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Brucellosis and bovine tuberculosis at an animal-human interface in Zimbabwe

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Background: The South East Lowveld (SEL) of Zimbabwe is characterised by extensive farming where 70% of households own cattle, 88% sheep and 100% goats. The Gonarezhou national park, which is part of the Great Limpopo Transfrontier Park, lies in the SEL. Fences of the park in Zimbabwe were partly removed making the frontier between wildlife and domestic cattle extremely porous. In 2008, the first isolation of bovine tuberculosis (bTB) in buffaloes was reported in Gonarezhou. Brucellosis was also diagnosed in SEL but only in cattle (5-16%). The importance of the interface between wildlife, domestic animals and human in this region revealed a high potential for transmission of zoonoses. This study tackles the zoonotic risk of brucellosis and bTB in SEL.

Methods & Materials: A three dimensional risk analysis approach. was the adopted methodology.

Results: The study demonstrated that the public and professionals are at risk from zoonoses particularly brucellosis, due to lack of knowledge (57% awareness) combined with risky food consumption habits – 41% and 67% consume raw milk and game meat respectively. Only 36.2% of the professionals received continuous education on zoonoses and just 34.4% of human health workers were aware of brucellosis which could also account for several cases of undiagnosed febrile illnesses. There is lack of collaboration between the custodians of public health, the Department of Livestock Veterinary Services and the (DVS) and the Ministry of Health and Child Care (MoHCC) in public health education.

Conclusion: Even though no cattle samples were found positive to bovine tuberculosis, given the similarity of modes of transmission to brucellosis, the potential transmission of bTB from wildlife to cattle would constitute an important threat for human population. In addition to these results, HIV prevalence in Zimbabwe is high with a prevalence of 14.9% amongst adult aged 15 to 49. Therefore the potential of brucellosis and bovine tuberculosis spread into human population is really to be considered. As such strengthening links and promoting inter-disciplinary One Health collaboration between the two groups of professionals, human and veterinary in the field of public health would result in effective zoonoses control.

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How the 1917 army measles epidemics changed emerging infectious disease awareness

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Background: An argument can be made that if there was a "moment" in time when our response to emerging infectious diseases became recognizably modern, it may have been in 1917-1918, during the fatal measles epidemics affecting virtually all of 40 U.S. Army training camps. Previously a military disease of low incidence and low mortality, the winter of 1917 saw more than 95,000 military measles cases, and more than 3,200 deaths, with thousands more soldiers disabled by empyemas and disfiguring/debilitating thoracotomies.

Methods & Materials: Historical examination of over 200 military epidemiologic, bacteriologic, and pathologic records was undertaken.

Results: A massive Army-wide investigation involving hundreds of physicians and scientists showed that the fatal epidemic was caused by viral-bacterial co-pathogenesis associated with nasopharyngeal "carriage epidemics" of virulent streptococci. Investigations which correlated findings from clinical medicine, surgery, bacteriology, pathology, epidemiology, and the new discipline of radiology, substantially characterized the natural history and pathogenesis of the measles-streptococcal disease. Major changes in infection control practice may have slowed the epidemic. The findings of the measles epidemic investigation laid the groundwork for responding to the 1918 influenza pandemic when it appeared in September 1918, just as the measles epidemic was waning. In both epidemics, viral bacterial co-pathogenesis was responsible for the vast majority of deaths, and the measles-streptococcal prevention lessons undoubtedly lowered the tremendous mortality of the influenza pandemic with its associated pneumococcal, staphylococcal, streptococcal and other bacterial complications.

Conclusion: Implications for lowering mortality from endemic and epidemic respiratory viruses in 2014 will be discussed. The 1917 measles epidemic is among the most important emerging infectious disease epidemics of the past century because of its impact on how we investigate, evaluate and control new diseases.

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