



Australian responses to threats of bioterrorism

Australia *has* been a 'lucky country', using Donald Horne's term from the 1960s, but without his sense of irony¹. Yet our world is changing fast. The 2000 Olympic Games in Sydney provided a time for national celebration. However, before the Games it was not widely known that defence² and civil authorities had been working quietly to prepare for any terrorist or bioterrorist incident.

Emergency Management Australia (EMA) published a detailed manual to guide the recognition and management of chemical, biological and radiological threats³. Health authorities in NSW established enhanced surveillance to detect disease outbreaks or incidents over the Olympic period⁴. In other jurisdictions, plans developed by emergency services and health services were also upgraded, with EMA as the agency to coordinate any necessary national response.

Australia's quiet preparations were in response to the increasing international awareness of the possibility of terrorism, fuelled by the Aum Shinrikyo attacks in Japan and other incidents⁵.

The world changed irrevocably on 11 September 2001, following the World Trade Center attack, and again after October 4 following the anthrax cases in the USA caused by a series of letters laced with finely milled anthrax spores. Twenty-two people were infected, with five deaths. Several people were infected indirectly by spores that escaped from letters into mail-rooms and other buildings.

The resultant anxiety caused major social disruption: over 9,000 people received antibiotic prophylaxis in case they had been exposed. Millions of dollars were spent to decontaminate buildings⁶. It now appears that the anthrax-containing letters in the US were of domestic origin,

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with no targets outside that country^{6,7}.

In Australia there were numerous false alarms, 'white powder' incidents and hoaxes following the US events, placing a great burden on emergency and health services and public health laboratories in States and Territories. No anthrax spores or human anthrax cases associated with these incidents were detected here, but understandably there was considerable public anxiety.

As in other countries, the Australian public now recognises the threat of deliberately released biological agents. Anxiety is natural, but panic brings added cost to the community, as well as advantage to terrorists. In the US anthrax attacks, few were infected, most infected people were successfully treated and there was no chance of secondary spread from the human cases. We should remind ourselves that even at the height of the anthrax emergency in the US, the average risk of death from anthrax was much less than the risk from other every-day activities such as travelling by motorcar.

Following the US incidents, Australian health departments received many calls from the public. People wanted to know how to protect themselves, and whether they needed antibiotics, vaccines for anthrax or smallpox, or gas masks. Health authorities reassured those who were worried, and provided authoritative information and planning advice about anthrax and other conceivable threats.

Should a real biological incident ever occur in Australia, communication will be particularly important, not only in managing the emergency, but also in providing accurate public information to minimise alarm, which might otherwise cause more damage than the biological agent itself. In any incident, health care agencies would necessarily play a key role in recognising illnesses and managing the health consequences.

What biological agents might be used?

The USA Center for Disease Control and Prevention (CDC) has ranked biological agents that could be used by terrorists according to the severity of disease, the potential for the organism to disseminate and spread, and the disruption and panic that could be caused. They also took account of the public health infrastructure needed to react quickly and effectively to contain an outbreak.

Category A agents (Table 1) have the highest risk and the highest priority in warranting plans for protection. However, such agents are not necessarily available to terrorists. For example, smallpox no longer occurs naturally and the virus is only held legally by Russia and the USA. Although anthrax is a natural disease of animals, it is technically demanding to produce spores of the type used in the USA attacks. Plague, tularaemia and the viral haemorrhagic fevers do not occur in Australia, but reference stocks of the agents have been held in public health and research laboratories overseas. Access to stocks of biological agents has recently been tightened through legislation in the USA and through international agreements. However, there is a possibility that biological weapons and agents developed by the Soviets have fallen into the hands of terrorists or rogue states following the collapse of the USSR^{5,8}.



Table 1. Category A agents of bioterrorism: characteristics and limitations.

Disease	Availability	Spread to others	Persistence	Prevention	Prevention if exposure known	Treatment
Smallpox	Very limited	Yes	No	Vaccine	Vaccine within 4 days	Antivirals & immunoglobulin
Anthrax	Moderate	No	Yes	Vaccine: limited to high risk workers	Vaccine and antibiotics	Antibiotics
Plague	Limited	Yes	No	Antibiotics	Antibiotics	Antibiotics
Botulism	Reasonable	No	Yes	Vaccine: limited to high risk workers	Antitoxin	Antitoxin
Tularaemia	Very limited in Australia	Yes (in theory)	Yes	Vaccine being investigated	Antibiotics	Antibiotics
Viral haemorrhagic fevers	Very limited	Rare	No	Vaccine for some	Antiviral medication for some	Antiviral medication for some

Australian preparedness

Principles to guide preparedness for biological attacks have been published by WHO⁹, the CDC¹⁰ and other authorities. A recent editorial in the *Lancet*¹¹ emphasised the importance of a “well-organised and well-functioning public health system” to respond to deliberate attacks in the same way as to other emerging epidemics.

The anthrax threat highlighted the importance of linking security intelligence to health intelligence, and to lessons learned from disaster management. As pointed out previously¹², our federal system requires close collaboration between Australian governments. National planning is coordinated by EMA and other Commonwealth agencies reporting to the Prime Minister and Attorney General. Health plans are coordinated through the Australian Health Ministers Advisory Council and Chief Health Officers. Public health agencies work with emergency services in the States and collaborate through the Communicable Diseases Network Australia and the Public Health Laboratory Network to coordinate national reporting, surveillance, laboratory diagnosis and public health responses for disease outbreaks.

Biosecurity planning in Australia has thus built on its existing disease and disaster surveillance systems. These networks have collaborated to support the earliest

possible recognition of any deliberate release of a biological agent. The clues for detection of a biological attack (Table 2) are similar to the clues used to detect other outbreaks of disease.

Diagnostic and other advice for health professionals and for members of the public has been provided by the Department of Health and Ageing¹³. Australia has prepared by obtaining national stocks of smallpox vaccine, as well as antibiotics, antiviral agents and antidotes for emergency use. Detailed

plans for responding to smallpox and other biological agents have been developed in consultation with Australian and overseas experts.

Australia's bioterrorism preparations have been greatly helped by the expertise of its public health professionals, communicable disease physicians and researchers. Some experts have advised government directly, while others have provided leadership and advice through professional articles^{14, 15}, and by training health and emergency staff and junior colleagues.

Table 2. Clues for detection of a biological attack.

- A single case of a disease not normally seen (e.g. a single case of smallpox anywhere in the world or a single case of plague, tularaemia or viral haemorrhagic fever in Australia).
- Cases of unexplained disease or death or of disease in an unusual age group (e.g. cases of severe ‘chicken pox’ in adults).
- Unusual disease symptoms (e.g. those of pulmonary anthrax).
- A disease in an unusual location (e.g. cholera in an Australian with no history of travel and no contact with a recently travelled person).
- A disease known to be transmitted by a vector that is normally absent here.
- An unexpected outbreak or epidemic with similar but unexplained symptoms.
- Several simultaneous epidemics in different locations.
- Serial epidemics of different diseases in the same population.
- Unusual strains or variants of an organism.
- Similar genetic types of organisms at different locations (e.g. the same anthrax strain causing sporadic disease in different countries).



As in the Bali emergency, our health professionals will play an essential role in responding to any future bioterrorism alarm. The Australian public will be well served by their expertise and skills, and by the preparations made by government.

Acknowledgements

Valuable material for this article was also provided by Drs Leslee Roberts and Moira McKinnon.

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