

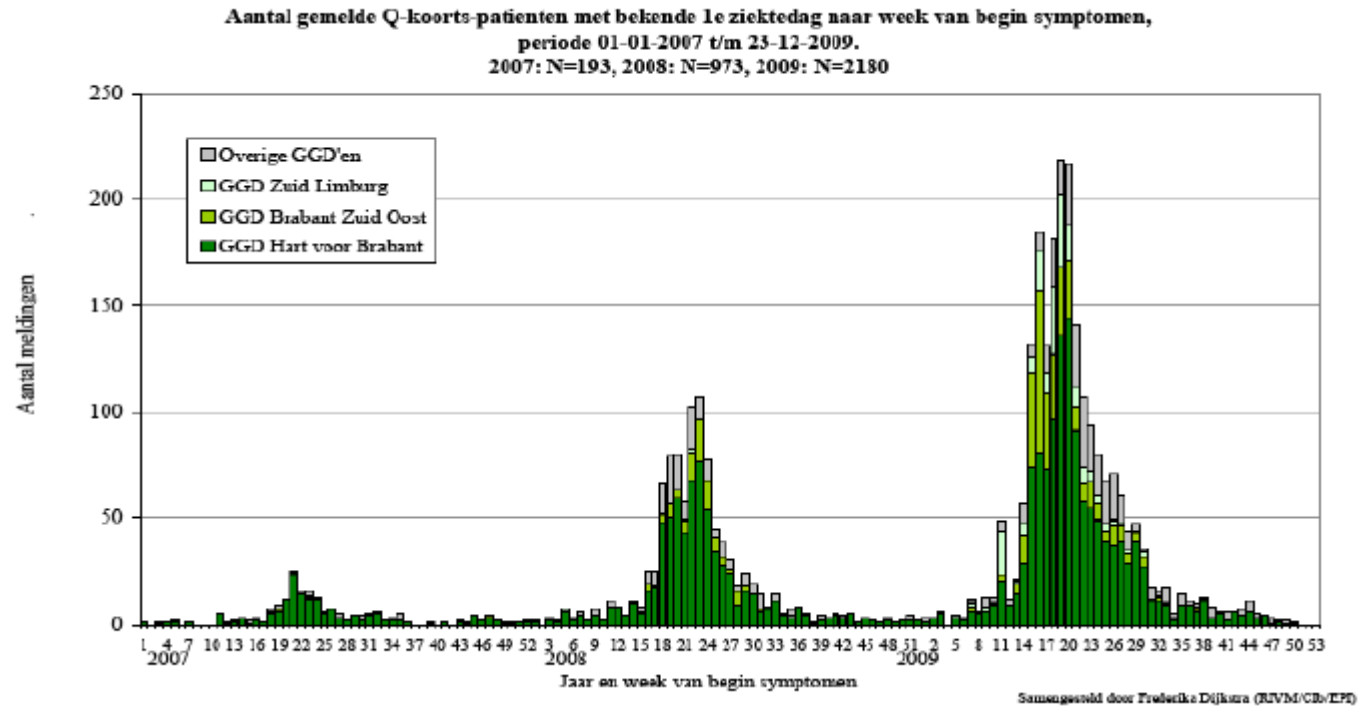


Animal Health and Welfare Panel

SCIENTIFIC OPINION ON

Q FEVER

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SCoFCAH 4 May 2010



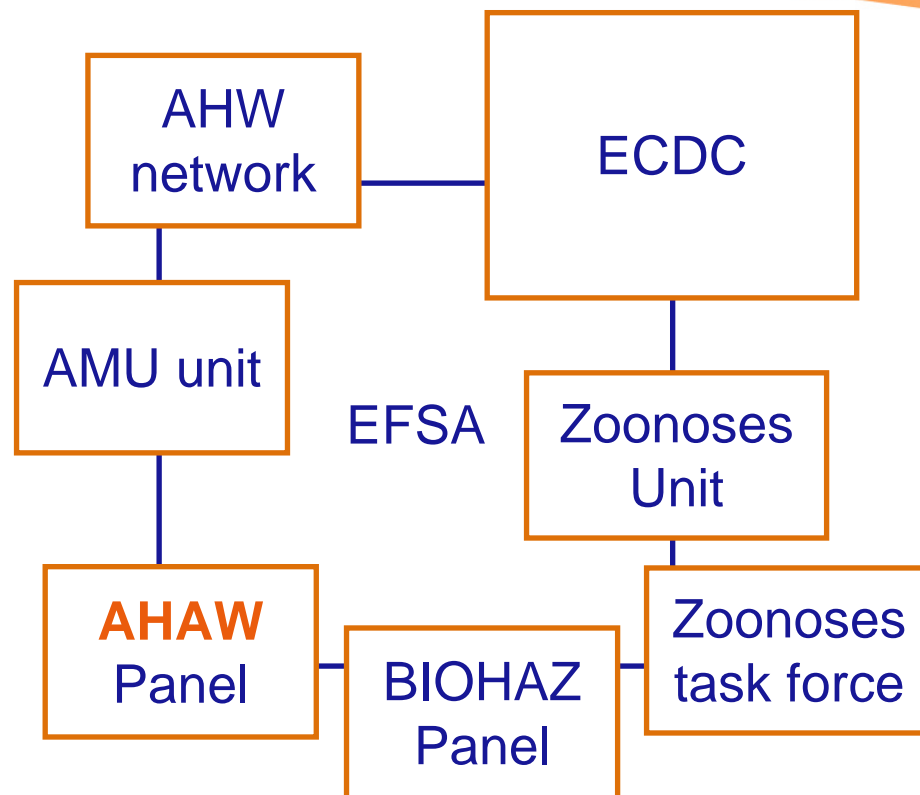
- The increase in human cases of Q fever in the Netherlands call for special consideration as regards the risks posed by Q fever for humans and animals

- The European Commission requested further scientific advice and risk assessment.
- The mandate posed three questions:
 1. to assess the **significance** of the occurrence of Q fever in the EU Member States
 2. to assess the **risk factors** for Q fever occurrence and persistence in animal husbandry and the related risks for humans, and
 3. to assess the effectiveness and efficiency of disease **control options**.

Approach

- Animal Health
- Public Health
- Food safety
- Data collection

- Deadline



- WG of experts

Simon More (Chair), Jan Arend Stegeman, Annie Rodolakis, Hendrik Jan Roest, Piet Vellema, Richard Thiéry, Heinrich Neubauer, Wim van der Hoek, Katharina Staerk.

EFSA secretariat: Ana Afonso, Milen Georgiev

Magnitude and distribution of infection and disease

Constraints:

- Comparability of data between EU MS (variations in regulatory aspects including case definitions, laboratory capacity, monitoring/surveillance intensity, data reporting).

Approach:

- A brief review of the diagnosis of *C. burnetii* infection,
- A descriptive assessment of monitoring/surveillance of *C. burnetii* infection in different MS,
- Insights into the magnitude and distribution of infection and disease (Zoonoses reports, *ad hoc* consultation, literature review), and
- A critical qualitative evaluation of impact and significance.

Conclusions

- Infection with *C. burnetii* is endemic in domestic ruminants (*cattle, sheep, goats*) in most, if not all, EU MS.
- Although infection in domestic ruminants is common, disease is rare. The overall impact of *C. burnetii* infection on the health of domestic ruminants in EU MS is limited.

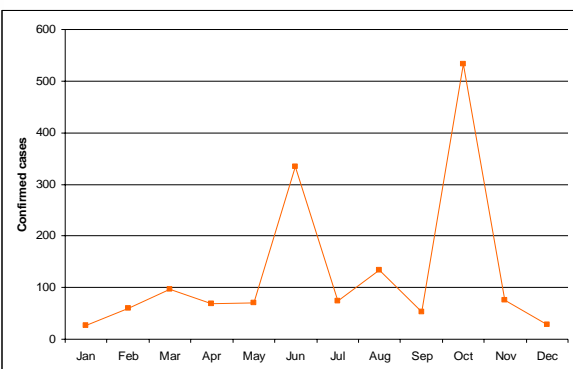


TOR 1 - Significance

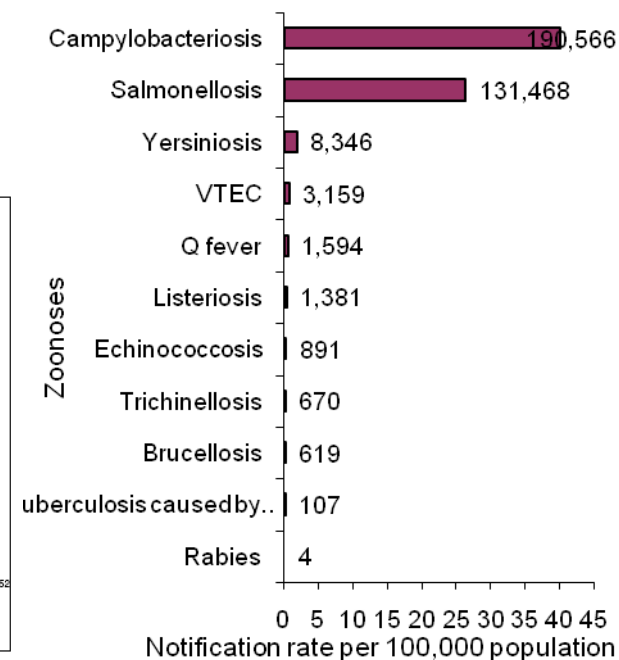
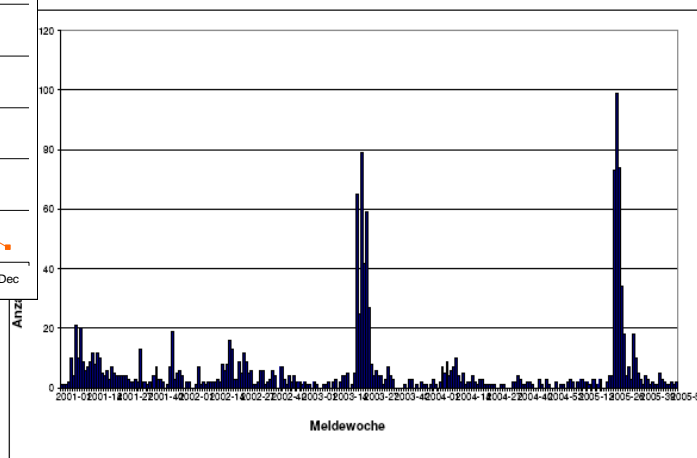
Conclusions

In humans, *C. burnetii* infection is present in most, if not all, EU MS. Q fever is a zoonotic disease with limited public health impact in the EU, however, in certain epidemiological circumstances and for particular risk groups the public health impact can be significant.

Many cases of Q fever are unrelated to occupational exposure.



49: Übermittelte Q-Fieber-Erkrankungen nach Meldewoche, Deutschland, 2001 bis 2005



Risk factors for maintenance and spillover

Constraints

- Risk factor identification/assessment has generally been conducted using qualitative methods, including implication on the basis of association and consistency with previous reports, and
- The published literature on Q fever outbreaks (and associated risk factors) is fragmented, with focus on the large and the unusual outbreaks.

Approach

- simple conceptual model,

- A critical review of available literature,

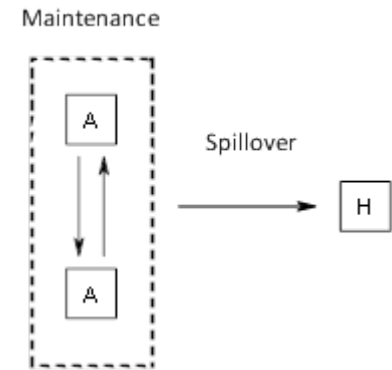
- Country case studies

- »Bulgaria,

- »France,

- »Germany

- » Netherlands



Conclusions

Maintenance

- It is likely that *C. burnetii* infection can be maintained in domestic ruminants in a **wide range of husbandry systems**.
- Maintenance of *C. burnetii* infection within farms might be favoured by **persistently infected animals, other animal reservoirs of infection, ticks, husbandry practices that favour within-herd transmission and/or environmental contamination**

Spillover

Common risk factors

1. association between human infection and small ruminants (**sheep and goats**), and
2. **proximity** between small ruminants and human populations, particularly in association with parturition and abortions (in the case of goats), and
3. **specific climatic conditions** (dry, windy weather)

Conclusions

Spillover

- No clear evidence of an association between bacterial genotypes/isolates and **virulence**.
- No conclusive evidence in support of a link between an **increased density of animals and/or farms** and spillover of *C. burnetii* from infected farms to humans.
- The **factors leading to outbreaks** of Q fever in the human population are not fully understood.
- There is considerable **uncertainty** about the relative importance of risk factors for maintenance and spillover

Conclusions

Food safety

- *C. burnetii* is excreted in milk. Milk can be contaminated with *C. burnetii*
- Contaminated milk and milk products can be considered as a source of exposure to *C. burnetii* for humans;
- Consumption of milk and/or milk products containing *C. burnetii* has been associated with sero-conversion in humans.
- There is **no conclusive evidence** that the consumption of milk and milk products containing *C. burnetii* has resulted in clinical Q fever in humans.

Approach

- A critical evaluation of available control options.
 - A qualitative assessment of effectiveness:
 - To reduce within-herd transmission and between-herd spread;
 - To influence spillover from domestic ruminant populations to humans;
- Uncertainty
- Sustainability
- Limitations

Conclusions

- It is likely that individual control options would need to be used in **combination**
- A number of control options were identified for **long-term** application
- Several options were not considered sustainable for long-term control, but may have a role **in the face of an outbreak**
- *C. burnetii* is highly resistant in the environment; consequently, **persistent environmental contamination** is a matter of concern.

- Harmonized field and laboratory data collection to allow comparison of prevalence/incidence estimates over time and between countries
- Prevalence and incidence studies should place emphasis on small ruminants
- Promote rapid identification and reporting of Q fever outbreaks in animals (abortion episodes).
- Early information exchange between veterinarians and public health counterparts
- Q fever burden of disease estimates of in humans are needed.

Further investigations and research are needed :

the relationship between genotype and **virulence**, the molecular basis for virulence, determine the host specificity of different bacterial isolates, to improve understanding of **transmission pathways**, quantify the number of bacteria excreted, quantify survival of *C. burnetii* in the environment, clarify the role of environmental contamination and climatic factors in the spillover of infection from animals to humans, and clarify the trade off between **farm density and farm size** in the maintenance and spillover of infection.

Longer-term options to control *C. burnetii* infection in domestic ruminants should be considered in those situations where the **public health risk is considered unacceptable.**

Vaccination should be considered as a long-term control measure. In order to better assess vaccine efficacy, it is recommended that field and experimental data are gathered.

Antibiotic treatment is not effective in substantially reducing either the level or duration of bacterial shedding in domestic ruminant populations; therefore the use of antibiotics cannot be recommended.

Thank you!

QUESTIONS?