Introduction
Contagious bovine pleuropneumonia (CBPP), also known as lung sickness, is a serious bacterial disease of cattle caused by a mycoplasma. Its origins are believed to have been in the Northern Hemisphere but by the end of the 19th Century it had largely been eradicated from at least Europe and North America. It was initially introduced into southern Africa from The Netherlands in 1854, but is believed to have been present in East and West Africa before they were colonised by Europeans.

Salient features of CBPP
CBPP is a disease that impacts negatively on cattle production in many countries in sub-Saharan Africa. The causative agent is Mycoplasma mycoides subsp. mycoides (Small Colony). The acute form of CBPP presents as a severe, usually unilateral fibrinopurulent pleuropneumonia that can cause significant mortality but in endemic situations the disease becomes more chronic and less easy to detect in live animals. Subclinical infection may be transient or persistent; in the latter case the animals have sequestra in the lungs that may contain viable mycoplasmas, but whether these play any role in transmission of infection has not been fully established. A feature of CBPP is that it may reappear a long time after it has apparently been eradicated or disappeared from an area. This was the case in Europe, with an outbreak occurring near the border between France and Spain in the 1980s after a 13-year absence, with spread to Portugal, from which country it was only eradicated in 1999 after the culling of 85,000 cattle. More surprisingly, it appeared in Italy between 1990 and 1993 after an absence of more than 90 years. The source was never traced but the agent was identical to those isolated from the outbreaks in France, Spain and Portugal and different from those in Africa. The disease manifestation was mild and it was believed that Italy may have been infected for two years before the disease was diagnosed. Genetic characterisation of the agent ruled out the possibility of introduction from Africa, and it was concluded that it had successfully hidden in one or more refugia in Europe before its re-emergence. Only cattle and occasionally water buffaloes (Bubalus bubalis) are susceptible to CBPP.

Where does CBPP occur?
Contagious bovine pleuropneumonia has occurred in most parts of the world at different times but is currently only reported to occur in sub-Saharan Africa, although Mongolia and Afghanistan reported suspicion of the disease in 2005 and 2009 respectively. In sub-Saharan Africa it has been reported to OIE by 29 countries during the period 2005 to 2014. During the colonial era and for the first decades after most African countries achieved independence CBPP was fairly well controlled, but the 1980s and 1990s saw a resurgence of the disease that is attributed to declining economies, weaker veterinary services and possibly cessation of rinderpest vaccination campaigns that included vaccination for CBPP.
What triggers an outbreak of CBPP?
Transmission of CBPP relies on direct contact between infected and susceptible animals. Outbreaks are therefore triggered by the introduction of infected cattle into naïve herds or naïve cattle into infected herds, or close contact between infected and naïve cattle where herds mix, for example at common watering places or live cattle markets. Contagious bovine pleuropneumonia was eradicated from Botswana in 1939 but a major outbreak occurred in 1995 as a result of infected cattle brought in from neighbouring Namibia. In 1990 CBPP was reintroduced into Tanzania after a long absence where it has become widespread and endemic.

Prevention and control
In spite of the fact that CBPP is a bacterial disease and therefore susceptible to antimicrobial treatment control has proven challenging. Eradication was achieved in most countries by a combination of movement control and massive culling, later supported by vaccination. However, annual vaccination has proven difficult to achieve in the face of dwindling resources and mobile cattle populations, as has movement control, and massive culling of a culturally and economically valuable species is not an option in countries without the resources to compensate the owners. The use of antimicrobials has been widely discouraged on the grounds that they suppress the clinical signs and reduce transmission but do not sterilize the infection and therefore may create long term carriers; nevertheless they are widely used by livestock owners to reduce the impact of the disease.

Control of CBPP is essential because of its negative effects on cattle production and its potential for transboundary spread and re-emergence in areas from which it was thought to be absent. Models developed in pastoral situations suggest that eradication would require more effective vaccines, supported by effective antimicrobial treatment, and a community-based approach to ensure producer cooperation.

Find out more
The CPD course on CBPP describes its history, aetiology and epidemiology, how to recognise it and confirm the diagnosis, its potential for transboundary spread, the effects it has had on cattle production worldwide and continues to have in sub-Saharan Africa, and the challenges of controlling and eradicating it from different cattle production systems including pastoral systems in Africa.

Other relevant CPD modules
• Animal health management