Animal Care and Biosecurity: Is There a Crossover?

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Yes!

Any Questions?
Animal Care

• “Provision of what is necessary for the health, welfare, maintenance, and protection of [animals]”

• NIAA Animal Care Council mission statement:
  – To identify and monitor issues surrounding the care and handling of livestock and to develop resources and educational materials for distribution to industry, producers, educators and other individuals interested in livestock care issues.
Biosecurity

• “Procedures intended to protect humans or animals against disease or harmful biological agents”

• Insurance
  – Pay those “premiums”
  – Hard to put a value on its effectiveness
  – Hope you never need it

• Spend money on biosecurity so you don’t have to depend on indemnity
Is There a Crossover?

Keep diseases out (biosecurity) =
Healthy animals (animal care) +
Healthy people (animal care) =
Safe, wholesome food +
Livelihood for producers =

Animal agriculture is
alive and well!!
Preventing Disease

Furred, feathered, hairy, or bare
Biological Risk Management (BRM)

• Disease risk cannot be totally eliminated
  – Animal, its environment
  – Decrease exposure to disease agents – “infectious burden”

• Minimize threat to animals and humans
Biological Risk Management (BRM)

• Process of awareness education, evaluation, and management
• Improve infectious disease control
  – Foreign and domestic diseases
• Provide tools to minimize risk
  – Online resources
Components of BRM

Risk analysis approach:
• Risk perception
• Risk assessment
  – Not disease specific
• Risk management
• Risk communication

“Awareness education”
Risk Perception

- Different perceptions of risk
  - First identify what is viewed as a threat
- Factors influencing perception
  - Previous experience
  - Media
  - Environment
- Acceptance and tolerance varies
Risk Assessment

• Objective evaluation
• Identify strengths, weaknesses (hazards)
  – Change over time

• Disease prediction is complicated
  – Underlying disease risks are not
  – Livestock’s vulnerability is influenced by:
    • Cleanliness, immunity, nutrition, exposure
    • Things that can be managed
How Organisms Enter a Farm

- Transport systems
  - Trucks and roads
- Employees
- Veterinarians and other advisers
- Sales people
- Visitors
- Rodents
- Birds
- Flies
- Animals and animal products
- Equipment
- Bedding
- Feed
- Water
- Airborne
- Transport systems
  - Trucks and roads

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Routes of Disease Transmission

Prevention Practices

“Risk Management”
How Pathogens Enter or Leave an Animal
Disease Spread

• Animal ↔ animal
• Animal ↔ human “zoonotic”

• Animal or human must be exposed to develop disease
• Understand different routes of exposure = Gain control, prevent!
Six Incredible Ways!

1. Aerosol
2. Direct contact
3. Fomite
4. Oral
5. Vector
6. Zoonotic
TRANSMISSION ROUTES OF ZOONOTIC DISEASES

**Aerosol**
Occurs when droplets are passed through the air from an infected animal and are breathed in by a person. Most exposure occurs when droplets are created from birth tissues (placenta, birthing fluids), soil contaminated with feces, urine or bacteria and a person breathes in the dust particles.

**Oral**
Occurs by ingesting food or water contaminated with a pathogen. This can occur if animal products, such as milk or meat, are not pasteurized or cooked properly. Eating or drinking after handling animals without washing your hands could also lead to oral zoonotic disease transmission.

**Direct Contact**
Requires the presence of a pathogen in the environment or within an infected animal. A person becomes exposed when the pathogen directly touches open wounds, mucous membranes or the skin.

**Vector**
Occurs when an insect acquires a pathogen from one animal and transmits it to a person.

**Fomite**
A fomite is an inanimate (non-living) object that can carry a pathogen from an animal to a person. Examples of fomites include contaminated obstetrical (O.B.) chains, brushes, needles, clothing or bedding (straw, shavings).

Graphic created by Clint May, CFSPH
Direct Contact Transmission

• Disease agent in animal or environment
  – Open wounds, mucous membranes, skin
  – Blood, saliva, nose to nose, rubbing, biting

• Reproductive transmission
  – Breeding (bull to cow)
  – Gestation (dam to offspring)
Fomite Transmission

- Contaminated inanimate object
- Carries agents to other animals, people
  - Brushes, needles, treatment equipment
  - Strollers, fences, gates
- Traffic
  - Vehicle, trailer, humans
Direct Contact and Fomite Prevention: Animal

• Basic prevention steps involve:
  – Isolating sick animals
  – Keeping environment clean, dry
  – Keeping equipment clean
  – Breeding males free of disease; artificial insemination
  – Wearing clean clothing, footwear, gloves
Direct Contact and Fomite Prevention: Human

• Wear protective outer clothing
  – Ensure don/doff procedures do not contaminate street clothes

• Proper disposal/laundering
  – Don’t contaminate other items
  – Clean/dirty storage of outerwear
  – Prevent disease agents from exposing those not involved with animal handling
  – Garbage bags to washing machine

• Wash hands after removing protective clothing
Direct Contact and Fomite Prevention: Human

PPE: Gloves

• Wear latex/nitrile gloves when working with sick animals or of unknown health status
  – Create a barrier between person and the disease
  – Especially important for hands with cuts, abrasions, chapped

• Wash hands after removing gloves
Oral Transmission

- Consumption of contaminated feed, water, milk
  - Feces, urine, saliva
- Licking/chewing contaminated environment, equipment (fomites)
- People: Hand to mouth activities

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Oral Prevention: Animal

• Basic prevention steps involve:
  – Isolating sick animals
    • Diarrheal diseases spread organisms
    • Separation is essential to minimize spread
    • Separate feeding and watering equipment
  – Keeping environment clean, dry
  – Ensuring feed, water clean
  – Managing manure, urine
Oral Prevention: Human

Wash Your Hands

- Don’t drink water in lakes, streams, pools, hot tubs
- Drink pasteurized milk
Risk Communication

Inform Your Audience
Risk Communication

• Communication is key!
• Plan must be understood and supported to be effective
• Many resources available for “peace time” and outbreak biosecurity
  – Spend time managing and training instead of writing reports
Infection control on livestock production facilities and in veterinary clinics protects animal and human health by instituting disease prevention practices. These principles prevent the spread of endemic diseases as well as zoonotic and foreign animal diseases. The CFSPH has developed Biological Risk Management (BRM) materials for beef, dairy, swine and equine operations and veterinary clinics that address infection control risks and management strategies.

- Cattle Facilities
- Equine Facilities
- Swine Facilities
- Veterinary Clinics
- Disease Exposure Routes
- Disinfection
- Signs and Visitor Information

The Biological Risk Management (BRM) online database is a free resource for veterinarians to use to evaluate their client’s livestock facility for disease exposure risks. Register or login today to identify prevention strengths and opportunities to improve animal health.

Overview of Biological Risk Management
This PowerPoint presentation is designed for beef or dairy producers. It gives the
Biosecurity Posters

- Farm activities
- Visitors with cattle contact
- Visitors without cattle contact
- English and Spanish
- Beef, Dairy, Swine
- Free online risk assessment tool
- Beef, dairy
  - Animal intros, housing, respiratory, etc.
- Numerous resources without logging in
No product or treatment recommendations

Biological Risk Management

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Policies for Visitors Contacting Animals or Entering Animal Areas

- Clean coveralls, hats, and disposable or disinfected rubber boots will be provided by the farm and must be worn while in animal areas
- Boots must be clean before entering animal areas
- Wash hands with soap and warm water before AND after handling animals
- Boots must be washed and disinfected or removed and disposed of properly after exiting animal areas
  - Clean all dirt, manure, and debris off of boots BEFORE stepping into the disinfectant solution
  - Allow the disinfectant solution to have ample contact time with the boot surface
- When leaving, remove all protective outer clothing and footwear provided by the farm and leave it in the designated area
- For your own protection, wash your hands with soap and warm water before leaving the farm
Signage

- English, Spanish
Disinfection Resources

Characteristics of Selected Disinfectants
This handout reviews the various types of disinfectant classes available and lists common trade names, how they work, advantages, disadvantages, and what type of organisms they are effective against.

Antimicrobial Spectrum of Disinfectants
This handout reviews the various types of disinfectant classes available and indicates what types of organisms are susceptible or resistant.

Bacteria Group Review Table
This multiple page handout reviews the various types of bacteria based on their classification as gram negative or positive as this is important when selecting an effective disinfectant.

Virus Family Table
This multiple page handout reviews the various types of RNA and DNA viruses. It lists whether they are enveloped or not, the diseases they cause and the species affected. This handout supplements the other disinfectant information and assists in proper selection of an effective disinfectant on farms.

Disinfectant PRODUCT LABELS
Understanding the information on a disinfectant product label is essential for effective disease organism removal and the safety of those handling the product. Always read the product label before use. It is a violation of federal law to use a product in a manner inconsistent with its labeling. In order to increase awareness of what a product label contains, this handout will provide you with a step-by-step guide of a disinfectant label.

Only products with EPA registration numbers should be used; this number indicates the product has been reviewed by the EPA and poses minimal risk to animals, people and the environment when used in accordance with the label.

This section will describe the hazards related to humans and animals when using this product. It recommends personal protective gear that should be worn, what effects it will have on the environment and treatment information should it be splashed into the eyes or ingested.

Some products may have multiple uses (i.e., cleaning various disinfectants) and require different dilutions and contact times for each action.

This section describes what diseases organisms the product controls as well as where, how and when to use it.

Specialty applications for the product (e.g., boat hulls, vehicle disinfection) will also be listed.

Center for Food Security and Public Health
Iowa State University
• 183 disease fact sheets
  – Foreign, domestic
• 131 diseases with images
• 101 PPTs
  – Speaker notes
• 104 1-page Fast Facts
Avian Influenza
Bird Flu

What is avian influenza and what causes it?
Avian influenza is a viral disease that can affect bird species throughout the world. The disease can vary from mild to severe, depending on the virus strain involved. The most severe strain, called highly pathogenic avian influenza (HPAI), is caused by viruses with H5 or H7 surface proteins. Most human cases result from close contact with sick birds. Outbreaks have occurred in many countries, including the U.S., parts of Asia, Europe, and Africa.

What animals get avian influenza?
Avian influenza primarily affects wild and domestic bird species. Waterfowl can carry the disease without becoming sick. Poultry are very susceptible to the disease and can die in large numbers. Some strains of the virus can affect mammals, such as pigs, cats, horses, dogs, and foxes.

How can my animal get avian influenza?
In birds, avian influenza is spread by direct contact with the fecal droppings or respiratory secretions of infected birds. The virus can live for a long time in the environment and can also be spread by objects or fomites (e.g., shoes, clothing, equipment) that have been contaminated with the virus. Mammals may be exposed by ingestion of infected birds.

How does avian influenza affect my animal?
Poultry affected by avian influenza will appear depressed, have ruffled feathers and are unwilling to eat. Birds may have watery diarrheas that start off bright green and change to white. The combs and wattles are often swollen and can turn blue. Swelling may occur around the eyes and neck. Legs may have pin-point hemorrhages. Egg production drops and typically stops. Rare cases can affect the brain causing twisted heads, cackling, or paralysis. Sudden death may occur.

Infected mammals will have fever, cough, and breathing difficulty; some may die.

Can I get avian influenza?
Yes. Humans can be infected with the avian influenza virus, but most cases have involved very close direct contact with sick poultry. Some cases of person-to-person transmission have been reported, but are very rare.

Clinical signs in people can include swelling and reddening of the tissues around the eyes (conjunctivitis), flu-like illnesses (fever, body aches). Death can occur in rare cases.

Who should I contact, if I suspect avian influenza?
In Animals – Contact your veterinarian immediately.
In Humans – Contact your physician. Inform him or her that you have had contact with birds with avian influenza.

How can I protect my animals from avian influenza?
Prevent contact between poultry and wild birds, especially waterfowl. Use strict biosecurity measures, such as cleaning and disinfection of bird-housing facilities as well as rodent and insect control measures, to prevent spread of the virus. Vaccines may be used to help control an outbreak.

How can I protect myself from avian influenza?
Avian influenza infection in people is rare. Wear protective clothing such as masks, gloves, and safety glasses, when working with birds or poultry. Avoid touching your eyes or mouth until hands have been washed thoroughly with soap and water. Antiviral medication or vaccines may be used during an outbreak situation. People working with the virus in laboratories or on vaccination crews should take extra precautions.

For More Information
CFSPH Technical Fact Sheets: Avian Influenza at http://www.cfsph.iastate.edu/DiseaseInfo/
Foot-and-Mouth Disease Awareness

- Progressive lesion images, descriptions
- English, Spanish
- Free PDF available
  - Swine books $15 ea.
- Funded by USDA, AASV, NPB, CFSPH

Center for Food Security and Public Health
Iowa State University
FMD Pocket Guide: Cattle

- Wallcharts also in English, Spanish
- Free PDF available
- Funded by USDA
  - Collaboration with AABP, NCBA, NMPF
Biosecurity for FADs

The Secure Milk Supply (SMS) Plan is currently under development. In the event foot-and-mouth disease (FMD) is diagnosed in the United States, an animal health emergency will be declared and livestock and allied industries will feel the immediate impacts of animal and animal product quarantine and movement restrictions. The just-in-time supply practices of milk movement in the U.S. could result in significant interruptions of milk and milk products to consumers, as well as create significant milk disposal and animal welfare issues on dairies. Movement of cattle to other operations is another important component of the dairy industry that would be impacted during an FMD outbreak. A well-developed, science and risk-based plan requires the input of industry, state and federal animal health officials.

Goals of the Voluntary SMS Plan:

- Maintain business continuity for dairy producers, haulers, and processors during an FMD outbreak.
- Minimize disease spread, and
- Assure a continuous supply of milk and milk products to consumers.

For more information:
- Project Overview: September 2015
- Biosecurity Performance Standards for Raw Milk Collection and Transport: July 2015

www.securemilksupply.org  www.securepork.org
Poultry Biosecurity Training Materials

This site offers educational materials (in English and Spanish) for the poultry industry to support implementation of biosecurity recommendations identified in the Checklist for Self-Assessment of Enhanced Poultry Biosecurity. The materials are arranged by checklist item. The materials can be downloaded, printed and used as is. However, poultry Biosecurity Officers are encouraged to modify the resources to best meet the situation at their operations. Note, if the text appears shadowed / hard to read when previewing the file, download the file and open it locally. That should resolve the issue.

These HPAI Biosecurity Training Materials were produced by the Center for Food Security and Public Health, Iowa State University, College of Veterinary Medicine. The USDA, APHIS, Veterinary Services, Surveillance, Preparedness and Response Services, National Preparedness and Incident Coordination provided funding through a cooperative agreement to the Center for Food Security and Public Health to develop these materials.

We welcome your suggestions for improvement.

Biosecurity Officer

The first checklist recommendation is that “each production site (or integrated system) should have a Biosecurity Officer capable of designing and implementing effective biosecurity procedures”. The Poultry Biosecurity Officer Information Manual provides guidance for a Biosecurity Officer in accomplishing the other checklist items.

Training Employees and Other Personnel

Short video presentations are available for training purposes. The PowerPoint file for each presentation is also provided. The presentations can be downloaded and modified to better address specific factors at your production site.

Introduction
- Video (7 min.) | Presentation | Video (7 min.) – en español | Presentation – en español

Do NOT Bring Avian Influenza to the Site
- Video (6 min.) | Presentation | Video (6 min.) – en español | Presentation – en español

Perimeter Buffer Area
- Video (8 min.) | Presentation | Video (8 min.) – en español | Presentation – en español

Line of Separation
- Video (6 min.) | Presentation | Video (6 min.) – en español | Presentation – en español
Questions?

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