Causes of Infectious Diseases

Floron C. Faries, Jr., DVM, MS
Objectives

- Describe the major differences between causative agents
- Discuss risk factors
- Discuss primary causative factors
- Discuss secondary causative factors
- Discuss protective risk factors
Infectious Diseases

- Caused by living organisms
- Exposures to infectious organisms (agents)
  - Feed
  - Water
  - Manure
  - Direct animal contact
  - Close animal contact
  - Arthropods
Entry of infectious agents
- Skin
- Mucous membranes
- Lungs
- Mouth
- Reproductive tract
Kinds of infectious agents

- Germs
  - Bacteria
  - Viruses
  - Fungi
  - Rickettsiae

- Parasites
  - Worms
  - Protozoa
  - Arthropods
Effect of infectious agents is tissue damage
- Pressure
- Reaction
- Toxin
- Feeding
Causative Agents

- **Viruses**
  - Single, non-cellular (no cell wall) organisms
  - Viewed by electron microscope
  - Infect inside body cells (intracellular)
  - In blood (viremia)
  - Disease results after multiplication
    - Normal incubation period
      - Recent exposure
    - Extended incubation period (latency)
      - Stress triggers
      - Long ago exposure
Bacteria

- Single-celled organisms
- Viewed by light microscope
- Infect inside body cells (intracellular)
- Infect outside body cells (extracellular)
- Bacteria in blood (bacteremia)
- Waste products in blood (septicemia)
- Toxins in blood (toxemia)
- Disease results after multiplication
  - Primary disease or secondary disease
  - Normal or extended incubation period
Rickettsiae

- Bacteria-like organisms
- Viewed by light microscope
- Blood biological transmission
  - Ticks and lice
  - Arthropod stomach regurgitation
  - Arthropod feces defecation
- Blood mechanical transmission
  - Flies, instruments, and blood transfusion
Fungi

- Single-celled organisms
- Viewed by light microscope
- Mycotic diseases (mycosis)
  - Similar to bacterial disease
Parasites

- Multi-cellular organisms
  - Viewed by naked eye
  - Arthropods
    - Flies, ticks, fleas, lice, and mites
    - Mange mites – viewed by light microscope
    - Vectors of viruses, bacteria, rickettsiae, and worms
- Worms (helminths)
  - Nematodes, tapeworms, and flukes

Single-celled organisms
- Viewed by light microscope
- Protozoa
- Disease due to population of large numbers
Risk Factors

- Causative risk factors
  - Increase probability of disease
  - Primary causative factors
    - Causative agents
      - Primary or secondary invaders
  - Secondary causative factors (follow primary)
    - Inclement weather
    - Overcrowding
    - Pollution
    - Commingling
    - Inbreeding
Protective risk factors

- Decrease probability of disease
  - Immunizations
  - Husbandry
  - Management practices
  - Cross-breeding