

Q Fever

Have you heard of Q Fever?

Weak newborns

Abortion

Infertility

Metritis

Retained placenta

Premature calving

Stillbirths

Do you recognise these signs?



A disease that has the potential to have significant impact on livestock health and production.

If you are seeing these signs in your herd without an obvious cause ask your vet about Q fever and diagnostics

Q Fever

What is Q fever?

Q fever is a zoonotic bacterial infection caused by *Coxiella burnetii*.

This bacterium is endemic ⁽¹⁾ in the UK and can be found in multiple species around the world, including humans.

Ruminant populations infected with Q fever are the main source of infection.

How does Q fever affect cattle?

In cattle, clinical signs associated with Q fever infection include:

- Abortions & pregnancy loss ⁽²⁾ (at any stage) - cattle with Q fever are 2.5 times more likely to abort than those uninfected with Q fever ⁽³⁾
- Infertility including late return to bulling, increased unplanned days open period ^(3, 4)
- Still births, weak or premature calves ⁽⁵⁾
- Retained placenta - a cow that has been exposed to the bacteria is 1.5 times more likely to have retained foetal membranes ⁽⁶⁾
- Metritis/endometritis - herds with evidence of Q fever bacteria circulating were 2.5 times more likely to have a high incidence of metritis/clinical endometritis ⁽⁶⁾

The characteristics of *Coxiella burnetii*

The bacterium that causes Q fever survives:

- 5 months in the soil ⁽⁷⁾
- 2 years at -20°C ⁽⁸⁾
- 7 to 9 months in contaminated wool stored at 20°C ⁽⁹⁾
- 24 months in faeces/dung ⁽⁹⁾
- Up to 20 months in tick faeces ⁽⁹⁾
- Thermostable (survives 30 minutes at 60°C) ⁽⁹⁾
- Large variations in pH ⁽⁹⁾
- Resistant to many disinfectants & antiseptics ⁽¹⁰⁾

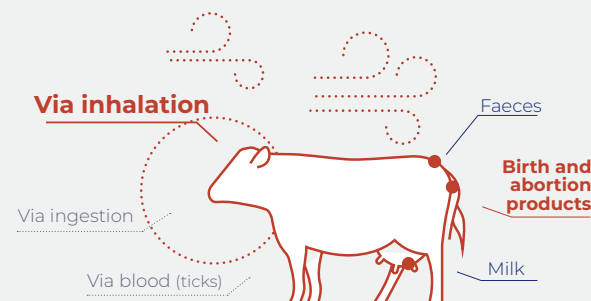
The bacterium can be spread by the wind for up to 11 miles ⁽¹¹⁾



How is it transmitted between livestock?

The main route of infection in animals and humans is by inhalation of contaminated air particles originating from pregnant infected ruminant females.

Coxiella burnetii can also be excreted by apparently healthy animals outside parturition period.



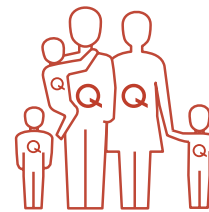
Other routes of infection

- Oral – low risk
- Vector-borne e.g. ticks
- Venereal (during mating) - theoretical risk

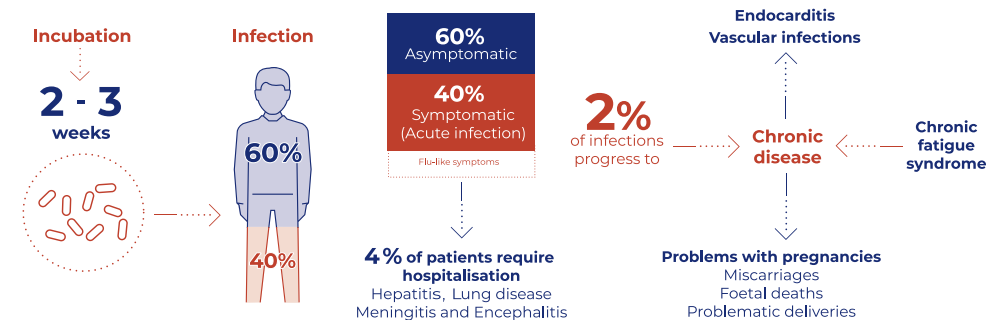
NB: Risk levels may be evaluated differently by different authorities, due to the method of analysis used

The Q fever bacterium is highly infectious, with a very low infectious dose rate, and can be transmitted by coming into direct contact with the bacterium present in air particles, vaginal mucus, dung, dust and milk. ⁽¹²⁾

Q fever is zoonotic - a risk to human health



- Those most at risk of Q fever include cattle and small ruminant farmers, family, employees, abattoir workers, technicians including foot trimmers and artificial inseminators, veterinarians and vet support staff
- If you or your family members or employees are unwell you should contact your GP and tell them that your herd has recently been diagnosed with Q fever



- 60% of human Q fever cases will be asymptomatic and unaware of infection
- 40% will experience an acute infection with flu-like symptoms
- 4% will require hospitalisation
- 2% of infections progress to chronic diseases including chronic fatigue syndrome, endocarditis and vascular infections
- **Q fever infections can progress to miscarriage, foetal death and pre-term delivery**

Does drinking raw milk from your herd increase your risk?

It is considered low risk in comparison to inhalation of the bacterium. This does not however remove all risk. The Q fever bacterium *Coxiella burnetii* is thermotolerant surviving 30 minutes at 60°C ⁽¹³⁾. Standard pasteurisation (at least 71.7°C for 15 seconds or any equivalent combination) is anticipated to inactivate any *Coxiella burnetii* within the milk.



Q Test Diagnosis

Diagnosis of Q fever is available in the UK including a bulk tank milk PCR.

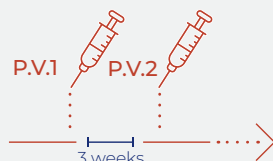
Please discuss diagnosis with your vet if you are concerned your herd may have Q fever.

Activities that may increase risk of spreading bacteria over distances include dung or slurry spreading, pressure washing parlours and poor disposal of foetal membranes, placenta or aborted foetus from infected herds.

Vaccination for herds

The unique vaccine Coxevac is available for use in cattle. The objective of the vaccine in cattle is to lower the risk for non-infected animals to become shedders of the Q fever bacterium *Coxiella burnetii*.

It is advisable to vaccinate all the animals in the herd at the same time.



P.V.1 1st primary vaccination injection

P.V.2 2nd primary vaccination injection



A Q fever vaccine protocol needs to be implemented over at least 3 years (including regular boosters), preferably 5-10 years, to maximally reduce shedding, and therefore environmental contamination and disease. Please discuss vaccination protocols for Q fever with your farm vet.

Speak to your vet about diagnosis and vaccination if you are concerned about Q fever.

www.qfever.co.uk

References 1. Valesova M. et al. 2017. Herd-level prevalence of selected endemic infectious diseases of dairy cows in Great Britain J Dairy Sci. Nov. 100(11): 9215-9233 2. Dobos A. et al. 2020. Serological screening for *Coxiella burnetii* in the context of early pregnancy loss in dairy cows. Acta Veterinaria Hungarica 68.5 (2020): 305-309 3. Chironneau, S., 2012. Impact de la vaccination et de l'antibiothérapie sur l'incidence des troubles de la reproduction et sur la fertilité dans des troupeaux bovins laitiers infectés par *Coxiella burnetii*. INRA - ONIRIS, 1300 BioEPA Biologie, Epidemiologie et Analyse du Risque. Centre de Recherche Angers-Nantes, Nantes, France 4. Lopez Helguera, I. et al. 2014. Vaccinating against Q fever with an inactivated phase-I vaccine (COXEVAC) improves reproductive performance in *Coxiella burnetii*-infected dairy herds. Presented at the XXVIII World Buiatrics Congress, Cairns, Australia 2014, pp. 274-275 5. Barberio, A. et al. 2017. Epidemiology of Q Fever in cattle, in: The Principles and Practice of Q Fever: The One Health Paradigm. Nova Science Publishers, New York, pp. 189-212 6. Valla, C., 2014. Prevalenza di *Coxiella burnetii* nel latte di massa in allevamenti di bovine da latte italiani e possibile correlazione con problemi riproduttivi. Large Animal Review 51-56 7. Welsh et al., 1959. Q fever studies. XXI. The recovery of *Coxiella burnetii* from the soil and surface water of premises harboring infected sheep. Ann. D. Hyg. 70: 14-20 8. McCaul TF, Williams JC. Developmental cycle of *Coxiella burnetii*: structure and morphogenesis of vegetative and sporogenic differentiations. J Bacteriol. 1981 Sep;147(3):1063-76. doi: 10.1128/jb.147.3.1063-1076.1981. PMID: 7275931; PMCID: PMC216147 9. Cuatrecasas, R. 2013. Q Fever: An emerging disease. Book published by Grupo Asis Biomedica, S.L 10. Heinzen et al., 1999. Developmental biology of *Coxiella burnetii*. Trends Microbiol. Apr; 7(4):140-54 11. Hawker J, et al. 1998. A large outbreak of Q fever in the West Midlands: windborne spread into a metropolitan area? Commun Dis Public Health. 1998; 1(8):7-12. Williams J. 1991. Virulence and pathogenicity of *Coxiella burnetii* for various hosts. In: Williams J, Thompson H, editors. The biology of *Coxiella burnetii*. Boca Raton (FL): CRC Press; 1991. 13. Cerf O. et al. 2006. *Coxiella burnetii* and milk pasteurization: An early application of the precautionary principle? Epidemiol Infect., 134:946-951



COXEVAC® suspension for injection for cattle and goats contains inactivated *Coxiella burnetii*, strain Nine Mile z72 QF Unit/ml. *Q-fever Unit: relative potency of phase I antigen measured by ELISA in comparison with a reference item. LEGAL CATEGORY: UK [POM-V]. Please refer to the product packaging and leaflets for information about side effects, precautions, warnings and contra-indications. Further information is available from the SPC or on the datasheet at www.noahcompendium.co.uk or upon request. Prescription decisions are for the person issuing the prescription alone.

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