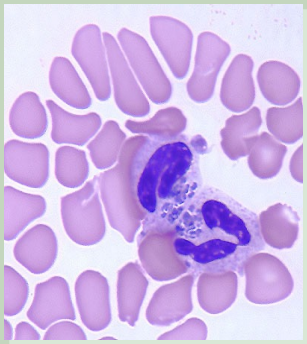
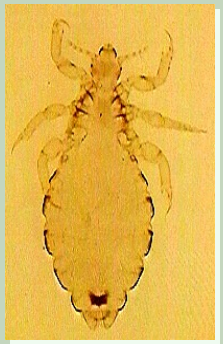

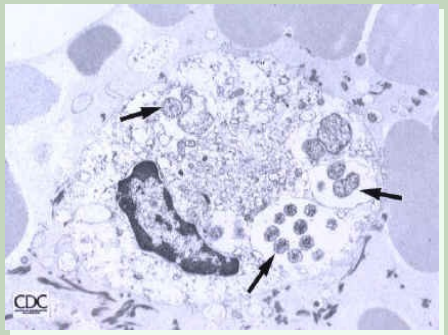


# Bugs and Bacteria: Others

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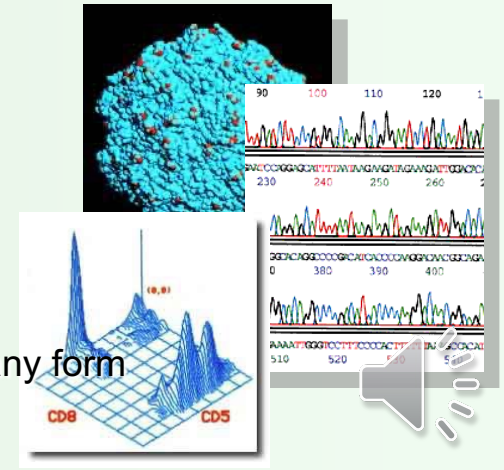
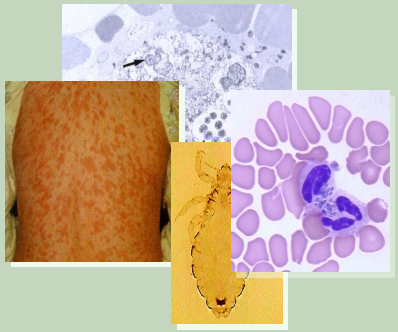
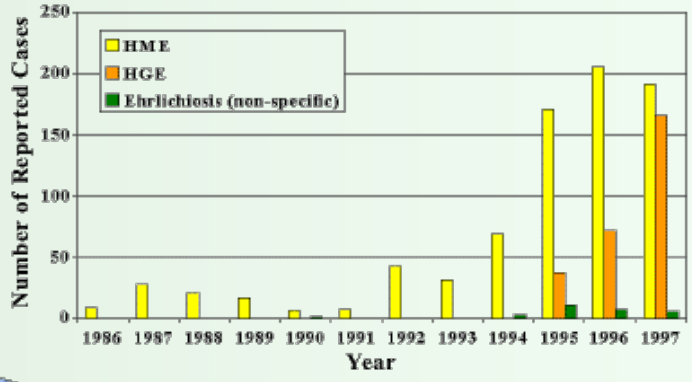
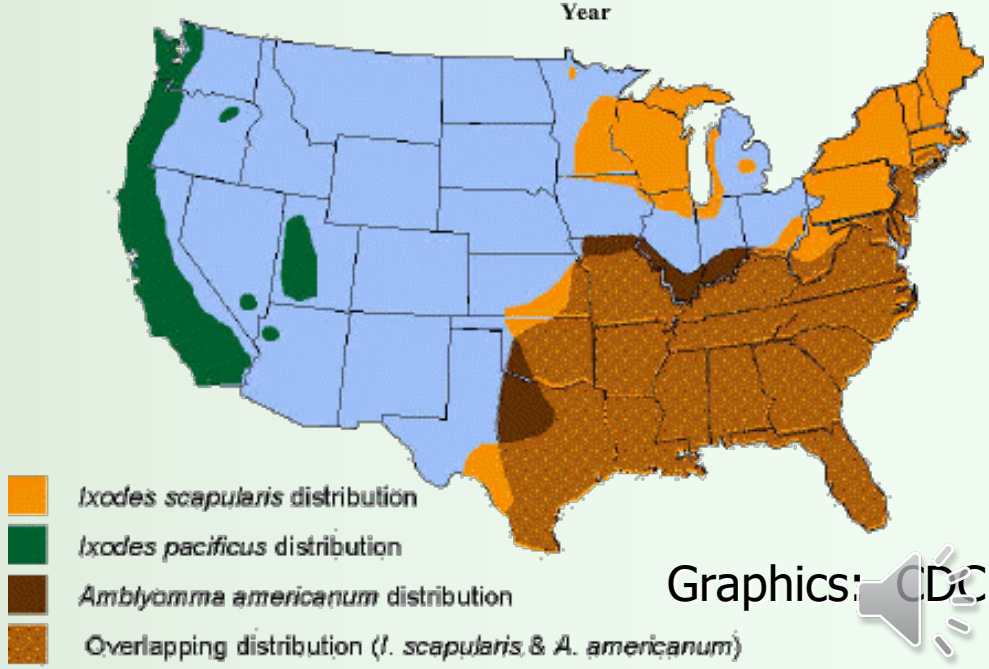


# *Ehrlichia* and *Anaplasma*



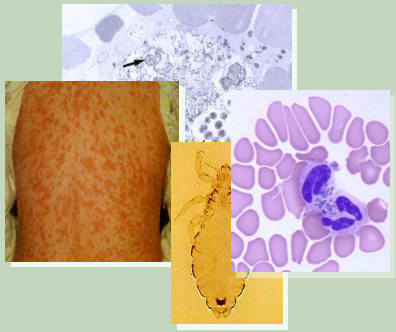
- *Ehrlichia chaffeensis*: Human monocytic ehrlichiosis (HME)
- *Anaplasma (formerly Ehrlichia) phagocytophila*: Human granulocytic anaplasmosis (HGA)
- *Ehrlichia ewingii* and other species: Emerging diseases
- Tick-borne illnesses, first recognized in humans in the 1980s



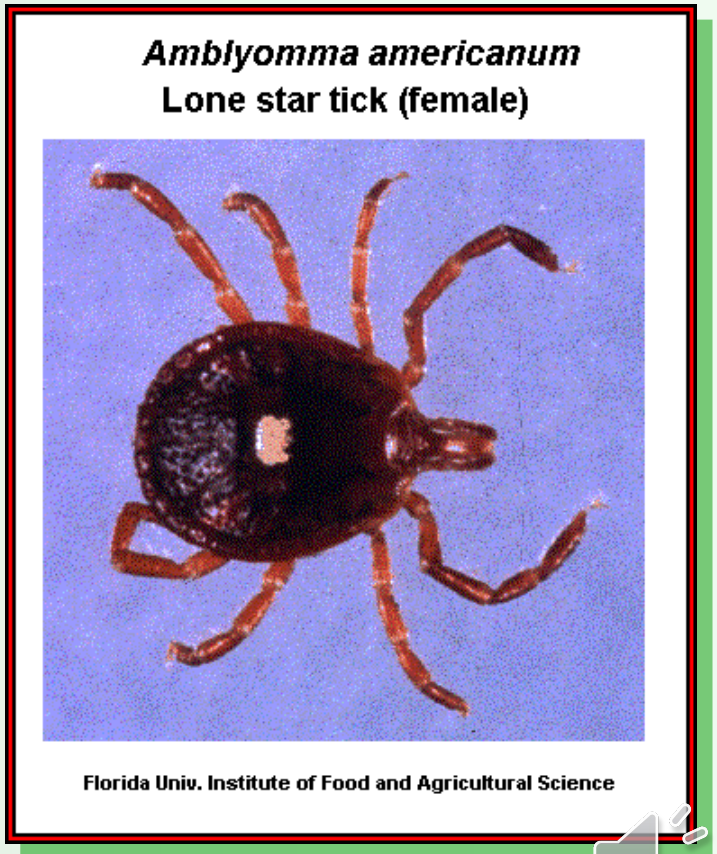




Graphics: CDC

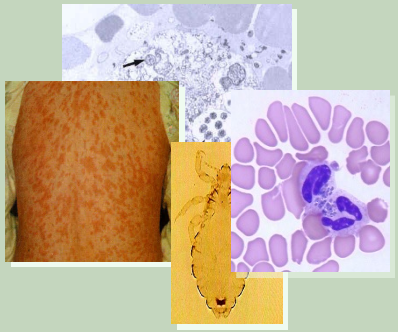
# *Ehrlichia*: HME Epidemiology



- Geography of most US reports conforms to central range of the Lone Star tick, *Amblyomma americanum*
  - South central, SE states
- Probably other ticks responsible in other areas
  - Reports from other states, Europe, Africa

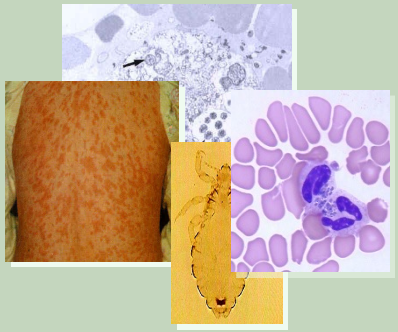


# *Ehrlichia*: HME Clinical

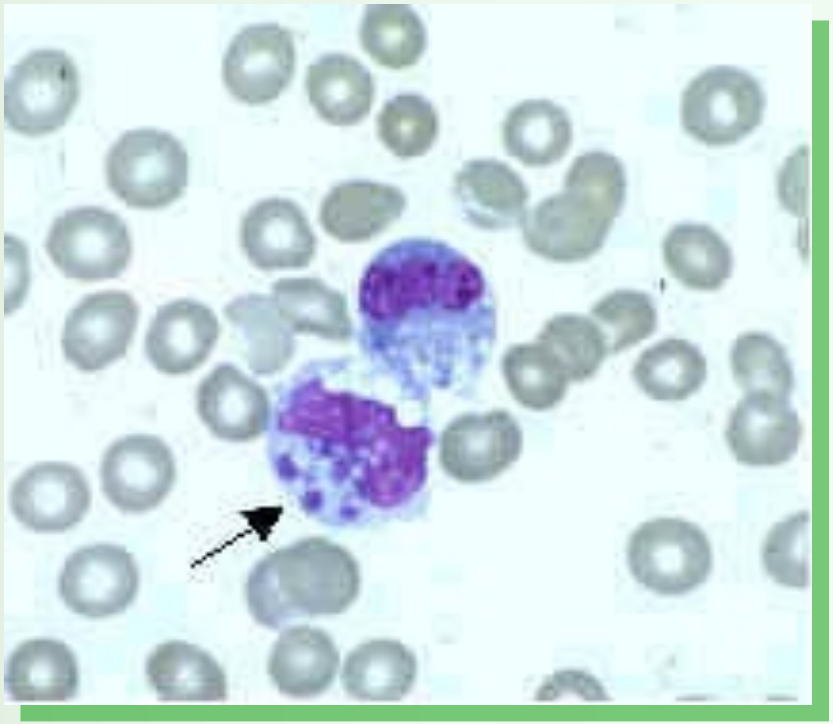


- Most cases asymptomatic by serosurveys
  - Wide variation in severity
  - Immunocompromised at risk for fulminant disease
- Incubation ~7d
  - fever, chills, headache, myalgia, malaise
  - nausea, anorexia, weight loss
  - rash in <50%, may be petechial
- Complications
  - pulmonary, renal, CNS, GI bleed

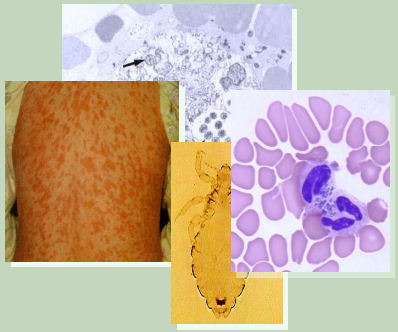
# *Ehrlichia*: HME Diagnosis



- Laboratory
  - leukopenia, thrombocytopenia
  - elevated LFT
- Morulae seen in <10%
- Serology
- PCR

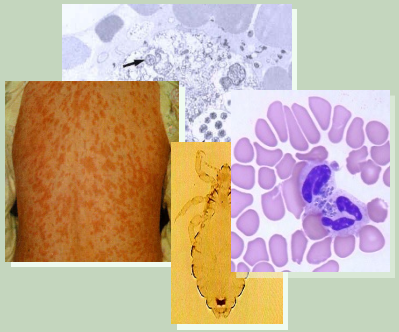


# *Anaplasma*: HGA Epidemiology



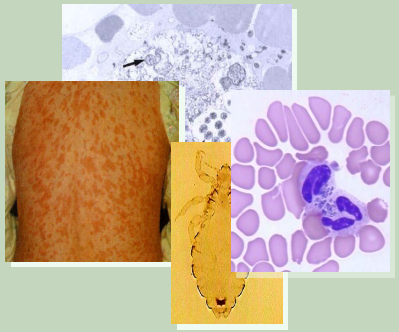
- Caused by *Anaplasma* (formerly *Ehrlichia*) *phagocytophila*
- Spread by *Ixodes* ticks (like Lyme)
- Highest prevalence in the Northeast and upper Midwest
- Also reported from Europe
- Peak incidence in July and November
- Most infections probably asymptomatic

# *Anaplasma*: HGA Clinical



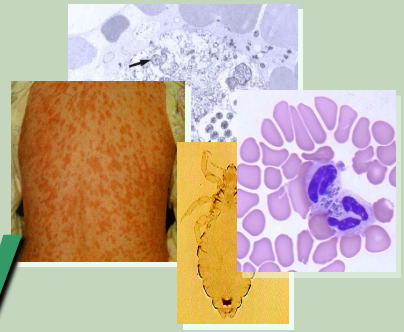
- Incubation ~1-2 weeks
  - fever, headache, malaise, myalgias
  - <50%: GI symptoms, arthralgias, stiff neck, confusion
- Severe disease
  - pulmonary, septic shock, rhabdomyolysis
  - opportunistic infections

# *Anaplasma*: HGA Laboratory Diagnosis



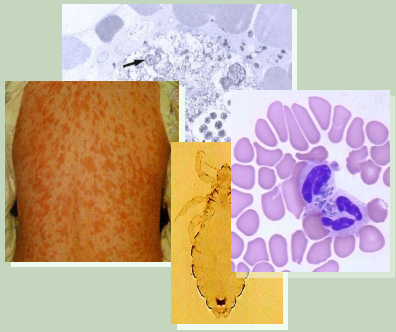
- Cytopenias
  - leukopenia, anemia, thrombocytopenia
  - may be associated with clinically significant bleeding or immunosupression
- Morulae seen in 20-80%
- Serology
- PCR

# *Ehrlichia & Anaplasma*: Prevention and Therapy



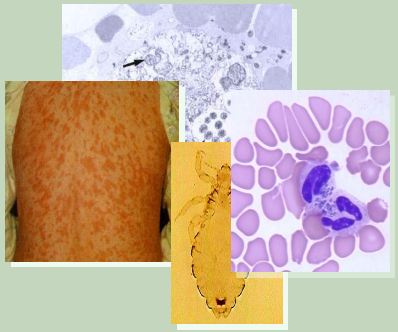
- Prevention
  - Tick avoidance
- Therapy
  - All treatable with doxycycline or tetracycline
  - Chloramphenicol is NOT effective

# *Coxiella*: Q Fever Epidemiology

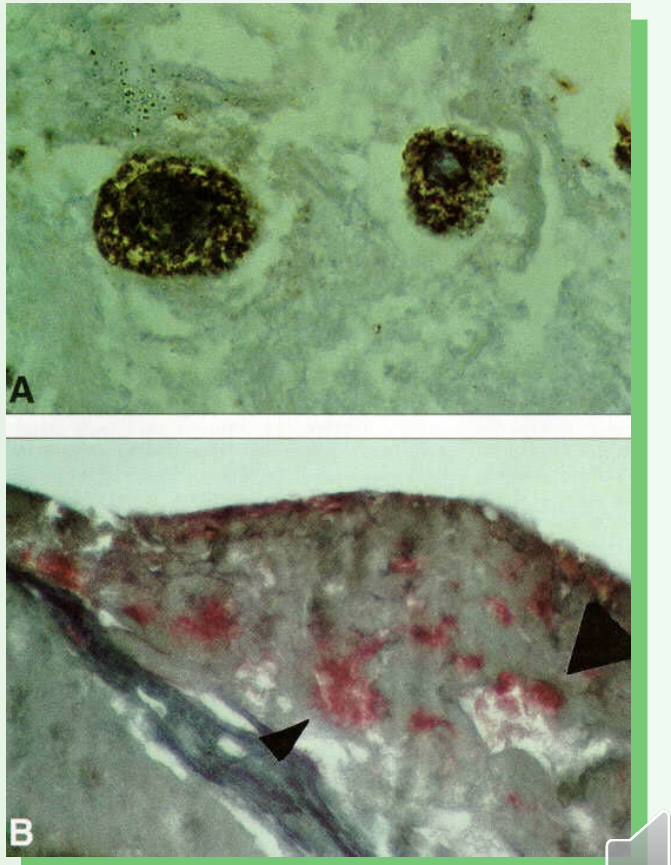


- Caused by *C. burnetii*
  - Spore form described
  - Persists for months in environment; wool, meat, milk
- Acquired by inhalation of aerosolized organism
  - Reservoirs in livestock, cats, rodents, birds
  - *Usually* occupationally acquired
  - No human-human spread documented other than via transfusion

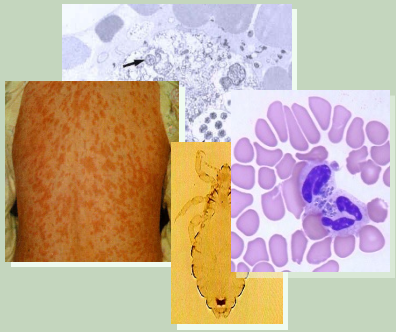
# *Coxiella*: Q Fever Clinical



- Organism lives in the phagolysosome at low pH
- Inhaled organisms proliferate in the lungs→blood
- Multiple clinical syndromes, acute & chronic
  - Acute: self-limited febrile illness, pneumonia
  - Chronic: endocarditis, hepatitis, CNS disease

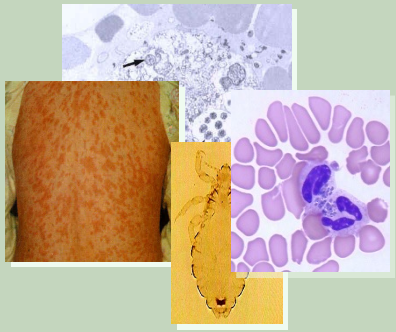


# *Coxiella*: Q Fever
## Diagnosis, Prevention, Therapy



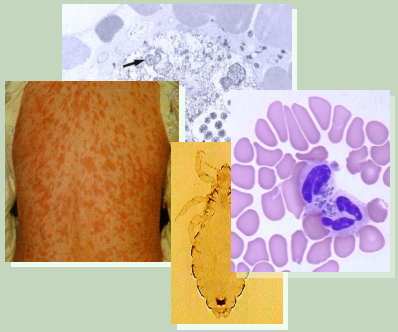
- Diagnosis is primarily serological
  - PCR investigational
- Prevention
  - Tick control on animals
  - Reduce exposure to infected material (esp. placentas)
  - Vaccine under development
- Therapy
  - Tetracyclines + Quinolones or hydroxychloroquine are drugs of choice; therapy for endocarditis may be prolonged (years!), with significant relapse rates

# *Bartonella*: Cat-scratch & others
# Biology



- *Bartonella* spp: distantly related to Rickettsiae, more closely to Brucella
- *B. quintana*: Trench fever, bacillary angiomatosis
- *B. henselae*: Cat-scratch disease

# *Bartonella*: Cat-scratch & others Epidemiology



- B. quintana:  spread by human body louse
  - Global distribution
  - Humans only identified reservoir
- B. henselae:  linked to cat exposure
  - Spread by the cat flea