

Nationwide study shows emerging leptospirosis strain

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Members of the Massey University Leptospirosis Research Group (left) Neville Haack, Dr Jackie Benschop, Dr Julie Collins-Emerson and Professor Cord Heuer. Credit: Massey University

Massey University researchers have found that a strain of leptospirosis

may be more frequent in New Zealand dairy herds than first thought, posing public health concerns for farmers, veterinarians and dairy workers.

The study was the first to explore the effect of long-term vaccination in a nationally representative sample. Two hundred [dairy herds](#) randomly selected from throughout New Zealand and 20 milking cattle were sampled [blood and urine] from each [herd](#) between December 2015 and March 2016.

The findings indicated that 97.6 per cent of [dairy](#) cows in 73.5 per cent of the herds did not shed *Leptospira*. However, 2.4 per cent of vaccinated cows were shedding from 26.5 per cent of herds. This shedding was predominately associated with a positive blood test to a strain (serovar Tarassovi), which has previously been rare and is therefore not currently controlled by vaccines.

Director of the EpiCentre Professor Cord Heuer says that until new vaccines become available, people in rural occupations need to be aware and take protective measures against leptospirosis.

"We can now be confident that vaccination is effective in dairy herds, but the Tarassovi strain needs our immediate attention. 2.4 per cent of over five million cows across the country is 120,000 cows – people working with dairy herds are exposed everyday – a vet doing 120 pregnancy tests, a farmhand milking twice a day, even people's families are at risk of exposure. The fact that the new strain is associated with most of the cases of shedding is evidence that the vaccine works for exposure to the predominant strains Hardjobovis, Pomona and Copenhageni.

"Therefore, vaccination programmes need to continue to protect herds, vets and dairy workers from the vicious disease, which means regular

programmes with calves receiving first shots at three to six months with booster shots throughout their lives to ensure the best protection," says Professor Heuer.

Dr Julie Collins-Emerson, molecular biologist and leptospirologist, adds "We can't say it enough – the emergence of new strains doesn't mean you should abandon your vaccination programmes against the regular strains as they are still just as dangerous as once they were. Our results reinforce the importance of a multi-faceted approach to this complex disease - controlling rodents and wildlife, good personal hygiene and awareness of risks both on and off the farm."

The list of recommendations is available [here](#).

Dean of Veterinary Sciences Associate Professor Jenny Weston advises, "Farmers must ensure that all cattle on the farm are vaccinated and the vaccine is administered at the right time(s) of year in conjunction with veterinary advice. Other risk management approaches such as rodent control and effluent management need to be included given the risk from other strains of the bacteria, which aren't in the current vaccines. The development of new vaccines is not going to be quick or easy."

"We are using the results of this study to update best practice guidelines for farmers, veterinarians and industry stakeholders in order to reduce infection in animals and people working on farms and in the dairy industry. They come with a list of recommendations for humans coming into contact with herds."

The 'Leptospirosis Dairy Study 2016' from Massey's Farmer Leptospirosis Action Group Dairy (FLAG-Dairy) the first to explore the effect of long-term vaccination in a nationally representative sample of herds by looking at vaccine use and efficacy. It includes representatives from Massey University, the New Zealand Veterinary Association, Rural

Women New Zealand and DairyNZ. The group made the study results available to participating farmers, vets, and stakeholders of industries, government and the public.

Funding has been provided by the Sustainable Farming Fund of the Ministry for Primary Industries, AgMardt, and industry and stakeholder groups.

The study was prompted by a small pilot study by Professor Peter Wilson of Massey in 2010-11 that found three per cent of cows properly vaccinated against the disease were shedding [releasing the bacteria via urine]. These results were not representative of the entire New Zealand dairy population - prompting a more in-depth study into the effectiveness of vaccination on farms.

The FLAG-Dairy team at Massey University is represented by chair of the group, Professor Heuer and PhD candidate Yuni Yupiana, who coordinated the collection and testing. The work was done in conjunction with 92 vets from around the country who collected blood and urine samples from stock – in order to be collated at Massey University.

Professor Heuer says the results would not have been possible without many people. "Thank you to the many farmers, veterinarians, veterinary technicians and clinic staff who have assisted us with this."

Provided by Massey University

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