EQUINE INFLUENZA INQUIRY

FURTHER SUPPLEMENTARY SUBMISSIONS ON BEHALF OF THE STATE OF QUEENSLAND

1. These submissions are provided in response to an oral submission made by Mr Ryan on 3 April 2008 to the effect that the Commissioner should consider a recommendation that the general horse population, or at least parts of it, should be vaccinated against the Equine Influenza virus.

2. The State of Queensland generally opposes such a proposition on the following bases:

2.1. it would be very difficult to enforce a policy requiring vaccination across the entire horse population, except in sectors which had enforceable rules such as horse racing. In this way, the policy would, at best, only ever achieve partial immunity;

2.2. the vaccination of horses against the Equine Influenza virus tends to mask the clinical symptoms of the disease although it does not prevent the virus being passed to other horses. Theoretically therefore, in a horse population which was vaccinated, detection of the virus may prove more difficult, leading to delay in reacting to an outbreak. This could make it more difficult to contain such an outbreak;

2.3. a requirement to vaccinate horses would impose a significant cost burden, especially upon those involved in hobby and leisure activities involving horses; and

2.4. quite apart from the difficulties outlined above, it would seem to be largely unnecessary. Australia is currently again free of the Equine Influenza virus. Assuming that recommendations from this Inquiry are acted upon by the Government, so that quarantine and biosecurity integrity is once again restored in Australia, there would be no need for the entire horse population to be vaccinated against the virus.

3. Generally speaking, the State of Queensland supports and adopts the reasoned argument in the article "Ongoing Vaccination for Equine Influenza" which is attached.[1]

AJ MacSporran S.C.

JJ Allen

(Counsel for State of Queensland)

4 April 2008

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[1] Ongoing vaccination for Equine Influenza, R D Paskin, Principal Veterinary Officer: Epidemiology, Biosecurity Victoria

Ongoing Vaccination for Equine Influenza

R D Paskin, Principal Veterinary Officer: Epidemiology, Biosecurity Victoria

1 Introduction

There is some debate within the Australian horse industry around the issue of ongoing vaccination against equine influenza. The objective of this document is to examine the case from both the perspective of EI control and in the context of other transboundary animal diseases.

2 Background

Equine influenza (EI), like various other diseases such as foot-and-mouth disease (FMD), avian influenza (AI) and many others, is a livestock epidemic disease that is exotic to Australia. As with other exotic diseases, the stated official policy is to eradicate it as first option. The relevant Ausvetplan Manual explicitly lays out an eradication strategy in the same way as it does for other exotic diseases.

Eradication strategies typically have various weapons in their armouries, ranging from quarantine and movement restrictions to vaccination and culling. Because of the transient nature of equine influenza and the kind of industry it affects, culling was obviously excluded, but vaccination was allowed under very specific conditions.

In the recent outbreak, a temporary permit was secured for the emergency use of canary-pox vectored recombinant vaccine in highly specified horse populations. In "vaccinated buffers" the vaccine appeared successful in the temporary suppression of viral transmission and was undoubtedly of use in combating disease spread.

Certain populations (racing animals) were vaccinated to ensure that in the event of a disease incursion, the majority would have enough protection to be able to continue racing (provided that they were at a racing precinct at the time of any outbreak), thereby preserving at least in part, the income of the industry concerned. This was a *temporary measure to ensure business continuity* and was not intended to (indeed, it could not) ensure the health of individuals. (It is known that although vaccination suppresses clinical signs in many individuals, this is not always the case; vaccinated animals do sometimes become very clearly ill.)

In cases where business continuity was the aim of vaccination, the industry sector concerned had to make a very convincing case for such 'business insurance', supported by clear evidence that the animals concerned were maintained in relatively biosecure compartments with little or no contact with 'outside' animals, decontamination of personnel before and after contact with horses, a high degree of regulation and continuous and close veterinary monitoring. All animals had to be individually identified and fully traceable.

3 Equine Influenza Vaccination – Specific Caveats

- The vaccine does not prevent infection. It only suppresses clinical symptoms and still allows some virus secretion to occur. "Silent transmission" is thus possible and is indeed well documented.

- Immunity (in other words, suppression of symptoms) is short-lived and vaccinated animals can contract overt disease again as soon as four months post vaccination.

- It is possible for more than one virus type to circulate in "vaccinated" populations. Indeed, the use of vaccination places selection pressure on circulating viruses which favours genetic drift and the emergence of new strains.

- The emergence of new strains which are vaccine resistant necessitate the development of new vaccines.

- No fully effective vaccine has ever been developed against influenza in any species, human, equine or other. Outbreaks will continue in the face of vaccination, especially as new strains emerge and spread.

The sustained use of vaccine in a population serves to create a good deal more problems than it actually solves. The aspect of masking infection and allowing virus to circulate unnoticed while slowly developing new antigenic properties is particularly worrying. This is one of the main reasons why, for example, vaccination against FMD is simply not used in FMD-free countries.

4 Is there a Rationale for Continued Vaccination against EI in Australia?

It would seem from the arguments that have been presented to the CCEAD that in fact the pressure to vaccinate on an ongoing basis relates mainly to the thoroughbred industry. Counting both breeding and racing stock, this probably amounts to around 150,000 horses. Whether horse owners in other sectors, owning the remaining 850,000 horses in the country, would be interested in pursuing this course is highly doubtful.

This creates a scenario in which a population of partially immune animals would be present in the country in which virus might circulate, periodically breaking out into susceptible populations outside the racing sector and disrupting activities in other parts of the industry. Once the virus was circulating in the thoroughbred population, it probably be fairly widespread by the time it was detected, rendering a decisive response with early containment impossible.

The only way to mitigate against this risk would be to impose draconian biosecurity measures on the racing and breeding sectors in order to prevent viral escape; an expensive option.

Cost of vaccination is also a consideration. *Vaccination with veterinary certification would be inescapable*; no racing organisation would accept that an animal was vaccinated purely on the word of an owner or trainer. If a recombinant vaccine were to be used, this would be even more the case, as GM products would be tightly controlled and accessible to veterinarians only. Given that animals would have to be vaccinated two to three times per year to generate a meaningful level of immunity in the population and that veterinary vaccination can cost up to $200 per procedure, a single animal could cost anything from $200 to $600 per year to immunise. *Vaccination costs are not made up solely of the vaccine cost, but will include the cost of employing a veterinary practitioner to perform and certify the vaccination.*

The racing sector, being affluent, could probably – at least on paper – well afford this. However, for a population of 150,000 animals (if vaccination cost an average of $400/horse/year) this would amount to $ 600,000,000 over a ten-year period. Whether the racing sector would want to incur this level of expense over time is doubtful.

Allowing for continuing vaccination against a disease that does not occur in Australia creates precedents for other diseases as well. Since an argument has been made that another EI outbreak is inevitable, a similar argument can be made that outbreaks of FMD, Classical Swine Fever and AI are also inevitable. Why should Australia not then vaccinate all cloven-hoofed livestock against FMD (and if so, which strain?), all pigs against CSF and all poultry against AI? Shouldn't we vaccinate all dogs against rabies?

The most obvious answer is that it makes absolutely no sense to vaccinate against a disease that does not occur here. Apart from incurring an unnecessary expense, vaccination often masks the presence of disease, making early detection difficult and mounting an effective response fraught with uncertainty. It becomes extremely difficult, if not impossible, to determine the precise extent of disease in a vaccinated population. For these reasons, Australian legislation specifically does not allow vaccination against exotic diseases.

It should also be noted that claiming freedom from a disease against which continuous vaccination is carried out becomes highly problematic and would require ongoing testing of vaccinated animals to prove the absence of the causative organism.

In fairness, it should be said that maintaining immunity in a group of animals would ensure that, should influenza strike them, a minimum number of them would be debilitated by disease. This would ensure that a majority of them would be available to participate in a race/event; however, it should also be said that with movement restrictions in place, only the animals actually at the event venue would continue to participate. It is unlikely that vaccination would allow the free movement of individuals during an outbreak, given that vaccinated animals would likely play some role in virus dissemination.

5 The Dangers of Vaccinates and the Problem of an Effective Response

As alluded to above, vaccinated animals make early and effective reaction to the introduction of disease extremely difficult. They serve as a reservoir in which virus can silently circulate, and without going to the extreme of testing every vaccinated animal, it would be impossible to pinpoint and isolate groups of animals shedding virus. The prospect of eradication would certainly become more remote.

It has been said repeatedly during the recent outbreak that the greatest danger is posed by the vaccinated animal, due to its potential to be a silent spreader of infection. This raises a question as to how any future incursion of EI into Australia might be handled.

Protecting the susceptible horse population – which would make up 85% of the total horse population – would mean not only a national horse standstill and zoning, as has just been done, but imposing a long and extremely strict quarantine and testing regime on all vaccinated populations.

The interconnectedness of the racing industry means that every vaccinated population – no matter where it was situated – would have to be regarded as a potential source of infection. The consequence of this is that it would difficult to do other than declare – at least temporarily – a restricted and a control area around every premises where vaccinated horses were present, even in apparently unaffected states or territories. The consequential disruption of the entire industry would be far greater (with the presence of a vaccinated sub-population) than was the case in 2007.

The alternative to this would be to mount no response at all and allow the disease to spread. It is highly unlikely that this option would be palatable for the majority of horse owners in the country. While the 'affluent' racing sector might feel able to cope with this, many horse owners in the non-racing sector would likely find it unacceptable.

It is difficult, however, to conceive of an alternative control approach that might be midway between the two outlined above. There would either have to be a full and comprehensive response specifically targeting vaccinated animals, given that they pose the highest risk to the rest, or a *laissez-faire* response that would allow for eventual endemicity.

The problem with having a vaccinated sub-population of animals (and this principle applies to any disease, not just EI) is that it creates a situation where two differing levels of immunity are present simultaneously, giving rise to an inherent epidemiological instability within the population as a whole.

On a social level there are, of course, other ramifications: the issue of social equity arises where one group of horse owners adopt a different set of practices because of their access to better economic resources. How this kind of inequity might play out in terms of horse owners' attitudes to disease control measures in the event of an outbreak is entirely unpredictable. It can only be assumed that the kinds of difference of opinion and approach that came to surface in 2007 would be exacerbated in an

outbreak where one segment of the industry was seen to have acted as a reservoir of infection, and this would throw any coherent response campaign into jeopardy.

6 Conclusion

- To make any sense at all, a "vaccinate into the future" policy for EI would have to cover most or all of the horse population in Australia. A situation with two different sub-populations having two completely different levels of immunity, particularly where one of the sub-populations carries within it the potential to be a reservoir for virus circulation, is epidemiologically risky. Reaching the ideal of vaccinating the majority of horses in Australia regularly is highly unlikely.

- Enabling continuing vaccination would imply, in some cases, changes to legislation and would in any case require a lengthy registration and approval process for whatever vaccine is chosen. By the time all of this had been achieved, it is possible that the momentum to move in this direction would have run out.

- In the event of the re-introduction of EI into Australia (which could well be, as was in 2007, through a vaccinated horse), the vaccinated sub-population would serve as a conduit through which virus could be spread into susceptible sub-populations via subclinical shedding. Should a meaningful national response be contemplated it would have to specifically target vaccinates and would be more disruptive than the response strategy followed in 2007. The benefit of having small "pools" of vaccinated animals available to participate in events is probably relatively small in comparison to the complexity they would add to the problem of managing the disease.

- The desirability for continued vaccination against a disease that is absent is doubtful from the economic viewpoint and it is doubtful that, once the full ramifications are understood, that this would be attractive. It may be better to seriously contemplate the unpleasant scenario of abandoning an eradication attempt if any future disease incursion is not rapidly identified an effectively contained within a very small area.

- The argument that one should vaccinate because of the inevitability of an outbreak is fallacious; were this argument valid, Australia would have to consider routine vaccination against a range of other exotic diseases.

- In conclusion, it is a fundamental principle that vaccination is not carried out against diseases that do not occur. Apart from being an unnecessary expense, such a strategy clouds the epidemiological picture, making early detection difficult, delaying a response and adding considerably to its costs.