20th and 21st Century Veterinary Public Health Success Stories

World Veterinary Year 2011:

250 Years of Improving Animal and Human Health

Marguerite Pappaioanou, DVM, PhD

Bias to Presentation

- US Emphasis
- US Centers for Disease Control and Prevention

“Veterinary Public Health”

- “Comprises all the community efforts, influencing and influenced by the veterinary medial arts and sciences applied to the prevention of disease, protection of life, and promotion of the well-being and efficiency of man” (WHO, 1951)
- “A component of public health activities devoted to the application of professional veterinary skills, knowledge and resources to the protection and improvement of human health” (FAO/WHO, 1975)
- “The sum of all contributions to the physical, mental, and social well-being of humans through an understanding and application of veterinary science” (WHO, 2002)
- “Public health is what we, as a society, do collectively to assure the conditions in which people can be healthy” (IOM 1988)

17th-19th and turn of the 20th Century

- Human population increasing after devastating plague pandemic– increased need for food/protein--hunger
- Multiple wars
- Human Disease -- typhus, dysentery, spotted fever, anthrax, tuberculosis
- Animal diseases-- Rinderpest, anthrax, swine erysipelas, more!
- Etiology- pathogenesis -- Koch, Pasteur, Salmon, Smith and Kilbourn, Ross, more!

20th and 21st Century Success Stories

- Food security, safety, systems, globalization of food systems
- Changing food animal production systems; implications for disease spread-prevention-control, population based health systems, issues of animal welfare, antibiotic use/resistance, sustainability
- Emerging Zoonotic Diseases
- Bioterrorism, and role of zoonotic agents (Anthrax-2001)
- Natural and human-made disaster preparedness and response
- Genetics, genomics, proteomics
- Evolving Human Animal Bond

20th and 21st Century Success Stories

- Application of epidemiology, population medicine
- Information pathways– the media, the internet, public and professional awareness
- Organized veterinary public health
- Growing visibility for One Health
- Evolving and advancing veterinary medical education
- Leaders Champions and Heroes

Success Story 1

FOOD SECURITY, SAFETY

Success Story-- Food Systems

- 7 Billion People and Growing-- Food security
  - Eradication and control of major food animal diseases such as Tb, Brucellosis, Hog Cholera, Anthrax, Foot and Mouth Disease (14 diseases eliminated since 1892)
  - Disease surveillance
  - Development and production of diagnostics and vaccines
  - Food animal production, consolidation, population health, international trade
  - Nutrition, genetics, genomics, proteomics
- Sustainability and Health
  - Human, animal, ecosystem health; human under and over nutrition, poverty, climate change, ecosystem health, animal welfare
  - Use of antibiotics and growth promoters

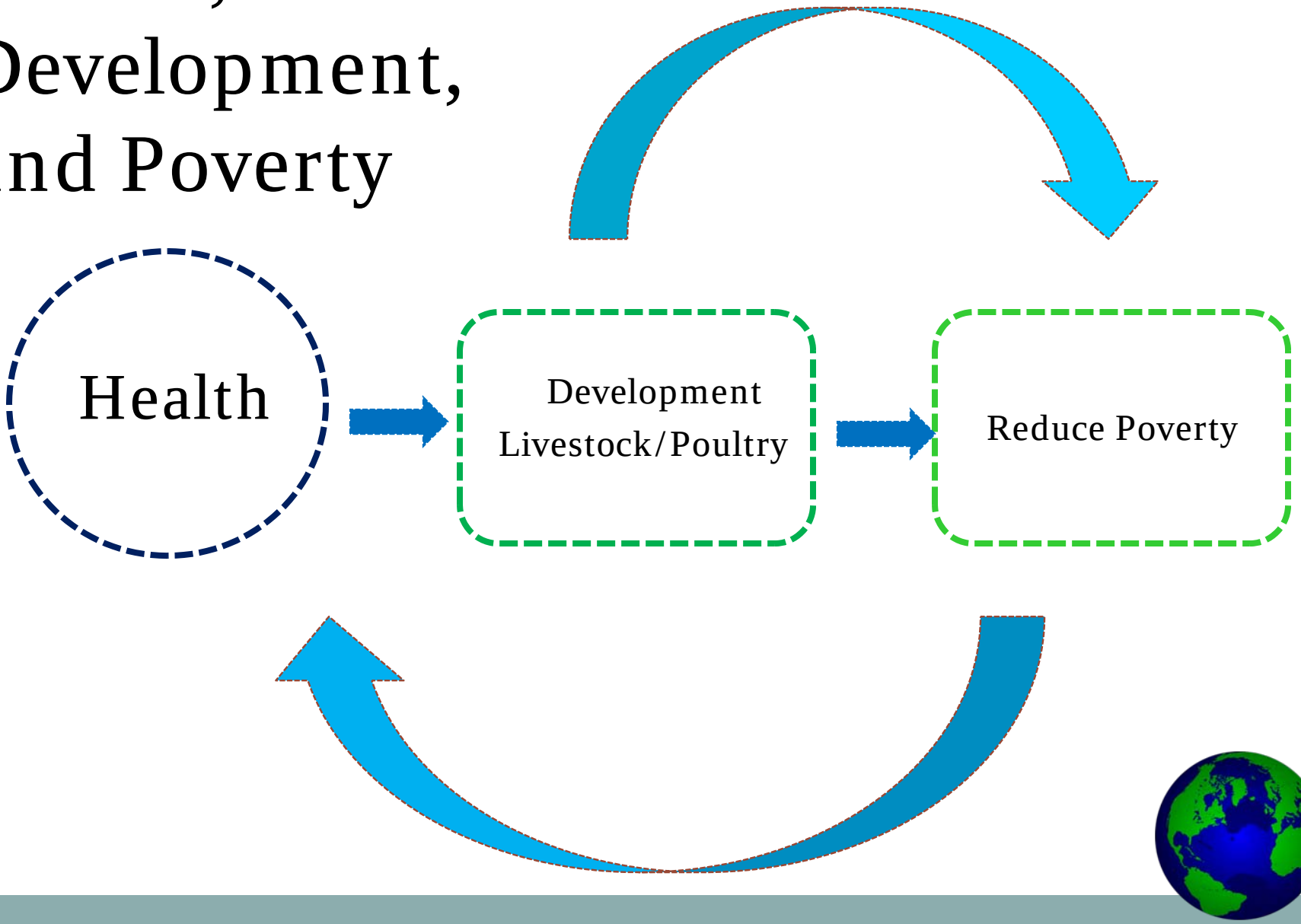
Success Story -- Food Safety

- Milk regulations, pasteurization
- Meat Hygiene – Upton Sinclair, “The Jungle” – slaughterhouse and waste management
- Food processing
- Hazards Analysis Critical Control Points (HACCP)
- Globalization of food systems
- Population based health systems
- Silent human food borne pathogens in animals
  - Salmonella spp.
  - E coli 0157: H7
- Vaccine development
- Alternative antimicrobials/to antibiotics
- Surveillance systems for foodborne pathogens, outbreaks & antibiotic resistance– Foodnet; Pulsenet; Salmsurv
- Outbreak investigation methodology

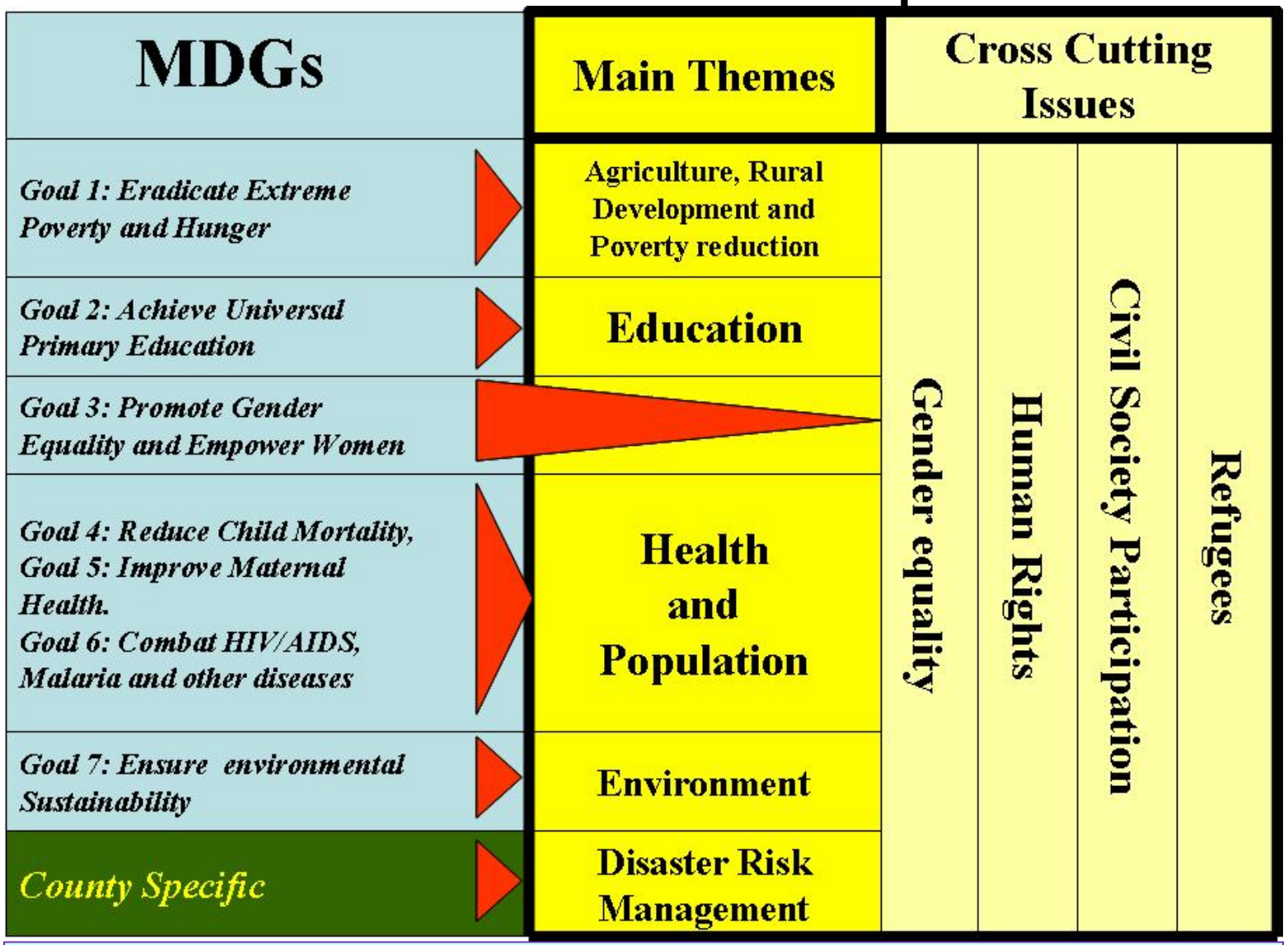
Success Story 2

GREATER VISIBILITY FOR LINKS BETWEEN AGRICULTURE, DEVELOPMENT, GLOBAL HEALTH

Health, Development, and Poverty



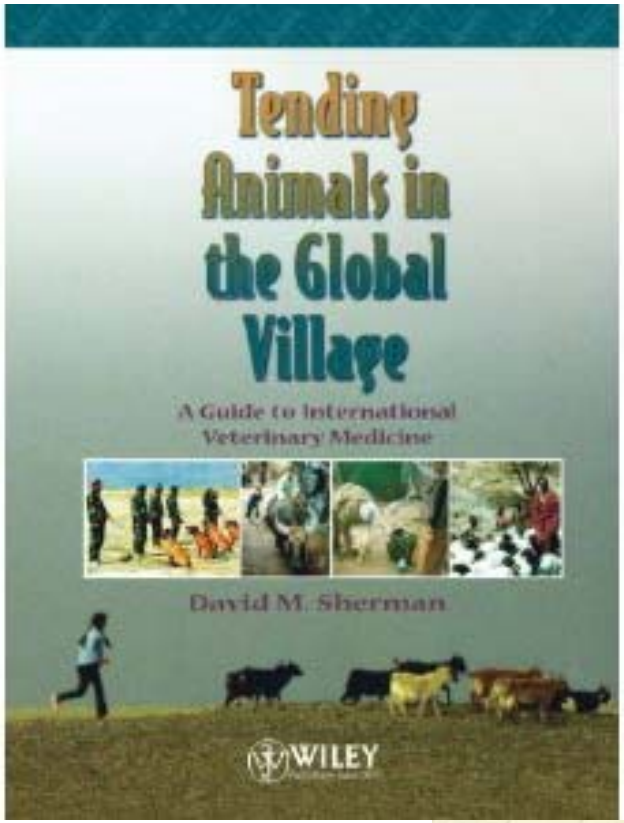
Millenium Development Goals

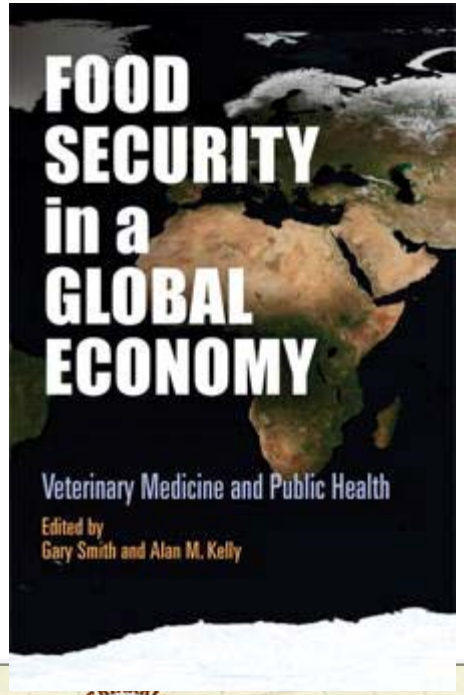


Source: UNDP

Goal 8: Develop a Global Partnership for Development

Goal 8: Develop a Global Partnership for Development



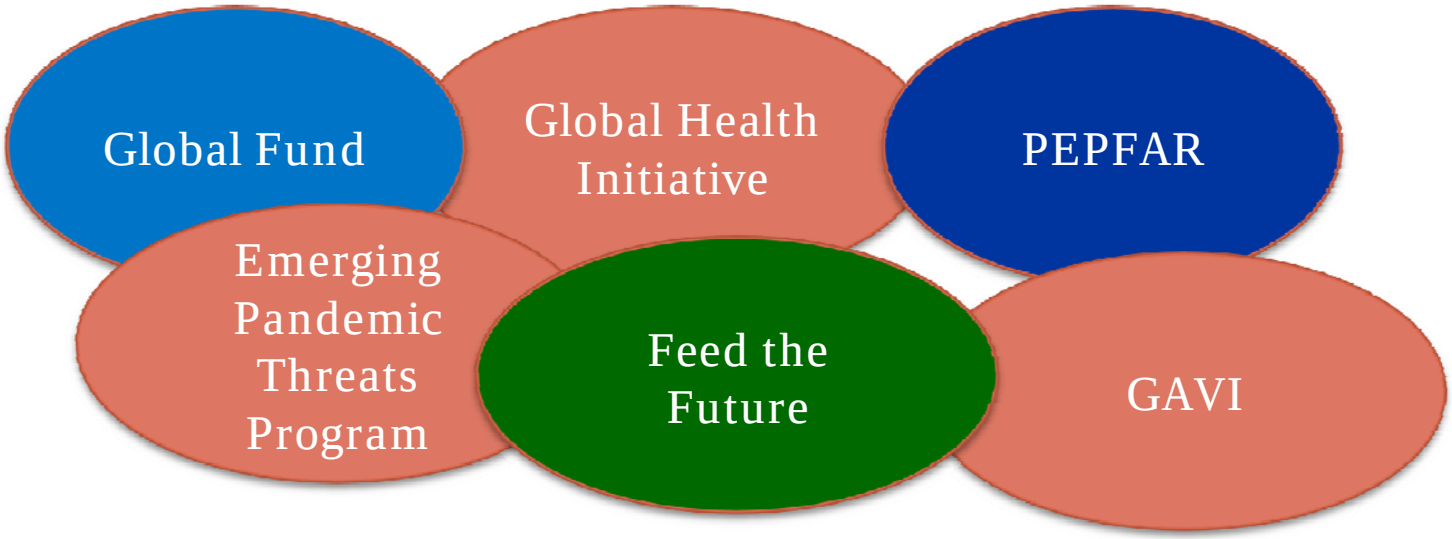


VETERINARIANS WITHOUT BORDERS U.S.

"Healthy Animals
Sustain A Healthy World"

WHO WE ARE • VETERINARIANS TO LIBERIA PROJECT • DONATIONS NEWSLETTER

Greater Awareness of Connectedness Between Major Global Health Initiatives



Success Story 3

CONFRONTING EMERGING ZOONOTIC DISEASES

PROFESSIONAL AND PUBLIC AWARENESS OF THE ROLE OF VETERINARY MEDICINE

Emerging Zoonotic Diseases

- Rabies treatment, control, prevention
- BSE in UK, 1986
- Introduction of West Nile Virus into the Western Hemisphere, 1999
- Anthrax bioterrorism event, 2001
- SARS outbreak 2003
- FMD UK, 2001
- Highly pathogenic AIV H5N1, 1997 and 2003-now
- Pandemic H1N1 influenza virus, 2009

Rabies Treatment, Prevention, Control

- Human vaccines- prevention, and treatment
  - Nerve tissue derived vaccines (first in 1885, Pasteur and Roux)
  - Human diploid cell rabies vaccine (1967)
  - New less expensive purified chicken embryo cell vaccine and purified vero cell rabies vaccine now
  - Pre- and post exposure regimens
  - Human rabies immunoglobulin treatments
- Long acting canine, feline, ferret vaccines
  - Original vaccines needed to be administered every 6 months
  - Inactivated and modified live virus vectored products– 1- 3 years
- Wildlife vaccines
  - Recombinant oral vaccine to prevent outbreaks of rabies in wildlife
- Bite management
- Management of animals that bite humans

West Nile Virus Introduction in Western Hemisphere

MMWR Weekly
October 01, 1999 / 48(38);845-9

Outbreak of West Nile-Like Viral Encephalitis -- New York, 1999

An outbreak of arboviral encephalitis was first recognized in New York City in late August and has since been identified in neighboring counties in New York state. Although initially attributed to St. Louis encephalitis (SLE) virus based on positive serologic findings in cerebrospinal fluid (CSF) and serum samples using a virus-specific IgM-capture enzyme-linked immunosorbent assay (ELISA), the cause of the outbreak has been confirmed as a West Nile-like virus based on the identification of virus in human, avian, and mosquito samples.

On August 23, 1999, an infectious disease physician from a hospital in northern Queens contacted the New York City Department of Health (NYCDOH) to report two patients with encephalitis. On investigation, NYCDOH initially identified a cluster of six patients with encephalitis, five of whom had profound muscle weakness (with axonal neuropathy by electromyelogram and requiring respiratory support [n=four]). Testing of these initial cases by IgM-capture ELISA for antibodies to the common North American arboviruses was positive for SLE virus on September 3 at CDC. Eight of the earliest case-patients were residents of a 2-by-2-mile area in northern Queens. On the basis of these findings, aerial and ground applications of mosquito adulticides and larvacides were instituted in northern Queens and South Bronx on September 3.

To [illegible]e the geographic extent of the outbreak, NYCDOH initiated active surveillance on August 30, and the Westchester County Department of Health and [illegible] Nassau County Department of Health initiated active surveillance on September 3. Surveillance is also ongoing in surrounding areas. A clinical case is d[illegible]ed as a presumptive diagnosis of viral encephalitis with or without muscle weakness or acute flaccid paralysis, Guillain-Barre syndrome, aseptic m[illegible]s, or presence of the clinical syndrome characterizing the initial cluster of cases in a patient presenting after August 1.

Before and concurrent with this outbreak, local health officials observed increased fatalities among New York City birds, especially crows. During September 7-9, officials of the Bronx Zoo noted the deaths of a cormorant, two captive-bred Chilean flamingoes, and an Asian pheasant. Necropsies performed on these birds at the zoo revealed varying degrees of meningo-encephalitis and severe myocarditis. Tissue specimens from these birds and a crow with pathologic evidence of encephalitis from New York state were sent to the U.S. Department of Agriculture National Veterinary Services Laboratories (NVSL) in Ames, Iowa, on September 10 to be tested for common avian pathogens and the equine encephalitis viruses; all tests were negative. NVSL isolated viruses from the birds' tissues and forwarded them to CDC on September 20 for identification and characterization.

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MMWR

Weekly

October 08, 1999 / 48(39);890-2

Update: West Nile-Like Viral Encephalitis -- New York, 1999

The outbreak of human arboviral encephalitis attributable to a mosquito-transmitted West Nile-like virus (WNLV) continues to wane in the Northeast (Figure 1). As of October 5, the number of laboratory-positive cases had increased to 50 (27 confirmed and 23 probable), including five deaths. The increase in cases is mainly a result of completed retesting with West Nile virus antigen of specimens previously tested with the related St. Louis encephalitis virus antigen and to intensive retrospective case finding in the ongoing epidemiologic investigations (1,2).

Of the 50 case-patients, none had onset of illness after September 17. Thirty-eight resided within boroughs of New York City (NYC): 26 from Queens, one from the Bronx, two from Manhattan, and one from Brooklyn. An additional 12 cases were reported from the adjacent counties of Westchester (eight) and Nassau (four). In NYC, the earliest laboratory-positive case occurred in a patient on August 4, followed by 11 cases in patients from Queens with onset dates ranging from August 5 to August 18.

The association of WNLV with deaths in crows and domestic and exotic birds was confirmed during September. As a result, CDC, state wildlife veterinarians, and an expanding group of federal agencies are using deaths in crows as sentinel events to define the current geographic distribution of mosquitoes and birds infected with WNLV (1). As of October 5, results from selected bird tissue samples tested indicate that WNLV has been identified from 41 avian tissue specimens collected in NYC; Nassau, Suffolk, Rockland, and Westchester counties in New York; Fairfield County, Connecticut; and Bergen, Union, Middlesex, and Essex counties in New Jersey. No human cases of encephalitis attributable to WNLV have been reported from either Connecticut or New Jersey. Pools of *Culex* mosquitoes collected in localized areas of Queens, Brooklyn, and the Bronx in mid-September and a pool

Time Line to Confirmation of WNV 1999

1st patient admitted to hospital, Queens

human sera tested positive for SLE

Veterinary pathologist suspects human and bird epidemics linked

CDC confirms WNV

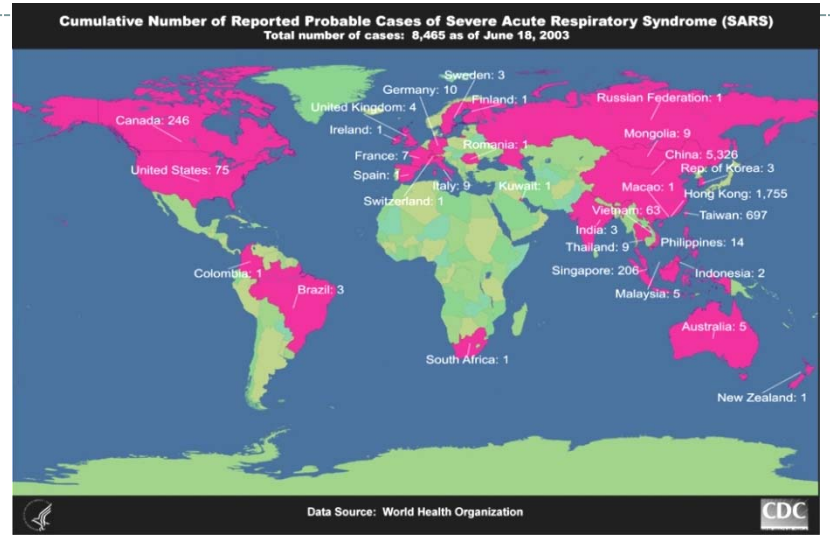
Introduction | 12-Aug | 3-Sep | 9-Sep | 23-Sep

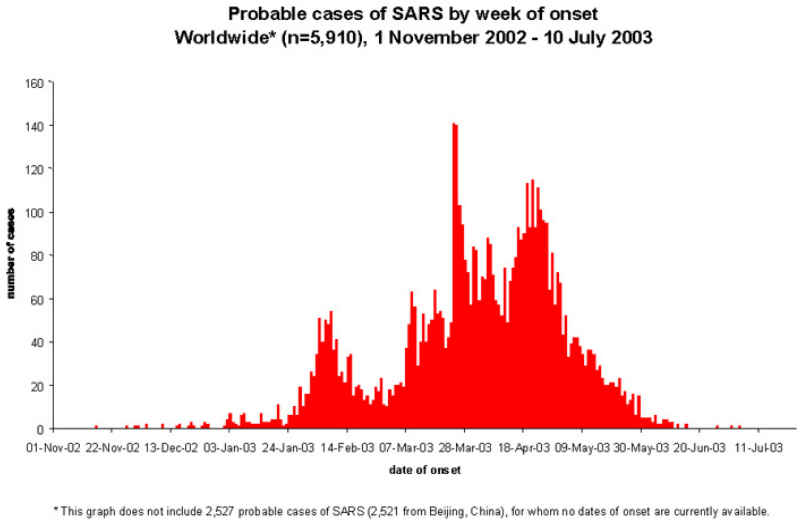
- ArboNET– integrated surveillance system launched

Severe Acute Respiratory Syndrome

Outcomes – SARS 2003

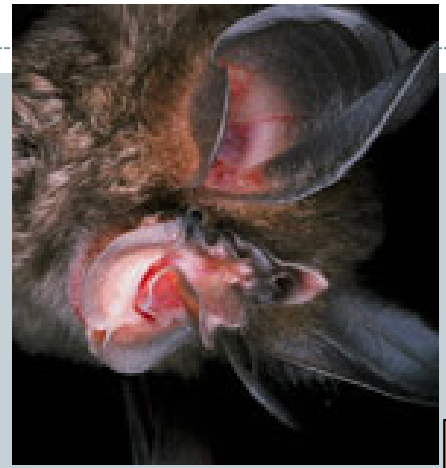
- 29 countries/areas
  - 8,098 cases
  - 774 deaths (9.6%)
- $1 Billion US to economies of Asia and Canada
- Importance of laboratories working together emphasized





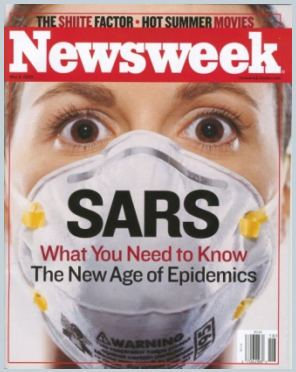
The Reservoir of SARS Discovered 2005

- Chinese Horseshoe bats

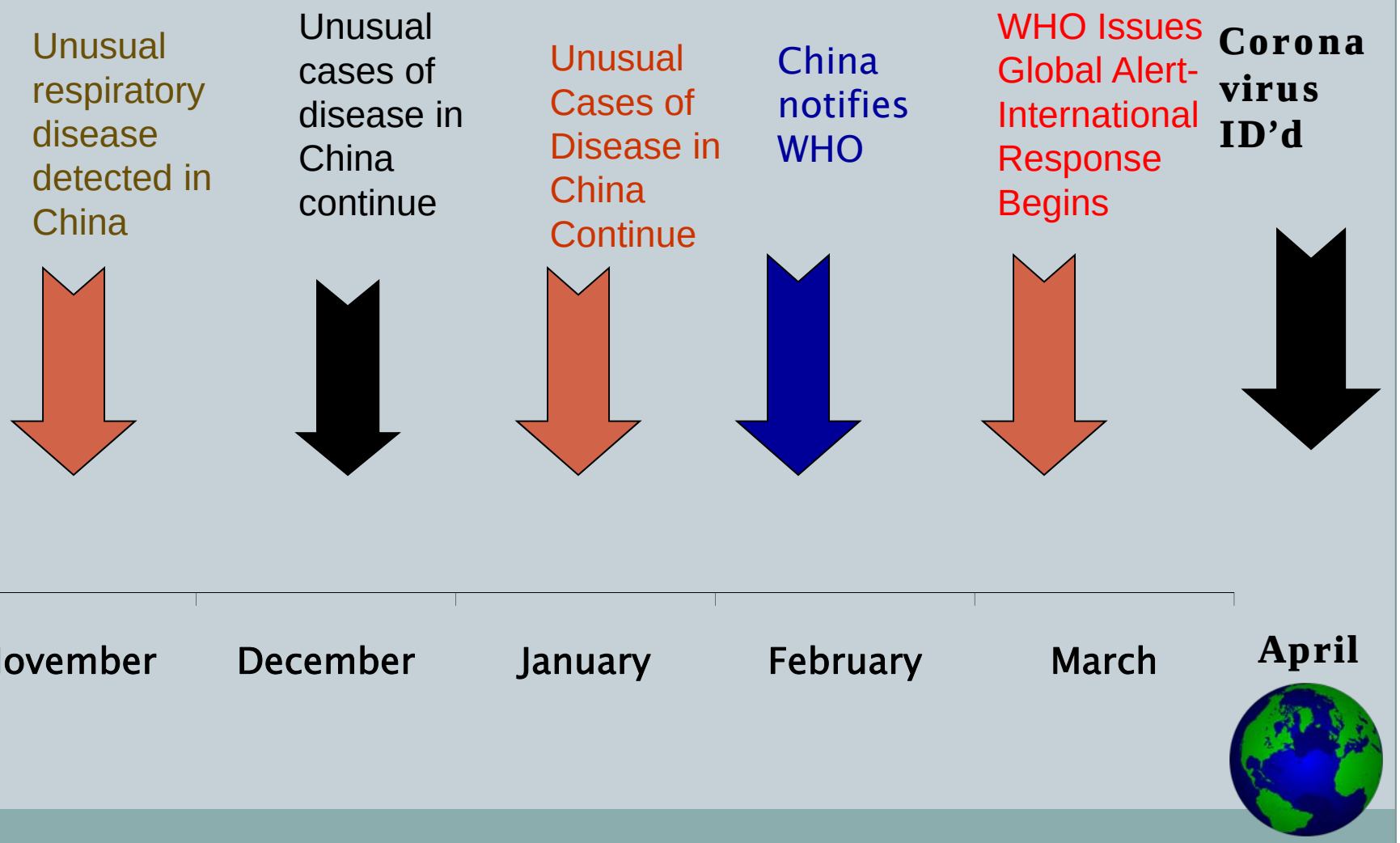


- Civets

- Live animal markets
- Humans



Time Line to Confirmation of SARS 2002/2003

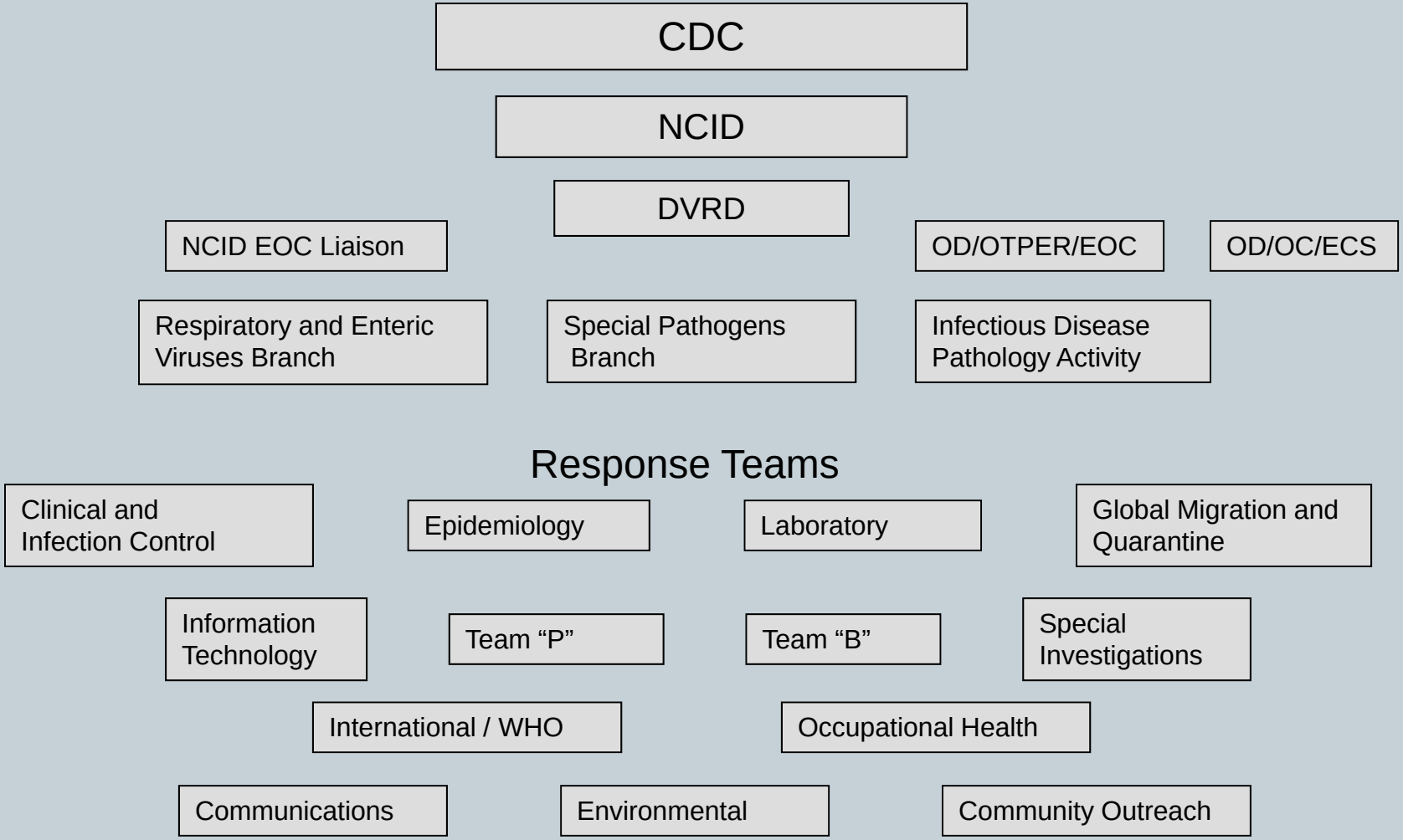


Unknowns at Start of Outbreak

- Who is affected/at risk of infection?
- What is the clinical picture?
- What is the incubation period?
- What is the source of infection?
- How and when is the infection transmitted?
- What is the etiology– is there a diagnostic test?
- How can transmission be prevented?
- How can transmission be contained?
- What are effective treatments?

CDC SARS Investigation 2003

May 1, 2003



CDC's Staff Deployed Internationally

- Assigned to and participated in WHO teams
- Disease surveillance
- Epidemiologic Studies
- Infection Control
- Occupational issues
- Environmental issues
- Training infection control personnel

CDC Response-- Team B

- Team to think “outside of the box” apart from immediate response efforts
- Etiology, prevention, response, treatment
- Animal Coronavirus Experts consulted
  - Niels Pederson, UC Davis, feline coronaviruses
  - Linda Saif – bovine coronaviruses
  - Swine coronavirus

HP AIV H5N1

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MMWR

Weekly

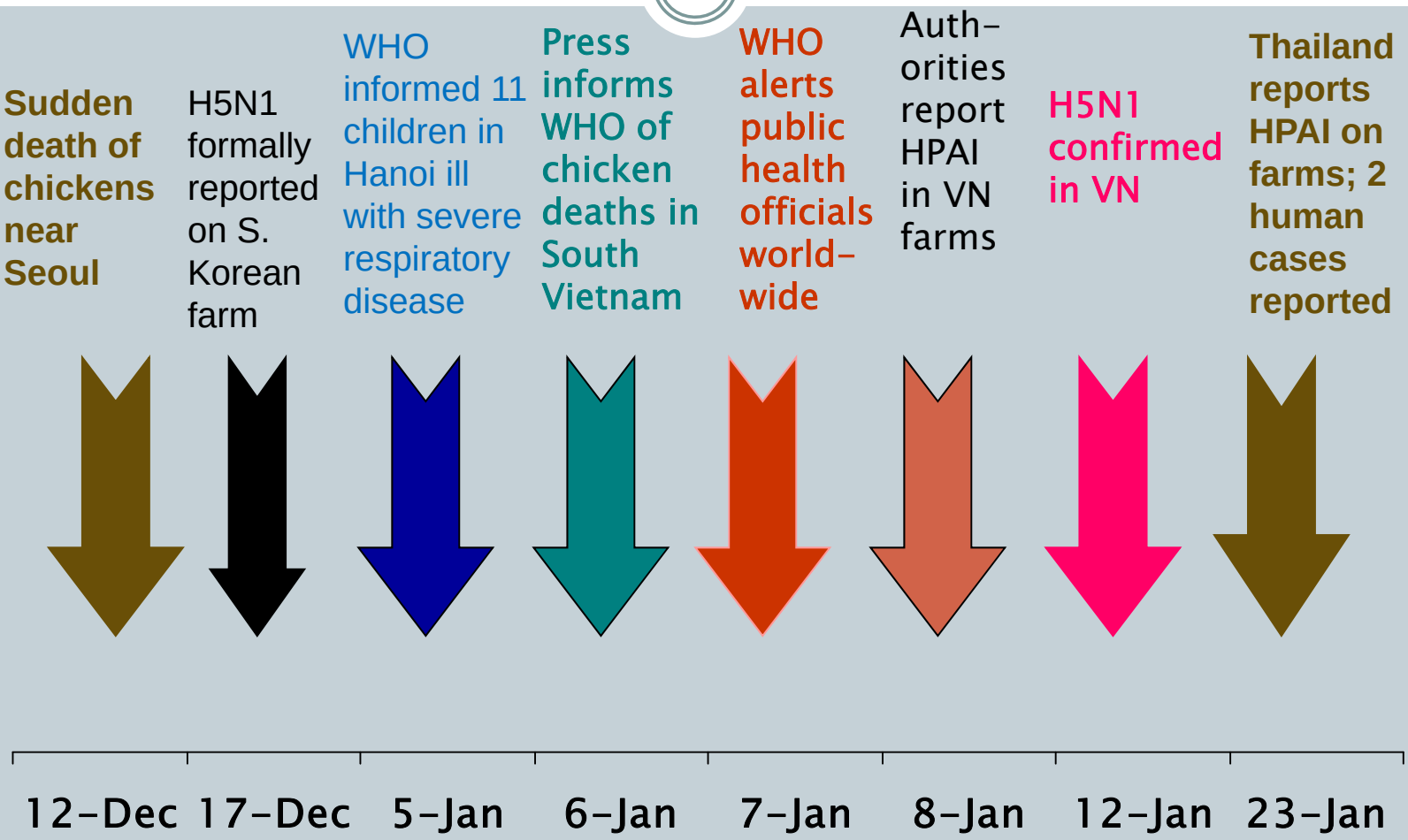
December 19, 1997 / 46(50);1204-1207

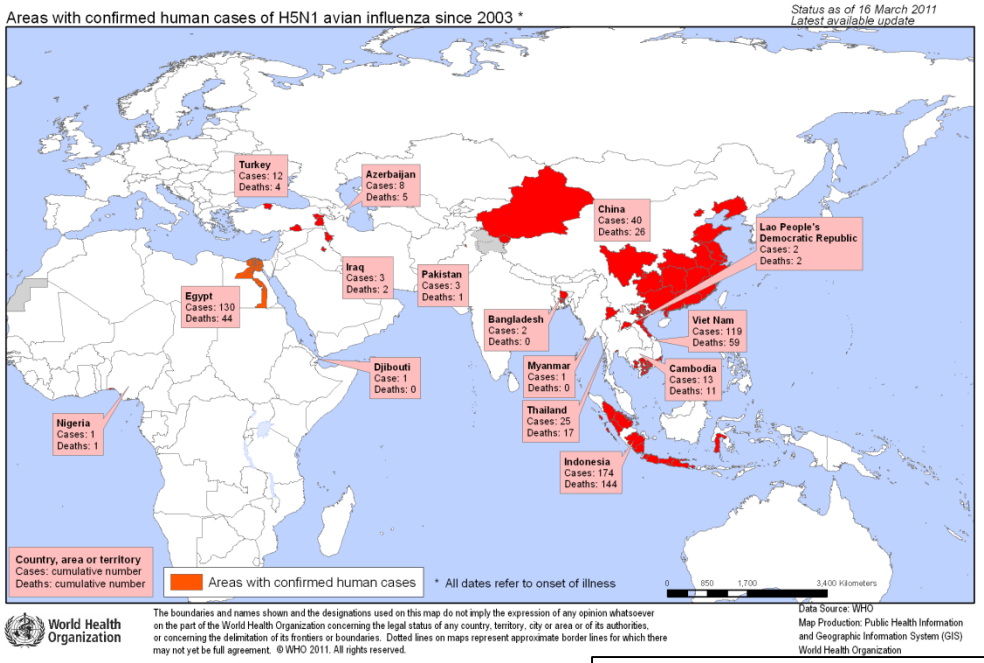
Isolation of Avian Influenza A(H5N1) Viruses from Humans -- Hong Kong, May-December 1997

A strain of influenza virus that previously was known to infect only birds has been associated with infection and illness in humans in Hong Kong. The first known human case of influenza type A(H5N1) occurred in a 3-year-old child who died from respiratory failure in May 1997. In Hong Kong, the virus initially was identified as influenza type A, but the subtype could not be determined using standard reagents. By August, CDC; the National Influenza Center, Rotterdam, the Netherlands; and the National Institute for Medical Research, London, United Kingdom, had independently identified the virus as influenza A(H5N1). An investigation conducted during August-September by the Hong Kong Department of Health and CDC excluded the possibility of laboratory contamination. Since this initial case was identified, six additional persons in Hong Kong have been confirmed to have influenza A(H5N1) infection, and two possible cases have been identified. This report summarizes the nine cases identified thus far and describes preliminary findings from the ongoing investigation, which indicate that multiple influenza A(H5N1) infections have occurred and that both the source and mode of transmission are uncertain at this time. Confirmed Cases

Patient 1. On May 9, 1997, a previously healthy 3-year-old boy developed fever, sore throat, and cough. The child's symptoms persisted, and on May 15, he was hospitalized. His illness progressed, and on May 18, he was admitted to the pediatric intensive care unit (ICU). On May 21, the child died from acute respiratory distress secondary to viral pneumonia. Influenza A(H5N1) virus was isolated from a tracheal aspirate collected on May 19. The child may have been exposed to ill chickens before he became ill

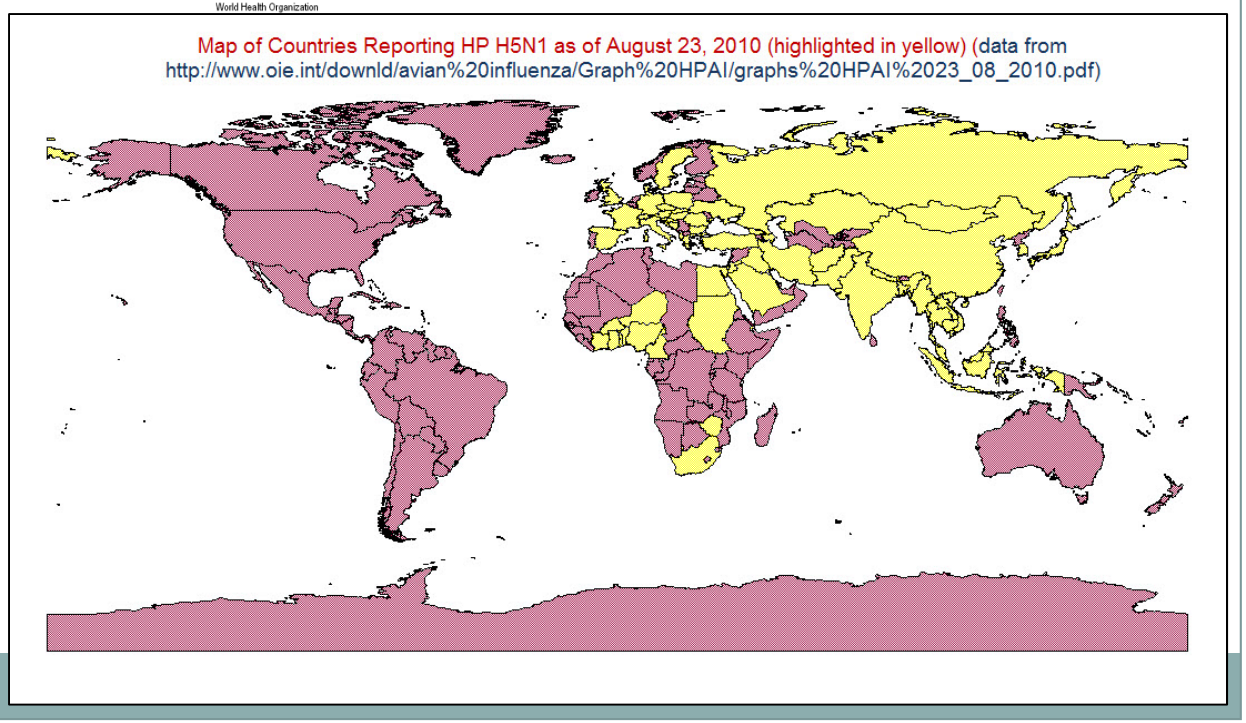
Avian Influenza 2003- 2004





Global Distribution of Reported HP AIV H5N1

2011 (human)
2010 (animal)



FMD UK February-October 2001

- Followed
  - Widespread BSE in cattle (1985-early 1990s)
  - Drop in agricultural income 1995-2000 by 64%
- Trade implications–> eradication
  - Movement restrictions (people and animals)
  - Slaughter on suspicion (clinical signs only)
  - All animals on contiguous farms within 3 km of infected area slaughtered
  - 4- 10 M animals slaughtered over 6-8 months
- Agriculture, Service Industry, Tourism, other sectors affected
- Multidisciplinary US team visits Department of Health in the UK regarding public health concerns

Public Health Concerns

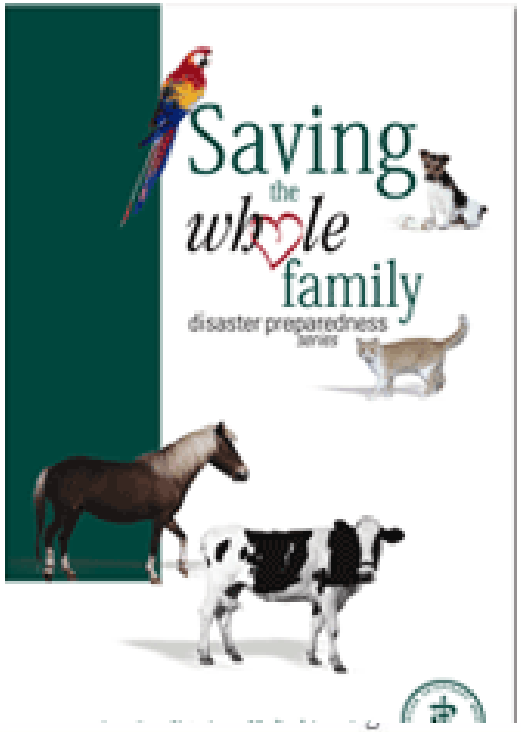
- Majority of Concerns Related to Animal Disease Control Options and Carcass Management
  - Environmental Health
  - Occupational Health
  - Behavioral / Mental Health
  - Food Safety and Security
  - Human Disease/Injury/Exposure Surveillance
  - Risk Communication
  - Emergency Preparedness

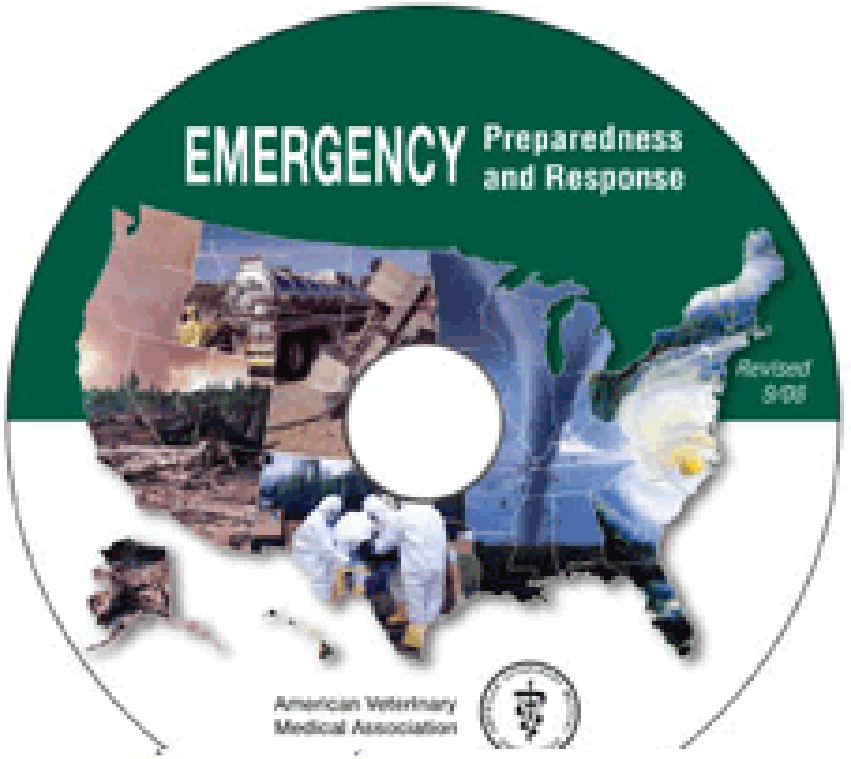
Lessons Observed

- Public health concerns will arise with an FMD outbreak
- Public health needs to be at the decision-making table on disease control from the start
- Coordination needed among agricultural & public health agencies
- Regional and local input critical at all stages of decision-making
- Standardized approaches to disease control and response needed across country
- Provide media training on FMD to human and animal health personnel

Success Story 4

EMERGENCY PREPAREDNESS AND RESPONSE





H.R. 3858: Pets Evacuation and Transportation Standards Act of 2006

109th Congress
2005-2006

To amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to ensure that State and local emergency preparedness operational plans address the needs of individuals with household pets and service animals following a major disaster or emergency.

Success Story 5

EVOLVING HUMAN ANIMAL BOND AND IMPORTANCE TO PUBLIC HEALTH

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National Center for Infectious Diseases

Healthy Pets Healthy People

HPHP Home | Health Benefits | Contact Us

Health Information

- Browse by Animal
- Browse by Disease

Prevention Tools

- For People at Extra Risk
- For Health Professionals

Go To...

- Glossary
- Resources
- Foodborne and Diarrheal Diseases Branch

Introduction

Pets provide many benefits to humans. They comfort us and they give us companionship. However, some animals can also pass diseases to people. These diseases are called zoonoses.

Although animals can carry germs, it is important to know that you are more likely to get some of these germs from contaminated food or water than from your pet or another animal you encounter. CDC has created this Web site to provide you with information about the health-related risks of owning and caring for animals. We encourage you to follow the links located throughout this Web site for general information about companion and wild animals and the diseases they can carry.

Many groups encourage people to enjoy the benefits of common household pets. By following CDC's simple tips on the Healthy Pets, Healthy People Web site, you can enjoy your pets while protecting yourself against diseases they carry.

Because wild animals can carry diseases that are dangerous to people, CDC discourages direct contact with wildlife. You should never adopt wild animals as pets or bring them home. Teach children never to handle unfamiliar animals, wild or domestic, even if the animals appears to be

What's New?

Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2011

>> Appendix C: Hand-Washing Recommendations to Reduce Disease Transmission from Animals in Public Settings

Poster: Handwashing at Animal Exhibits (PDF)(683 KB)

Afiche de los CDC: Lávese las manos en las exhibiciones de animales (PDF)(696 KB)

Reptiles, Amphibians, and *Salmonella*

HUMAN-ANIMAL MEDICINE

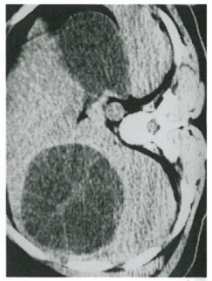
Clinical Approaches to Zoonoses, Toxicants and Other Shared Health Risks



PETER M. RABINOWITZ
LISA A. CONTI

SAUNDERS
ELSEVIER



HUMAN-ANIMAL MEDICINE

A Clinical Manual for "One Health"

The unprecedented convergence of human, animal, and environmental health requires new clinical approaches to address global pandemics and emerging disease threats. The "One Health" approach calls for greater communication and cooperation among human health care providers, public health professionals, and veterinary staff to most effectively prevent and control disease. This manual provides practical guidelines for "One Health" collaborations in a wide range of clinical settings; it covers such current topics as zoonoses, the H1N1 virus, the human-animal bond, animal allergy, bites and stings, and animals as "sentinels" for toxic environmental health hazards.

TOOLS FOR INCORPORATING "ONE HEALTH" PRINCIPLES INTO DAILY PRACTICE

- **Concise clinical tips for prevention and treatment** of the H1N1 virus, zoonoses, animal allergy, bites and stings, psychosocial issues, and toxic exposures shared by humans and animals
- **Protocols and sample forms for professional collaboration** among human health clinicians, veterinarians, and public health professionals
- **Occupational health guidelines for preventive care of animal workers,** including veterinary personnel, farmers, pet store employees, and zoo workers
- **History forms and checklists** for primary care, hospital, home health care, and specialist providers regarding human-animal medicine issues
- **Comparative tables of disease signs, diagnoses, and treatment** in humans and animals
- **Guidelines to detect and improve environmental factors** affecting the health of humans and animals
- **Legal and ethical aspects of "One Health"** that human health providers and veterinarians need to know

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Healthy You

The NATION'S HEALTH
January 2011

Pets can be a prescription for happier, healthier life

By Teddi Dinelcy Johnson

We include them in our family portraits, make room for them on our beds, tell them our deepest secrets and miss work when they're sick. And whether they paw, fly or swim their way into our hearts, pets are an important part of our lives.

America is a nation of animal lovers. According to the National Pet Owners Survey, about two-thirds of U.S. households own at least one pet, which means 71 million homes provide shelter for at least one furry, feathery or scaly critter. We take good care of our pets, but did you know that our pets also take good care of us? A growing body of research suggests that owning and interacting with a pet can improve our health.

Besides loving you unconditionally, studies show that those wagging, purring or hopping bundles of love can reduce your stress levels, tame your blood pressure, curb your depression, reduce feelings of loneliness, keep you physically fit and even help you live longer.

Some studies suggest that children who are exposed to furry pets as infants are less likely to develop allergies.

"There are lots of studies showing that pets are good for our health," says Rebecca Johnson, PhD, RN, director of the Research Center for Human-Animal Interaction at the University of Missouri College of Veterinary Medicine.

Enjoying pawsitive energy

Researchers are busy studying the many ways our pets can benefit our health. Several large studies suggest that Fluffy and Fido — in addition to winning your heart — can improve the way your heart works. A National Institutes of Health study of 420 adults who had suffered heart attacks showed that pooch owners were significantly more likely to still be kicking — and their tickers still ticking — one year later than were poochless patients, regardless of how serious the heart attack. In another study of 240 married couples, those who owned pets had lower heart rates and blood pressure, both at rest as well as under stress.

Your best bud can also improve your circulation. A study involving cat owners found they have fewer strokes than their feline-free counterparts.

"The reduction in blood pressure through interaction with a companion animal has been shown in many studies," Johnson says. "It's practically the oldest finding we have."

The "relaxation response" has even been shown when people kick back and watch their fish swim, Johnson says.

Happy tails

At the end of a long day, who doesn't enjoy coming home to a cold nose, a wagging tail and a slobbery kiss? But is it okay to kiss our pets?

It's not a good idea to let your pets lick you on the mouth, says Jennifer Wright, DVM, MPH, a veterinary epidemiologist at the U.S. Centers for Disease Control and Prevention. If you want to kiss your dog or cat, the top of her or his head is the preferred place to plant kisses.

"The rewards you get from your pets are much greater than the risk of acquiring an illness from a well-cared for pet," Wright says.

>> For more pet health information, visit www.cdc.gov/healthypets

Just like people, our pets can carry certain bacteria, viruses, parasites and fungi, so get into the habit of washing your hands after interacting with your pets. This is especially important for children and for people with compromised immune systems.

If you have a child younger than five, don't bring turtles, amphibians such as frogs, or baby chicks into your home. Small kids can't resist picking up these cute critters, but there's a downside: They shed salmonella bacteria, which can cause serious illness, especially in small children, elderly people and folks with chronic conditions.

Pet-to-person infections can occur if you are bitten or scratched by an infected animal, or have contact with an infected pet's waste or saliva. Cats and dogs can carry bacterial infections in their intestinal tracts, and parasites can be present in their waste. If you have small children, make sure the cat's litter box is not accessible to them. Kids will put anything in their mouths, so you don't want them in your cat's toilet.

Keeping up with your pet's vaccinations will help keep your pet healthy and reduce the risk of someone in your family contracting an animalborne infection.

"There are benefits to having pets, you just have to be aware that there are some risks and they are all perfectly preventable risks," Wright says.

Parade your pooch

In terms of getting you off the couch and out the door, dogs have the edge.

"You're not going to walk a snake," Johnson says. "Dogs will facilitate physical exercise better than cats or other nonwalking pets."

Studies show that dog owners who regularly walk their hounds lose pounds and are more physically active overall than those who don't own or walk a dog. In addition to getting you outdoors — rain or shine — your pooch provides "social lubrication," she says.

In other words, when you're out walking Max, people are more likely to strike up conversations with you. And some research shows that neighborhoods where people walk dogs regularly are viewed as friendlier and safer.

American Public Health Association

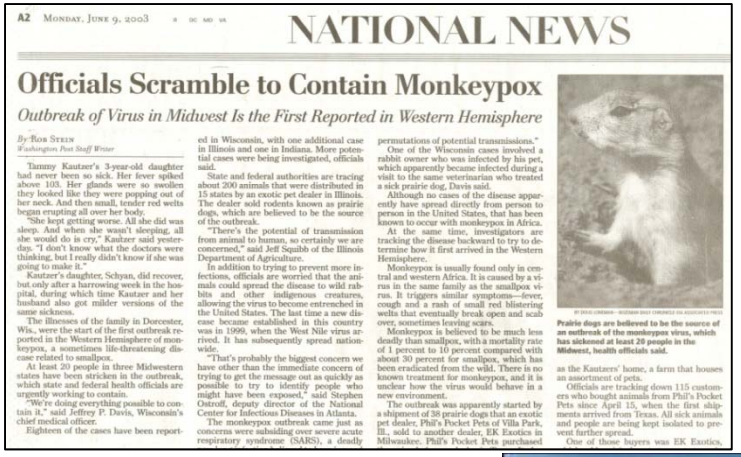
APHA , The Nations Health, January 2011

Success Story #6

THE MEDIA - THE INTERNET

PUBLIC AND PROFESSIONALS OF MULTIPLE DISCIPLINES BECOME AWARE OF LINKS BETWEEN HUMAN, ANIMAL, ENVIRONMENTAL HEALTH

ONE HEALTH



A2 MONDAY, JUNE 9, 2003

NATIONAL NEWS

Officials Scramble to Contain Monkeypox

Outbreak of Virus in Midwest Is the First Reported in Western Hemisphere

By Rob Stein
Washington Post Staff Writer

Tammy Kautzer's 3-year-old daughter had never been so sick. Her fever spiked above 103. Her glands were so swollen they looked like they were popping out of her neck. And then small, tender red welts began erupting all over her body.

"She kept getting worse. All she did was sleep. And when she wasn't sleeping, all she would do is cry," Kautzer said yesterday. "I don't know what the doctors were thinking, but I really didn't know if she was going to make it."

Kautzer's daughter, Schyan, did recover, but only after a harrowing week in the hospital, during which time Kautzer and her husband also got milder versions of the same sickness.

The illnesses of the family in Dorcester, Wis., were the start of the first outbreak reported in the Western Hemisphere of monkeypox, a sometimes life-threatening disease related to smallpox.

At least 20 people in three Midwestern states have been stricken in the outbreak, which state and federal health officials are urgently working to contain.

"We're doing everything possible to contain it," said Jeffrey P. Davis, Wisconsin's chief medical officer.

Eighteen of the cases have been reported in Wisconsin, with one additional case in Illinois and one in Indiana. More potential cases were being investigated, officials said.

State and federal authorities are tracing about 200 animals that were distributed in 15 states by an exotic pet dealer in Illinois. The dealer sold rodents known as prairie dogs, which are believed to be the source of the outbreak.

"There's the potential of transmission from animal to human, so certainly we are concerned," said Jeff Squibb of the Illinois Department of Agriculture.

In addition to trying to prevent more infections, officials are worried that the animals could spread the disease to wild rabbits and other indigenous creatures, allowing the virus to become entrenched in the United States. The last time a new disease became established in this country was in 1999, when the West Nile virus arrived. It has subsequently spread nationwide.

"That's probably the biggest concern we have other than the immediate concern of trying to get the message out as quickly as possible to try to identify people who might have been exposed," said Stephen Ostroff, deputy director of the National Center for Infectious Diseases in Atlanta.

The monkeypox outbreak came just as concerns were subsiding over severe acute respiratory syndrome (SARS), a deadly permutations of potential transmissions."

One of the Wisconsin cases involved a rabbit owner who was infected by his pet, which apparently became infected during a visit to the same veterinarian who treated a sick prairie dog, Davis said.

Although no cases of the disease apparently have spread directly from person to person in the United States, that has been known to occur with monkeypox in Africa.

At the same time, investigators are tracking the disease backward to try to determine how it first arrived in the Western Hemisphere.

Monkeypox is usually found only in central and western Africa. It is caused by a virus in the same family as the smallpox virus. It triggers similar symptoms—fever, cough and a rash of small red blistering welts that eventually break open and scab over, sometimes leaving scars.

Monkeypox is believed to be much less deadly than smallpox, with a mortality rate of 1 percent to 10 percent compared with about 30 percent for smallpox, which has been eradicated from the wild. There is no known treatment for monkeypox, and it is unclear how the virus would behave in a new environment.

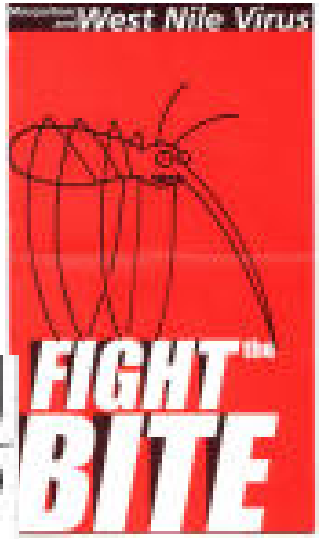
The outbreak was apparently started by a shipment of 38 prairie dogs that an exotic pet dealer, Phil's Pocket Pets of Villa Park, Ill., sold to another dealer, EK Exotics in Milwaukee. Phil's Pocket Pets purchased

Prairie dogs are believed to be the source of an outbreak of the monkeypox virus, which has sickened at least 20 people in the Midwest, health officials said.

as the Kautzers' home, a farm that houses an assortment of pets.

Officials are tracking down 115 customers who bought animals from Phil's Pocket Pets since April 15, when the first shipments arrived from Texas. All sick animals and people are being kept isolated to prevent further spread.

One of those buyers was EK Exotics.



Beef recall hits record 1.2 million pounds

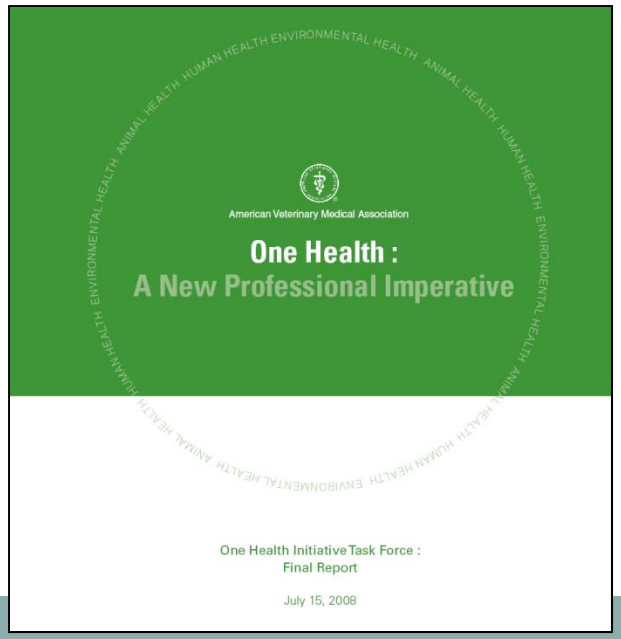
USDA questions delay in recall of E. coli-tainted meat

August 15, 1997

Web posted at: 6:14 p.m. EDT (2214 GMT)

WASHINGTON (CNN) -- The

One Health Initiatives



One Health Commission
World Health Through Collaboration

One Health - Definition

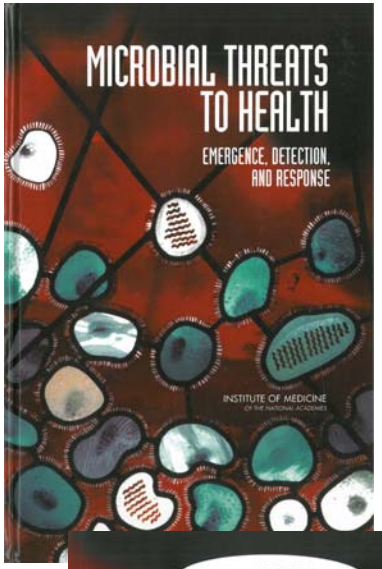
Is the Collaborative Effort of Multiple Disciplines

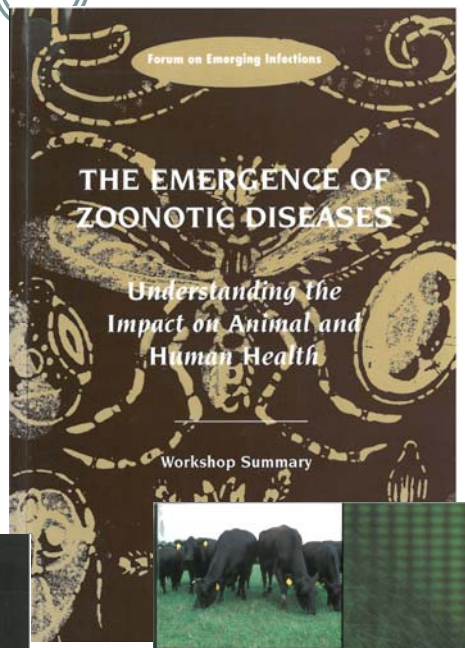
– working locally, nationally, and globally–

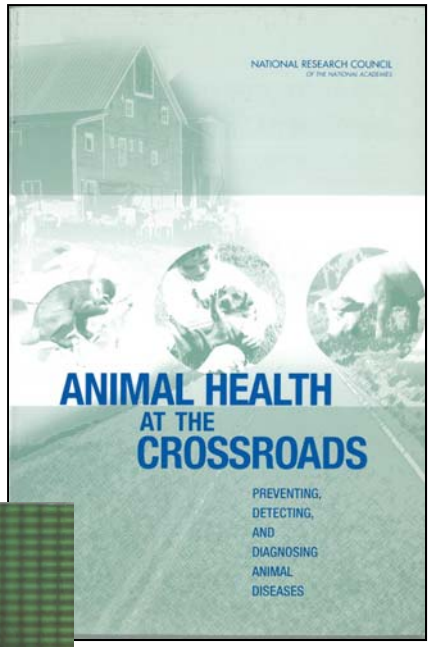
to attain optimal health for people, animals, and our environment.

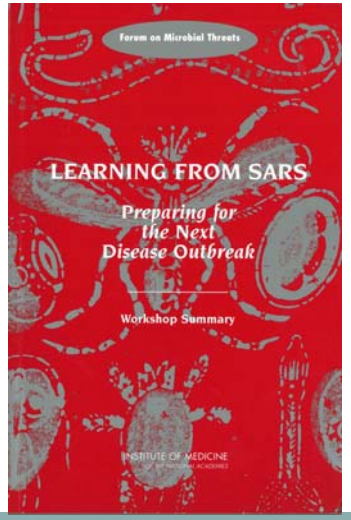
AVMA-AMA One Health Task Force, 2007

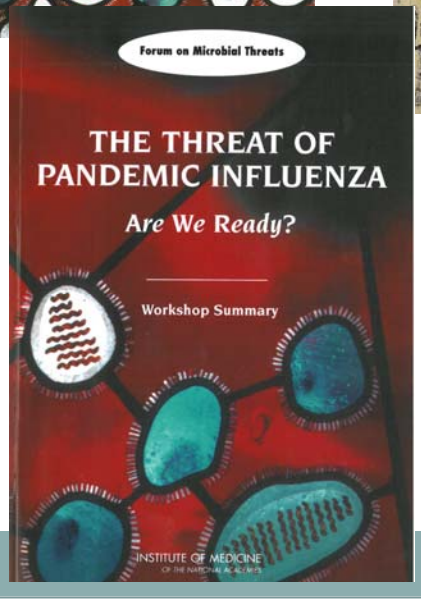
National Academy of Science Becomes Aware



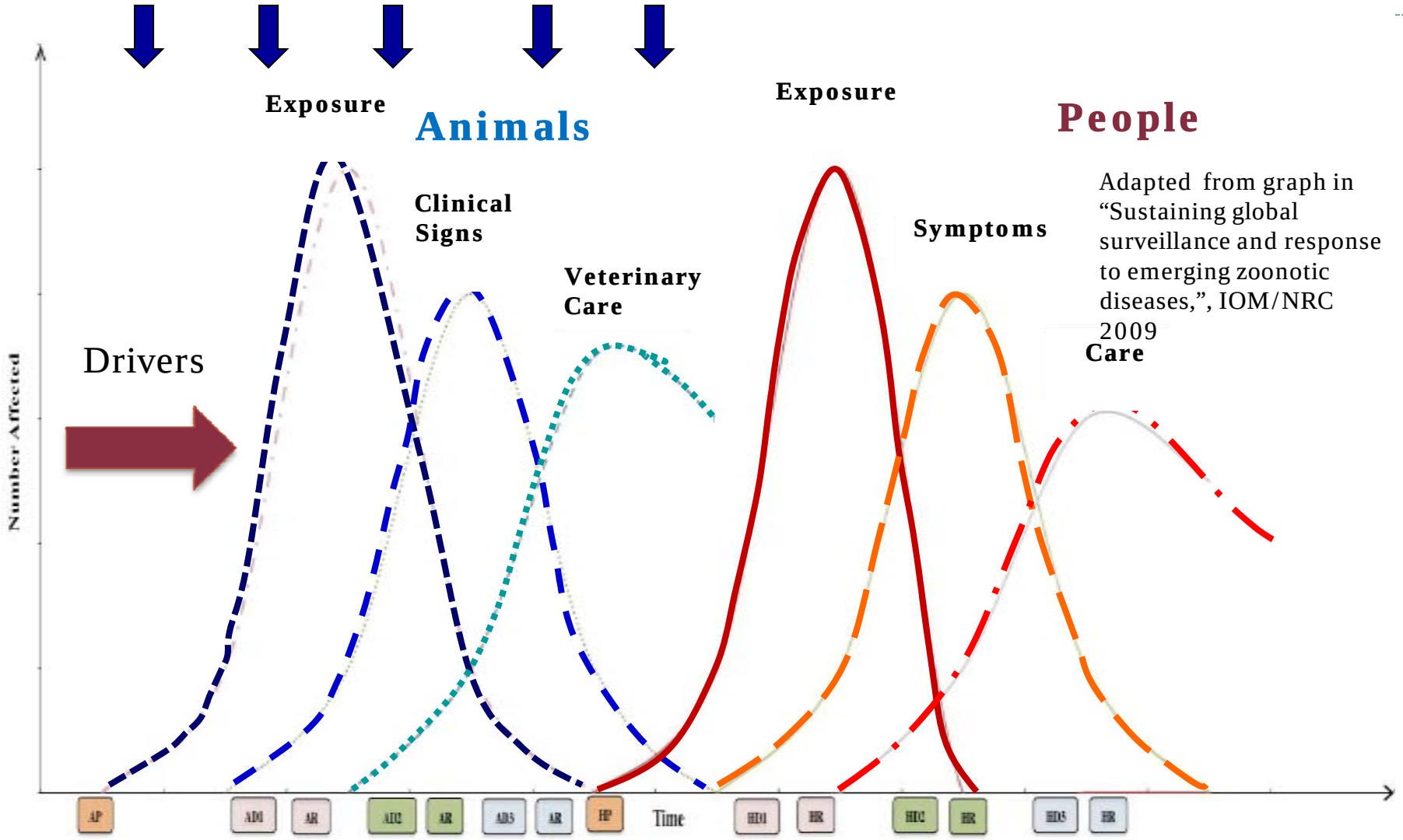






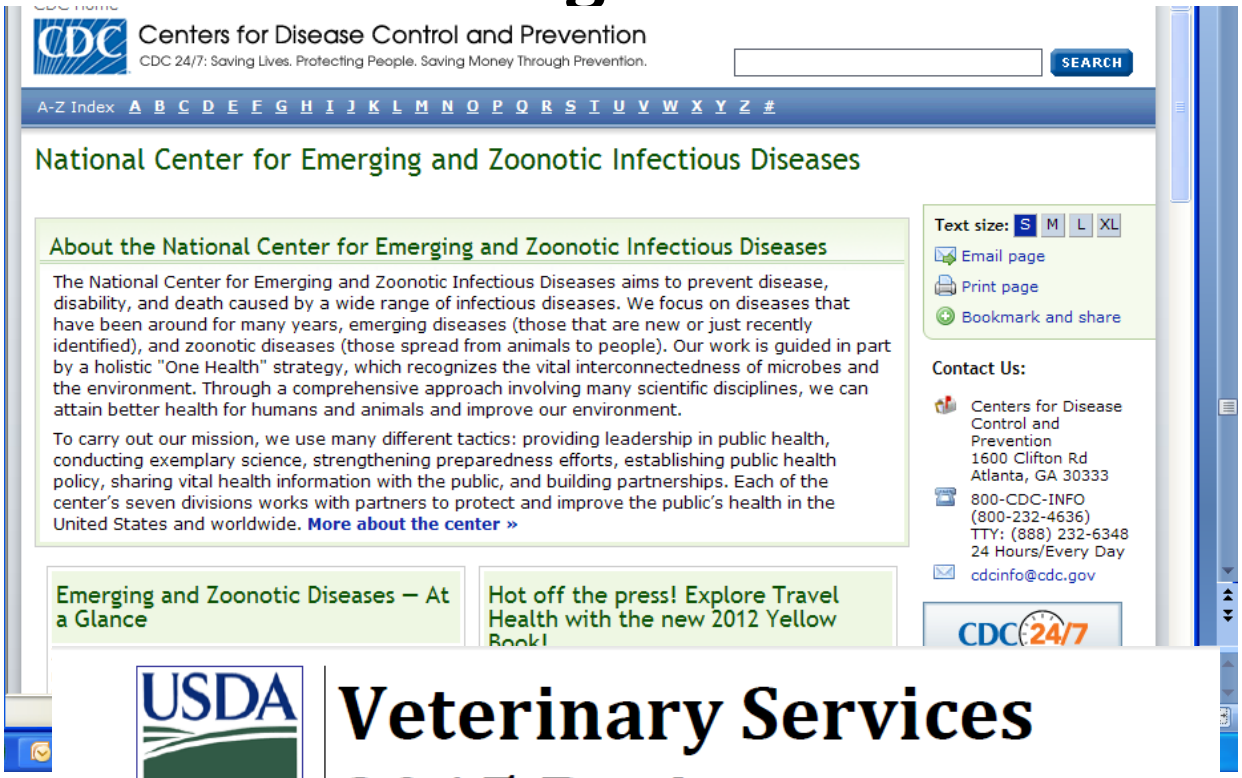


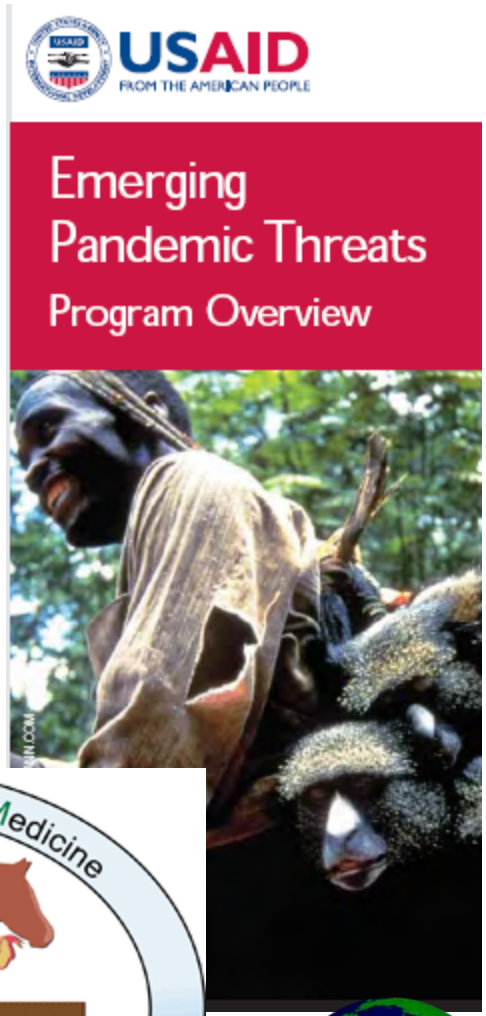
Integrated Zoonotic Disease Early Detection and Response System



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

US Agencies Take Action





USDA

APHIS

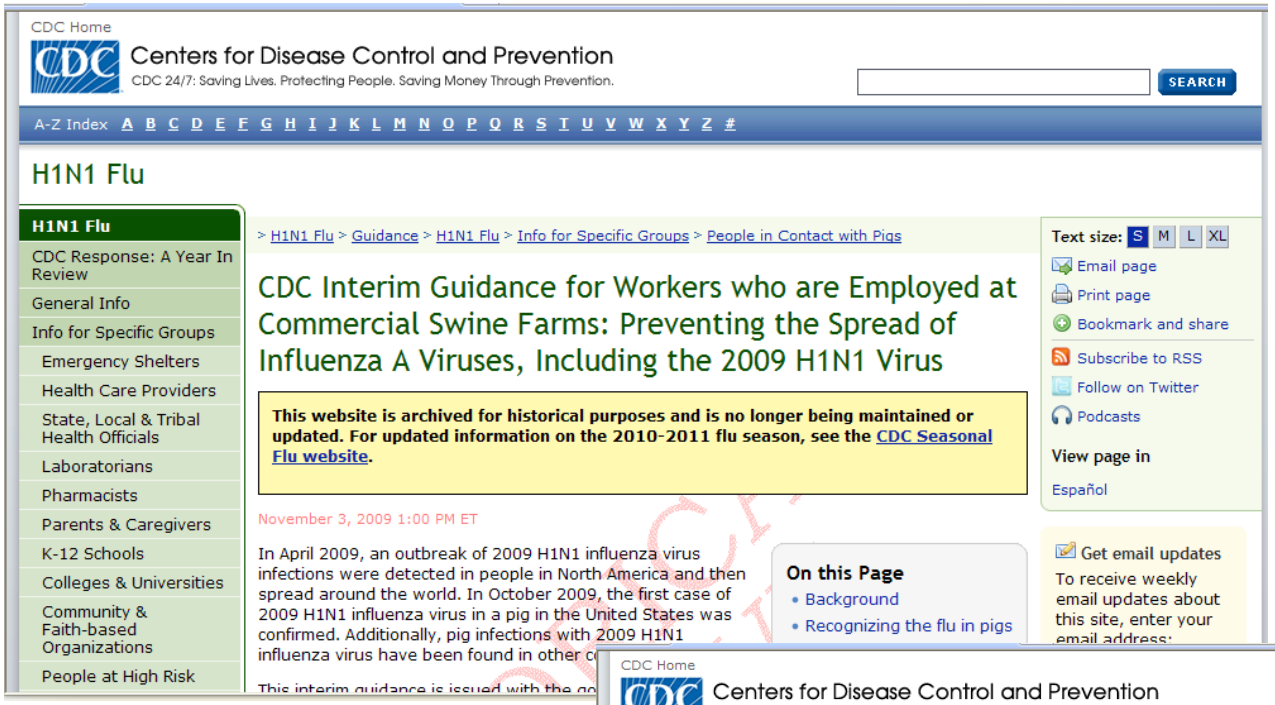
Veterinary Services

Safeguarding Animal Health

Veterinary Services 2015 Project

One Health

Strategic Direction


CDC Home
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People. Saving Money Through Prevention.
SEARCH
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 #
H1N1 Flu
H1N1 Flu
CDC Response: A Year In Review
General Info
Info for Specific Groups
Emergency Shelters
Health Care Providers
State, Local & Tribal Health Officials
Laboratorians
Pharmacists
Parents & Caregivers
K-12 Schools
Colleges & Universities
Community & Faith-based Organizations
People at High Risk
> H1N1 Flu > Guidance > H1N1 Flu > Info for Specific Groups > People in Contact with Pigs
CDC Interim Guidance for Workers who are Employed at Commercial Swine Farms: Preventing the Spread of Influenza A Viruses, Including the 2009 H1N1 Virus
This website is archived for historical purposes and is no longer being maintained or updated. For updated information on the 2010-2011 flu season, see the CDC Seasonal Flu website.
November 3, 2009 1:00 PM ET
In April 2009, an outbreak of 2009 H1N1 influenza virus infections were detected in people in North America and then spread around the world. In October 2009, the first case of 2009 H1N1 influenza virus in a pig in the United States was confirmed. Additionally, pig infections with 2009 H1N1 influenza virus have been found in other
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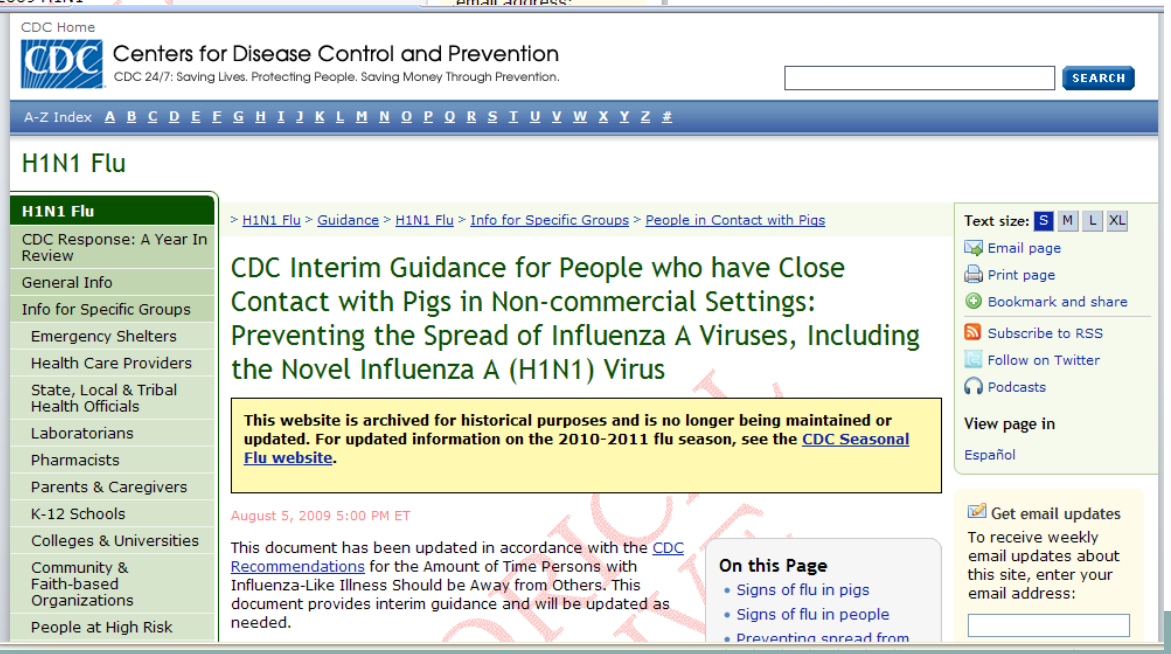
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Community & Faith-based Organizations
People at High Risk
> H1N1 Flu > Guidance > H1N1 Flu > Info for Specific Groups > People in Contact with Pigs
CDC Interim Guidance for People who have Close Contact with Pigs in Non-commercial Settings: Preventing the Spread of Influenza A Viruses, Including the Novel Influenza A (H1N1) Virus
This website is archived for historical purposes and is no longer being maintained or updated. For updated information on the 2010-2011 flu season, see the CDC Seasonal Flu website.
August 5, 2009 5:00 PM ET
This document has been updated in accordance with the CDC Recommendations for the Amount of Time Persons with Influenza-Like Illness Should be Away from Others. This document provides interim guidance and will be updated as needed.
On this Page
Signs of flu in pigs
Signs of flu in people
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Global Health Careers

Make a World of Difference

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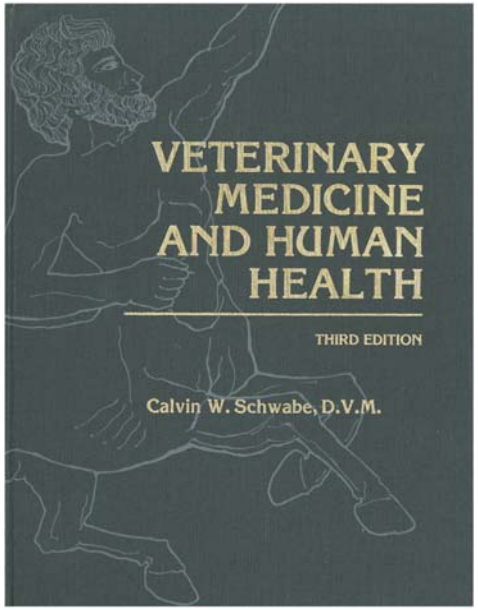
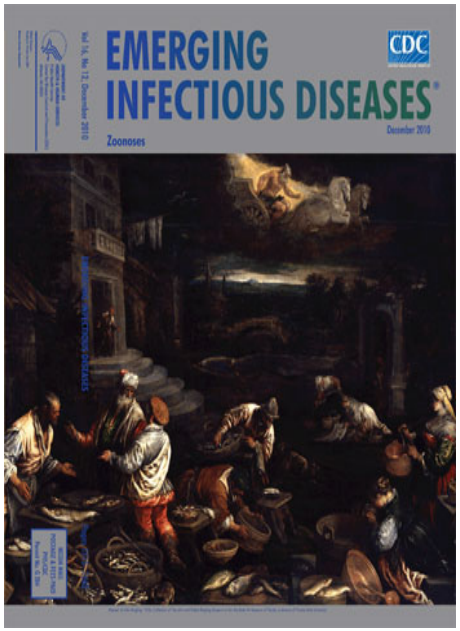
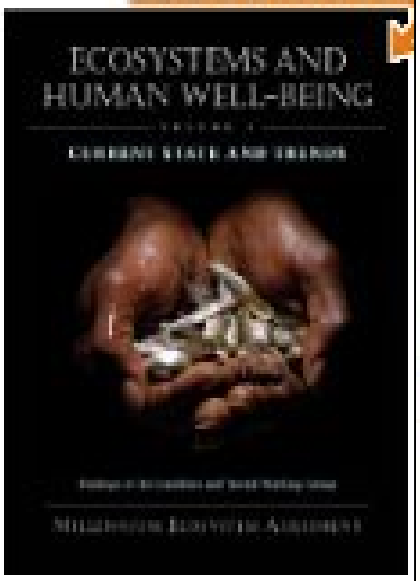
The Center for Global Health (CGH) in the Centers for Disease Control and Prevention (CDC) is inviting qualified licensed **Physicians and Veterinarians** to join us for a hiring event on July 15th 2011 in Atlanta, GA.


VETERINARY MEDICINE AND HUMAN HEALTH
THIRD EDITION
Calvin W. Schwabe, D.V.M.


EMERGING INFECTIOUS DISEASES
CDC
Zoonoses


LOOK INSIDE!
ECOSYSTEMS AND HUMAN WELL-BEING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One Health:
The Intersection of
Humans, Animals,
and the Environment


1st International
One Health Congress
Human Health, Animal Health, the
Environment and Global Survival
Melbourne Convention Centre
14–16 February

International Agencies Take Action

World Organisation for Animal Health

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For the media
- Press releases
- Editorials
- Press packs
- Animal diseases
- Key documents
- Multimedia

"International Symposium on Emerging Zoonoses – Medical and Veterinary Partnerships to address global challenges"

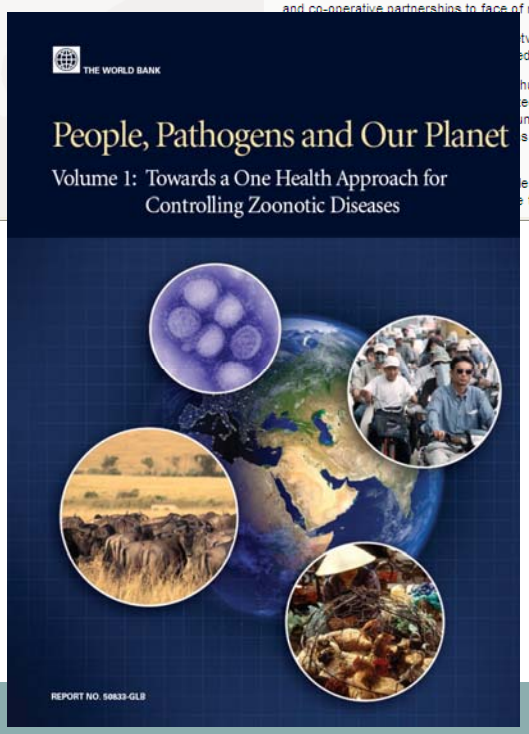
Atlanta , Georgia (USA) 22-24 March 2006

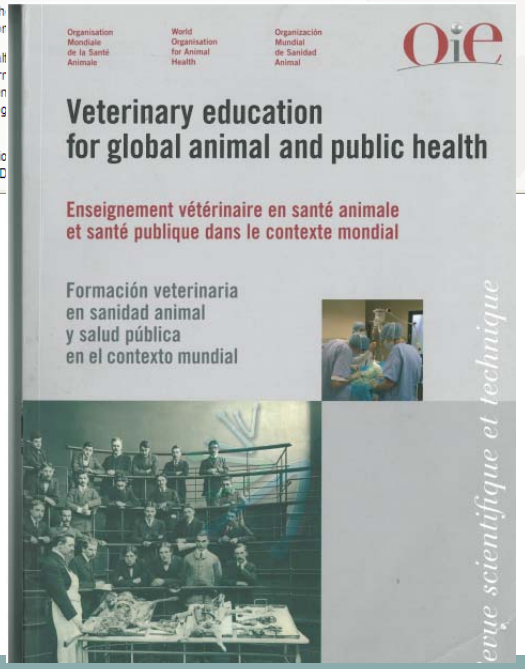
The first "International Symposium on Emerging Zoonoses – Medical and Veterinary Partnerships to address global challenges" was held in Atlanta , Georgia (USA) from 22-24 March 2006. The Symposium was co-organized by Centers for Disease Control and Prevention (**CDC**) and the World Organisation for Animal Health (**OIE**) with the strong support of the Food and Agriculture Organization of the United Nations (FAO) and of other international and national sponsors, as well as with the participation of the World Health Organization (WHO).

As public health and animal health organizations attempt to respond to a new era of threats linked to emerging and re-emerging zoonotic diseases, their ability and skill in forming new strategic partnerships will be paramount. Episodes of emerging zoonoses are appearing with increasing frequency and are being recognized around the world since the confluence of people, animals and animal products today is unprecedented within the context of globalisation.

The Symposium brought together public health and animal health professionals to strengthen the development of effective and co-operative partnerships to face of new microbial threats.

- WAHID
- Online bookshop
- For the media
- OIE world conferences
- Document database





International Agencies Take Action

World Health Organization

Strong intersectoral partnerships in health

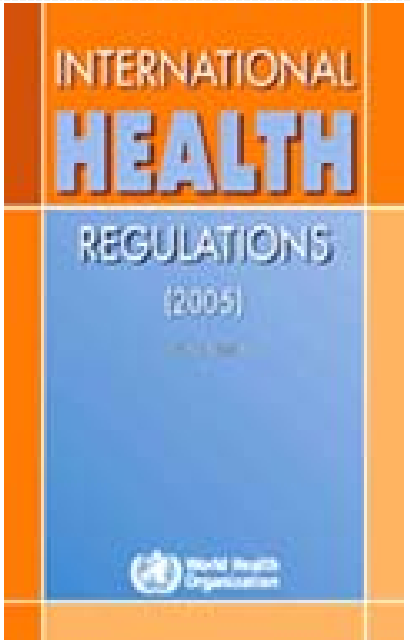
Managing zoonotic public health risks at the human–animal–ecosystem interface

- **Why invest in public health risks at the human–animal–ecosystem interface?**

Domestic and wild animals, and their ecosystems, contribute to the health and well- other things, they

response systems at local, national, regional and international levels.

This area of work requires sharing of responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces and shifts the focus from mostly short term intervention to medium and



The FAO-OIE-WHO Collaboration

Sharing responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces

A Tripartite Concept Note

April 2010

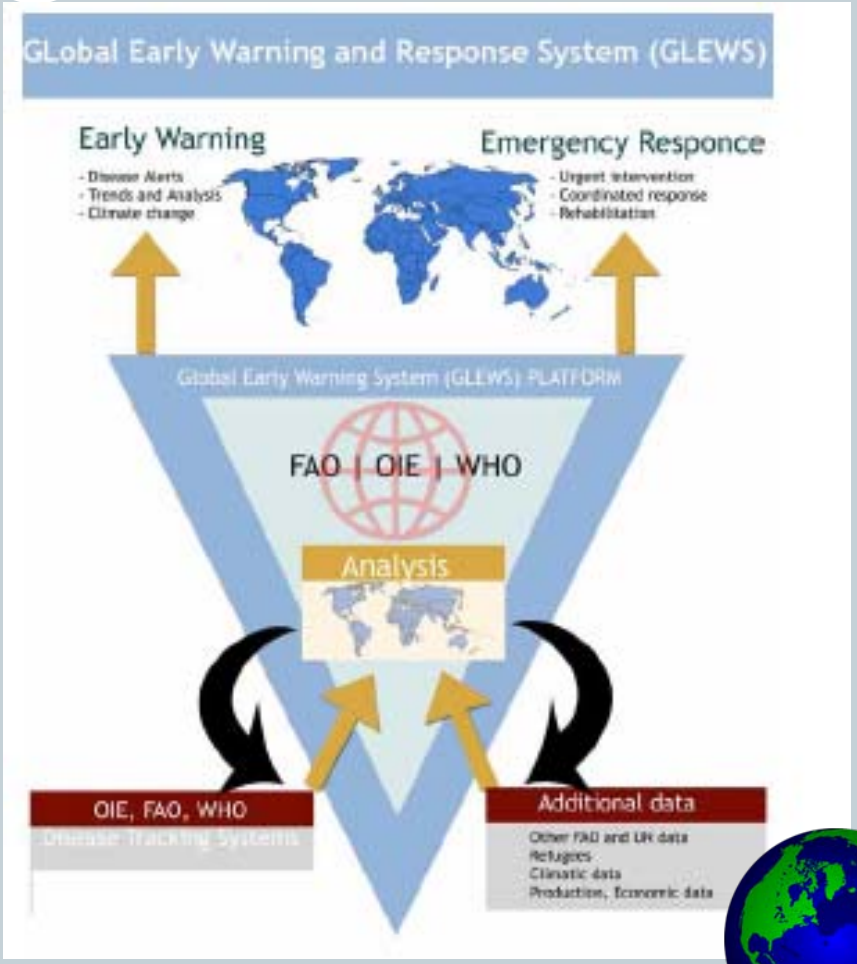
Human and Animal Vaccination Delivery to Remote Nomadic Families, Chad

Esther Schelling,*[1] Mahamat Bechir,† Mahamat Abdoulaye Ahmed,† Kaspar Wyss,* Thomas F. Randolph,‡ and Jakob Zinsstag*

Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 13, No. 3, March 2007

WHO/OIE/FAO


GLEWS
Global Early Warning and Response System for Major Animal Diseases, including Zoonoses
oie


GLobal Early Warning and Response System (GLEWS)
Early Warning
- Disease Alerts
- Trends and Analysis
- Climate change
Emergency Responce
- Urgent intervention
- Coordinated response
- Rehabilitation
Global Early Warning System (GLEWS) PLATFORM
FAO | OIE | WHO
Analysis
OIE, FAO, WHO
Disease Tracking Systems
Additional data
Other FAO and UN data
Refugees
Climatic data
Production, Economic data

Success Story #7

CAPACITY BUILDING IN ONE HEALTH

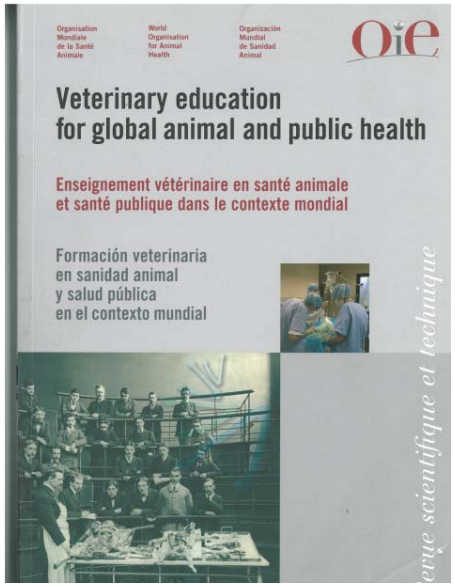
Innovations in Veterinary Education

Veterinarians and Public Health: The Epidemic Intelligence Service of the Centers for Disease Control and Prevention, 1951–2002*

Marguerite Pappaioanou ■ Paul L. Garbe ■ M. Kathleen Glynn ■ Stephen B. Thacker

JVME 30(4) © 2003 AAVMC


Home
Evolving veterinary education for a safer world
Source:
Organisation Mondiale de la Santé Animale
OIE
Evolving Veterinary Education for a Safer World
Paris (France) 12-14 October 2009
In a rapidly changing world, veterinary education must face new challenges and continually evolve to meet societal demands in the field of food security, food safety, public health and animal welfare. Appropriate education


Organisation Mondiale de la Santé Animale
World Organisation for Animal Health
Organización Mundial de Sanidad Animal
OIE
Veterinary education for global animal and public health
Enseignement vétérinaire en santé animale et santé publique dans le contexte mondial
Formación veterinaria en sanidad animal y salud pública en el contexto mundial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International Clinical Research Scholars Program
Overseas Fellowships in Global Health and Clinical Research
The 2011-2012 Fogarty International Clinical Research Scholars Program application is no longer available. Please check back this summer for information on the 2012-2013 program.
The Fogarty International Clinical Research Scholars and Fellows (FICRS-F) Support Center at Vanderbilt offers a one-year clinical research training experience for graduate-level U.S. students in
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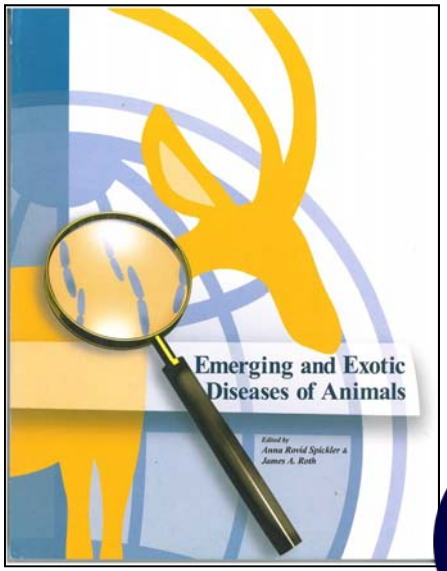
Emerging and Exotic Diseases of Animals

One Health Research Capacity

FROM THE DIRECTOR

One Medicine, One Health:
Multidisciplinary Research Teams Are Critical to Scientific Discovery

The phrase "one medicine" embodies the view that advances in both human and veterinary medicine depend on overlapping technologies and research discoveries. The concept is not new. The 19th century German physician Rudolf Virchow, also known as "the father of pathology," wrote, "Between animal and human medicine, there is no dividing line — nor should there be. The object is different, but the experience obtained constitutes the basis of all medicine."

In recent years, the concept of one medicine has gained momentum, driven by science advances that underscore the close connection between human and animal health.

We now know that 60 percent of all infectious diseases in humans are caused by pathogens that cross species lines. Moreover, the ability to sequence entire genomes has revealed that most mammals have roughly the same number of nucleotides — about three billion base pairs — in their genomes and thus more or less the same number of genes. We also know that there is more than 95 percent to 98 percent similarity between related genes in humans and apes, and similarities between mouse and human genes range from about 70 percent to 90 percent.

NCRR has been a staunch supporter of one medicine. Our programs are helping veterinarians to participate in translational research teams along with basic scientists and clinicians — their research being driven by the same goals and bound by the same ethical concerns.

In the following pages, you will read about the insights NCRR-supported veterinary scientists are gaining into complex medical problems, such as metabolic disorders, osteosarcoma, multiple sclerosis and hormone replacement therapy. These are exciting stories of scientific discovery that illustrate why collaborative, multidisciplinary teams are critical to addressing the complexity of modern biomedical problems.

NIH is not alone in recognizing the value of one medicine. Both the American Medical Association and the American Veterinary Medical Association have passed resolutions to unite human and veterinary medicine to improve animal and human health. In addition, two recent National Research Council reports have lauded the concept of one medicine, calling attention to the pressing need for veterinary scientists in biomedical research.

We hope you will enjoy reading this latest issue of the *NCRR Reporter* and the exciting advances made possible by these and other NCRR programs — each one bringing us a step closer to understanding disease and developing diagnostic tests and treatments for both animals and humans.

Barbara Alving, M.D.

Barbara Alving, M.D.
Director, NCRR

INSIDE

FALL 2010, VOL. XXXIV, NO. 3

3 CTSAs in Focus

CRITICAL RESOURCES

4 Veterinarian Scientists: Ideal Translational Research Partners
NCRR-supported veterinary career development enables innovative research opportunities that can benefit both animals and humans.

RECOVERY ACT FUNDS IN ACTION

8 Infusion of Recovery Act Funds Boosts Biomedical Research
Leveraged funds maximize the impact of biomedical and translational research at institutions across the country.

SCIENCE ADVANCES

12 A Little Salt Goes a Long Way
A small reduction in dietary salt could yield huge health benefits for Americans while reducing health care costs.

14 Shining New Light on Tumors
Imaging technology reveals breast cancer activity during chemotherapy

16 News f

National Science Foundation
WHERE DISCOVERIES BEGIN

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Press Release 10-227

Biodiversity Loss: Detrimental to Your Health

Infectious diseases on the rise as species disappear

View Video
In fragmented forests, biodiversity declines, leading to infectious diseases like Lyme disease.
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- Regional Activities
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- Trans-NIH Programs and Other Collaborations

Home > Programs > Research Grants > Ecology of Infectious Diseases Initiative

Ecology of Infectious Diseases Initiative (EID)

STATUS: Open for applications

Announcement | Purpose | Awards | Inquiries | Partners | Archive

Announcement

This joint NIH-NSF program is currently being competed under an NSF program announcement.

- Ecology of Infectious Diseases (EID) Announcement on National Science Foundation Web site
- **Full Proposal Deadline:** December 14, 2011
  Second Wednesday in December, Annually Thereafter

Purpose

This joint National Institutes of Health (NIH)-National Science Foundation (NSF) initiative supports efforts to understand the underlying ecological and biological mechanisms that govern relationships between human-induced environmental changes and the emergence and transmission of infectious diseases. The highly interdisciplinary research projects funded under this program apply both ecological and biomedical methods, and study how environmental events such as habitat alteration, biological invasion, climate change, and pollution alter the risks of emergence and transmission of viral

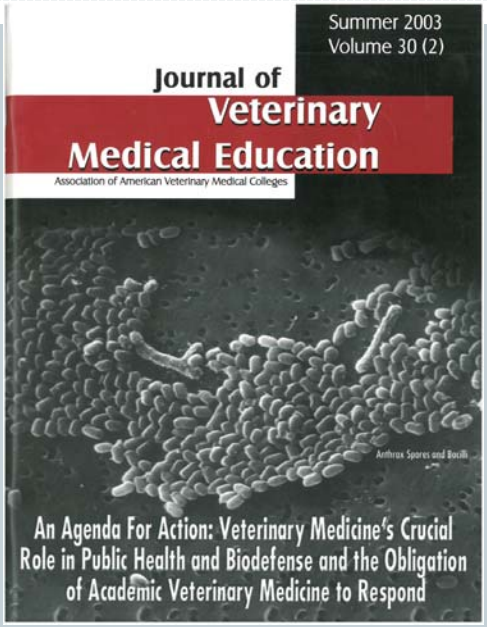
News & Information

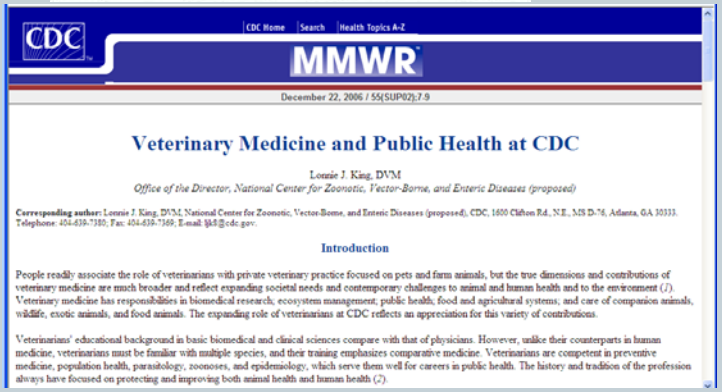
- New Biodiversity Loss: Detrimental to Your Health - National Science Foundation Press Release, December 1, 2010
- Related funding opportunity Climate Change and Health: Assessing and Modeling Population Vulnerability to Climate Change (R21)
- New procedures are in effect for all NIH applications with due dates on or after January 25, 2010

Success Story #8

VETERINARY PUBLIC HEALTH ORGANIZES

Veterinary Public Health Organizes

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CDC MMWR

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Veterinary Medicine and Public Health at CDC

Lonnie J. King, DVM
Office of the Director, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed)

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Introduction

People readily associate the role of veterinarians with private veterinary practice focused on pets and farm animals, but the true dimensions and contributions of veterinary medicine are much broader and reflect expanding societal needs and contemporary challenges to animal and human health and to the environment (*1*). Veterinary medicine has responsibilities in biomedical research; ecosystem management; public health; food and agricultural systems; and care of companion animals, wildlife, exotic animals, and food animals. The expanding role of veterinarians at CDC reflects an appreciation for this variety of contributions.

Veterinarians' educational background in basic biomedical and clinical sciences compare with that of physicians. However, unlike their counterparts in human medicine, veterinarians must be familiar with multiple species, and their training emphasizes comparative medicine. Veterinarians are competent in preventive medicine, population health, parasitology, zoonoses, and epidemiology, which serve them well for careers in public health. The history and tradition of the profession always have focused on protecting and improving both animal health and human health (*2*).

- OIE
- US Army Veterinary Medical Corps
- US Public Health Service (1945)- Veterinary Category (1947)
- Veterinary Public Health unit at PAHO, 1949
- Veterinary Public Health Unit at WHO, 1950
- FAO, 1945
- Veterinary Public Health Unit at CDC
- American College of Veterinary Preventive Medicine
- National Association of State Public Health Veterinarians
- USAHA

Success Story 9

VISIONARY LEADERS, CHAMPIONS, HEROES

Daniel Elmer Salmon

Dr. Daniel Elmer Salmon

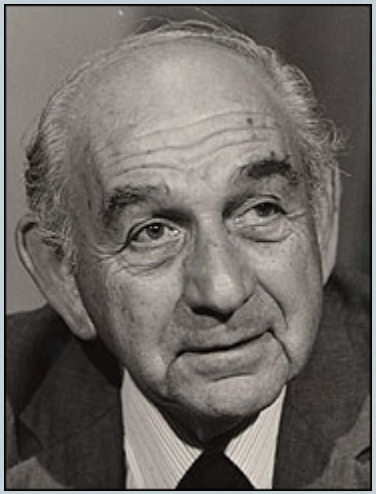
- First director of Bureau of Animal Health in USDA (1884-1905)
- He gave his name to the *Salmonella* genus of bacteria, which were discovered by Dr. Theobald Smith, and named in his honor
- Eradicated contagious pleural-pneumonia of cattle in the U.S.
- Studied and controlled Texas fever *(Babesia)*
- Established the federal meat inspection program (Upton Sinclair, The Jungle, led to his dismissal– non federal slaughterhouse conditions
- Began inspecting exported livestock and the ships carrying them, began inspecting and quarantining imported livestock
- Studied the effect of animal diseases on public health.

Dr. K.F. Meyer

Dr. KF Meyer

- Graduate of Veterinary Medical and Medical School
- One of the world's most prodigious investigators in animal diseases and public health
- Zoonoses, foodborne pathogens and protections
- Mentor to other leaders

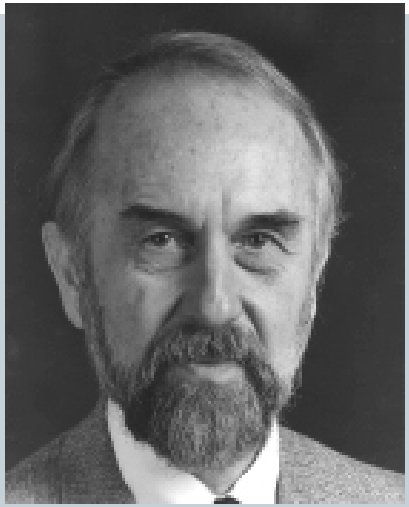
Dr. Martin Kaplan



Dr. Martin Kaplan

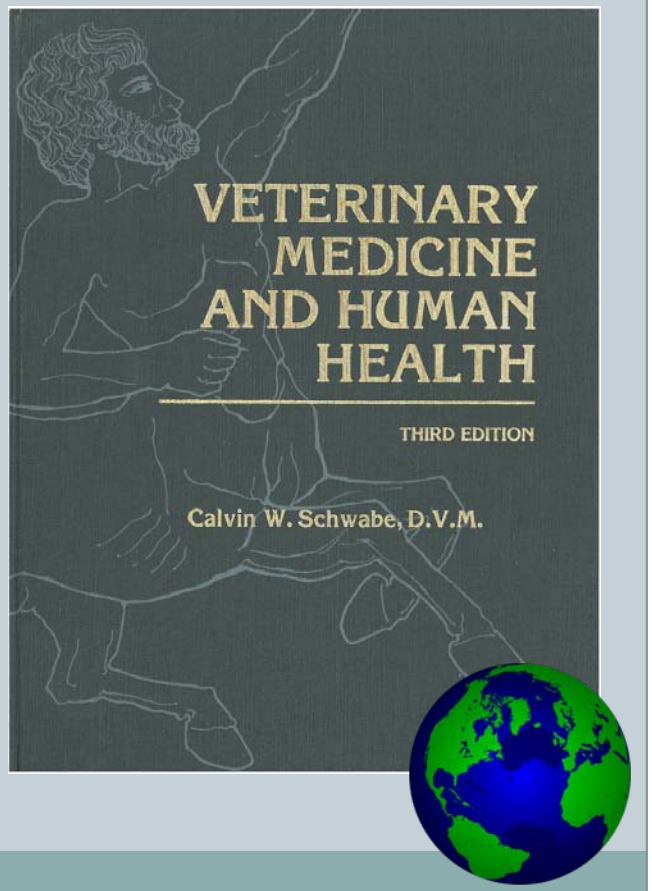
- Sole and first veterinarian on staff at WHO – 1949
- Veterinary Public Health Unit at WHO
- Organized, led, expert groups, reports
- Mentor to other leaders

Dr. Calvin Schwabe



Dr. Calvin Schwabe

"Human health provides the most logical unifying or apical cause in veterinary medicine's hierarchy of values"



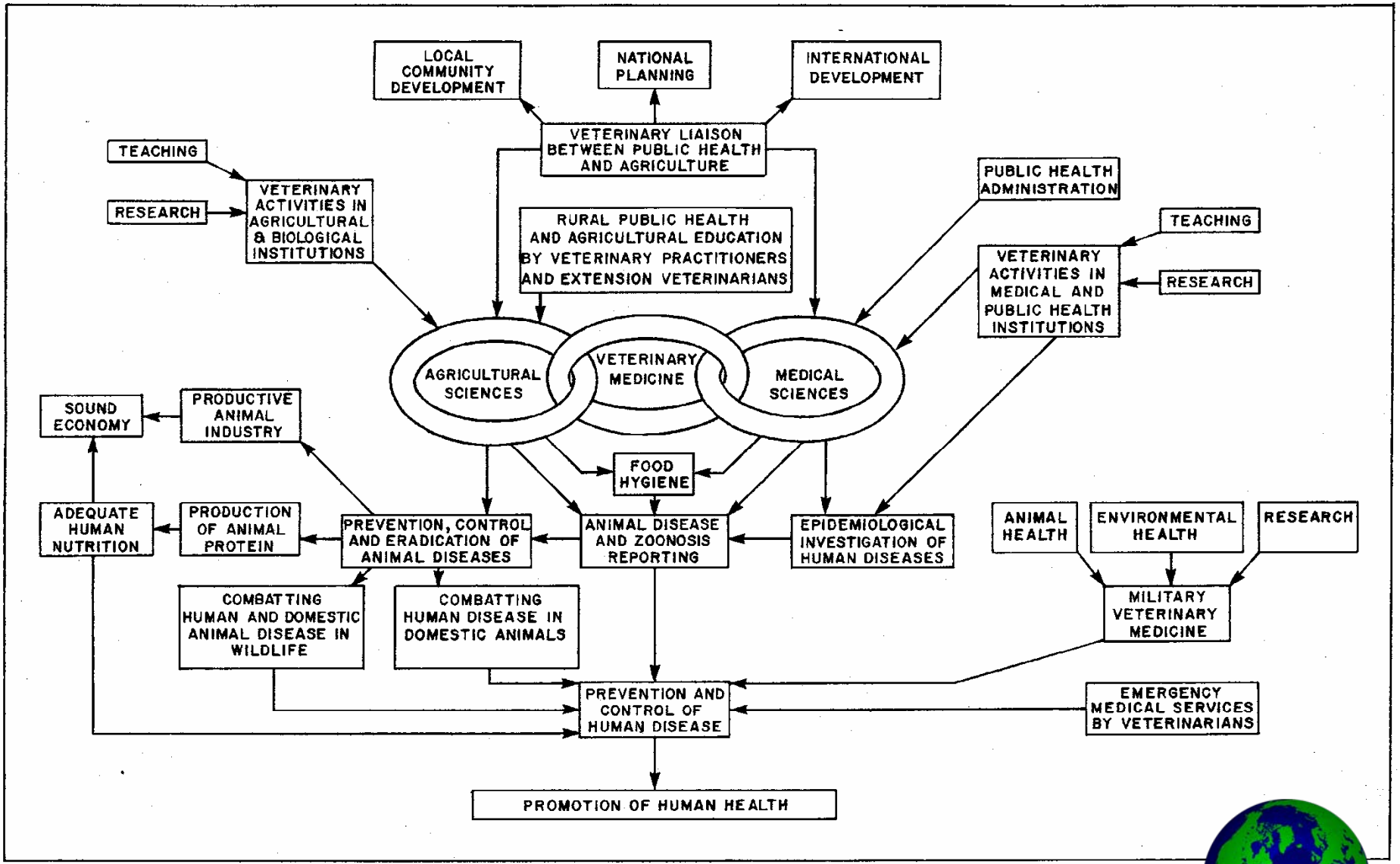
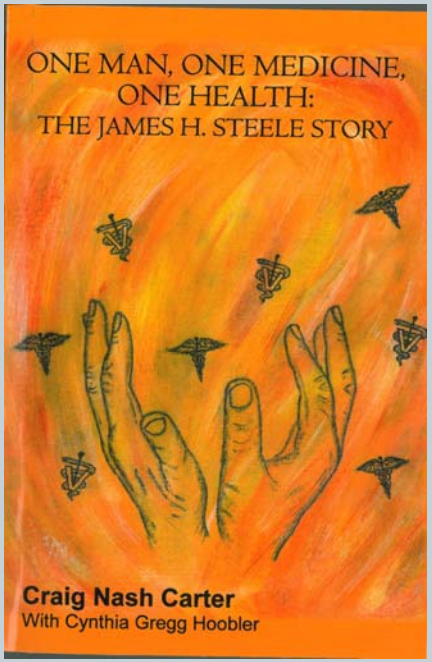


Figure 1.2. The multiple links veterinary medicine provides between medical sciences and agricultural sciences not only promote man's health in a variety of specific v n basis for more general cross-sectoral cooperation between health and food programs in government.

Dr. James Steele

Dr. James H. Steele

- Helped establish Veterinary Category in the US Public Health Service
- Integrated veterinary public health into public health programs at US CDC
- Consulted on VPH program – WHO Organizing Committee
- Raised visibility of zoonotic diseases to leaders in human health



Dr. Pedro Acha

Dr. Pedro Acha

"I would like to put forth the notion that the veterinary profession should serve humanity.

Those who are responsible for the professional education in the veterinary sciences should grasp this idea and begin to guide our training centers to the three principal services benefiting humankind:

Agriculture, biology and public health.

I believe that if we were to do any less, we would fail in our mission…"

Dr. Bernard Vallat

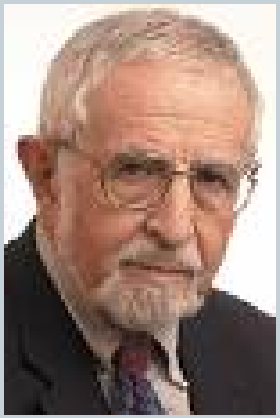
Dr. Bernard Vallat

"The work of the veterinary profession and veterinary services.. now recognized as a global public good.

Support for them in developing and transitional countries is a priority .. to promote development around the world, .. to protect the world against the spread and the re-emergence of animal diseases and zoonoses."

- Stresses importance of sharing scientific information
- Promotes veterinary services and a continued commitment to food safety and animal welfare.
- Gives visibility to positive impact of animal health policies on poverty reduction and public health.

Leaders, Champions, Heroes

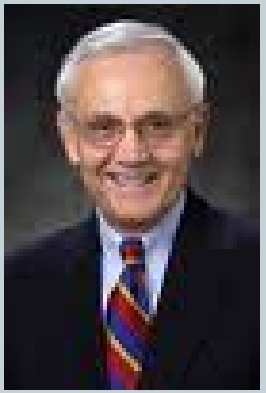


Dr. Philip Brachman

Dr. Fred Murphy

Dr. James Hughes

Dr. Julie Gerberding



Dr. Lonnie King

Dr. Tom Monath

Dr. Laura Kahn

Dr. Greg Gray

Dr. Ron Davis

Dr. Roger Mahr

Summary
20th and early 21st Century Successes

- Eradication and control of major food animal diseases
- Globalization, One Health, Sustainability
- Public health officials sensitized to importance of information from animal and environmental health experts
- Public and policy -makers begin to understand links between development, agriculture, health, ecosystem health
- Food security, safety, defense, emerging diseases, emergency response, national defense (soft power)

Summary
20th and early 21st Century Successes

- Accounting for Human animal bond – changing relationships with animals
- Animal Welfare Considerations, all animals
- Strengthened cooperation across WHO, OIE, FAO
- Cooperation among laboratories, disciplines
- Comparative medicine approaches to research
- Integration of education, training programs across sectors and disciplines
- Science– genetics, diagnostics, vaccines, alternatives to antimicrobials

Thank you!