**Brucella melitensis – a forgotten disease?**
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A recent outbreak of *B. melitensis* was diagnosed in a goat herd in Gauteng. In this outbreak, at least two human cases were also diagnosed. It is therefore essential to consider *B. melitensis* in cases of abortions in livestock.

**History**
*B. melitensis* was first diagnosed in South Africa in 1965 when three outbreaks occurred in sheep in the Mpumalanga- and Limpopo Provinces. Thereafter sporadic outbreaks also occurred in the Gauteng-, KwaZulu-Natal- and North West Provinces.

The last occurrence of *B. melitensis* in wild animal species was in 2007. Prior to this current outbreak, the last occurrence of *B. melitensis* in domestic species was in 1999.

*B. melitensis* has been rated by the World Health Organisation as one of the most important zoonoses, as it is very pathogenic to humans, causing the disease known as Malta fever (also known as Mediterranean- or undulant fever). The clinical disease caused by *B. melitensis* is more severe compared to that caused by *B. abortus* and *B. suis* in humans.

**Livestock**
*Brucella melitensis* (biovar 1, 2 or 3) is the main cause of abortions due to *Brucella spp* in sheep and goats. *B. melitensis* occurs occasionally in some cattle herds. Pregnant cows may abort and shed *B. melitensis* in their milk.1,2

**Clinical signs**
- Usually the first sign of the presence of *B. melitensis* in a susceptible herd of goats or flock of sheep is an abortion storm, where a large percentage of pregnant animals, usually in late gestation, abort. During subsequent breeding seasons, the number of pregnant animals in the affected flocks/herds that abort may decrease progressively and may eventually cease to occur, but such flocks however, remain infected for years.
- Kids or lambs from infected females may be born weak or asymptomatic. It is thought that some of these kids or lambs may become persistent latent carriers.
- Retention of placenta and foetal membranes, especially seen in nanny goats.
- Genital discharges are usually copious in nanny goats and persist for up to 3 months following abortion or kidding. These genital discharges often contain large numbers of *B. melitensis* organisms. In ewes, the genital discharges may be less copious compared to that of nanny goats.
- Decreased milk yield as well as a decrease in milk quality. *B. melitensis* may persist in the udder for years in nanny goats. Persistent infection of the mammary glands and constant intermittent shedding of *B. melitensis* in the milk in succeeding lactations serve as a source of infection. The shedding of *B. melitensis* in ewes is less compared to that of nanny goats.
- In males, orchitis or epididymitis may occur, and this may in turn result in decreased fertility.
- Arthritis (hygromas).

**Transmission**
The main route of infection is via the sucking or licking of aborted foetuses and their placentas, as well as vaginal discharges. Infection due to the ingestion of infected milk or feedstuffs may also occur. Herding of sheep and goats into kraals or pens at night, creates the ideal environment for the spread of *B. melitensis* infection.

The infection may also be transmitted from ewes or nanny goats to lambs/kids – a small percentage in utero, but the majority via the ingestion of infected colostrum or milk. These lambs/kids greatly increase the difficulty of eradicating *B. melitensis* from the herd/flock as the infection may persist until adulthood in these lambs/kids without the induction of detectable antibodies.
Infected billy goats or rams may develop orchitis and epididymitis, with resultant *B. melitensis* organisms being present in the semen, thus posing a risk of transmission.

Contaminated environment and equipment used for milking or artificial insemination, are further sources of infection, as well as permanent lambing/kidding camps and lush pastures, particularly if wet and muddy.

**Dogs**
Farm dogs that are kept with *B. melitensis* infected flocks/herds may become infected and develop generalised disease. These farm dogs, especially bitches, may serve as a reservoir of *B. melitensis* infection.

**Humans**

**Transmission**
Individuals that are immuno-compromised due to advanced age, or for example HIV, have an increased susceptibility to zoonotic diseases, including *B. melitensis*. Common routes of infection in humans include infection through cuts and abrasions, the conjunctival sac of the eyes, inhalation of infectious aerosols, and ingestion of infectious material. Humans, therefore, may become infected through:
- the ingestion of raw milk and other unpasteurized dairy products (e.g. soft cheeses)
- contact with infected carcasses
- handling of wool from infected animals
- handling of infected aborted material
- during the milking process by milkers being infected through the skin and by milk that sprays in their eyes

Pasteurization or prolonged boiling of milk or cream readily kills *Brucella*. PASTEURIZED OR PROLONGED BOILED MILK AND MILK PRODUCTS AND COOKED MEATS DO NOT SPREAD DISEASE.

*B. melitensis* Rev. 1 can cause brucellosis in humans and hence, the vaccine Brucella Rev 1 for sheep and goats (Act 36/1947 Reg No. G125, OBP), containing live *B. melitensis* Rev. 1 bacteria, should be used with great care.

**Symptoms of disease**
The symptoms of *B. melitensis* infection in humans resemble that of influenza, or malaria, and include: fever, night sweats, chills, headaches, joint- and bone pain, muscle aches, weakness, weight loss, nausea and depression.

The disease may persist as chronic brucellosis. Chronic brucellosis is diagnosed where the symptoms persist for 12 months or longer from the time of diagnosis. Chronic brucellosis can be divided into 3 categories:
1. Relapse – the reoccurrence of symptoms at some time after the completion of a course of treatment;
2. Chronic localized infection – due to the failure to eliminate a deep focus of infection; and
3. Delayed convalescence – persistence of symptoms in patients who have completed a course of therapy.

**Complications of the disease**
- Bone and joint involvement is the most frequent complication and occurs in up to 40% of patients. These complications include sacro-iliitis, spondylitis, peripheral arthritis, osteomyelitis, bursitis and tendosynovitis;
- Hepatobiliary complications due to foci of inflammation;
- Respiratory tract complications, including lymphadenopathy, interstitial pneumonitis, bronchopneumonia, lung nodules, pleural effusion and empyema;
• Genitourinary complications, including orchitis and epididymitis;
• Complications during pregnancy and breast feeding include spontaneous abortion and intra-uterine transmission to the foetus(es);
• Cardiovascular complications include infective endocarditis;
• Neurological complications include meningitis and meningo-encephalitis;
• Cutaneous complications such as rashes, nodules, papules, erythema nodosum, petechiae, purpura, epistaxis and haematuria; and
• Ophthalmic complications, including uveitis

Occasionally these complications may result in death.

The Department of Health and the National Institute for Communicable Diseases were informed of the outbreak in Gauteng. People who develop influenza- or malaria like symptoms after being in contact with animals that are aborting, should kindly inform their health care professional of such contact, so that relevant diagnostics can be performed.

**Protective measures**

Wear full protective clothing (overall or coat; rubber or plastic apron; masks; rubber gloves; boots; eye protection) when handling risk material, such as ewes or nanny goats that are in the process of giving birth, aborted foetuses, infective genital secretions, and carcasses. If animals are known to be infected with *Brucella* spp, they should be slaughtered at abattoirs designated for this purpose, as the staff would have been specifically trained and equipped to deal with the risk. Tissues that are likely to be heavily infected, will be removed, condemned and destroyed.

**Compliance with the Animal Diseases Act, 1984 (Act No. 35 of 1984)**

Section 11(2) of the Animal Diseases Act states: “A veterinarian who finds the incidence or suspected incidence of any controlled animal disease in any animal or progeny or product thereof, shall immediately report such incidence to the director.” Brucellosis in any animal species is listed as a controlled animal disease.

In order to try and limit the zoonotic risk posed to the human population and prevent *B. melitensis* from becoming endemic in South Africa, we urge each and every veterinarian to assist the Directorate Animal Health of the Department of Agriculture, Forestry and Fisheries by the timeous reporting of any suspected- or confirmed incidence of *B. melitensis*. The Department will also cover the diagnostic costs for *B. melitensis* if samples are submitted by the relevant provincial state veterinarian.

**References**

6. The development of new/improved Brucellosis vaccines: report of WHO meeting with the participation of the Food and Agriculture Organization of the United Nations (FAO) and the Office International des Epizooties (OIE), Geneva, Switzerland, 11-12 December 1997 [website]. Available from [http://www.who.int/emc](http://www.who.int/emc)