

Bovine Tuberculosis Day highlights need for more research and control strategies

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A collaborative team effort is needed to counter the increasing danger of bovine tuberculosis (BTB) in wildlife evident in the continuous spread of the disease to wildlife on unrelated properties in different parts of South Africa. That was the core message at a Bovine Tuberculosis Outreach Day recently hosted by the Faculty of Veterinary Science and spearheaded by Prof Anita Michel of the Department of Veterinary Tropical Diseases.

According to Prof Michel, this unique event was organised to share the knowledge gained from research done in the past two years and in view of the evidence that TB is spreading in wildlife at an alarming and increasing rate. It was also intended to make everyone aware of the existence of the Study Group on Tuberculosis in Wildlife that researches TB in South Africa and aims to collaborate more effectively with, among others, game farmers. Prof Michel emphasised that a team effort is needed involving academia, government, private game farmers and other role players.

This was reiterated by Dr Lin-Mari de Klerk-Lorist of the Kruger National Park in her presentation, which focused on the current status of BTB control in wildlife in South Africa. Dr De Klerk-Lorist's presentation highlighted alarming facts about the current lack of measures and strategies to control BTB in wildlife; for instance, the strategies, screening and diagnostic testing in place for buffaloes are only reasonably effective. This is problematic because research has shown that many mammalian species, including meerkat and cheetah, are susceptible to the disease.

Prof Michel says the current situation poses new challenges. Improved measures are required to identify which other species are high-risk carriers of the disease, and validated diagnostics must be developed for these species. Work done on buffaloes is certainly the beginning but definitely not the end. BTB is a chronic and highly contagious disease, and it can take years to discover that transmission between species has taken place and that new properties have been infected. Although the methods of transmission of BTB in livestock, specifically cattle, is better known, much more information and research are needed to determine the nature of the interaction between livestock and wildlife because it affects the transmission of the disease between the various species.

Looking at all the risk factors and the lack of information and funding, the extent of the problem seems to be considerable. Prof Nick Kriek, emeritus professor, former dean of the faculty and currently employed in the Section of Pathology, was one of the speakers at the outreach day. Referring to the lack of information about the extent to which cattle are infected with BTB, he painted a gloomy picture. From as far back as 2008 the government's veterinary services have no data on the level of infection of herds or individual hosts. The fragmentation of veterinary services at the provincial level has had a direct impact on the quality of information and control programmes.

According to Prof Kriek experience has shown that the existence of a wildlife maintenance host for TB in a system makes it impossible to eradicate TB in cattle. This phenomenon is encountered in various countries, including Canada, the United Kingdom, New Zealand, Spain and the USA. However, the extent to which infected wildlife acts as a source of infection in cattle in South Africa is unknown but may be complex as the disease was detected in 21 local, free-ranging wildlife species. At present we do not fully understand how the disease is transmitted at the interface between infected wildlife species or between wildlife and livestock. This contributes to the complexity of the issue in that infection in wildlife creates a reservoir that makes the control of TB in cattle very difficult and eradication impossible.

‘Until we know what the mechanism of transmission is between cattle and wildlife and vice versa, we cannot control it effectively,’ Prof Kriek says. What we do know is that BTB is a chronic and highly contagious disease, and that, in experimental terms, the easiest way to transmit it is through droplets. Inhaling only one bacterium can cause infection. Mycobacteria can stay alive for up to 12 hours and the droplets in which they occur can be carried by various means, for instance, the wind. However, according to Prof Kriek, the way in which the disease is transmitted is largely unknown despite extended, ongoing research worldwide. To compound the problem, the mechanism of transmission can differ from one region to another. He warns that although much emphasis is placed on buffalo carriers in South Africa, any of the 21 infected wildlife species, irrespective of whether they are maintenance hosts or not, can infect other susceptible animals.

To identify the spread and occurrence of the disease more successfully, the current misconception that wild animals are not acting as reservoirs for TB in South Africa must be addressed and high-risk profile analyses must be done on a wide scale. Regular testing and screening must be carried out on herds of all affected species.

Both Prof Kriek and Prof Michel are of the opinion that progress in addressing the complexity of the TB problem requires increased and focused research. Wider surveys, more and reliable data, and increased research funding are of the utmost importance. At present, researchers rely on outside funding because funding from government is limited or non-existent.

According to Prof Michel, research should ideally be aligned with government’s mandate to control the disease, but the aims and goals of external funders are often not aligned with those of government. Compliance with regulatory requirements, for instance obtaining permits to do research, is often a hindrance that delays research. (It can take up to three months for government to issue a permit.)

Dr De Clerk-Lorist pointed out that currently owners of disease-free buffaloes (based on existing and historical test records) have access to an exclusive and lucrative market. If, however, one buffalo in a herd tests positive for TB the value of the all animals in the herd is reduced from millions of rand to a few thousand rand.

Therefore, regular diagnostic testing and screening of wildlife for the presence of BTB are very important. In addition, when introducing new wildlife species onto a property, a risk assessment of the animals and their property of origin must be done to limit the risk of introducing infected animals.

It is clear that new strategies, closer cooperation among the various parties, more research and adequate research funding are necessary if any progress is to be made in understanding and fighting the disease.

Maybe it is time for the approach to be aligned once again with the objectives of the Animal Diseases Act 35 of 1984, namely 'To provide for the control of animal diseases and parasites, for measures to promote animal health, and for matters connected therewith.'

Other speakers at the event included Prof Dr Christian Gortazar-Schmidt, Head: SaBio Research Group, National Wildlife Research Institute (IREC), Spain; Dr Peter Buss, Senior Manager: Veterinary Unit, Kruger National Park; Dr Donald Sibanda, State Veterinarian: Disease Control, Department of Agriculture, Forestry and Fisheries (DAFF); Prof Paul van Helden, Director: Centre for Tuberculosis Research, University of Stellenbosch; Dr Alex Lewis, wildlife veterinarian; and Dr Alicia Cloete, State Veterinarian: Disease Control, Department of Agriculture, Forestry and Fisheries (DAFF).

- Author Chris van Blerk