Q fever situation the Netherlands

1. Case definitions

EU	The Netherlands
a. Clinical criteria Any person with at least one of the following three: — Fever — Pneumonia — Hepatitis **b. Laboratory criteria** At least one of the following three: — Isolation of *Coxiella burnetii* from a clinical specimen — Detection of *Coxiella burnetii* nucleic acid in a clinical specimen — *Coxiella burnetii* specific antibody response (IgG or IgM phase II) **c. Epidemiological criteria** At least one of the following two epidemiological links: — Exposure to a common source — Animal to human transmission **d. Case classification** **Probable case:** Any person meeting the clinical criteria and with an epidemiological link **Confirmed case:** Any person meeting the clinical and the laboratory criteria	Person presents with at least one of the following symptoms: fever, pneumonia or hepatitis **AND** Person complies with at least 1 of the following lab criteria: • Seroconversion 4- fold increase in IgG antibodies against *C burnetti* using paired sera (one in acute phase and one in recovery phase)through Immunoflueorescense or complement binding reaction • Present of IGM antibodies against phase 2 of *C. burnetti* • Demonstration of *C burnetti* (through PCR or culture) in blood/serum or respiratory material • Presence of antibodies against Phase 1 of *C. burnetti* (chronic infection) http://www.rivm.nl/cib/infectieziekten-A-Z/infectieziekten/Q_koorts/index.jsp

2. Official notifications in the Netherlands

According to official surveillance data from the RIVM website, notifications (by date of notification and date of onset of disease) have remained well under the cases reported in 2009, due to the absence of the seasonal peak which was observed in 2008 and 2009. The baseline level of notifications by date of notification in 2010 (as seen in the blue line in Figure 1) were up to 10-fold higher for the first 13 weeks of 2010 compared to 2009 (Figure 1). RIVM does indicate that it is difficult to compare the epidemic curve from 2010 by date of onset for the last 3 months with previous years because of the inherent delay in notification from the local area up to the national surveillance database. Also, the proportion of reported cases that are from GGD (local public health authorities) regions that are outside of the core risk-area has increased in 2010 when comparing to 2009 (Figure 3 and 4).

There has been a single change regarding the case definition for notification of cases at the beginning of 2010. This change stipulates that only cases that fulfil clinical and laboratory criteria for a Q-fever case for who the date of onset of symptoms has been less than 90 days before the lab diagnosis are considered confirmed cases. Any persons with dates of onset longer than 90 days before laboratory diagnosis are not reported as new cases. The justification for this is to rule out "old" infections as IgM phase II titres can persist for long periods.

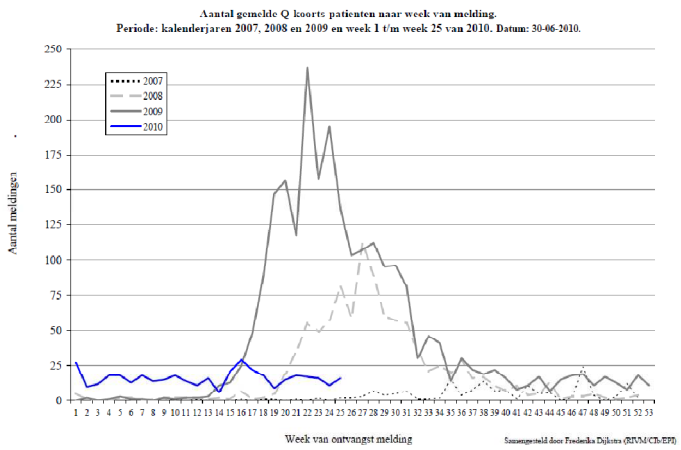


Figure 1: Epidemic curve for 2007-2010 for Q-fever notifications, by date of notification.

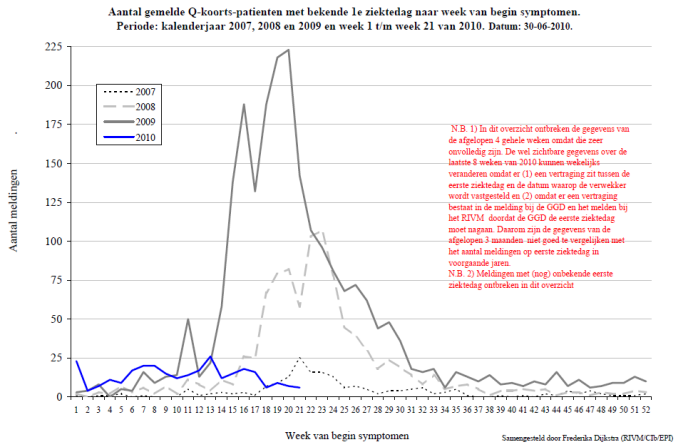


Figure 2: Epidemic curve for Q-fever notifications for 2007-2010, by date of onset of disease.
NB: data for last 3 months is NOT comparable to previous years because of delay between a) notification and actual date of onset and and b) delay between notification from local level to national level because of verification of date of onset

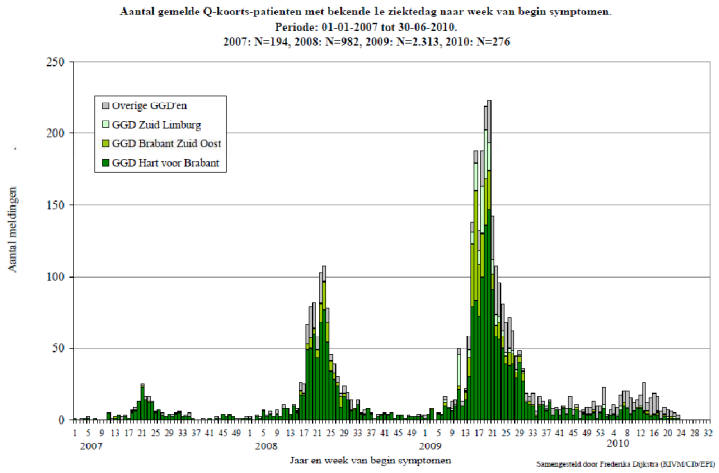


Figure 3: Epidemic curve by GGD coverage area for 2007-2010 by date of onset.

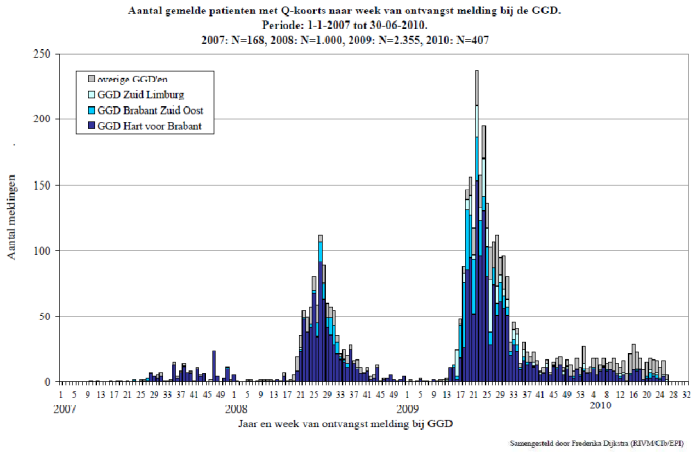


Figure 4: Epidemic curve by GGD coverage area for 2007-2010 by date of notification

3. Laboratory surveillance for Q fever

The number of positive laboratory tests reported from virology laboratories is recorded in the weekly and in the monthly infectious diseases bulletin (http://www.rivm.nl/cib/publicaties/bulletin/). The data presented is the number of positive laboratory tests per pathogen. When comparing data presented from these laboratories for 2009 and 2010 (Figure 5), the number of weekly positive tests for *C. burnetti* has remained stable, and even decreased in 2010, compared to 2009 where the number of positive tests sharply increased in Week 17-20, 2000. When comparing the cumulative number of positive laboratory tests for *C. burnetti* between 2009 and 2010, up to week 24, the cumulative number of positive tests for 2010 is below that of 2009 (Figure 6). The shape of the laboratory surveillance curve on figure 5 is comparable with the shape of the surveillance curves on figure 1 and figure 2.

Figure 5: Number of positive *C. burnetti* tests reported from virological laboratories in the Netherlands from Week 1 to Week 24 in 2009 and 2010.

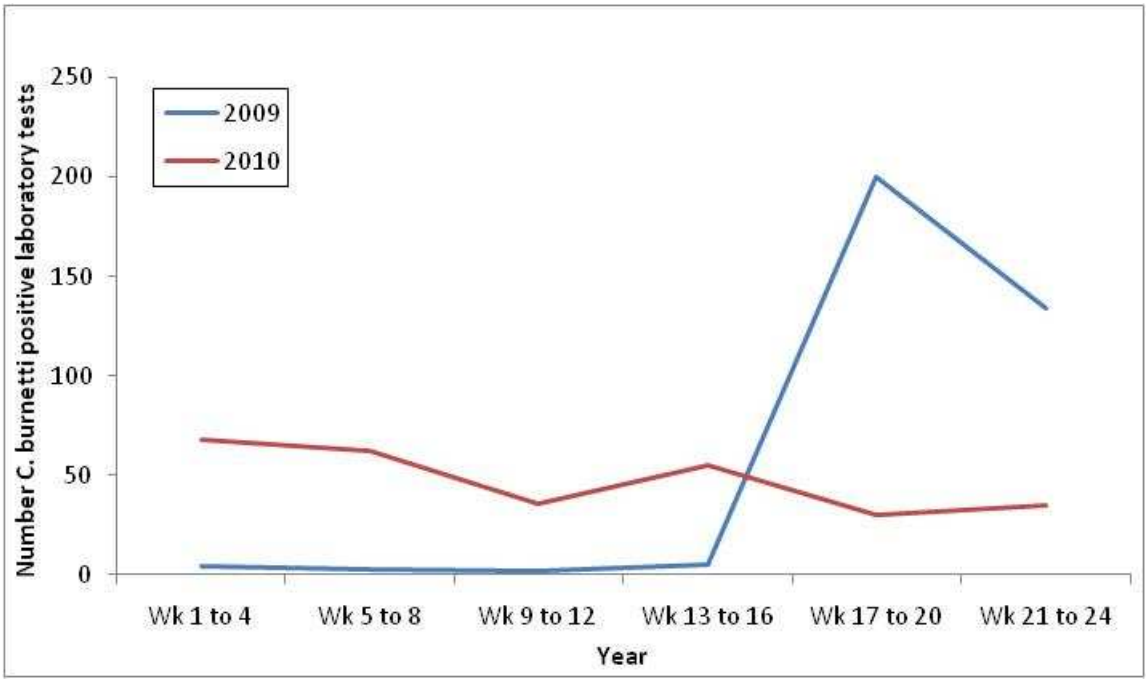
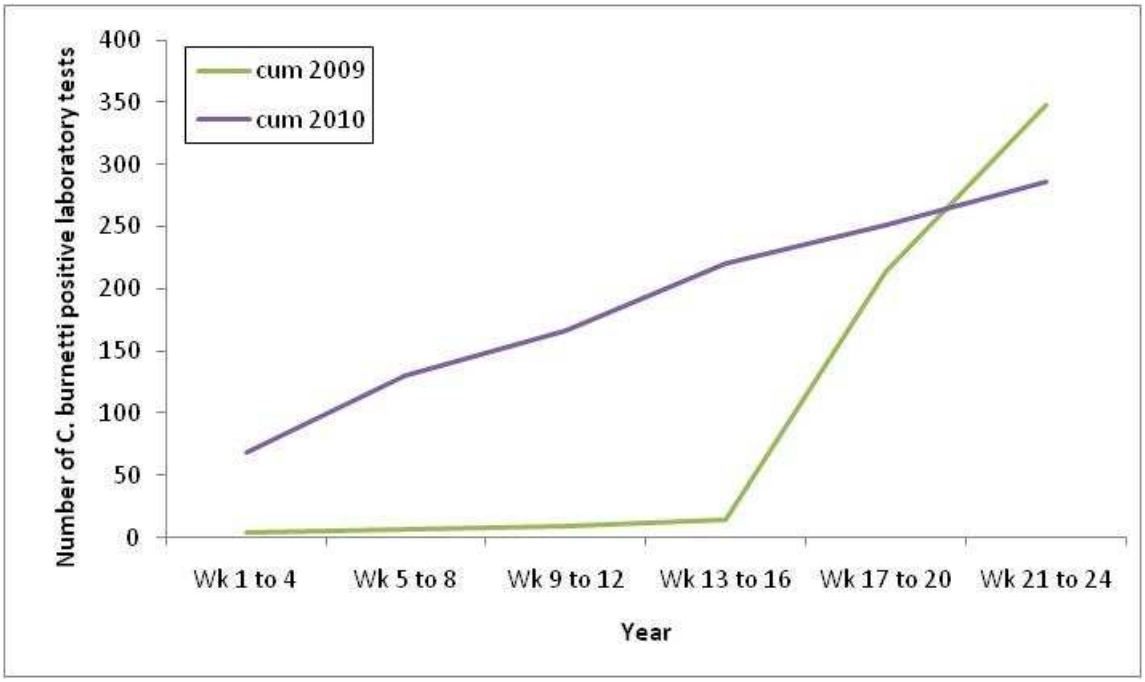


Figure 6: Cumulative number of positive *C. burnetti* tests reported from virological laboratories in the Netherlands from Week 1 to Week 24 in 2009 and 2010.



4. Geographic spread

Through comparison of the official maps on Q-fever infected farms from 16 December, 2009 and 18 June, 2010, it is clear that the number of infected farms has increased in the last 6 months, but that also their location in the country have spread further and away from the core-infected areas in Brabant. The most recent map shows that newly infected farms have now also been identified in

the provinces of North Holland, Friesland and Groningen as well as along the border with Germany. These results are based on bulk tank milk monitoring, and are not related to increased abortion rates. According to the positive farm notification list, the last Q-fever positive farm was notified on June 3, 2010 in the province of North Holland (see Volledige lijst met besmetting in Nederland (pdf)).

Q-fever Infected Farms, 16 December 2009

Q-fever Infected Farms, 18 June 2010

5. RIVM correspondence concerning Advice-request, 25 May 2010

a) Overall

- Expected that large-scale vaccination of animals will lead to a reduction of spread of *C. burnetti* by reducing the number of new animals infected and in those that do acquire the infection that a reduced dose of shedding will occur.
- The drastic measure of culling pregnant animals on milk-tank positive farms has resulted in a drastic reduction of *C. burnetti* shedding and the mating-ban on these farms will continue to reduce the shedding from these farms well into 2011.
- All human cases continue to be associated to infected farms and there are no indications that new sources of contamination are present.

b) Human cases

- The human case number do not show the same shape as those in 2009, but it is too early to predict how the contaminated environment in 2010 will affect new cases being reported
- The notifications of human cases in 2010 have continued to rise, but the slope of the epidemic curve is not as steep as it was in 2009.
- There is a degree of surveillance bias in the 2010 notifications resulting from:
  i. Difficult in distinguishing new and old infections with laboratory techniques, therefore some of the cases reported in 2010, might be from infections acquired in previous years
  ii. Increased awareness for reporting by clinicians in 2010

- The notifications from 2010 are more dispersed through the country than in 2009 and for the majority are not from the 'core-risk' area from 2009. 57% of all notifications are from a single 5km radius area.
- The hospitalisation has remained the same as last year and there are 12.6% work-related infections compared to 5% in 2009
- There have been a few geographic clusters of cases identified in North Holland, Overijsel, Northeast Brabant and north Limburg (border Germany) – these are outside of the core-risk zone from last year. The first 2 are related to persons working in previous positive farms. The last 2 are related to farms where the lambing season had started before the culling was completed.
- Currently notified cases are acquiring their infection from already contaminated environments and not likely from new sources.
- It is unlikely that food-associated infection has been a likely route of transmission.
- Current 'manure' control measures should remain before the effectiveness of these measures has been evaluated.
- A stricter level of hygiene measures needs to be implemented in farms as infected farms appear to not always follow these hygiene guidelines so strongly.

c) Vaccine

- Current studies conducted in the Netherlands have shown that vaccination of animals is an effective strategy for control. Vaccination of non-infected animals is the most effective as it reduces their risk for infection and if they are infected will reduce the likelihood of spontaneous abortions or reduce the amount of Coxiella shedding.
- This evidence confirms evidence from France (unpublished).

d) Work related infections

- Guidelines are being developed to target persons in high-risk employment and how to reduce their risk for infection with Q-fever. Special attention will be paid to those professionals that are pregnant.

e) Control measures

- The expert panel continues to suggest that the surveillance on milk-tanks remain in operations.
- Farms that are completely vaccinated but for who tanks are determined to be positive do not need to be culled, but will need to ensure strict implementation of hygiene measures (with controls).
- All farms that are found positive during tank-milk monitoring should have a mating-ban imposed (but another expert panel in the Netherlands disagrees with this finding apparently).
- Re-population of a previously infected farm is only allowed with non-infected animals that are 100% vaccinated.

6. ECDC conclusions from above information

At the moment, it seems that the seasonal peak of human Q fever infections which was observed in the previous years is absent this year. This is consistently noted through the epidemiological and laboratory surveillance systems.

The absence of peak in the 'core risk' areas suggest a shift in the transmission pattern, from an explosive seasonal peak in relation with shedding of *Coxiella* during the lambing seasons to a stable number of new cases, probably in relation with environmental contamination. This would indicate that the drastic control measures in 'core risk' areas were effective but may also suggest that the majority of persons living close to affected farms (which constitutes the main risk factor for infection) have already developed the disease, remaining asymptomatic for many of them.

Q fever has been spreading geographically among animals in the Netherlands in 2010. Most new human cases are currently being notified from non 'core risk' areas

The current baseline rates of infection are similar to those observed in other Q-fever endemic areas such as Southern Germany.

The change in case definition in 2010 should not affect significantly the comparability of cases reported between 2009 and 2010 as there were much fewer potential 'older infections' in 2009. The change in case definition there enhances the quality of the surveillance data to reflect the situation of new cases.