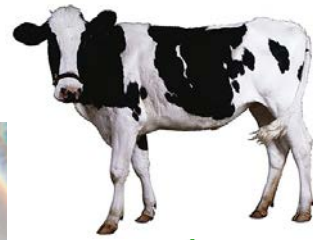


NEW INSIGHTS ON Q FEVER: FROM FIELD DATA TO AN EXPERIMENTAL INFECTION

Marcella Mori

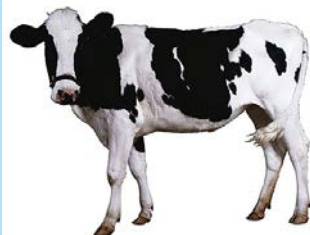
C. burnetii infection



Milk, birth products, vaginal discharges, semen, faeces

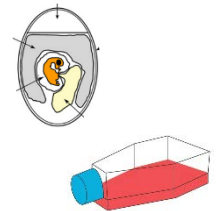
Contaminated environment
-> dust
-> aerosols

Inhalation *C. burnetii*

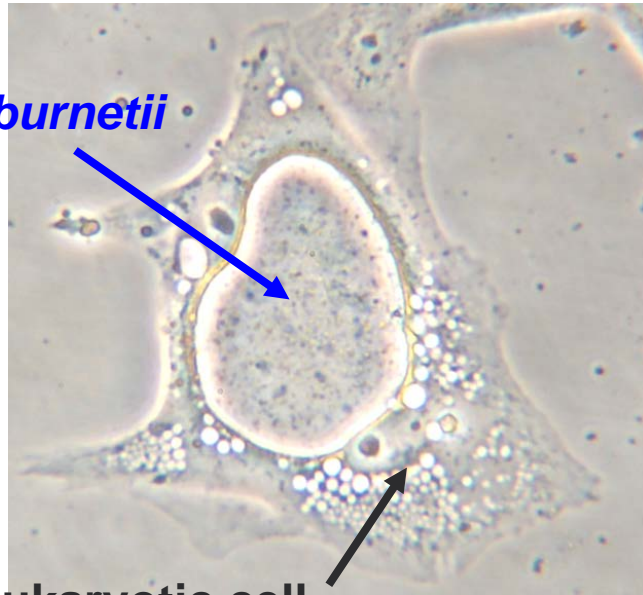


Phase I *C. burnetii*

laboratory



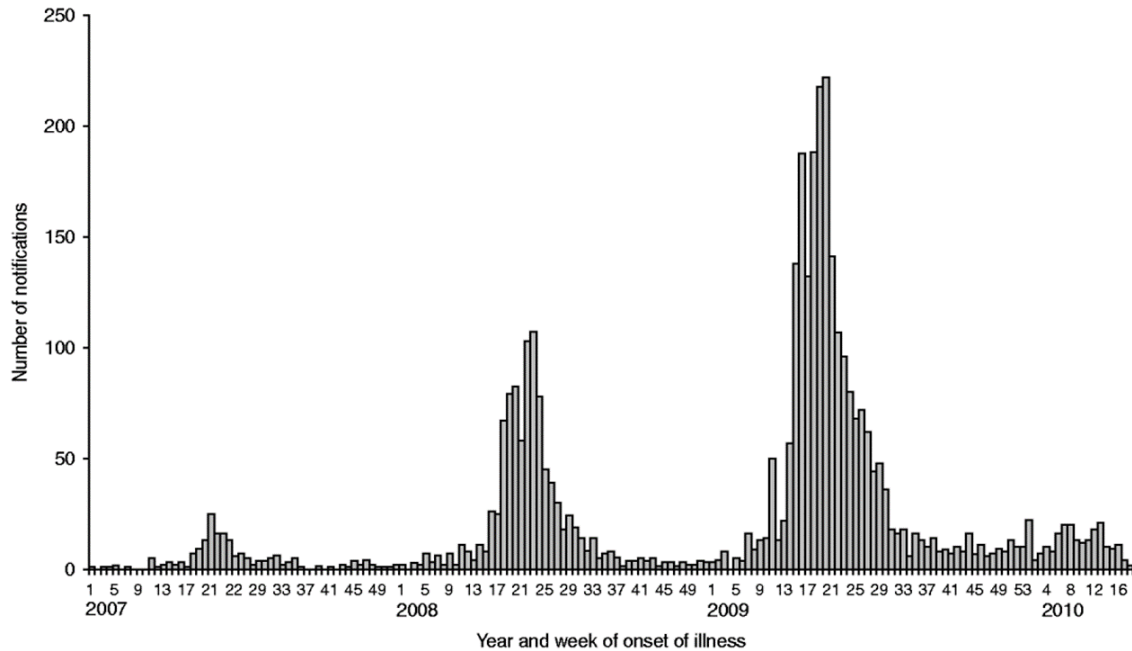
Phase II



C. burnetii

Eukaryotic cell

The Belgian surveillance/control program of Q fever: the inheritance of the Dutch Q fever outbreak



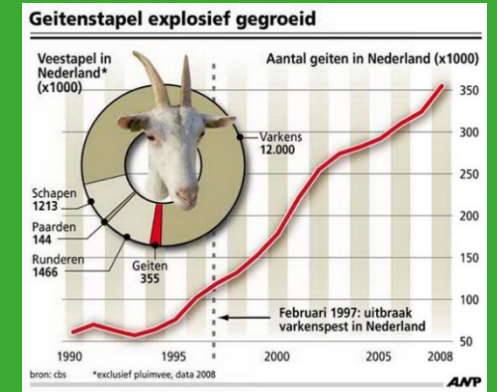
4108 notified acute Q-fever patients of which at least **24** persons (0,6%) died

Van Loenhout J.A. et al., Assessing the long-term impact of Q-fever in the Netherlands: a prospective cohort study started in 2007 on the largest documented Q-fever outbreak to date., 2012, BMC Infect Dis.

Estimation of **44000** people infected with *C. burnetii*

Van der Hoek W. et al., Shifting priorities in the aftermath of a Q fever epidemic in 2007 to 2009 on the Netherlands: from acute to chronic infection., 2012, Euro Surveill.

1. Large import of goats since 1984 (7000 →374000)

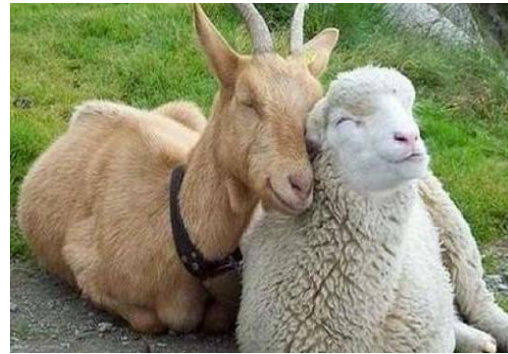


2. Intensive breeding and large-size farms
3. Close vicinity to densely populated areas
4. Dry and windy spring conditions
5. Circulation of a hypervirulent strain (CbNL01)



Official programs for the control of QFV in small ruminants (SR)

Meat and dairy sectors
Abortion protocol
(Dec-Apr)
PCR



Dairy sector
(BTM for the public
consumption-not private)
Screening 5x /y
PCR, ELISA

CLINICAL MANIFESTATION

PREVENTION

(various stages of infection)

POS PCR

thermal treatment of milk, restriction on animal movement, compulsory vaccination (COXEVAC) of animals (1x)
(AM, 11 May 2011)

MEASURES



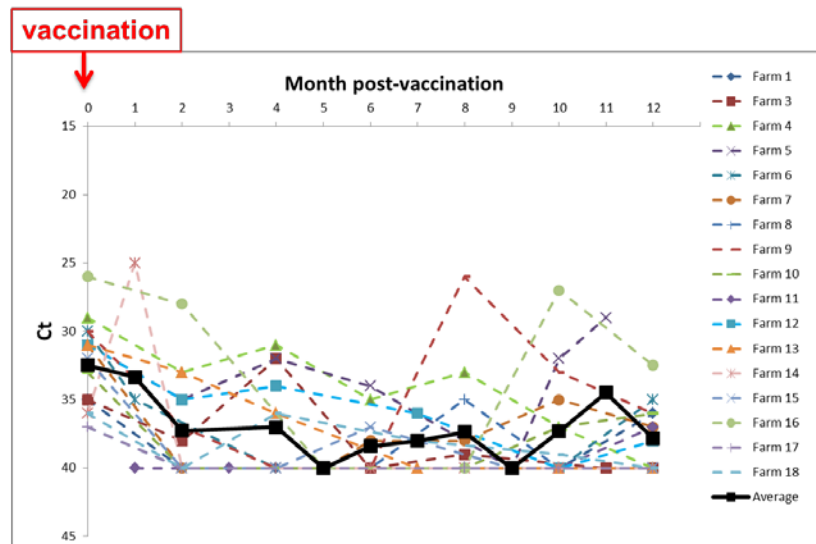
EPIDEMIC

LONG TERM CONTROL

Vaccination protocol and length of vaccine immunity in field settings

- To be performed by the farm veterinarian following the manufacturer's prescriptions
- All non-pregnant doelings (>3 m)/does of the farm within 6 months following a PCR-positive result
- The measure is released after 1y of conforming results (discontinuous protocols of 1y)

- All goats (including bucks) >3m
- The vaccination protocol (prime + boost) to be completed 3w before breeding
- Synchronized vaccination highly advised
- Recall: yearly



Excretion of *C. burnetii* in milk, in absence of an additional vaccination dose, increases again after 9 months.

Conclusions and perspectives regarding QFV surveillance and control in SR

ABORTION PROTOCOL

- Limited declaration of abortion in SR from farmers, therefore limited sample size to evaluate a real prevalence
- **Important to continue the campaign to sensibilise farmers to declare abortions**

BTM SCREENING

- Covert an important proportion of the goat sector (~70% of the entire population in Belgium) but limited for the sheep sector
- QFV flock prevalence is decreasing with time concomitant to a higher vaccination pressure. Cluster cases were observed during the years highlighting the importance of the screening
- **Room for improvement**

IMMUNITY

- The vaccination in field settings is not optimal, **include all goats in vaccination protocol and promote long term vaccination**
- The vaccine strain is genetically different from the strains circulating in animals in Belgium
- The vaccination with an adjuvant is promising (higher level of antibodies, a higher level of cell-mediated response) but awaits further confirmation to relate with protection outcomes

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THANK YOU FOR YOUR ATTENTION

