



Implementation of One Health Principles - A Multidisciplinary Approach to Solving Issues at the Human-Animal-Environmental Interface

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Overview

- What is “One Health” (OH) and why it is important
- Overview of Veterinary Service (VS)
- The expanding role of OH in Veterinary Services
- OH in action – examples from the field
- Discussions of future cooperation

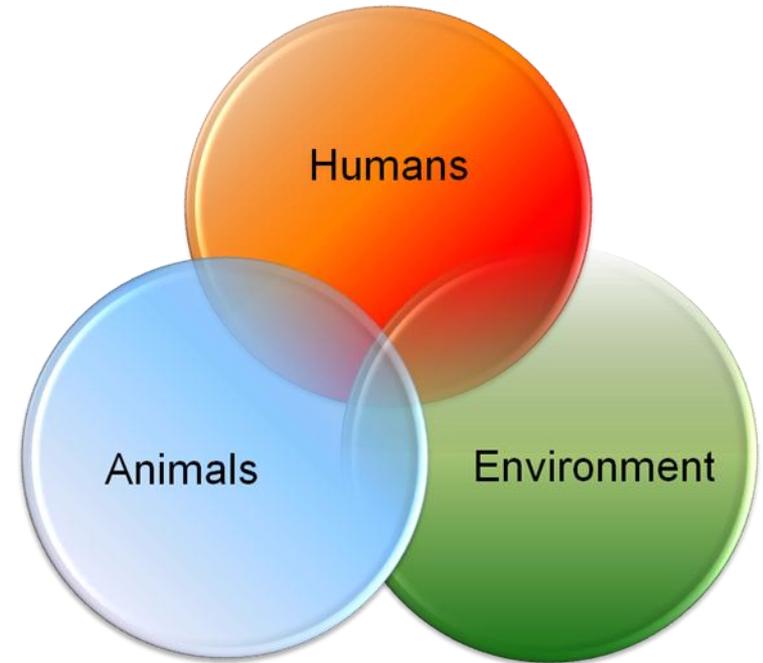
One Health

AVMA defines One Health as:

the collaborative efforts of multiple disciplines working locally, nationally, and globally to attain optimal health of people, animals, and the environment

One Health

- Recognizes the interconnectedness of environment, animals and people
- **Not a new concept to veterinarians**
- A way to improve communication and collaboration between animal, human and environmental health specialists



One Health – Why is it Important?



- Human *Salmonella* Infections
 - Turtles, frogs
 - Frozen feeder rodents
 - Hedgehogs
 - Live poultry
 - Dry pet food
- HPS – Yosemite NP
- Leptospirosis
- AMR
- Raw Milk
- Food Safety
- etc...

VS Organization



History of Successful Eradication

- 1892, contagious bovine pleuropneumonia
- 1929, FMD and fowl plague
- 1959 and 1966, screwworm
- 1971, Venezuelan equine encephalitis
- 1974 and 2003, END
- 1978, hog cholera
- 1924, 1985, and 2004, HPAI

VS' Traditional Roles

- Manage animal disease programs
- Facilitate import and export
- Protect livestock from foreign animal diseases
- Oversee veterinary labs and biologics
- Explore and analyze animal health data

– But notice our “new” tag line:

VS2015

The Future of Veterinary Services

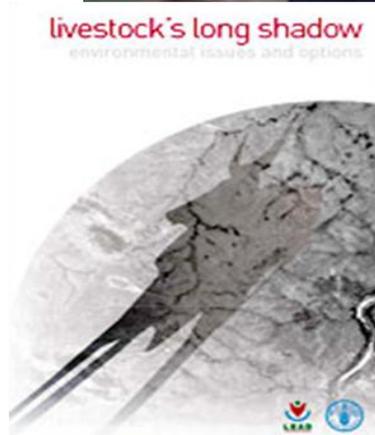
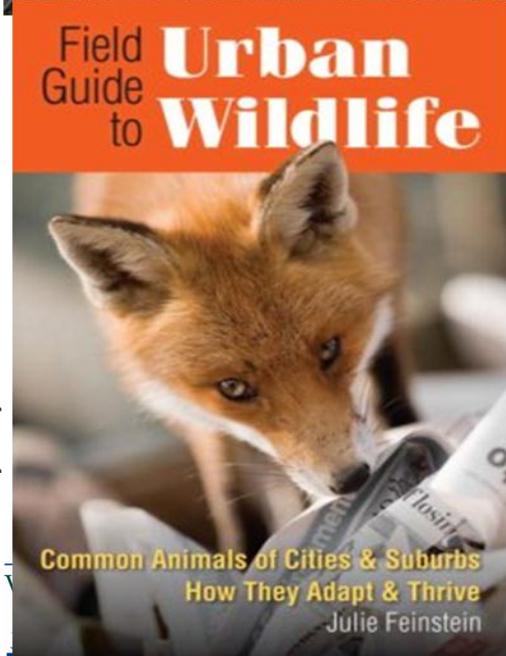
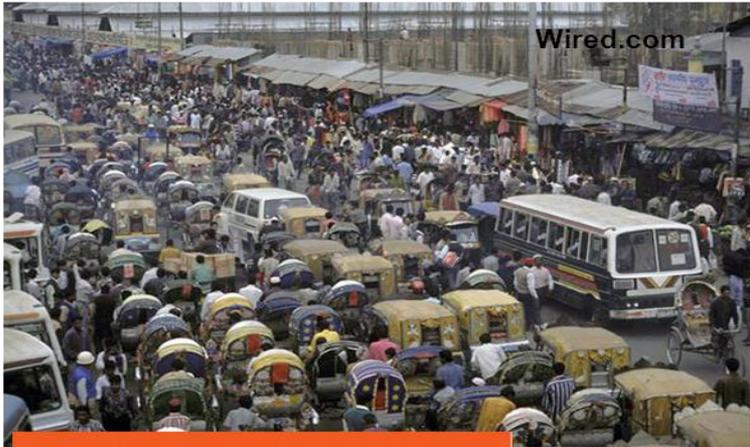


VS Vision and Science

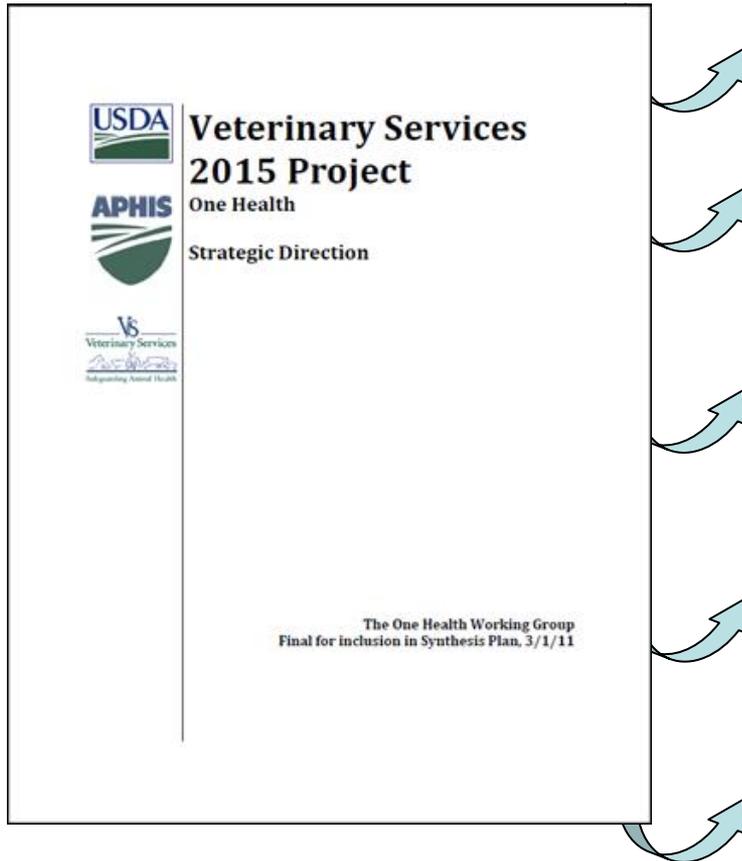
Why must
Veterinary
Services
(VS)
change?

- Continual evolution of the animal industry
- Use of new technologies
- 24/7 demands of global trade
- Globalization of infectious diseases
- Public opinion

Expanding Role of One Health in VS

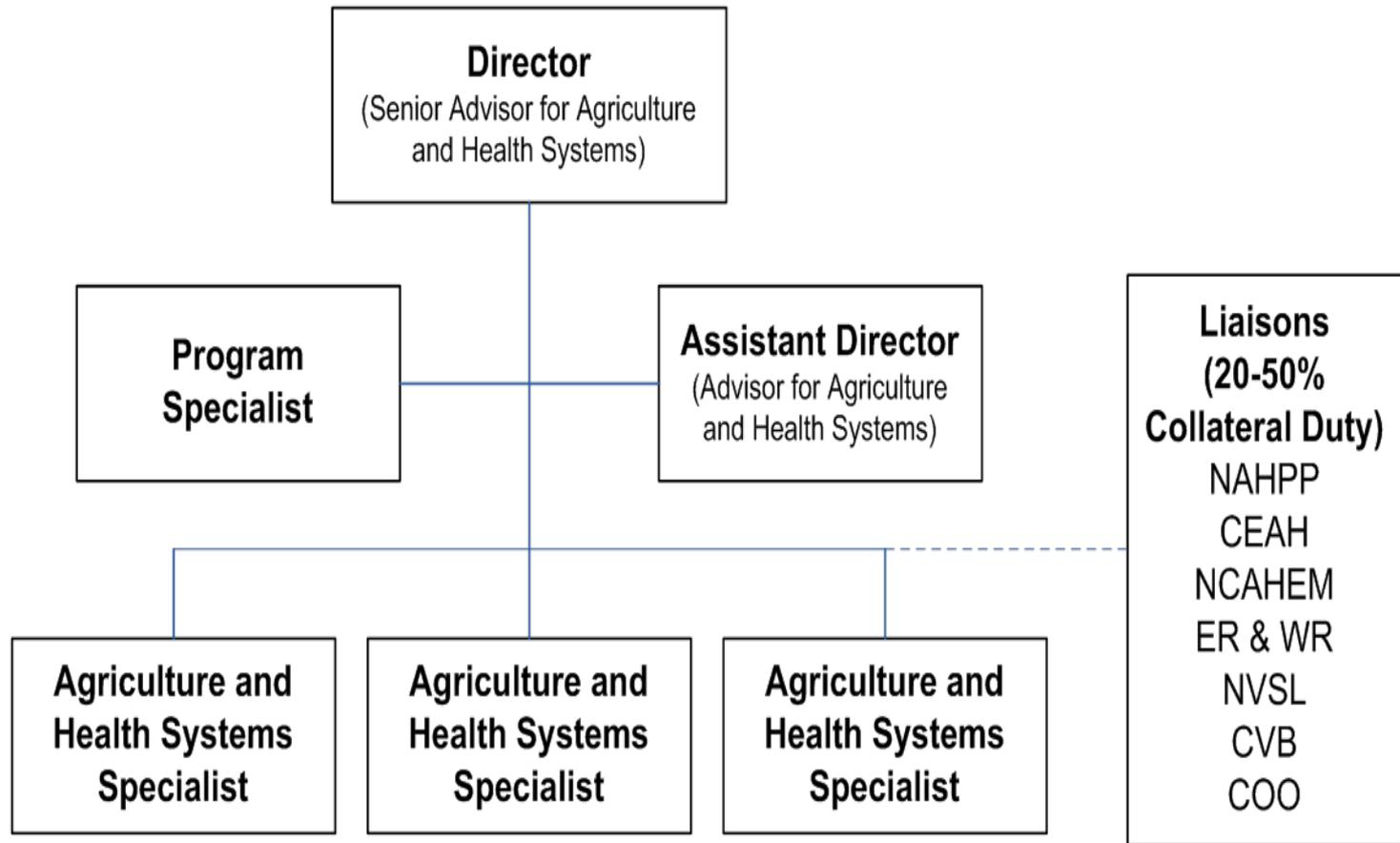


VS' One Health Goals



1. Align APHIS VS policy, programs, and infrastructure with the VS 2015 OH vision.
2. Build new collaborations and partnerships, and sustain existing relationships in the OH community.
3. Spearhead outreach and communication to build credibility, trust, and respect in the OH community.
4. Transform the APHIS VS culture and workforce, and build new skill sets to support and integrate OH principles.
5. Apply our unique competencies to support and enhance the OH community.

Establishment of a permanent One Health Coordination Office



Operational Plans

- Pre-Harvest Food Safety Policy Documents
- Zoonotic Disease Operational Plan
- Communications Plan
- Training and Education Plan

Decision Matrix for VS One Health Engagement							
	Relative Weighting (1-10)	Definite Involvement	Likely Involvement	Uncertain Involvement	Unlikely Involvement	No Involvement	Score (Product of ratings)
Relative Weighting (1-5)	→	5	4	3	2	1	
Species Involved	7	Cattle, sheep, swine, poultry	Horses, Farmed Cervids, Farmed aquaculture	Wild cervids, feral swine, wild fish, wild horses, domestic pets	Wild species, insects, zoo animals	Animals not involved	
Agent Involved	5	Primary host is "farm" species	Secondary host is farm species	Host range is unknown or uncertain	VS-covered species are unlikely hosts	Exclusive human pathogen	
Zoonotic Transmissibility	9	Zoonotic transmission common and likely	Known zoonotic transmission of moderately transmissible agent	Zoonotic transmission limited or uncertain	Zoonotic transmission unlikely	No known zoonotic transmission	
Human Consequences	10	Agent is potentially highly fatal to humans	Agent causes serious illness in humans	Human illness likely mild	Humans infected, but asymptomatic	Human infection unlikely	
Human Scope	8	Definite Pandemic threat	Agent somewhat transmissible	Human transmissibility uncertain	Agent unlikely to be transmissible in humans	Agent not contagious to humans	
Animal Prevalence	7	Agent not thought to exist in susceptible population	Agent exist at low to moderate levels in population	Agent is endemic or highly prevalent in species	Agent is ubiquitous in species of concern	Agent is not found nor infectious in animal species	
Animal Infectivity and Transmissibility	6	Agent highly transmissible within and between species	Moderate transmissibility within species	Animal transmissibility limited or uncertain	animal transmissibility unlikely	No known animal transmission	
Animal Consequences	8	Agent causes high mortality/ morbidity in species of concern	Agent causes serious illness and moderate economic loss in species of concern	Agent of unknown or uncertain consequences in species of concern	Agent causes little or no known illness in species of concern	Animal infection unlikely	
Availability of diagnostic assays	2	Assays currently available with good sensitivity and specificity	Assays available but not widely used, or less sensitive and specific	Assays likely can be developed, but not available	Assay development is unknown or difficult	Agent is unknown or extremely difficult to diagnose	
Total Score							

Operational Plan for VS' Engagement in Zoonotic Diseases

- Captures past zoonotic disease endeavors and current zoonotic disease activities
- Describes VS authority and new direction
 - Acknowledges State's jurisdiction
 - Vision of VS engagement in a non-regulatory capacity
- Recognizes non-traditional stakeholders for One Health partnerships

One Health in Action Examples

Examples of One Health Activities in VS	Summary
Zoonotic disease surveillance	Avian and swine influenza, West Nile Virus, tuberculosis, brucellosis
Epidemiologic Investigations	Developing comprehensive approach and framework
USDA Antimicrobial Resistance Strategic Plan	Collaboration between ARS and VS, recently held 2 day forum
Pre-Harvest Food Safety	Operational planning, bovine cysticercosis, NAHMS studies, planning of public input sessions with FSIS
Certification Programs	Salmonella, Trichinella
Subject Matter Expertise and support	RMSF, Q Fever, foodborne outbreaks, risk analyses (avian influenza)
Laboratory support	PFGE and serotyping for Salmonella outbreaks (live chicks, dog food, etc)

Collaborating on Influenza Surveillance

- Because of the need to better understand the epidemiology and ecology of SIV, APHIS continues to work with Federal and State AH, PH and industry partners on SIV surveillance
- August 2008: CDC & USDA entered into an IAA to conduct SIV surveillance
 - CDC provided USDA funding to initiate a pilot SIV surveillance project
- May 2009: USDA expanded surveillance
- July 2010: USDA revised national SIV surveillance plan

Centers for Disease Control and Prevention

MMWR Morbidity and Mortality Weekly Report

Early Release / Vol. 60 December 23, 2011

Update: Influenza A (H3N2)v Transmission and Guidelines — Five States, 2011

From August 17 to December 23, 2011, CDC received reports of 12 human infections with influenza A (H3N2)v viruses that have the matrix (M) gene from the influenza A (H1N1)pdm09 virus (formerly called swine-origin influenza A [H3N2] and pandemic influenza A [H1N1] 2009 viruses, respectively [Box]). The 12 cases occurred in five states (Indiana, Iowa, Maine, Pennsylvania, and West Virginia), and 11 were in children (1,2). Six of the 12 patients had no identified recent exposure to swine. Three of the 12 patients were hospitalized, and all have recovered fully.

A case in an adult male in Indiana with occupational exposure to swine was among the 12, and two children in West Virginia who regularly attended the same day care accounted for the latest cases. This report describes those cases and swine influenza virus (SIV) surveillance being conducted by the U.S. Department of Agriculture (USDA).

did not exhibit signs of illness. No illness was reported among the patient's household members or other close contacts.

West Virginia. On November 19, a child aged <5 years developed acute onset of fever after 1 week of cough and congestion. The child had been hospitalized for an unrelated condition 2 days before the onset of fever. On November 21, a respiratory specimen was collected. Rapid diagnostic tests conducted by the hospital were negative for influenza and respiratory syncytial virus, but influenza A was identified by an alternative rRT-PCR at the hospital. The specimen was forwarded to the West Virginia Office of Laboratory Services, where it was identified as a suspected influenza A (H3N2)v virus. Subsequent genome sequencing conducted at CDC confirmed the virus as A(H3N2)v with the M gene from the A(H1N1)pdm09 virus. The child, who had no recent travel or exposure to swine, was discharged on November 21, and

Outbreaks of Influenza A (H3N2) virus among People and Swine Associated with Fairs, 2012



John Korslund, DVM

Outbreak of H3N2v

- Between July 12 and October 11, 2012
 - 306 cases in people from 10 states
 - 16 people hospitalized; 1 death
- Impact on the fairs
- Collaboration in Investigation and Response activities

Salmonella Homepage

- Outbreaks
- Reporting Timeline
- Typhimurium Infections Linked to Ground Beef
- Heidelberg Infections Linked to Kosher Broiled Chicken Livers
- Enteritidis Infections Linked to Turkish Pine Nuts

Salmonella Homepage > Outbreaks

Multistate Outbreak of Human *Salmonella* Altona and *Salmonella* Johannesburg Infections Linked to Chicks and Ducklings

NOTICE: This web page is archived for historical purposes and is no longer being maintained or updated. The information is accurate only as of the last page update.

- >50,000,000 chicks sold annually
- Business is booming due to increased demand
 - Backyard flocks
 - Urban chicken phenomenon
- Baby poultry
 - Sold at feed stores
 - Sold over the internet

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What's this?

Contact Us:

- Centers for Disease Control and Prevention
1600 Clifton Rd
Atlanta, GA 30333
- 800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6342
- New Hours of Operation
8am-8pm ET/Monday-Friday
Closed Holidays
- cdcinfo@cdc.gov

Spotlight



CDC Poster: Reducing Your Risk of a *Salmonella* Infection from Poultry [PDF - 880 KB]

Afiche de los CDC: Reduzca su riesgo de infección por *Salmonella* por el contacto con crías de aves de corral [PDF - 839 KB]

CDC Feature: Risk of Human *Salmonella* Infections from Live Baby Poultry

Human *Salmonella* infections; therefore, you should always wash hands thoroughly with soap and water right after touching live poultry or anything in the area where they live and roam. Adults should supervise hand washing for young children. Additional recommendations are available.

June 29, 2011	
June 9, 2011	
May 27, 2011	
Typhimurium Infections	

After you touch ducklings or chicks, wash your hands so you don't get sick!



- Contact with live poultry (chicks, chickens, ducklings, ducks, geese, and turkeys) can be a source of human *Salmonella* infections.
- *Salmonella* germs can cause a diarrheal illness in people that can be mild, severe, or even life threatening.
- Chicks, ducklings, and other live poultry can carry *Salmonella* germs and still appear healthy and clean.
- *Salmonella* germs are shed in their droppings and can easily contaminate their bodies and anything in areas where birds live and roam.

Protect Yourself and Your Family from Germs

DO:

- Wash your hands thoroughly with soap and water right after touching live poultry or anything in the area where they live and roam.
 - Adults should supervise hand washing for young children.
 - If soap and water are not readily available, use hand sanitizer until you are able to wash your hands thoroughly with soap and water.
- Clean any equipment or materials associated with raising or caring for live poultry outside the house, such as cages or feed or water containers.

DON'T:

- Don't let children younger than 5 years of age, elderly persons, or people with weak immune systems handle or touch chicks, ducklings, or other live poultry.
- Don't let live poultry inside the house, in bathrooms, or especially in areas where food or drink is prepared, served, or stored, such as kitchens, or outdoor patios.
- Don't snuggle or kiss the birds, touch your mouth, or eat or drink around live poultry.



Notes from the Field

Q Fever Outbreak Associated with Goat Farms — Washington and Montana, 2011

On April 22, 2011, the Q fever bacterium *Coxiella burnetii* was detected in a goat placenta collected from a farm in Washington, where 14 of 50 (28%) pregnant does had aborted since January. A county health alert advised health-

care providers to advise patients who had purchased goats with a synovitis-like illness from a Washington farm in October 2010–January 2011 to seek medical attention if they had purchased goats from the Washington farm or had contact with goats from the Washington farm who had purchased goats from the Washington farm before

five more persons reported onset of symptoms compatible with Q fever from late March to mid-May, following exposure at a Montana farm to goats purchased from the Washington farm at various times during October 2010–January 2011. On June 10, the Washington State Department of Health and Montana Department of Public Health and Human Services requested CDC assistance to characterize the extent of the outbreak, distribute Q fever information, and identify others at risk for infection.

report animal abortions and positive Q fever test results to state authorities. All homes within a 1-mile radius of the Washington farm where *C. burnetii* was initially detected and a Montana farm that also had high goat seroprevalence linked to human illness were visited once by CDC or by county public health officials and CDC in July or August 2011 to provide Q fever health education and offer human serologic testing. The states

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for chronic Q fever. Doxycycline is recommended for treatment of acute Q fever. *C. burnetii* is highly infectious, persists in the environment, and can travel for miles once windborne (3). Transmission can occur via inhalation of contaminated aerosols or dust; human-to-human transmission is rare. Cattle, sheep, and goats are the primary Q fever reservoirs. Continued community awareness is essential for disease prevention and control. Additional information is available at <http://www.cdc.gov/qfever/>.

- Jan-Apr 2011 – abortions in 14 (28%) of 50 pregnant goats in the index herd
- 21 persons from 2 states positive
- 17 goat herds in 3 states positive

Recent Examples of Zoonotic Disease Involvement in Companion Animals

- Identification of novel H1N1 influenza A virus in pet ferrets.
- Diagnosis of zoonotic diseases from companion animals
 - Tularemia in a domestic cat
 - *Mycobacterium tuberculosis* in a pet bird
 - Screwworm infection in dog entering the U.S.
- Acute neurologic syndrome in Guatemala involving people and horses.
- *Salmonella infantis* outbreak linked to pet food

Outbreak of Lymphocytic Choriomeningitis Virus in a Rodent Facility in Indiana

- Potentially LCMV-infected mice were shipped from the Indiana facility to purchasers, including pet stores, in several states up through May 7, 2012.
- CDC recommended euthanasia and safe disposal of all potentially LCMV-infected rodents (mice, hamsters, gerbils, guinea pigs).
- State and local health authorities determined the disposition of animals at locations in the individual states which had received shipments of potentially LCMV-infected mice.
- Several VS Area Offices provided assistance during the response
- APHIS Animal Care also provided assistance

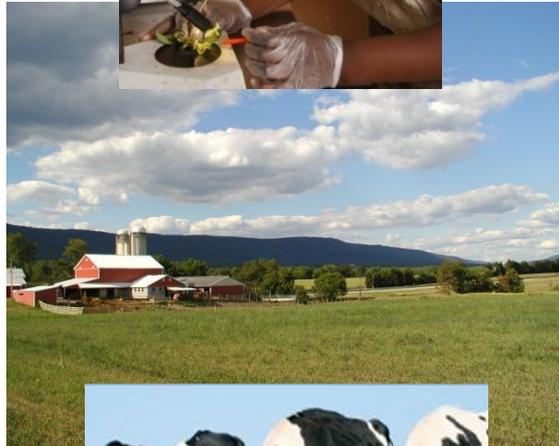
Summary

- Domestic and global health challenges such as emerging zoonotic diseases and issues at the AHEI highlight the need for a OH approach to address these problems, define issues and develop solutions.
- As part of our vision VS will continue to expand our engagement in OH
- Key to OH and the successful detection and response to events at the AHEI requires establishing and enhancing partnerships and sustained relationships

AVMA “One Health - What is One Health?”

- “...Because of their expertise, veterinarians play critical roles in the health of animals, humans, and even the environment, but these roles are often overlooked or unrecognized. Nonetheless, veterinary medicine is the only profession that routinely operates at the interface of these three components of One Health...”*

Discussion?



Questions?