

COXIELLOSIS OR Q FEVER

ANIMAL GROUP AFFECTED	TRANSMISSION	CLINICAL SIGNS	FATAL DISEASE ?	TREATMENT	PREVENTION & CONTROL
Mammals, birds, reptiles, fish, invertebrates	Direct contact, aerosol, fomites, ingestion, vertical, sexual	Mostly asymptomatic, but in sheep, goat and cattle reproductive disease. Zoo reports of abortion in fur seal, sea lion, waterbuck, sable antelope, deer, bovidae, equidae	Abortions, stillbirths. In man fatal in case of endocarditis without treatment	Moderate efficacy of tetracycline, chloramphenicol, clarithromycin, enrofloxacin, trimethoprim-sulfa	<i>In houses</i> Good hygiene <i>in zoos</i> Hygiene, prevention of aerosol, arthropod control

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Susceptible animal groups Many domesticated and wild species can be infected, both in the wild and in captivity. These include many mammals: sheep, goats, cattle, dogs, cats, rabbits, horses, pigs, camels, buffalo, deer, waterbuck, sable antelope, fur seals, sea lions, rodents, coyotes, raccoons, opossums, badgers, bears, musk ox, marsupials; birds: pigeons, swallows, parrots, crows, geese, lorikeets; reptiles: snakes; fish.	
Causative organism The aetiological agent of coxiellosis is <i>Coxiella burnetii</i> . In the past this organism has been placed in the family Rickettsiaceae. After recent phylogenetic studies this pathogen is now classified in the gamma subdivision of Proteobacteria. It is an obligate intracellular organism and produces spore-like structures that are highly resistant. It has two antigenic stages: phase I and phase II, which are morphologically identical. Phase I cells are recovered from infected animals; phase II cells are avirulent and exist only in vitro.	
Zoonotic potential Through inhalation of spores or milk consumption, mainly flu-like symptoms rarely pneumonia, hepatitis or endocarditis but often asymptomatic infection in man. Pregnant women, cardiac patients and immunodepressed people are particularly vulnerable.	
Distribution This disease has an almost worldwide distribution. New-Zealand is still free.	
Transmission Transmission occurs by fomites, aerosols, direct contact and ingestion, but is also possible vertically and sexually. <i>Coxiella</i> localises predominantly in the female reproductive tract (mammary glands, uterus, placenta, foetus), but it can also be found in milk, faeces and urine, and in the semen. Ticks can also spread this pathogen. Additionally, <i>Coxiella</i> has been found in fleas, lice, mites and parasitic flies.	
Incubation period The incubation period is variable with abortions late in pregnancy.	
Clinical symptoms Abortion late in pregnancy, stillbirth, retained placenta, agalactia, endometritis, reduced fertility, small or weak offspring. In many species there are no clinical symptoms.	
Post mortem findings Placentitis with exudate, vascular inflammation.	
Diagnosis 1. Direct methods: detection of the organism. a) Smears Placenta, lung, liver, abomasal contents, vaginal discharge smears can be examined by several staining	



- methods: Stamp, Gimenez, Macchiavello, modified Koster.
- b) Specific detection methods
These include specific immunodetection with ELISA or immunohistochemistry and PCR. Immunohistology is also possible.
- c) Isolation
Inoculation of embryonated chicken eggs or cell culture in specialised laboratoria.
2. Indirect methods: detection of antibodies
Indirect immunofluorescence test, complement fixation test and enzyme-linked immunosorbent assay.

Material required for laboratory analysis

Placenta and fluids, liver, lung, stomach contents, milk, urine, faeces, serum.

Relevant diagnostic laboratories

CODA, Groeselenberg 99, 1180 Brussel, Belgium

Treatment

Moderate efficacy of tetracycline, chloramphenicol, clarithromycin, enrofloxacin, trimethoprim-sulfa administered during several weeks. These treatments do not always eliminate this pathogen.

Prevention and control in zoos

Strict hygiene is necessary around parturition and if possible isolation of infected animals. Tick control helps to prevent the spread. Commercial sheep vaccines reduce both abortion and excretion of the organism.

Suggested disinfectant for housing facilities

Coxiella is resistant to many disinfectants and a variable efficacy has been reported with hypochlorite, formalin and phenolic compounds. The following may be effective: 0.05% hypochlorite, 5% peroxide, glutaraldehyde, ethanol, gaseous formaldehyde, gamma irradiation or temperatures of 130°C for 60 minutes.

Notification**Guarantees required under EU Legislation****Guarantees required by EAZA Zoos****Measures required under the Animal Disease Surveillance Plan****Measures required for introducing animals from non-approved sources****Measures to be taken in case of disease outbreak or positive laboratory findings****Conditions for restoring disease-free status after an outbreak****Contacts for further information****References**

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