



A pilot study on Avian Tuberculosis to determine whether further testing throughout the Province is necessary

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Avian TB is a contagious, chronic disease which affects a wide range of birds and mammals. All avian species are susceptible to infection to some degree, however the domestic chicken and sparrows are considered to be extremely susceptible.

Despite having a worldwide distribution, Avian Tuberculosis amongst commercial poultry farmers has declined considerably over the years due to advances in biosecurity measures and improved farming practices. However, under certain conditions, the traditional practice of keeping free ranging chickens is considered to be highly conducive to the spread of the disease.

The organism responsible for Avian TB is extremely resistant and has the ability to survive in the soil and environment for many years. This poses a major obstacle regarding its control and eradication. The organism is also capable of causing disease in humans which is highly resistant to treatment, as well as to many of the common disinfectants used today. This is of particular significance to patients with HIV/AIDS and compromised immunities.

Although the incidence of Avian TB in South Africa is considered to be low and has not been reported in any of the commercial flocks in South African provinces since an outbreak in Natal in 1925, poor record keeping, poor reporting and lack of testing in the rural sectors mean we do not know whether the disease is actually present or not.

Considering the diseases' potential to pose a significant threat to the poultry industry – coupled with its zoonotic implications - especially in the HIV patient, it would be of value to determine whether Avian TB is a disease we should be concerned about in the non commercial poultry sector of KwaZulu-Natal.

For these reasons, a qualitative pilot survey is being undertaken in the rural poultry sector of Richmond in the Umgungundlovu district of KwaZulu-Natal.

Since there are no official census figures for the rural poultry population of KwaZulu-Natal, a two-stage cluster sampling approach has been used.

The KZN province is divided into eleven Municipal districts. Umgungundlovu Municipal District (DC22), was selected due to the fact that it is considered to have the highest poultry population in KZN. (Stock Census figures obtained from the KZN Department of Agriculture and Rural Development: Veterinary Epidemiology section).

Out of the 8 local municipalities which make up Umgungundlovu, Richmond was selected for the pilot survey. This area fits the study best as it can be considered a high risk area since it meets the criteria which are considered to be highly conducive to the spread of Avian TB. These criteria include: areas of high human population densities; poor sanitation in areas; a free ranging poultry population with exposure to wild birds; and poultry which are kept for breeding or laying purposes. (Only 20.2% of the human population in Richmond Local municipality have access to piped water and less than a quarter of the population have access to proper sanitation with only 12.6% having access to a flush toilet.)

The entire area of Richmond is further divided into 7 wards. For this study, 3 wards were randomly selected. From here, a random geographic sampling method was applied. Using an aerial map, a grid was placed over the three selected wards and ten random grid blocks were chosen per ward. A suitable household was then selected from each of these grids. This amounted to 30 houses being selected for the study with a sample size of 150-300 birds.

All adult, free ranging chickens are suitable for the survey. The chickens are tested using the intradermal skin test method. On live birds, intradermal skin testing has been used in poultry for many decades in the diagnosis of Avian TB and is normally used as the test of choice to determine the prevalence of disease in a poultry flock.

The intradermal tuberculin test has an 80% accuracy and serves to identify birds infected with or sensitized to *M. avium*.



Intradermal Injecting

Birds are injected in the right wattle and then left to free range as normal. Forty eight hours later, they are examined for any signs of reaction at the injection site. Any reactions are measured and recorded. Each house is then provided with Newcastle Disease vaccine for their birds as well as a complimentary 2kg bag of chicken food in appreciation of their participation in the study.



Injection site on the wattle

The survey is currently running and should be completed in 2016.

The objectives of the study include conducting a qualitative survey on rural, free-ranging poultry occurring under conditions which are considered to be highly conducive to the spread of Avian TB; to conduct intradermal skin testing on Poultry to determine whether Avian

Tuberculosis is possibly present; to obtain supportive information by means of a questionnaire which is completed by individual owners; to create awareness of Avian Tuberculosis amongst the sampled poultry owners.

The outcome of the survey is to determine whether further testing for Avian TB throughout the province should be undertaken.



Rural chicken coop