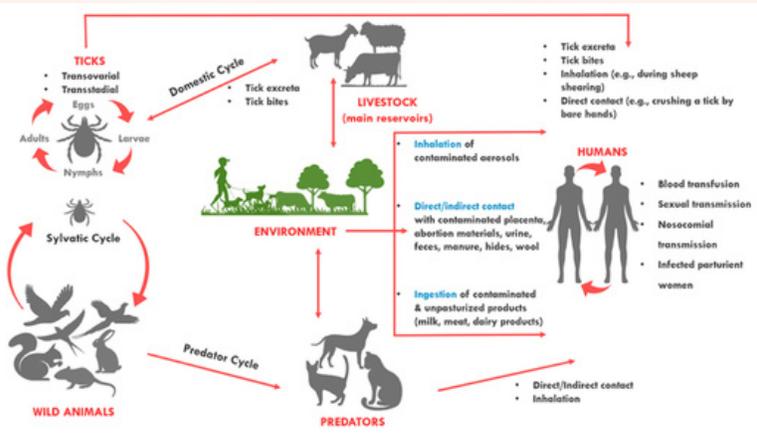


Lecture 4: The Rickettsiae

- Heterogenous group of six genera, obligately intracellular, gram negative, coccobacilli and short bacilli, non specific signs and symptoms during the first days (flu like).

➔ **Coxiella burnetii (Q fever)**

- **Information about life cycle:**



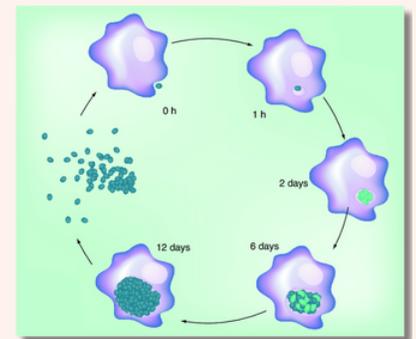
Domestic cycle : transmitted to livestock animals through arthropod (tick). Or directly to the human through inhalation, tick and other .

Predator cycle : predators eat wild animals that are infected by the tick, then through contact or inhalation to human. **And also from human to human.**

Animals contaminate the environment, then transmitted to the human through inhalation, direct or indirect contact and ingestion.

● **You have to know:**

- **Infection dose: one bacterial cell.**
- Highly resistant to environmental stress (spore like structure) and to phagolysosomal environment .
- It's killed by pasteurization.
- 60% asymptomatic
- 40% symptomatic and 2% (or 1%-5%) of these are chronic.
- **The most common presentation in the chronic disease: endocarditis.**
- **Acute infection:** patient with symptomatic illness would have Pneumonia or / and hepatitis (through macrophage (Kupffer cell)).
- **The mortality rate 1% or lower if treated.**
- **Treatment: Doxycycline.**
- **Long lasting immunity.**



Rickettsia prowazekii

Information about life cycle:



Cause : Rickettsia prowazekii.

Vector: Body lice.

-Pediculus corporis(common)

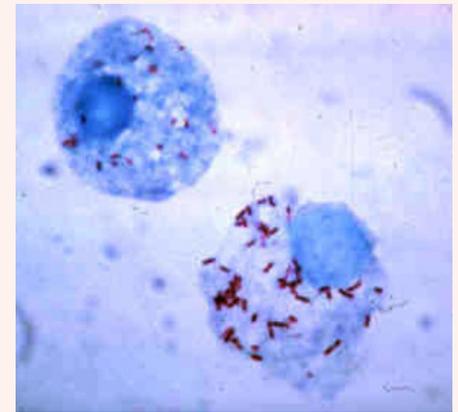
-Pediculus capitis.

Mode of infect : penetration of the skin by bite of infected body lice.

Species	Disease	Reservoir
<i>R. prowazekii</i>	Epidemic typhus, Brill-Zinsser disease	Human body louse
<i>R. typhi</i>	Endemic typhus	Rat flea

Diseases caused by Rickettsia

- **You have to know:**
- Non motile, nonspore forming, highly pleomorphic bacteria.
- **Delusion describing the state of mind of those infected.**
- A pruritic reaction, rickettsaemia, it parasitises the endothelial blood vessels, proliferation of the organism causes damage to the endothelium, activation of clotting factor with multi-organ vasculitis which may cause thrombosis.
- **Gangrene of the distal portions of the extremities, nose, ear lobes and genitalia may occur as the result of thrombosis of supplying blood vessels.**
- Vasculitis may result in hypovolaemia →shock →death. edema.
- Many names refers to endemic typhus that gives indication that it is transmitted through crowdness.
- **Treatmeant: Doxycycline 200mg, alternative in doxycycline resistanc: Azithromycin, Rifampicin.**
- **Some clinical findings: headach occurs abruptly and continues constantly, non-productive cough, rash: appears after 4-5 days (is macular/papular/petechial), lymphadenopathy (regional or generalized).**



Archive:

1. Epidemic typhus is caused by?

- a. *R. rickettsii*.
- b. *O. tsutsugamushi*.
- c. *R. prowazekii*.
- d. *R. typhi*.
- e. *Coxiella burnetii*.

2. *Coxiella burnetii* (Q fever) can be characterized by all of the following EXCEPT?

- a. Obligate intracellular parasite.
- b. Humans are dead-end hosts.
- c. Transmitted by vector.
- d. incubation: 2 to 5 weeks.
- e. Aerosol is not a mode of transmission of the disease.

3. According to *Rickettsia prowazekii*, one is wrong?

- a. Vasculitis
- b. Gangrene
- c. Extracellular parasites damage endothelial cells of the blood vessels
- d. Vector: body lice
- e. endocarditis

4. The most common route for Q fever infection is?

- a. Contaminated Air with infected product
- b. sexually
- c. Fecally.
- d. Armored mites bite.
- e. Trans-placental

5. The most common vector that causes *Rickettsia prowazekii*?

- a. *C. burnetti*
- b. *Pediculus capitis*.
- c. *Pediculus corporis*.
- d. *Toxoplasmosis Gondii*
- e. *Wuchereria bancrofti* .

1	2	3	4	5
C	e	c	a	c



6. Which of the following statements is NOT true about Q fever?

- A) It is caused by the bacterium *Coxiella burnetii*.
- B) It can be transmitted from animals to humans.
- C) It is primarily not spread through contaminated food or water.
- D) It commonly presents with flu-like symptoms such as fever and fatigue.
- E) Acute stage has highest hospitalizations rate.

7. Which of the following statements is NOT true about Q fever?

- A) It is caused by the bacterium *Coxiella burnetii*.
- B) It can be transmitted through inhalation of contaminated dust particles.
- C) All require hospitalization.
- D) It is commonly treated with antibiotics such as doxycycline or fluoroquinolones.
- E) It can be transmitted by animal's birth products .

8. *Pediculus capitis* is a vector for?

- a. *R. Prowzeki*
- b. Yellow fever
- c. Body lice infestation
- d. Leishmaniasis
- e. Malaria .

6	7	8
e	c	a

