Critical, but stable

Australia’s capacity to respond to an infectious disease outbreak

The existence of new and re-emerging disease threats such as Severe Acute Respiratory Syndrome (SARS), multi-drug resistance, and the ongoing outbreak of avian influenza across much of Asia, combined with the spectre of bioterrorism, has prompted countries around the world to examine closely their capacity to prevent, detect and respond to serious infectious diseases. Australia is no exception and after a long period of apparent complacency about Australia’s vulnerability to communicable diseases, Australia’s systems for disease surveillance, detection and reporting have recently been reinvigorated, as has planning for mass casualty and outbreak preparedness.

However, existing research and comments from the Australian experts in public health policy and practice interviewed for this paper highlight major deficiencies in the emergency health response to infectious disease in the human population. Although most respondents were confident that in the event of a national infectious disease emergency ‘the system would work’, the system is largely untested and many of Australia’s hospitals appear to be underprepared. There is a general sense that the current emergency health response labours under difficulties arising from limited resources, inadequate training exercises and a lack of integration.

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Executive summary

Infectious disease control has always been central to public health in Australia, and it was largely concern about infectious disease that led to the establishment of the Commonwealth Department of Health in 1921. The Commonwealth today retains a strong interest in infectious disease, even as its interest and involvement in public health has broadened well beyond this issue.

After a period of apparent complacency about Australia’s vulnerability to communicable diseases, which some say ended only as recently as the 1990s, Australia’s systems for disease surveillance, detection and reporting have recently been reinvigorated, as has planning for mass casualty and outbreak preparedness. For example, measures announced in the 2004–05 Federal Budget included $40.2 million for initiatives to strengthen national health security, preparedness and response capability in the event of a terrorist attack or a national health emergency. Many of the improvements being undertaken build on existing influenza pandemic planning.

Even as little as five or six years ago, issues such as a national emergency stockpile of vaccines and medications, mass casualty preparedness and real-time disease surveillance did not receive routine or ongoing attention. Much of the recent boost to this sort of planning has occurred as part of the current national security agenda, which, according to some, is as much a hindrance to successful planning as an advantage. It has also been argued that Commonwealth/state health responsibilities are ill-defined and that policy-makers with limited public health content knowledge are making decisions on critical public health matters, with little or no consultation with clinical health professionals.

Existing research and comments from respondents interviewed for this paper highlight major deficiencies in the emergency health response to infectious disease in humans. Few respondents felt, for example, that routine reporting through current surveillance systems was sufficient for early notification of a serious disease outbreak, whether it is naturally-occurring or deliberately introduced. Furthermore, despite the experience and commitment of the people working in the health system nationally, many of Australia’s hospitals appear to be underprepared for dealing with mass casualty incidents—particularly one involving an infectious disease—or are only now beginning to address the issue.

Most respondents were confident that in the event of a national infectious disease emergency ‘the system would work’, but also readily admitted that the system is largely untested. Most respondents agreed that Australia’s current surveillance networks are sufficiently ‘robust’ to deal with routine disease threats, but felt that detection and reporting mechanisms need to be more streamlined in order to deal with a major infectious disease crisis. There is a general sense that the emergency health response labours under difficulties arising from limited resources, inadequate training exercises and a lack of integration, and that perhaps the system works despite the structures in place rather than because of them.
Summary of key issues

- the Commonwealth Government has become increasingly involved in public health matters traditionally left to the states/territories, with little, if any, decrease in state involvement
- as recently as the late 1990s, there appears to have been a distinct complacency within government about Australia’s vulnerability to infectious disease—SARS and avian flu in particular have driven a renewed interest in the detection and control of infectious disease
- overlapping Commonwealth/state responsibilities and divisions between clinical health practitioners and public health policy-makers were identified as two broad problem areas in Australia’s national arrangements for responding to an infectious disease outbreak
- respondents were confident the emergency health system would work in the event of a national infectious disease crisis, but admit that it is still largely untested
- the ‘securitisation’ of health appears to be as much a hindrance as an advantage to planning
- there appears to be some resistance amongst the medical community to an ‘all-hazards’ approach in dealing with an infectious disease outbreak
- Australia’s external and border disease surveillance mechanisms were generally thought to be good, but Australia’s internal surveillance systems attracted considerable criticism
- the success of Australia’s infectious disease control system appears to rely more on unofficial networks and personal contacts than on bureaucratic structures—respondents nominated the calibre of the people in the system ahead of the structures in which they operate as the primary strength of the health care system
- there is very little slack or ‘surge capacity’ in the hospital system to deal with a mass casualty incident, particularly an infectious disease outbreak
- several respondents felt that medical workforce issues have not received enough attention in contingency planning
- many of Australia’s hospitals appear to be underprepared for dealing with mass casualty incidents and administrators appear reluctant to devote time and resources to exercising their response
- there does not appear to have ever been a national exercise, the focus of which has been a human health crisis, particularly one which involves an infectious disease outbreak—at most, mass casualty response is sometimes included as one aspect of counter-terrorism exercises which are primarily designed to test the national security apparatus
- most respondents were critical of the way in which the Bali bombing has been held out to have been a successful test of Australia’s mass casualty preparedness, arguing that the scale of the incident was relatively modest and the impact on resources short-lived and easily absorbed, and
- Australia has been steadily expanding its National Medicines Stockpile in case of an emergency need for vaccines, antibiotics or anti-virals, but unlike some other countries, it is envisaged that medication would only be made available to ‘first responders’ and other essential personnel rather than the entire population.
Introduction

Somewhat reluctantly, countries such as New Zealand and Australia now recognise that national security in a globalised world involves facing a wide range of threats which transcend simple considerations of military power and national borders.

Both countries have been slow to recognise that infectious diseases are a direct threat to their population; that they are likely to aggravate and, in some circumstances provoke, social fragmentation, threaten trade and commerce and undermine national confidence.

Despite the oft-cited success of eradicating smallpox globally, serious infectious diseases have not gone away, as the advent of new and re-emerging disease threats such as Severe Acute Respiratory Syndrome (SARS), multi-drug resistance and the ongoing outbreak of avian influenza (‘flu’) across much of Asia clearly demonstrates. The existence of such threats, combined with the spectre of bioterrorism, has prompted countries around the world to examine closely their capacity to prevent, detect and respond to serious infectious diseases. Australia is no exception, despite the fact that it has so far been spared infection from the likes of SARS and the recent avian flu. Indeed, the fact that Australia has been spared appears to have provided added impetus to ensuring that Australia keeps such diseases out of the country and can act promptly and effectively if an outbreak does occur.

The bulk of the research for this paper was conducted through interviews with a range of Australian experts in public health policy and practice between March and May 2004. (See list at Appendix). Interviews were conducted in the form of an open discussion, either by telephone or in person, with respondents invited to comment as appropriate on specific issues such as disease surveillance, the influenza pandemic plan, disaster planning and hospital preparedness, the Commonwealth–state relationship and the Bali bombing in 2002. The information obtained from these interviews has been supplemented with other research based on academic literature, government information and media reports.

As such, the aim of this paper is to raise issues for discussion and highlight both the positive and negative aspects of Australia’s current emergency health response arrangements. Therefore, given the vast and complex nature of the national health system, it is not the intention of this paper to provide much more than a basic analysis of the issues or to offer recommendations. Similarly, given that health is predominantly a state/territory government responsibility, it is important to note that while the paper attempts to cover the major aspects of the health response to a national emergency, which may involve all states and territories, enquiries with state health authorities and professionals were limited to the ACT, NSW and Victoria. This was due mainly to time and resource constraints, and NSW and Victoria were chosen because they are the two most populous Australian states.

Although all respondents who contributed to the research for this paper agreed to be identified, none of the comments made by respondents cited in the paper are attributed to specific individuals, due to the sensitive nature of many of the issues and the confidential basis on which some of the respondents offered comments.
Responsibility for public health: the historical context

Infectious disease control has always been central to public health in Australia—so much so that concern about infectious diseases drove the development of a national response to public health matters, culminating in the establishment of the Commonwealth Department of Health in 1921. This movement was propelled by a number of factors.

In the second half of the nineteenth century, and continuing into the early twentieth century, scientific and medical knowledge about the origins of disease made considerable advances. Disease and its spread were no longer believed to be due to pollution of the air from insanitary conditions (for example, malaria was thought to be a result of ‘bad air’), but rather caused by bacteria. Moreover, these living agents were found to be identifiable and controllable. As a former (and the founding) Commonwealth Director-General of Health explained:

The current belief that disease was the result of insanitary conditions … had now become completely superseded by exact knowledge of the true relationship of insanitary conditions to the occurrence of disease, which, in turn, indicated the directions for rational administrative procedure.

In addition, in the early years of the twentieth century there was a growing acceptance that the proper role of government was more than the prevention and control of disease—it was also to promote health, both of the community and the individual:

These advances in medical knowledge steadily induced an ever-expanding adaptation of governmental policy to the fundamental truth that ‘public health’ as a responsibility of government could not exclude ‘private health’—the health of the individual human unit.

The movement towards federation also facilitated the emergence of a national approach to public health. In the lead-up to federation, one of the matters raised regularly as one for which a national government should have the power to make laws was quarantine. The reason given was that quarantine was essential to the health and prosperity of Australia, which this statement from 1884 reflects: ‘Quarantine is a means only to the end sought: which last is the preservation of the public health in Australasia’. Quarantine became one of the few functions of government at the time for which the new Commonwealth Parliament had power to make laws.

However, it took outbreaks of disease around the country, such as bubonic plague which ran from 1900 to 1909, to prompt the Commonwealth Government to give legislative effect to its Constitutional quarantine powers. After a conference of state premiers in 1906 passed a resolution that quarantine administration should be taken over by the Commonwealth, the Commonwealth Government introduced a Quarantine Bill in 1907 which took effect from 1 July 1909, as the Quarantine Act 1908 (‘the Act’).
The evolution of Commonwealth quarantine powers

The Act deals with the Commonwealth power over human, animal and plant quarantine, section 4 of which states:

(1) In this Act, quarantine includes, but is not limited to, measures:

(a) for, or in relation to:

(i) the examination, exclusion, detention, observation, segregation, isolation, protection, treatment and regulation of vessels, installations, human beings, animals, plants or other goods or things; or

(ii) the seizure and destruction of animals, plants, or other goods or things; or

(iii) the destruction of premises comprising buildings or other structures when treatment of these premises is not practicable; and

(b) having as their object the prevention or control of the introduction, establishment or spread of diseases or pests that will or could cause significant damage to human beings, animals, plants, other aspects of the environment or economic activities. 9

Under section 51(ix) of the Constitution, the Commonwealth has power over the states regarding quarantine. Where state and Commonwealth laws are inconsistent, the Commonwealth law prevails. 10 However, this principle proved less clear-cut than its drafters probably intended. Between 1910 and 1919 a number of incidents showed that ‘the delimitation of relative spheres of co-existent Commonwealth and State authority must be achieved by experience and adjustment through either repeated conflict or mutual goodwill’. 11

For example:

• During the smallpox outbreak in Sydney in 1913, the Commonwealth Director of Quarantine declared a quarantine area within a 15 mile radius of Sydney. New South Wales protested strongly, arguing the move hurt commerce, but it did comply with conditions for lifting the quarantine ban after 18 months;

• Before an amendment to the Act in 1912 the Commonwealth did not have the power to act in response to a number of diseases, such as a measles epidemic aboard a ship. The states had the power, but no resources, to take quarantine measures;

• Emergency internal quarantine measures taken by the Commonwealth during the influenza pandemic of 1918–19 were accepted by the states. But when the first cases appeared in Sydney and Melbourne, the states imposed their own internal quarantine restrictions by closing state borders. The abject failure of these measures (no state escaped infection) saw the states once again cede control over quarantine to the Commonwealth. 12 (See Box 1 for further detail on the 1918–19 pandemic).
In 1920 the Act was amended to address these constitutional and administrative problems. Section 2A(3) was inserted to give the Commonwealth power to override state legislation by proclamation in an emergency.\textsuperscript{13}

The epidemic scares, combined with concerns about diseases imported by soldiers returning from World War I and burgeoning ideas about state planning and intervention, created impetus for further centralisation of health responsibilities:

Medical and population policy as the means to national renewal dominated thinking amongst public health doctors and a wide section of the medical profession. Stimulated by wartime experiments in medical control, this new public health lobby urged that the power of the state be harnessed to the wider project of health education and preventive medicine.\textsuperscript{14}

A national health department

[T]he growth of the Department has been an orderly process in response to the growth of scientific knowledge, to urgent national needs arising from recurrent national emergencies, and to more intelligent and exacting demands by the public as a natural result of the rapid development of educated public opinion.\textsuperscript{15}

At a Premiers’ Conference in 1919, the acting Prime Minister, W. A. Watt, proposed that the states consider either transferring powers over health to the Commonwealth or accepting Commonwealth co-ordination. Watt asked the premiers to consider the following arrangements:

A system in which the Commonwealth Department of Public Health would, in addition to its quarantine functions, concern itself with the investigation of causes of disease and death, methods of prevention of disease, the collection of sanitary data, the education of the public in matters of public health. In addition to this, the Commonwealth Government would subsidize any well directed effort made by any State towards the eradication or control of any disease; conduct campaigns of prevention on which more than one State is interested, and generally—as is done in the United States of America—inspire and co-ordinate public health measures generally without infringement or transfer of sovereign powers to the States.\textsuperscript{16}

The influenza debacle of 1919 was not sufficient to secure the states’ agreement to the proposal. The issue was settled only after public support of the proposal by the British Medical Council in Australia and the Australian Medical Congress in 1919 and 1920 respectively, and an offer of funding from the International Health Board of the Rockefeller Foundation.\textsuperscript{17} The Government accepted the offer and on 3 March 1921, the Commonwealth Gazette announced the new Department of Health.\textsuperscript{18}

The central function of the new department was not to operate as a national public health service \textit{per se}, but rather to focus on quarantine matters.\textsuperscript{19} These included administration of the Act, establishment and control of laboratories for the investigation of disease, conducting campaigns for prevention of disease, and control of sanitary data.\textsuperscript{20}
Increasing Commonwealth involvement in public health was propelled by its interest in controlling infectious disease (and in regulating the entry of immigrants who might be carrying disease), although its expansionary moves waned somewhat following World War II. Commonwealth measures in this regard expanded in response to new knowledge and practices in medicine and government and specific issues and emergencies, such as disease outbreaks. For their part, the states accepted or rebelled against encroaching Commonwealth powers usually according to the level of crisis each faced.

The Commonwealth today retains a strong interest in infectious disease, even as its interest and involvement in public health has broadened well beyond this issue. As many of the respondents interviewed for this paper highlighted, the historical tensions between the Commonwealth and states continue with regard to responsibility for infectious disease, as does the Commonwealth’s expansionary impulse in response to what it perceives as national security issues in health.

**Infectious disease control today**

Despite the Constitutional limitations on its power over public health matters, the Commonwealth today is a significant player. This is partly by virtue of the funding it provides to the states through health agreements and other arrangements, and the accountability these entail. In the area of disease surveillance and control, however, the Commonwealth plays an increasingly ‘hands-on’ role against a national security backdrop.

This renewed activism in infectious disease control has only developed in the last decade, after a period of complacency about Australia’s vulnerability to communicable diseases. One respondent claimed that as recently as the late 1990s, the predominant thinking in the Commonwealth Government was that Australia was free from communicable diseases, with the Government pointing to successes such as the global eradication of smallpox and the ongoing campaign to eliminate polio. Indeed, the Department of Prime Minister and Cabinet’s (PM&C) 1977 review of quarantine arrangements concluded that, ‘the disease threat to people has reduced to almost insignificant proportions, notwithstanding enormous increases in personal mobility since World War II’.

The Nairn Review of quarantine in 1996 also noted a long-standing disinterest in human quarantine. The 1977 PM&C review did, however, recommend that the Commonwealth establish access to ‘infectious disease facilities’ in state hospitals in the event of an outbreak of ‘diseases not yet known’.

Indeed, it has been new or re-emerging public health threats such as HIV/AIDS, multi-drug resistant tuberculosis, hepatitis C, Severe Acute Respiratory Syndrome (SARS), and more recently, avian flu, which have all since helped precipitate renewed national action. See Box 1 below for a summary of the threat posed to Australia by the recent outbreak of avian flu in Asia and Australia’s response to it.

However, various problems with the current national arrangements for preventing and controlling infectious disease in Australia are mentioned in the academic literature and were identified by many of the respondents interviewed for this paper.
Box 1: Australia and the avian flu

Although avian flu viruses usually only cause mild symptoms in wild birds, some (most notably the H5 and H7 strains) cause widespread, highly contagious and fatal disease (referred to as ‘highly pathogenic avian influenza’ (HPAI), or ‘avian flu’) in domestic poultry. It was the ‘H5N1’ which recently swept across much of Asia. Human infection with H5N1 was first noted in Hong Kong in 1997. Pigs are also susceptible to both avian and human flu viruses. If avian flu and human flu were to mix in an infected pig or person to create a new flu virus to which people have no immunity, and human-to-human transmission occurred, a human flu pandemic could occur.

The most infamous pandemic was the ‘Spanish Flu’ of 1918–19, which is estimated to have killed 40–50 million people worldwide, including 11 500 in Australia, in an age before mass commercial air travel. Although a different strain from the recent outbreak of avian flu, it is also thought to have originated in birds. According to figures in the Commonwealth Government document A Framework for an Australian Influenza Pandemic Plan (June 1999), if Australia was struck by a flu pandemic today like the Spanish Flu, it could expect at least 42 000 deaths per year, representing a 30 per cent increase in overall mortality rates.

A significant outbreak of the current avian flu in Australia could threaten the agricultural industry (particularly poultry meat and eggs), trade, tourism and the economy generally. It would result in significant loss of income for operators and could lead to job losses on farms and in related industries. There are costs associated with every aspect of an outbreak—loss of revenue, dealing with the disease, compensating farmers and re-establishing markets. In Australia at least, the costs associated with an outbreak of avian flu in poultry (without human infections), would be shared equally by government and industry under the pre-existing ‘Emergency Animal Diseases Response Agreement.’ A total of five outbreaks of HPAI (due to H7 viruses) have occurred in Australia, with the last occurring in NSW in 1997. Each outbreak was quickly eradicated, but in each case, there was evidence of contact between the farmed poultry and waterfowl.

Sampling of wild birds for avian flu is part of the Australian Quarantine and Inspection Service’s (AQIS) disease surveillance programs, and surveys have confirmed various strains of avian flu do circulate among wild birds. Australia’s strict farm biosecurity aims to prevent contact between commercial poultry and wild birds by protecting feed and water supplies, limiting entry to farms, and physically isolating the poultry. The Australian Veterinary Emergency Plan (AUSVETPLAN) deals with a variety of animal health crises, including avian flu. The section on HPAI provides detailed information on mounting a response to any outbreak of the disease. Although it notes that the risk of a major HPAI outbreak in Australia remains low due to the strength of the biosecurity provisions in the poultry industry, AQIS conducted 100 per cent baggage screening with passengers arriving from Asia, and seized all poultry products such as meat, eggs and feathers. International mail was also screened and poultry from ships stores confiscated. Even under normal circumstances, Australia does not import live poultry, eggs or raw poultry products, and any cooked product must be cooked well enough to kill the flu and other viruses before it is imported.

Although the recent HPAI outbreak affected some of Australia’s nearest neighbours, and the threat to Australia was considered high, the actual risk of it spreading to Australia while it predominantly affected only birds appeared to be low. The consensus seems to be that Australia’s strict farm biosecurity measures, routine disease surveillance and increased quarantine screening should act together to substantially mitigate the risk.

Critical, but stable: Australia’s capacity to respond to an infectious disease outbreak

National co-ordination and control

National preparedness for an infectious disease outbreak begins with the development of policies and strategies. At the national level, these are formulated in a number of agencies and with the input of various experts (see Box 2 below).

Box 2: National-level bodies involved in outbreak response

- **Commonwealth Chief Medical Officer** (CMO). The CMO provides support to the Minister and the Department of Health and Ageing across the full range of professional health issues, including health and medical research, public health, medical workforce, quality of care, evidence-based medicine and an outcomes-focused health system. The CMO does not have an executive or operational role in relation to managing health issues, and contrary to how the role is sometimes understood, the Office does not appear to be entirely independent from the Commonwealth Government. Several respondents had the impression that the CMO is expected to support government policy—the CMO himself said in evidence to the Senate Standing Committee on Community Affairs on 3 June 2004, when questioned about the decision to purchase a particular anti-viral drug for Australia’s National Medicines Stockpile: ‘I will have to seek some technical advice as to who makes decisions. I do not think CMOs make any decisions’ (p. 54).

- **Australian Health Disaster Management Policy Committee** (AHD–MPC). This high level inter-jurisdictional committee was formed in the wake of the Bali bombing to help improve national health disaster preparedness. Its membership includes a senior health official from each Australian state and territory and experts in public health, mental health, and clinical and emergency care. The Australian Defence Force, Emergency Management Australia and a senior health officer from New Zealand are also members of the Committee.

- **Communicable Diseases Australia**. As a branch of the Department of Health and Ageing, it coordinates the national surveillance of notifiable and other communicable diseases, manages and liaises with specific communicable disease surveillance programs and fosters collaboration on national strategies to improve communicable disease surveillance.

- **Emergency Management Australia** (EMA). Although primary responsibility for the protection of life, property and the environment rests with the states and territories, EMA provides Commonwealth Government support to develop the states’ capacity to deal with emergencies and disasters. EMA also provides physical assistance when the states/territories cannot reasonably cope during an emergency.

- **Communicable Diseases Network Australia** (CDNA). The CDNA provides national public health leadership and co-ordination on communicable disease surveillance, prevention and control. It offers strategic advice to governments and other key bodies on public health measures to minimise the impact of communicable diseases in Australia and the region. The CDNA also oversees the National Communicable Diseases Surveillance Strategy, which aims to develop the infrastructure and systems for effective national surveillance, preparedness and responses to communicable disease risks.

- **National Influenza Pandemic Action Committee** (NIPAC). NIPAC was formed in 2003 to plan for pandemics and monitor avian influenza. NIPAC’s plans address, amongst other things, border protection, immunisation, anti-viral agents, laboratory diagnosis, respiratory hygiene, communication with the public, and infection control measures to limit the spread of the disease.
The respondents interviewed for this paper consistently raised two main issues with regard to the national arrangements for responding to an infectious disease outbreak, both of which are also reflected in the literature. The first issue is the overlapping Commonwealth–state responsibilities for different aspects of health—a broad issue which regularly kindles heated debate. Communicable disease control is no exception, particularly in the wake of SARS, avian flu and the perceived increased threat of bioterrorism, although it does not always attract the same degree of public debate as other aspects of health policy. The second issue is the division in involvement and function between public health practitioners and health policy-makers.

**Commonwealth-state relations in health**

The relationship between the Commonwealth Health Department and the State organizations is increasingly good, although some elements of suspicion persist. Coordination could be better if we had a greater community of interest: we can all admit that co-ordination will be better when we recognize that the cause we are serving is greater than our personal interests.

All respondents noted that the Commonwealth had increased its involvement in public health in the last few years after effectively leaving responsibility for it to the states for decades. Not all respondents see this as a favourable development, although as some of them suggest, some aspects of Commonwealth involvement are more about divisions between practitioners and bureaucrats than Commonwealth–state relations per se.

According to some respondents, the invention of new Commonwealth structures in the wake of terrorist attacks, SARS and avian flu (such as the Australian Health Disaster Management Policy Committee: AHD–MPC) has added to an already heavy public health bureaucracy dealing with infectious diseases. Respondents were also concerned about duplication of effort, noting new Commonwealth involvement but no decrease in state involvement. The existence and alleged overlap of numerous committees and working groups was described by one respondent as ‘messy’ and as a ‘shambles’ by another.

Such comments reflect an element of distrust between the states and the Commonwealth (or, perhaps more accurately, the distrust which the states have towards the Commonwealth). Neither side appears to wholly trust the other’s motives. States see a federal grab for control over what remains essentially a state responsibility, while from the perspective of the federal bureaucracy’s new ‘can-do’ attitude to infectious diseases, the states are stubbornly resisting ceding power. This was described by one respondent as a ‘tug-of-war’ between the Commonwealth and states.

Nevertheless, several respondents (including some at state level) acknowledged that the new Commonwealth activity in infectious disease has brought benefits. For example, measures announced in the 2004–05 Federal Budget included $40.2 million for initiatives to strengthen national health security, preparedness and response capability in the event of a terrorist attack.
or a national health emergency.\textsuperscript{30} The bringing together of expert groups, facilitated by the Commonwealth in recent years was also seen as a positive step towards greater and more effective collaboration.

Furthermore, despite the concerns expressed above, most respondents believe that the system retains its decentralised essence and works well. Advice and goodwill (from other states or the Commonwealth) are said to be available when needed, and health resources are reportedly ‘infinite’ if the case is properly made.

Most respondents were confident that in the event of a national infectious disease emergency, ‘the system would work’.

Despite underlying tensions, Commonwealth–state relations were described as ‘quite cordial’ in practice. Most respondents were confident that in the event of a national infectious disease emergency, ‘the system would work’. The response to SARS was often cited as an example of Commonwealth–state co-operation and goodwill. It was also noted as an example of where duplication in structures is not necessarily wasted effort.

All respondents considered state-state relations and communication to be excellent, and it was claimed that help required in any jurisdiction would be quickly forthcoming (the Canberra bushfires in 2003 were mentioned as an example). It appears that due to the first-response role of the states, the link between public health practitioners and state governments is generally much stronger than that between practitioners and the Commonwealth Government.

**Practitioners and policy-makers**

The Commonwealth doesn’t make enough use of the expertise available to it.\textsuperscript{31}

A common refrain from many respondents was that ‘managerialism’ has had a detrimental effect on Australia’s ability to plan and act strategically for infectious disease outbreaks. Respondents used the term ‘managerialism’ in the context of the Department of Health and Ageing governing through a deliberate division between public health policy-makers and clinical health professionals.\textsuperscript{32}

These respondents argued that policy-makers with limited public health content knowledge make decisions on critical public health matters, with little or no consultation with ‘experts’ or practitioners in the field. Some were frustrated by recent decisions of the Commonwealth on the distribution of resources in public health. An example cited was the allocation of money to infrastructure or equipment, without any real assessment of the need for it, that could have been spent more usefully. Staff and training were both frequently suggested as the two areas in need of more funding.

Another source of frustration was the Communicable Diseases Network Australia. Whilst it was acknowledged as an important asset in Australia’s disease monitoring system, some respondents felt it is not always well connected to strategic policy-making on communicable
diseases. Comments by respondents suggest that part of the reason for this appears to be the Commonwealth’s tendency in the last two to three years to maintain a tight policy grip on health matters deemed to be also matters of national security, which, it is claimed, often sidelines practitioners and other experts in the process.

Although most respondents felt that the introduction of a security consciousness into health policy and planning was generally beneficial, mainly because it gave health issues a little more ‘weight’, many were critical of the way in which this had been implemented. Some commented that the ‘securitisation’ of health had become a barrier to proper planning and that there was a reluctance by police and intelligence agencies to accept or share planning with any other professional who was not a ‘spook’. A number of respondents noted that this lack of integration has given rise to a strong sense of distrust and suspicion, to the extent that medical experts are ironically becoming further removed from aspects of public health planning at a time when, it could be argued, they are needed most.

As one respondent pointed out, addressing the threat of bioterrorism, for example, is clearly a national security issue, but one to which medical experts have a clear contribution to make.

It is important to note, however, that some respondents felt that in some areas ‘content’ people are beginning to provide strategic leadership. For example, one person commented that the AHD–MPC is helping to connect health experts more closely with executive decisions, but felt that ‘there is a long way to go’. Change is generally felt to be slow and there is a sense that top levels of the Commonwealth bureaucracy are resistant to allowing such experts to have more influence.

A number of reasons were suggested for this resistance, both by the practitioners and the policy-makers among the respondents interviewed for this paper. Policy-makers seem to view practitioners as having too many vested interests, such as a narrow focus on obtaining research funding or ‘extravagant’ new equipment. Practitioners are also accused of having a poor understanding of the process by which policy is developed and implemented, particularly on Commonwealth issues. Policy-makers, on the other hand, are seen by practitioners as being driven more by politics and bureaucratic goals than by genuine concern for good public health outcomes. As one respondent said, ‘you end up with non-sensible decisions made for political purposes’.

This historical mutual distrust is being fuelled currently by an environment in which health has become a national security issue. Medical experts feel they have been further sidelined and not trusted with sensitive security planning. One respondent described a ‘chasm’ that exists between content/expert knowledge and management/strategic planning. The concern amongst many respondents is that an infectious disease outbreak is likely to quickly become a political issue, where bureaucrats micro-manage what is essentially a public health matter—one with which health professionals are better positioned to deal.
It is clear that the policy-practitioner divide is overlaid by Commonwealth-state tensions, particularly in the area of health funding. However, it was evident from comments by respondents that all parties feel that relations are cordial in practice. Perhaps more importantly, despite the ongoing bureaucratic tensions, the broad feeling amongst respondents is that in the event of an infectious disease outbreak, the application of the Commonwealth-state structures would result in an adequate practical response.

**An Australian national disease control centre?**

A number of respondents commented on the desirability of Australia establishing a body equivalent to the US Centers for Disease Control and Prevention (CDC). It was argued that while Australia has expertise in disease control, this expertise is too diffuse, spread as it is amongst a multitude of working groups and committees. An Australian equivalent of the CDC might, for example, through better resourcing, improve the ability of health professionals around Australia to identify a new virus.

However, other respondents rejected this idea, partly because Australia may not have the physical and human resources required to equip and staff such a centre. Some also felt that, whereas the CDC was established with the public health agenda of fighting communicable diseases (although its mission was later broadened to preventive health generally), the establishment of a similar body in Australia would probably be driven more by political goals, than by a genuine belief that public health would benefit. For example, an Australian body might be used to make it appear that Commonwealth–state problems of co-ordination and responsibility for infectious disease were being resolved.

**Stove-piping**

Most respondents agreed that Australia should practise an ‘all-hazards’ approach in dealing with any infectious disease outbreak—that is, emergency procedures should be the same regardless of the source or nature of the crisis. Emergency Management Australia generally takes an ‘all-hazards’ approach in its planning, but such an approach does not appear to be universally accepted or practised.

Many respondents noted that existing emergency plans are ‘stove-piped’—that is, separate plans exist for a response to a terrorist attack, fire, flood, influenza pandemic and so on. One respondent described this delineation as ‘man as terrorist versus nature as terrorist’, and another believed that in terms of dealing with terrorism, governments would do well to consider that ‘terrorism is just another disaster’. Overall, the all-hazards approach was felt to be stronger in rhetoric than in practice. According to some respondents, this was not due to poor implementation, but to resistance in some areas to such an approach, especially in health bureaucracies and amongst the medical community. The reason for this resistance is not entirely clear, but may stem from an underlying perception that terrorism is not just simply ‘another disaster’, and is somehow qualitatively different—perhaps because a terrorist attack would be likely to be a far more political and emotive issue than other disasters.
Surveillance

Re-emerging and new infectious diseases have caught governments by surprise …

The World Health Organization (WHO) defines surveillance as the ‘continuing scrutiny of all aspects of the occurrence and spread of disease that are pertinent to effective control’. It is characterised by ‘methods distinguished by their practicability, uniformity, and frequently by their rapidity, rather than complete accuracy’. In other words, while surveillance is central and essential to infectious disease control, the protection it offers is not foolproof. Effective surveillance relies on a combination of laboratory-based diagnoses, timely reporting systems (including from general practitioners and emergency departments) and the human capacity to analyse and interpret data.

External surveillance

The SARS outbreak has highlighted the importance of border protection measures against the transmission of disease as an essential first line of defence.

In some ways Australia’s surveillance systems begin beyond its borders. Identifying diseases before they reach Australia is perhaps the best strategy for keeping them out of the country. That is, Australia’s health security is dependent on its continued involvement in international surveillance networks, such as the WHO Global Influenza Surveillance Network, and good security in the region—Australia’s avoidance of SARS and avian flu are good examples. However, it was suggested by several respondents that Australia is ‘too introspective’ when it comes to disease prevention and control in the region. This is partly because of new and re-emerging disease threats, but also because many Asian and Pacific neighbours need more help with their disease control systems. Many regional countries, for example, do not have anti-virals and vaccines. One respondent argued that, just as Australia is taking a proactive role in preventing the political and economic collapse of near neighbours such as PNG and Nauru, Australia should take greater responsibility for influenza pandemic preparedness in the immediate region.

Surveillance at the border is the next step in Australia’s preparedness. Health surveillance at the border has long been a small but effective permanent presence which is boosted as needed, such as during the SARS outbreak. Most respondents felt that Australia managed this aspect very well:

Australia’s capacity to protect its population at the border is as good, if not better, as anywhere else.

The term ‘border’ in this context was taken to mean controlled entry points rather than Australia’s largely unprotected 36,000 km of coastline. Australia’s internal surveillance arrangements attracted more criticism from respondents, as well as in the literature.
Internal surveillance

We’re in reasonable shape to spot an [infectious] agent and respond to it.40

National co-ordination of surveillance activities occurs through the Communicable Diseases Network Australia (CDNA). Established in 1989, its membership includes Commonwealth and state government representatives, representatives from other countries in the region as observers, members of key organisations in the communicable diseases field and others with relevant expertise. Members convene fortnightly to exchange information about communicable diseases in Australia and the region. See Box 3 for a summary of communicable disease surveillance activities co-ordinated by the CDNA.

Box 3: Communicable disease surveillance

• **National Notifiable Disease Surveillance System.** Established in 1990 under the auspices of the Communicable Diseases Network Australia (CDNA), the system coordinates the national surveillance of more than 50 communicable diseases or disease groups endorsed by the CDNA. Public health legislation requires that notifiable diseases are reported to health agencies within each state or territory. Computerised, ‘de-identified’ unit records of notifications are also supplied to the Australian Government Department of Health and Ageing for collation, analysis and reporting. This allows for the detection of national trends, outbreaks of diseases crossing borders and enables co-operative national action.

• **National Influenza Surveillance Scheme.** This is based on several schemes collecting a range of data that can be used to measure influenza activity. The schemes include:
  – laboratory-confirmed influenza, which is a notifiable disease in all Australian states and territories, reported through the National Notifiable Diseases Surveillance System,
  – sentinel general practitioner schemes that report incidents of influenza-type illness, and
  – the Virology and Serology Laboratory Reporting Scheme laboratory reports of influenza diagnoses.

• **Public Health Laboratory Network.** The PHLN was established to complement the Communicable Diseases Network Australia (CDNA) and consists of a collaborative group of laboratory representatives. The Network provides strategic advice and shares expertise nationally to enhance the capacity for the laboratory-based detection and surveillance of communicable diseases in Australia.

Most respondents agreed that Australia’s current surveillance networks are sufficiently ‘robust’ to deal with routine and some emerging infectious diseases, due to a combination of factors, one of the most important of which was referred to as ‘rumour surveillance’. This was described as the often informal personal networks through which current information is exchanged between professionals. According to many respondents, these networks are a real strength of the day-to-day functioning of the overall system.
Such networks form the basis of a system of decentralised assistance, where states ask for and offer advice and resources to each other when needed—without the Commonwealth acting as mediator or co-ordinator. A common refrain was that ‘the system comprises a lot of goodwill and expertise’. In other words, the success of Australia’s infectious disease control system is felt to be largely due to unofficial networks, decentralised assistance and personal contacts between agencies.

It was clear, however, from repeated comments that this reliance on informal arrangements is also a weakness. Respondents felt that it reflects the lack of workable structures through which states can communicate with each other and with the Commonwealth. Respondents appeared less convinced that Australia’s surveillance networks would be sufficiently ‘robust’ to handle a major infectious disease crisis.

Lack of timely reporting was identified as a serious problem by several respondents. One respondent claimed that official notification of the SARS outbreak took six weeks to reach general practitioners in some states. This is a long delay when health authorities are attempting to control a serious disease outbreak. It was also claimed that the time taken for reports to pass from local hospitals or other health care facilities, to state health departments and on to the Commonwealth means that a cross-border outbreak (with the potential to become a national health emergency) could potentially take weeks to identify. Although this was believed to be partially mitigated by the fact that alerts about unusual diseases or symptoms would pass quickly through informal channels, there was, however, a strong view that detection and reporting mechanisms need to be more streamlined.

Another aspect of Australia’s surveillance network that attracted some criticism is laboratory capacity. It was felt that there are not enough laboratories around Australia to be useful in the rapid identification of a disease, and many are not equipped to detect SARS, one of the latest threats to public health.

However, even with better facilities, many of our respondents commented that outbreaks are unlikely to be detected in a laboratory. Clinicians, such as doctors and nurses, are more likely to raise the alarm about a new infection, and laboratories would then be used to confirm the case. In other words, few respondents felt that routine reporting through current surveillance systems was sufficient for early detection of a disease outbreak, whether it is naturally-occurring or deliberately introduced.

**Syndromic surveillance**

Outbreaks are not detected in labs, but by clinicians in the field noticing something different or odd.

Syndromic, or real-time, surveillance differs from the surveillance systems described above in that it involves collecting and analysing data on symptoms and other indicators of health (such as fever or cough), rather than relying on particular disease diagnoses. Syndromic surveillance aims to identify in real-time abnormal occurrences of groups of symptoms and
signs, and to alert health authorities well before an individual clinician could identify an evolving event. For this reason, syndromic surveillance aims to detect outbreaks earlier than traditional disease surveillance systems.  

The threat of bioterrorism has fuelled interest in developing syndromic surveillance systems. Given that bioterrorist agents such as anthrax, plague and smallpox can result in initial flu-like symptoms, a sudden increase in reports of headache, fever or muscle pain could indicate a bioterrorist attack. However, the problem for any detection system is that such symptoms could also simply indicate the onset of normal seasonal influenza.

It is clear that views differ on the usefulness of real-time disease surveillance systems. Some respondents argued that because such systems expand the range and volume of data that can be collected, they increase the chances of identifying and managing disease outbreaks when they occur (see Box 4 below for a description of a NSW trial).

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**Box 4: NSW biosurveillance system**

The NSW Department of Health is developing a ‘biosurveillance’ system which aims to produce ‘near real-time public health surveillance’. Currently being trialled in hospital emergency departments, the system uses a combination of specific diagnoses from individual cases and categories based on symptoms. Captured data includes age, sex, time and date of arrival in the emergency department, and country of origin.

Triage entries are accessible to users of the NSW Health database. Data messages are instantly transmitted from emergency departments to the surveillance database. Human communication protocols are also in place for updating the national Communicable Diseases Network Australia (CDNA), allowing any communicable disease issues to be followed up at a national level if necessary.

Limitations of the system, according to those working closely with it, include the fact that reliance on hospital emergency department data means that only conditions related to the clinical case are recorded. Emergency department data needs to be enhanced with other hospital data, such as pathology, ambulance and absentee data from schools and the workforce to provide a fuller picture.

Significantly, the system is not built to distinguish between natural and intentional outbreaks of disease. However, the NSW system is currently designed to provide both early warning of outbreaks and to monitor the progress of an outbreak once it is recognised.

Others argued that even the best real-time surveillance system still needs human skill to read and interpret the data once it is collected, so Australia’s disease prevention systems need more human resources rather than technological advances to boost their capacities. Several people pointed to US trials of such systems, which highlighted the need to boost staff numbers and training to deal with the volume of information produced by the automated collection system. In New York City, for example, real-time surveillance did not detect anthrax cases that clinicians reported informally from the community.
A RAND Corporation study agrees:

No matter how well a syndromic surveillance system performs, its benefits ultimately depend on how effectively it is integrated into the broader public health system. Syndromic surveillance only sets off alarms. A process for investigating such alarms and responding effectively must be in place beforehand. 48

Another US study of the cost-effectiveness of syndromic surveillance makes a similar point:

The optimal approach to using the establishment of syndromic surveillance to strengthen the state and local public health infrastructure would be permanently to increase state and local funding to hire and equip well-trained public health professionals (e.g. epidemiologists, biostatisticians, programmers, etc.) working in these agencies to establish, conduct, and analyse the results of the surveillance … However with most cities, counties, and states facing budget deficits, it is hiring freezes, elimination of unfilled positions, and reductions in staffing that are the order of the day, not the hiring of new staff into locally funded permanent positions.49

It was also argued that syndromic surveillance needs laboratory support to identify influenza types and to differentiate normal seasonal influenza from exotic (and potentially dangerous) variants like the one associated with the recent avian flu outbreak. As noted above, the belief is widespread that Australia lacks capacity in this regard.

Real-time data is also of limited use when some hospitals, including major hospitals in capital cities such as Canberra, do not have the resources to conduct a test for viruses such as SARS. Samples are typically sent interstate with a minimum 2–3 day turn-around. Several respondents suggested that Australia needs a number of adequately-resourced and staffed laboratories throughout the country equipped to test for viruses such as SARS.

These points are echoed in the findings of a recent assessment of a New York City syndromic surveillance system:

Syndromic surveillance systems are essentially ‘smoke detectors’ and call for prompt investigation and response if they are to provide early warning of outbreaks. Syndromic surveillance should be viewed as an adjunct to, not a replacement of, traditional disease surveillance.50

Better use of information technology, such as through real-time computerised systems, may help the response to some diseases, but not necessarily all. This is partly because public health surveillance relies heavily on investigations, which means that, while data and electronic surveillance are helpful, interviews and investigations are of more value from an epidemiological perspective. Clinicians, hospitals and public health professionals are the main vehicles for this. As much as electronic data and equipment are useful, most respondents felt that more people are needed ‘on the ground’.
Another possible limitation of the usefulness of syndromic-type systems is the extent to which they assist health departments to respond to a report suggesting an outbreak. As one study notes:

…it is difficult to envision a health department taking any substantive action, such as distributing prophylactic anti-microbial agents, vaccination, imposing quarantine, or even issuing an alert to the public, based solely on an increased number of clinical illnesses.\(^{51}\)

None of this is to argue that development of syndromic systems should be abandoned. They are an important public health resource. As the comment below suggests, even if syndromic data does not necessarily improve the chances of identifying and fully controlling an outbreak, once detected, the data helps to trace the epidemiology of the outbreak and track its progress. It could also be used to assess the effectiveness of prevention and control measures.\(^{52}\)

Even if bioterrorism is first detected by an astute clinician, syndromic surveillance can help delineate the size, location, and tempo of the epidemic or provide reassurance that a large outbreak is not occurring when a single case or a small, localized cluster of an unusual illness is detected.\(^{53}\)

**Medical response capacity**

Part of the problem is that we are trying to imagine that which is beyond the imagination of most Australians.\(^{54}\)

The ability of hospitals to deal with a sudden influx of multiple casualties, often referred to as a ‘surge capacity’, is a critical part of the response to a major incident. Most of the respondents interviewed for this paper expressed serious doubts about the ability of any hospital to deal with such a crisis, with many noting in particular the lack of sufficient intensive care facilities. Several respondents also expressed concern that workforce issues were not given enough consideration in devising emergency plans for dealing with multiple casualties, particularly if those casualties are the victims of an infectious disease outbreak. Other research suggests that many of Australia’s hospitals are underprepared for dealing with mass casualty incidents or are only now beginning to address the issue.

**Hospital surge capacity**

Just how extensive a ‘surge capacity’ the health sector has, or may need, to deal with the consequences of a major terrorist attack here in Australia is under active consideration at the moment.\(^{55}\)

*Professor Richard Smallwood, Chief Medical Officer (Commonwealth) November 2002*

During the worldwide outbreak of SARS in mid-2003, an Australian professor of emergency medicine working in Hong Kong, Dr Peter Cameron, claimed that Australia’s health care system lacked sufficient intensive care unit (ICU) beds, ventilators and trained staff to
adequately deal with an outbreak such as SARS. He claimed that the biggest concern was the acute lack of ICU beds, and that if there were just 200 cases of a disease such as SARS in Sydney or Melbourne, 20–30 per cent of which required intensive care, ‘there would be little likelihood of finding 50 ICU beds at short notice’. The director of the Infectious Diseases Unit and the Department of Microbiology at Canberra Hospital, Dr Peter Collignon, agreed that there was not much spare capacity in the health care system, and was quoted as saying at the time that, ‘there is not even the planning in our hospitals to cope with the increase in influenza cases every winter’. Indeed, it has been estimated that an influenza pandemic could, within a six to eight week period, result in up to 20 000 people requiring hospitalisation in Victoria alone.

One respondent related a case in which a major public hospital in a capital city struggled to deal with a coach-load of tourists who presented together at the emergency department with diarrhoea. Most of the respondents interviewed for this paper were unsurprised by this story, commenting that most hospitals consistently run at near capacity and that the majority of all admissions are emergency admissions (but not necessarily ICU admissions). A recent performance audit conducted by the NSW Auditor-General into the transport and treatment of emergency patients in NSW supports this observation when it reported that ‘on average 60 per cent of all overnight patients admitted to an inpatient bed do so via the emergency department’. The fact that most hospitals operate at near capacity obviously leaves little flexibility or slack in the system generally, and even less in terms of ICU facilities. More than one respondent believed that Sydney or Melbourne hospitals would not currently cope with a mass casualty incident or an extensive infectious disease outbreak. It was also claimed that most hospitals would on average only ever have one or two ventilated ICU beds spare at any given time.

Admittedly, such problems do not appear to be unique to Australia. In February 2004, the BBC reported that a survey of over half of the UK’s intensive care units revealed that approximately 10 per cent of doctors interviewed claimed that bed shortage had cost lives and a further 31 per cent said that ‘delays in finding a bed had compromised patients’ health’.

**Availability of hospital beds**

The results of a survey conducted during 2001–02 by the Australian and New Zealand Intensive Care Society (ANZICS) reveal that Australia has a total of 171 hospitals with ICU facilities and that, of those ICUs which participated in the survey (92 per cent response rate), 65 per cent are located in capital cities. The survey also indicated that Australia has an average of around 7.4 ICU beds per 100 000 population. The following table provides some indication of how this compares to other major industrialised nations.
Critical, but stable: Australia’s capacity to respond to an infectious disease outbreak

Table 1: International comparison of ICU bed numbers per 100 000 population

<table>
<thead>
<tr>
<th>Country</th>
<th>Publication Year</th>
<th>Number of ICU Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>2003</td>
<td>6.3</td>
</tr>
<tr>
<td>Australia</td>
<td>2001–02</td>
<td>7.4</td>
</tr>
<tr>
<td>Germany</td>
<td>1999</td>
<td>8.3</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>9.0</td>
</tr>
<tr>
<td>Holland</td>
<td></td>
<td>10.2</td>
</tr>
<tr>
<td>Canada (Alberta)</td>
<td></td>
<td>16.0</td>
</tr>
<tr>
<td>United States (Massachusetts)</td>
<td></td>
<td>24.0</td>
</tr>
</tbody>
</table>

In the recently released report by the Joint Standing Committee on Foreign Affairs, Defence and Trade titled *Watching Brief on the War on Terrorism*, the Deputy Secretary of the Department of Health and Ageing, Mary Murnane, is quoted in evidence to the Committee describing a national audit of acute hospital beds, ventilators, isolation beds and mortuary facilities currently being undertaken.66 In remarks to a June 2004 Senate Estimates hearing on the results of this survey (the first of its kind), Ms Murnane described Australia’s capacity to respond to incidents similar to the Bali bombing as ‘reasonable’ and ‘adequate’.67 A month earlier, in May 2004, the current Chief Medical Officer, Professor John Horvath, had described Australia’s emergency medical response as ‘excellent’, adding that ‘I’m not concerned at the present time that any credible threat will not be able to be appropriately met with our current level of preparedness’.68

In an apparent effort to deal with increased demand for hospital services over winter, the NSW Government, for example, announced in early June 2004 that it would open nearly 1000 extra beds throughout Sydney hospitals, approximately only half of which would be permanent. South Australia took a similar approach in 2003.69 However, figures provided by the Australian Private Hospital Association indicate that in the two years to October 2003, the NSW Government closed 359 public hospital beds (and the Victorian Government, 526 beds, the most of any State), so the sustainability of this approach as a long-term strategy is questionable.70 The NSW Nurses Association was cautious in its support for the announcement, saying that nurses were always under pressure to open up extra beds.71

This approach does not appear to have done much to ease the problem of ambulances in Sydney being forced to ferry patients from one emergency department to another in order to find a bed, or queuing outside hospitals, a situation which the Health Services Union claims occurs every winter with no long-term strategies to prevent it.72 The NSW Auditor-General reports that the main cause of so-called ‘access block’, which occurred at an average rate of 36 per cent in NSW metropolitan hospitals in the 12 months to March 2004, is the inability to find ward beds into which existing emergency patients can be transferred.73 This problem is not unique to NSW, with the ACT Government recently moving to ease pressure on hospital emergency departments.74
Simply opening additional beds as a solution to increasing bed capacity was criticised by many of those interviewed for this paper as short-sighted and temporary, and a number shared the concerns of the NSW Nurses Association that permanent extra beds require an ongoing commitment of additional, suitably qualified staff. Several respondents emphasised that it is not so much creating bed capacity that is the problem, but rather adequately staffing those beds. This view is supported by the NSW Auditor-General:

… increasing bed numbers necessitates an increase in nursing staff numbers. As current shortages indicate, it would be difficult for hospitals to find sufficient staff to provide this many extra beds.75

This issue is of acute importance when planning for the creation of extra beds in an emergency, because patients require ongoing monitoring. Workforce issues are covered in more detail in the next section.

Creating additional capacity

She [Diana Horvath, chief executive officer of the Central Sydney Area Health Service] confirmed Royal Prince Alfred hospital would close about 32 elective surgery beds by merging wards such as vascular with cardiovascular, and head and neck cancer surgery with general cancer surgery.

But she said the beds would be reopened for patients being admitted by the emergency department. She said the hospital was 97 per cent full when it should be running at an 85 per cent occupancy rate.

‘It makes a situation where you just can't deal with the slightest surge in demand, and we know we have a peak during winter,’ she said.

‘We want to ensure the beds we have got can take the emergencies rather than the electives.’76

The standard approach to creating additional bed capacity in a medical crisis appears to be the cancellation of elective surgery. A 2001 report by the Australian and New Zealand Intensive Care Society (ANZICS) evaluating the availability of intensive care resources for influenza pandemic planning indicated that the cancellation of elective surgery could potentially provide an extra 68,252 ICU bed days each year in addition to the total 249,306 ICU bed days reported in Australia for 1998.77 The report also noted that just over 1400 extra ventilated beds could be created in health care facilities around Australia if required, but warned that the effect on other areas of the hospital system of co-opting resources had not been assessed.78 Significantly, in assessing the potential requirement for ICU beds in the event of a pandemic, the report concluded that ‘even the most conservative estimates suggest that the current system would be overwhelmed’.79
Comments by respondents for this research would suggest that the situation has not changed since 2001, and the NSW Auditor-General has noted that the cancellation of elective surgery has become normal practice for dealing with the increasing numbers of routine emergency patients. This perhaps suggests that the value and impact of cancelling elective surgery as an emergency measure in times of crisis might now be somewhat diminished. While all respondents who commented on this issue agreed that cancellation of elective surgery is one of the quickest ways to create additional beds, it was suggested by one respondent that the capacity for routine elective surgery first needed to be expanded in order to create greater potential slack in the system that could be drawn on in an emergency. As the respondent put it, 'you can’t cancel what you don’t have'. The findings of the NSW Auditor-General’s report would seem to provide some basis for this view:

Mr Sendt [Auditor-General of NSW] found hospitals had experienced a 23 per cent increase in attendances since 1997 and were increasingly unable to get through their booked surgery lists. The number of people waiting more than a year for surgery doubled in the 12 months to March 2003, and had risen by another 10 per cent since then.80

Another respondent suggested that in order to ensure a true overflow capacity, each state would need to maintain two fully equipped wards on permanent standby, sealed for emergency use only—although it was also acknowledged that this is highly impractical. It was also noted that China built a new hospital in approximately two weeks to deal with the increased need for beds during the SARS outbreak in 2003. Other more practical options being examined include adopting the Israeli approach of setting up general wards such that they can be quickly converted to ICU wards in a crisis and lining the walls of hospital corridors with oxygen and electrical outlets to connect up extra patients as required.

It was suggested that much could be learnt from how Israel deals with mass casualties, given that it experiences bombings and other violent attacks on a fairly regular basis. The Federal Government at least appears to recognise that surge capacity is a national issue, requiring national coordination to address it effectively. The Deputy Secretary of the Department of Health Ageing stated in evidence to the Joint Standing Committee on Foreign Affairs, Defence and Trade in March 2004 that:

Coordination is the key. You can plan for certain incidents but, generally speaking, surge is something that requires a national solution.81

One respondent suggested that bed shortages will always be a problem because health is predominantly a state responsibility and, because hospitals are costly to run, they are perpetually short-staffed. It was also noted by some respondents that the states are usually left to cope with an imposition on resources when their hospitals are expected to enforce measures of national significance, as was the case with SARS. This point is also made in a
recent review of SARS surveillance in Australia, which concludes that an influenza pandemic could be expected to have a far greater impact than SARS:

The rapid and extensive allocation of resources required for the SARS response has also highlighted a need to examine surge capacity at primary care, jurisdictional and national levels. Most stakeholders needed to make a substantial and prolonged response to SARS at the expense of other investigations, programs and routine activities. An assessment to estimate the impact of the response may assist in a more efficient future response to an influenza pandemic which would most likely be far greater in magnitude.\(^82\)

The Alfred Hospital in Melbourne was apparently designated by the Victorian State Government as a SARS hospital, but it was claimed that in the absence of any back-up support for dealing with day-to-day emergency cases, the admission of just one SARS patient would have necessitated closure of the entire state-wide trauma service provided by The Alfred. As it was, The Alfred did not end up taking any SARS patients. However, despite these and other complaints, suggestions earlier this year that the Commonwealth Government might consider taking over responsibility for running the public hospitals were not viewed very favourably by any of the respondents who commented on the issue.\(^83\)

A number of respondents pointed out that it is widely acknowledged that very little slack currently exists in the health system, and expressed doubts as to how successful any of the current approaches to increasing bed capacity would be in reality. There is the possibility too that supply actually creates demand—meaning that additional beds will always be filled—and that this might always deter governments from dramatically expanding the numbers of hospital beds, even in emergency wards. It was noted generally that surge capacity is a problem faced all over the world, and with the exception perhaps of Israel, one that so far has very few real solutions.

**Workforce issues**

Several respondents commented that the staffing of hospitals and ICU facilities in particular is an issue not given nearly enough consideration in contingency planning. Indeed, the ANZICS 2001 report on influenza pandemic planning stated that ‘in Australia at the present time, the ability to admit patients to the ICU is frequently constrained by inadequate number of qualified nursing staff’ and claims that several studies have indicated ICU mortality rates are higher during periods of increased workload and when fewer trained staff are available.\(^84\) Although respondents saw merit in proposals to use hotels, patients’ homes, community halls, and other similar places as a means of creating additional bed capacity during a pandemic, several suggested that such an emergency measure would be of only limited value because there would still not be enough staff to attend to such patients.\(^85\)
Absenteeism would also be likely to impact significantly on the availability of health care workers during an infectious disease outbreak. It has been estimated that between 40–70 per cent of the workforce might not be able to attend work due to illness during an influenza pandemic. This does not account for the people who may choose to stay at home to avoid infection in the first place. One respondent suggested that despite the likelihood that health care workers would receive vaccinations and other prophylactic treatments as a priority, perhaps up to 50 per cent of medical staff may not turn up for work due to the higher risk of exposure they potentially face. Some respondents questioned their own willingness to attend for work if there was an outbreak of a deadly infectious disease, commenting to the effect that doctors have families too. Indeed, it has been reported that a group of thirty Canadian nurses who contracted SARS during the global outbreak in 2003 are suing the Ontario Government for failing to implement and enforce adequate workplace safety measures.

Some respondents also claimed that few current disaster plans adequately account for hospital staffing issues. Indeed, a review of The Canberra Hospital’s response to the January 2003 Canberra bushfires—‘one of the largest responses to a disaster ever by a single Australian hospital’—noted that many staff were unable to attend work because of fire in or around their homes and that:

The fires occurred during school holidays and the hospital’s medical changeover period, when junior staff move to new positions, often interstate. Many regular staff were out of the city, and many of the previous year’s staff had already left.

Despite this, the review notes that the emergency department’s workforce was sufficiently boosted with the assistance of staff from other areas of the hospital and that overall, ‘medical outcomes were excellent, and the hospital system coped well’. Although the emergency department dealt with 252 presentations in a single day (139 of them in six hours) compared with a daily mean of 137 for the preceding five years, only 15 per cent of patients required admission.

Respondents also made the point that a hospital’s work continues long after the initial clean-up of an incident scene is over, and that disaster plans generally do not consider the need for numerous patients to stay in hospital for potentially six to eight weeks following admission. One respondent believed that the current level of resources means that the capacity really only exists to care for patients for a maximum of two weeks. Other areas of concern regarding staffing related to the difficulty of rotating limited numbers of staff to avoid exhaustion and psychological trauma, and the possible reluctance or inability of hospitals to accept transfers of patients infected with a contagious deadly disease.

One comment repeatedly made was that the real strength of Australia’s health care system lies with the experience and commitment of the people working within it. The success of the system was described as relying on informal networks, decentralised assistance between regions and the maintenance of personal contacts between agencies. It is perhaps significant that all the respondents interviewed for this paper nominated the calibre of the people in the system ahead of the structures in which they operate as the primary strength of the health care
The real strength of Australia’s health care system lies with the experience and commitment of the people working within it. Perhaps this indicates a general belief that the system works despite the bureaucratic structures in place, not because of them and that but for the people involved, the system might not work at all. Just how well Australia’s health care system would deal with a major infectious disease outbreak if large numbers of its staff were unable or unwilling to work appears to be open to question.

Mass casualty and outbreak preparedness

If there were multiple outbreaks of say, smallpox, in capital cities around Australia, we’d be in trouble.\(^91\)

It is striking that there does not appear to have ever been a national medical or anti-terrorist exercise aimed solely at testing Australia’s ability to respond to an infectious disease outbreak. As many respondents noted, even the *Australian Action Plan for Pandemic Influenza* has never been exercised at a national level, leading most to agree that it is more of a health policy document than an operational plan. Most respondents noted this deficiency with some concern and were critical of the way in which the Bali bombing has been held out to have been a successful test of Australia’s mass casualty preparedness. Many respondents also deplored the lack of local exercises within individual hospitals. Each of these issues is addressed in turn.

National exercises

Although the Minister for Defence, Senator the Hon. Robert Hill, stated in May 2004 in a speech on Australia’s response to terrorism, that ‘we have exercised the capability of the Australian health system to cope with attacks’, the respondents interviewed for this paper were unable to identify any such exercises conducted by the Commonwealth at a national level.\(^92\) They certainly were not aware of any national exercise in which issues such as disease surveillance, quarantine and the emergency distribution of medication or vaccinations had been tested, which was of great concern to those who commented on the issue.

Although a number of exercises appear to have involved testing the management of casualties, there does not appear to have ever been a national exercise the focus of which has been a health crisis, particularly one which involves an infectious disease outbreak. It has been claimed by some respondents and others that even the largest national exercise to date, ‘Mercury ’04’, announced and conducted with much fanfare, did little to test the emergency health response properly:

There has been a major exercise recently – Mercury 4 – as I’m sure you’ll remember, but that involved very little of the hospital side of things, more security and police.

That is a significant problem, the modern currency of terrorism is in morbidity or injury and mortality or death and we really need to look at how our hospitals can deal with that and if they can’t – start planning for changes to that.\(^93\)
Medical experts appear to be increasingly concerned that Australia’s capacity to deal with a major infectious disease outbreak, in particular, remains largely untested. Evidence to the Joint Standing Committee on Foreign Affairs, Defence and Trade in April 2003 indicated that New Zealand conducted a ‘very large exercise’ across the country as far back as 2001 called ‘Operation Virex’, which simulated the impact of ‘an aberrant influenza’. A number of respondents said there was now a pressing need for a national exercise with a health focus to be conducted in Australia.

As one respondent pointed out, national anti-terrorism exercises typically involve a siege-hostage scenario or the investigation of some threat of violence which is almost always successfully resolved by police or army counter-terrorism units. However, as Derek Woolner from the Australian Defence Studies Centre noted in an interview in 2003, ‘siege-hostage situations are now only about 1 per cent of terrorists worldwide’. The respondent expressed concern that incidents are perhaps not properly regarded as terrorism or treated as such unless the response calls for ‘guns and bullet-proof vests’, and claimed that as a result, ‘Australia’s bioterrorist response is vastly underprepared’.

Although some respondents believed it is potentially dangerous to try and impose rigid, structured plans like the Australian Action Plan for Pandemic Influenza in a dynamic public health setting, the same respondents were also of the opinion that as a minimum, any test of Australia’s emergency health response should rigorously test the influenza pandemic plan. As one respondent put it, ‘plans made in peace need to be tested in war’. The respondents also believed that the pandemic plan would be best implemented by health professionals, rather than ‘bureaucrats’, and that the various state plans need to be integrated more fully with the federal plan.

In what was claimed to be the first ever test of an influenza pandemic plan anywhere in Australia, the NSW Health Department conducted a statewide exercise called ‘Warning Shot’ in October 2003, the first statewide disaster exercise involving all eighteen NSW Area Health Services. The objective of the exercise was to activate and evaluate the NSW Influenza Pandemic Action Plan and test operational response under local Area Health Service Emergency Plans.
Most respondents interviewed for this paper believed that there was an overwhelming need for a multi-jurisdictional approach to emergency health response planning and that the only way to maintain vigilance and responsiveness in the health system is to practice and rehearse emergency arrangements continually. Some respondents were especially critical of the tendency they believed existed to regard a one-off exercise as a sufficient test of emergency procedures.

Despite national exercises focussing on animal health having been conducted, such as ‘Minotaur’, there still appear to be no plans at the Commonwealth level for an exercise like ‘Warning Shot’ which deals with a human health emergency. Emergency Management Australia (EMA) is, however, planning to hold a pilot senior management training programme in November 2004 which uses an influenza pandemic scenario. This desk-top training is aimed at the Secretary/Deputy Secretary level within the state and Commonwealth public services and is designed to improve decision-making processes and strategic thinking in responding to a national emergency. Those designing the programme hope that such training might also foster the development of closer ties between agencies so that in the event of an emergency, those making critical decisions are not meeting and dealing with each other for the first time.

Recent comments on the importance of routine communication between hospitals by the visiting director-general of Jerusalem’s Hadassah Hospital, Professor Shlomo Mor-Yosef, underscore the significance of this point:

Having spent the past three-and-a-half years dealing with the devastation caused by Palestinian suicide bombers, Mr Mor-Yosef told a forum at the Royal Prince Alfred Hospital in Sydney that communication between hospitals was essential to handling the victims of a major terror attack.

‘The main idea is to build communication on a daily basis,’ he said.

‘If you don’t work on (the communication) then don’t expect that when you need it, it will be there.’

The training might also go some way to addressing the perception of some of the respondents for this paper that a lack of integration of state and federal resources is undermining Australia’s capacity to respond to an infectious disease outbreak. Respondents frequently expressed the sentiment that as there is only so much money to go around, state and federal health bodies cannot afford to conduct emergency planning and exercises independently of each other. They were also keen to point out that despite the fact that counter-terrorism and national security planning is a federal responsibility, the responsibility for the initial and frontline emergency health response rests with the states because it is the states which run the country’s hospitals and health services.
**Bali bombing**

If Bali had happened on Australian soil, we’d have been in trouble.\(^{101}\)

Without wishing to detract from the admirable effort by the Australian Defence Force (ADF) and various medical authorities across Australia in successfully evacuating and treating surviving victims of the Bali bombing (see Box 5 for a brief summary), all respondents who commented on the issue agreed that the Bali bombing was not a significant or real test of Australia’s ability to respond to a mass casualty incident, and was even less of a test of Australia’s capacity to respond to an infectious disease outbreak.

Respondents noted that whilst Australia’s response was good, in terms of the impact on the emergency health system nationally, the scale of the incident was relatively modest and the impact on resources short-lived and easily absorbed—a rather different view from the Federal Government’s claim that the Bali bombings were ‘the gravest single medical crisis that Australia has ever confronted’.\(^{102}\) Some respondents suggested that the response might not be so good if hospitals were faced with hundreds or thousands of casualties, particularly if those casualties were infectious. The difference between the impact on resources of a bombing and an infectious disease outbreak was succinctly explained by Dr William Beresford, Director of Clinical Services at Royal Perth Hospital and metropolitan hospitals services director of disaster planning in Perth, in testimony to the Joint Standing Committee on Foreign Affairs, Defence and Trade in April 2003:

> The concern with [a] biological [incident] is that it starts small, is imported and then spreads, and each successive wave of outbreak puts more and more strain on the system. A chemical or bomb explosion is a once-only: you pick up the pieces, recover and move on; you have an end point. With biological, you are potentially into a control situation where it remains endemic.\(^{103}\)

It was claimed by respondents that hospitals around the country coped easily with a number of extra patients in the immediate aftermath of the Bali bombing, but that any one hospital in Australia would have been seriously stretched dealing with all the casualties alone. As Dr Beresford explained to the Joint Standing Committee:

> We have planned to take up to 150 [burns victims]. We have the capability to do so. Prior to Bali, we had nine severe burns patients. We took 32 in the space of 48 hours, and we also took another 11 over the next two weeks. We were capable of coping with that.\(^{104}\)
Box 5: Australia’s emergency medical response to the Bali bombing—12 October 2002

In what was the largest Australian ‘aeromedical evacuation’ since the Vietnam War, ADF operation ‘Bali Assist’ undertook the triage, stabilisation and evacuation of 66 critical (and mostly young) patients suffering a variety of burn, blast and shrapnel injuries from Bali to Darwin over a period of 21 hours in an operation involving 34 military medical staff and five Hercules C-130 aircraft. The first C-130 arrived in Bali at 1930 hrs on 13 October 2002.

- **13 October 2002 (2230 hrs)** – the first C-130 left Denpasar Airport with 15 patients, one of whom died en route to Darwin, despite ‘aggressive’ attempts at resuscitation;

- **14 October 2002 (0430 hrs)** – the second C-130 departed with 22 patients on board, two of whom were in intensive care and another six of whom were in a serious condition;

- **14 October 2002 (0830 hrs)** – the third C-130 left for Darwin with 16 patients, closely followed by the fourth aircraft carrying 11 patients;

- **14 October 2002 (1400 hrs)** – the last C-130 left Denpasar Airport carrying all the medical personnel, two patients and several uninjured Australians.

With the assistance of civilian medical retrieval teams, such as the Royal Flying Doctor Service, the Royal Australian Air Force transferred 35 patients from Darwin to four different capital cities over a period of 16 hours on 15 October 2002. Every effort was made to ensure that patients would be treated in their home state and many of the military medical staff involved had been working for an average of 34 hours straight. Significantly, it was noted by those involved that ‘no single agency could have conducted the whole operation’ and that military and civilian personnel ‘worked seamlessly’ to meet the challenge.

One respondent reasoned that the response to the Bali bombing involved a staggered evacuation to a number of hospitals around the country, and claimed that the Royal Darwin Hospital, which initially received all the casualties before they were transferred, could not have continued to cope on its own with dozens of patients arriving and requiring treatment all at once. Indeed, although the Royal Darwin Hospital apparently ‘dealt in 36 hours with more casualties than any single hospital dealt with after either 9/11 or the Oklahoma bombing’, its emergency facilities were seriously challenged, as Dr Malcolm Johnston-Leek from the hospital’s emergency department explains:

We had 61 patients come through and at one stage we had 18 simultaneous resuscitations going on, so the space was just—we were packed.\textsuperscript{105}

Media reports at the time reported that patients were transferred to hospitals in Sydney, Melbourne, Brisbane, Perth and Adelaide.

If there were an outbreak of an infectious disease, either naturally or as a result of a deliberate release, hospitals (and indeed governments) in areas not yet affected might be less inclined to accept infectious (or potentially infectious) patients and the sharing of casualties around the country might possibly not be so easy to achieve. As one respondent familiar with emergency department procedures said, ‘infectious disease only adds another layer of complexity’. This issue does not appear to have been taken into account by the Department of Health and Ageing, if the Deputy Secretary’s comments are anything to go by. The Deputy Secretary, Mary Murnane, explained to a Senate Estimates Committee in June 2004 that Australia’s response to an incident on the scale of the Bali bombing would require a ‘national response’, involving ‘a transfer of patients, expertise, resources across borders’.\textsuperscript{106}

Commenting on the fact that the majority of emergency patients during the 2003 Canberra bushfires arrived at hospital by private vehicle, a review of The Canberra Hospital’s response to the disaster had this to say on the problems for hospitals posed by biological or other contamination:

The high use of private transport during this disaster is an important lesson for the national capital, where exposure to chemical, biological or radiological weapons is considered a real threat. As there appears to be no realistic prospect of containing an exposed population, services must plan around patients presenting by private transport and requiring decontamination at hospitals.\textsuperscript{107}

This comment echoes the concerns of several respondents that Australia’s ability to respond to a biological incident is both untested and underprepared. Critical questions remain unanswered—quarantine, as the comment above alludes, could well be a logistical nightmare. Would people submit to it and what degree of curtailment of personal rights and freedoms would people accept during an outbreak?\textsuperscript{108} Would compulsory detention for the sake of public health be viewed any differently from imprisonment?\textsuperscript{109} On the prospect of a biological terrorist attack, Dr Beresford said that it ‘scares me silly’.\textsuperscript{110}
One of the initiatives to have arisen out of the ‘lessons learnt’ from the emergency health response to the Bali bombing was the development of a National Burns Plan, which was proposed by doctors in Perth. This, in turn, has led to calls for a national trauma plan for dealing with mass casualties.\textsuperscript{111} It should also be noted that in May 2004, citing the fact that there were important lessons to be learnt from the Bali bombing, the Western Australian Government announced the formation of a Disaster Preparedness and Management Unit, which, it was reported, would develop plans for a ‘coordinated health response to a chemical explosion, a biological or radiological incident, or the outbreak of a pandemic’ and would be able to assist local hospitals deal with up to 1000 casualties.\textsuperscript{112} Western Australia’s Health Minister, the Hon. Jim McGinty, said that ‘diseases such as SARS, avian flu and AIDS have challenged medical knowledge and the possibility of a human pandemic must be taken seriously … we are not immune and we have to ensure our hospital and health services are well-prepared’.\textsuperscript{113}

The Federal Government also announced, as part of its 2004 election platform, a promise to commit $49.5 million towards establishing the Royal Darwin Hospital as a National Critical Care and Trauma Response Centre to ‘receive and treat as many casualties as possible’ in the event of another crisis in the region similar to the Bali bombing.\textsuperscript{114}

**Hospital preparedness**

Central Sydney Area Health Services director Dr Peter Kennedy said central Sydney hospitals were prepared for tragedies like bushfires or train derailments, but not the sort of devastation caused by a terrorist attack.\textsuperscript{115}

The view that major hospitals in Australia’s capital cities are not adequately prepared for a terrorist attack was common amongst the majority of respondents interviewed for this paper, and one which is also supported by research.

In June 2002, Dr Peter Aitken, an emergency physician at The Townsville Hospital and a Senior Lecturer at James Cook University in Queensland, conducted a survey of 61 Australian emergency departments to ascertain their level of disaster preparedness.\textsuperscript{116} The results indicate that whilst 98 per cent of emergency departments had a disaster plan, half had not undertaken any sort of risk assessment or tested staff call-in procedures. Furthermore, only just over half (52 per cent) of those emergency departments surveyed had a contingency plan for dealing with loss of power supply and had tested it.

Some 90 per cent of the emergency departments surveyed reported holding training exercises, but the majority of those (82 per cent) were desk-top exercises only. Approximately only 40 per cent of all exercises conducted were triage or ‘casualty-based’. Fewer still were conducted in real time. The factor most impacting on an emergency department’s ability to conduct exercises was the ongoing need to maintain delivery of normal services. The next two factors reported were lack of time and lack of staff. Nearly 90 per cent of all emergency departments surveyed reported having no specific funding in place for disaster preparedness and response.
The survey concluded that there was ‘large variation’ in disaster preparedness amongst emergency departments, but that emergency departments in NSW/ACT and Victoria were the best prepared. Dr Aitken noted that although the majority of emergency departments had a ‘reasonable level of planning’, the existence of training and exercises was limited. Dr Aitken has since conducted an updated survey with colleagues in other states, the results of which are due to be released later this year. Preliminary results apparently indicate that the level of disaster preparedness in emergency departments has not improved much in the two years since the original survey.\textsuperscript{117}

Several respondents interviewed for this paper reported that in their own experience, most hospitals had rarely, if ever, conducted disaster response exercises involving mass casualties. The main reason for this, they claimed, was that hospital administrators and health authorities believed the exercises to be ‘too disruptive’. As one respondent said, ‘exercises are warranted, but you can’t do them all the time.’ Reflecting the apparent view that mass casualty exercises are too disruptive, the current Chief Medical Officer, Professor John Horvath has said:

\begin{quote}
I know there’s a debate out there that maybe we should do an exercise that involves 2000 potentials, but that means closing down hospitals, that means stopping elective surgery for periods of time and seriously disrupting the normal working of our health system.\textsuperscript{118}
\end{quote}

Most of the respondents interviewed for this paper were of the view that adequately testing the emergency health response justified some degree of temporary disruption to services. The Canberra Hospital, for example, conducted a desk-top exercise of its ‘regularly reviewed external disaster plan’ just two months before the 2003 Canberra bushfires, but it was only the response to the actual fires that revealed practical problems with the plan.\textsuperscript{119} The inability or reluctance of hospitals to conduct full practical training has also been highlighted publicly by others in the field, with one Sydney emergency doctor pointing out that although most emergency department staff are encouraged to undertake the three-day Major Incident Medical Management and Support Course (MIMMS), the course is sometimes compressed into one day.\textsuperscript{120} It was also claimed by one respondent that some doctors working in major hospitals would be largely unaware of what plans existed in their own hospitals for dealing with mass casualties in a disaster situation.

The inability or reluctance of hospitals to conduct full practical training has also been highlighted publicly by others in the field, with one Sydney emergency doctor pointing out that although most emergency department staff are encouraged to undertake the three-day Major Incident Medical Management and Support Course (MIMMS), the course is sometimes compressed into one day.\textsuperscript{120} It was also claimed by one respondent that some doctors working in major hospitals would be largely unaware of what plans existed in their own hospitals for dealing with mass casualties in a disaster situation.

One of the few hospitals to have conducted an actual mass casualty exercise is the Royal Adelaide Hospital which conducted the exercise ‘Supreme Truth’ in May 2003. ‘Supreme Truth’ was designed to test South Australia’s readiness for a chemical/biological/radiological (CBR) terrorist attack, and was billed at the time by the State Government as the ‘largest of its type ever held in Australia’.\textsuperscript{121} The exercise involved a mock CBR attack on a racecourse, in which 160 people were exposed to an agent, and in response, the Royal Adelaide Hospital
enacted its Major Incident Plan. The exercise quickly revealed that health authorities were unable to deal with the incident, with the hospital admitting that their CBR response plan ‘fell over within the first 15 minutes’. According to the hospital, the major problems were crowd control, staff exposure, decontamination and communications—despite the Royal Adelaide Hospital ‘being probably the best prepared hospital in the country’.

Dr David Caldicott, a doctor in the emergency department at the Royal Adelaide Hospital involved in the exercise, believes Australia is underprepared and said of the exercise in an interview in May 2004:

We shut our hospital doors and people very concerned, very upset about not having immediate access to medical care tried to break into the hospital …

One of the good reasons for talking about this openly is to prepare the Australian public for what is likely to happen.

If they expect immediate care straight away, they're going to be sorely disappointed and probably very angry …

We need to plan for worst-case scenarios and the Australian public needs to ask how many of us are going to survive this event because doctors are short-staffed or underprepared for this event.

Even with the best planning and training that a hospital can manage, in the event of a mass casualty incident or a major outbreak of an infectious disease (such as an influenza pandemic), it is possible that limited resources combined with fear and panic in the community would mean that hospitals might have to take drastic measures to regulate the likely surge in the influx of patients. A respondent noted that hospital emergency departments would quickly become the primary chokepoint in the system, with an increasing number of patients attending ‘off the street’ and expecting medical attention. Indeed, during the 2003 Canberra bushfires, 60 per cent of ‘disaster patients’ and 30 per cent of patients requiring admission arrived at The Canberra Hospital by private vehicle, including the two most critically ill.

Echoing Dr Caldicott’s views, several respondents claimed that many sick people would be left to cope on their own, and that not everyone would get the treatment they needed. Furthermore, as more than one respondent explained, the ‘unpalatable’ truth is that people may well be left to die as limited resources would possibly not be expended on victims with little probability of survival. This was referred to by one respondent as ‘military triage’, and described in general terms as a standard approach to triage for a mass casualty situation in which the need for treatment outstrips the ability to provide it.
Indeed, this approach is written into the Australian Emergency Manual Series (AEMS), published by Emergency Management Australia, which is a guide to ‘the management and delivery of support services in a disaster context’.126 It states that the guiding principle of triage is ‘to achieve the greatest good for the greater number of casualties’, and that in the event of a disaster, available health resources should only be directed to ‘those who will receive the greatest benefit’.127 According to the manual, in addition to the standard triage categories, there is the option of also creating an ‘expectant death’ category, which would comprise those casualties ‘whose injuries are so severe that they either will not survive, or they will drain excessive resources to the detriment of large numbers of other casualties’.128 As the manual explains, the decision to establish this triage category ‘should be made by the senior ambulance/medical officers on site, and will depend on factors such as the level of resources available at the scene, evacuation resources … and the resources available in hospital’.129 A number of respondents agreed that most hospitals would probably be forced to lock their doors and, according to very strict triage processes, restrict entry only to those selected for treatment. However, the same respondents indicated that decisions about triage and how resources were utilised would rest with individual doctors and hospitals and that doctors would make every effort to save lives where possible.

Some respondents also believed mortuary facilities would be over-stretched, particularly if bodies needed to be stored for coronial or pathology purposes, and that few hospitals could meet this need alone. To this end, the manual recommends that ‘prior consideration must be given to the disposal or medium to long-term storage of bodies that may require further pathological testing or may be highly contaminated’, and suggests that ‘interim storage facilities should be considered, including the utilisation of large refrigerated or freezing facilities’.130 In order to assist with the storage of bodies following the Bali bombing, the Australian Defence Force provided five refrigeration units on site in Bali which are normally used to store perishable food during military deployments, but which are capable of storing 12–17 bodies.131 The manual also recommends that authorities plan for mass burial ‘with the ability to identify specific graves’. It is also interesting to note that state coroners have apparently advocated a new federal coronial jurisdiction to deal with national disasters.132

**Vaccines and anti-virals**

It’s prudent to believe an epidemic of flu will occur.133

In November 2002, the then Commonwealth Chief Medical Officer stated publicly that Australia would have 100,000 doses of smallpox vaccine by early 2003.134 In March 2002, Parliament amended the *Therapeutic Goods Act 1989* to allow the Minister to import and stockpile ‘unregistered compounds’, like the smallpox vaccine, for use in an emergency. It was imported to meet the demands of an emergency response in the event that smallpox was introduced into Australia, and is reportedly stored in several locations around the country, from where it can be distributed to any Australian city within hours.
Australia’s National Medicines Stockpile, comprising of antibiotics, anti-virals and vaccines is, however, limited—although it has been recently reported that the size of the stockpile is to be expanded. In mid-2004, the Government apparently utilised emergency regulations to fast-track the importation of 200 000 doses of new smallpox vaccine from the US and to enable the local manufacture of about 400 000 packets of antibiotics to prevent and treat anthrax infection in humans. By comparison, the US has sufficient supplies of smallpox vaccine, for example, to vaccinate its entire population, Canada has enough to cover a large percentage of its population, and the UK has reportedly ordered enough vaccine for at least 30 million people.

The reason for the limited stockpile, according to some respondents, is that the Commonwealth has not made up its mind about whether it would vaccinate or provide treatment to the entire population in the event of an influenza pandemic, for example. Evidence to Senate Estimates hearings in June 2004 by the Department of Health and Ageing would seem to suggest that the provision of medication to the entire population is, in fact, not envisaged:

So the primary purpose of the expenditure is to stockpile anti-viral drugs which would help to keep essential services operating, under conditions of a pandemic flu … we would want to be protecting health workers, people transporting essential supplies of food and medication, police and essential utilities like power and water, to make sure that people keep turning up for work under conditions of a pandemic flu.

Another reason suggested by some is the sense that the risk of a bioterrorist attack in Australia is not as great as in the US, and that if such an attack did occur in Australia, the Government would rely on close US ties to obtain the required additional vaccines.

In the case of smallpox, despite the fact that the majority of the Australian community would have no remaining immunity to smallpox, Australia has decided against mass vaccination for now, in line with WHO recommendations. This is primarily because the smallpox vaccine can have serious side effects, ranging from encephalitis and ulceration of muscle and bone, to death—for example, if the US was to vaccinate its entire population, it could expect several hundred deaths due to the vaccine itself. This has led some to believe that the vaccine is more problematic than the disease itself, particularly given that powerful and effective anti-viral treatments now exist which could potentially be used to treat smallpox. Whilst the exact use of smallpox vaccine in Australia is still being determined, it would be likely to only be used in the event of an outbreak, and involve only vaccinating relevant medical/emergency personnel and those who may have had close contact with an infected person.

Australia is fortunate enough to have a local vaccine manufacturer (CSL Limited), and is in fact one of the few countries in the world with this resource. However, there was concern among some respondents that, according to their recollections, little or no consultation had occurred between the Commonwealth and CSL on influenza pandemic planning. They believed this was because other manufacturers had not been invited to tender, and this would be in breach of the Commonwealth’s commitment to competitive tendering. This, however,
did not stop the Federal Government recently purchasing anti-viral influenza medication worth over $120 million without a tender process, in the form of ‘a direct purchase from the supplier of the product that the department has determined is the best fit for the purpose’.141

Several respondents argued that it is important that Australia maintains the capacity to make its own vaccines, partly because it is ‘unrealistic’ to expect that, during a global pandemic, Australia could rely on the US, or any other country similarly under threat, to supply vaccines. Indeed, one respondent pointed out that during the SARS outbreak in North America, Canada did not receive the vaccines it had been promised from the US.

Several respondents argued that it is important that Australia maintains the capacity to make its own vaccines... 

However, it was also suggested that it is perhaps unwise to rely on vaccines because they typically take months or even years to develop and produce in sufficient quantities—a reliable SARS vaccine is still two to three years away, according to many scientists.142 It was also claimed by one respondent that acquiring adequate supplies of vaccine is further complicated by patents over drug and vaccine developments, and that this is a major issue that is yet to be resolved.

Some respondents also questioned the value of influenza anti-virals. Although they are generally regarded as an ‘important interim measure’, it was claimed that they are only a ‘stop-gap’, essentially for treating early cases and protecting essential staff. Respondents who commented on the issue emphasised that anti-virals should have prophylactic and treatment power, not just one or the other. The Department of Health and Ageing has since confirmed that the anti-viral influenza drug it has purchased is ‘a wonderfully flexible drug which is useful both for prevention and for cure …’.143 Incidentally, despite the Department refusing to name the drug that had been chosen on the grounds that such information ‘falls into the category of “security”’144 and ‘could assist those who do not wish us well’,145 the Minister for Health, the Hon. Tony Abbott, had already previously confirmed that the drug purchased was Tamiflu146—comments the Deputy Secretary of the Department described as ‘not useful’.147 This perhaps serves to highlight the inconsistencies and problems associated with the securitisation of health.

Ultimately, given that full national protection through vaccines and anti-virals would cost many hundreds of millions of dollars, Australia’s response plan is perhaps best described as a risk-management approach to infectious disease control. That is, it is a system which uses a combination of robust surveillance systems (both off-shore and within Australia) and vaccines and anti-virals for vulnerable groups and first responders (frontline health workers and others involved in emergency response).

Conclusions

It is clear that there are a number of problems with the current national arrangements for preventing and controlling infectious disease in Australia. Existing research and comments
from respondents interviewed for this paper have highlighted major deficiencies in the emergency health response to infectious disease.

Despite the experience and ongoing commitment of the people working in the health system nationally, many of Australia’s hospitals appear to be underprepared for dealing with mass casualty incidents, particularly one involving an infectious disease, or are only just now beginning to address the issue. To be fair, however, even as little as five or six years ago, issues such as a national emergency stockpile of vaccines and medications, mass casualty preparedness and real-time disease surveillance did not receive routine or ongoing attention.

It is perhaps reassuring that in the event of a national infectious disease emergency, most respondents were confident overall that ‘the system would work’. However, Australia’s ability to respond to a serious infectious disease outbreak remains largely untested. Whilst the majority of respondents agreed that Australia’s current surveillance networks are sufficiently ‘robust’ to deal with routine infectious disease threats, they were less convinced of the ability of the networks to respond effectively to a major infectious disease crisis. Given that not even the national influenza pandemic plan has been exercised, there appears to be an urgent need for the emergency health response to infectious disease to be exercised nationally in such a way as to test the whole of the emergency health care system rather than just aspects of it as an adjunct to tests of the national security apparatus.

There is an overwhelming sense that the emergency health response currently labours under difficulties arising from constantly limited resources, inadequate training exercises and a distinct lack of integration, and that perhaps the system works despite the structures in place rather than because of them. Australia’s response to a national infectious disease emergency might well be adequate initially or for a short duration, but serious questions remain as to Australia’s capacity to manage concurrent crises or crises over an extended period of time.

A number of issues arise for possible policy consideration from the discussion in this paper. They include whether:

- the roles of health policy-makers and public health practitioners should be better integrated
- the overlapping of Commonwealth–state responsibilities with respect to infectious diseases should be assessed and continually monitored
- there is a need for more workable structures in the health system through which states can communicate with each other and with the Commonwealth
- more funding is required to enable the provision of additional medical staff and training and whether Australia’s disease prevention systems need more human, rather than technological, resources
• the opening of additional hospital beds requires an ongoing commitment of additional suitably qualified staff to attend to them
• the Communicable Diseases Network Australia should be better connected to strategic policy-making on communicable diseases
• the top levels of the Commonwealth bureaucracy should allow medical experts to have more influence in national security planning for bioterrorism and the national emergency health response
• Australia’s expertise in infectious disease control should perhaps be consolidated and more fully utilised by the Commonwealth—a national disease control centre has been suggested as a possible solution
• an ‘all-hazards’ approach to infectious disease planning and terrorism generally should be emphasised
• Australia should take greater responsibility for influenza pandemic preparedness in the immediate region
• disease detection and reporting mechanisms need to be streamlined and more adequately-resourced laboratories around Australia should be established to allow the rapid detection and identification of diseases such as SARS
• Australia needs to increase the number of intensive care unit beds it has per 100,000 population and whether Australian hospitals need to implement permanent measures to cope with increased routine admissions
• the cancellation of elective surgery as a means of creating additional hospital beds in a crisis should be reviewed as it has now become normal practice for dealing with increasing numbers of routine emergency patients
• the capacity for routine elective surgery needs to be expanded in order to create greater potential slack in the system that can be drawn on in a crisis
• Australia’s hospitals should be better prepared for dealing with a mass casualty incident or a major infectious disease outbreak and whether hospitals should conduct full-scale practical emergency response exercises
• medical workforce issues should be given greater consideration in crisis contingency planning
• Australia’s national emergency health response urgently needs to be properly tested—starting with the national influenza pandemic plan as a minimum—and whether there is now a pressing need for a national exercise with a health focus to be conducted in Australia, and
a greater multi-jurisdictional approach to emergency health response planning is needed.

Endnotes

3. ibid., p. 16.
4. ibid.
7. After a referendum on 28 September 1946, the Constitution Alteration (Social Services) Act 1946 (enacted on 19 December 1946) altered the Constitutional powers of the Parliament by adding paragraph xxiiiA to section 51. This addition of paragraph xxxiiiA to section 51, introduced by the Chifley Labor Government, gave the Commonwealth Parliament the power to make laws for the provision of a much wider range of social services—child endowment, benefits to students, unemployment benefits, medical and dental services, maternity allowances, family allowances, sickness and hospital benefits, widows’ pensions—as the Constitution had only referred to pensions for invalid and aged people. This more prominent role was reflected in the establishment of the Commonwealth Department of Social Security in 1939, the Department of Immigration in 1944, and the Commonwealth Employment Service and the Commonwealth Office of Education in 1945.

10. ‘When a law of a State is inconsistent with a law of the Commonwealth, the latter shall prevail, and the former shall, to the extent of the inconsistency, be invalid’: *The Commonwealth of Australia Constitution Act 1900*, section 109.


12. Kelsall et al., op. cit., p. 91. See also Cumpston op. cit., pp. 24–39 for a more detailed account of these and other incidents.

13. A further amendment, in 1947, enables the Governor-General to declare that an epidemic caused by a quarantinable disease or pest exists or that there is a danger of such an epidemic. Section 2B empowers the Minister to take whatever quarantine measures s/he deems necessary to control or eradicate the epidemic. This section was inserted into the Quarantine Act in 1947 because of concerns that outbreaks of communicable diseases in Europe, Africa and Asia after World War II, and the increasing volume and speed of air travel to Australia, required that the Minister be given more power to deal with an emergency resulting from an outbreak of disease in Australia.


17. The funding offer was made contingent upon the establishment of a Ministry of Health and a Commonwealth Department of Health. See Cumpston, op. cit., p. 45.


21. There is a growing literature on the way that fear of contagion, from disease or ‘alien races’, has seen Australian health and immigration policies develop in mutually supportive directions. See endnote 5 above.

22. M. Metherell, ‘Beware: the untreatable epidemic is on its way’, *Sydney Morning Herald*, 28 June, 2003. This claim was also made by respondents interviewed for this paper.


25. For example, the first National HIV Strategy began in 1989, a National Hepatitis C Action Plan was initiated in 1994 and SARS was declared a quarantinable disease in April 2003, giving the Commonwealth powers to implement a range of control measures.
Critical, but stable: Australia’s capacity to respond to an infectious disease outbreak


28. Micro-economic reform is also believed to have been behind an increase in the Commonwealth’s involvement and to have spawned a plethora of new bodies such as the National Blood Authority, Food Standards Australia–New Zealand, etc.

29. In addition to the multitude of bodies established to monitor and respond to infectious disease outbreaks, numerous documents and plans are devoted to providing information and guidelines to public health professionals and the general public about Australia’s capacity to respond to an infectious disease outbreak.

30. ‘Addressing emerging or potential health risks,’ Fact Sheet 1, Budget 2004–05.

31. Comment by a respondent interviewed for this paper.


36. According to the WHO website: ‘The WHO Global Influenza Surveillance Network was established in 1952. The network comprises 4 WHO Collaborating Centres (WHO CCs) and 112 institutions in 83 countries, which are recognized by WHO as WHO National Influenza Centres (NICs). These NICs collect specimens in their country, perform primary virus isolation and preliminary antigenic characterization … The WHO Influenza Surveillance Network serves also as a global alert mechanism for the emergence of influenza viruses with pandemic potential.’ Australia has three NICs—in Melbourne, Perth and Sydney—and is home to one WHO Collaborating Centre (in Melbourne), http://www.who.int/csr/disease/influenza/influenzanetwork/en/ (21 September 2004).

37. See, for example, J. S. Mackenzie et. al, ‘Emerging viral diseases of Southeast Asia and the Western pacific’, Emerging Infectious Diseases, 7 (3), Supplement, June 2001, pp. 497–504.

39. Comment by a respondent interviewed for this paper.

40. Comment by a respondent interviewed for this paper.


42. Syndromic surveillance is an imprecise term. Its medical meaning usually refers to the lack of a distinct diagnosis. A medical syndrome is a collection of a group of symptoms and signs known to occur in certain conditions, but that do not necessarily add up to a single definable diagnosis. Syndromic systems can also refer to non-specific indicators of health, such as a patient with a complaint of ‘cough’, or the sale of over-the-counter cold medication. Other possible terms include biosurveillance, which, as indicated below, is used by the NSW Health Department epidemiology section. F. Mostashari and J. Hartman, ‘Syndromic surveillance: a local perspective’, *Journal of Urban Health*, 80 (2), Supplement 1, 2003, pp. i1–i7.

43. Comment by a respondent interviewed for this paper.


45. The proliferation of electronic technologies in healthcare settings is also fuelling the development of these systems.


47. D. Heyman, *Lessons from the anthrax attacks: implications for bioterrorism preparedness*, Centre for Strategic and International Studies, 2002, pp. 14–15: ‘The most effective and fastest method of detection today relies on astute clinicians. Alert practitioners have been the key for detecting recent unusual outbreaks, including anthrax, hanta virus, and West Nile virus. Until adequate detection technology is available—and perhaps even after it is—medical and public health professionals and private citizens will play a critical role in bioterrorism detection and defense’, p. 15.


51. A. Reingold, op. cit., p. 79.
52. A useful critical discussion of the costs versus benefits of syndromic surveillance can be found in ibid, pp. 77–81.


57. ibid.


62. ibid. Calculated as the average number of beds across ‘available’ and ‘ventilator’ beds per 100 000 population.

63. Due to the different definitions and composition of ICU beds around the world, international comparisons should be treated with caution and as an indication only. It should also be noted that Australian ICU data includes both adult and paediatric intensive care services.

64. cited in Higlett, et al., op. cit., p. 120.


73. The Audit Office of New South Wales, op. cit., p. 19.


75. The Audit Office of New South Wales, op. cit., p. 27.


77. Bed days are defined in Tracey Higlett, Therese Anderson and Graeme K Hart as ‘the total number of days for all patients who were admitted to the ICU for an episode of care—calculated as the difference between the separation date and admission date’ (op. cit., p. 129). Therese Anderson, Graeme K Hart, Marion A Kainer and Kevin Moon, Influenza Pandemic Planning for Intensive Care, Australian and New Zealand Intensive Care Society, Melbourne, 2001, p. 12.

78. Therese Anderson, et al., ibid, p. 17 and p. 20.

79. ibid.


81. Joint Standing Committee on Foreign Affairs, Defence and Trade, op. cit., p. 104.


84. Therese Anderson, Graeme K Hart, Marion A Kainer and Kevin Moon, op. cit., pp. 7–8.

85. See, for example, Standing Committee on Infection Control, op. cit., for discussion of this option.

86. Standing Committee on Infection Control, op. cit., p. 1.


89. ibid., p. 40.

90. ibid., p. 40 and 42.

91. Comment by a respondent interviewed for this paper.


93. Dr David Caldicott, op. cit.


99. Exercise ‘Minotaur’ was conducted by the Department of Agriculture, Fisheries and Forestry in September 2002 as a desk-top exercise focusing on a national foot and mouth disease outbreak. Involving over 1100 people, it was the largest exercise of its type ever held in Australia—http://www.affa.gov.au/exerciseminotaur (11 October 2004).

101. Comment by a respondent interviewed for this paper.


106. Mary Murnane, op. cit., p. 57.

107. Drew B Richardson and Sashi Kumar, op. cit., p. 41.

108. Peter Curson, op. cit.

109. Alison Bashford, op. cit.


115. ‘Hospitals must prepare for terrorism’, op. cit.


117. Dr Aitken, telephone and email communication, 20 May 2004—cited with permission.

118. ‘Domestic security under the spotlight’, op. cit.

119. Drew B Richardson and Sashi Kumar, op. cit., pp. 40–42.


123. ibid.

124. ‘Domestic security under the spotlight’, op. cit.

125. Drew B Richardson and Sashi Kumar, op. cit., p. 41.


128. ibid.

129. ibid.

130. ibid.


133. Comment by a respondent interviewed for this paper.

134. Professor Richard Smallwood, op. cit.


137. Professor Richard Smallwood, op. cit.


139. Professor Richard Smallwood, op. cit.

140. ibid.

141. Andrew Stuart, op. cit.


143. Andrew Stuart, op. cit., p. 56.

144. Mary Murnane, op. cit., p. 10.

145. ibid, p. 53.


147. Mary Murnane, op. cit., p. 53.
Appendix

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Dr Scott Cameron  Senior Lecturer, National Centre for Epidemiology and Population Health, Australian National University.
Dr Tim Churches  Manager, Population Health Information Branch, Centre for Epidemiology and Research, NSW Health.
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Dr Charles Guest  Deputy Chief Health Officer, ACT.
Dr Alan Hampson  Deputy Director, World Health Organization Collaborating Centre for Reference and Research on Influenza.
Prof. Thomas Kossmann  Director, Department of Trauma Surgery and Director, National Trauma Research Institute, The Alfred Hospital.
Dr Mahomed Patel  Senior Lecturer, National Centre for Epidemiology and Population Health, Australian National University.
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