Epidemiological investigation on a dairy sheep farm in a professional agricultural high school following an alert of Q fever clustered human cases

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A major gap in Q fever knowledge is to understand transmission risks to humans on the field (see also #150)

Great variability of situations at-risk for transmission to humans
Importance of describing and learning from these situations

Background

1/ Medical Doctors reports human cases

- 12 suspected cases
- 5 confirmed by the NRC (French National Reference Center)

2/ Source quickly identified => sheep farm of an agricultural school

- Strong concern about a risk of exposure for: 200 students and 60 school staffs
Visitors of the school Open Day (held in March)

Results

Animal shedding

- Evolution of C. burnetii vaginal shedding in the sheep flock
- First abortions (adult ewes)
- Second strong abortion wave on primiparous ewes
- Diagnostic confirmation

Environmental contamination

- Farm (areas with animals): persistence of a high bacterial load (both dust and wool) for several months despite intensive C/D during the first year
- Cheese factory and school: widespread initial environmental contamination with progressive decrease after intensive C/D using routine methods

Conclusions and discussion

- This “One Health” investigation reports an episode of 45 aborting ewes with massive C. burnetii shedding and persistent high level of environmental contamination that lead to 5 confirmed clinical cases among at least 300 individuals exposed,

- Many questions raised regarding both the impact of management measures and the risk factors for human clinical infection.

- Was shedding reduction a result of the normal within-flock bacterial circulation dynamics? Was it a result of vaccination? If yes, of which animals (all females or only those that were recently infected)?

- Should C/D be recommended for farm buildings?
- Does it facilitate bacterial resuspension?
- Does it have an impact on bacterial infectiosity even if bacterial loads remain high?
- Are the bacteria sensitive to the present conditions without C/D?

- Which ambient dose is effective for human transmission?
- For human clinical disease? How virulent is the circulating strain?

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References


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