Biosecurity

Routes of Disease Transmission

- Animal to animal
- Environment
  - soil, water, feed
  - vectors
- Animal to human
  - Zoonotic
  - Human to animal

Disease Transmission

- Sources
  - Susceptible animal comes in contact with infected animal
- Body fluids
  - Urine, feces
  - Saliva
  - Blood, milk
- Tissues
  - Lesions
  - Carcass
- Breeding
- Mother-to-offspring

Direct Transmission

- Susceptible animal comes in contact with infected animal

- Ingestion of contaminated feed or water
  - Feces, urine
  - Saliva
  - Milk
- Licking/chewing contaminated environment
- Shared feed or water sources

Aerosol Transmission

- Disease agents contained in droplets
  - Pass through air
- Most agents not stable in droplets
- Close proximity required
  - Enclosed barns
  - Coughing, sneezing
  - Contaminated soil
  - Birthing tissues
  - Feces, urine

Oral Transmission

- Ingestion of contaminated feed or water
  - Feces, urine
  - Saliva
  - Milk
- Licking/chewing contaminated environment
- Shared feed or water sources
Fomite Transmission

- Contaminated inanimate object
- Carries pathogens to other animals
  - Needles, balling guns
  - Buckets
  - Bedding, shovels
  - Vehicles, trailers
  - Humans, clothing

Vector Transmission

- Living organism transfers disease between animals
  - Mosquitoes
  - Ticks
  - Biting midges
  - Flies
- Acquires pathogen from one animal
- Transmits to another animal

Points to Keep in Mind

- Transmission routes vary with disease
  - Multiple routes
  - Single route
- Animals may not show obvious signs of disease
- Persistence in environment
  - Soil, manure, water

Biosecurity Measures for Transmission Routes

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Prevention: Direct Contact

- Isolation/quarantine
  - Increase distance between sick and well animals
- Dedicated equipment to prevent spread from isolation area
- Cleaning and disinfection

Prevention: Aerosol

- Adequate ventilation
  - Provide fresh air to all animals
  - Decrease humidity and odor build up
- Control dust
  - Wear respiratory protection in certain situations
Prevention: Ingestion
- Keep feed and water clean
- Prevent rodent and bird access
- Proper waste management
  - Keep environment clean and dry
- Cleaning and disinfection

Prevention: Vector Control
- Source reduction
  - Habitat reduction/elimination
  - Parasitic or predatory insects
- Control adults
  - Insecticides
    - Knockdown and residual sprays
    - Baits, fly traps
- Minimize interaction
  - Sheltering of animals

Personal Protective Equipment
- Gloves
  - Creates barrier between you and pathogen
  - Especially hands with cuts, abrasions, chapped
  - Wash hands after removing gloves
- Coveralls, footwear
- Respiratory and eye protection

Additional Resources
- USDA Foreign Animal Disease Preparedness (FAD PReP) Guidelines:
  Biosecurity
- Just-In-Time training presentations

Acknowledgments
Development of this presentation was by the Center for Food Security and Public Health at Iowa State University through funding from the Multi-State Partnership for Security in Agriculture

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