Biosecurity: Understanding its importance when working on livestock farms

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Do you go onto livestock farms?
Do you go in livestock barns?
Biosecurity: practices to prevent or reduce disease spread

• Preventing an infection or outbreak
  – Keep disease out

• Reducing spread
  – Keep disease in
Flu and Cold Season Practices

Cover a cough

Wash your hands

Stay home and avoid contact with other people
Which pathogens are lurking outside livestock barns?

- **Poultry**
  - Highly Pathogenic Avian Influenza (HPAI)
  - Low Pathogenic Avian Influenza (LPAI)
  - Exotic Newcastle

- **Swine**
  - PRRSV (Porcine reproductive and respiratory syndrome virus)
  - PEDV (porcine epidemic diarrhea virus)

- **Dairy**
  - Johne’s
Cost to federal taxpayers:

$990 million

Source: USDA Animal and Plant Health Inspection Service, Veterinary Services
HPAI Cases in 2017

US avian influenza in 2017

Turkey – Low path
Chicken – Ten low path and two high path cases

https://batchgeo.com/map/2017-avian-influenza-outbreaks
Wild bird flyways

Black Sea/Mediterranean Flyway

East Atlantic Flyway

Central Asian Flyway

West Asian - East African Flyway

East Asian – Australasian Flyway

Mississippi Americas Flyway

Atlantic Americas Flyway

Pacific Americas Flyway

West Pacific Flyway

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What do you need?

BIOSECURITY AWARENESS
How pathogens get into barns?

- Carried in by people on boots, clothing, supplies, equipment or other things
- Airborne
- Feed or water
- Other
Line of Separation

• Boundary or space between
  – Biosecure and non-biosecure areas
  – Clean and dirty areas
  – Not contaminated versus potentially contaminated areas
• Only clean things cross the line
Biosecure Entry

- Get people and supplies in and out of building
- Prevent introduction of disease organisms
- Prevent disease spread between barns and farms
- Clear line of separation

http://www.extension.umn.edu/agriculture/swine/img/main.jpg
Multi-step Contamination

1. Contamination source
2. Contact with viable contaminant source
3. Retain viable contaminant material on boots, clothing, hands, equipment
4. Enter barn
5. Shed viable contaminant material
Break the Chain

1. Contamination source
2. Contact with viable contaminant source
3. Retain viable contaminant material on boots, clothing, hands, other

Change boots, change clothing and wash hands!

Contaminate Sources

• Your animals
  – Are you raising poultry, exotic birds, swine or other livestock

• Wildlife areas
  – Are you a hunter?
  – Do you frequent wildlife areas?

http://news.psu.edu/story/418529/2016/07/24/stay-safe-salmonella-backyard-poultry
Northern pintail image by Brendan Lally/CC 2.0/ flic.kr/p/4yQE26
Contaminate Sources

- Other livestock farms
  - Do you work on other livestock farms?

- Infected farms
  - Is there an outbreak?

http://news.psu.edu/story/418529/2016/07/24/stay-safe-salmonella-backyard-poultry
Northern pintail image by Brendan Lally/CC 2.0/ flic.kr/p/4yqE26
Contaminate Sources

• Animals in other barns
  – Are you working in multiple barns?

• Outside areas
  – Are you going in and out of the barn?
  – Are you going to places where other workers and equipment from other farms and barns meet?
Transport to farms & into barns

• Trucks and other equipment
  – Feed
  – Rendering
  – Manure handling equipment
  – Load out equipment
  – Maintenance trucks and equipment

• People and equipment

http://brownindustrial.com/work/bucket-bodies-and-trailers/
Flow Analysis

- Systematic planning approach
- Layout and design farmsteads and animal facilities
- Enhance movement into and out of farmstead and barns

   - People
     - Animals
     - Feed
     - Supplies

   - Equipment
     - Bedding
     - Ventilation air
     - Other
Two Common Boundaries

- Farmstead boundaries
- Barn boundaries
Protocols to Manage Risk

- Pre-visit downtime
- Disinfecting trucks and equipment
- Barn specific boots and coveralls
- Biosecure entries
- Hand washing
- Log-books
- Other
Challenges

- Identifying all the flows
  - Irregular flows – unusual and rare activities
- Easily implemented protocols
- Adequate supplies
- Trained and committed people
- Time to follow protocols every time
Danish Entry

• “Minimum requirements for controlling the entrance and exit of pathogens from a hog barn”
• “Part of an effective biosecurity plan”
• “Can be built at a relatively low cost”

Two-zone Entry

- One line of separation
- Dirty side
- Biosecure or clean side
Three-zone Entry

- Two lines of separation
- Dirty area
- Grey area – between dirty and clean
- Clean and biosecure area
- More space required
• To view a video on Two-Zone Danish entry

Visit:
https://www.youtube.com/watch?v=BAfblGkMKuE
Biosecure Options

People Entry

• Biosecure entry using Danish entry concepts
  – Two-zone
  – Three-zone

• Shower-in shower-out

Equipment & Supplies

• Clean suppliers
• Off farm or farm office delivery
• Disinfect and dry
Biosecurity Guidelines

• Limit access to production areas
• Have clear biosecurity protocols
• Always adhere to the protocols
• Provide biosecurity training and talk about biosecurity regularly
• Teach visitors your protocol
• Post signs and instructions

Biosecurity guidelines

• Ensure all tools and equipment are properly cleaned and disinfected prior to bringing them into barn
• Keep disinfectant in entry area to disinfect equipment
• Do not set tools or equipment on the floor
Minimum Entry Protocol

1. Always enter barn through biosecure entry
2. Remove and store outer clothing on dirty side
3. Remove and store outside shoes on dirty side
4. Disinfect hands after removing outer clothing and farm shoes
Minimum Entry Protocol

5. Step over line of separation to biosecure side
6. Put on barn specific cloths, coveralls, hats and barn boots
7. Enter production area

http://www.extension.umn.edu/agriculture/swine/FDAs-antibiotic-changes/img/piglets-300.jpg
Minimum Exit Protocol

1. Always exit barn through biosecure entry
2. Remove and store barn specific clothing and boots on biosecure side
3. Disinfect hands
4. Step over line of separation to dirty side
5. Put on outside clothing and boots
6. Exit barn
Hand Washing

• Sink with hot water
  – Water supply and heater
  – Soap
  – Heated entry to prevent freezing
  – Wastewater collection and disposal
  – Towels

• Hand sanitizer
Biosecure Entry Compliance

- Eight Canadian poultry farms
- One randomly selected barn per farm
- Seven required biosecurity measures
- Video recorded entry for 2 weeks
- Six months later, recorded entry for another 2 weeks.
- Total of 883 visits

Required Biosecurity Measures

1. Respect dirty and clean areas
2. Change boots or use plastic boots
3. Wear barn specific coveralls
4. Wash hands on entry
5. Wash hands on exit
6. Disinfect outside footwear
7. Sign logbook

Biosecure Entry Compliance

- Only 26 (2.9%) visits out of 883 visits were performed without error
- 44 different errors were recorded
- Five categories of errors
  - Area separation
  - Boots
  - Hand washing
  - Coveralls
  - Logbook

Biosecure Entry Education Trailer

Supported by the University of Minnesota Rapid Agricultural Response Fund from the State of Minnesota
Biosecure Entry Education Trailer

• Primary purposes
  – Develop & assess protocols
  – Train employees
Take Home Message

• Recognize biosecure areas
• Learn and follow farm biosecurity practices
• **Always** use biosecure entries and exits
• Use clean equipment
• Wash your hands often
Thank You!
Factsheets


References


