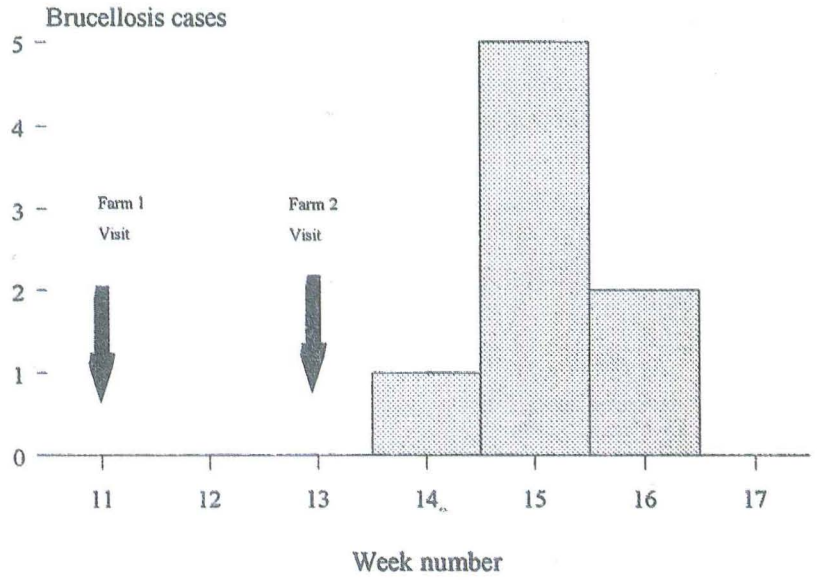
Brucellosis in an extended family in Riyadh

In April 1994 the epidemiologist of Al-Morsalat selected primary health care center in Riyadh noticed increasing numbers of brucellosis reports, including three patients with the same telephone number. Interviews with these three patients revealed that a total of eight relatives living in six different houses in Riyadh city had become ill with brucellosis over a three-week period (Figure 1). Their physicians suspected brucellosis, and each patient had a *Brucella* agglutination titer of ≥320.

Figure 1: Brucellosis in six families by week of onset
March-April 1994, Riyadh City



Among 44 persons in six families, 13 persons visited farms during the 5 to 60 days before onset of brucellosis. Eight of the 13 developed brucellosis (relative risk [RR]=undefined; p-value>0.001 [Fisher's exact test]).

On March 17, 1994, all 13 had visited farm 1. They were served laban prepared from fresh milk from another farm and barbecued meat. There were no sheep or livestock at farm 1. Among these 13 people, brucellosis was not associated with laban (RR = 2.1; 95% confidence interval [CI] 0.4-10.95) and all 13 ate barbecued meat (RR=undefined, p-value= NS). Brucellosis was also not associated with keeping animals on other farms outside the city (RR=0.75; 95% CI 0.25-2.22). One of the visitors at farm 1 invited everyone to visit another farm (farm 2) two weeks later.

Eight persons from that group of 13 visited farm 2; all 8 developed brucellosis from 1 to 3 weeks after the visit. The 5 persons who went to farm 1 but did not visit farm 2 remained well (RR=infinity, p-value< 0.001). There were sick sheep at farm 2. The eight visitors spent more than eight hours with the animals, feeding them and handling them. While at farm 2, the 8 persons consumed only food and drink purchased at a Riyadh grocery store.

The owners of farm 2 had purchased their animals from the main sheep market in Riyadh two months before the outbreak. One animal had had an abortion one month before the people visited farm 2. Three other animals were sick. We were unable to get a veterinarian to examine these animals because the farm's owners told us that they sent these animals to the farm of another relative who had livestock and could care for them.

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Editorial note: It appears likely that eight hours of exposure to sick animals at farm 2 led to the infection. The animals in that farm were kept in close confinement, which can facilitate the spread of infection among animals. As long as sick animals are kept in small areas and their urine or their abortion products are spread on the straw, the environment will remain infected for a long time.[1] When people enter these confined areas, they will either breathe the dust that contains the *Brucella* organism or become infected through lesions on their bodies. The mode of transmission could be either skin contact or airborne. However, it is unlikely that all eight people had skin lesions, so airborne transmission is most likely. In this outbreak there was no strong association with drinking laban; laban is sour and its pH is acidic, while *Brucella* need an alkaline pH (6.0-6.8) to grow.[1] The barbecue meat showed no association at all; all 13 people ate it, but only eight became infected. It is crucial to impress on livestock owners and caretakers the importance of regular veterinary checkups of their herds to identify brucellosis and to eliminate it. Such identification of the disease can control its spread both to other animals and to humans.

References

1. Brucellosis, undulent fever, Malta or Mediterranean. In: Christie AB. Infectious diseases: Epidemiology and clinical practice. Edinburgh: Churchill Livingstone 1980: 824-47.