

A history of livestock quarantine in Australia

Maxwell JA*

Katanning Regional Veterinary Hospital, Katanning, WA, Australia

Abstract

During the 18th century, economic livestock were imported into Australia from a number of countries where major livestock diseases existed. However, it was not until the late 19th century that quarantine was considered necessary. With Federation came Australia's *Quarantine Act (1908)*. Fortunately, when incursions of exotic diseases of livestock occurred in Australia, they failed to gain a foothold or were eliminated. During the latter half of the 20th century, a series of enquiries were conducted to assess the effectiveness of Australia's quarantine. The Frawley Review in 2003 highlighted the vulnerability of our quarantine system and the central role played by veterinarians. Since Frawley, other quarantine reviews have been held; however, they, like Frawley, have not led to an improvement in livestock quarantine. Australia is still vulnerable and its "Clean and Green" credentials are under challenge.

Abbreviations: AHA- Animal Health Australia, AQIS- Australian Quarantine and Inspection Service, AVR- Australian Veterinary Reserve, BSE- Bovine spongiform encephalopathy, CBPP- Contagious bovine pleuropneumonia, FMD- Foot-and-Mouth-Disease

Introduction

In 1714, Rinderpest caused catastrophic losses of cattle in Europe. In Great Britain, action was taken to control the impact of this disease – affected animals were destroyed and their carcasses burnt, disinfection was used and the area de-stocked. Within six months the disease was eradicated. The condition re-appeared in Great Britain in 1769, but this time there were personnel present who knew how to control the disease and within a month of its discovery, legislation was passed to prevent its spread and it was quickly contained. Nearly 70 years later, another disease appeared which spread rapidly, but unlike Rinderpest, had a low mortality rate. This disease became known as Foot-and-Mouth Disease [1].

In the 18th century, Great Britain established a penal colony in *Terra Australis*. Economic livestock were imported into the colony from different parts of the world where serious disease states existed. However, it was not until the middle of the 19th century, that health problems of livestock caused significant concern [2,3].

Rinderpest and FMD were present in countries exporting livestock to Australia and these diseases made their appearance in this country, Rinderpest in 1923 and FMD in 1872 [4-6].

It was other diseases, however, that prompted the call for quarantine in Australia. By the middle of the 18th century, Scab in sheep and Pleuro-pneumonia in cattle, caused such concern that the concept of limiting importation of animals into Australia first began to be voiced [2,3,7,8].

The experience with Sheep Scab, the introduction of CBPP and the threat of FMD gave impetus to the establishment of quarantine measures. It was concluded that by the 1870's the need for quarantine had become self-evident [3].

The Quarantine Act 1908

This led to the passing of the *Quarantine Act (1908)*, which was the only specific health power vested in the Commonwealth by the Constitution at Federation in 1901 [9,10].

From an initial reaction to stop the importation of diseased livestock, quarantine developed and became the means of promoting the value of our livestock by presenting it to the world as free from serious diseases.

Rinderpest 1923

An outbreak of Rinderpest in Western Australia occurred in 1923 and its diagnosis, containment and eradication by test and slaughter was documented [4]. As a result of the effective management of this outbreak, the veterinarian in charge, W.A.N. Robertson, was appointed Director of Veterinary Hygiene in the Commonwealth Department of Health to control animal quarantine nationally. During the period 1926 until 1994, a total of six veterinarians were appointed to this position. However, in 1994 the Commonwealth Government resumed responsibility for quarantine [10,11].

Newcastle Disease 1930 and 32

The Veterinary Research Institute in Victoria diagnosed Newcastle Disease in poultry in 1930 and 1932. The rapid diagnosis and control of these outbreaks helped establish the value of veterinary science in this country. Further episodes have occurred sporadically, but not on a large scale. However, it is considered that this disease poses a threat to Australia's poultry industry [12].

*Correspondence to: Maxwell JA, Katanning Regional Veterinary Hospital, Katanning, WA, Australia, E-mail: berean@westnet.com.au

Key words: Quarantine, Biosecurity, Frawley Review, Veterinarians

Received: March 25, 2018; **Accepted:** April 24, 2018; **Published:** April 29, 2018

Scrapie 1950

We have details of the one recording of Scrapie occurring in Australian sheep. In 1950, a small consignment of Suffolk stud sheep was imported into Victoria from the United Kingdom. They failed to thrive, and a private practitioner was called to investigate. Various samples were submitted, but when no diagnosis could be arrived at, a CSIRO veterinarian suggested testing for Scrapie. This resulted in a positive finding and an eradication program was instituted [13].

Quarantine measures 1940's to 1980's

From the 1940's, regular meetings took place between Chief Quarantine Officers of all the States and in 1957 an arrangement was made between the Prime Minister and State Premiers for a sharing of the cost of quarantine.

In the 1960's, the Bureau of Animal Health was established; this body became responsible for all Commonwealth veterinary activities with the exception of quarantine, which remained with the Department of Health [14].

In the 1970's, a series of off-shore quarantine stations were built to house high-risk live animals and, because of the success of the eradication of CBPP, Australia undertook Tuberculosis and Brucellosis eradication programs at that time [9,15].

In 1977, evidence of Bluetongue virus was detected in an insect sample from Northern Territory and it was thought that it was derived from cattle in Indonesia [10].

During the 1980's, Australia developed an "Australian Veterinary Emergency Plan" (AUSTVETPLAN). The Australian Agricultural Health and Quarantine Service was formed, only to be replaced in 1986 by the Australian Quarantine and Inspection Service, when the function of quarantine was transferred from the Department of Health to the Department of Primary Industry [14].

R.W. Gee

In a 1982 article, R.W. Gee, Director of the Australian Bureau of Animal Health, detailed the animal diseases introduced into Australia and provided a list of those that were currently exotic to Australia. He stated;

Australia's relative freedom from the major epidemic animal diseases can be attributed to its geographical isolation from other livestock-raising countries.

He considered that the most serious consequence of the introduction of any of the exotic diseases would be the disruption or loss of export trade and concluded that Australia was committed to a policy of eradication for the incursion of any major exotic diseases [16].

In a later article, Gee emphasised the importance of quarantine and the part played by Australia's veterinarians. He listed the outbreaks of Rinderpest, Newcastle disease and cited the co-operation between practitioner and CSIRO in the detection of Scrapie.

He also sounded a warning. He was alarmed at the downgrading of government diagnostic laboratories and concluded with a plea;

[Industry]and politicians must be made aware of the need for government to remain in tight control of disease standards for our exports...Australian cannot in the present circumstances of massive downturn in the economy put at risk any of its major export industries... remember that the health status of our livestock industries is directly related to the health status of our profession.

Here was a veterinarian, greatly experienced in Australia's quarantine system and its significance in providing this country with a special position within the world's agricultural economy, voicing his concern at seeing much of what had been achieved, being lost [15].

The Lindsay Review 1988

In 1988, the Department of Primary Industries and Energy commissioned a Review of Australia's Quarantine System entitled "Australian Quarantine Requirements for the Future".

The committee, led by Professor D. Lindsay, set out to establish principles of quarantine for the future. They received 173 submissions and made 59 recommendations [9].

This committee concluded that most previous reviews had improved quarantine, but none had addressed the whole quarantine system and that is what the Lindsay committee set out to do. As a result, they examined all aspects of the quarantine process, such as its objectives, its policies, its strategies and principles and concluded that the changes they recommended represented a form of "Hazard management".

They concentrated their attention on AQIS, justifying their recommendation on the estimates of Agriculture's significance to the Australian economy by stating that agriculture provided more than a third of total export earnings. They quoted the potential cost of a FMD outbreak in this country at between \$1 to \$2.5 billion of lost exports in the first year following the outbreak.

They noted that the most important question to ask about quarantine was whether it had actually worked or not;

Among the many difficulties associated with determining the adequacy and effectiveness of quarantine procedures, the greatest is the fact that we cannot prove or disprove that the absence of any particular pests or disease is due to its exclusion by means of quarantine vigilance.

After nearly a century of quarantine of livestock in Australia, the question of whether it actually worked had not been answered!

The Nairn Review 1996

In 1996, the Australian Animal Health Council Inc., now known as Animal Health Australia, came into existence. Its function was to strengthen Australia's animal health status and to re-enforce confidence in the safety and quality of Australia's livestock products in domestic and overseas markets [10].

The same year, the Commonwealth Government commissioned a review of quarantine titled "Australian Quarantine: a shared responsibility" which;

...came to the conclusion that some fundamental changes were required not only in the structure of the organisation delivering quarantine services but also in general community attitudes to quarantine.

The Review Committee, led by Professor M. Nairn, received 167 written submissions, made 109 recommendations and was submitted to the Commonwealth Government in 1996 [17].

It developed a number of themes; one being to engage government, industry and the general public in a partnership of quarantine, hence its title.

To achieve this, it was proposed that a structural change take place within AQIS by locating quarantine service and policy in a statutory

authority known as Quarantine Australia. It made recommendations to improve the assessment of “Risk” and it broadened the focus of quarantine from a border approach to a pre-border, border and post-border one entitled a “Continuum of Quarantine”

The Review stated that Monitoring and Surveillance were essential components in fulfilling Australia’s international obligations under the Agreement on the application of Sanitary and Phyto-sanitary Measures (SPS Agreement). Under this agreement participating member countries were required to establish scientifically that they were free of specific pests and diseases, it must be;

Scientifically based monitoring and surveillance programs will therefore be an essential element in establishing continuing freedom from pests and diseases...The cost of eradication of an unwanted pests or disease can be significant, especially when compared to the annual cost of targeted monitoring and surveillance programs...information generated from monitoring and surveillance programs must be complete and up-to-date.

The Review cited the success achieved with the Brucellosis and Tuberculosis Eradication Campaign. This program commenced in 1970 and cost more than \$760 million, with both the cattle industry and government sharing the cost. It resulted in Australia achieving freedom from Bovine Brucellosis in 1989 and enabled Australia to be declared free of Bovine Tuberculosis by 1997.

This Review hoped that it would provide a blueprint for a new approach to Australian quarantine based on a shared responsibility.

The Frawley Review 2003

The Frawley Review of 2003, pointed out the weaknesses within the surveillance and monitoring component of Australia’s quarantine of livestock. But instead of bolstering these services, it proposed the formation of an entirely new entity, the Australian Veterinary Reserve;

The Commonwealth, through PIMC, establish an Australian Veterinary reserve (AVR) as a matter of priority. The purpose of the AVR is to have a veterinary capability trained and equipped to deal with animal disease emergencies and, undertake surveillance as appropriate: (a) the Commonwealth fund the development and establishment of the AVR and then negotiate ongoing funding arrangements; and (b) once established, the AVR be managed by AHA.

The Review received 128 submissions, consulted widely and produced 15 recommendations [18].

It found;

The current surveillance and monitoring system is unlikely to continue to meet the increasing stringent requirements of Australia’s trading partners for assurances about disease freedom and status. There is a need for a more integrated system of national surveillance to develop from the current combination of informal and formal programs. (underlining added)

It recognised that a weakness existed in surveillance and monitoring and that this could constitute a challenge to Australia’s disease-free status. It made recommendations regarding the government’s management of quarantine of economic livestock through the agency of AHA to enhance national surveillance and to the reporting of emergencies and endemic diseases.

The Review emphasised the need for an effective program of surveillance by proposing greater involvement of veterinary services, both in the field and within diagnostic laboratories.

The Review proposed the establishment of the AVR which incorporated the participation of private veterinary practitioners in an emergency disease outbreak situation, but which could also provide involvement in surveillance.

Equine Influenza 2007

In August 2007, Equine Influenza was imported into Australia in a shipment of thoroughbred horses brought here for the spring racing season. Soon after arriving, horse in quarantine exhibited signs of this disease and within a short interval, horses within the general population were found to have contracted this disease.

In September 2007, Hon I. Callinan AC was appointed Commissioner by the Minister for Agriculture, Fisheries and Forestry, under the *Quarantine Act 1908*, to conduct an inquiry into the outbreak of equine influenza in Australia [19].

The report was delivered to the government in April 2008 and found that the virus considered responsible for this condition escaped from Eastern Creek Quarantine Station and that this was due to negligence on the part of AQIS, the responsible body, and specifically the Director of Animal and Plant Quarantine, the Executive Director of AQIS and the Executive Manager of Quarantine within AQIS.

The report stated;

The objective of biosecurity measures at a post-arrival quarantine station for animals, such as eastern Creek, is to prevent the escape of disease that might be present in the station. It is therefore essential that people and equipment having contact with the animals are adequately decontaminated before leaving the station. That was not happening at eastern Creek in August 2007. Had such measures been in place, it is most unlikely that there could have been any escape of equine influenza from the Quarantine Station. That such measures were not being implemented was a consequence of a number of acts and omissions on the part of various employees and officers of AQIS at different levels of that organisation and over a number of years.

In addition to the multiple failures of the operation of the Quarantine station the Commissioner stated;

Finally, I accept that those who treated and cared for the horses in Eastern Creek – especially the grooms, private veterinarians and farriers – and the import agents and studs who employed or retained them, must take some responsibility for the failure of quarantine. Their failure to decontaminate themselves and their equipment contributed to the probable means of the virus’s escape from eastern creek.

Various estimates of the cost of this outbreak have been made from more than \$100 million in direct cost to the equine industries and billions more in indirect costs [10].

The Beale Review 2008

Since Frawley, another examination of quarantine has been conducted, entitled “One Biosecurity: a working partnership” [20].

This Review acknowledged recent events, such as the 2001 outbreak of FMD in the United Kingdom, the outbreak of BSE in Europe and North America, the outbreaks of Avian Influenza in Asia and Europe, as well as the outbreak of Equine Influenza in Australia. These events had been widely publicised and increased concern that such outbreaks could occur here and may pose a health threat to Australia’s human population;

Against this background, the decision to commission a comprehensive review of Australia's quarantine and biosecurity system has been timely, the previous such review (undertaken by the Nairn Committee) having reported in 1996.

Although the Review concluded that Australia had a good quarantine system in place, it required "far-reaching change" and pointed out that the recommendations were designed to enhance the good aspects of Australia's system and rectify its shortcoming.

It recommended a change of terms from "Quarantine" to that of "Biosecurity":

As part of this change in emphasis, the Panel recommends focussing on 'biosecurity' rather than the narrower concept of 'quarantine'. Quarantine has a largely negative, defensive connotation associated with isolation, segregation and disinfection at the border. Biosecurity is a more pro-active concept, aligned with the pre-border and post-border continuum, a multilayered approach, a shift from zero risk to manage risk, from barrier prevention to border management.

This Review took numerous submissions from governments (Australian and overseas), businesses and individuals and produced a total of 84 recommendations.

The Matthews Review 2011

In 2011, the Australian Government commissioned a report, entitled "A review of Australia's preparedness for the threat of foot-and-mouth disease" to assess our capacity to deal with this specific exotic disease of livestock [21].

Whilst recognising the strength of our quarantine, it questioned a number of assumptions regarding Australia's preparedness to deal with such an incursion. The review committee developed 11 areas where improvements would further strengthen Australia's management of the threat of this disease. The formation of the National FMD Action Plan directly resulted from this report.

The Future

Despite over 100 years of quarantine experience, Australia remains vulnerable to incursions of exotic livestock diseases. Frawley, in 2003, considered our position to be more vulnerable than previously.

Each of the reviews of quarantine applauded the system that was in place, but recommended a number of improvements and, in spite of these changes, we are still vulnerable.

What should be done? For an effective assessment to take place, a series of fundamental questions arise and need answering – Do we need quarantine at all? Is our "Clean and Green" status important and necessary? Does quarantine work? Is our current system capable of preventing or dealing with a serious incursion? Is our current system the only system worth exploring, or should we consider other models? How should it be conducted? Who should do it? Are veterinarians an essential element in the quarantine process? If so, should they be more involved in its formulation as well as its conduct? How is it to be resourced?

Conclusion

Originally, all economic livestock in Australia were imported from countries where serious disease conditions existed. Fortunately, when they were introduced they did not become established. However, when livestock numbers began to increase rapidly, problems began to occur, and quarantine was introduced.

The Australian Quarantine Act 1908 was enacted soon after Federation, but has recently been replaced by the Biosecurity Act 2015. During the 20th century, various disease outbreaks occurred and, it is thought that mainly through the action of veterinarians in the employ of government, they were contained.

A series of reviews and enquiries have been held to improve our quarantine readiness. However, outbreaks continued to occur.

The Frawley Review of 2003 queried Australia's preparedness and instituted the formation of the AVR, which proved ineffective.

Now, we are possibly more vulnerable than at any previous time as our quarantine services are being reduced. We are waiting for the next disaster to occur.

References

1. Parsonson IM (1998) The British Background of the Veterinary Profession in the Australian Colonies. In: The Australian Ark: A history of domesticated animals in Australia. CSIRO publishing, Collingwood, Victoria: 149-158.
2. Beardwood JC (1972) Disease control in livestock in 1886. The first interstate (intercolonial) veterinary conference in Australia. *Aust Vet J* 48:571-574. [[Crossref](#)]
3. Fisher JR (2002) Origins and early development of the Australian veterinary profession: the nineteenth century. Milestones in Australia's Veterinary History.
4. Robertson WAN (1923) Rinderpest in Western Australia 1923. Service Publication (Veterinary Hygiene) Number 1, Melbourne. Commonwealth of Australia Department of Health 1:1-58.
5. Fisher JR (1984) Foot-and-mouth disease in Australia. *Aust Vet J* 61: 158-161. [[Crossref](#)]
6. Bunn CM, Garner MG, Cannon RM (1998) The 1872 outbreak of foot-and-mouth disease in Australia – why didn't it become established? *Aust Vet J* 76: 262-269. [[Crossref](#)]
7. Bunn CM (2002) Sheep Scab. Milestones in Australia's Veterinary History.
8. Seddon HR (1961) The development of veterinary science in Australia. In: The University of Queensland Veterinary School. University of Queensland Press, Watson, Ferguson and Company, Brisbane: 15-42.
9. Lindsay D (1988) Australian Quarantine requirements for the future. Report of the Quarantine Review Committee. Department of Primary Industries and Energy. ISBN 0 644 08162 7: 1-227.
10. Turner A (2011) Quarantine, exports and animal disease in Australia 1901-2010. *Aust Vet J* 89: 366-371. [[Crossref](#)]
11. Doyle KJ (2002) The role of the veterinary profession in quarantine. Milestones in Australia's Veterinary History.
12. Arundel JH (1993) The Harold E Albiston Oration. *Aust Vet J* 70:281-283. [[Crossref](#)]
13. Bull LB, Murnane D (1958) An outbreak of Scrapie in British Sheep imported into Victoria. *Aust Vet J* 34: 213-215.
14. Turner AJ (2011b) Endemic disease control and regulation in Australia 1901-2010. In: History of the veterinary profession in Australia. Booklet produced by the History Special Interest Group of the Australian Veterinary Association.
15. Gee RW (1994) Pride without prejudice. *Aust Vet J* 71: 1-2. [[Crossref](#)]
16. Gee RW (1982) Australia and exotic animal diseases. *Aust Vet J* 59: 11-13. [[Crossref](#)]
17. Nairn ME, Allen PG, Inglis AR, Tanner C (1996) Australian Quarantine: a shared responsibility. Department of Primary Industry and Energy, Canberra: 1-284.
18. Frawley PT (2003) Review of Rural Veterinary Services. Department of Agriculture, Fisheries and Forestry. Commonwealth of Australia: 1-109.
19. Callinan I (2008) Equine Influenza: The August 2007 outbreak in Australia.
20. Beale R, Fairbrother J, Inglis A, Trebeck D (2008) One Biosecurity: a working partnership. An independent Review of Australia's Quarantine and Biosecurity Arrangements Report to the Australian Government.
21. Matthews K (2011) A review of Australia's preparedness for the threat of foot-and-mouth disease. Australian Government Department of Agriculture, Fisheries and Forestry, Canberra.

Copyright: ©2018 Maxwell JA. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.