Feline zoonoses

Institutional Animal Care and Use Committee

12/09

NDSU

Cat scratch disease

- Bacterial infection caused by *Bartonella henselae*
- Associated with a cat bite or scratch
- Infection at point of injury, swelling of regional lymph node(s), fever, headache, fatigue, poor appetite
- Kittens are more likely to pass the bacterium to people
- About 40% of cats are infected during their lifetime, but show no signs of disease

Cat Scratch disease

- Immunosuppressed people more likely to develop complications
- Avoid “rough play” with kittens
- Wash bites or scratches thoroughly with soap and water
- If clinical signs of cat scratch disease are experienced, consult your physician

Tularemia

- Caused by a bacteria, *Francisella tularensis*
- Animals usually found dead
- Rabbits and hares
  - Weakness, fever, ulcers, abscesses, swollen lymph nodes
  - Behave strangely
    - Easily captured because they run slowly
    - Rub their noses and feet on the ground
    - Muscle twitches
    - Anorexia, diarrhea, difficulty breathing

Tularemia

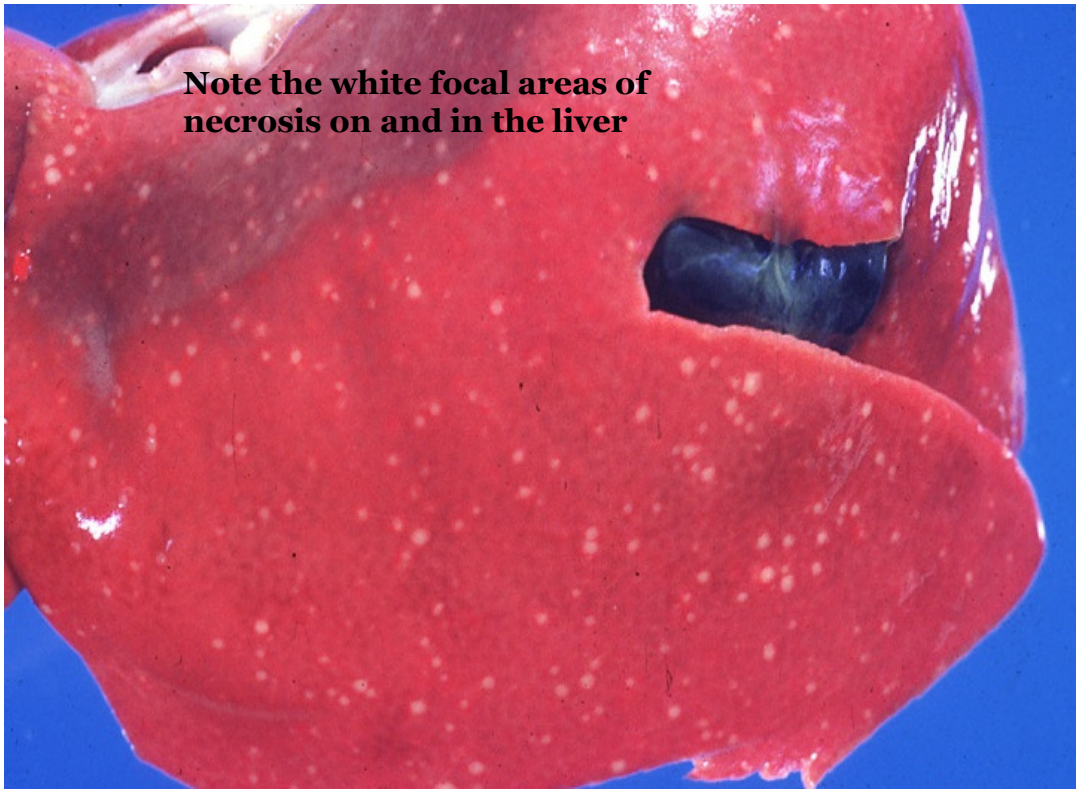
- Cats
  - Fever, depression, anorexia
  - Listlessness, apathy
  - Ulcerated tongue and palate
- Dogs
  - Fever, anorexia, muscle pain
  - Ocular and nasal discharge
  - Abscess at site of infection

Tularemia

- Cattle - resistant
- Horses – fever, depression , incoordination
- Pigs – fever, difficulty breathing, depression
  - Young pigs
- Sheep
  - Outbreaks following severe winter
  - Heavy tick infestations
  - Fever, weight loss, swollen lymph nodes, difficulty breathing, diarrhea, isolate from flock, rigid gait
  - Death in young

Tularemia

- The classic lesion is white spots on and in the liver and spleen



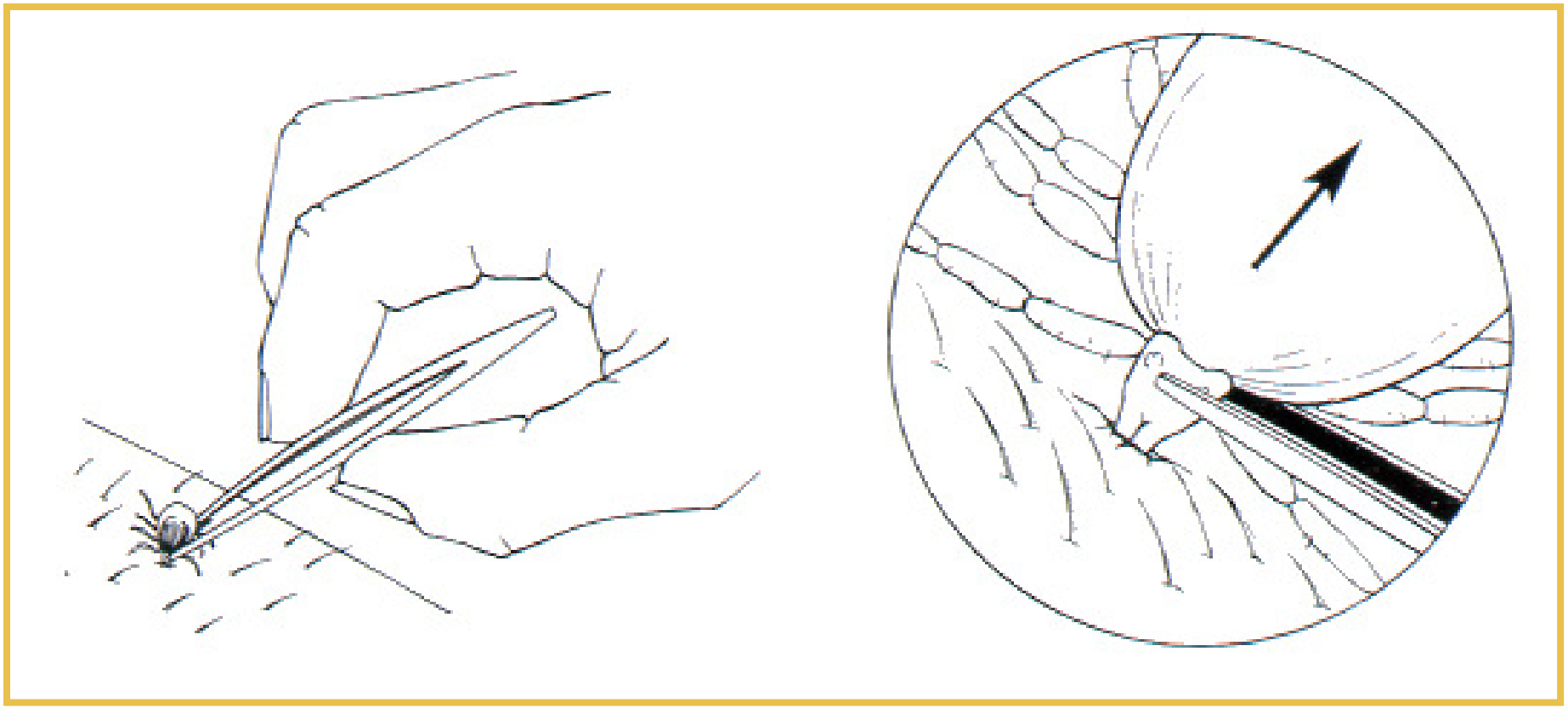
Tularemia

- Modes of transmission
  - Tick bite
  - Ingestion of contaminated material
  - Contact with infected animal
    - Pet
    - Livestock
    - Wildlife
      - Carcasses, meat
  - Inhalation
  - Insect bite
    - Mechanical vector

Tularemia

- Remove ticks as soon as possible
  - Proper removal technique
  - Wash hands after removal
  - Apply antiseptic to bite
- Streptomycin
  - Antibiotic of choice

Proper Tick Removal



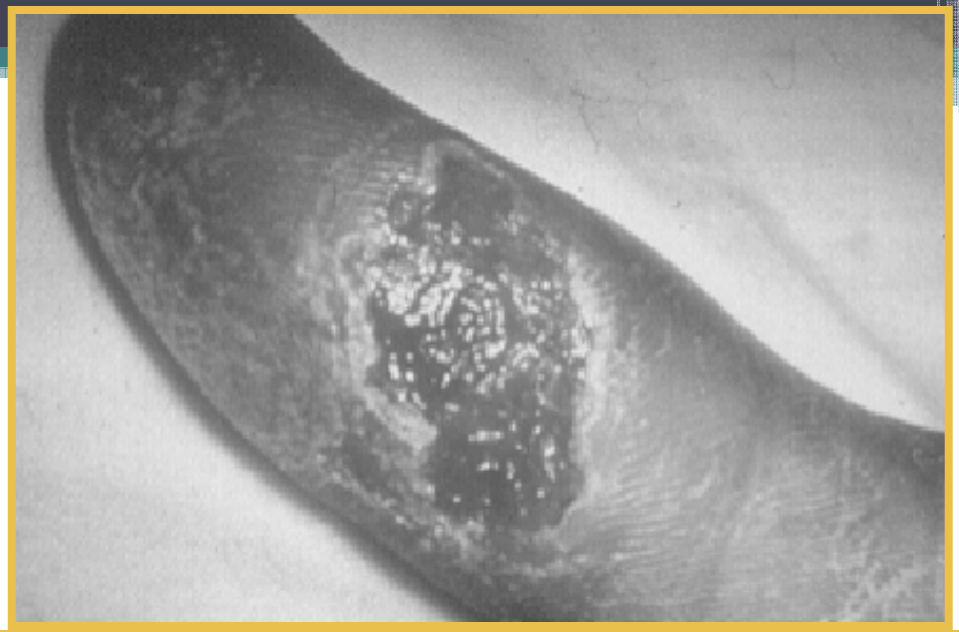
NDSU

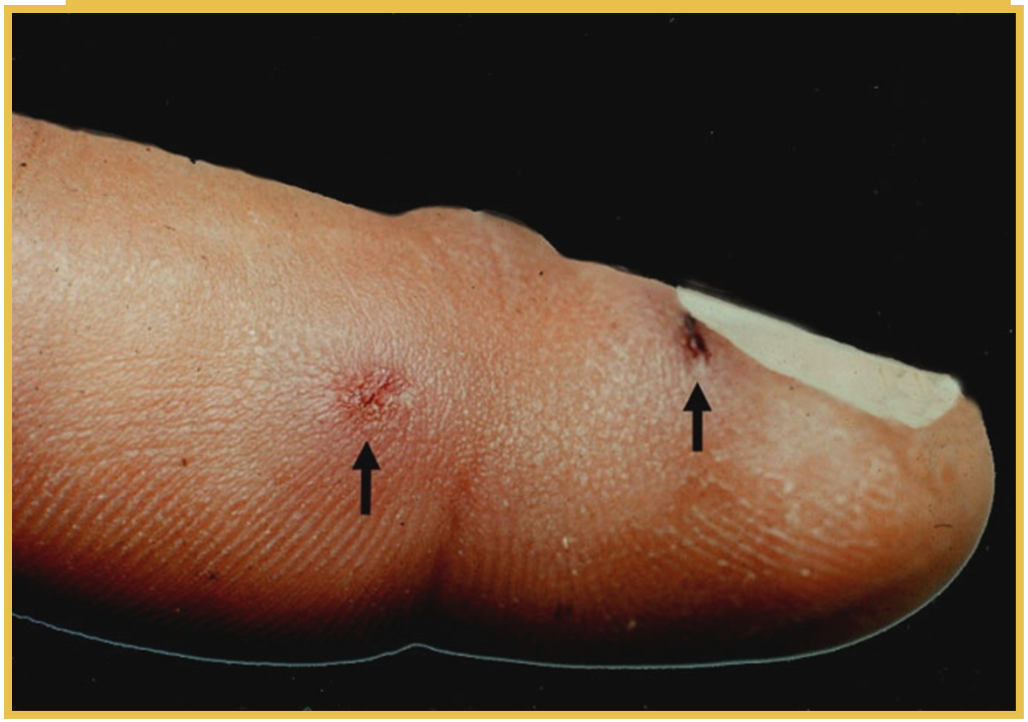
Tularemia - Human Disease

- Incubation
  - 3-15 days
  - Varies with virulence of strain and dose
- Initially all forms start with
  - Sudden fever
  - Chills
  - Headache
  - Muscle pain
- 6 clinical syndromes
  - Ulceroglandular
  - Glandular
  - Oculoglandular
  - Oropharyngeal
  - Typhoidal
  - Pulmonary

Tularemia - Human Disease

- Ulceroglandular
  - Most common
  - Ulcers and regional lymph node swelling
- Glandular
  - Regional lymph node swelling, no ulcers
  - Second most common





NDSU

Tularemia - Human Disease

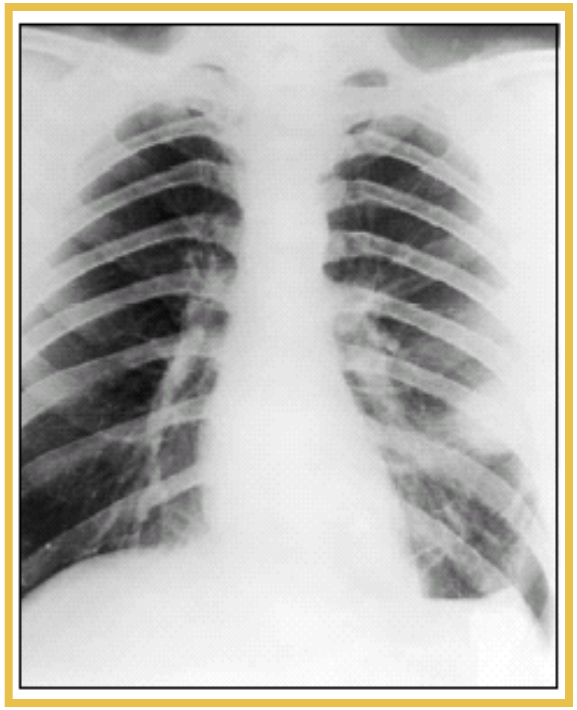
- Oculoglandular
  - Conjunctiva infected
    - Contaminated fingers
    - Contaminated material splashed into eye
  - Conjunctivitis
  - Regional lymph node swelling
  - Severe form
    - Ulceration of conjunctiva
    - Ocular discharge

Tularemia - Human Disease

- Oropharyngeal
  - Ingestion
    - Hand-to-mouth
    - Consumption of undercooked meat or water
  - Pharyngitis, diarrhea, abdominal pain, vomiting, gastrointestinal bleeding, nausea
  - Pseudomembrane may develop over tonsils

Tularemia - Human Disease

- Typhoidal
  - Acute
  - Septicemia
    - Without lymph node swelling or ulcers
- Pulmonary
  - Inhalation of aerosol
  - Spread through bloodstream
  - Complications from other forms
- Case-fatality (untreated): 30-60%



Tularemia

- Prevention and control
  - Education
    - Personal protection (masks, gloves)
      - When working with animal tissues
      - Potential aerosolization in endemic areas
  - Vector avoidance or protection
    - Ticks, flies and mosquitoes
    - Rodents
  - Thoroughly cook meat
  - Hand-washing
  - Have suspect cases investigated

Feline plague

- Caused by a bacteria, *Yersinia pestis*
- Transmitted to cats by a flea bite or consumption of a rodent that has died of plague
- In endemic areas (western U.S.) consider in any cat presenting with a fever of unknown origin
- Cats can transmit to humans by flea transport, bites, scratches, contact with infectious tissues and fluids, or aerosol (cats with pneumonia)

Feline plague

- Cats have bubonic, septicemic and pneumonic plague
- Bubonic most common in cats – fever, lethargy, anorexia, lymph node swelling
- Septicemic – shock-like symptoms
- Pneumonic – respiratory symptoms
- Humans handling sick animals should use gloves, masks and gowns
- Responsive to antibiotics

Feline plague

- Diagnosis by isolation of agent or paired antibody titers
- Incubation period for pneumonic plague in humans is 1 to 3 days
- Potentially exposed humans should have prophylactic antibiotic treatment
- Prevention
  - Confine pets, apply flea control products, pets should not sleep with owners, monitor rodent or rabbit die-offs in the area

Sporotrichosis

- Caused by a fungus, *Sporothrix schenkii*
- Typically causes a skin infection
- Usually picked up from the environment – people who work with plant material
- Diagnosis is by culture of the fungus
- Treated with antifungal agents
- Humans can acquire this infection from contact with dogs and cats that have the infection
- Prevention through personal protective gear

http://emedicine.medscape.com/article/228723-overview

NDSU

Roundworms

- Caused by a parasite, the dog/cat roundworm
- Humans can become infected with feline and canine roundworms by ingesting roundworm eggs
  - Fecal/oral transmission
- Condition called “visceral larval migrans”
  - Canine roundworm cannot complete development in human, but migrates through various tissues causing inflammation and scarring
    - Can target the eye on occasion
      - “Ocular larval migrans”

Roundworms

- Diagnosis requires examination by a physician
- Treatment depends upon the stage of the infection
- Prevention through hand-washing and careful handling of dogs and cats
- Worm cats and dogs to prevent the shedding of worm eggs into the environment
- Clean up dog and cat fecal matter immediately to eliminate source

Hookworms

- Caused by a parasite, the dog/cat hookworm
- Dog/cat hookworm larva in the environment penetrate human skin and cause a condition called “cutaneous larval migrans”
- The dog/cat hookworm larva cannot complete their life cycle in humans but do migrate through the skin and subcutis and cause dermatitis

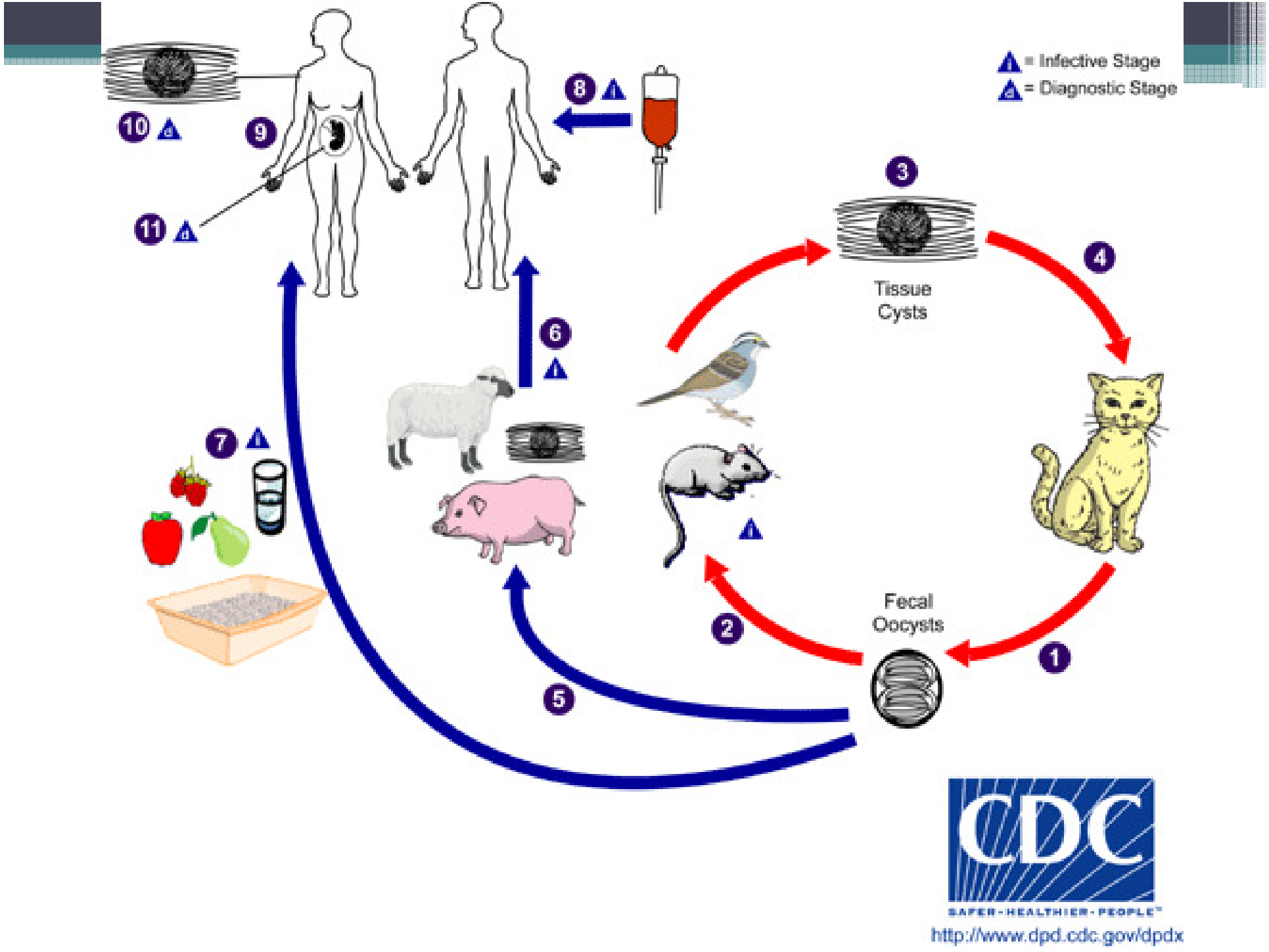
Hookworms

- Diagnosis by physical exam, biopsy
- Treatment with antiparasitic drugs
- Prevention by worming dogs/cats
- Clean up dog/cat fecal matter immediately
- Be aware of the environment – exposure of skin to hookworm larva
  - Avoid bare feet in the summertime in certain locations

https://www.mja.com.au/public/issues/177_04_190802/loo10413_fm.html

Toxoplasmosis

- Caused by a parasite, *Toxoplasma gondii*
- Cats are the definitive host of this parasite and shed the infective oocyst in their feces for about two weeks at time
- Cats become infected by consuming prey containing the infective tissue cyst
  - Outdoor cats more likely to be infected
- Limit exposure to cat fecal material


= Infective Stage
= Diagnostic Stage
Tissue Cysts
Fecal Oocysts
1
2
3
4
5
6
7
8
9
10
11
CDC
SAFER·HEALTHIER·PEOPLE™
http://www.dpd.cdc.gov/dpdx

Life cycle

- Human infection may occur by:
  - Ingestion of undercooked meat containing *Toxoplasma* cysts
  - Ingestion of the oocyst from fecally contaminated hands or food
    - Sandboxes, gardens, cat litter boxes
  - Organ transplantation or blood transfusion
  - Transplacental transmission
  - Accidental inoculation of tachyzoites.
  - The parasites form tissue cysts, most commonly in skeletal muscle, myocardium, and brain

Toxoplasmosis

- Human disease
  - No symptoms
  - Acute flu-like illness
  - Severe disease in immunocompromised people
  - Pregnant women
    - Abortion
    - Birth defects
    - Childhood diseases

Rabies

- Clinically ill cats are a source of infection for humans
- Transmitted by a bite wound/contact with virus-laden saliva
- Cats are infected by exposure to a wild reservoir
  - Striped skunk
  - Various species of bats
- Prevention through
  - Vaccination of cat population
  - Judicious handling of cats showing central nervous system disease

Rabies

- Any type of behavioral abnormality, in particular, aggression, should be considered a potential clinical sign of rabies. Do not attempt to handle an animal like this without appropriately trained personnel.
- Contact the University Attending Veterinarian immediately.

http://wahrefugecentre.org/Quickstart/ImageLib/Skunk.jpg

Skunks active in the daytime are always suspect for rabies. North Dakota has a high incidence of rabies in the skunk population. Avoid any contact.

Bats should not be handled without gloves. In fact, it is advisable to place them in container and submit them to the laboratory for testing.

http://static.howstuffworks.com/gif/bat-1.jpg

NDSU

Cryptosporidium

- Caused by a parasite, *Cryptosporidium* spp.
- Humans infected through inadvertent ingestion of parasite oocyst from infected animals
- Uncommon cause of diarrhea in dogs and cats
- Diagnosis through identification in fecal matter
- Treated with antiparasiticides
- Prevention through hand-washing and judicious use of gloves when handling suspects for infection
- Typically resolves in 2 to 3 weeks in healthy individuals, but can be more severe in immunocompromised individuals

Giardiasis

- Caused by a parasite, *Giardia lamblia*
- Humans infected through inadvertent ingestion of parasite cyst from infected animals
- Common cause of diarrhea in dogs and cats
- Diagnosis through identification in fecal matter
- Treated with antiparasiticides
- Prevention through hand-washing and judicious use of gloves when handling suspects for infection
- Typically resolves in 2 to 3 weeks in healthy individuals, but can be more severe in immunocompromised individuals

Bordetellosis

- Caused by a bacteria, *Bordetella bronchiseptica*
- Caused of upper respiratory disease in cats and dogs
- Rarely transmitted to humans by aerosol contact with infected cats and dogs
- Diagnosis through culture
- Treatment with antibiotics
- Prevention through careful handling of infected small animals