THE NEW SOUTH WALES RESPONSE TO THE 2007 EQUINE INFLUENZA OUTBREAK IN EASTERN AUSTRALIA

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Abstract

In August 2007, an outbreak of equine influenza (EI) occurred in New South Wales and Queensland. EI was exotic to Australia. Horse racing authorities were responsible for the planning and implementation of control and eradication plans for their codes within the framework established by the Commonwealth and State governments. This paper reports the response of the New South Wales Thoroughbred and harness racing industries to the EI crisis.

Introduction

Before August 2007, Australia was free of EI, due largely to stringent quarantine protocols. In order to be permitted to enter Australia, horses are required to have been recently vaccinated against EI, to have undergone pre-entry quarantine and to be subject to a 14 day period of post arrival quarantine. These conditions do not apply to horses imported from New Zealand, which is EI free. However, Australia's disease-free status has been put under increasing threat by the movement of horses into the country, particularly for the purpose of breeding. In the 2006/7 breeding season, 64 Thoroughbred stallions entered Australia, representing 7.7% of the total Thoroughbred stallion pool in Australia. These shuttle stallions covered 20.8% of all mares served. In comparison, during the 1990/1 season, 4 shuttle stallions covered 0.8% of the Australian mare population (ARB 2007). In the 12 year period 1995/6 – 2006/7, a total of 12,343 Thoroughbreds were imported into Australia, ranging from 1,205 in the 1998/9 season to 860 in 2003/4. Over this period, 21% of imports originated in countries which are not EI – free.

From 3rd to 8th August 2007, 6 consignments of stallions entered Australia and were quarantined at Eastern Creek in Sydney. Two consignments were from the United States, one from the United Kingdom, 2 from Ireland and one from Japan. Between 17th and 20th August several stallions began showing clinical signs that could have been consistent with a diagnosis of EI. On 23rd August, a diagnosis of EI was confirmed in 5 of the horses. On 22nd August horses beyond the confines of the quarantine station were recognised as showing clinical signs consistent with EI, and were formally diagnosed with the disease on the evening of 24th August. Initial cases were confined to the leisure and eventing horse industry. On 29th August, 8 Thoroughbreds stabled at Randwick Racecourse tested positive to EI. The infection reached other racing centres in the state over the following weeks.

The disease came at a critical time for the racing industries with the New South Wales Spring Carnival of Thoroughbred racing scheduled for September – early October, and the year's major harness racing carnival due in November. It was also a critical time for the breeding industry. In New South Wales, foaling commences on 1st August, and breeding in early September. The relatively mild weather at the time may have helped the disease to spread.

Management policy

Policies for the management of an outbreak of EI were in place in August 2007. Principal amongst these was the co-ordinated national response specified in the AUSVETPLAN (AHA, 2007). The AUSVETPLAN covers all exotic diseases that could enter Australia, and is managed by Animal Health Australia, a not-for-profit public company established by the Australian, state and territory governments and major national livestock industry organisations. In the face of an exotic disease outbreak, the AUSVETPLAN takes precedence as the approach to be used to manage the outbreak.

The funding framework within which control activities are conducted is specified in the Emergency Animal Disease Response Agreement (EADRA). The EADRA provides funding for the initial response to a disease outbreak, with costs shared between the Commonwealth, State and Territory governments and major livestock industry organisations (AHA 2007). Under the agreement, EI is classified as a Category 4 disease. Funding for the control and eradication of Category 4 diseases is provided by the industry(s) concerned (80%) and Governments (20%), with costs under any agreement capped at 1 per cent of the gross value of production (GVP) unless an alternative upper limit is agreed. EI is classified as a Category 4 disease because its primary impact is a loss of production, and the main beneficiary of a successful emergency response is the horse industry.

AUSVETPLAN specifies that the response to an outbreak should aim at control and eradication through stringent quarantine and movement controls; decontamination and disinfection procedures; tracing and surveillance to determine the source and extent of infection; and awareness campaigns to encourage cooperation by the industry and the community (AHA, 2007). Vaccination is not considered to be a first line response if the outbreak is detected early and can be confidently contained by effective movement controls. Only if the disease is widespread when detected; or significant numbers of horses are at immediate risk; or initial control methods have failed does vaccination become a first line approach to control.

It was within this regulatory framework specifying disease control strategies and cost structures that the racing industry was required to respond to the EI outbreak.

The management structure is illustrated in Figure 1.

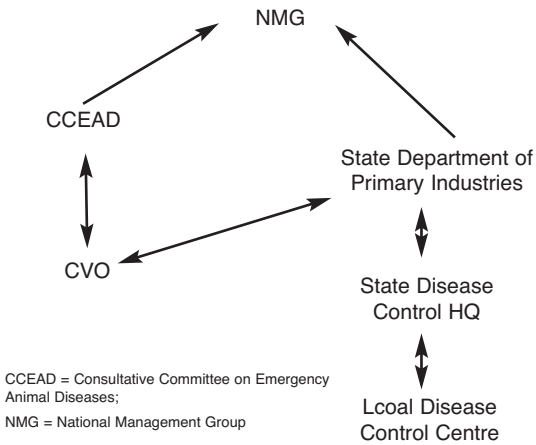

Fig 1: Management model for an exotic disease outbreak modified from AUSVETPLAN (AHA, 2007).

Initial response

Consistent with AUSVETPLAN (AHA, 2007), an order prohibiting the movement of horses throughout the state of New South Wales was imposed on the morning of 25th August. All horse racing meetings were cancelled throughout the country. By 1st September it had become apparent that the infection was limited to parts of New South Wales and Queensland, and racing resumed in other states on that day.

In the early weeks of the outbreak, there was a general agreement regarding the priority issues that needed to be addressed. Paramount was the belief that the Victorian Spring Carnival, including the Melbourne Cup, needed to go ahead at all costs, and that if this was to occur, Victoria needed to remain EI free. The basis for this view was the fact that the Carnival generates very significant betting turnover on Totalisators in all states. A loss of this turnover would result in significant decreases in prize money Australia-wide when racing recommenced. Within New South Wales, the second goal was the resumption of limited racing as soon as possible. Subsequently, the resumption of breeding activities during the key months of September – November became another priority issue.

Rules

Australian Rule of Racing AR64K provided the framework within which the response to EI was managed.

AR64K

1) The Australian Racing Board may, by order in writing, declare an infectious or contagious animal disease or condition to be a notifiable disease or condition for the purposes of this Rule.
2) A person who owns or is in charge of, or has in his possession or control, a horse which the person suspects or should reasonably suspect is infected with a notifiable disease or condition, and who does not, as soon as possible after he should have suspected or became aware that the horse is infected, report the fact to the Principal Racing Authority in that State or Territory by the quickest means of communication available to the person is guilty of an offence.

3) A person who owns or is in charge of, or has in his possession or control, a horse which the person suspects or shall reasonably suspect is infected with notifiable disease or condition must as far as practicable keep that horse separate from other horses or animals not so infected. A person who contravenes this subrule is guilty of an offence.
4) If they reasonably suspect any premises, place or area to be contaminated with a notifiable disease or condition, the Stewards may by order in writing declare it to be an infected place. Such written notice of an order declaring any premises, place or area to be an infected place must be given to the owner or person in charge or in apparent control of the premises, place or area to which the order relates.
5) If they reasonably suspect any vehicle to be contaminated with a notifiable disease or condition, the Stewards may by order in writing declare it to be an infected vehicle. Such written notice of an order declaring a vehicle to be an infected vehicle must be given to the owner or person in charge or in apparent control of the vehicle to which the order relates.
6) Any person (other than a person expressly authorised to do so by the Stewards) who brings, moves, takes or allows any person to bring, move or take any animal, fodder or fitting into, within or out of any such premises, place, area or vehicle, declared under subrules (4) or (5), or who causes, permits or assists any vehicle to enter or leave any such premises, place or area is guilty of an offence.
7) Without limiting their powers, the Stewards may attach conditions to an authorisation referred to in subrule (6) including conditions that the animal, fodder, fitting or vehicle to which the authorisation relates - must first be disinfected to the satisfaction of the Stewards and in a manner specified by the Stewards before leaving or being taken out of the infected place or infected vehicle; and must not go or be brought to any other premises or place where any specified animals, fodder or fittings are located.

7a) Where a declaration has been made under subrule (1), the Stewards may give any direction or order with respect to bio security precautions that shall be taken by any person on licensed premises, or in handling or riding racehorses (Racing New South Wales, 2008).

This was supported by Local Rule 15.

LR 15. Where a declaration has been made under AR 64K(1), the Stewards shall have the function of taking any measures which in their opinion are necessary for the purpose of containing or eradicating the disease or condition which is the subject of the declaration including but not limited to the following powers to:

a) require persons to implement biosecurity precautions to be taken on any racecourse, training centre, registered stable premises and/or any other premises where race horses are located or trained;
b) require persons to implement biosecurity precautions to be taken in the care, control, supervision, transport, stabling, handling, riding or training of racehorses and any other horses located on the same premises as racehorses or likely to have contact with such racehorses;
c) require persons to vaccinate or comply with the vaccination of any racehorse stabled or located on the premises of any racecourse or any registered stable, or trained or controlled by a licensed person, or that may be training or racing on the premises of a racecourse or located at registered stable premises at any future time;
d) require persons to vaccinate or comply with the vaccination of any other horse located on the same premises or nearby premises, or likely to have contact with racehorses referred to in subsection (c);
e) restrict or control the access of any person, vehicle or service to any racecourse, training centre or registered stable premises;
f) restrict or control access by any unvaccinated horse to any racecourse, training centre or registered stable premises.

For the purpose of this rule only, a racehorse shall mean all Thoroughbred horses of whatever age that are registered or are capable of being registered (Racing New South Wales, 2008).

AR64K7(A) was invoked to enforce biosecurity procedures on 29th August. Stewards directed that all trainers, jockeys, track riders, stablehands, veterinarians, farriers, chiropractors, horse dentists or others providing a service to the racing or other horse industries were prohibited from working at more than one training or stabling centre.

Diagnosis of EI

The diagnostic tools used in the outbreak have been reported by Kirkland and Jeggo (2008). At the time of the outbreak diagnostic testing was the responsibility of the Australian Animal Health

Laboratory, located in Victoria, which used virus isolation and haemagglutination. Reverse transcriptase polymerase chain reaction assays (qRT-PCR) were used for amplification and identification of specific viral RNA, and serological diagnosis was carried out using a haemagglutination inhibition (HI) test or (bELISA). Subsequently, local testing became available at facilities operated by State Departments of Primary Industries.

Throughout the course of the outbreak, qRT-PCR was used to detect viral RNA and bELISA and HI were used to detect antibodies. Infection with EI was was confirmed by detection of viral RNA in nasal swabs using the qRT-PCR and by testing of serum samples using bELISA (Kirkland and Jeggo 2008).

Controlling the spread of EI

With the outbreak of EI, trainers were required to implement biosecurity measures at their stables and at trackwork. These measures included the provision of footbaths and hand washing facilities at the stable entrance as well as the twice daily recording of the temperatures of all horses.

Trainers and their staff were restricted to entering only their own premises and prohibited from having contact with any horses other than their own. They were required to shower and wash their hair before work, and to wear clean clothes to work. Footbaths filled with recommended disinfectants were required at the entrance to each stable premises. Hands and footwear were disinfected upon entering and leaving the premises. The temperatures of all horses in the stable were taken twice daily and recorded. Similar restrictions applied to riders who were permitted to ride at one training centre only on any given day. All gear was disinfected before and after use. Riders who had ridden at a venue were not permitted to ride at another venue for a period of 24 h.

Closed race meetings

In New South Wales, in order to support the industry and its participants, a proposal to conduct 'closed' race meetings was developed. The principal feature of these meetings was the fact they were effectively quarantined (hence 'closed'). Only people essential to the conduct of the meeting were permitted to attend, and the meetings were restricted to horses that were stabled within the local area. Strict biosecurity and decontamination procedures were in place to minimise the risk of infection. Race meetings were approved by the state's Chief Veterinary Officer. The controlling bodies, Racing New South Wales and the Greyhound and Harness Racing Regulatory Authority, were responsible for biosecurity, and were required to submit a report on the compliance and success of biosecurity to the New South Wales Department of Primary Industries. The first closed race meeting was held at Warwick Farm on 8th September followed by a closed meeting at Newcastle on 15th September. In the Thoroughbred industry, biosecurity is covered by rule AR64K.

In order to participate in the closed meetings, trainers were required to sign a declaration stating that they had recorded the rectal temperatures of all horses in their stable twice daily from the time that they were directed to do so by Stewards. Trainers were required to produce the records on demand. All horses competing at the meeting were subject to a nasal swab taken between 72 h and 48 h prior to the meeting.

Zoning

From 21st September affected areas in New South Wales and Queensland were zoned according to the risk of infection. The system facilitated the limited movement of horses allowing limited racing and breeding activity to occur. 'Green' zones were areas that were not infected. 'Amber' zones were buffer areas around infected areas. 'Red' zones were areas of at least 10 km around infected premises. The 'Purple' zone was a special restricted area which was largely infected.

Horses were allowed to move freely within the Green zone, and events were allowed to be staged within it. Within the Amber zone, movements were permitted for racing and breeding. Horses were allowed to enter the Purple zone and to move within it, but were unable to leave. The Purple zone included most of the major studs in the Hunter Valley of New South Wales, and its establishment therefore permitted breeding to continue. Events were not staged within the Purple zone because not all horses in the zone had been infected. The strictest prohibitions on movement existed in the Red zone. Irrespective of zoning, an authority to move any horse within the State was required until 30th June 2008. This 'travelling horse statement' included details of the horses being moved, the vehicle in which they were moved, and their origin and destination.

Vaccination

Although the disease continued to spread during the first days of September, the National Management Group (NMG) of AHA overseeing

the control and eradication programme 're-affirmed its view that equine influenza can be contained with a view to eradication, with current control measures remaining effective' on 13th September. Consequently, vaccination was not considered a necessary component of the eradication strategy. Furthermore, no vaccine supplies were available, and there was no existing approval to import vaccine into Australia. However, there was considerable pressure from a number of sectors of the horse industry for the introduction of vaccination, and as a result on 27th September approval to import live canary pox recombinant EI vaccine was received from the Commonwealth Government. The use of the vaccine was governed by State and Commonwealth legislation. Due to the recombinant nature of the vaccine, administration of the vaccine was restricted to registered veterinarians who had received special approval from the Chief Veterinary Officer in their State. Approval was dependent on the veterinarian having completed special training. The general strategy for the use of the vaccine was to establish buffer zones around heavily infected areas. The vaccination approval also included 'high value, at risk horse populations outside the buffer zones' where 'it can be demonstrated that the occurrence of the disease will have a major impact on the horse industry, the community, and the broader economy'. This decision created the opportunity for vaccination of racing stock in New South Wales, Queensland and Victoria. The NMG decision stated that 'the immediate priority during the coming 7 days is to provide a total of 9,240 vaccine doses for both Queensland and New South Wales (for use in buffer zones and to protect high value horses) along with 4,100 for Victoria to commence protection of the 7,100 horses associated with the Victorian Spring Racing Carnival'.

The controlling bodies were required to produce evidence that:

- the vaccine would be used within an identifiable sector of horses;
- they would be responsible for all aspects of vaccine holding and that they could audit, identify and track all vaccinated horses;
- they had the rules, authority and capability to control the activity of horses and people, the application of penalties and sanctions, and the system to trace horses and people moving to and from events or training locations;
- biosecurity measures would be applied on the movement of horses and people within each location to prevent the potential exposure of other horses to the virus.

The costs of administering the first 2 doses of the vaccine were borne by the controlling bodies. For this reason, and because of shortages of vaccine, vaccination was initially limited to racing stock and yearlings. Subsequently, the responsibility for the administration of the third required vaccine dose was shifted to the owners of the horses.

On 26th October, the Australian Racing Board (ARB) gave in-principle approval to new Australian Rules of Racing making it mandatory for all horses involved in racing and breeding to be vaccinated as a condition of participation in the industry. This decision was based on modelling that predicted an outbreak of EI is likely to occur in Australia every 20 years. However, authority to use the recombinant canary pox vaccine was withdrawn on 30th June 2008. As a result, vaccination within the racing population ceased on that date.

Moving horses after EI

Outbreaks of EI resulted in major training centres being declared red zones, with a 30 day quarantine period being imposed from the date of the last detected case on the premises. As a result, large numbers of recovering horses were isolated in stables on racetracks, a situation that was less than ideal in both veterinary and welfare terms. As preparations for the return to racing commenced, it became necessary to move horses into the stables to commence training.

On 5th October, a strategy known as the 'Randwick Agreement' was developed to allow the movement of horses on and off training centres. The terms of the agreement were that all stables and associated buildings were decontaminated according to the standards of the New South Wales DPI, and that biosecurity measures continued to be implemented.

It was necessary to remove horses from the Randwick area to spelling properties within the Purple zone that had already been infected with EI, or to uninfected Purple zone properties 14 days after all horses on the property had received their second booster vaccination.

In order to return horses to their stables, Racing New South Wales declared that trainers were required to sign an undertaking that the horses were either recovered or approved vaccinates. Recovered horses were defined as those that had a history of EI infection between 30 days and 9 months previously, and had returned a positive ELISA test for antibodies to EI within the last 6 months. To be defined as an approved vaccinate, a horse was required to have been vaccinated twice at a 2–6 week interval within the

past 7 days – 4 months. Horses that had been infected with EI were permitted to resume training a minimum of 4 weeks rest after the last febrile episode. The twice daily recording of temperature continued. A horse which entered a stable was required to remain there for a minimum of 30 days. This decision was based on the risk of horses developing subclinical infections after arrival in a stable which could result in transmission of the disease if the horses were moved. An important part of the process was the availability of correct information, and trainers were required to adhere strictly to the requirement that they lodge official notification within 48 h of any horse movements into or out of the stables.

Support for affected businesses

An important part of the Australian response to EI was the implementation of a Commonwealth Government support package for those people who experienced financial loss as a result of the outbreak. The components of this package relevant to the racing industries were:

- The Equine Workers Hardship Wage Supplement Payment which was available for workers involved in commercial horse dependent industries who lost their job or most of their income.
- The Equine Influenza Business Assistance Grant which was available to eligible businesses that derived the majority of income from the equine industry to cover additional costs incurred as a direct result of the EI outbreak.
- The Commercial Horse Assistance Payment which was provided to primary carers whose racing or harness horses were unable to undertake their normal activities and could otherwise have generated an income, if not for the quarantine/movement restrictions in place.

Costs of control

The initial cost cap under the funding agreement was set at $32 million based on the GVP of the industry. On 13th November the NMG agreed to increase the cost cap from 1–2% of the GVP of the horse industry based on the belief that eradication disease was achievable. On 7th January 2008, the existing cap was reached. In response, the NMG increased the cap to $108 million (NMG).

The Commonwealth Government instituted a judicial inquiry into the circumstances surrounding the outbreak of EI. The report (Callinan 2008) states that:

- costs were $560,000 a day for disease control and $3.35 million a day in forgone income in equine businesses;
- the loss in betting turnover was about $327 million.
- the New South Wales Government spent $46 million on containing the disease
- the cost to the Queensland Government to 30th June 2008 was calculated at $17.172 million; and
- at 28th February 2008 the Commonwealth Government had provided $227.9 million in financial assistance to individuals and businesses whose primary source of income had been affected by the outbreak.

Conclusion

On 30th June 2008, Australia was declared free of EI. In the view of the NSW DPI (NSWDPI, 2008), the successful eradication was due to:

- a rapid response, based on the AUSVETPLAN;
- cooperation from the horse industry;
- locking down on all horse movements; and
- quarantining infected areas also helped reduce spread.

The zoning system allowed some normal activities, such as breeding, to go ahead.

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