

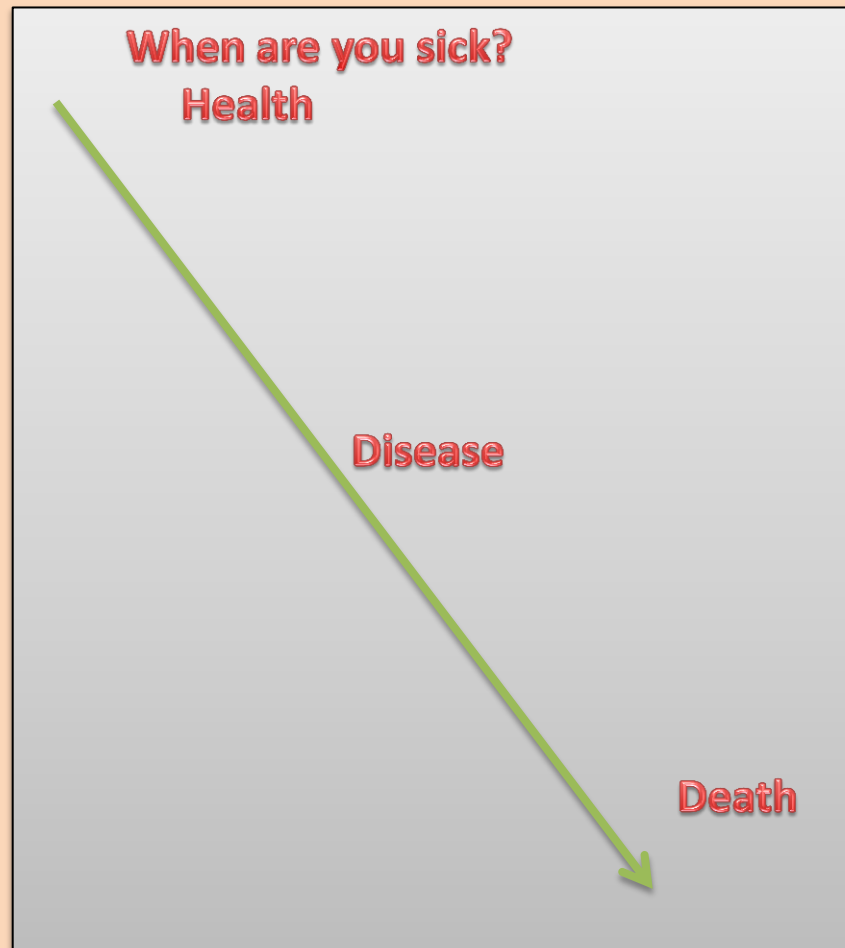
# Zoonotic Diseases

Risks of working with wildlife

# Definition

**Zoonoses:** infectious diseases of vertebrate animals that can be naturally transmitted to humans

# Health vs. Disease



# Transmission

- **Direct:** Contact of mucosa or open wound with infected bodily fluids such as blood, saliva, urine, etc.
  
- **Indirect:** Contact with objects that have been contaminated with infected materials, or through a vector, such as a tick.

# Direct Transmission



# Indirect Transmission





# General Symptoms

- Flu like symptoms.
- Fever.
- Weakness, dizziness, body aches.
- Skin rashes.
- Joint pain.



# What to do if you present Symptoms

- Go to the Dr. let him know the type of risks you have in your work.
- Contact your local Public Health Department.
- Have something in writing in your wallet

## **ATTN: Medical Personnel**

This person works with wildlife and may have been exposed to zoonotic diseases not routinely considered in the differential diagnoses of **febrile illnesses**. Please consider:

Anthrax, Arbovirus encephalitis, Brucellosis, Giardiasis, Hantavirus, Hendra Virus, Highly Pathogenic Avian Influenza, Histoplasmosis, Leptospirosis, Lyme Disease, Monkeypox, Mycotoxicosis, Nipah Virus, Psittacosis, Q Fever, Rabies, Rocky Mountain Spotted Fever, Salmonella, Sylvatic Plague, Tularemia, Typhus, & West Nile Virus.

**Primary Physician name:**

**Telephone #:**

For more information on the occurrence of these **diseases in humans**,

please contact:

The Centers for Disease Control and Prevention  
1600 Clifton Rd.

Atlanta, GA 30333

1-800-232-4636 (1-800-CDC-INFO)

<http://www.cdc.gov/>



For more information on the occurrence of these **diseases in wildlife**,

please contact:

N. C. Wildlife Resources Commission

1751 Varsity Drive,

Raleigh, NC 27606

(919) 707 0050/ 707 0056

<http://www.ncwildlife.org/>





# Incubation Period

Most diseases take between 2 days and several months to show symptoms

During that time the pathogen is replicating in your body and you may be shedding the pathogen

You have to remember to keep a log of the animal species that you worked with and when

# Prevention

Information (for you, your family and your Dr.)

Wear latex or nitrile gloves

Wear masks and eye protection

Cover any areas with broken skin

Do not eat, drink or smoke until you have fully washed your hands and face

Understand that your clothes, shoes and vehicle can be contaminated

# Your equipment

Clean your equipment and/or store it appropriately after you finish working

Most bacteria and parasites are very stable in the environment (that includes your stuff)

If **IT** touched poop and then **IT** touches you, then **YOU TOUCHED POOP!**

Do not bring it home with you!

Leave contaminated shoes, clothing and equipment outside

Shower and change clothes before you touch your children 😊

# Diseases of importance in NC

What  
Who  
When  
Symptoms  
So?

# Hantavirus

What: Virus

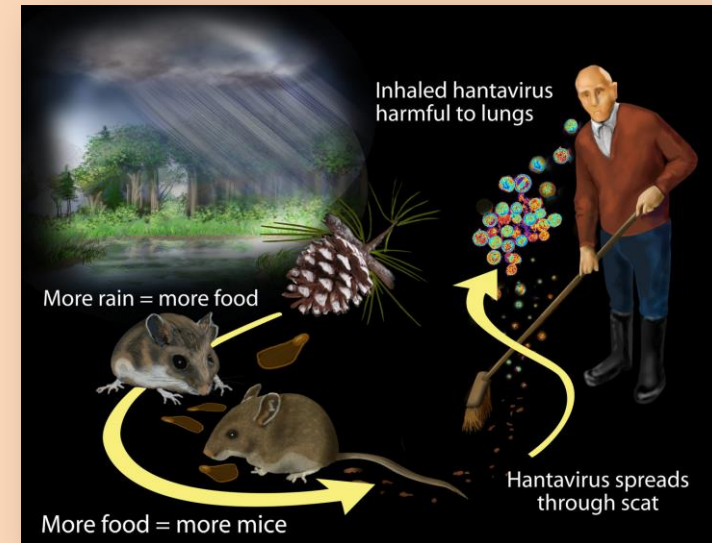
Who: -Deer mouse                      -White-footed mouse  
-Rice rat                                -Cotton rat.

How: Direct  
Indirect (i.e. dust with droppings)

When: 1-6 weeks

Symptoms: General

So?: **Deadly**





# Histoplasmosis

What: Fungus

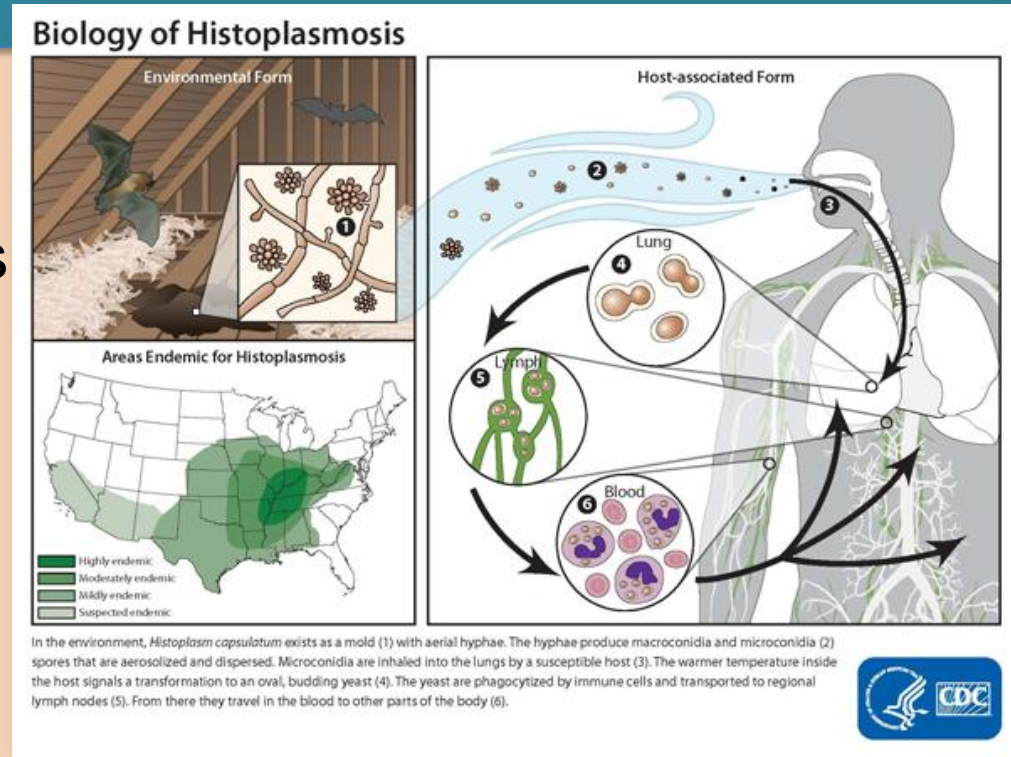
Who: Bat and Bird droppings

How: Inhalation of spores

When: 1-14 days

Symptoms: General

So?: Many times is subclinical, young and old people are at risk of developing more serious symptoms



# Brucellosis

What: Bacterium

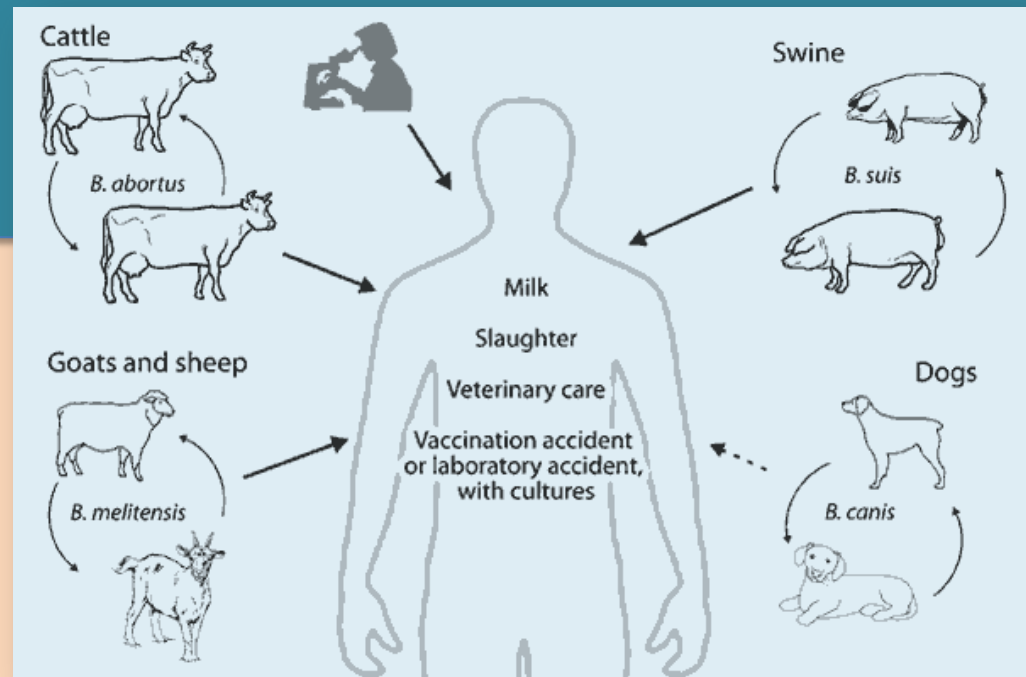
Who: -Swine  
-Deer

How: Direct and indirect contact

When: 6-180 days

Symptoms: General at first  
Develops into a debilitating disease

So?: Very hard to treat



# Leptospirosis

What: Bacterium

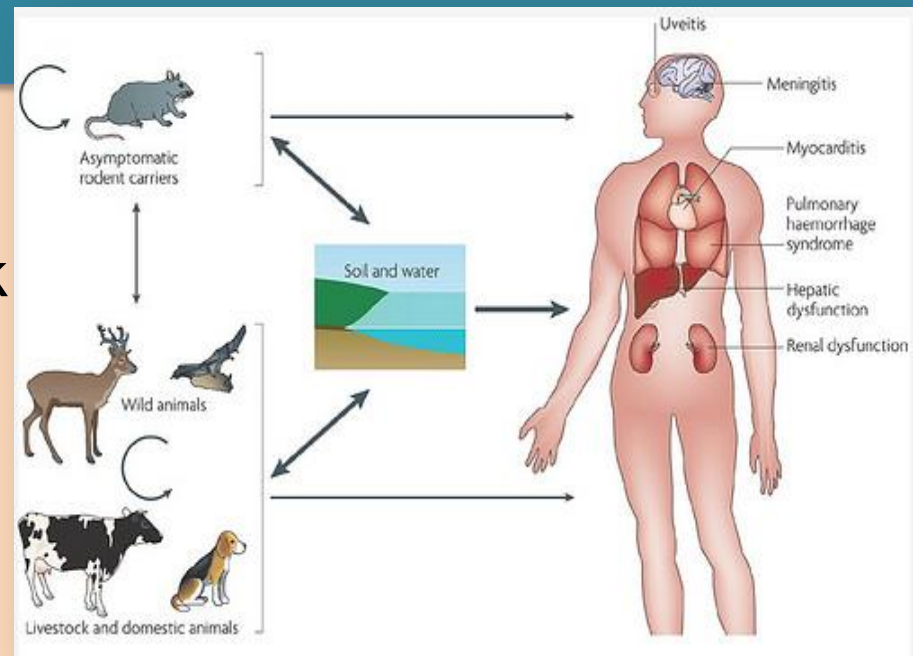
Who: -Raccoon                      -Striped Skunk  
-Red Fox                        -Gray Fox  
-Opossum                       -Rodents

How: Contact with urine (water)

When: 2-30 days

Symptoms: General to serious heart and kidney disease

So?: Debilitating disease that can permanently damage the kidneys



# Leprosy

What: Bacterium

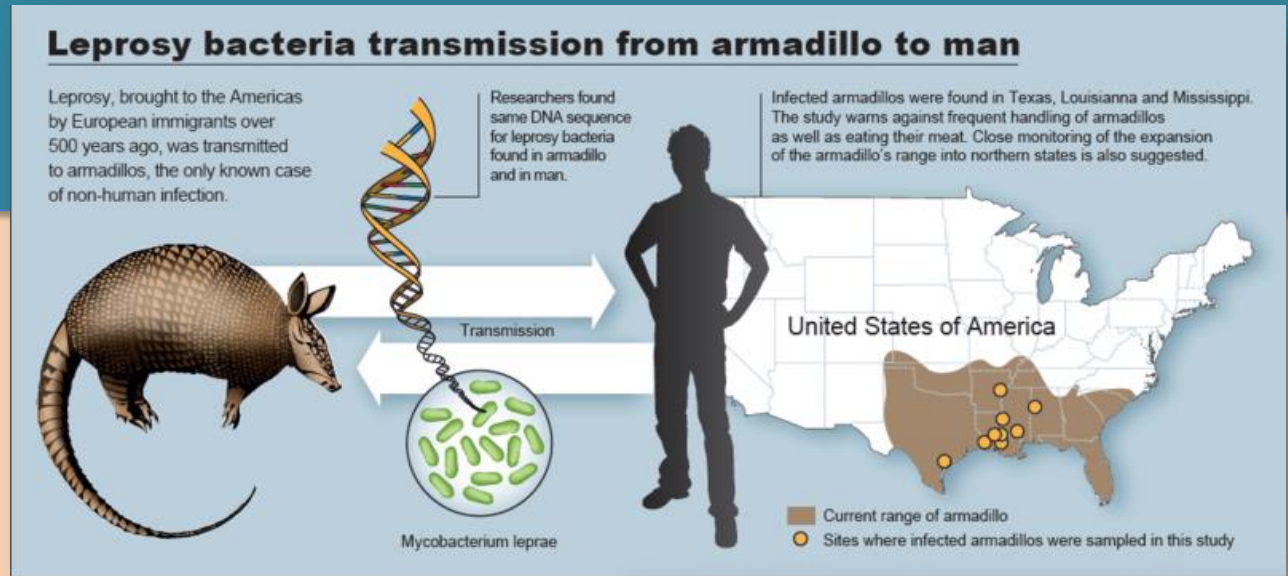
Who: Armadillos

How: Direct and indirect contact

When: 9 months to 20 years

Symptoms: Chronic skin infection  
nodules, papules, ulcers  
Peripheral nerve paralysis  
Muscle wasting

So?: You may loose some parts



# Q Fever

What: Bacterium

Who: Rodents, birds and ticks

How: Direct and Indirect

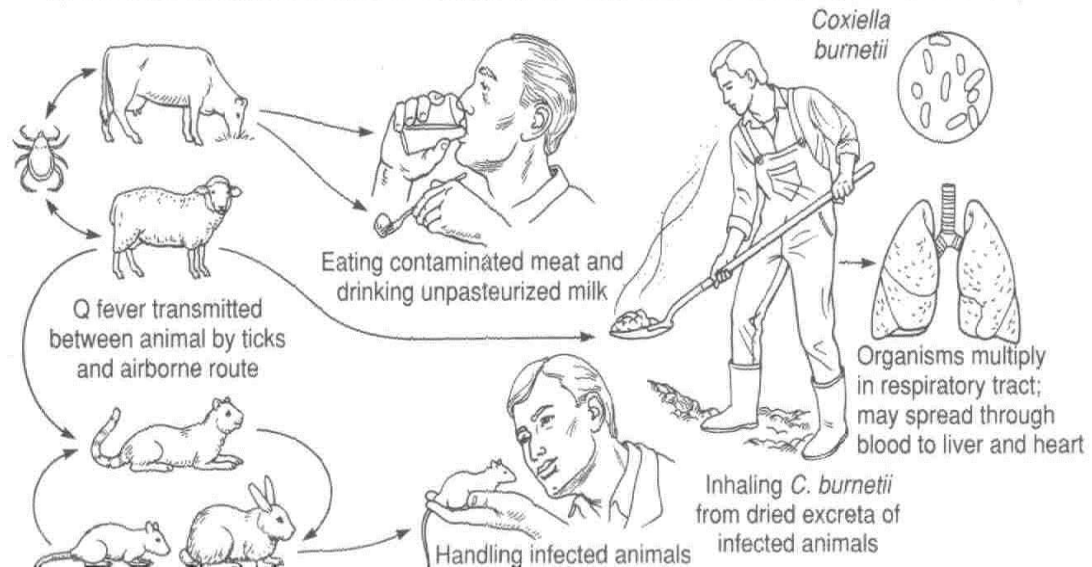
When: 3-30 days

Symptoms: -Acute → general  
-Chronic → Severe Cardiac disease

So?: Can cause hepatitis (liver disease) and endometritis

**Q Fever (Query Fever)** Q is for "query" because when described, its etiology was unknown 219

**DEFINITION:** An acute infectious disease caused by the rickettsial organism *Coxiella burnetii*. It infects a variety of animals, but unlike other rickettsial diseases it is not transmitted to humans through an insect vector.





# Tularemia

What: Bacterium

Who: -Rabbits and rodents in general  
 -Beavers  
 -Horseflies and ticks (indirect contact)

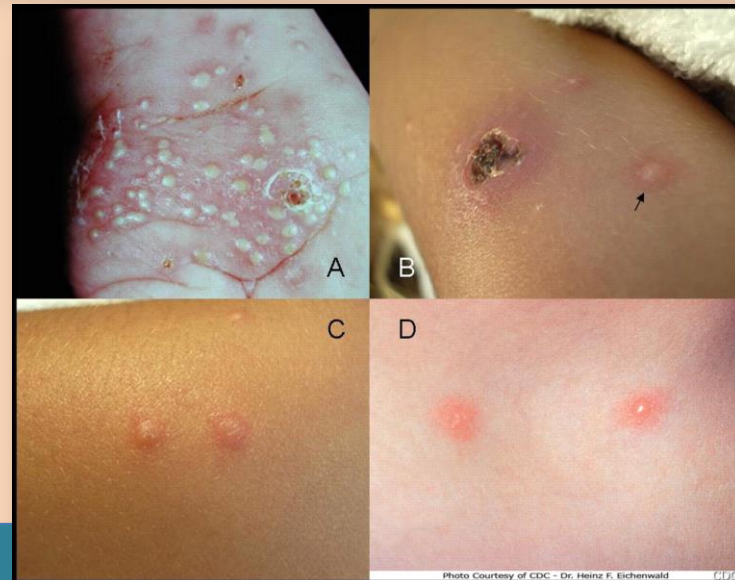
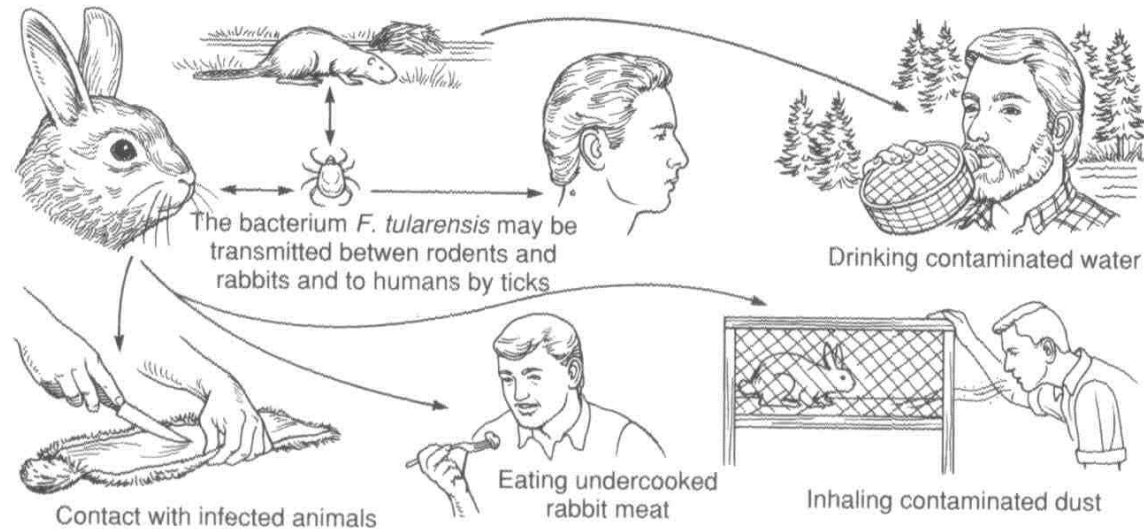
How: Direct contact

When: 1-14 days

Symptoms: General

So?: **30% mortality**

DEFINITION: An acute, infectious disease of wild rabbits and rodents caused by the bacterium, *Francisella tularensis*; also known as rabbit fever.



# Tetanus

What: Toxin

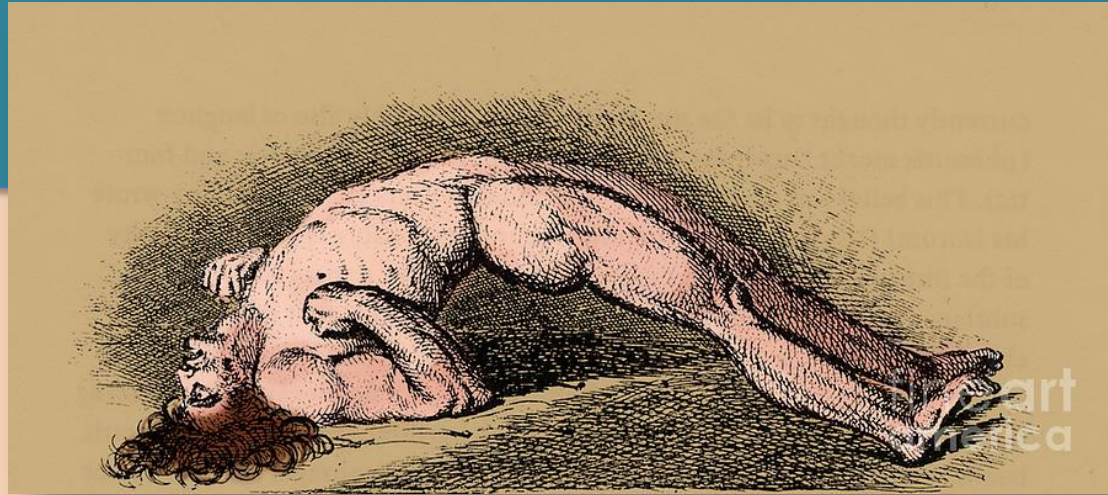
Who: Contaminated soil

How: Direct contact with toxin

When: 3 days to several months

Symptoms: Muscle spasms  
Sensitivity to light and noises  
Difficulty swallowing

So?: Horrible but preventable death



# Parasites

What: -Baylisascaris                      -Giardiasis  
          -Hookworms                        -Toxocariasis

Who: Feces of many species

How: Through ingestion and skin contact

When: Days to months

Symptoms: From mild (diarrhea) to severe (vision loss, hepatitis, neurologic symptoms)

So?: Children are most affected! Don't bring parasites home.



# Toxoplasmosis (Parasite)

What: Protozoan

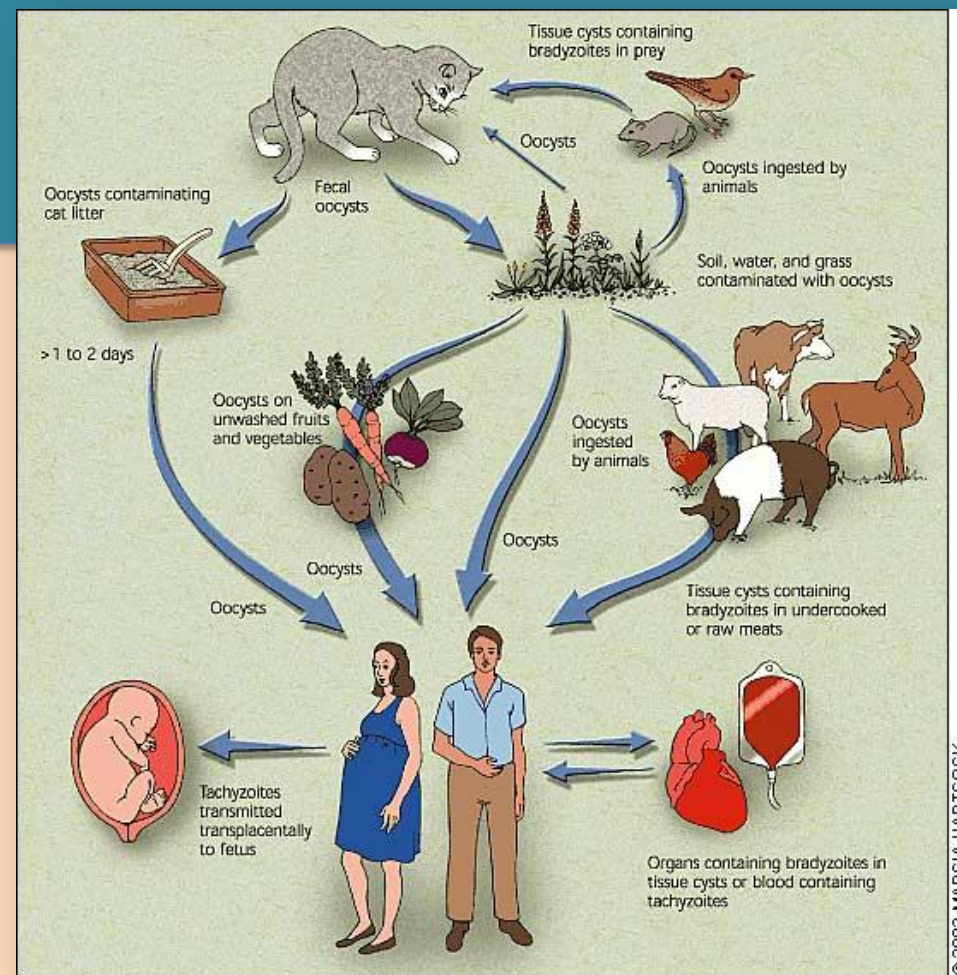
Who: Deer, cats, dogs

How: Indirect (water or food contaminated with feces)

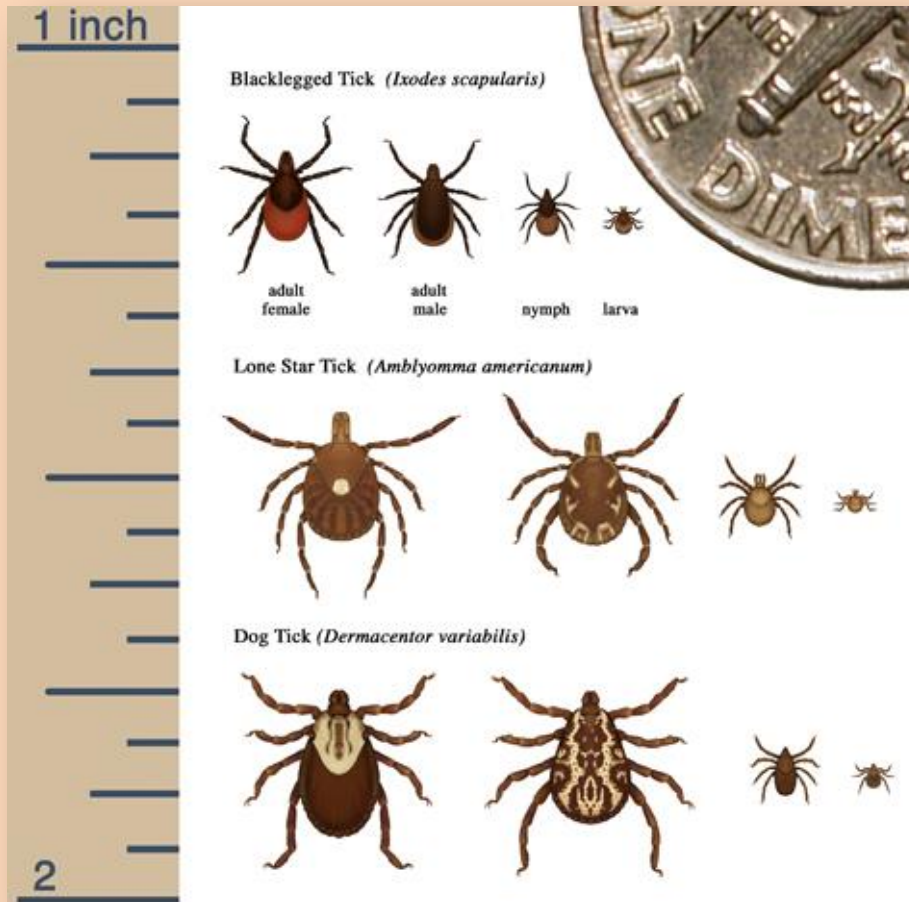
When: 5-20 days

Symptoms: -General  
-Redness in eyes and pain  
-Swollen lymph nodes

So?: Very serious for pregnant and immune-compromised

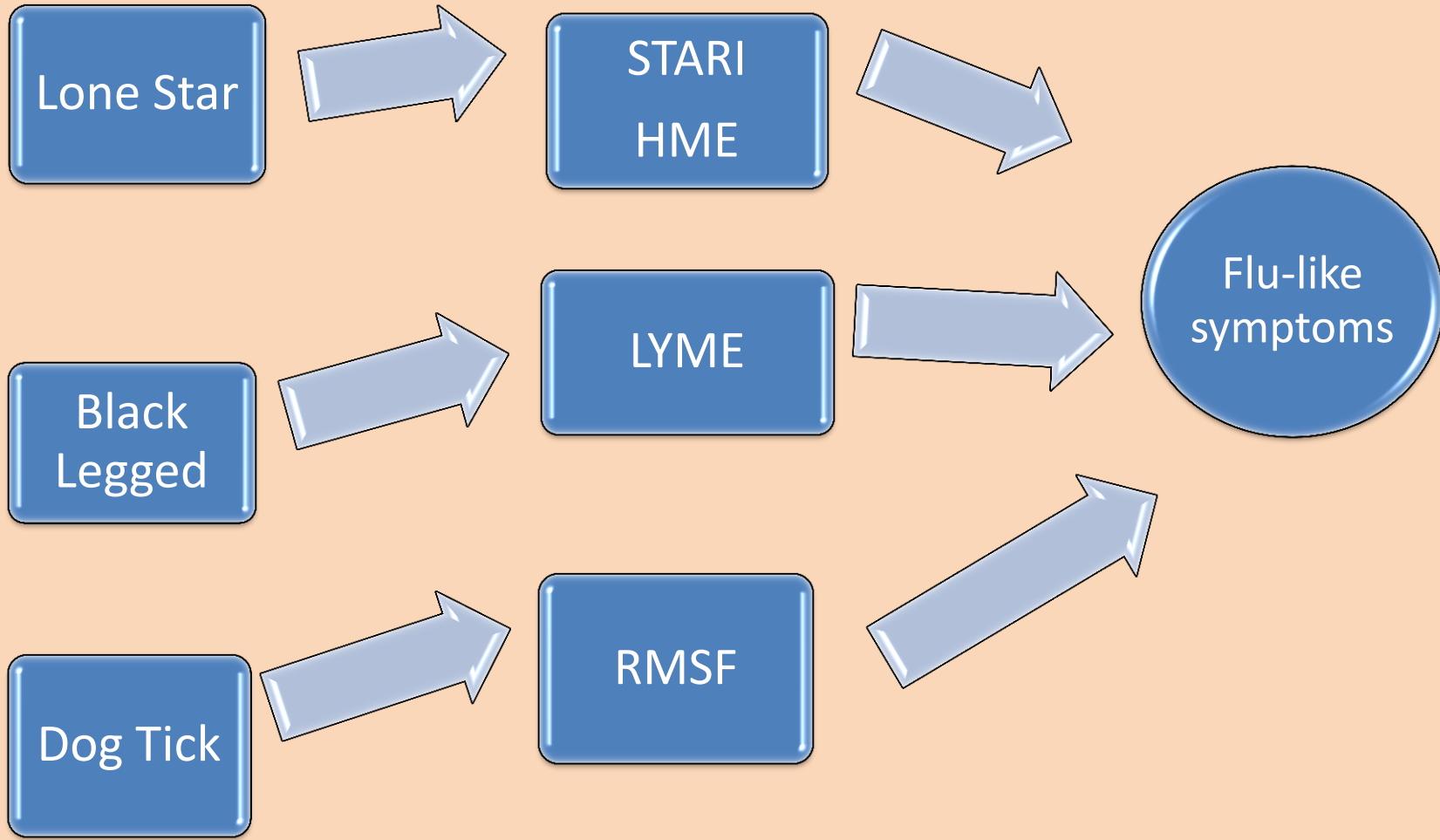


# Ticks of NC.





# Tick-borne Diseases in NC.

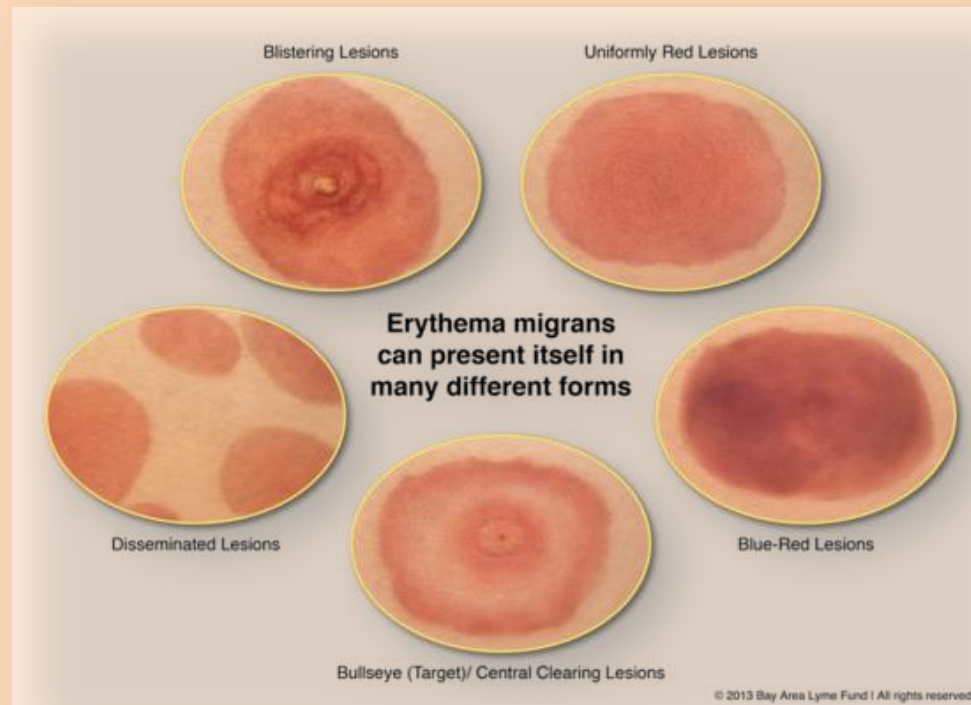


# Tick-borne Diseases

RMSF: 80% mortality when not treated



## LYME



# Mosquito-borne Diseases of NC

## LaCrosse Encephalitis (LACV)

- Tree hole mosquito
- Spring to late fall
- General Symptoms
- Severe encephalitis in children under 16

## West Nile Virus (WNV)

- Humans are accidental hosts
- 1 in 150 humans will have severe symptoms

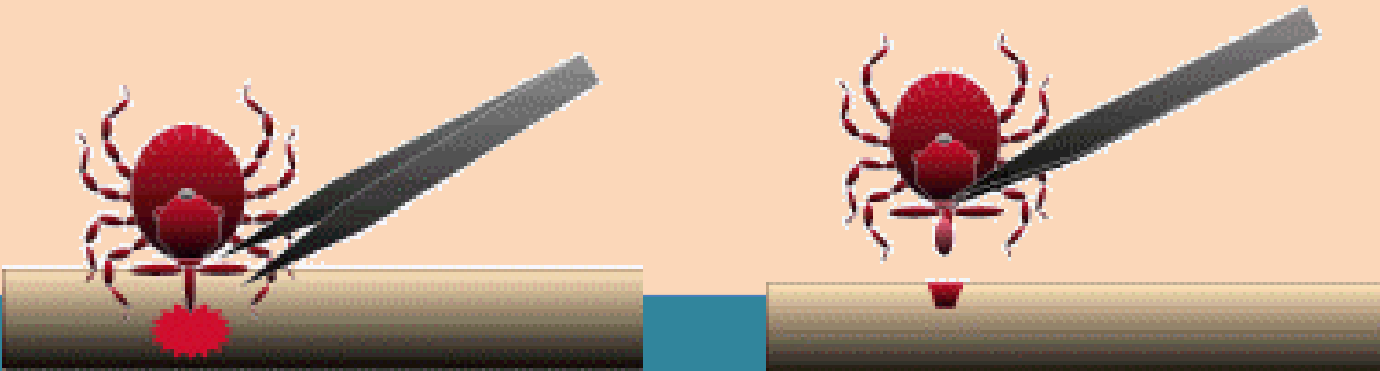
## Eastern Equine Encephalitis (EEEV)

- *Culiseta melanura*
- 3-5% of the infected people will develop EEE
- 30% of people with EEE will DIE within 10 days
- Survivors will have severe sequelae



# Tick and Mosquito Prevention

- ✓ Avoid getting bitten by ticks and mosquitos
- ✓ Use long sleeves and pants
- ✓ Use repellants with 20% DEET or more
- ✓ Shower as soon as possible to reduce the risk of tick bites
- ✓ Preform a body check for ticks every day, most diseases need the tick to be attached for at least 6 hours
- ✓ Remove all ticks from body with fine-tipped tweezers
- ✓ Check clothing, pets and gear for ticks
- ✓ Remember the symptoms and seek medical attention





# Thank you for your time



**Be safe**

Maria Baron Palamar, Wildlife Veterinarian  
[maria.palamar@ncwildlife.org](mailto:maria.palamar@ncwildlife.org)