

16

The role of animal management officers in animal disease surveillance

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Abstract

Australia as a continental island has, in the past, had a geographical advantage in maintaining a disease free status for many serious diseases of animals and humans. This advantage is changing with the appearance of new (emerging) diseases and changing disease prevalence patterns. As a consequence of changing social, demographic and climatic factors, Queensland in particular has experienced the establishment of Hendra virus, Australian Bat Lyssavirus, Japanese Encephalitis and other diseases of animals and humans. This is a national issue, not just a Queensland one and Animal Management Officers in every Local Authority area of Australia are a key element in terms of awareness and response to this threat. This paper will examine the role of the Animal Management Officers in watching for and reporting on these diseases as part of the national surveillance system. This paper will also provide some self-awareness training necessary for safe working in an environment of serious disease threats to these Local Government officers.

Introduction

The ability to identify, document and analyse the distribution and prevalence of animal diseases is vital to Australia and Queensland's trade in animals and animal products and in the case of diseases that can be transmitted from animals to humans, accurate information is essential for food safety and public health planning and responses. Australia has many mechanisms to collect and record data on animal disease. Some mechanisms are the responsibility of Federal and State governments and operate as legal or collaborative programs involving industry and veterinary professionals. There is however a need, and provision for, public inclusion in the surveillance systems. This paper will discuss the role of Animal Management Officers in the surveillance of animal diseases and the process of identifying and reporting suspected significant diseases.

The global community

Animal disease control in a global sense is coordinated by the World Organisation for Animal Health or OIE as it is known and referred to by animal health professionals. OIE is an abbreviation of the original organisation the "Office des International Epizooties" formed in 1924 by a collaborative agreement between twenty-eight (28) European States for the purpose of controlling rinderpest outbreaks in Europe. Today there are 176 member countries of OIE, each voluntarily participating in the global reporting and awareness of animal diseases and contributing to the control of outbreaks and the movement of animal and animal products between countries on agreed sanitary protocols. It is interesting that some 150 years after the establishment of the first veterinary school in Lyon France and 87 years after the OIE agreement for collaboration that rinderpest was declared globally eradicated in 2011.

Australia, specifically the federal Department of Agriculture Fisheries and Forestry (DAFF) through the Office of the Chief Veterinary Officer, has a formal obligation to report to OIE in a timely and transparent way the animal disease situation of the nation. This includes incidents of disease that have not yet been identified but are known to be the cause of significant livestock loss or public health concern.

It must be noted that the OIE reporting program contains no requirement to control or eliminate animal diseases by the reporting country. Policy or legislation for the control of animal diseases is a national matter and while cooperative reporting agreements exist there is no similar obligation to control many diseases. The global or regional control or eradication of animal diseases remains a matter for collaboration and cooperation between nations.

Animal health in Australia

Australia as a federation of States operates in a similar manner. There is no overriding national disease control legislation, unless it is developed and agreed by collaboration between States and Territories. Each State has individual legislation

that in effect supports the Australian reporting requirement to OIE. In all cases this is achieved by the declaration of notifiable diseases and a legal requirement for persons suspecting the existence of any of these diseases to report this suspicion to the relevant state authority.

In Queensland the notifiable disease list includes all the major exotic diseases of social or economic significance where the policy is for eradication if incursion is detected or has public health significance. The legislation also specifies a person must immediately report unusual mortality (death) or excessive numbers of lame, drooling or nervous signs including unusual or unfamiliar signs of disease in animal groups. This last group of signs or symptoms is intended to develop reporting of new or emerging diseases as well as provide a guide for livestock owners and others to understand what could be a disease requiring reporting.

Reports from the public are encouraged and there are no charges for investigations into these reports if they are undertaken by government officers. It is a requirement for all persons to report any suspicious signs to a government animal health officer within 24 hours of observing the affected animals

The emerging disease phenomenon

In recent times a number of newly described diseases have emerged to challenge both public health and animal health professionals. Diseases such as SARS, Nipah virus, Hendra virus, West Nile virus, Marburg virus, Australian Bat Lyssavirus and Avian Influenza to name just a few have captured the attention of health authorities and media with dramatic and often fatal appearance around the globe.

The facts behind this apparent surge in serious diseases often involving an animal host remain the subject of debate. It is possible that the diseases have always been circulating in the animal host (often it is a wildlife host) until there is a change in the relationship with humans or other species. The driver of change can often be related to a change in the environment. Seasonal conditions can either increase the number and persistence of insect vectors or concentrate the animal hosts in reduced areas of resources such as forests or water supplies.

Whatever the reasons for natural change it is certain that the human population is directly responsible for part of the observed increase in newly described diseases. The world population is projected to grow from 6.1 billion in 2000 to almost 9 billion in 2050. This growth will happen mostly in developing countries and will be accompanied by a proportionally higher demand for food than presently produced. It is certain that this demand for food will

increase the competition for resources and place a greater level of contact between currently isolated ecosystems and human activity. It is in this scenario that new diseases will be observed and described and challenge the ability of health systems to control them.

Animal management officers role in disease surveillance

The daily work of an Animal Management Officer includes exposure to wild, orphan, un-owned and often diseased animals that have had the opportunity to roam both the urban and peri-urban environment. This group of animals is at greatest risk of contact with wildlife, potentially are undernourished and therefore likely to be susceptible to parasitic and other infections.

It is natural that many of the animals encountered will not have diseases other than lack of nutrition and care. It is a skill that comes with experience to recognise the unusual, the overfriendly dog, the dull horse or apparently tame wildlife animal could all be behaving in this manner due to the effects of disease.

The obvious question is "Which one should be reported?" Unfortunately there is no easy answer but as with most serious situations it is better to be safe than sorry after the event.

It would be a good policy for any animal that bite or scratched an officer while being captured to be submitted where possible for veterinary examination if alive or for autopsy if the animal is destroyed after capture.

In all cases of flying fox or micro-bat capture where the animal is thought to be paralysed the person handling the animal must be vaccinated against Rabies and if the handler is bitten or scratched the animal must be submitted to the government veterinary laboratory for examination and testing. Submission of animals to government laboratories is sufficient for notification of a suspect disease.

All other animals that exhibit unusual signs should also be reported. This would include overly excitable animals that do not regain normal behaviour when left alone or dull animals that cannot be roused. Animals with diarrhoea or incontinence or noticeable skin wounds and fly strike should also be reported.

When reporting a suspect notifiable disease, it is essential to record the location of the animal when it was first observed and the current location. Also record the number and species of any other animals that are or were in contact with the diseased animal or animals. The contact details for the owners or people who may have had contact is particularly useful information. Recording as much information about the condition of the animal and any other observations from members of the public are useful.

Recommended actions are for immediate vector control and consider the removal of pigs from proximity to humans. A vaccination is available and recommended for prolonged periods of exposure and residence in the Torres Strait. Use of topical preparations to repel or deter mosquitoes is appropriate.

Caution should be exercised and follow up medical or veterinary monitoring if persons report unusual influenza symptoms in early summer or horses or pigs are noticed with nervous or reproductive signs.

Leptospirosis is a bacterial disease that has been known for many years. Rats in cane paddocks were traditionally associated with human infections known as Weil's disease. The causative bacteria can persist in moist soils and surface water. Entry to the body is either through breaks in the skin of feet or ingestion or contact with eyes or other membranes. In north Queensland a large number of native marsupials and rodents as well as pigs, cattle and dogs are known to be carriers of the disease.

Significant signs in most host animals are limited or unapparent to a casual observer. Humans can have no symptoms or influenza like illness with muscle pain that may progress to meningitis. Leptospirosis is a common and significant disease of outdoor workplaces where contamination is likely. Vaccination is not considered effective for humans due to the strain differences in the bacteria and the short duration of protection.

Recommended actions relate to the minimisation of human infections. Leptospirosis is not notifiable for animal health. A person diagnosed with leptospirosis will have their case notified to the human health agency, if the infection is work related there may be subsequent enquiries. Risk of infection is minimised by wearing of waterproof shoes in wet conditions, covering skin breaks with waterproof dressings and avoiding contamination of membranes by urine or surface water.

Caution should be exercised when entering rodent infested areas or when urine splash is possible.

The reporting process

In Queensland there are two phone numbers available for reporting of suspect notifiable diseases. Biosecurity Queensland maintains 132523 as a primary contact number during office hours. After hours the national emergency disease reporting hotline 1800 679 888 is used to report suspect disease incidents.

There is no issue with reporting suspect disease alerts if they are subsequently found to be non notifiable. The approach used is to ensure all suspects are reported and any chance of disease can be eliminated by animal health professionals.

Reporting of negative data is still valuable as it builds a picture of where observations are made of suspect diseases, areas that have no reports require specific surveys to ensure the health status of Australian animals is guaranteed and animal health food safety and public health are not under a disease cloud.

Animal Management Officers who are often the only people to see many of the remote and possibly likely challenged animals have a valued role in reporting to protect Australia's animal health status.

Disease awareness will also assist in the workplace health and safety risk assessment and safe work practices.

BIOGRAPHY

Dr Robert Hedlefs

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Dr Hedlefs is a long term resident of north Queensland with a keen interest in the beef cattle industry and the management of endemic and exotic diseases in tropical regions.

Following graduation from the University of Queensland Dr Hedlefs embarked upon mixed dairy practice in south west Victoria. After two years he returned to Townsville to a mainly equine practice before joining Queensland Department of Primary Industries in 1984. As a government veterinarian he became involved in the tuberculosis eradication program but with the growth in live export during this period sparked a continuing interest in trans boundary animal disease management.

Dr Hedlefs has been involved in beef and dairy cattle export programs in Japan, Thailand, Indonesia, Fiji and Papua New Guinea.

Currently Dr Hedlefs leads the ACIAR funded project "Animal Health surveillance for PNG" and the AusAID funded project "Food animal biosecurity networks for the Pacific". As the Associate Professor of State Veterinary Medicine he delivers the Public Veterinary Medicine component of the undergraduate veterinary degree at James Cook University.



What are the risks?

There are four diseases that present a major risk to Animal Management Officers in Queensland specifically northern Queensland. They are Hendra virus, Australian Bat Lyssavirus, Japanese Encephalitis and Leptospirosis. Each of these diseases will be discussed as well as the risks to humans and prevention strategies. Leptospirosis is notifiable to human health and the remainder are notifiable diseases for animal health.

In addition a generic risk exists with persons handling animals particularly cattle, sheep, goats, native marsupials and rodents and cats and dogs particularly at birthing for transmission of Q Fever. This disease can have serious work limiting effects on humans and as there is an effective vaccine and sound policy for vaccination of at risk people it is not included in the discussion of risks.

Hendra virus was originally recorded in the Brisbane suburb of Hendra in 1994. Subsequently it is now known that the disease infected a human in 1993 at Mackay. To date there is an increasing number of incidents involving an area from Cairns to mid coastal New South Wales and onto the western downs at Chinchilla. This virus is known to be fatal to humans and no vaccination exists to mitigate the effects of infection. Knowledge of the disease is limited but it is certain the disease is normally circulating in the flying fox population of Australia and Papua New Guinea. The exact mechanism by which horses become infected is unknown. It seems certain that humans become infected as a result of contact with discharges from infected horses.

Significant signs in horses are the likely presence of bats in the area; the horse is kept in an open paddock and is likely to show any combination of fever, nervous changes or bloody discharges. The onset is usually sudden and there may be a history of another horse dying suddenly in the paddock.

Recommended actions include advising any other people to limit contact with the horse or any objects contaminated by the horse including rugs, feed bins or halters. If there has been contact with discharges, wash with copious running water and soap and contact a medical practitioner. Contact the government animal health officer to report your suspicions and ensure other persons and horses are not able to contact the suspect animal. Do not attempt to capture, transport or treat the horse.

Caution should also be exercised when approaching cats and dogs on premises where suspect horses as it is possible the disease may spread to them and perhaps from them to humans.

Australian Bat Lyssavirus has been reported in Australia since 1996. It is known to have caused the death of two Queensland bat carers. ABL is a rabies like virus that circulates in flying foxes and some species of insectivorous bats including the yellow bellied sheath tail bat. Human infections follow a bite or scratch from an infected bat. Experience to date indicates the likely infection of dogs or cats is very low to this virus.

Significant signs in bats include unusual behaviour such as swooping on people or being paralysed and unable to climb trees. In some cases the bat may be trapped on fences or other material as a result of partial paralysis.

Recommended actions include only vaccinated persons should attempt to capture bats that are apparently unable to fly. If the bat has bitten or scratched a person or domestic animal it should be submitted to the animal health laboratory for investigation of the risk of ABL. A vaccine is available that does provide protection for humans but the level of protection must be regularly monitored and revaccination is usually required over a life time. If a person is exposed through a bite or scratch the wound should be immediately washed with running water and soap and medical assistance and advice obtained.

Caution should also be exercised when presented with paralysis in dogs or cats particularly if there is a history of involvement with a paralysed or abnormally behaving bat. Care should be taken not to be contaminated with urine or saliva and the animal taken for veterinary examination.

Japanese encephalitis is a viral infection with reservoir hosts in wild birds and pigs. The disease occurs regularly in Papua New Guinea and sporadically in the Torres Strait and Cape York. It is spread between animals and humans by mosquitoes. Many people and animals do not develop severe signs of the disease following infection but in cases a severe encephalitis and death can occur in pigs and humans. Pigs are multiplier hosts, building the number of infected mosquitoes and increasing the risk of human infection. Five people from far north Queensland died of this disease in 1994.

Significant signs of infection are difficult to describe in animals, horses may show evidence of encephalitis with dull or excitable stages, head pressing and death. Pigs may display abortion. People may report influenza like illness prior to seizures and collapse. Factors to consider are the presence of hosts particularly pigs, presence of the vector mosquito and the opportunity for infection to occur when no separation between species exists or mosquito control is not practiced.