

# A new approach to monitoring animal health and biosecurity risk in Australia

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## Abstract

A new surveillance approach is to be piloted in Australia over the next three years as an adjunct to existing programmes. The approach involves detailed studies of specific industry sectors, with the intention that the studies be repeated periodically to assess trends. Each study will involve producer questionnaires and disease surveys in animals, and will focus on collecting data to inform risk analysis, assist industry to improve productivity, and provide data to support Australia's export trade in animals and animal products.

**Keywords:** *structured surveillance, risk factors, partnership approach*

## Introduction

There has been much discussion on animal health surveillance in Australia in recent years (1-4). Currently there are a number of ongoing initiatives aimed at improving surveillance. The first is the National Animal Health Surveillance and Diagnostics Business Plan 2016–2019, which identifies four high level goals for surveillance at the national level: detect emerging and emergency diseases early; support claims of disease freedom; assist in the management of nationally significant endemic diseases; and identify factors or events that influence biosecurity risks (5). The second is the Agricultural Competitiveness White Paper, an Australian Government policy initiative with a strong focus on market access and improving profitability for producers (6). It commits funding over a four year period to June 2019, part of which is to improve biosecurity surveillance in Australia. This provides an opportunity to trial new ideas to address some ongoing surveillance problems. One such project is the Australian Livestock Industry Health Studies Pilot. It is loosely based on the National Animal Health Monitoring System from the USA (7), in which specific industry sectors are studied in detail at intervals using a combination of questionnaires and disease surveys. There is significant scope for the approach to be adapted for Australia's needs. It provides an opportunity to generate data to support our trade and international animal health status, including freedom from specific diseases. It also provides an opportunity to collect data on farm level risk factors, which can be used in risk assessment and planning or evaluating extension programmes. Most importantly, by using a collaborative approach in which studies are planned in partnership between government and industry, there is the opportunity to strengthen working relationships, and initiate contact with producers who would not ordinarily interact with government animal health services.

## Materials and methods

The project is intended to be collaborative and foster partnerships, so most of the initial work has been consultation with the various stakeholders. Within the Department of Agriculture and Water Resources, there has been broad consultation to determine specific current information needs and any risks associated with the proposed surveillance approach. In Australia, states and territories are responsible for animal health, including surveillance, within their borders. Working with states and territories is essential to ensure that the approach provides benefits and fits within the existing frameworks in each jurisdiction. State and territory government veterinarians can also help to identify regional differences in livestock production that may impact on the way the study is carried out or the information required. An implementation group was formed, made up of veterinarians from several states and territories, the Australian Government and Animal Health Australia (AHA), a public-private partnership between government and industry that operates to protect animal health and the sustainability of Australia's livestock industries. This group has so far agreed on some generic objectives that would apply to any industry study, and drafted a questionnaire that could be adapted for any specific industry. Support and cooperation from industry is also essential for this project. Industry peak bodies were approached with information about the proposed approach, and volunteer industry sectors were sought to participate in the pilot project. Representatives from the volunteer industries will play an important part in planning and conducting the study for their industry.

Broader consultation is also required, so some processes for seeking wider input were developed. In the first instance, consultation will occur through the National Veterinary Epidemiology and Surveillance Group, a group composed of surveillance managers or senior veterinary epidemiologists from each of the state and territory biosecurity agencies, the Australian government and AHA. Further consultation will occur through Australia's Animal Health Committee – comprised of the Australian, state and territory chief veterinary officers, and representatives from the Australian Government Department of Agriculture and Water Resources, the Australian Government Department of the Environment and Energy, and the Australian Animal Health Laboratory of the Commonwealth Scientific and Industrial Research Organisation (CSIRO-AAHL), with several observers—and the AHA Industry Forum, comprised of representatives from the livestock peak industry bodies.

Each industry study will include a producer questionnaire or questionnaires and a national disease survey for a small number of diseases that have been selected for their importance for trade or productivity. For government, the important outcomes will be data to support trade and information about farm level biosecurity risks, which may inform future risk mitigation or extension programmes. For industry, there is the opportunity to collect information on the impacts of disease on productivity and profitability, which may facilitate industry-led programmes to improve animal health and productivity. For participating producers, we expect to provide feedback on how their information compared with other producers, such that they are able to assess their practices against others. The results will be collated and analysed nationally.

## Results

The outcome of the early work to pilot this new approach is a framework for planning and consulting on specific industry studies. The objectives for each industry study include:

- Collect baseline information on herd/ flock size, structure and productivity to provide industry benchmarks and inform risk analysis.
- Determine the current producer management practices, biosecurity practices and emergency animal disease knowledge, to inform risk assessment and allow the success of ongoing and future extension programmes to be measured.
- Determine the background level of particular disease syndromes, allowing detection of future changes that may indicate novel agents or changing epidemiology of endemic diseases.
- Determine the prevalence or seroprevalence of selected infectious diseases of importance to government or industry, or provide evidence to support their absence from the population.
- Investigate any links between disease syndromes or agents and productivity/ profitability to identify the syndromes that currently have the most impact on industry.
- Investigate any links between management or biosecurity practices and disease syndromes or agents to identify which behaviours could be targeted by extension programmes to provide the most benefit.
- Determine the current usage of veterinary services (government and private), and identify any barriers to access.

These objectives lead to some obvious themes for a questionnaire. However, despite the commonality of information required between different industries, there are also significant differences between industries, such that each study needs to be tailored to the industry of interest. Additional objectives might be introduced, or some might be removed if there is recent work from that industry that is relevant. There may also be differences in how questionnaires are delivered or samples acquired between the different industries, based on the most efficient methods for each sector.

The true results will emerge as the specific industry studies are planned and carried out, as each will provide opportunities to assess the benefits and problems associated with this new approach. Several industries will be studied as part of the pilot project, which will help make an overall assessment as to whether the new approach is a valuable addition to Australia's animal health system.

## Discussion

It is rare that a new surveillance programme is developed. This pilot project will test a new approach, based on an existing programme from another country, but adapted to Australia's specific needs. The novel approach presents some significant opportunities, but also some potential risks and challenges. Because of Australia's position as an exporter of animal products, there is a risk that surveys for exotic diseases could have adverse consequences for trade. A small number of false positive results could be expected in any survey using an imperfect test, but could be interpreted in unexpected ways by trading partners. This risk can be minimised by being open about the expected false positive results and developing protocols for follow up and further investigation. Another significant challenge will be ensuring adequate participation from individual producers, as low participation rates will affect the validity of the results and thus the value of the approach. Support from the peak industry body for each participating industry and a strong communication strategy will help to ensure maximal participation rates.

Despite these potential problems, the Australian Livestock Industry Health Studies Pilot has the potential to provide data that are not currently available. This data may help to strengthen Australia's animal health claims, help to better understand risk factors at the farm level, and strengthen ties with industry and producers.

## Acknowledgements

We gratefully acknowledge the ongoing contributions of colleagues from the state and territory biosecurity agencies, peak industry bodies and AHA to the planning of this project.

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