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Grand Round Series

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Agroterrorism: Management of Foreign and Emerging Animal Diseases

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Speaker

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Evaluation

UAlbanyCPHP.org/evals

Nursing Contact Hours, CME & CHES Credits Available
# Importance of Agriculture

- Largest economic sector in US
  - 2002 US Census of Agriculture
    - Total value of livestock, poultry and their products sold = $105,494,401,000
- Principle source of food
- Vulnerable to animal disease outbreaks
- Potential target of bioterrorist

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# US Threatened by Potential Occurrences of FEADs

- Foreign animal diseases
  - Not currently present in US
  - Accidental and intentional risks for entry
    - Travelers
    - Meat products
    - Garbage
    - Bioterrorists

## Cont.

- Emerging animal diseases
  - Currently present in US
  - A new disease or a new form of an old endemic disease
  - Natural, accidental and intentional risks of emergence

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# US Threatened by Potential Occurrences of FEADs

- Zoonotic diseases
  - Diseases shared by animals and people
  - Various FEADs
  - ~200 diseases
  - ~67% infectious diseases

## Cont.

### Types of Occurrences of FEADs

- Natural
- Accidental
- Intentional (agroterrorism)

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### Devastating Impacts of Animal Disease Outbreaks

- Economic impacts
- Sociologic impacts
- Emotional impacts
- Political impacts
Foot and Mouth Disease

- Not currently present in the US
- A reportable disease
- Viral disease
  - Domestic and wild cloven-hoofed livestock
    - Cattle, sheep, goats, swine, deer, llamas
  - Highly contagious, spreads rapidly
  - Blisters and sores in mouth and on feet

Foot and Mouth Disease

- Impact on human health
  - People not usually infected
    - Rare cases of mild human disease in persons with direct contact to heavily infected animals
  - People affected economically, emotionally and sociologically
  - Reduced risks of entry and spread
    - USDA bans
      - Import bans
      - Meat garbage feeding to swine

‘Mad Cow Disease’
Bovine Spongiform Encephalopathy (BSE)

- Not currently present in the US
- A reportable disease
- Prion disease
  - Cattle
  - Brain disease
    - Rabies-like symptom
  - Zoonotic disease (Variant Creutzfeldt-Jakob Disease)

Mad Cow Disease

Mad Cow: Spongy Holes in Brain Tissue
**Mad Cow Disease**

- Not contagious
- Feeding of contaminated meat and bone meal
- Reduced risks of entry and spread
  - USDA bans
    - Import bans
    - Feed bans
    - Slaughter bans

**Chronic Wasting Disease (CWD)**

- Cervid Spongiform Encephalopathy
  - A reportable disease in the US
  - Prion disease
    - Deer, elk, moose
    - Brain disease
      - Rabies-like symptoms
      - Chronic emaciation disease
  - Management
    - Restricted importation into States
    - Voluntary CWD Monitoring Program
    - Hunter-Killed Testing Program

**Anthrax**

- A reportable disease in the US
- Bacterial disease
  - Domestic and wild livestock
  - Sudden death
  - Transmission
    - Ingestion (soil-borne)
  - Zoonotic disease
    - Direct contact with infected carcass
West Nile Encephalitis

- Reportable disease in the US
- Viral bird disease – >100 species
  - Blue jays, crows, hawks
  - Encephalitis death
- Zoonotic disease

West Nile Virus Transmission Cycle

- Transmission
  - Virus in bird blood
  - Mosquito (>75 species) bite bird
  - Mosquito bite mammal – virus not in blood (dead end)
    - Horse – rabies symptoms
    - People – zoonotic disease

Johne’s Disease

- Bovine Paratuberculosis
  - A reportable disease in the US
  - Bacterial disease
    - Ruminants
      - Most commonly seen in cattle
    - Chronic emaciation (diarrhea, weight loss)
  - Zoonotic Disease??
    - 3 – 75% of patients with Crohn’s disease test positive for the same bacteria that causes Johne’s Disease
    - No definitive epidemiological link

Bovine Tuberculosis (TB)

- A reportable disease in the US
- Bacterial disease
  - Cattle and buffalo
  - Chronic emaciation, respiratory distress
  - Tumor abscesses of lungs and lymph nodes
- Zoonotic disease
  - Direct contact with infected cattle
### Johne’s Disease

![Johne's Disease Image]

### Agroterrorism

“The use of biological (to include toxins), chemical, or radiological agents against some component of agriculture in such a way as to adversely impact the agriculture industry or any component thereof, the economy, or the consuming public.”

- The Center for Food Security and Public Health, Iowa State University

### Agroterrorism?

- Does not require sophisticated boundaries
- Highly contagious
- Easily spread on own
- Local outbreak can have national and international consequences

### National Center for Foreign Animal and Zoonotic Disease Defense (FAZD Center)

- US Department of Homeland Security Center of Excellence
- Collaborating partners
  - Texas A&M University System
  - University of California, Davis
  - University of Texas Medical Branch
  - University of Southern California

### National Center for Foreign and Zoonotic Disease Defense

- USDHS priority areas
  - Prevention
  - Detection
  - Response
  - Recovery
  - Risk communication/education

### National Center for Foreign Animal and Zoonotic Disease Defense

- FAZD CENTER components
  - Biological systems
  - Information modeling and management
  - Education
  - Outreach (training and communication)
First Line of Defense in Emergency Management of FEADs

- Education of first defenders
  - Animal owners
  - County Extension agents
  - Private veterinarians

Key Aspects to Emergency Management of FEADs

- Biosecurity measures
- Early detection
  - Unusual signs
- Rapid reporting
- Rapid response
  - Prompt quarantine
  - Quick diagnosis
  - Depopulation
- Surveillance
  - National Animal Identification System (NAIS)

Key Aspects to Emergency Management of FEADs

- Regulatory agencies and animal industries must work together
  - Federal (USDA, DHS, DOI, HHS)
- State
  - Department of Animal Health
  - Department of Health
- Local
  - Animal owners
  - Veterinarians
  - Extension agents
  - General public
  - County Department of Health
  - County Emergency Management Offices

Biosecurity Measures

- Wash hands
- Wash/disinfect boots, trailers, tires, equipment
- Proper garbage disposal
- Lock gates
- Stranger alert
- International visitor – >48 hours wait
- Purchased livestock – >2 weeks isolation, tests (preferably 6-8 wks)
- Routine observations

Summary

- Understand the difference between foreign and emerging animal diseases.
- Understand the potential threats of these diseases to the health and welfare of animal and human populations.
- Understand the roles of agencies and public in minimizing the threats of these diseases.
Available Resources

- Texas Cooperative Extension – Texas A&M University
  http://extensionvetmed.tamu.edu
- National Center for Foreign Animal and Zoonotic Disease Defense
  http://fazd.tamu.edu
- USDA Animal and Plant Health Inspection Service
  http://www.aphis.usda.gov
- NYS Department of Agriculture & Markets
  http://www.agmkt.state.ny.us/AI/AIHome.html
- The Center for Food Security and Public Health
  http://www.cfsph.iastate.edu/

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Mass Evacuations to Rural Communities

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