical devices
- Human biologics
- Cosmetics
- Radiation electronics
- Veterinary products
  - Pet food, drugs and devices
United States Fish and Wildlife Services

- Conserve, protect and enhance fish, wildlife, plants and their habitats
- Habitat conservation, import-export, and hunting
United States Department of Agriculture

- Provides leadership on food, agriculture, natural resources, and related issues
  - Expanding markets for agricultural products
  - Support international economic development
  - Developing alternative markets for agricultural products and activities
  - Enhancing food safety from farm to table
FSIS – Food Safety Inspection Service

- Meat, poultry and egg products
- Safe, wholesome and properly labeled
- Largest single employer of veterinarians worldwide
- Interstate and international inspection
- Compliance with U.S. and international standards
- HACCP
Agriculture Research Service

- Mission is finding solutions to agricultural problems that affect Americans everyday, from field to table

- Research on:
  - Nutrition, food safety/quality
  - Animal production and protection
  - Natural resources and sustainable agricultural systems

ARS Veterinary Medical Officers Amy Vincent and Kelly Lager are leading ARS’s swine influenza virus research program.
APHIS – Animal and Plant Health Inspection Service

- Protecting American Agriculture
- Contributes to the national economy AND public health
- Includes:
  - Veterinary Services
  - Wildlife Services
  - Animal Care
VS – Veterinary Services

- Veterinary accreditation
- Laboratory services
- Biologics
- Monitoring and surveillance
- Disease eradication
- Emergency management
- Facilitate trade

Kendra Stauffer, USDA/VS, ear tagging a white-tailed deer fawn for the chronic wasting disease program
WS – Wildlife Services

- Provides federal leadership and expertise to resolve wildlife conflicts and create a balance that allows people and wildlife to coexist peacefully
- Protecting health and safety by preventing hazards that can exist due to interactions between wildlife and humans
- National rabies management program

Fish meal polymer baits
AC – Animal Care

- Provides leadership for determining standards of humane care and treatment of animals
- Support enforcement of Animal Welfare Act and Horse Protection Act
- Inspect zoos and aquariums, research facilities, petting zoos
Department of Homeland Security

- **Homeland Security Act 2002, Executive Order**
- **Customs and Border Patrol**
  - Securing and facilitating trade and travel and enforcing hundreds of U.S. regulations
  - 2,700 USDA port inspectors moved to CBP
- **Federal Emergency Management Agency (FEMA)**
  - Reduce the loss of life and property and protect the National from all hazards
U.S. Environmental Protection Agency

- Leads U.S. environmental science, research, education and assessment efforts

- Clean Water:
  - Clean Water Act and Safe Drinking Water Act
  - Marine Protection Act

- Clean Air

- Clean Land
Military

- Monitoring of disease trends
- Food safety practices and sanitation
- Preventative medicine
- Communicable disease control
- Advising commanders on military public health issues
- Directing food programs
- Managing contamination control programs
Location of Veterinarians in Public Health

Public Health Veterinarian

Federal
- HHS
  - NIH
- DOI
- USDA
- DHS
- EPA

Military
- Military

State
- Dept of Health
  - State PH Vet
  - Regional Or Local
- Dept of Ag
  - State Vet
  - Regional or Local

Academia
- Research
- Professor/Clinician

Industry
- Private Practice
SPHV – State Public Health Veterinarians

Housed in epidemiology, toxicology or environmental divisions

Generally work on zoonotic disease control and prevention

Regularly consult with physicians, emergency rooms, legislators, local officials, schools, health departments, and general public

Singular authority in most states on rabies exposures
State Departments of Agriculture

- SV – State Veterinarian
- Protection of livestock and the livestock industry, and of consumers by enforcing rules and regulations governing eradication and control of certain livestock and poultry diseases
- May also license and inspect pet feed and rendering plants to ensure safety of finished products
Location of Veterinarians in Public Health

Public Health Veterinarian

Federal
- HHS
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  - CDC
  - FDA
- DOI
- USDA
- DHS
- EPA

Military

State
- Dept of Health
  - State PH Vet
    - Regional Or Local
- Dept of Ag
  - State Vet
    - Regional or Local

Academia
- Research
  - Professor/ Clinician

Industry

Private Practice
Academia

- Professors, Researchers, Epidemiologists, Extension Services, Clinicians, and more…

- Public health residency programs
  - University of Minnesota (ACVPM approved)
  - The Ohio State University (ACVPM approval in progress)

- Educate students, veterinarians, health professionals, politicians, the public, etc.

- Study public health problems looking for solutions

- Incorporate public health into practice and policy
Industry

- Technical services specialists
- Management or staff roles for product production, quality assurance, product research, product field trials, marketing, sales, and general administration
- Business executives
- Board members
Private Practice

- Educate pet owners and farmers about the risks of acquiring zoonotic diseases
- Reduced transmission risks to humans by vaccinating and deworming large numbers of pets and livestock against zoonotic diseases
- Care for wildlife and exotic animals
So many options, but how many veterinarians work in public health?

- As of 2008:
  - 84,000 veterinarians in the U.S.
  - 4.1% work in public health at local, state, or federal level
  - About 90 veterinarians working at CDC
- Shortage of about 1,500 veterinarians in public health
  - Could rise to 15,000
- Special measures being made to hire veterinarians
Current status of education of veterinary students on public health

- **Core and elective courses**
  - Focus on zoonotic disease and educating clients
  - Do not necessarily focus on career paths

- **Externships**

- **Dual degree programs**
  - MPH
  - MPVM
  - MS/PhD
**CDC epidemiology elective program**

- **4th year veterinary and medical students**
- **6 weeks or longer between September and June**
- **Work with CDC epidemiologists to solve real-world public health problems**
- **Attempt to assign to preferred public health subject area**

**Assignment locations:**
- Atlanta
- Arctic Investigations Program (Anchorage, AK)
- Vector-borne Diseases (Fort Collins, CO)
- Indian Health Services (Albuquerque, NM)
USDA FSIS volunteer student program

- Formal agreement with 15 veterinary schools
  - UCD not included
  - Can sign a Student Agreement Form
- At least 1 week of full-time volunteer service
- Will be paired with a Veterinary Medical Officer
  - Demonstrate what their job is
  - If time will see variety of positions:
    - Consumer Safety Officer
    - Inspector In Charge
    - District Veterinary Medical Specialist
    - Frontline Supervisor
    - District Office Staff
Los Angeles County Veterinary Public Health Unit Veterinary Student Externship

- 3rd and 4th year students
- Hands on experience in a large metropolitan health department
- Three areas of focus:
  - Veterinary Public Health
  - Rabies Control
  - Bioterrorism
- Potential experiences:
  - Outbreak Investigation
  - Coordination with various sections in the Dept. of Health Services
  - Getting familiar with animal control agencies in the county
O.C. Hubert Student Fellowship in International Health

- 3rd and 4th year veterinary and medical students
- 6-12 weeks in a developing country
- Encourage students to think of public health in a global context

Examples of experiences:
- Guatemala: evaluation of various home drinking water treatment and storage methods
- Kenya: review of antiretroviral therapy
- Guinea: epidemiology of Lassa Fever
- Vietnam: surgery site infections
Opportunities and training after graduation

- **Pursue additional degree(s)**
- **Fellowship or training programs**
  - Laboratory research
  - Epidemiology
  - Development, implementation and evaluation of disease prevention and control programs
Epidemiologic Investigation Services at the California DHS (Cal-EIS)

- One year fellowship for medical professionals
- Must have at least a Master’s degree
  - Veterinarians must have taken epidemiology and biostatistics at the graduate level
- Goal: train epidemiologists for public health leadership in California
- Decent salary (better than intern or resident salary)
Epidemic Intelligence Service (EIS) at CDC

- Two-year, post-graduate program
- “On the job” training for health professionals
- Veterinarians should have an MPH or equivalent or public health experience
- Salary comparable to new graduate salary
- Can lead to career in federal government
- Option to be in the USPHS
Emerging Infectious Diseases Fellowship Program (APHL/CDC)

- 2 year post-doctorate experience
- Conduct high-priority research in infectious diseases related to public health
- Placement at CDC or State Public Health Laboratory
ASM/CDC Program in Infectious Disease and Public Health Microbiology

- 2 year post-doctorate experience
- New approaches, methodologies and knowledge in infectious disease prevention and control
- Fields of study:
  - Bacterial and Mycotic Diseases
  - Viral and Rickettsial Infections
  - Nosocomial Infections
  - HIV/AIDS
  - Vector-borne Infectious Diseases
  - Parasitic Diseases
Other programs

- CDC posts applied and laboratory research opportunities (link in OIE paper)

- Examples currently posted:
  - Division of Laboratory Science Post-Doctoral Program
  - National Laboratory Training Network
  - James A. Ferguson Emerging Infectious Diseases Fellowship

- Program Locator
Pathways to public health that have worked

- Many examples
- Does not need to be a planned career
- Our education is perfect training for public health
Robyn Stoddard, DVM, PhD

- **Education:**
  - UCSC: BA in biology with research on elephant seals
  - UCD:
    - DVM: Independent track (mainly mixed animal) with externship at Sea World
    - PhD: Elephant seals as sentinels of fecal pollution in the marine environment and effect of antimicrobial drug use in rehab

- **Microbiologist in the Bacterial Special Pathogens Branch**

- **Run routine serology for diagnosis of leptospirosis, brucellosis and anthrax**

- **Research projects and travel**
Kate Glynn, DVM, MPVM

- **Training:**
  - Cal-EIS and EIS at CDC
  - *International Experience and Technical Assistance (IETA) program*

- **Many positions at CDC:** Foodborne, Surveillance, HIV/AIDs, Bacterial Zoonoses Branch Chief

- **Current position:** OIE, Scientific and Technical Department

- **Main activities:**
  - One Health: reducing the risk of infectious diseases at the human-animal-ecosystems interface
  - Emerging infectious zoonotic diseases
  - Capacity building: improving veterinary services as a global public good
  - Liaison to CDC One Health Office
First Time Ebola Found in Pigs

Ebola has been found in the Philippines. Pigs on two farms have been found carrying the Ebola-Reston virus, and one person has been infected. Ebola-Reston is not normally dangerous, but this development does indicate that humans could catch lethal Ebola from pigs.

Concern over Ebola virus in pigs

A form of Ebola virus has been found in pigs, which could lead to human disease.
Kendra Stauffer, DVM

- **Training/ Previous Jobs:**
  - Private practice for 5 years
  - Diplomate of ACVPM
  - USDA, Veterinary Services: Veterinary Medical Officer
    - Worked with regulatory diseases
    - Area emergency coordinator: focus on Agro-terrorism
  - EIS at CDC

- **USDA, VS: Florida Area Emergency Coordinator**
  - Protects/improves health, quality and marketability of nation’s animals, animal products, and veterinary biologics
Kendra Stauffer, DVM

- **Day to day:**
  - Investigate any animal/herd with potential regulated diseases by feds or state
  - Work with officials to prepare, mitigate, respond and recover from any hazard
  - Make sure importer and exporters meet regulations

- **Bigger projects:** incorporate One Health into the Veterinary Services Strategic Plan
Training/Work History:
- Small animal/Avian/Exotic/Wildlife medicine and research
- Zoo veterinarian
- University of Texas: Attending veterinarian and faculty member

FL Department of Health: H1N1 Veterinary and Agriculture Liaison
- Help county HD to engage and integrate vet and agriculture with public health
- Also liaison for the Florida Vet’s Office
- Supports DOH’s interest in wildlife issues with FL Fish and Wildlife Commission
Education/Training
- Grew up on farm
- Peace Corps

CDC: Jack of all trades monkey (Veterinary Medical Officer) in Special Pathogens Branch
- Viral pathogenesis and molecular biology

Day to day is highly variable

Bigger project: multicenter characterization of the Rift vaccines
Clifton Drew, DVM, PhD

Training:
- Private practice for 2 years
- UCD: Anatomic Pathology Residency, Diplomate ACVP

CDC: Research VMO/Staff Pathologist in the Infectious Disease Pathology Branch

Day to day:
- Reviewing H&E/IHC slides of submitted through our diagnostic service
- Collaborating with researchers on animal models of infectious disease
Diana Blau, DVM, PhD

- **Training:**
  - Post-doc and faculty work on coronavirus
  - During vet school
    - Joined Army
    - Worked at USDA doing epidemiology (dairy work)
  - Active duty, USAMRRID working on animal models of biothreat agents
  - EIS at CDC in Infectious Disease Pathology Branch

- **CDC: VMO in IDPB**

- **Day to day:**
  - Get info on submitted cases
  - Take questions from pathologists/public health labs
  - Run projects, help others with projects

- **Big projects: One Health and Nigeria**
Sean Shadomy, DVM, MPH

- **Training**
  - ROTC in Undergrad
  - In Army Reserves in Vet school
  - After, 4 years active duty as Army Veterinarian
  - FDA: Vaccine safety
- **CDC:** BSPB, Epidemiologist
- **Day to day:**
  - SME: Anthrax, leptospirosis
- **Big projects:** AFI study in Uganda
For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov    Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.