



Australian Government
Department of Health and Ageing

Australian Health
Management Plan for

PANDEMIC INFLUENZA

IMPORTANT INFORMATION FOR ALL AUSTRALIANS



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2008

Disclaimer

These guidelines are accurate at the time of writing, and the advice contained within the *Australian Health Management Plan for Pandemic Influenza (2008)* represents current thinking, but it is subject to review in the light of changes in modelling data and other emerging scientific evidence. Readers are advised to visit the Department of Health and Ageing website www.flupandemic.gov.au to ensure that they have access to the most current and up to date version. While this plan includes guidance for those involved in providing patient care, readers should note that the information contained in the plan is not a substitute for, and is not intended to replace, independent professional advice. The Commonwealth of Australia does not accept any legal liability or responsibility for any injury, loss or damage incurred by the use of, or reliance on, or interpretation of the information contained in this plan.

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Acknowledgments

The *Australian Health Management Plan for Pandemic Influenza* (AHMPPI) has been developed by the Office of Health Protection in the Department of Health and Ageing following extensive consultation and feedback from peak bodies, advisory groups and eminent experts in pandemic influenza.

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Abbreviations

A glossary of terms is provided at Appendix A.

AHMAC	Australian Health Ministers' Advisory Council
AHMC	Australian Health Ministers' Conference
AHMPPI	Australian Health Management Plan for Pandemic Influenza
AHPC	Australian Health Protection Committee
AHPC/NIC	Australian Health Protection Committee/National Immunisation Committee Pandemic Vaccine Working Group
AI	Avian Influenza
AMPPI	Australian Management Plan for Pandemic Influenza (June 2005)
AQIS	Australian Quarantine and Inspection Service
AUSVETPLAN	Australian Veterinary Emergency Plan
CDNA	Communicable Diseases Network Australia
CEO	Chief Executive Officers
CHO	Chief Health Officers
CMO	Commonwealth Chief Medical Officer
COAG	Council of Australian Governments
CQO	Chief Quarantine Officers
DoHA	Australian Government Department of Health and Ageing
EAG	Chief Medical Officer's Expert Advisory Group on Pandemic Influenza
EMA	Emergency Management Australia
FLUBORDERPLAN	The National Pandemic Influenza Airport Border Operations Plan
GISN	World Health Organization Global Influenza Surveillance Network
HPAIIH	Highly Pathogenic Avian Influenza in Humans
IHR	<i>International Health Regulations 2005</i>
ILI	Influenza like illness
IPPWG	Inter-jurisdictional Pandemic Planners Working Group
NAP	National Action Plan for Human Influenza Pandemic
NFP	National Focal Point
NHEMRN	National Health Emergency Media Response Network
NHS Act	<i>National Health Security Act 2007</i>

NIC	National Influenza Centres
NIR	National Incident Room
NMS	National Medical Stockpile
OIE	World Organisation for Animal Health
PAPR	Powered Air Purifying Respirator
PCN	Pandemic Control Network
PHLN	Public Health Laboratory Network
PPE	Personal protective equipment
SIAG	Chief Medical Officer's Scientific Influenza Advisory Group
SPAG	Chief Medical Officer's Scientific Pandemic Advisory Group
VAG	Chief Medical Officer's Vaccine Advisory Group
VIDRL	Victorian Infectious Diseases Reference Laboratory
WHO	World Health Organization
WHOCC	World Health Organization Collaborating Centre for Reference and Research on Influenza

Minister's foreword

According to the World Health Organization, it is inevitable that the world will face another influenza pandemic. While there is no certainty about when the next one will occur, Australia must be prepared. An influenza pandemic could devastate a nation's health system and our health sector must be equipped to respond to minimise the impact on the health of all Australians and on the health system itself.

Australia's strategy to achieve these goals is outlined in this plan—the *Australian Health Management Plan for Pandemic Influenza* (AHMPPI). The AHMPPI (2008) is a significant revision of the plan and outlines the measures that the health sector as a whole would consider taking in response to an influenza pandemic. This iteration of the national health plan is a significant step forward, and reflects a maturing of pandemic planning in Australia.

The AHMPPI (2008) demonstrates the Rudd Government's commitment to keeping Australia secure against potential threats. Its development has also embodied the Government's commitment of working closely with the states and territories.

The AHMPPI (2008) builds on the work and principles contained within previous pandemic plans and draws on major developments since the last plan was released in 2006. The assumptions about what the next pandemic might look like and the likely effectiveness of different interventions have been reviewed, and in some cases revised in light of new evidence. A process for continual review of these planning assumptions has been established to ensure that pandemic planning in Australia is evidence-based and in line with the latest advances.

The impact of a pandemic on our society is uncertain and for this reason the plan incorporates a high level of flexibility and presents a framework that allows for tailored responses appropriate to the severity of any pandemic and the availability of resources.

The AHMPPI (2008) also contains a new focus on sustaining the health system if a pandemic is widespread in Australia. This has been made possible due to developments in many areas including:

- increased availability of antiviral medication
- increased confidence in vaccine technology and availability of a pandemic vaccine



- the inclusion of H5N1 avian influenza vaccines in the National Medical Stockpile
- a better understanding of how to combine different control measures.

The plan will continue to be updated as new clinical evidence or other prevention and management strategies are developed. While there has been significant work in Australia to prepare for an influenza pandemic, we must continue with our preparations. This plan provides the guidance and leadership we need to make sure we are as best prepared as possible to deal with an influenza pandemic.

A handwritten signature in black ink, appearing to read 'Nicola', with a long, sweeping horizontal stroke extending to the right.

The Hon Nicola Roxon MP
Minister for Health and Ageing

December 2008

Introduction

Why plan for an influenza pandemic

The burden of an influenza pandemic could overwhelm a nation's health system. An influenza pandemic also has the capacity to cause economic and societal disruption on a massive scale¹. For these reasons, the World Health Organization (WHO) encourages all countries to draw up and implement national preparedness plans for an influenza pandemic².

There is no certainty when the next influenza pandemic will occur but according to the WHO, 'there will be an influenza pandemic, sooner or later'³. In recent history, two to three pandemics have been recorded every century.

How rapidly the next pandemic will emerge is unclear but it could emerge very quickly with little warning. Currently there are influenza viruses with pandemic potential circulating widely in animals. These viruses occasionally infect humans. This situation could continue for some time, and while this situation remains, there is a risk that a pandemic may develop.

It is also uncertain how severe the next pandemic may be. It could be relatively mild, creating health problems similar to those seen during a very severe influenza season. Alternatively, a highly pathogenic virus could emerge resulting in serious and widespread illness, leading to a large number of deaths and to the disruption of the normal functioning of society for a prolonged period.

If Australia is prepared, we are more able to reduce dramatically the impact of an influenza pandemic by minimising the number of people who become infected, protecting critical infrastructure and essential services in our society and considerably improving the health outcomes for those who are affected. For this reason, governments continue to invest in planning for potential pandemics. Preparing for the next influenza pandemic will provide additional benefits, as improvements in infrastructure can also mitigate the effect of other epidemics or infectious disease threats.

The purpose of pandemic planning within the health sector is to ensure that we are ready whenever the pandemic occurs—ready to assess the situation, ready to make decisions quickly, ready to take action and most importantly ready to work together to reduce the impact and recover as quickly as possible.

-
- 1 McKibbin WJ & Sidorenko A.A. Global macroeconomic consequences of pandemic influenza, Lowy Institute for International Policy, February 2006.
 - 2 Resolution of the World Health Assembly WHA 56.19, Prevention and control of influenza pandemics and annual epidemics, 56th WHA, 10th plenary meeting, 28 May 2003.
 - 3 The World Health Report, 2007.

A coordinated response across all levels of government namely, Australian, state, territory and local, and across all sectors (for example, transport, power, food, telecommunications, welfare) is required to effectively respond to an influenza pandemic. Health is just one of many sectors that will be involved in the response. The health sector, however, plays a pivotal role within a whole of government response.

Aim, goals and objectives of pandemic planning

The overarching aim of pandemic preparedness across all sectors is to protect Australians and to reduce the impact of a pandemic on social function and the economy. This is an aim that all sectors across all governments will be working towards during a pandemic and forms the framework for a whole of government response.

The goal of the health sector during a pandemic is to minimise the impact of an influenza pandemic on health and the health sector.

Underpinning the health sector goal are four operational objectives that guide and focus the health sector response during an influenza pandemic.

These objectives are:

Operational Objective 1: Communicate the best available information to decision-makers, health professionals and the public.

Operational Objective 2: Minimise transmission (spread) of the pandemic virus.

Operational Objective 3: Optimise the health system to reduce mortality (death) and morbidity (illness).

Operational Objective 4: Work in partnership across all sectors of government to support the whole of government aim of protecting Australians and reducing the impact of a pandemic on social functioning and the economy.

This document uses the health sector goal and the four operational objectives to guide planning and to assist in prioritising the types of interventions that would be implemented during a pandemic. More detail about the goals and objectives is in Part 1, Section C with a description of the types of interventions considered at each phase of the pandemic to ensure achievement of the goal and objectives.

Purpose of this document

The *Australian Health Management Plan for Pandemic Influenza* (AHMPPI) is a national health plan for responding to an influenza pandemic, based on international best practice and evidence. The purpose of this document is to outline the measures that

the health sector will consider in response to an influenza pandemic and to provide an overview of the preparedness activities being undertaken to ensure that the health sector is adequately prepared for an influenza pandemic.

The AHMPPI provides an overarching framework for preparedness and response activities within the health sector. The operational documents that will guide the response at a local level align to this framework to ensure a nationally consistent response.

This plan provides clear links with whole of government planning and outlines where advice from the health sector would feed into whole of government decision making.

As there are so many uncertainties around when a pandemic could occur and how it might affect our society, this plan incorporates a high level of flexibility to ensure that actions taken will be appropriate to the situation and can be adapted to meet the needs of different groups or situations.

To assist the planning process a number of assumptions have been made about how the next pandemic virus might behave, and how effective our interventions would be. Once the next pandemic strain emerges, a rapid review of these assumptions will be needed to ensure that the response is appropriate to the specific situation.

This document builds on the work and principles contained within previous national pandemic health plans. It aims to incorporate the many valuable lessons learnt that have been gained from pandemic exercises here and abroad, as well as the latest research findings on influenza and pandemics.

Elements of this plan will be tested at national, jurisdictional and local levels. The testing will inform the future development of the plan.

How does this document fit with other pandemic plans

This plan should be read in conjunction with jurisdictional health plans, whole of government plans and broader emergency response strategies (see Appendix B).

Scope of the document

This document details preparedness measures being undertaken to ensure that Australia is ready to respond to an influenza pandemic. It outlines the response (actions and interventions) that will be considered once the next influenza pandemic virus emerges.

This plan provides a strategic outline of the likely health sector responses, but does not include detailed operational plans and standard operating procedures. The AHMPPI is

complemented by a number of national technical annexes (see Appendix C), some of which are complete while others are still under development, as well as a large range of state and territory health department protocols.

This document is written for all Australians. It focuses on the actions that may be taken by governments to control the disease at a population level, so that the essential health needs of all Australians can be met. The measures that individuals and households can take to assist slowing transmission are listed in Part 2.

This plan is based on the premise that the next influenza pandemic strain will first emerge overseas and it will be imported to Australia via an infected traveller. The approach required if a second, less likely, scenario occurs, namely that the pandemic virus first emerges in Australia, is outlined in Appendix D.

This is the third iteration of the AHMPPI. It has been revised in response to a key outcome of the first national influenza pandemic exercise, Exercise Cumpston held in 2006. Details on how this document has evolved are provided at Appendix E. The evidence base that supports the AHMPPI is continually developing. This plan is therefore a 'living' document that requires review and reassessment every two years.

What is new in the AHMPPI (2008)

While the underlying aims of pandemic planning, and the key measures used to control an influenza pandemic have not substantially changed, the AHMPPI (2008) reflects some significant developments since the last edition was published in 2006 (see Box 1).

Box 1: What is new in this document

- Strategic framework with explicit aims, goals and objectives for the health sector.
- Increased number of health response phases to take into account additional antiviral stocks, vaccine developments and other recent scientific findings.
- Revised antiviral, vaccine and PPE strategies.
- Revised planning assumptions and processes for continual review.
- New legislative basis for response.
- More emphasis on health system strengthening.
- Broader surveillance aims.
- Greater flexibility to ensure that the needs of the situation and different population groups can be better addressed.

The National Medical Stockpile (NMS) now has more antivirals and a candidate pandemic vaccine. This means that the overall approach to the health response, which was previously based on containment measures followed by maintenance, can be augmented (see Box 2). The health response phases are further outlined in Part 1, Section B3. The antiviral and vaccine strategies have also evolved, as have the strategies for the use of personal protective equipment (PPE).

Box 2: Phases of the health response	
The ALERT phase	Being alert to the risk of a pandemic and preparing for a pandemic
The DELAY phase	Once the pandemic virus emerges overseas, keeping the virus out of Australia
The CONTAIN phase	Once the pandemic virus does arrive in Australia, limiting the early spread
The SUSTAIN phase	Sustaining the response, while we wait for a pandemic vaccine
The CONTROL phase	Controlling the pandemic spread with a vaccine
The RECOVER phase	Once the pandemic is under control, returning to normal, while remaining vigilant

The assumptions about what the next pandemic might look like and the likely effectiveness of different interventions have been reviewed, and in some cases revised, in light of new evidence. A process to continually review the key planning assumptions to take into account the latest scientific and medical research has also been established, ensuring that pandemic planning in Australia will remain evidence based and in line with the latest advances.

Additional focus is placed on strengthening the health system and the need to consider all health services, in addition to preparing specific influenza services.

Australia now has national legislation under the *National Health Security Act 2007* (NHS Act) that strengthens the national surveillance and decision-making during health emergencies, as well as surveillance and reporting capacities. This legislation allows us to meet our obligations as a signatory to the WHO *International Health Regulations 2005* (IHR), which means we have to report and respond to diseases that potentially affect travel and trade. These and other legislative issues have been reflected in this document and incorporated into all aspects of pandemic planning and response.

The need for immediate and updated information in an influenza pandemic will be great and the current approach to surveillance in AHMPPI (2008) goes beyond that for traditional communicable disease surveillance. The impacts of the pandemic (and the measures used to control it) are to be monitored and public perception and concerns gathered, so that the key issues can be taken into account in decision-making.

Finally, greater scope for flexibility has been incorporated into both planning and response to ensure that actions can be rapidly adapted to reflect the situation during the pandemic, and be tailored to better meet the needs of different groups or localities.

Overview of the document and how to use it

The AHMPPI (2008) includes the following:

Introduction

The introduction sets the scene and outlines the scope for this iteration of the plan.

Part 1

Part 1 provides important background information on the nature of influenza pandemics. It describes the strategy for the response to an influenza pandemic, and the likely actions taken during the different phases of a pandemic.

Part 2

Part 2 describes how individuals and households can prepare for an influenza pandemic and help protect themselves from infection during an influenza pandemic.

Part 3

Part 3 provides more detail of the strategy and responses for health professionals and decision makers, along with technical details and scientific rationale for planning.

To assist the reader a glossary of terms is available at Appendix A.

While this plan is written for all Australians, some groups may find certain parts of the document of particular interest: Table 1 outlines the areas of interest, and draws attention to relevant sections and the supporting documents to the AHMPPI (2008).

Table 1: Areas of interest for readers of this document

Audience	Relevant section in this document	Relevant supporting documents
General public	Introduction Part 1 —Australia's health plan for pandemic influenza Part 2—How individuals can help control the spread of the virus	Australian Health Pandemic Influenza Communications Strategy (May 2006) (Public Communication Annex)
Health professional	Entire document All appendices	Public Communication Annex Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006) Interim National Pandemic Influenza Clinical Guidelines (June 2006) Aboriginal and Torres Strait Islander Health Service Annex* Aged Care Annex* Blood Annex* Funeral Annex* Health Workforce Enhancement Annex* Pathology Annex* Pharmacy Annex* Primary Care Annex* Vaccination Annex*
Health and other sector decision makers	Entire document All appendices	Public Communication Annex The National Pandemic Influenza Airport Border Operations Plan (FLUBORDERPLAN) Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006) Interim National Pandemic Influenza Clinical Guidelines (June 2006) Aboriginal and Torres Strait Islander Health Service Annex* Aged Care Annex* Blood Annex* Funeral Annex* Guidelines for the Public Health Management of Pandemic Influenza* Health Workforce Enhancement Annex* Pathology Annex* Pharmacy Annex* Primary Care Annex* Quarantine of Arrivals Plan* Strategy for Prioritising Preventative Services* Surveillance Annex* Vaccination Annex*

*under development

PART ONE

**Australia's Health Plan
for Pandemic Influenza**



Part 1: Australia's Health Plan for Pandemic Influenza

A. What is pandemic influenza

A1. What is influenza

Influenza (flu) is a potentially life threatening illness. It is a contagious disease (see Box 3) of the respiratory tract caused by influenza viruses. Each year, influenza causes serious infection and death around the globe, usually in the winter months (seasonal influenza).

Box 3: How is influenza spread

The main ways in which the influenza virus can enter a person's body and cause disease are via:

1. Respiratory spread—when an infected person exhales, their respiratory droplets can spread into the eyes, nose and mouth of an uninfected person. The uninfected person needs to be relatively close by—usually at a distance of around a metre.
2. Contact spread—if an uninfected person has virus on their hands and they touch their own eyes, nose or mouth they can infect themselves. A person's hands may be contaminated by:
 - a) touching used tissues, doorknobs or other items or surfaces that an infectious person has contaminated,
 - b) virus present in faeces, blood or other bodily fluids.

As the virus can not survive well in the environment, contamination of hands is most likely to occur following contact with freshly soiled items.

Respiratory droplet and contact spread are the major modes of transmission in the community. Specific procedures within the medical setting may lead to generation of aerosols, requiring specific precautions in these settings.

Due to some pre-existing immunity to the seasonal strains of influenza, most people only suffer a self-limiting illness, lasting from a few days to several weeks. Influenza can lead to complications (see Box 4) and for some people—the elderly, people with poor immune systems and people with pre-existing respiratory, cardiac and endocrine disease—influenza can be a significant disease and cause death. It can also cause the death of healthy adults and children.

Box 4: Complications of influenza infection:

- difficulty breathing
- secondary bacterial infections in the lungs (pneumonia), the middle ear (otitis media) and sinuses (sinusitis)
- viral pneumonia
- inflammation of muscles (myositis), occasionally including heart muscle (myocarditis)
- neurological problems
- kidney failure
- heart attack
- stroke
- complications of diabetes.

Three different types of influenza viruses infect humans—types A, B and C. Only influenza A and B cause major outbreaks and severe disease. They are included in seasonal influenza vaccines. Influenza C causes a common cold-like illness in children. Only influenza A is known to have been responsible for influenza pandemics.

Influenza A and B viruses have two main proteins on the outside of the virus: the haemagglutinin (H); and the neuraminidase (N) proteins. These proteins are referred to as ‘antigens’ because they are the structures to which our immune system responds. New strains of influenza A and B continually emerge because of the tendency of these H and N antigens to change.

While influenza B is essentially a human disease, influenza A viruses are found in many species. Influenza A occurs as distinct forms or subtypes based principally on their haemagglutinin antigen, of which there are 16 different versions. Water birds are the natural host of influenza A viruses. From time to time influenza A viruses have, however, successfully jumped the species barrier and have become established in other animals, including humans.

A2. What is an influenza pandemic

The word pandemic (from Greek language *pan* meaning all and *demos* meaning people) is used to describe an epidemic that affects the populations across every continent.

An influenza pandemic occurs when:

- a new subtype of influenza virus emerges in humans which most people have not been previously exposed and are, therefore, highly susceptible
- the virus causes a serious disease in humans
- the virus is easily and rapidly spread between humans, infecting large numbers of people worldwide and causing many deaths.

A3. How do pandemics develop

The genes of an influenza virus that determine the haemagglutinin and neuraminidase antigens slowly change over time (known as ‘antigenic drift’) by mistakes made when the virus reproduces and copies its genetic material. These changes mean that immunity gained from previous infection or immunisation becomes less effective or ineffective, explaining why a previous bout of seasonal influenza does not prevent subsequent infections, and why we need a new seasonal influenza vaccine each year.

Under the right circumstances, a new subtype of influenza can emerge. When this type of major change in the influenza virus occurs, it is known as ‘antigenic shift’. Because the immune system has never been exposed to viruses of this new subtype before, and has no ability to recognise it and combat it, the virus tends to cause very severe infections with a high mortality rate.

Antigenic shift (major change in the virus) can occur in one of two ways:

- reassortment, which is the mixing of the genes from an animal or bird virus and a human influenza virus—this is thought to be able to occur if an animal or human is infected with both viruses at the same time
- adaptive mutation, which is change in the genes of an animal influenza virus, which may allow the virus to infect and be transmitted easily between humans.

Of the influenza type A viruses:

- Only strains within the subtypes H1, H2 and H3 have been known to have adapted successfully to transmit easily between humans. When they first emerged, these subtypes initially caused pandemics but then, over the course of a number of years, adapted to cause seasonal influenza. Only the H1 and H3 viruses are currently circulating in humans.

- Other subtypes (such as H5, H7 and H9) have caused human infections, but have not developed the capacity to be transmitted easily and rapidly between humans.
- The remaining subtypes, which cause infection in birds and some animals, have not developed the ability to infect humans yet, but they are closely monitored by scientists.

The WHO has studied the development of previous pandemics in detail and stated that the next pandemic is likely to develop by moving through the following steps:

- First, an influenza virus in birds or animals develops the ability to be able to infect humans and cause serious disease. During this initial phase, although the virus can cause disease in humans, the virus is unable to transmit efficiently between humans. Contact with infected animals is needed for human infection to occur.
- Following further genetic change, the virus may become more efficient at passing from human to human, first within small groups or clusters (families or community networks) and later over wider but still localised areas.
- Finally, the virus is able to transmit readily between humans. It spreads rapidly because of the short incubation period and the infectious nature of influenza. Rapid global spread is aided by the large amount of international travel that takes place every day between virtually every country in the world.

The length of time it takes for a virus to develop from one which can only affect birds or animals, to one that can cause a human pandemic is unknown. In the past, when a pandemic virus has emerged, the virus has affected all continents over one to two years, often in waves lasting a few months at a time.

A4. What were past pandemics like

Influenza pandemics have occurred at irregular intervals throughout history. In the twentieth century, the world experienced three pandemics, which occurred in 1918–19, 1957–58 and 1968–70.

4.1 The pandemic in 1918–19

The Spanish flu swept across the world in three waves between 1918 and 1919. It tended to affect an area for up to 12 weeks and then would suddenly disappear, almost as quickly as it had arrived, only to return several months later. This wave pattern matches descriptions of some earlier pandemics, and occurred in a less pronounced form in the milder pandemics of 1957–58 and 1968–70.

In terms of the loss of human lives, the Spanish flu was unprecedented in modern times. More people died during the pandemic than were killed in the First World War. The illness came on suddenly and progressed rapidly to respiratory failure and in some instances death. Many people died from bacterial disease after infection with influenza (known as secondary bacterial infection).

Worldwide, at least 50 million people are thought to have died, with unusually high numbers of deaths in young and healthy people. It has been estimated that about 25 per cent of the world's population was infected. Global spread and severity were influenced by the war and the movement of troops.

The Spanish flu did not reach Australia until 1919, partly because of strict maritime quarantine implemented by the government. It began in Victoria, spread to New South Wales then to the rest of Australia. By the end of 1919 (when the Australian population was just over five million), around 10,000 Australians, mostly young adults, had died of influenza⁴. As in other countries, health services in Australia were greatly stretched during this time.

Although we cannot be entirely sure, recent research suggests that the virus concerned evolved by adaptive mutation.

4.2 The pandemic in 1957–58

The influenza pandemic of 1957–58, called the Asian flu, resulted in fewer deaths and had milder effects. Although the proportion of people infected was high, the illness was relatively mild compared to the Spanish flu. The first wave of the pandemic was concentrated in school children and the second in the elderly. Infants and the elderly were more likely to die. It is estimated that the Asian flu caused two million deaths worldwide.

Studies show that the virus responsible for this pandemic arose by genetic reassortment and had both haemagglutinin and neuraminidase antigens derived from a bird virus.

4.3 The pandemic in 1968–70

The 1968–70 pandemic or Hong Kong flu was also relatively mild compared to the Spanish flu. It affected mainly the elderly and is thought to have caused about one million deaths worldwide.

Studies show that the virus responsible for this pandemic arose by genetic reassortment.

4 Paton RT. *Report of the Director-General of Public Health to the Honourable The Minister for Public Health. Section V. Report on the Influenza Epidemic in New South Wales in 1919.* Sydney: NSW Health Department, 1920 (cited in Horvath, J., McKinnon, M., Roberts, L. (2006) *The Australian response: pandemic influenza preparedness.* MJA, Volume 185 No. 10)

A5. What type of pandemic are we planning for

We are planning to have the capacity, capability and flexibility to respond to a pandemic as severe as the one that occurred in 1918.

Rapid international travel, the significant numbers of people living with chronic health issues and our high expectations of modern medicine, mean that we need to plan for a pandemic that could happen very quickly, could disproportionately and severely affect some members of our society, and would put a significant strain on our health services.

If we were to experience a pandemic as severe as the one that occurred in 1918 and we were not prepared and unable to respond, scientists have estimated that in Australia:

- 40 per cent of the population (8.5 million Australians⁵) could show clinical signs of infection during a pandemic
- 2.4 per cent of those affected would die (around 200,000 people)
- 50 per cent of the population may not go to work at the peak of the pandemic
- several waves each lasting up to 12 weeks could occur
- disruption to services could last as long as two years.

Clearly, we are planning to respond and reduce the impact of this type of pandemic. It is estimated that if we were unfortunate enough to experience a pandemic as severe as that in 1918, but we were prepared and were able to respond effectively, then:

- the number of cases could be reduced from 40 per cent clinically affected, to 10 per cent clinically affected, that is around 2.1 million Australians
- death rates could be halved to 1.2 per cent of those clinically affected, that is around 25,000 people may die
- absenteeism at the peak could be 30 to 50 per cent
- the duration of the pandemic in Australia could be 7–10 months, in a single wave
- the level of disruption across all sectors would be reduced (although persisting for a longer period at a more manageable level).

To put the mortality figures in context, about 2,800 Australians (mainly elderly) die each year from influenza and pneumonia.

5 This figure is based on the estimated resident population projection to mid 2008.

B. The strategy for responding to an influenza pandemic

B1. What will guide the use of our key resources

Five key elements provide the strategic approach for the health sector when responding to an influenza pandemic:

- **Strategic Framework**—which outlines the goal and objectives for the health sector's preparedness and response. These goals and objectives will apply throughout Australia to ensure that the different parts of the health system are working together to achieve the same outcomes. Having clear health sector goals and objectives means other sectors (for example, transport and power) know what the health sector is trying to achieve and where joint action could help achieve desired outcomes.
- **Phase Description**—of the likely different phases a pandemic could go through in Australia. The phases describes which stage of the pandemic Australia is at, and assist in determining broadly the types of actions that would be most appropriate at that time, as well as the actions required for planning in anticipation of the next phase.
- **Ethical Framework**—that provides guidance on standards that would be expected during a pandemic to guide responses, as well as a means of identifying ahead of time areas where decision-making could be complex.
- **Legal Framework**—under which pandemic preparedness and response must operate.
- **Flexible Policy**—that takes into account differing levels of severity and the availability of resources, with a focus on prioritising health care delivery so that life-saving services are maintained.

B2. Strategic framework and operational objectives

The overarching aim of preparedness and response to a pandemic is;

to protect Australians and reduce the impact of the pandemic on social and economic functioning,

as outlined in the whole of government *National Action Plan for Human Influenza Pandemic* (NAP). All sectors within Australia are preparing to be able to contribute to achieving this aim in the event of a pandemic. To do this, each sector has set its own goals and objectives.

The health sector's goal is;

to minimise the impact of an influenza pandemic on health and the health sector.

To achieve this goal, the health sector will need to prepare and respond in four different operational areas. An operational objective has been set for each of these key areas.

The four operational objectives are:

1: Communicate the best available information to decision makers, health professionals and the public.

Achievement of this objective is vital so that decision-making is effective, timely and transparent. It is also vital that health professionals and the public have knowledge of the situation so that they are able to take the right actions to protect themselves and care for others.

There are two sub-objectives for objective 1. These are:

- 1.1 collect and analyse appropriate information to guide decision making (information collection and analysis)
- 1.2 communicate appropriate information effectively to decision makers, health professionals and the public (information distribution).

2: Minimise transmission (spread) of the pandemic virus.

Actions will be taken to reduce the spread of the pandemic virus to minimise the number of people affected by the disease.

There are four sub-objectives for objective 2. These are:

- 2.1 support control activities overseas
- 2.2 delay the entry of a pandemic virus to Australia by using border measures
- 2.3 slow the spread in the community
- 2.4 vaccinate the population to protect individuals and control the pandemic.

3: Optimise the health system to reduce mortality (deaths) and morbidity (illness).

Different actions will be taken so that the health system can provide optimal care for those with pandemic influenza as well as continue to treat those patients presenting with other health needs.

There are four sub-objectives for objective 3. These are:

- 3.1 protect and provide surge capacity in the health workforce
- 3.2 establish and maintain influenza-specific services
- 3.3 maintain life-saving non influenza services and support services
- 3.4 reduce avoidable demand on the health system.

4: Work in partnership across all sectors of government to support the whole of government aim of protecting Australians and reducing the impact of a pandemic on social functioning and the economy.

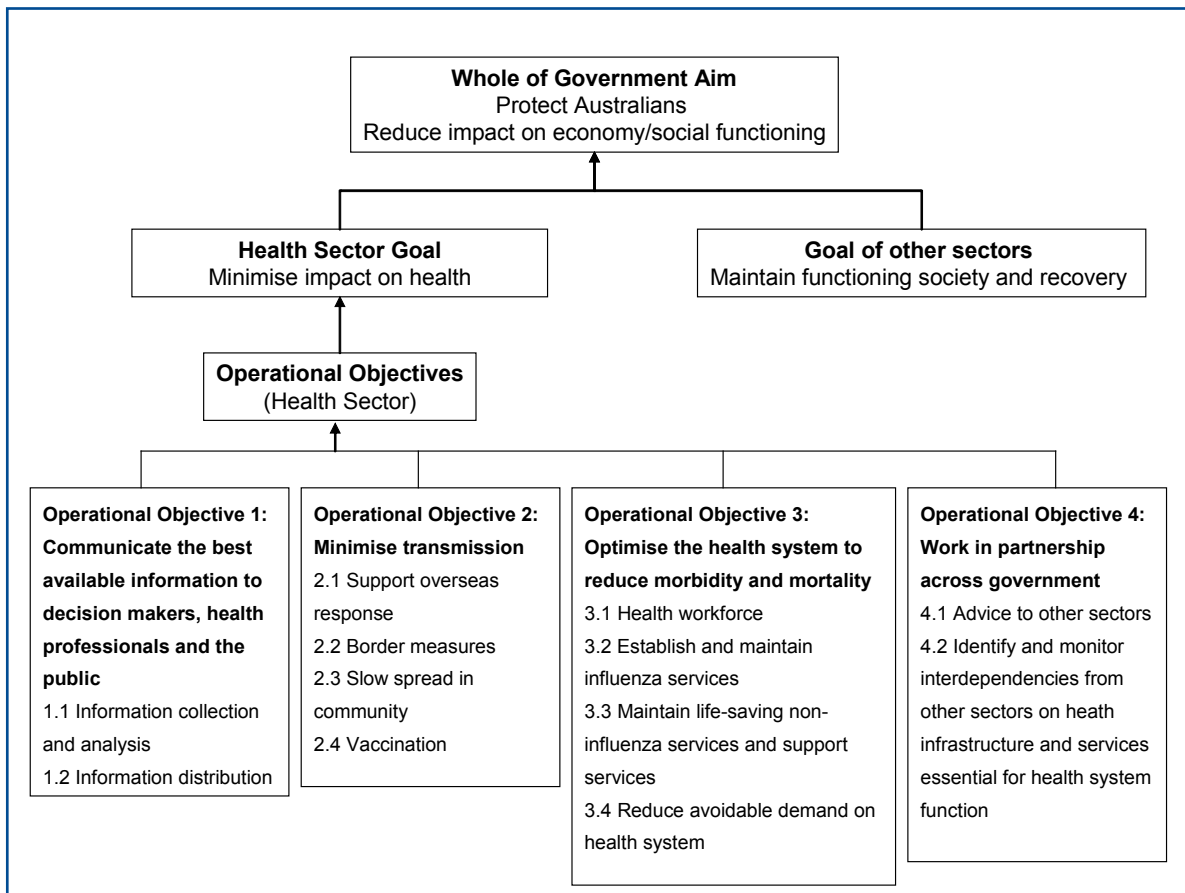
It will be important to ensure that the right health advice can be provided across government. Where assistance from other sectors (for example, power) is needed for health to achieve its objectives, it is important that these areas of interdependency are identified and addressed.

There are two sub-objectives for objective 4. These are:

- 4.1 provide health sector advice for decision makers across government
- 4.2 identify and monitor interdependencies from other sectors on health infrastructure and services essential for health system function.

The Strategic Framework (see Figure 1) shows the relationship between the overarching whole of government aim, the goals of the health sector response and the underpinning operational objectives. The actions that health will consider taking during a pandemic in order to achieve each of the four operational objectives are described in detail in Part 1, Section C.

Figure 1: Strategic Framework



B3. Pandemic phases

3.1 The Australian pandemic phases

It is likely that the development of a pandemic will move through a number of different phases as the virus becomes more adept at infecting humans, spreads around the globe, and throughout Australia. As each of these phases requires a different set of actions, identifying the phase is useful to guide decision-making and to ensure the most appropriate actions are being taken. It is important to consider that the situation could move very quickly between phases or that certain phases may not be detected in time for the actions specific to that phase to occur.

WHO has a set of pandemic phases that it uses to describe the global situation (phases 1–6). Australia uses the same numbering system as WHO to describe each phase; however, the Australian pandemic phases are designed to describe the situation in Australia and to guide Australia's response. Thus, the Australian and the WHO phase may not always be the same.

The Australian phases describe whether the virus is in countries overseas (OS) or in Australia (AUS). Different response strategies may be used simultaneously in different parts of Australia, due to variations in the local stage of a pandemic. Having an Australian system means that actions can be taken in Australia before a change of phase is declared by the WHO.

The description of each phase and key actions that occur by phase are shown in Table 2.

Figure 2 gives an overview of the pandemic phases and illustrates the split between phases where the pandemic virus is:

- emerging overseas (left hand arm of the Y diagram) or
- emerging in Australia, or if there was early transmission of a virus with pandemic potential that is transmitted to Australia before a pandemic occurs overseas (right hand arm of the Y diagram).

The actions taken are quite different depending on whether the virus emerges overseas or in Australia, however, once the pandemic has begun in Australia (Phase 6) it becomes irrelevant where the virus first emerged. What will be important to Australia is the progress of the pandemic across the country, as this will guide the types of actions that are needed to reduce the impact and eventually control the pandemic.

Figure 2: Pandemic Phases

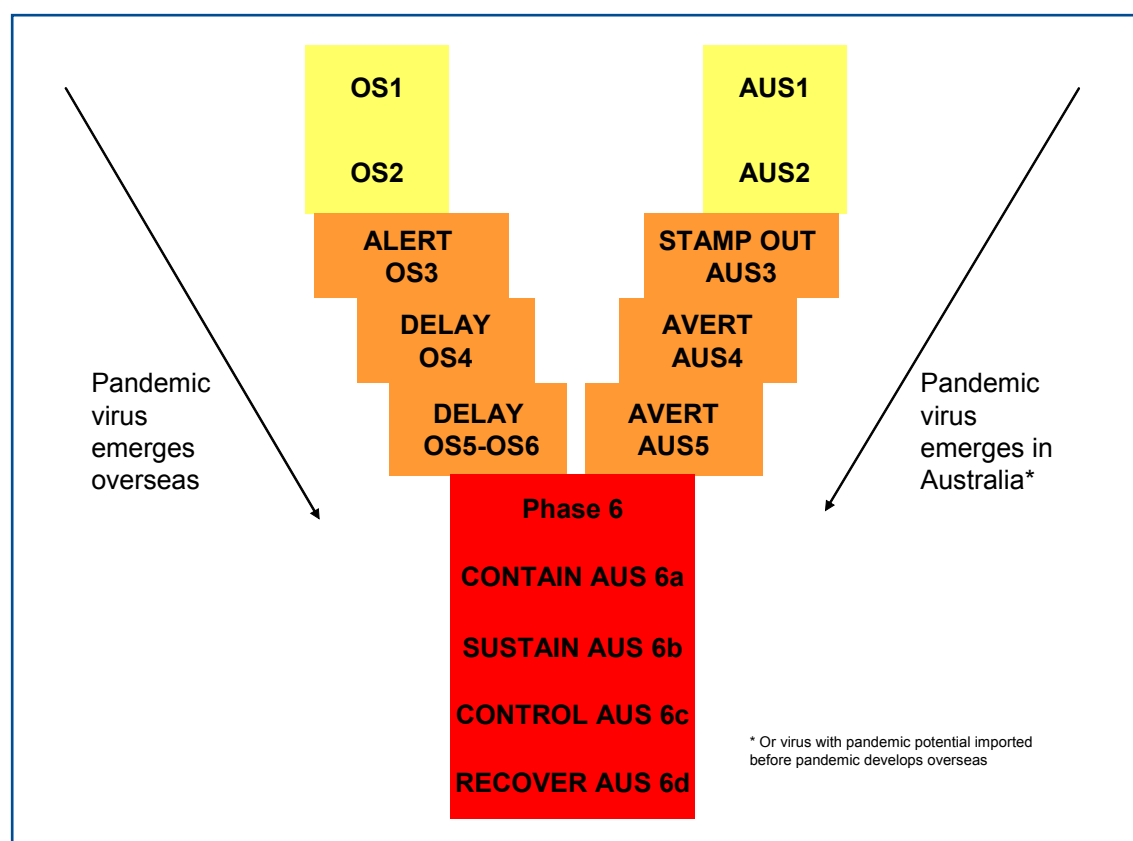


Table 2: Key actions by phase

Australian phase	Description	Key Actions
ALERT OS3	A novel virus with pandemic potential causes severe disease in humans who have had contact with infected animals. There is no effective transmission between humans. Novel virus has not arrived in Australia.	<ol style="list-style-type: none"> 1. Alert: Increased vigilance for cases. Remaining alert to the risk of a pandemic and increased monitoring of the virus (to look for genetic mutations in the virus). 2. Support the overseas response to control the source. Working with the agriculture and health sectors in overseas affected countries to reduce the amount of the pandemic potential virus circulating in animals and to protect humans from infection. 3. Prepare: Increased pandemic preparedness activities.
DELAY OS4/OS5/ OS6	<p>Novel virus has not arrived in Australia.</p> <p>OS4 Small cluster of cases in one country overseas.</p> <p>OS5 Large cluster(s) of cases in only one or two countries overseas.</p> <p>OS6 Large cluster(s) of cases in more than two countries overseas.</p>	<ol style="list-style-type: none"> 1. Delay entry of the virus to Australia using border measures. 2. Support the overseas response to control the source. Try to avert a pandemic by rapid intervention in the affected areas. 3. Enhanced vigilance-Increased vigilance for cases (overseas and domestically) and increased monitoring of the virus (to look for genetic mutations in the virus). 4. Escalate preparedness activities for possible pandemic (that is, get ready to implement). 5. Stand-down the response if the pandemic is averted before it arrives in Australia.
CONTAIN AUS 6a	Pandemic virus has arrived in Australia causing small number of cases and/or small number of clusters.	<ol style="list-style-type: none"> 1. Contain the establishment of the pandemic strain in Australia. 2. Ensure the health system is best able to cope with an influenza pandemic.
SUSTAIN AUS 6b	Pandemic virus is established in Australia and spreading in the community.	<ol style="list-style-type: none"> 1. Sustain the response while we wait for a customised pandemic vaccine to become available. 2. Minimise transmission and maintain health services.
CONTROL AUS 6c	Customised pandemic vaccine widely available and is beginning to bring the pandemic under control.	<ol style="list-style-type: none"> 1. Control the pandemic with vaccine. 2. Careful downscaling of response as the pandemic is brought under control, to an eventual standing down of control measures in recover.
RECOVER AUS 6d	Pandemic controlled in Australia but further waves may occur if the virus drifts and/or is re-imported into Australia.	<ol style="list-style-type: none"> 1. Recover and restore the health system and return to ALERT phase as quickly as possible. 2. Enhanced vigilance for a subsequent wave. Increased vigilance for cases and increased monitoring of the virus (to look for genetic mutations).

3.2 What is new in the AHMPPI (2008)

There are five major changes to the AHMPPI in the 2008 edition.

1. The plan does not cover the inter-pandemic period.

At the time of publication, Australia is in the Pandemic Alert Period (OS3). Given the continued reporting of human cases of influenza A/H5N1, as well as sporadic reports of human cases caused by H7 and H9 viruses, it is unlikely that we will return to the inter-pandemic period (Phases 1–2) in the foreseeable future.

2. We assume that the next pandemic will emerge overseas.

It is considered unlikely that the pandemic will emerge in Australia. These phases are therefore dealt with in Appendix D as the actions that would be taken if AUS3, AUS4 or AUS5 were to occur are markedly different from those that are taken in the equivalent overseas phases OS3, OS4 and OS5.

3. New phases have been added—SUSTAIN and CONTROL.

Since 2006, the following developments have occurred that have altered our thinking about the phases. We have:

- greater understanding of how effective different combinations of control measures could be
- increased availability of antiviral medication for both treatment and prophylaxis (prevention)
- increased confidence in vaccine technology and availability of a pandemic vaccine
- inclusion of H5N1 candidate vaccines in the NMS.

The major amendment in the phasing system since the AHMPPI (2006) is the addition of the SUSTAIN phase, where the aim is to sustain the response while we wait for a customised pandemic vaccine to become available. The emphasis of this phase will be on sustaining transmission reduction in order to keep case numbers at a manageable level as well as sustaining health systems until the customised pandemic vaccine becomes available in sufficient quantities to help bring the pandemic under control in Australia. This phase is followed by the CONTROL phase, where the pandemic is brought under control.

4. We anticipate only one wave of the pandemic in Australia.

We expect that a pandemic specific vaccine could be available in Australia in time to prevent subsequent waves, however, they could occur if the virus changes its genetic material (i.e. drifts).

5. The Maintenance phase is seen as an exception.

In the AHMPPI (2006), the arrival of the AUS 6B phase signalled the start of the maintenance phase whereby the use of antivirals would focus on maintaining functioning. This is now seen as an exceptional situation.

If at any point during the pandemic, sustaining both the health system and critical infrastructure becomes unmanageable, then Australia would move to a maintenance strategy (see Appendix F).

In this exceptional circumstance, when our ability to keep the number of cases at a manageable level is not successful or that the pandemic vaccine is not effective, it will be necessary to shift the focus to maintaining critical services until the pandemic becomes under control. The Australian Government's policy on the distribution of antiviral medicines will focus on sustaining society and the economy.

3.3 How are changes in phase decided in Australia

The Australian Government Department of Health and Ageing (DoHA) maintains international surveillance of the pandemic risk by monitoring the overseas emergence of influenza viruses with pandemic potential in humans. When concern arises that the Australian phase should be changed, the following will take place:

- The Commonwealth Chief Medical Officer (CMO) convenes a meeting of the Chief Medical Officer's Expert Advisory Group on Pandemic Influenza (EAG)—(see Part 3, Section A for more details) who advise the CMO as to whether they feel a change in phase is appropriate.
- The CMO will consider this advice as well as information from other sources (e.g. WHO). If a change in phase is recommended, the CMO will then provide advice to the:
 - Australian Government Minister for Health and Ageing
 - Australian Health Protection Committee (AHPC) (which includes Chief Health Officers)
 - Chief Executive Officers (CEO) of state and territory health departments.
- The Australian Government Minister for Health and Ageing will advise the Prime Minister, state and territory health ministers and other appropriate Australian Government ministers.
- The Prime Minister will inform the state Premiers, territory Chief Ministers, and the Governor-General.

- The Prime Minister will then make a formal announcement of the change in phase.

The process for changing the pandemic phase is not covered by legislation. The legal framework, including details of proclamation of an epidemic under the *Quarantine Act 1908*, are provided in Part 1, Section B5.

3.4 How long would each phase last

While it is impossible to predict precisely how quickly a pandemic would evolve from one phase to another, estimates are provided in Table 3. The duration of later phases will be dependent on the availability of the vaccine, which will be rolled out progressively. Overall, it is anticipated that the pandemic in Australia could last for 7–10 months (from CONTAIN to the end of CONTROL). While interventions may extend the duration of a pandemic, they dramatically decrease the number of Australians affected at one time. The following provides a guide for planning purposes:

- The pandemic could move very quickly from ALERT to DELAY phase, or even move directly to the CONTAIN phase. Pandemic planning should ensure we can move quickly from preparedness activities to full response.
- If measures (detailed in Part 1, Section C2.1–2.2) such as assisting the overseas response and border measures, were implemented early in DELAY, the arrival of the pandemic virus into Australia could potentially be delayed for days to weeks. Timeframes for this delay would depend on the extent of the pandemic overseas and the volume of movement of people into Australia.
- Once the pandemic virus has arrived in Australia, it is believed that the infection could be contained if community control measures (Part 1, Section C2.3) are implemented early and appropriately. The CONTAIN phase could therefore last for a number of weeks or months, particularly if the pandemic virus is not highly infectious and the control measures are effective with high levels of compliance. Conversely, this phase could be relatively short if the pandemic virus is highly infectious and/or implementation of control measures is delayed or compliance is low.
- The move to the SUSTAIN phase will be when the number of new cases faced by jurisdictional health authorities exceeds the available resources for CONTAIN strategies. As it could take up to one year before sufficient vaccine would be available to bring the pandemic under control in Australia, it will be necessary to sustain essential services and continue to minimise transmission in SUSTAIN for several months.

- As it will take some time to vaccinate the population and for individuals to develop protective antibodies afterwards (Part 1, Section C2.4), the CONTROL phase could last for a number of weeks or months.
- The duration of the RECOVER phase is dependent on how long the health system takes to return to normal and whether there are subsequent waves. If second and additional waves of pandemic influenza do occur their severity will be dependent on how much protection the population has (from either natural infection and/or vaccination) and how much the virus has drifted.

Table 3: Possible duration of phases

Phase	Possible duration
DELAY	Days to weeks
CONTAIN	Several months: 1–3 months Variable, depending on: <ul style="list-style-type: none"> • how infectious the virus is • how effective control measures are • the availability of resources to continue with the CONTAIN strategy.
SUSTAIN	Several months: 3–4 months Variable, depending on: <ul style="list-style-type: none"> • how infectious the virus is • how effective control measures are • the availability of resources to continue with the CONTAIN strategy.
CONTROL	Several months: around three months
RECOVER	Six to twelve months for the health system to recover

B4. Ethical framework

In the event of an influenza pandemic, a number of difficult decisions will need to be made about a wide range of pandemic response and recovery issues. These decisions may include questions about restricting individual's freedom and allocating limited resources.

These decisions will affect all people, whether they are members of the public, leaders of government, health workers, or other people involved in the essential functioning of society.

There could be conflicts between the needs of the population and those of the individual. Ethical issues may also arise about privacy, confidentiality, provision of health care and safety of employees.

The AHPC has agreed on an ethical framework to guide the health sector response. The following ethical values are taken into account when planning and implementing actions:

- Protection of the public—ensuring that the protection of the entire population remains a primary focus.
- Stewardship—that leaders strive to make good decisions based on best available evidence.
- Trust—that health decision makers strive to communicate in a timely and transparent manner to the public and those within the health system.
- Equity—providing care in an equitable manner, recognising the special needs, cultural values and religious beliefs of different members of our community—this is especially important when providing health services to vulnerable individuals, such as Aboriginal and Torres Strait Islander peoples and people who are culturally and linguistically diverse.
- Proportionality—ensuring that measures taken are proportional to the threat.
- Reciprocity—ensuring that when individuals are asked to take measures or perform duties for the benefit of society as a whole, their acts are appropriately recognised and legitimate need associated with these acts are met where possible.
- Provision of care—ensuring that health care workers are able to deliver care appropriate to the situation, commensurate with good practice and their profession's code of ethics.
- Individual liberty—ensuring that the rights of the individual are upheld as much as possible.
- Privacy and confidentiality of individuals is important and should be protected, however, under extraordinary conditions during a pandemic it may be necessary for some elements to be overridden to protect others.

Rapid medical or scientific research may be required in a pandemic. Leading Australian guidance on ethical values and principles with respect to human research can be found in the *National Statement on Ethical Conduct in Human Research* (National Health and Medical Research Council (2007)).

B5. Legal framework

5.1 National legislative powers

Commonwealth quarantine legislation, and state and territory public health and emergency response laws, provide a legislative framework to underpin actions that may be required to respond to a pandemic.

Quarantine Act 1908

The objectives of quarantine activities, and the *Quarantine Act 1908*, are to prevent the introduction of specified diseases into Australia and prevent the spread of such diseases within Australia. Highly Pathogenic Avian Influenza in Humans (HPAIIH) is a disease that is subject to quarantine controls under the *Quarantine Act 1908*. Due to the inclusion of HPAIIH in the list of diseases subject to quarantine, people reasonably suspected to have these diseases can be ordered to comply with a range of control activities. These include observation, examination, detention, segregation and isolation of people.

The Australian Government Minister for Health and Ageing and the Australian Government Minister for Agriculture, Fisheries and Forestry share responsibility for quarantine measures and administration of the *Quarantine Act 1908*. The Australian Quarantine and Inspection Service (AQIS) have primary responsibility for the implementation of the Act at Australia's borders. AQIS administers the human quarantine provisions on behalf of the DoHA.

Emergency powers

The Governor-General can also make a proclamation under the *Quarantine Act 1908* to authorise actions to respond to an epidemic or the danger of an epidemic, and to allow the Australian Government Minister for Health and Ageing to invoke emergency powers to take action to remove or respond to this threat. These powers could be applied to respond to an influenza pandemic.

National Health Security Act 2007

The *National Health Security Act 2007* (NHS Act) provides for the exchange of public health surveillance information (including personal information) between the Commonwealth and the states and territories and, where relevant, the WHO. The legislation enhances the early identification of, and timely responses to, public health events of national or international significance, such as an influenza pandemic.

The National Health Security Agreement has been signed by the Commonwealth, states and territories to support the practical operation of the NHS Act. It formalises decision-making and coordinated response arrangements that have been refined in recent years to prepare for health emergencies such as an influenza pandemic.

5.2 State and territory government legislative powers

The states and territories have legislative powers that enable them to implement biosecurity arrangements within their borders that would act to complement Commonwealth quarantine arrangements. They also have a broad range of public health and emergency response powers available to them under both public health legislation and emergency legislation for responding to a public health emergency, such as an influenza pandemic, that might occur within their jurisdiction.

5.3 International legislative issues

The *International Health Regulations 2005* (IHR) came into force in June 2007. The IHR are an international public health treaty that commit signatory countries to take actions to prevent, protect against, control and provide a public health response to the international spread of disease, in ways which avoid unnecessary interference with international traffic and trade.

The NHS Act enabled the establishment of a National Focal Point (NFP) to liaise with Commonwealth, state and territory agencies within Australia in relation to influenza pandemics and other public health events of national significance. The NFP provides a central point of coordination with WHO on all matters related to the IHR.

B6. Flexible policy

It is acknowledged that an influenza pandemic will have considerable impact on the health system and on individuals. Every attempt will be made to prioritise health care delivery so that life-saving services are maintained.

Actions taken to control the pandemic will be tailored to fit the situation, to ensure that resources are used in the most appropriate manner. This will ensure that the least disruptive control measures could be used where appropriate. Flexibility is afforded by the use of policy that can respond to the:

- changes in our pandemic planning assumptions
- severity of the situation
- resources we have available (see Part 1, Section B7).

6.1 Assumptions

Planning for the next pandemic is based on a set of assumptions that have been defined using the best scientific and medical evidence. Planning is in place to reassess these assumptions as quickly as possible as the pandemic emerges. This is to allow time to adjust our responses if the pandemic virus appears to be behaving slightly differently than the initial assumptions would have suggested.

6.2 Severity

Four main factors will be taken into account when assessing the severity of a pandemic:

- direct health impact in terms of death rate and the severity of the illness
- health system impact in terms of the ability of our health services to provide care
- social impact in terms of absenteeism and how well society can continue to function and provide essential services
- psychosocial impact of the pandemic.

Governments and researchers are working on ways to measure the overall impact of a pandemic accurately. Forward planning tools are being developed to allow experts to estimate what the likely impact would be so that decision makers will be able to take pre-emptive action to try to remain ahead of the pandemic.

Every effort will be made to ensure that decisions taken will:

- be proportionate to the threat
- be based on the best available information at the time
- take into account the impact of the decision, both within the health sector and more broadly on the economy and society.

In the early stages of the pandemic, actions will be based on our pandemic planning assumptions, and on any relevant information from overseas. Later in the pandemic, if there was information to suggest that the impact of the pandemic on health and society is different to that anticipated, a more flexible and tailored use of resources would be implemented.

In addition, the control measures and response would be tailored if the impact of the pandemic were shown to be more severe for certain groups or disproportionately affecting the availability of some resources.

B7. Key resources

7.1 People

While considerable effort has gone into preparing the health system and the whole of government for a pandemic, the resource that will have the greatest effect on reducing the impact of a pandemic will be the measures that the public can take to protect themselves, support others and build resilience within their communities. Australia

will be drawing on the skills of its population in order to minimise transmission in the community, provide care to those affected by an influenza pandemic, and assist in the maintenance of society. Part 2 outlines the measures that can be taken to protect yourself and your community.

A further key resource to ensure we can minimise the impact of an influenza pandemic on health will be our health professionals (see glossary for definition) and the health system. Measures to care for those who care for others and to optimise the health workforce during a pandemic are outlined in Part 1, Section C3.1. Appropriate professional education materials will enhance health professionals' response to the pandemic.

7.2 Facilities and equipment

Health care services and health care resources such as flu clinics, clinical and laboratory services and supplies, and medicines are also key resources.

Resources for the containment of the disease include protective equipment and antivirals, and vaccines. The rate of usage of these resources will be monitored throughout the pandemic. This information will be useful in tailoring the response and ensuring that resources are used in the most effective and sustainable manner.

Personal protection (use of protective equipment in certain settings and adoption of good hygiene practices by everyone) and **antiviral medication** will have to be used to protect those most at risk of infection, and to treat individuals who become infected and require medical intervention. Personal protection and antivirals will have an important role throughout a pandemic from the first emergence of the pandemic virus overseas to the final phases of controlling the pandemic virus in Australia. In the event of a pandemic, antivirals in the NMS will be distributed by state and territory public health authorities.

Appendices G and H provide a detailed description of how personal protective equipment (PPE) and antivirals will be used during a pandemic to reduce transmission and, in the case of antivirals, appropriately treat people who have been infected with pandemic influenza.

Vaccines against pandemic influenza are likely to be extremely useful in bringing a pandemic under control and protecting those most at risk from infection, however, it is likely to take many months before sufficient vaccine will be available to control the pandemic and protect all Australians. Part 1, Section C2.4 outlines plans to develop and distribute vaccines against pandemic influenza.

C. Key actions to achieve each operational objective

The four operational objectives remain the same for each phase of the pandemic. In this section, the activities and interventions that would be used are described under each operational sub-objective. A series of phase snapshots are provided that describes how these activities are implemented, according to the phase. The phase snapshots also refer to the complementary documents, which provide additional details about the action. In the linked documents section, documents that are currently under development are listed and designated as such.

C1. Objective 1: Communication

No matter where we live or what we do, we all need accurate and timely information so that we can work together to protect our country and ourselves. The first operational objective is to communicate the best available information to decision makers, health professionals and to the public in a timely manner.

1.1 Information collection and analysis

Information will be collected and analysed by the DoHA to answer the following questions:

- What phase is Australia in?
- Are the assumptions that were used for planning still valid?
- What is the current and anticipated impact on health services and the community?
- How effectively have measures been implemented and how effective have they been at reducing spread?

Monitoring of both the international and Australian (domestic) situation is required to answer these questions. The overall plan for information collection and analysis will be described in the *Surveillance Annex*.

A summary of the key information sources is provided at Appendix I.

Role of health professionals in information collection

Health professionals will assist with the gathering of information, through reporting cases to health authorities, assisting with contact tracing, reporting adverse events associated with the use of antivirals and vaccines, and may report (via surveys) their perceptions of the pandemic and the control measures that are being taken.

Role of the public in information collection

The public will also be a valuable source of information, by reporting illness to health professionals. The public may also report (via surveys) their perceptions of the effectiveness of the measures that are being taken.

Phase snapshot: Information collection and analysis

PHASE	HEALTH ACTION
ALERT	Enhance monitoring and vigilance of international situation Prepare policy, processes, infrastructure for Australian surveillance
DELAY	<i>International Surveillance</i> Continue monitoring of the international situation and pandemic planning assumptions Implement monitoring of effectiveness of control measures overseas <i>Australian Surveillance</i> Enhance case detection Implement estimation of anticipated impact and monitoring of public and professional perceptions
CONTAIN	<i>International Surveillance</i> Continue monitoring of international situation and effectiveness of control measures overseas <i>Australian Surveillance</i> Continue case detection, estimation of anticipated impact and monitoring of public perceptions Implement review of assumptions, and effectiveness of control measures in Australia
SUSTAIN	<i>International Surveillance</i> Continue monitoring of international situation and the effectiveness of control measures overseas
CONTROL	<i>Australian Surveillance</i> Continue monitoring of Australian phase, impact (current and anticipated), assumptions, effectiveness of control measures in Australia, and public perceptions
RECOVER	<i>International Surveillance</i> Continue monitoring of international situation and the effectiveness of control measures overseas Implement review of assumptions regarding possible next wave <i>Australian Surveillance</i> Continue monitoring for evidence of new wave Implement monitoring of public and professional perceptions regarding recovery of the health system
Linked document	Surveillance Annex (under development)

Note: The same health actions apply for both SUSTAIN and CONTROL for this table.

1.2 Information distribution

Decision makers in the health sector

The DoHA currently delivers regular situation reports to leaders and decision makers in the health sector regarding the Australian phase and risk of a pandemic. The distribution networks for these reports would be reviewed once it appears a pandemic virus has emerged overseas (DELAY), and the timeliness and frequency of this reporting would be scaled up. At this stage, the National Incident Room (NIR) within the DoHA becomes the focal point for communication.

Health professionals

Governments throughout Australia are working to ensure that health professionals can access accurate and timely information on the:

- situation
- pandemic assumptions
- latest scientific research findings on patient care and public health interventions.

Primary care providers will be provided with timely alerts by health departments through fax, websites, email via existing mailing lists, and other broadcast systems held by the various peak medical and health care bodies representing medical practitioners, pharmacists and nurses. Other communications systems, such as the use of private pathology laboratory communications networks, may be utilised if appropriate.

Health professionals will also provide vital information to the public. Their advice will affect how the public responds to the pandemic. Health professionals will help the public understand the situation and take measures to protect themselves.

General public

The Australian Government, state and territory and local governments are working together on communication strategies and plans to deliver consistent and accurate public messages nationwide in the event of a pandemic. Governments will make every effort to provide timely and reliable advice to the public, media, businesses and industries.

The DoHA has developed a comprehensive health sector communication strategy. The strategy is designed to be flexible to accommodate the various ways a pandemic might develop and to provide clear, accurate and timely information to Australians. A public information campaign using a range of media, including electronic, print, outdoor (e.g. signs), online media and communications materials will be delivered through health

providers and, if necessary, direct to households. The health sector communication strategy is complemented by a whole of government communication strategy.

In a pandemic, the DoHA will provide general information about:

- what is happening internationally
- information about the disease and what areas in Australia are affected
- general advice on infection control and how to prepare for a pandemic
- information on how the health sector is responding.

This information will be provided via:

- TV, newspapers or radio
- the DoHA website at www.flupandemic.gov.au
- the DoHA Public Health Information Line (PHIL) 1800 004 599.

During the pandemic, members of the public should call their local state and territory information lines for immediate advice if:

- someone in the household develops symptoms of pandemic influenza
- they want information regarding local arrangements such as the location of flu clinic or vaccination services.

These numbers will be widely publicised in the event of a pandemic and will be available at www.flupandemic.gov.au.

The DoHA will work with the Australian Government Department of Foreign Affairs and Trade to ensure that Australians overseas are appropriately informed so that they can make decisions about returning home.

Governments at all levels will communicate with business and industry via established networks such as the Trusted Information Sharing Network. Additional information on the Trusted Information Sharing Network is available from the Australian Government Attorney-General's Department via www.tisn.gov.au.

Phase snapshot: Information distribution

PHASE	HEALTH ACTION
ALERT	<p>Identify communication mechanisms with health sector decision makers</p> <p>Develop and distribute education material for healthcare professionals and the public</p> <p>Prepare pandemic specific websites, hotlines and messages</p>
DELAY	<p>Continue communications with health sector decision makers, as appropriate</p> <p>Implement communications with health professionals and public: pandemic specific website, hotlines and media based public information campaign</p>
CONTAIN	<p>Continue communications with health sector decision makers, as appropriate</p> <p>Continue communications with health professionals and public: website, hotlines, public information campaign; update messages to ensure timely and accurate information is provided</p> <p>Evaluate public and health professionals awareness levels, attitudes and intentions relating to public health measures; modify messages and information to ensure it meets their needs</p>
SUSTAIN	<p>Continue communications with health sector decision makers, as appropriate</p>
CONTROL	<p>Continue communications with health professionals and public: website, hotlines, public information campaign; update messages to ensure timely and accurate information is provided</p> <p>Ensure public and health professionals understand reasons why interventions might be modified and tailored to best meet the needs of the situation and/or specific population groups</p> <p>Evaluate public and health professionals awareness levels, attitudes and intentions relating to public health measures; modify messages and information to ensure it meets their needs</p>
RECOVER	<p>Continue communications with health sector decision makers, as appropriate</p> <p>Continue communications with health professionals and public: website, hotlines, public information campaign; update messages to ensure timely and accurate information is provided, with a focus on recovery</p> <p>Build capacity so that we can rapidly return to CONTAIN phase level of activity again if additional pandemic waves occur</p> <p>Evaluate public and health professionals awareness levels, attitudes and intentions relating to public health measures; modify messages and information to ensure it meets their needs</p>
Linked documents	Australian Health Pandemic Influenza Communications Strategy (Public Communications Annex) (May 2006)

Note: The same health actions apply for both SUSTAIN and CONTROL for this table.

C2. Objective 2: Minimising transmission of the pandemic virus

The **second operational objective** is to minimise transmission of the pandemic virus to reduce the number of people who become infected.

2.1 Supporting control activities overseas

It is most likely that the pandemic strain will emerge overseas. Preventing development of the pandemic strain requires:

- Containment of influenza outbreaks in animals, and
- Protecting those humans who are in close contact with infected animals. This not just to protect the individual from severe disease but to reduce the opportunities for the influenza virus to gain the ability to transmit readily between humans.

Scientists believe that if the first cluster of human cases is detected early enough then rapid intervention could potentially avert a pandemic, or at least significantly delay the spread of the pandemic virus to other countries.

In the event that a cluster of human cases emerges overseas, the Australian Government will act early to encourage the WHO and relevant governments to attempt to avert a pandemic using rapid interventions as outlined in the *WHO Interim Protocol: Rapid operations to contain the initial emergence of pandemic influenza*. The WHO has a stock of antiviral medicines and equipment at its disposal. The Australian Government will also consider requests from the WHO or other governments for assistance. The Australian Government would respond commensurately with the nature of the threat, providing this could be done without weakening Australia's own capacity for action, should the pandemic spread here.

Phase snapshot: Supporting control activities overseas

PHASE	HEALTH ACTION
ALERT	Provide health advice about support required by overseas countries to: <ul style="list-style-type: none"> • control of pandemic potential viruses in animals, • protection of humans from infection, and • support pandemic preparedness
DELAY	Provide health advice about overseas aid required to control the pandemic in humans
CONTAIN	Focus on domestic response
SUSTAIN	
CONTROL	

PHASE	HEALTH ACTION
RECOVER	Consider overseas support to control global pandemic and reduce risk of subsequent waves affecting Australia, if capacity exists and need is identified
Linked document	National Action Plan for Human Influenza Pandemic

2.2 Delaying the pandemic strain entering Australia

Once the pandemic strain emerges overseas it will be important to delay the entry of pandemic influenza into Australia for as long as possible. This will give the governments of Australia as much time as possible to prepare and for vaccine companies to begin producing customised pandemic vaccine to protect the Australian population.

Border measures in the DELAY phase include:

- pre-border actions (such as reducing the number of travellers from high risk areas entering Australia and advising Australians against visiting affected areas abroad)
- at-border actions (such as screening to detect infected or high risk travellers).

Scientific research and modelling suggests that it could be possible to delay the entry of the virus into Australia for a short period of time if the following occurred:

- **at-border measures** were used **in combination** with **pre-border measures**, and
- the number of cases and rate of transmission overseas was relatively low and being controlled.

It is recognised that border measures will not keep the pandemic out of Australia indefinitely. Border measures are, however, one of a number of control measures, which if taken together and implemented early and effectively, could slow the introduction of the pandemic into Australia. Border measures may also help raise awareness amongst the travelling public and deter those with infection from travelling.

Border measures are a whole of government decision and the role of the health sector is to provide advice to governments in relation to what measures may be effective and when they should be implemented.

If Australia was one of the first countries to be affected by a pandemic, to prevent ill people with pandemic influenza from leaving the country, the WHO may request exit screening measures be implemented under our IHR obligations.

Repatriation of Australians overseas

The Australian Government would seek to provide Australians overseas with early practical advice to enable them to make decisions best suited to their situation. Arrangements regarding the return of Australians overseas in a pandemic situation are a whole of government decision which would be taken in light of health advice, the ethical framework and other considerations.

Health advice will be provided to the whole of government on how and when return to Australia could be achieved, in a manner that minimises the risk of infection for the individual and minimises the risk of further importation of disease into Australia. It is likely that in the DELAY phase the government may advise Australians in affected countries to return home.

Australians overseas should have their own medical and departure plans. The Australian Government's ability to assist may be extremely limited and in many situations may not be feasible.

Phase snapshot: Delaying the pandemic strain entering Australia

PHASE	HEALTH ACTION
ALERT	Recommend heightened border surveillance for influenza viruses in bird and animal products
DELAY	Assist the implementation of at-border and pre-border measures Prepare health advice for Australians overseas
CONTAIN	Evaluate the impact of border measures and advise on need
SUSTAIN	Prepare health advice on the need to discontinue border measures
CONTROL	Evaluate effectiveness of border measures
RECOVER	Prepare health advice on the need to re-implement effective measures if a subsequent wave is imminent
Linked documents	FLUBORDERPLAN National Action Plan for Human Influenza Pandemic Quarantine of Arrivals Plan*

2.3 Slowing the spread in the community

No matter how effective Australia's border measures are, it is very likely that at some time the pandemic strain will make its way into Australia. A number of measures will be needed to minimise the spread of the pandemic.

Measures at the individual level include:

- Widespread, concerted adoption by individuals of good infection control at all times, such as:

- keeping at least one metre away from people with obvious flu symptoms
- adopting good hygiene practices
- wearing a surgical mask (or other appropriate nose and mouth covering) when instructed by health authorities.

Part 2, Section B provides further information on these infection control measures.

- Identifying and *isolating* cases, and providing antiviral treatment. Part 2, Section C.2 provides further guidance on how infectious individuals can help slow the spread of the pandemic.
- Identifying and *quarantining* people who have been in close contact with an infectious case, and providing antiviral prophylaxis. Part 2, Section D provides further guidance on how those in contact with infectious individuals can help slow the spread of the pandemic.

Measures at the community level (often referred to as ‘social distancing measures’) include:

- closure of schools and childcare centres
- workplace measures
- cancellation of mass gatherings
- changing public transport arrangements to limit crowding
- movement restrictions.

Identification and management of people infected (cases) with the pandemic influenza virus

Public health authorities will start to actively look for people potentially infected with the pandemic influenza virus as soon as we reach the DELAY phase (this is referred to as active surveillance). Depending on local requirements, state and territory health departments may establish flu clinics to assist with the early detection of people who may have pandemic influenza (see Part 1, Section C3.2 for more details).

The definitions used by public health authorities and clinicians to identify cases of pandemic influenza may change at different phases of the pandemic, as knowledge about the disease increases (see Box 5).

Box 5: Confirming the diagnosis

During the DELAY and CONTAIN phases, people under investigation for pandemic influenza are likely to require a laboratory test to confirm the diagnosis. Confirming the diagnosis using a laboratory test will allow public health authorities to assess the situation accurately.

Later in the pandemic, in SUSTAIN and CONTROL phases, when case numbers will be higher and when health professionals will be experienced in identifying pandemic influenza cases, an influenza like illness (ILI) may be sufficient for diagnosis and commencement of treatment. Community announcements will encourage those who are ill to remain in home isolation.

During RECOVER, laboratory diagnosis will once again be important to assess the situation and confirm the diagnosis when very few, if any cases, are occurring in Australia. Details of laboratory testing are provided in the *Pathology Annex*.

If clinically indicated, cases may be offered a course of antiviral medicine and will be provided with information on how to access medical care if they become severely unwell.

In accordance with appropriate public health legislation all people with pandemic influenza will be required to stay at home (referred to as 'home isolation') until they are no longer infectious. If severely ill and requiring hospital care, they would be isolated from people without influenza in a hospital room, or in an alternative facility, until they are no longer infectious or no longer requiring hospital care.

It is likely that adults will be infectious for up to seven days after the onset of illness. Children and the elderly may take longer to clear the virus from their system and hence could be infectious and need to be in isolation for longer periods. Clear guidance on how long cases should be asked to remain in isolation will be issued in the DELAY phase. The length of isolation may be adjusted during the pandemic in light of increased knowledge about the behaviour of the pandemic virus and a better understanding of the effectiveness of antiviral medication in reducing the amount of virus a person sheds.

The patient, and those caring for them in the home, will need to adopt strict hygiene practices to avoid the spread of infection in the household (see Part 2). Wearing a surgical mask while in close contact with other people is one of the main measures an infectious person can take to help stop the spread of infection.

Phase snapshot: Case identification and management

PHASE	HEALTH ACTION
ALERT	Prepare policy, infrastructure, processes Implement passive surveillance for cases of avian influenza in humans (imported from overseas)
DELAY	Implement active surveillance for possible cases of pandemic influenza, manage and isolate cases under investigation until diagnosis of pandemic influenza is excluded
CONTAIN	Depending on sustainability of resources continue active or passive surveillance
SUSTAIN	Continue to manage and isolate cases
CONTROL	Continue , but consider downscaling surveillance of cases as appropriate. Continue to manage and isolate cases manage cases Evaluate effectiveness of case identification and isolation measures
RECOVER	Get ready to re-implement effective measures if a subsequent wave is imminent
Linked document	Guidelines for the Public Health Management of Pandemic Influenza (under development)

Identification and management of people exposed to pandemic influenza: quarantine of contacts

From DELAY onwards, authorities will try to identify people who have been in recent close contact with patients confirmed to have the pandemic strain ('contacts'). The definition of a contact will be determined at the time and may change during the different phases (see Box 6).

Box 6: Scope of contact definition

CONTAIN	Likely to include household, school, workplace and other close contacts.
SUSTAIN onwards	Likely to include household contacts only

In the CONTAIN phase efforts will be made to identify and quarantine people who have had contact with infectious cases at school and/or workplace as well as at home. All contacts will be directed to stay at home in 'home quarantine'. During the SUSTAIN phase, quarantine may be limited to people who share a home with an infected case. These contacts may be given post-exposure prophylaxis antivirals (preventative medication) to reduce their chances of becoming infected.

Contacts in quarantine will be asked to take their body temperature every day and report by telephone to a specified jurisdictional health service if symptoms occur. Contacts in home quarantine should wear a surgical mask if they can (or other

appropriate covering of mouth and nose) for at least 48 hours from the time they were identified as a contact. Contacts should practice appropriate personal hygiene throughout the quarantine period.

If a contact becomes unwell with any influenza like symptoms, they should wear a surgical mask while in contact with others. They should discuss their symptoms with the health authorities. If confirmed as a case, their post-exposure prophylaxis may be changed to a treatment regime. The infected person would then be managed in isolation as stated above (case management).

For those who do not become ill, home quarantine will end after a specified period of time. This is likely to be around seven days from last possible exposure. Clear guidance on how long contacts should be asked to remain in quarantine will be issued at the beginning of the DELAY phase. The length of the quarantine period may be adjusted during the pandemic in light of increased knowledge about the behaviour of the pandemic virus.

Phase snapshot: Contact identification and management

PHASE	HEALTH ACTION
ALERT	Prepare policy, infrastructure, processes
DELAY	Implement contact tracing (all contacts) and quarantine
CONTAIN	
SUSTAIN	Depending on impact and sustainability of resources continue contact tracing (household contacts) and quarantine
CONTROL	Continue contact tracing (household contacts) and quarantine if feasible, but consider downscaling services as appropriate to complement vaccine distribution Evaluate effectiveness of control measures
RECOVER	Get ready to re-implement effective measures if a subsequent wave is imminent Implement measures to recover
Linked document	Guidelines for the Public Health Management of Pandemic Influenza (under development)

Community measures—social distancing

While it is not feasible for everyone in the community to stop all social contact, we can reduce the likelihood of infection in some settings.

Some people will be infectious without knowing it and they will continue to move around in the community. In settings where there are large numbers of people who have close contact, infections can spread easily. The aim of social distancing is to decrease the opportunity for this to happen.

Social distancing measures complement individual measures outlined earlier.

Disease modelling has shown that some of these interventions, for example school and childcare closures, need to be in place early to ensure they are fully effective. The choice of measures will depend on the epidemiology of the pandemic.

Implementation of the social distancing measures outlined below will be a whole of government decision because of their broader social and economic impact (see Box 7). Health may advise consideration of the following.

Box 7: Social and community impacts of social distancing

The Australian Government is working with the community sector to enhance its ability to manage better the social and community impacts of a pandemic and to be in the best position to continue providing essential community services in the event of a pandemic in Australia. This includes providing information and planning tools, pandemic business continuity workshops, training for social workers, arrangement to ensure continuity of income support payments, more flexible contractual arrangements for service providers and other assistance should it be needed.

Schools and childcare closures

Disease modelling has shown that the early introduction of school or childcare closures may reduce the rate at which pandemic influenza spreads in the community. It is known from seasonal influenza and from previous pandemics that:

- children typically have higher rates of infection than adults
- they may be infectious but not showing signs of infection for longer than adults
- infected children shed more virus and for longer periods of time than adults (that is, are more infectious to others than adults)
- children are less able to comply with hygiene measures than adults.

Reducing transmission in children by closing schools could therefore potentially reduce the rate at which children become infected and reduce transmission in the community.

Decisions relating to school or childcare closures will be made at the time, once the epidemiological characteristics of the virus are known. If schools or childcare centres are to be closed, administrators and employers will be advised by their state or territory government.

Workplace measures

All businesses should have business continuity plans in place to prepare for an influenza pandemic and protocols for infection control and general hygiene in the workplace.

In addition to good infection control and general hygiene in the workplace, employers can prevent transmission by:

- Encouraging people who are potentially infected with pandemic influenza, and their contacts, to keep away from the workplace. Staff should be actively encouraged to stay away from work if they or someone in their household has a fever, or other signs of respiratory illness.
- Ensuring staff who develop influenza like illness (ILI) while at work leave immediately and seek medical attention at the nearest influenza service.
- Providing opportunities for staff to work from home, particularly during the SUSTAIN phase.
- Providing flexible working hours to reduce crowding at peak times.

Business or community organisation managers should consider providing the following:

- Facilities for people to wash their hands frequently. This means sinks with warm and cold running water, plain, liquid or antimicrobial soap, or alcohol-based disinfectants and disposable paper towels.
- Tissues and no-touch waste bins.
- Signs about cough and sneeze etiquette. Posters and other materials are available from www.flupandemic.gov.au.

Further guidance for workplaces and business continuity planning is available at Appendix B.

Cancelling mass gatherings in the SUSTAIN phase: for example, places of worship, sports events.

If the pandemic is widespread in the community well people may be encouraged to avoid mass gatherings, and certain events may even be cancelled. Specific local advice on events and gatherings will be provided at the time.

If well people must enter a crowded environment in an area where there is widespread community transmission they will be advised to apply individual infection control measures.

Public transport in the SUSTAIN phase

If the pandemic is widespread in the community, transport schedules may be changed to limit crowding. If people must use public transport they will be advised to apply individual infection control measures.

Movement restrictions

Movement restrictions are likely to be an extraordinary measure and utilised only under certain circumstances in the CONTAIN phase. The decision will be made at a whole of government level.

In the CONTAIN phase, if an outbreak of the pandemic virus is confined to a well-defined area, that area may be quarantined. If so, people will not be allowed to travel to or from the area. Authorities will ensure that necessary services continue to be supplied to people in the area.

Phase snapshot: Community measures — social distancing

PHASE	HEALTH ACTION
ALERT	Prepare health policy advice
DELAY	Advise whole of government that social distancing measure should be anticipated
CONTAIN	Advise whole of government that social distancing measure should be implemented Implement social distancing measures
SUSTAIN	Evaluate social distancing measures depending on impact and sustainability of resources
CONTROL	Advise whole of government if social distancing measure should be continued but consider downscaling services as appropriate to complement vaccine distribution Evaluate effectiveness of control measures
RECOVER	Get ready to re-implement effective measures if a subsequent wave is imminent Implement measures to recover
Linked document	National Action Plan for Human Influenza Pandemic

2.4 Protecting the population using vaccination

Influenza Vaccines

Seasonal influenza vaccines refer to vaccines, updated yearly, that protect against seasonal (winter) influenza viruses. These vaccines will not provide adequate protection against a pandemic virus.

Candidate pandemic vaccines are based on a viral strain that is thought to have ‘pandemic potential’ for example the H5N1 strain that is currently circulating. The virus strain from which these types of vaccines are made is unlikely to be an exact match to the strain that eventually causes the pandemic. If these vaccines are used they may reduce the severity of illness in those who become infected, or prevent infection in some people, but not to the extent of a customised pandemic vaccine. They may also ‘prime’ the immune system—potentially shortening the amount of time it takes to mount an immune response to the customised vaccine, and possibly decreasing the number of doses of customised vaccine that are required.

Candidate pandemic vaccines are unlikely to offer full protection and indeed would only be useful if the vaccine and the pandemic strain belong to the same influenza subtype. The advantage of these vaccines is that they can be made and stockpiled ahead of time and hence would be available for use from the DELAY phase, some months before a customised pandemic vaccine would be available.

Customised pandemic vaccine is a specific, customised vaccine against the pandemic virus based on the actual pandemic viral strain. As such, production of this vaccine can only begin once the actual virus has emerged in the DELAY phase.

It is likely that customised pandemic vaccines will provide a significant level of protection against both infection and the development of severe illness. The exact level of protection and particularly effectiveness of the vaccine in different groups (for example, the elderly, children and people with severe medical conditions) will not be known until the pandemic has begun and rapid studies are performed.

How long until a customised pandemic vaccine becomes available

If production of a customised pandemic vaccine starts as soon as the pandemic virus has emerged it could take several months for the first doses of vaccine to become available in Australia and up to 12 months before there is enough vaccine for all Australians to receive a full course, and develop immunity.

This reinforces the importance of the measures to slow the arrival and spread of pandemic influenza in Australia. For every week we can delay the entry or reduce the spread of infection, we will be a week closer to being able to protect the whole population through vaccination.

Ways in which vaccines against pandemic influenza could be used

Australia has a small stockpile of an H5N1 candidate pandemic vaccine which may be used in the DELAY phase should the emerging virus be a H5 subtype.

The government will assess the risks and the benefits of a customised pandemic vaccine when it is developed and will use it in the most effective manner. If appropriate the government aims to provide a full course of a customised pandemic vaccine to every Australian as quickly, safely and as effectively as possible. It will be necessary for governments to prioritise the distribution of initial doses of the vaccine.

Prioritising the distribution of stockpiled candidate vaccine and the initial doses of the customised pandemic vaccine would be a whole of government decision that would be made at the time, taking into account:

- the needs of the health sector and other critical infrastructure to maintain societal functioning
- the infectiousness of the pandemic virus
- the impact of disease on different population groups.

The Australian Government is actively considering issues related to distribution, allocation and administration of pandemic vaccines and is in consultation with state and territory governments regarding these issues.

Phase snapshot: Protecting the population by using vaccines

PHASE	HEALTH ACTION
ALERT	Prepare policy, infrastructure, processes Purchase and stockpile candidate pandemic vaccine Make arrangements for future production and purchase of customised pandemic vaccine
DELAY	Consider use of candidate pandemic vaccine from stockpile and implement according to whole of government decision Implement customised pandemic vaccine production (once the pandemic virus is available) Prepare to deliver vaccination services to priority groups then whole population
CONTAIN	Continue customised pandemic vaccine production (and distribute when available)
SUSTAIN	Continue customised pandemic vaccine production and distribution Evaluate effectiveness of vaccination
CONTROL	Continue customised pandemic vaccine production and distribution
RECOVER	Get ready to re-implement measures if a subsequent wave is imminent Monitor drift of viral strains
Linked document	Vaccination Annex (under development)

C3. Objective 3: Ensure health services are optimised to reduce overall morbidity and mortality

The third operational objective is to ensure health services are optimised to reduce overall morbidity and mortality.

3.1 Protecting and ensuring appropriate health workforce

Skilled health care workers will be extremely important during an influenza pandemic. They will provide care and treat patients with pandemic influenza, support families during anxious times, and maintain other essential health services.

A range of strategies will be used to ensure that people delivering health care are provided with the most appropriate protection from infection in the workplace. Different protection measures will be applied depending on the level of risk of infection associated with the type of care that is being provided.

Protection measures that may be applied include:

- maintaining high levels of appropriate hygiene in the workplace
- organising services so that where possible infectious patients are treated in separate areas away from other patients
- asking all infectious or potentially infectious patients to wear a surgical mask to reduce the risk of spreading infection to others
- providing risk appropriate protective equipment to frontline health care workers
- providing antiviral prophylaxis according to current guidelines (see Appendix H)
- providing vaccine once it becomes available (either candidate and /or customised) in a staged approach to all health care workers.

Health departments throughout Australia are exploring how surge capacity within the health workforce will be provided to meet the anticipated increase in demand for health care. Safety and maintenance of acceptable standards are overriding principles guiding this work. Health departments are also working to ensure that health professionals will have the right level of training and skills to cope with the specific demands of an influenza pandemic.

While every effort will be made to encourage influenza patients to utilise influenza services, all practices including general practices, pharmacies and dental surgeries need to consider having their own pandemic plan. The approach an individual practice takes in

dealing with patients with ILI will depend on local arrangements such as the availability of flu clinics and other influenza services.

In addition to protection from infection, health departments are developing systems to support health care workers in dealing with the psychological and social aspects of providing care during a pandemic and developing strategies to ensure that excess demands on health care workers can be minimised.

Health care workers are likely to require particular support due to their heightened risk associated with work, and because of fears for themselves and their families. Challenges associated with this circumstance can be supported by information, support programs through their workplace and identifying family support issues.

Phase snapshot: Protecting and ensuring appropriate health workforce*

PHASE	HEALTH ACTION
ALERT	<p>Prepare policy, infrastructure, processes, training material</p> <p>Stockpiling protective equipment and medication (e.g. antivirals) by government</p>
DELAY	<p>Provide protective equipment and antivirals to health care settings</p> <p>Provide health advice regarding use of stockpiled candidate vaccine for frontline health care workers</p> <p>Provide training and psychosocial support to frontline health care workers</p> <p>Provide post-exposure antiviral prophylaxis if an identified high risk exposure to a case occurs</p> <p>Implement organising patient management to separate patients with influenza like illness</p>
CONTAIN	<p>Provide risk appropriate PPE available to frontline health care workers</p> <p>Offer pre-exposure antivirals for frontline health care workers who are at continuous exposure to confirmed infectious patients within influenza services (as clinically appropriate)</p>
SUSTAIN	<p>Provide post-exposure antiviral prophylaxis (as clinically appropriate) for health care workers who have an identified exposure in non-influenza service</p> <p>Implement workforce strategies as needed</p> <p>Continue training and psychosocial support</p> <p>Consider providing health advice regarding use of customised vaccine, if appropriate and according to whole of government decision (see Phase snapshot: Protecting the population by using vaccines)</p>
CONTROL	<p>Consider downscaling PPE and antivirals in areas no longer affected by the pandemic</p> <p>Evaluate efficacy of measure</p> <p>Continue psychosocial support for those who are frontline workers in the pandemic</p>

PHASE	HEALTH ACTION
RECOVER	<p>Get ready to re-implement effective measures if a subsequent wave is imminent</p> <p>Continue psychosocial support and other influenza recovery services</p> <p>Cease organising patient management to separate patients with influenza like illness</p>
Linked documents	<p>Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006)</p> <p>Interim National Pandemic Influenza Clinical Guidelines (June 2006)</p> <p>Aged Care Annex (under development)</p> <p>Health Workforce Enhancement Annex (under development)</p> <p>Pharmacy Annex (under development)</p> <p>Primary Care Annex (under development)</p>

*Vaccination policy for health care workers is detailed in 2.4 Protecting the population using vaccination

3.2 Establish and maintain influenza services

What are influenza services

Influenza services are services which have been developed, or modified to specifically manage or support influenza cases, including home care, flu clinics, hospitals and mental health services.

Home Care

If they are able and well enough, influenza patients will be encouraged to remain in their home for the duration of their illness. Many people, however, will require both health and social support to be able to do so.

Information on self care, reducing the risk of infection to others and caring for people with pandemic influenza will be available from government websites and through health department call centres. Information on social support will be available from government websites and call centres.

Flu Clinics

All state and territory health departments are planning to establish special flu clinics in the community or in existing hospitals to help prevent the spread of infection by keeping potentially infectious patients separate from other patients being seen in general practices and hospitals. Flu clinics will also help to ensure that general practices and hospitals do not become overloaded, so that life-saving non-influenza health services can be maintained.

Flu clinics will provide rapid access to trained health professionals for anyone who is concerned they may have pandemic influenza.

The staff in the clinics will:

- clinically diagnose pandemic influenza and collect specimens for laboratory diagnosis if needed
- provide antivirals to those who are diagnosed if clinically indicated
- work closely with public health authorities so that people who have been in close contact with a person confirmed to be infectious can be rapidly identified and offered antiviral medication if clinically appropriate
- work closely with local health services to ensure that influenza patients who may require additional medical support can be assessed quickly and treated.

The location, staffing levels and range of services that will be offered by individual flu clinics will be tailored to meet the needs of local communities. Details of how to access the nearest flu clinic will be made available at the time by state and territory health departments via their public information lines.

Jurisdictions are developing staffing models for flu clinics to suit their individual situations. Some jurisdictions plan to use General Practitioners on a voluntary basis within flu clinics. It is important for General Practitioners to check their jurisdiction's policy for staffing these services.

In some jurisdictions, General Practice based influenza services will form part of a coordinated jurisdictional approach in areas of need. State and territory health departments may ask General Practices to nominate as influenza services.

Primary Care

The roles and responsibilities of primary care providers during a pandemic will vary according to the arrangements operating within their jurisdiction and the phase of the pandemic. Roles may include:

- assisting with the early detection of cases and provision of appropriate care
- treating patients with pandemic influenza
- maintaining life-saving non-influenza services
- supporting families during anxious times
- providing care in the home setting (if appropriate)
- providing care in new flu clinics and/or at other influenza specific services.

Acute services (hospitals)

It is anticipated that the majority of people with pandemic influenza will be able to remain at home during their illness and will not require hospital care. State and territory health departments will provide specialist influenza in-patient health care services. They may reorganise some hospital services to meet the needs of patients who might require care in a hospital, and will work with the private sector to manage hospital capacity. The AHPC will work collaboratively to manage critical care resources.

Psychosocial services

An influenza pandemic—even a relatively mild one—is likely to create emotional challenges for many members of our society, especially those who have lost loved ones.

All governments in Australia recognise that there will be an increase in demand for counselling services and for community psychological support. Help-lines will provide details of how to access these services.

Phase snapshot: Influenza services

PHASE	HEALTH ACTION
ALERT	Prepare policy and processes
DELAY	Get ready to implement influenza services, including psychosocial support (implement to manage concerned members of the general public if general practices and hospitals are overloaded with people seeking advice) Prepare to enhance influenza services in later phases
CONTAIN	Implement influenza services (not already implemented)
SUSTAIN	Continue influenza services
CONTROL	Consider downscaling influenza services, as appropriate to local needs Evaluate effectiveness of influenza services
RECOVER	Get ready to re-implement effective measures if a subsequent wave is imminent Continue psychosocial support and other influenza recovery services
Linked documents	Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006) Interim National Pandemic Influenza Clinical Guidelines (June 2006) Aboriginal and Torres Strait Islander Health Service Annex (under development) Pathology Annex (under development) Pharmacy Annex (under development) Primary Care Annex (under development)

3.3 Sustain life-saving non-influenza services and support services

It is likely that some health care services will need to be temporarily reorganised during an influenza pandemic. Some elective surgery and other non life-saving services could be suspended for a period. Other changes may also be needed, depending on the severity of the situation. The AHPC is currently developing plans to prioritise non-influenza services.

There are many other services and supplies (for example, emergency departments, obstetric services, ambulance and emergency services and certain pharmaceuticals) that are either life-saving, or critical to the overall wellbeing of society. State and territory health departments are developing plans to ensure that non-influenza services are utilised to maximise public good during an influenza pandemic. It is possible that some general practices and hospitals could be designated as 'non-influenza' services to ensure that these life-saving services can be maintained and protected from surges in demand.

There is a range of support services (such as pathology, blood, radiology, mortuary and waste management) that will need to cope with an increase in demand during an influenza pandemic and maintain appropriate support for non-influenza related services. Some services (for example mortuary services and clinical waste management) will require advice on how to manage demand and function safely. Specific advice will be available in a number of annexes to this document.

Good practices in the funeral industry will be critical in ensuring that disease does not spread, but will also need to remain sensitive to the needs of grieving families and friends. The DoHA has been consulting with representatives of the funeral industry to develop appropriate guidelines.

Phase snapshot: Non-influenza services and support services

PHASE	HEALTH ACTION
ALERT	Prepare policy, infrastructure and training materials
DELAY	Get ready to reorganise services to maintain life-saving non-influenza services and provide support services
CONTAIN	Implement measures to reorganise services to maintain life-saving non-influenza services and provide support services
SUSTAIN	Monitor the impact on these services
CONTROL	Implement measures to transition non-influenza services to meet anticipated needs during the recovery phase Evaluate effectiveness of measures
RECOVER	Get ready to re-implement effective measures if a subsequent wave is imminent Implement measures to normalise non-influenza and support services

Linked documents	Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006)
	Interim National Pandemic Influenza Clinical Guidelines (June 2006)
	Aged Care Annex (under development)
	Blood Annex (under development)
	Funeral Annex (under development)

3.4 Reducing avoidable demand on the health system

Maintaining good health will reduce unnecessary demands on the health system. Campaigns may be run to promote important healthy living activities (e.g. food hygiene).

The DELAY phase will be an opportune time for individuals to consider their overall health, current medications required and vaccination status and seek medical advice if concerned.

Preventative services deemed to be non life-saving or non-critical in the short term may be suspended until after the pandemic has been brought under control.

Phase snapshot: Reducing avoidable demand on the health service

PHASE	HEALTH ACTION
ALERT	Prepare policy
DELAY	Enhance certain preventative services, so they can be scaled back in subsequent phases Get ready to reorganise preventative services
CONTAIN	Implement reorganisation of preventative services
SUSTAIN	
CONTROL	Implement measures for transitioning preventative services to meet anticipated needs during the recovery phase Evaluate effectiveness of measures
RECOVER	Get ready to re-implement effective measures if a subsequent wave is imminent Implement measures to restore preventative services
Linked document	Strategy for Prioritising Preventative Services (under development)

C4. Objective 4: Working across government

4.1 Support decision making across government

Input from the health sector will be critical in assisting the many different sectors that need to be involved with the response to an influenza pandemic. Health sector advice will also be critical in assisting the whole of government decision making and ensuring that the most effective control methods can be used at the right time, and in the right places.

The decision to implement control measures that have a major impact on the economy or society will be made at a whole of government level. Such measures may include issues such as the repatriation of Australians from overseas, support for action overseas to avert a pandemic, border measures and school and childcare closures. In these situations health will contribute advice on the most effective strategies from a health perspective and most effective timing for implementation.

The health sector will also contribute best practice advice to other sectors on how they might protect people at potential risk of exposure to pandemic influenza in the workplace. Health will provide tools to guide other sectors in assessing occupation related infection risks and will provide advice on the most appropriate ways in which any infection risks could be managed.

The health sector will also provide advice on how best to assist workers with any psychological issues that may occur in relation to the pandemic, and the stresses it may place on workers, their families and their communities. Health will work with the community sector in this area.

Phase snapshot: Health advice to support decision making across government

PHASE	HEALTH ACTION
ALERT	Provide health advice for preparedness planning in other sectors Provide health advice on assumptions and optimal staff protection Update assumptions, based on new scientific and medical evidence
DELAY	Update assumptions, based on overseas experience
CONTAIN	Update assumptions and optimal staff protection based on Australian experience Provide health advice on issues that require whole of government decision making Provide health advice on the effectiveness of control measures
SUSTAIN	Continue to update assumptions, based on Australian experience Continue to provide advice to assist with tailoring of the response Continue to provide advice on effectiveness of control measures
CONTROL	Provide health advice on effectiveness of control measures Provide health advice on appropriate downscaling of control measures Provide health advice on transitioning of health related services into recovery phase
RECOVER	Provide health advice on need to re-implement control measures Provide health advice on restoring the health system
Linked documents	Business Continuity Guide For Australian Businesses National Action Plan for Human Influenza Pandemic

4.2 Identify and monitor interdependencies from other sectors on health infrastructure and services essential for health system function

Support from other sectors may be needed for the health sector to achieve its operational objectives. These ‘interdependencies’ need to be identified, contingency plans developed and vulnerabilities monitored throughout the pandemic.

Operational Objective 1: Communicate the best available information to decision makers, health professionals and the public

Information technology and other communications systems need to be functioning for health authorities to be able to gather the appropriate information to support critical decision making and communicate with the public and health professionals.

The health sector is working closely with the communications sector to identify communication infrastructure that may be vulnerable during a pandemic, through Infrastructure Assurance Advisory Groups.

Operational Objective 2: Minimise transmission of the pandemic virus

Some individuals may require social support in order to be able to comply with community public health interventions such as home isolation of cases, home quarantine of contacts and school closures. The health sector recognises that high levels of compliance will be required for these measures to be effective. The health sector is working with the key sectors that provide these types of services to identify ahead of time issues that could become critical during a pandemic.

Operational Objective 3: Optimise the health system to reduce morbidity and mortality

For health systems to function adequately, power, water, transportation and range of other essential services must be operating. The health sector is working with the key sectors that provide these types of services to identify ahead of time issues that could become critical during a pandemic.

Phase snapshot: Identify and monitor interdependencies from other sectors on health infrastructure and services essential for health system function

PHASE	HEALTH ACTION
ALERT	<p>Participate in whole of government planning at national and jurisdictional level</p> <p>Identify health sector vulnerabilities and inform relevant sectors and whole of government decision makers</p>
DELAY	<p>Reassess likely health sector vulnerabilities</p> <p>Inform relevant sectors and whole of government decision makers</p>
CONTAIN	Monitor health sector vulnerabilities
SUSTAIN	Inform relevant sectors and whole of government decision makers
CONTROL	Continue to monitor health sector vulnerabilities
RECOVER	<p>Reassess health sector vulnerabilities during recovery phase</p> <p>Inform relevant sectors and whole of government decision makers</p>
Linked document	National Action Plan for Human Influenza Pandemic

PART TWO

**How Individuals can Help Control
the Spread of the Virus**



Part 2: How individuals can help control the spread of the virus

The public will play a significant role in responding to a pandemic. The greatest effect on reducing the impact of a pandemic will be the measures that the public can take to protect themselves, support others and build resilience within their communities. The success of health sector actions relies on the involvement of the public.

This part of the plan gives information about preparing for a pandemic and basic information about infection control.

A. Preparing your household for an influenza pandemic

A1. Plan ahead

Once Australia reaches the DELAY phase, the public should:

- Develop a plan in case you and your household have to stay at home for a week or so during a pandemic. Talk to your family and friends about this.
- Think of someone you could call on for help if you became very ill with influenza. Discuss this possibility with them.
- Think of someone you could call on to care for your children if their school or day-care centre is closed because of a pandemic, and you are required to work. Discuss it with them.
- Have a plan to care for elderly or vulnerable relatives and friends who may need your help.
- Identify someone who could help you with food and supplies if you and those in your household are ill or in quarantine. Discuss it with them.
- Have a telephone list of the people who you may have to contact in an emergency.
- Put the telephone number of your family doctor and your state or territory information line in a prominent place. Find out where your local flu clinic may be located.
- Keep a watchful eye on neighbours, especially those living alone or at particular risk, and phone them if you suspect they might be ill.
- Teach children about hand washing and cough etiquette.

A2. Supplies you might need in a pandemic

The Australian Government has developed an emergency survival kit checklist for households entitled *Preparing for the Unexpected*. This is available from Emergency Management Australia (EMA) at www.ema.gov.au. The Australian food and grocery sector has prepared an emergency pantry list for households which is available from www.pantrylist.com.au.

In the household:

- have a supply of tissues available
- consider having conveniently located dispensers of alcohol-based hand rub
- provide soap and disposable towels near sinks for hand washing
- consider what pain control may be appropriate in a pandemic (see Box 8).

Box 8: Use of pain control

Some of the symptoms of influenza can be alleviated with over the counter pain medication. People under the age of 18 with influenza should avoid taking medications containing aspirin. This is because they can develop Reye syndrome, a very serious illness affecting the nervous system and liver. People over 18 years of age who have a history of gastric ulcers (bleeding from the stomach), previous allergic reaction to aspirin, liver or kidney problems or who have asthma should avoid taking aspirin, as should women who are breast feeding. Paracetamol or ibuprofen could be used as an alternative.

Aspirin can interact with some types of prescription medicines. Anyone who is taking prescription medication should check with their doctor before taking aspirin to ensure that it will not interact.

B. Infection control—general advice

The Interim Pandemic Influenza Infection Control Guidelines provide detailed instructions on infection control during a pandemic. The guidelines are available on the DoHA website, www.flupandemic.gov.au.

This section describes the simple things everyone can do to help control the spread of the influenza virus during a pandemic. These include:

- washing and drying your hands regularly and properly
- covering your mouth and nose when you cough or sneeze
- wearing basic PPE—see Appendix G
- standing or sitting back from other people.

Knowing what to do when you are sick or when caring for sick people is also very important, this is covered in Part 2, Section C.

Some people need to be especially careful about infection control in a pandemic (see Box 9).

Box 9: People who should be particularly careful about infection control

Some people, such as very young children and the elderly, may be at higher risk from influenza because they have weaker body defences (immune systems). Pregnant women, particularly those who are in the second or third trimester of their pregnancies, have an increased risk of complications and death after influenza infections. Similarly, people with diseases such as cancer or HIV/AIDS, people who have had organ transplants and people who take particular medications, frequently develop complications.

People with chronic medical conditions, such as heart disease, lung disease (for example, asthma or cystic fibrosis), kidney disease or diabetes, are also at risk from influenza. When the body is affected by other conditions, it is easier for bacteria to invade cells damaged by the influenza virus and cause other illnesses, such as pneumonia. Influenza can also stress the body so that the underlying illness worsens.

B1. Hand hygiene

Hand hygiene is crucial to reducing the transmission of infectious agents. Hand hygiene includes washing hands with soap and water or cleaning hands with alcohol-based products (gels, rinses, foams) that can be used without water.

- If your hands are visibly dirty with respiratory secretions (phlegm, spit), you need to wash them with soap (plain or antimicrobial) and water. Wash with soap and warm water, scrubbing your wrists, palms, fingers and nails for 15–20 seconds. Rinse, and dry with a clean, dry towel or paper towel.
- If there is no visible dirt, you might prefer alcohol-based products with an emollient. They dry the skin less and can be more convenient.
- Always wash and dry your hands after contact with other people, and before and after removing a mask or gloves, and before touching your mouth, nose or eyes.
- In general, try to keep your hands away from your face.

B2. Cough and sneeze etiquette

If you cough or sneeze, you should:

- Cover your nose and mouth with a disposable tissue rather than your hands.

- If there are no tissues available, cover your nose and mouth with your upper arm rather than your hands. Wash your upper arm (or sleeve) as soon as practical if you have sneezed or coughed into it.
- Dispose of used tissues in the nearest bin.
- Wash your hands afterwards or after touching used tissues.

B3. Wearing basic personal protective equipment

When the pandemic is widespread in the Australian community (in the SUSTAIN phase), health authorities will encourage people who need to enter crowded areas or visit a health facility to wear a surgical mask or other appropriate covering for the nose and mouth. Advice on appropriate face coverings will be provided at the time. These measures need to be used in combination with good hand hygiene. It is particularly important for people who are coughing or sneezing to wear a mask to prevent the spread of infection to others. It is also important to ensure that they are worn properly and disposed of correctly (see Box 10).

Box 10: Surgical mask

It is important to ensure that surgical masks are worn and disposed of correctly.

Make sure the mask is correctly fitted by ensuring that it covers your nose and mouth and that it is secured at the back of your head. Avoid touching your face while wearing the mask.

Replace the mask whenever it is moist. A mask that has been removed for example, when eating, should not be reused.

Remove the mask by only touching the straps and put the used mask in a bin. Wash your hands straight away.

B4. Standing or sitting back

A very simple way of reducing the chances of being infected or passing on infection is to stand or sit back from other people in public or in the workplace. Where possible, you should try to maintain a distance of at least a metre, which is about a large step.

When the pandemic is widespread in the Australian community (in the SUSTAIN phase) you should try to avoid crowded gatherings, especially in enclosed spaces. If you need to use public transport, you should wear a surgical mask, or if a mask is not available some other appropriate covering for the nose and mouth.

B5. Infection control for children

It will be challenging to teach very young children cough etiquette and other hygiene measures. They may not tolerate wearing a mask and it might not be feasible or reasonable to expect them to wear one. Other measures such as social distancing and general hygiene may have to be employed.

Parents should teach their children how to:

- wash hands
- cover coughs and sneezes.

Explaining to children beforehand that it will be important to keep away the germs can provide a base to engage them in cough etiquette or other hygiene measures such as hand washing. For younger children, pictures showing what to do would be helpful, as can strategies that make this into a ritual game or fun.

You may need to be extra diligent with cleaning toys and surfaces in the home.

C. What happens if I have influenza

C1. What to do if you think you have pandemic influenza

You should seek medical advice if you have a fever and any one of the following symptoms:

- difficulty breathing
- chills and shivering
- muscle aches and pains
- sore throat
- dry cough
- stuffy or runny nose
- extreme tiredness.

Note: since the symptoms of pandemic influenza cannot be known at this time, it is important that you keep up-to-date with advice on symptoms, as these may change.

Medical advice will be available from health department websites and hotlines, but you should seek medical attention preferably from a flu clinic or influenza service if you feel very unwell. Ambulance services may be stretched in the SUSTAIN phase of a pandemic and should only be used if necessary.

If sick, you should stay home from work or school until it is confirmed that you do not have pandemic influenza. If you are not confirmed to have pandemic influenza, but are still ill, stay home until you are well.

If you have influenza symptoms, wear a surgical mask or other appropriate covering for nose and mouth (advice about appropriate face covering will be provided at the time) in public or when near other household members.

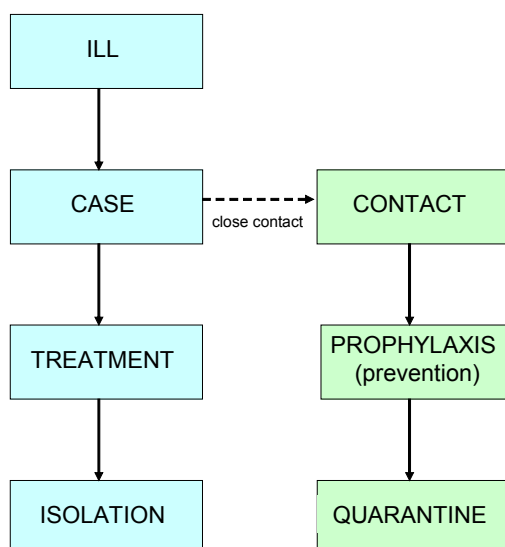
If you are feeling unwell and need to seek medical attention, the best option is to attend a flu clinic or influenza service. If you cannot access a flu clinic, and need to seek medical attention from your GP, phone before visiting so that special arrangements can be made to ensure you are treated in an area away from other patients.

C2. What happens if you do have pandemic influenza

If you are diagnosed with pandemic influenza, you will be referred to as a case. Other household members will be considered contacts. All will need to stay at home for a period. Box 11 outlines some of the terms you may need to become familiar with in an influenza pandemic.

Box 11: What is the difference between:

- cases and contacts
- treatment and prophylaxis
- isolation and quarantine.



During an influenza pandemic, if someone becomes ill with an influenza-like illness and they meet the case definition for pandemic influenza they will be referred to as a **case**. They may be offered antivirals as **treatment**. Cases will be **isolated** in the home, or in hospital if required.

Someone who has come into close contact (e.g. household or other exposure) with a case will be referred to as a **contact**. They may be given antivirals to prevent infection; this is referred to as **prophylaxis**. Contacts will be **quarantined** in the home.

It is important to remember that the antivirals provided for prophylaxis and for treatment may be different and you should always follow the advice provided by the health authorities.

If you do have pandemic influenza you will need to stay in isolation until you are no longer infectious (advice on duration will be provided at the time via hotlines/websites).

The measures that an infectious person can take to prevent transmission are outlined in Box 12.

Box 12: Measures that an infectious person can take to prevent transmission

If sick:

- Stay at home, in isolation (if you need to seek medical care call ahead for advice).
- If provided with antiviral medication, ensure you complete the course as instructed.
- Respect and protect other people by:
 - wearing a surgical mask when in the company of others
 - maintaining good personal hygiene and cough etiquette.

Advice will be provided at the time about when infected individuals are safe to return to normal activities and when these measures can be ceased.

D. If an infected person is being cared for in the household

All of the general measures outlined in Part 2, Section B above should be employed by all household members when an infected person is in home isolation. Infected people may be offered treatment with antivirals if:

- they are the appropriate age—antivirals are not always suitable for certain age groups (e.g. infants)
- they can commence the antiviral course within an appropriate timeframe (antivirals are most effective if started within 48 hours from the onset of symptoms)
- there are antiviral stocks available.

Household members may be offered antiviral prophylaxis which aims to prevent them becoming infected.

Everyone in the household should clean their hands with soap and water or use an alcohol hand rub regularly (even if hands are not visibly dirty) as it is critical to reducing the risk of spreading the infection. Commonly touched surfaces such as taps, doorknobs, tables, kettle handles and fridge door handles should be cleaned frequently with normal household detergents. Infected persons personal items should be kept separate and not shared (see Box 13).

People should not share cups or utensils. Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. After utensils have been washed in this manner, they may be used by others.

Infected persons towels and bedding should not be shared. Laundry may be washed in a standard washing machine with warm water and detergent. Care should be taken when handling soiled laundry to avoid direct contact of skin or clothing with contaminated material. Soiled laundry should not be shaken or otherwise handled in a manner that may aerosolize infectious particles. After laundry has been cleaned in this manner it may be used by others.

Box 13: Why hand hygiene and environmental cleaning is so important

When a person with the flu breathes, coughs or sneezes they can spread the flu virus from their respiratory tract. Droplets from the respiratory tract carrying the virus can spread up to a metre and land on surfaces, onto floors, tables and benches.

If the sick person sneezes or coughs onto their hands and then they touch household items, these items can also become contaminated. The virus can probably only survive on hands for 30 minutes, but it can survive on some surfaces for longer—up to 48 hours.

A household member can catch the flu if they touch a contaminated surface or household item, and then touch their eyes, mouth or nose without first cleaning their hands.

This is why it is so important that when someone in your household has the flu:

- they clean their hands regularly
- all other household members also clean their hands regularly
- the household environment is regularly cleaned.

If an infected person is being cared for at home, they should have an individual room if possible. The infected person should wear a surgical mask for at least 48 hours from the time of diagnosis. All household members should wear a surgical mask for at least the same period. They should avoid touching their eyes, mouth or nose. It may be difficult for some infected people for example, children and the elderly, to wear a mask properly. In these situations, it is especially important that carers and other contacts in the household wear a mask for at least 48 hours from the time the infected person was diagnosed.

Household contacts should be advised to take their own temperature daily and to contact health authorities if they develop influenza-like symptoms. They may need to go to a flu service for further assessment. Arrangements will be advised at the time.

Non-household members should not enter a quarantined household. You might warn expected guests by telephone that they should not visit you while the household is in quarantine.

Home based support may be provided to those in isolation or quarantine. In a pandemic, contact your state and territory health department information hotline for further details.

The Australian Government Disaster Assist website has been set up by the Australian Government to give individuals and families better access to information about recovery assistance following a disaster. The website, www.disasterassist.gov.au, contains information on how to look after yourself and support others in coping with a disaster situation which may be useful in a pandemic.

The measures that a contact can take to prevent transmission are outlined in Box 14.

Box 14: Measures contacts of infectious people should take to prevent transmission

If identified as a contact:

- Stay at home in quarantine (if you need to seek medical care, call ahead for advice).
- If provided with antiviral medication, ensure you complete the course as instructed.
- Monitor your health and take your body temperature every day.
- If you have a temperature or feel unwell, report your symptoms.
- Respect and protect other people by:
 - wearing a surgical mask when in the company of others
 - not going to work
 - not travelling on public transport
 - not attending public gatherings
 - maintaining good personal hygiene and cough etiquette.

Advice will be provided at the time about when contacts can return to normal activities and when these measures can be ceased.

E. Psychosocial and mental health aspects

People may become quite fearful about the risk of becoming infected. They may worry about how they will manage their sickness, the consequences if they become infected and the potential threat to life if the condition is severe.

If you think you or your family member is suffering anxiety or depression because of the pandemic you should consider further assessment.

To support your family and friends it is helpful to acknowledge concerns. The following strategies may be useful.

• ***Simple anxiety management techniques***

Simple anxiety management techniques such as taking time out, slow measured breathing, positive actions and relaxation techniques are all helpful. Anxiety is natural in such circumstances.

- ***Positive coping strategies***

Helping family and friends identify positive coping strategies that have previously been useful during illness or adversity can help them to mobilise these for the present situation.

- ***Keeping in touch***

If people have to stay at home because of the strategies being used to contain the pandemic, suggest they set up phone, text messaging or email/internet support systems to assist themselves and others through this time. This will be particularly important for those who live alone. Ill people who live alone should phone someone, and ask him or her to phone back each day to check they are okay.

- ***Support through death***

People who are experiencing bereavement will benefit from support and recognition of their loss.

- ***Children***

In the event of any threat, young children may experience anxiety/fears, and may respond with changed behaviours such as withdrawal, regression, clinging or aggressiveness. Older children and adolescents may show bravado—acting as if they are not afraid or do not care.

Helping children through difficult times related to a potential epidemic, school closures and other changes related to managing the pandemic, should involve three key principles.

1. Provide reassurance of love, comforting and connectedness, to ensure they know that the family is there. This will provide continuity of care and family life for the child.
2. Provide explanations and simple information about what is happening, what will be done, why and what the child can do. Listen to the child's concerns and answer questions in simple terms.
3. Continue the child's world as far as possible. If the school is closed, continue school work at home, have contact with a few friends, and continue to plan for future activities.

F. Advice for individuals in the workplace

It is important for individuals to know their responsibilities and roles at work in the event of a pandemic, including alternative and contingency working arrangements.

In a pandemic:

- While at work, you should adopt the good hygiene measures outlined in Part 2, Section B.
- Do not go to work if you are feeling ill with the symptoms outlined in Part 2, Section C1.
- Do not go to work if any of your close contacts have these symptoms.
- If you start feeling ill at work with the symptoms outlined, you should keep away from work colleagues; contact your manager to let them know you are leaving, and then leave the workplace. You should seek medical advice either by attending an influenza service, or by calling your state and territory information line.

PART THREE

**More Information for Decision Makers
and Health Professionals**



Part 3: More information for decision makers and health professionals

Overview

Part 3 of the AHMPPI (2008) is primarily for decision makers and health professionals as it contains information to support health sector decision making at a national level.

Part 3 covers the following:

- A. Decision making structure—health sector coordination at a national level
- B. Decision making process—how decisions will be made
- C. Assumptions that have been used for planning and which will guide the response during the pandemic
- D. Looking to the future.

Sections A and B need to be read in conjunction with decision structures and processes that are outlined in jurisdictional health sector pandemic plans, as well as both national and jurisdictional whole of government pandemic plans.

Section C provides a summary of the scientific rationale for selecting each assumption. Section C needs to be read in conjunction with the relevant technical annexes to understand how these assumptions have been used to guide planning and how they would be used to guide decision making during a pandemic.

Section D is a summary of advances made to prepare Australia and the challenge of how to ensure we remain prepared.

A. Decision making structures

The Council of Australian Governments (COAG) will lead the national whole of government response supported by the National Pandemic Emergency Committee (NPEC). These arrangements are outlined in the NAP, which is available from www.pmc.gov.au.

Health sector coordination at a national level

A range of committees have provided advice for the development of health sector pandemic plans at a national level. These planning and preparedness committees are described in Part 3, Section A1.

Some of these committees will continue to have an operational role in the event of a pandemic. However, to ensure rapid and streamlined decision making in a pandemic, the number and composition of the committees will be changed once the DELAY phase begins. A description of the streamlined response committee structure that would be operational from DELAY onwards is outlined in Part 3, Section A2.

A1. Planning and preparedness structure

Coordination of national health sector preparedness in the ALERT phase

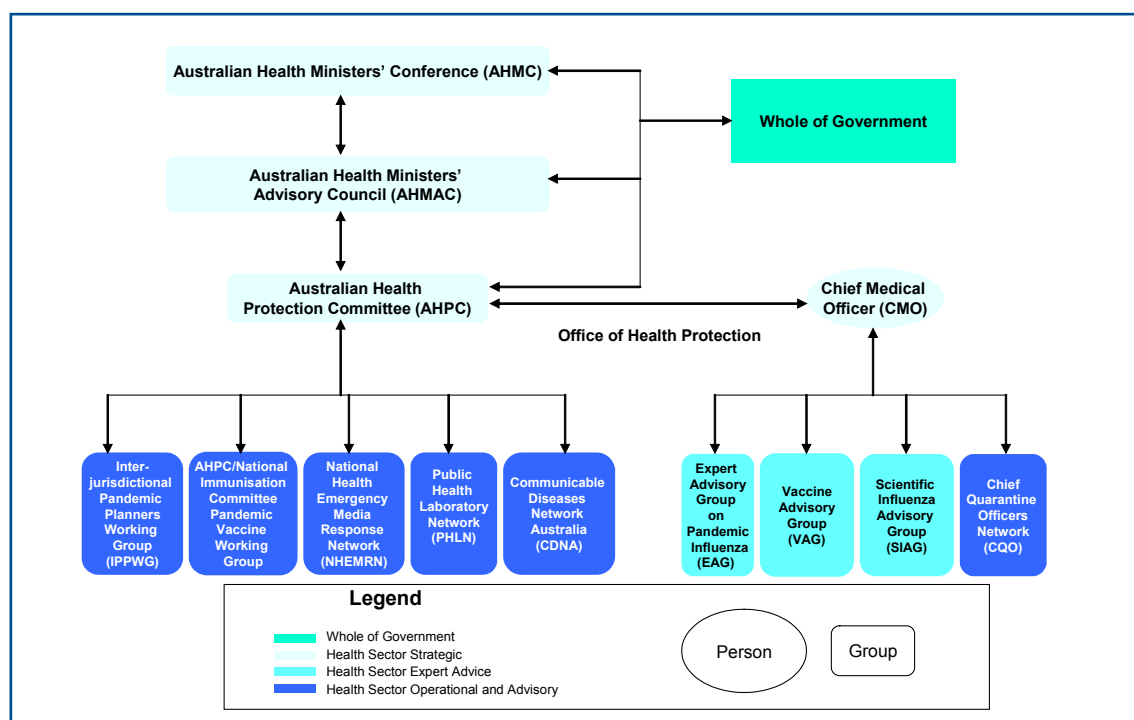
Figure 3 outlines the health sector committees that are operational in the ALERT phase. A description of the terms of reference and membership of each committee is detailed in the text that follows.

The committees broadly fall into three different functional categories:

- strategic decision making committees
- expert advisory committees
- operational committees.

These functional categories are represented by different colours. The figure describes the major linkages and reporting lines. The cross communication linkages that occur between many groups and networks depicted in the bottom row of the diagram are not shown.

Figure 3: Health sector coordination in the ALERT phase



Health sector strategic decision making at a national level

The AHPC is chaired by a Deputy Secretary from the DoHA and membership includes the CMO, the Chief Health Officers (CHO) of the states and territories, and representatives of Australian Government organisations involved in emergency management and response. The AHPC reports through the Australian Health Ministers' Advisory Council (AHMAC), to the Australian Health Ministers' Conference (AHMC) to advise them on preparedness activities to achieve the health sector goal.

Health sector expert advice

The AHPC is supported by technical advisory committees:

- The Communicable Diseases Network Australia (CDNA) is a subcommittee of the AHPC and provides communicable disease and epidemiological advice. Membership of the CDNA comprises human health and veterinary representatives from the Australian Government, human health representatives from the state and territory governments and from organisations in the communicable diseases field, as well as academic experts.
- The Public Health Laboratory Network (PHLN) is a subcommittee of the AHPC that comprises representatives of the major public health laboratories in all the states and territories. It provides advice to the AHPC around the laboratory aspects of pandemic planning.

In addition to the technical advisory committees that report directly to the AHPC, the CMO also provides technical advice to the AHPC. The CMO is supported in this role by a number of technical advisory committees including:

- The EAG provides medical, scientific and epidemiological advice to the CMO on the pandemic phase and the triggers that should be considered when a decision is made to change the phase.
- The Chief Medical Officer's Scientific Influenza Advisory Group (SIAG) provides medical, scientific and evidence based advice to the CMO, and has developed and will continue to review the pandemic planning assumptions during the ALERT phase and the implications for planning and response across all Operational Objectives (except Operational Objective 2.4 Vaccination). Membership comprises experts in the fields of influenza clinical management, epidemiology, public health, virology, animal health management and influenza research.

- The Chief Medical Officer's Vaccine Advisory Group (VAG) provides advice to the CMO on aspects of vaccines that could be used to control a pandemic virus—Operational Objective 2.4 Vaccination.

Health sector operational advice:

The following groups provide operational advice to the CMO and the AHPC in the ALERT phase:

- The Inter-jurisdictional Pandemic Planners Working Group (IPPWG), whose membership includes the person responsible for pandemic planning in each state and territory, work to ensure national consistency, where required, in jurisdictional operational responses except those relating to vaccination.
- The National Health Emergency Media Response Network (NHEMRN) provides advice to the AHPC and coordinates the public communications response in a pandemic (Operational Objective 1.2). The NHEMRN comprises media liaison managers in Australian Government, state and territory agencies, the medical colleges and professional associations.
- The Chief Quarantine Officers (CQO) group provides operational planning for border activities (Operational Objective 2.2).
- The Australian Health Protection Committee/National Immunisation Committee (AHPC/NIC) Pandemic Vaccine Working Group on vaccines provides operational advice to AHPC on the use of pandemic vaccines (Operational Objective 2.4). Members of the National Immunisation Committee are national immunisation coordinators.

A2. National response structure

Australia's emergency management arrangements are based on partnerships between the Australian Government, state, territory and local governments and the community. State and territory governments have the constitutional responsibility for emergency management within their jurisdictions. Through cooperative arrangements with states and territories, the Australian Government may be requested to help and can provide:

- a communication hub
- support for states and territories to develop capacity for dealing with emergencies and disasters
- assistance to states or territories when requested by using national assets or coordinating sharing of other state and territory assets
- the services of EMA to coordinate national response and recovery activities.

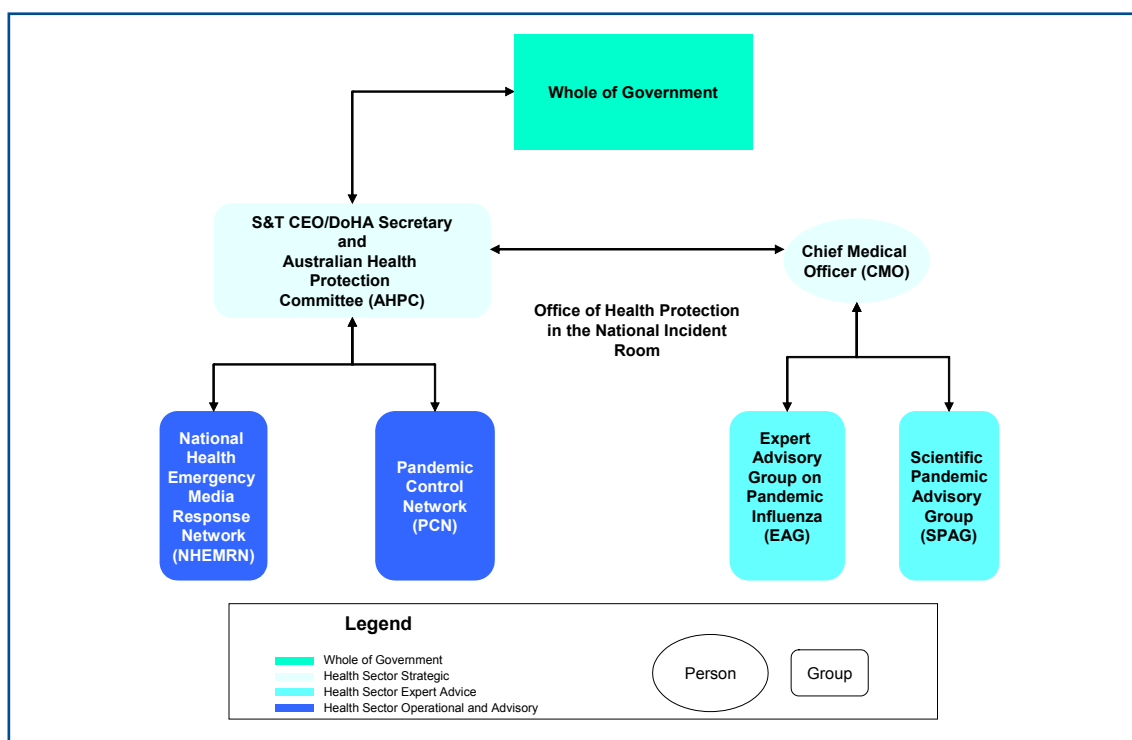
These arrangements allow all levels of Australian Government to work together to prevent, plan, respond to and recover from a range of emergencies such as a pandemic. These arrangements and governance are formalised in a range of emergency planning and response documents maintained by EMA.

Coordination in health sector from the DELAY phase onwards

One of the outcomes from *Exercise Cumpston '06* was the need to streamline decision making in the emergency response phase. This section will outline how the committee structures described above will be rationalised during an influenza pandemic.

Once DELAY is announced, the committees will merge to enable a streamlined process for emergency decision-making (Figure 4). Note the figure describes major linkages and reporting lines—cross linkages have not been shown.

Figure 4: Key health sector committees during the response to a pandemic



National health sector strategic decision making

From the DELAY phase onwards, the Secretary of the DoHA and the CEO from state and territory Departments of Health, will join the AHPC at decision points, such as when making major strategic decisions or when developing advice to inform a whole of government response. This group will meet at turning points in the development of a pandemic overseas and will meet regularly if a pandemic spreads to Australia. Within each jurisdiction, members of this group will advise their own Minister for Health. However, Health Ministers may meet as part of AHMC if extraordinary measures are required, or if the expanded AHPC strategic decision making committee cannot reach consensus.

Health sector expert advice

The expanded AHPC strategic decision making committee will receive expert technical advice from the CMO as required.

The CMO will be supported by the following technical advisory committees:

- The EAG will continue to advise the CMO on the pandemic phases.
- The Chief Medical Officer's Scientific Pandemic Advisory Group (SPAG) will review the pandemic planning assumptions and the medical and scientific basis for health sector interventions, and provide advice to the CMO on the need to modify response policies in light of any new information. SPAG will combine expertise from:
 - SIAG
 - VAG

Health sector operational advice

The NHEMRN will provide advice to the AHPC on the implementation and coordination of the public communications response to a pandemic for the health sector.

The expanded AHPC will consider operational and expert technical advice from the Pandemic Control Network (PCN) as part of their strategic decision-making. In addition, the expanded AHPC committee may request the PCN to coordinate specific operational elements of the national response as required.

The PCN will combine expertise from the following groups:

- CDNA
- PHLN
- CQO
- IPPWG
- AHPC/NIC.

B. How decisions will be made during a pandemic

A number of decisions made in the pandemic are the responsibility of health sector, decision makers. Health decision makers provide advice to whole of government on some matters where health imperatives are weighed against broader concerns in other sectors, because of the social and economic implications.

A whole of government decision in this document refers to one that is taken by decision makers from all sectors. These whole of government decisions can be made nationally, within states and territories, or as a joint agreement between all levels of government.

Table 4 outlines the major decision points for actions described in this plan (listed in the first column). The aim of this table is to outline which decisions are made within the health sector and when these decisions are referred to the whole of government because of their broader implications.

Decision makers are identified in bold text. Decisions made within the health sector are shown in the second column. The second column also describes the provision of advice to decision makers within the health sector.

Whole of government decisions are shown in the third column.

Table 4: Major decision points for actions described in this plan and those responsible for making them

Decision point	Health sector	Whole of government
<i>Operational Objective 1: Communications</i>		
What phase is Australia in?	EAG advises the CMO, who advises Australian Government Minister for Health and Ageing	Australian Government Minister for Health and Ageing advises Prime Minister , who makes decision and informs state and territory leaders, head of Australian Local Government Association, the Governor-General and the public
Do we need to change our planning assumptions? How effective have the interventions been?	SPAG (via CMO) and PCN advises the AHPC	AHPC provides amended assumptions
How are the public and the health professionals perceiving and reacting to the pandemic and the interventions?	NHEMRN and CHOs advise AHPC	AHPC provides information to inform whole of government communications as needed
What public communications measures are required?	AHPC agrees specific health messages within health sector with advice from the NHEMRN	AHPC provides advice on health measures and messages to be included within whole of government communications
What information will be provided to health professionals?	AHPC agrees specific messages to health professionals	AHPC provides advice on health measures to be included within whole of government communications if required

Decision point	Health sector	Whole of government
<i>Operational Objective 2: Minimising transmission of a pandemic virus</i>		
Is there evidence that overseas support would delay the arrival of pandemic to Australia? What is the most appropriate assistance?	AHPC, with evidence from SPAG via CMO	AHPC advises whole of government Whole of Government decision at Australian government level
How should antivirals be used?	PCN and SPAG via CMO advise the AHPC	*
When should community interventions be implemented and lifted?	AHPC, with evidence from SPAG via CMO	AHPC advises whole of government Whole of government decision, primarily at state and territory level
Who should be given the stockpiled candidate pandemic vaccine and the initial customised pandemic vaccine?	AHPC, with evidence from SPAG via CMO	AHPC advises whole of government Whole of government decision at Australian Government and state and territory level
<i>Operational Objective 3: Ensure health services are optimised to reduce overall morbidity and mortality</i>		
How should health care workers be protected?	SPAG and PCN advise the AHPC	*
How should health work force be optimised?	Individual jurisdictional decision with advice from AHPC, if national consistency were required	*
When should influenza services be implemented?	Individual jurisdictional decision with advice from AHPC if national consistency were required	*
How and when should life-saving non-influenza services and support services be maintained?	Individual jurisdictional decision , with advice from AHPC, if national consistency were required	*
How and when should non-influenza preventative services be optimised?	Individual jurisdictional decision , with advice from AHPC if national consistency were required	*
* May become a whole of government decision in maintenance		
<i>Operational Objective 4: Working across government</i>		
Advice to other sectors and whole of government	AHPC provides best practice advice on control and protection strategies	Whole of government and individual sectors make decisions based on health advice as appropriate
Interdependencies impacting the health sector	AHPC identifies and monitors interdependencies from other sectors	Whole of government decision on how best to address vulnerabilities in health sector
* May become a whole of government decision in maintenance		

C. Assumptions

C1. How the pandemic planning assumptions were developed

The SIAG was formed in 2007. SIAG is a group of Australia's leading influenza experts brought together to review the data from the previous pandemics along with the latest findings on avian influenza viruses and the most up to date literature on seasonal influenza and its treatments. The result of this work has been the development of a set of assumptions that describe a 'theoretical but plausible' pandemic. The work of SIAG builds on the previous work by the National Influenza Pandemic Action Committee.

The assumptions that the SIAG has produced are based on 1918 data that have been 'applied' to today's society to take into account the different structure and health issues of our modern day population. It is also based on extrapolation from experiences with seasonal and avian influenza and on solid technical knowledge of how influenza viruses tend to behave. This analysis has provided an understanding of what is likely to be plausible during a pandemic and what is not. SIAG members base their assumptions on a range of information sources, and draw on the WHO for expert guidance.

As the virus that will cause the next pandemic is yet to emerge, we cannot know exactly how it will behave. The pandemic that we are planning for is therefore unlikely to occur in exactly the way it has been described. It may prove easier to manage in some respects and possibly more challenging in others.

Nonetheless, having clear and explicit assumptions allows the health sector to develop systems to ensure that once the pandemic virus does emerge, we can quickly reassess the assumptions used in our planning. This will ensure that our planned responses are valid, and it allows us to make any adjustments quickly that might be needed if the pandemic virus behaves differently than anticipated.

The pandemic planning assumptions are also being documented so that they can be used consistently in all pandemic planning materials and, as relevant, by all government sectors and jurisdictions.

Assumptions have been documented about how the pandemic would look if no control measures were in place. These are describing an unmitigated pandemic. In addition, assumptions have been documented about what the pandemic would look like if we did intervene and employ control measures to mitigate the pandemic.

C2. How our pandemic planning assumptions will be reviewed

These assumptions will be regularly reviewed by the SIAG during the ALERT phase and SPAG in other phases, to ensure they are consistent with the latest scientific evidence.

The assumptions are explained in Part 3, Section C3. There is an assumption table for each of the following:

1. Incubation period
2. Attack rate
3. Modes of transmission
4. Period of communicability
5. Respiratory protection zone
6. Survival of the virus
7. Serial interval
8. Presenting symptoms
9. Health impact of pandemic influenza
10. Treatment with Neuraminidase Inhibitor (NI) antivirals
11. Antiviral prophylaxis with Neuraminidase Inhibitor (NI) antivirals
12. Immunity following natural infection
13. Immunity following vaccination
14. Absenteeism
15. Duration of pandemic disruption

C3. Introduction to the assumption tables

The tables below outline the pandemic assumptions. They contain four sections:

1. current assumption
2. planning implications—implications of assumption for planning and modelling
3. response implications—priority for reassessment in pandemic and implications for response if changed
4. scientific rationale—grading level of evidence, extrapolation and expert opinion.

Assumption table 1—Incubation period

Current assumption(s)	While the maximum incubation period could be seven days, a shorter incubation period of around three days would be the most common.
Planning implications	Contacts will need to be quarantined for seven days after last exposure. Modelling is to be based on the average incubation period rather than maximum.
Response implications	It is important to reassess this assumption as early as possible as it may alter recommendations about length of time contacts need to be quarantined.
Scientific rationale	Although the incubation period for seasonal influenza is short (one to three days), longer incubation periods have been recorded for human infections with influenza A/H5N1. A precautionary approach has therefore been taken until proven otherwise.

Assumption table 2—Attack rate

Current assumption(s)	<ol style="list-style-type: none"> 2.1 The unmitigated attack rate would be in the order of 60% of which 1/3 of the cases would be asymptomatic giving an unmitigated clinical attack rate of 40%. 2.2 The mitigated clinical attack rate could be as low as 10% if all measures outlined in Part 1 of this Plan can be applied as planned and are as effective as current estimates indicate. 2.3 The attack rate in children will be higher than in adults. 2.4 The attack rates in health care settings would be very high unless effective infection control is implemented. 2.5 The attack rate in household settings is likely to be higher than other settings (except health care setting). 2.6 The attack rates may be higher in some population groups than others but it is difficult to predict which groups prior to the pandemic beginning.
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Planning implications	<p>2.1 An unmitigated pandemic would result in an unmanageable number of cases. Pandemic planning is required and mitigation strategies are warranted.</p> <p>2.2 Interventions to reduce transmission are potentially very worthwhile. They would reduce case numbers, even in the event of a pandemic as severe as in 1918–19.</p> <p>2.3 Interventions to reduce transmission in children may have a greater impact on reducing overall transmission rates than interventions targeting any other group. Transmission reduction strategies that target children should therefore be planned for (in conjunction with other broader population based strategies, as appropriate).</p> <p>2.4 Infection control measures in health care settings should be a high priority for planning.</p> <p>2.5 Management of household contacts is likely to have greater impact than interventions targeting other contacts (except health care workers). Planning should focus on strategies to identify and manage household contacts. Strategies to identify and target other contacts (e.g. workplace) should be second order priorities for planning when resources are limited.</p> <p>2.6 There is a need to prepare to be able to assess the attack rates in different population groups to inform decision making. Planning should encompass strategies to target specific population groups who may have higher than average attack rates.</p>
Response implications	<p>2.1 – 2.2 It will be important to model the likely impact of interventions on the attack rate so as to estimate the likely health care demand in a mitigated pandemic. It will be important to assess the impact of interventions on the attack rate continually in order to assess overall effectiveness.</p> <p>2.3 Early in the pandemic, it will be important to establish the differences in the rate of accumulation of cases in adults compared with children to assess the likely effectiveness such as school closures. Later in the pandemic robust estimates of age specific attack rates may be useful in supporting decision making with regards to use of initial doses of customised vaccine.</p> <p>2.4 It will be important to collect data to assess the effectiveness of infection control measures in health care settings and to be able to adjust recommendations if needed.</p> <p>2.5 – 2.6 It will be important to collect data on attack rates in different population groups to allow tailoring of public health interventions especially during the SUSTAIN phase.</p>
Scientific rationale	<p>2.1 Expert opinion based on past pandemics.</p> <p>2.2 Clinical attack rates in the 1918 pandemic were thought to be lower than that reported during the 1957 and 1968 pandemics.</p> <p>2.3 – 2.4 Extrapolation from data of seasonal influenza and from the 1957 and 1968 pandemics.</p> <p>2.5 – 2.6 These are based on modelling and expert opinion.</p>

Assumption table 3—Modes of transmission

Current assumption(s)	3.1	Droplet and contact spread will be the major modes of transmission in the community.
	3.2	Specific procedures within the health care setting may lead to the generation of clinically significant aerosols.
	3.3	Vertical transmission is a possibility that would need to be assessed early in a pandemic.
	3.4	Oro-faecal transmission seems unlikely but would need to be excluded early in the pandemic.
	3.5	The risk of transmission of pandemic influenza via blood is considered unlikely but conceivable.
Planning implications	3.1	Infection control in the community should focus on droplet and contact precautions.
	3.2	Health service planning should include the possibility of aerosol transmission.
	3.3	Infection control planning for obstetrics and neonatal units is required. Preparations should be made to collect data to assess the issue of vertical transmission early in the pandemic.
	3.4	Preparations should be made to collect data to assess the possibility of oro-faecal transmission early in the pandemic. Infection control should include the possibility that faeces may be infectious, but should focus on preparing to implement infection measures to address the other, more likely, routes of transmission.
	3.5	A precautionary working assumption that viraemia is possible during the first week of illness should be adopted. Standard precautions to protect against blood borne viruses should be maintained at all times. Pandemic influenza affected individuals should not donate blood for up to 4 weeks post the onset of illness or while symptomatic.
Response implications	3.1 – 3.2	It will be important to confirm this assumption early in the pandemic so as to re-affirm or amend infection control guidance.
	3.3	As data may not be available until later in the pandemic, responses should assume that vertical transmission could occur until data indicates otherwise.
	3.4	It will be critical to exclude this as a significant mode of transmission early in the pandemic. If oro-faecal transmission appears to play a role in transmission, infection control and transmission reduction interventions may need to be modified significantly.
	3.5	Planning and response should be based on the assumption that blood borne transmission could occur until data indicates otherwise. Data may not be available until later in the pandemic. If blood supplies become critical, it may be important for rapid study in this area.

Scientific rationale	<p>3.1 Droplet and contact transmission have been demonstrated as the major routes of transmission for seasonal influenza. The patterns of transmission in previous pandemics also indicate that these were dominant routes of transmission.</p> <p>3.2 Certain procedures performed in health care settings such as but not limited to bronchoscopy, intubation, and nebulizer treatment can create aerosols.</p> <p>3.3 Although vertical transmission has not been documented for seasonal influenza and there is very limited data available to assess whether vertical transmission occurred during previous pandemics, there is some indication from a very small case series that vertical transmission may occur with influenza A/H5N1.</p> <p>3.4 Avian influenza is predominately an oro-faecal disease in birds/animals. Over 50% of patients with influenza A/H5N1 experience diarrhoea, and gastrointestinal disturbance have been reported as a presenting symptom. Influenza A/H5N1 can be isolated from faeces and small intestine viral infiltrates have been noted in a very small number of post-mortem examinations. It is unclear whether these findings are due to primary or secondary infection. Expert opinion is that this issue should be studied early in the pandemic.</p> <p>3.5 Although viraemia is not associated with seasonal influenza, there is some evidence to indicate that viraemia does occur in some patients with influenza A/H5N1. A precautionary approach is therefore recommended.</p>
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Assumption table 4—Period of communicability

Current assumption(s)	<p>4.1 Cases of all age groups could be infectious from one day (24 hours) before the onset of symptoms. Persons who become ill may shed virus (and transmit infection) for up to one day before onset of symptoms. Peak shedding occurs in the first two days of illness.</p> <p>4.2 Children will shed greater amount of virus, and may shed for longer. Adults >65 years may also be infectious for a longer period.</p> <p>4.3 Cases would be most infectious in the first few days after the onset of symptoms. It is likely that, for the vast majority of cases of all ages, infectiousness would decline rapidly after 5 days of illness, particularly if accompanied by a decline in symptomatic illness.</p> <p>4.4 Antivirals are likely to reduce respiratory viral shedding. It is unclear (i) to what extent this occurs (ii) whether viral shedding in faeces (if it occurs) would be reduced by antiviral treatment and (iii) whether vertical transmission (if it occurs) would be reduced by the use of antivirals.</p>
Planning implications	<p>4.1 Quarantining of contacts even if asymptomatic will be required as it is assumed that the onset of the period of communicability will pre-date the onset of symptoms by up to 24 hours.</p> <p>4.2 – 4.4 The standard period for isolation is seven days or until the resolution of fever (if that period is longer).</p>
Response implications	<p>4.1 It is unlikely that early definitive evidence would be available that would allow experts to conclusively state that the period of communicability does not begin before the onset of symptoms. It is possible although unlikely that the period of communicability prior to the onset of symptoms might be longer than assumed. If there were data to support this, contact definitions may need to be amended.</p> <p>4.1 – 4.4 It is likely that the standard period of isolation would be amended during the pandemic as information becomes available about the characteristics of the virus and the disease it causes as well as the impact on shedding of antiviral treatment. It will be important to reassess the period of communicability early on in the pandemic.</p>
Scientific rationale	<p>4.1 There are a small number of studies that appear to indicate that persons with seasonal influenza could be infectious a number of hours before the onset of discernable symptoms. A precautionary approach has therefore been taken.</p> <p>4.2 – 4.4 Isolation periods are based on data from seasonal influenza viral shedding in different, untreated (i.e. no antivirals) population groups and from a small number of case studies of influenza A/H5N1 patients. There are some data to suggest that antiviral treatment reduces shedding of virus from the respiratory tract. Experts believe that this effect is likely to occur with pandemic virus.</p>

Assumption table 5—Respiratory protection zone

The respiratory protection zone is the area around an infected patient where airborne viral particles or large droplets could lead to direct respiratory or conjunctival infection.

This box provides an overview of the advice about the respiratory protection zone, the detailed practical advice will be provided in the *Clinical and Infection Control Annex* (see Appendix B).

Size of zone of transmission around an infectious patient when no aerosol generating procedures are undertaken.

The zone of transmission will be the same in all health care settings. One metre is the minimum distance.

Size of zone of transmission around an infectious patient when aerosol generating procedures are undertaken.

The transmission zone when aerosol generating procedures are undertaken is the room occupied by the patient at the time, except where full-length curtains or barriers enclose a space then the zone is the enclosure. The room is defined as a patient care space consisting of any non-temporary walls/barriers/curtains.

The assumptions below focuses only on the respiratory protection zone. For surface contamination see Assumption 6.

Current assumption(s)	5.1	Scenario: The infectious case is wearing a surgical mask thus no aerosol generating procedures are possible. The surgical mask worn by the patient is likely to act as an effective barrier against droplet transmission.
	5.2	Aerosol generating procedures (which, due to the techniques involved, can not be performed with the case wearing a mask) will result in: a) generation of fine, airborne viral particles b) propulsion of those particles through the air within the room that the case has occupied.
	5.3	Scenario: Infectious case is not wearing a mask but no aerosol generating procedures are undertaken. As the main route of transmission in these circumstances will be through large droplets that quickly fall to the ground, it is unlikely that there will be significant amounts of airborne viral particles beyond a one-metre radius of the case. However within the one-metre radius there are likely to be airborne viral particles that, if inhaled or in direct contact with conjunctiva of an unprotected, non-immune individual, could result in infection.

Planning and response implications	<p>When practical, every attempt should be made within the clinical setting to cohort mask wearing and non-mask wearing patients. If not possible, required protection should be in line with that for treating the highest risk patient in the room.</p> <p>5.1 Mask and eye protection: Protection with a surgical mask and eyewear* is required for people within one metre of an infectious case who is wearing a mask (unless the patient wearing a mask cannot keep it in place, e.g. because of extreme coughing). No respiratory or eye protection is required if greater than one metre away from the case**.</p> <p>Antiviral protection: A non-immune health care worker continuously caring for a patient within one metre is likely to be on pre-exposure prophylaxis. If not, post-exposure prophylaxis should be offered.</p> <p>5.2 Mask and eye protection: Protection with a P2 mask (or Powered Air Purifying Respirator (PAPR), if available) and eyewear* is required for all people in the room with the infectious case whilst aerosol generating procedures are taking place. Note: PAPRs are specialised devices that will be in short supply.</p> <p>Antiviral protection: If a non-immune health care worker is likely to be exposed to aerosol-generating procedures, pre-exposure antivirals should be taken preferably two hours before the exposure or as soon after exposure as possible.</p> <p>If a non-immune health care worker is likely to be continually exposed to aerosol-generating procedures performed on infectious cases, continuous prophylaxis with antivirals should be offered.</p> <p>If in the unforeseen circumstance of no pre-exposure prophylaxis, post-exposure prophylaxis should be provided within 48 hours.</p> <p>5.3 Mask and eye protection: Protection with a P2 mask and eyewear* is required for people who are within one metre of an infectious case who is not wearing a mask (or if a patient wearing a mask cannot keep it in place, e.g. because of extreme coughing). No respiratory or eye protection is required if a distance of one metre or greater is kept from the case**.</p> <p>Antiviral protection: A non-immune health care worker continuously caring for a patient within one metre is likely to be on pre-exposure prophylaxis. If not, post-exposure prophylaxis should be offered.</p> <p>Notes:</p> <p>*in addition to gloves and disposable gown</p> <p>**Hand washing to prevent contact transmission is required by all persons in areas where surface contamination may have occurred. For staff involved in surface cleaning of potentially contaminated areas particularly if this cleaning involves sweeping or scrubbing, respiratory protection with a surgical mask and eye protection as well as gloves and gown are required.</p>
Scientific rationale	<p>See assumption 3 for details about the modes of transmission.</p> <p>The assumptions are based on:</p> <ul style="list-style-type: none"> studies of aerosol generating procedures for both seasonal influenza and SARS field studies on the effectiveness of surgical masks worn by infectious patients used to estimate the likely impact of this intervention in reducing risk to others.

Assumption table 6—Survival of the virus

Current assumption(s)	<p>6.1 Survival on surfaces—the virus could survive if unwashed/undisturbed and be potentially infectious for the following lengths of time:</p> <p>a) on hard non-porous surfaces such as stainless steel and plastic for up to 48 hours</p> <p>b) on cloth, paper and tissues for up to 12 hours</p> <p>c) on surfaces contaminated with blood or faeces for longer than normal surface survival due to the presence of increased concentration of organic matter, up to 5 days under ideal conditions.</p> <p>6.2 Disinfection—the use of normal household detergents with standard cleaning procedures would inactivate or remove virus on any of the above surfaces.</p> <p>6.3 Survival on hands—pandemic influenza virus will be able to survive on unwashed hands for up to 30 minutes.</p> <p>6.4 Hand washing—washing with soap and water for 15–20 seconds or appropriate use of alcohol-based hand rubs would remove the virus.</p> <p>6.5 Cadaver—viable virus may be found within a cadaver for several days, possibly weeks after death, particularly if the body has been refrigerated.</p>
Planning and response implications	<p>6.1 – 6.5 Areas where an infectious case has spent time, particularly if the infectious case is not wearing a surgical mask, are likely to be contaminated. They will pose a risk to others through contact contamination and transference of viral particles. Hand washing and surface cleaning will be extremely important in reducing the risk of this occurring. Use of soap and water/alcohol rubs and standard cleaning materials will be effective in disinfecting contaminated areas. No special cleaning procedures or materials would be required during a pandemic.</p> <p>Special precautions will be required for people handling cadavers. These will be outlined in the <i>Funeral Annex</i> and <i>Pathology Annex</i>.</p>
Scientific rationale	<p>6.1 – 6.5 Research into seasonal influenza, avian influenza (influenza A/H5N1) and SARS have been used to estimate survival times on different surfaces and in cadavers. A precautionary approach has been taken and maximum possible survival times are quoted above. It should be noted that true infectiousness to humans of viruses at the extremes of these survival times is likely to be extremely low.</p> <p>Research into the effectiveness of different cleaning materials for seasonal and avian influenza and for SARS and other similar enveloped viruses was used to estimate likely effectiveness of these materials against the pandemic influenza virus.</p>

Assumption table 7—Serial interval

Current assumption(s)	The current assumption is that the serial interval will be two to four days. Serial interval in this context is defined as the average length of time between the primary case developing symptoms and the secondary case developing symptoms.
Planning implications	As the serial interval is assumed short, contact tracing must take place as quickly as possible for it to be effective.
Response implications	Serial interval estimate, along with attack rate, will be required to be able to model the likely impact.
Scientific rationale	Serial interval has been extrapolated from seasonal influenza and past pandemic data.

Assumption table 8—Presenting symptoms

Current assumption(s)	The current assumption is that the predominant presenting symptoms during a pandemic will be respiratory symptoms and fever usually accompanied by systemic symptoms such as myalgia and fatigue. Fever may not be present in the elderly and atypical presentations may be more common at the extremes of age.
Planning implications	Screening programmes, surveillance and clinical case definitions should be based around fever and/or respiratory symptoms.
Response implications	It will be a high priority to understand the spectrum of presenting symptoms to allow modifications to case (surveillance and clinical) definitions as early as possible to ensure the appropriate levels of sensitivity and specificity. It will be important early in a pandemic to establish the frequency of atypical presentations as amendments, particularly to the clinical case definitions, may be required.
Scientific rationale	Extensive studies of seasonal influenza and previous pandemics indicate that influenza is predominately a respiratory disease. However, atypical presentations of seasonal influenza can occur particularly in those at the extremes of age and in patients with unusual influenza viruses such as influenza A/H5N1. It is therefore possible that pandemic influenza could present with high frequency of atypical symptoms.

Assumption table 9—Health impact of pandemic influenza

Current assumption(s)	9.1	The current assumption is that in an unmitigated pandemic (i.e. no antivirals, no antibiotics) the clinical case fatality rate would be 2.4%.
	9.2	It is estimated that with the appropriate medical care (early antiviral and antibiotic therapy as needed and supportive care for those with more severe illness) the death rate could be halved that is, the clinical case fatality rate would be 1.2% with treatment.
	9.3	A W shaped mortality distribution, similar to that seen in the 1918 pandemic, has been assumed for planning purposes with three mortality rate peaks—under 5 year olds, over 65 year olds and 20 to 35 year olds.
	9.4	A similar range of complications would be encountered as currently experienced with seasonal influenza namely, predominately respiratory complications for all age groups, rise in cardiovascular events in adults and the elderly, and a small proportion of children presenting with neurological complications. The frequency of all complications would be greater in a pandemic than with seasonal influenza.
	9.5	Maternal mortality and early foetal loss are likely to be significant.
	9.6	The immunosuppressed and those with underlying serious medical conditions would experience higher complications than those without underlying health problems.
	9.7	Psychosocial and mental health needs are likely to be high and demand for these services may extend into and even beyond the recovery period.
Planning implications	9.1 – 9.2	Planning should ensure that the use of antiviral, antibiotics and appropriate supportive health care during a pandemic could be optimised.
	9.3	Paediatric and elderly care health services will be in demand and planning should ensure that these services could be readily optimised. The possibility of a high health impact in the young working age group needs to be incorporated into business continuity and social service planning arrangements.
	9.4	Respiratory and cardiovascular services will likely be in high demand and planning should ensure that these services could be optimised.
	9.5	Obstetric and neonatal services should be included in health service planning.
	9.6 – 9.7	Certain specialist health care services may be required to ensure that the specific needs of these groups can be best met. Social support and community resilience will also be important and should be included in whole of government planning.
Response implications	9.1 – 9.6	Data on health service usage needs to be closely monitored throughout the pandemic and services optimised as required.
	9.7	Transition of services during the CONTROL period will need to take into account the psychosocial and mental health needs of the population, which may extend well into recovery.

Scientific rationale	<p>9.1 and 9.3 are based on data from the 1918 pandemic.</p> <p>9.2 Data from the 1918 pandemic appears to indicate that at least 50% of the deaths were late deaths that is, they occurred ten days or more after the onset of illness. The majority of these deaths are likely to have been the result of secondary bacterial pneumonia for which, at the time, there would not have been any antibiotic treatment. Expert opinion is that early and appropriate use of antivirals (+ pneumococcal vaccine in high-risk groups) is likely to prevent 50% of such complications occurring in the first place. For the secondary bacterial pneumonias that do occur, antibiotics and supportive care would further reduce the death rate by at least another 50%.</p> <p>9.4 This is based on data regarding hospitalisation during seasonal influenza outbreaks in Australia.</p> <p>9.5 – 9.6 This is based on data from seasonal influenza, recent H5N1 infection in humans, and small amount of data from analysis of previous pandemics.</p> <p>9.7 This is based on data from natural disasters and mass casualty events.</p>
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Assumption table 10—Treatment with Neuraminidase Inhibitor (NI) antivirals

Note that Assumptions 10 and 11 are based on the presumption that:

A NI antiviral either oseltamivir or zanamivir will be used for treatment or prophylaxis. A full assessment of the possible effectiveness of the adamantines (amantadine and rimantidine) has not been undertaken due to the current high rates of resistance that the influenza virus demonstrate against this class of antiviral drugs.

Sensitivity of the pandemic virus to NI antivirals is high.

Effectiveness will be monitored during a pandemic.

Current assumption(s)	<p>10.1 Timing—NI antiviral treatment during the pandemic would likely be most effective if started within 48 hours of onset of illness. Limited therapeutic benefit is likely to be seen when treatment is started later than five days post onset of systemic symptoms (myalgia +/- fever).</p> <p>10.2 Dosage—the current recommended doses and contra-indications should be used for planning purposes. There is currently no evidence to support the use of combination therapy.</p> <p>10.3 Effect on mortality—for planning purposes it is assumed that:</p> <p>(a) Early NI antiviral treatment may have some impact on reducing early mortality (i.e. death within ten days of onset of illness) by reducing overall viral load.</p> <p>(b) Early NI antiviral treatment is likely to have significant impact in the prevention of complications due to secondary bacterial infections (up to 50% reduction) and that by reducing secondary bacterial complications, this is likely to lead to a significant reduction in late mortality (death after ten days of onset of illness).</p> <p>10.4 Effect on morbidity—the early use of NI antiviral medication (i.e. started within 48 hours of onset of symptoms) is anticipated to result in reduction:</p> <p>(a) in pneumonia in at risk adult population by 40%</p> <p>(b) in pneumonia in previously healthy adults by 50%</p> <p>(c) in pneumonia in children by 40%</p> <p>(d) in otitis media in children by 30%.</p> <p>10.5 The potential impact of NI antiviral therapy on maternal mortality and neonatal outcomes is impossible to predict at this stage. Early clinical trials will be needed to inform guidance in this area.</p> <p>10.6 The precise clinical indications and population groups that would benefit most from NI antiviral therapy are difficult to predict prior to the onset of a pandemic.</p>
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Planning and response implications	<p>10.1 – 10.6 Planning should therefore focus on developing the capacity to identify cases as early as possible in the course of their illness and on optimising services so that NI antiviral therapy, if clinically indicated, can be administered within 48 hours. The clinical benefit of treatment provided to cases that present after 48 hours onset will need to be evaluated at the time.</p> <p>Dose levels and length of treatment for adults and children should be kept under review.</p> <p>Preparedness and response also needs to ensure that, if required, there is the capacity to target NI antiviral therapy at the appropriate high risk/high need population groups. Rapid analysis of outcomes of the use of NI antivirals in the early stage of the pandemic will be needed to inform development of guidance in this area.</p> <p>Combination therapy needs to be considered in the future particularly if drug resistance becomes an issue.</p>
Scientific rationale	<p>10.1 This is based on data from seasonal influenza and outcomes of a small, non-randomised case study of a limited number of patients with influenza A/H5N1. In contrast to uncomplicated seasonal influenza, oseltamivir treatment is warranted for patients presenting later with H5N1 virus because viral replication is more prolonged than with seasonal influenza.</p> <p>10.2 Refer to MIMS 2008.</p> <p>10.3 There are currently only limited data from small trials with seasonal influenza available upon which to estimate possible impact of NI antivirals on mortality. However, given the strength of the data supporting the finding that early NI treatment in seasonal influenza results in significant reduction in complications (see 10.4 below) and the knowledge that over 50% of deaths in 1918 were likely due to these complications, expert opinion is that early antiviral treatment could have an appreciable impact on mortality during a pandemic.</p> <p>10.4 There is a relatively large body of evidence indicating that early NI antiviral therapy reduces complications. The data for use in seasonal influenza indicates complication reduction rates greater than the estimates above. However, a precautionary approach was taken in extrapolating from seasonal influenza to pandemic influenza and hence lower estimates of likely effectiveness have been assumed for pandemic influenza compared with documented results for treatment in seasonal influenza.</p> <p>10.5 – 10.6 This represents the consensus view of an expert committee</p>

Assumption table 11 —Antiviral prophylaxis with Neuraminidase Inhibitor (NI) antivirals

Current assumption(s)	<p>11.1 Dosage—the current recommended doses for prophylaxis is assumed to be effective against the pandemic strain.</p> <p>11.2 Pre-exposure prophylaxis</p> <p>Pre-exposure prophylaxis should preferably begin two hours before exposure.</p> <p>The maximum recommended length for continuous prophylaxis should be six weeks for oseltamivir and four weeks for zanamivir until further data becomes available.</p> <p>People on continuous pre-exposure prophylaxis need a periodic break from taking the drug.</p> <p>11.3 Post-exposure prophylaxis</p> <p>Post-exposure prophylactic antivirals started within 48 hours of exposure would result in a 50% reduction in laboratory confirmed secondary cases.</p> <p>Post-exposure prophylaxis will be most effective if taken as early as possible and within 48 hours of exposure. It is unlikely to have any significant impact if started more than 48 hours post-exposure.</p> <p>Ten days of post-exposure prophylaxis is required after last known exposure.</p>
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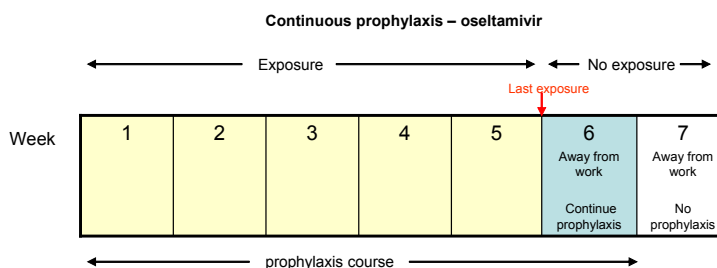
Planning implications

11.1 Dosage—For planning purposes, the dosage recommended in the Interim National Pandemic Influenza Clinical Guidelines (June 2006) should be followed.

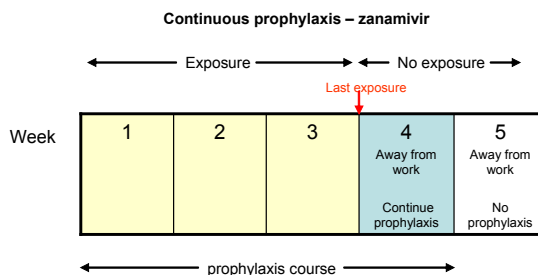
11.2 Planning should focus on ensuring that pre-exposure antivirals are available to be taken before exposure is likely.

As seven days of prophylaxis is needed after last exposure, followed by a seven day break from taking the drug, a health care worker on continuous prophylaxis would require:

– two weeks away from the high risk setting for every five weeks worked in that setting for oseltamivir.



– two weeks away from the high risk setting for every three weeks worked in that setting for zanamivir.



This needs to be taken into consideration when planning staff rosters in high-risk health care services where continuous prophylaxis might be used.

11.3 Planning should focus on developing the capacity to identify contacts as early as possible and on optimising services so that antiviral post-exposure prophylaxis can be administered quickly.

Any contact that is identified too late for post-exposure prophylaxis should be quarantined and monitored for symptoms for seven days post-exposure. These contacts should be offered early antiviral therapy if they develop symptoms. Planning needs to develop capacity to both monitor these contacts and provide early therapy if required.

Response implications

11.1 – 11.3 The effectiveness of prophylaxis, post-exposure and continuous pre-exposure, needs to be monitored and evaluated so that policies can be tailored during a pandemic to best meet the needs and ensure effective use of resources.

The duration of post-exposure prophylaxis will be reviewed if evidence is available that this period could be reduced.

Scientific rationale	<p>11.1 The current dose recommendations are based on data from a relatively small number of clinical trials that have been conducted to examine the safety and effectiveness of NI antiviral prophylaxis.</p> <p>11.2 There are currently no data available on continuous use of oseltamivir beyond six weeks or zanamivir beyond four weeks. The recommendation that a break is required between continuous courses is a precautionary recommendation only.</p> <p>11.3 Data from a small number of clinical trials indicates that early post-exposure NI antiviral prophylaxis for seasonal influenza reduces secondary cases by up to 70%. A precautionary approach was taken in extrapolating from experiences with seasonal influenza and translocating these experiences into assumptions about a novel, unknown pandemic virus that could have greater transmissibility than seasonal influenza. Hence, lower estimates of estimated impact on secondary case prevention have been assumed for pandemic influenza.</p>
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Assumption table 12—Immunity following natural infection

Current assumption(s)	<p>12.1 For planning purposes, it should be assumed that all individuals, regardless of age, would be vulnerable to pandemic influenza that is, no natural prior immunity will be present in any age groups.</p> <p>12.2 It is assumed that individuals who have recovered from natural infection will have a reasonably high degree of protection from a second infection within the same wave should a second distinct wave occur. However, as subsequent waves may be due to a drifted virus, it cannot be assumed that an individual who experienced pandemic influenza in an initial wave would be fully protected in any subsequent waves.</p>
Planning implications	<p>12.1 Planning should be based on the assumptions that no natural prior immunity will exist and hence protection may be required by all members of the population.</p> <p>12.2 Planning for the first wave response can assume that natural infection will confer a high degree of protection during that wave. However planning for second and subsequent waves (based on the assumption that the virus will drift), should be based on the assumption that immunity developed in the community as a result of infection during previous waves may not be fully protective against subsequent waves.</p>
Response implications	<p>12.1 As the first wave progresses, immunity post infection should be assessed. If immunity is high, then, in certain circumstances, protective measures for recoverees could be reduced.</p> <p>12.2 If subsequent waves progress, data should be collected to see if previous infection is conferring protection against the second/subsequent wave pandemic virus. If immunity is high, then, in certain circumstances, protective measures for recoverees could be reduced. The level of protection in second waves following natural infection will be assessed at the time as a priority.</p>
Scientific rationale	<p>12.1 – 12.2 Based on data from previous pandemics and particularly from analysis of the 1918 pandemic in Australia where infection during the first wave appeared (for some individuals at least) not to confer protection against second infection during the second wave.</p>

Assumption table 13—Immunity following vaccination

Current assumption(s)	<p>13.1 It is assumed that if the viral strain in the candidate pandemic vaccine were closely related to the pandemic strain (i.e. if both the candidate vaccine strain and the pandemic strain were both influenza A/H5N1 viruses), then some degree of protection would be afforded following two doses of candidate vaccine. The level of protection would not be known until testing could be conducted and it should be assumed that at least one dose of customised pandemic vaccine is likely to be needed to ensure adequate protection against the pandemic virus.</p> <p>13.2 If a person has received the customised pandemic vaccine and have received two doses 21 days apart, it is assumed they are fully vaccinated seven days after the second dose.</p> <p>For those individuals who receive a priming course of candidate vaccine that contains a similar viral strain to the pandemic virus, protective levels of antibodies are likely to occur very quickly, within seven days, after one dose of customised vaccine.</p>
Planning and response implications	<p>13.1 Anyone who has received two doses of candidate vaccine will require at least one dose of customised pandemic vaccine.</p> <p>13.2 Without priming, it will take at least 28 days for protection to be developed using customised pandemic vaccine.</p> <p>The use of continuous pre-exposure antiviral prophylaxis will be reviewed once the efficacy of the candidate and customised vaccine is determined.</p> <p>If the customised vaccine is effective, continuous pre-exposure antiviral prophylaxis will be ceased 14 days after a health care worker has received a second dose of customised vaccine. While it is assumed that antibodies will occur 28 days after the initial dose of customised vaccine (or seven days after receiving the second dose of customised vaccine, thus fully vaccinated), a further week on antiviral prophylaxis should be provided in the absence of further evidence.</p> <p>It is envisaged that most frontline health care workers on continuous pre-exposure prophylaxis will have received two doses of the candidate vaccine. These individuals will only need one dose of customised vaccine. They will be considered fully vaccinated seven days after the customised vaccine dose but should continue antiviral prophylaxis for a further seven days as a precautionary measure.</p>
	<div> <div>CANDIDATE PANDEMIC VACCINE</div> <p>The diagram illustrates the timeline for the candidate pandemic vaccine. It features a horizontal timeline labeled 'DAY' with markers at 0, 21, 0, 7, and 14. At Day 0, the '1st dose of candidate vaccine' is administered. At Day 21, the '2nd dose of candidate vaccine' is administered. A dashed line segment between Day 21 and the second Day 0 indicates a period of 'Waiting for customised vaccine to be produced'. At the second Day 0, the '1st dose of customised vaccine' is administered. Seven days after this (at Day 7), individuals are 'Considered to have protective antibodies/fully vaccinated'. Fourteen days after the second Day 0 (at Day 14), 'HCW taking continuous pre-exposure prophylaxis can cease taking prophylaxis'.</p> </div> <p>Data should be collected to see if vaccination is conferring protection against the second/subsequent wave pandemic virus. The level of protection in second waves following vaccination/natural infection will be assessed at the time as a priority.</p>
Scientific rationale	<p>The above is based on data from a range of clinical trials that have been conducted on candidate pandemic vaccines as well as data about immune responses to seasonal influenza in relatively naive populations (i.e. young children).</p>

Assumption table 14—Absenteeism

Current assumption(s)	<p>14.1 30 to 50% of the working age population could be away from work during the peak of the pandemic. This includes absenteeism due to illness or quarantine, the need to stay at home to care for someone who is ill, the need to stay at home to look after children in the event of school closures, fears about being infected at work as well as some people fulfilling other roles in the community. In certain sectors, absenteeism may be higher due to the high percentage of female employees (e.g. health care, especially in nursing, pharmacy).</p> <p>14.2 Working age adults who develop pandemic influenza would be quarantined and unable to come to work, because they could be infectious to others, for seven days after the onset of symptoms.</p> <p>14.3 Working age adults who develop pandemic influenza would, on average, require 14 days recovery that is, it would take 14 days from the onset of symptoms to be fit enough to return to normal activities.</p>
Planning and response implications	<p>14.1 – 14.3 Business continuity needs to assume and plan for high and possibly fluctuating levels of absenteeism throughout the pandemic.</p> <p>Communication strategies need to ensure that the public are kept well informed and that fears and concerns are addressed.</p>
Scientific rationale	<p>14.1 – 14.3 The evidence base for this is extremely limited, and thus represents the consensus view of an expert committee.</p>

Assumption table 15—Duration of pandemic disruption

Current assumption(s)	<p>The pandemic in Australia will last 7–10 months.</p> <p>Recovery is likely to take a further six months to a year depending on how severe the pandemic has been.</p>
Planning and response implications	<p>Business and the community need to plan to be able to continue to function despite the disruptions for up to one year. Business continuity needs to take into account the likely fluctuating levels of disruptions and possible differences in timing of interventions across the country.</p>
Scientific rationale	<p>The evidence base for this is extremely limited, and thus represents the consensus view of an expert committee.</p>

D. Looking to the future

Considerable advances have been made to prepare Australia for an influenza pandemic. Within the health sector, achievements include:

- development of a comprehensive national strategic framework for the health sector response, which is underpinned by jurisdictional plans and operational procedures
- coordination of the response at national and jurisdictional level via the AHPC, utilising the NIR within the DoHA as the hub of government information and response
- development of a legislative framework for health protection
- establishment of national infrastructure including:
 - a national stockpile of antiviral medicines, personal protective equipment and other stores that are likely to be needed in a pandemic, including thermal imaging scanners, other medicines and medical equipment
 - a stockpile of H5N1 candidate pandemic vaccine
 - the WHO Collaborating Centre for Reference and Research on Influenza (WHOCC) at new state-of-the-art facilities at the Victorian Infectious Diseases Reference Laboratory (VIDRL) in Melbourne
- agreements for the manufacture of customised pandemic vaccine
- development of methods and processes to scale up surveillance and monitoring of international situations
- comprehensive communication strategies.

The challenge now is to ensure this level of preparedness can be sustained into the future and used, in the absence of a pandemic, to address other possible health emergencies.

Sustaining our level of preparedness

A number of measures have been put in place to ensure that pandemic planning remains appropriate and in line with scientific advances:

- this plan will be revised every two years
- the technical annexes that accompany this plan will be reviewed every two years by expert groups

- the assumptions upon which this plan is built have been made explicit and expert groups will continually review the assumptions in light of new scientific data—significant developments that may affect our current assumptions will be incorporated into our planning
- Australia works closely with the WHO in a variety of forums and the WHOCC in Melbourne is an integral part of the WHO Global Influenza Surveillance Network (GISN)—if developments occur overseas that might have an impact on planning, the AHPC will be informed via the DoHA and an assessment of need for further action can be taken
- if there are any developments of concern overseas, the CMO can convene the EAG urgently to review the situation and provide advice to the Minister of Health and Ageing as needed.

The following activities will be undertaken to ensure that our level of preparedness is sustained into the future:

- exercising preparedness plans, operations and communication channels
- development of training material for a range of responders.

Using pandemic planning and preparedness to reduce the impact of other major health events

It is also important to consider how to broaden our pandemic response planning beyond influenza to incorporate a wider range of communicable disease threats. The development of a strategic framework for pandemic response, encapsulating aims, goals, operational objectives, actions required and operational tools is a useful structure for responding to any potential communicable disease epidemic threat.

APPENDICES



Appendix A: Glossary of terms

Absenteeism	<p>Absenteeism is when people are absent from work.</p> <p>An estimate of workplace absenteeism in a pandemic will range between 30–50 per cent. This includes absenteeism due to illness; the need to stay at home to care for someone who is ill; the need to stay at home to look after children in the event of school closures; fears about being infected at work as well as due to some people fulfilling other roles in the community (volunteering).</p>
Acute services	<p>Health services (usually hospitals) that provide care or treatment of people with short-term serious injury or illness. Medical conditions requiring acute care are typically periodic or temporary in nature, rather than long term.</p>
Anticipated impact	<p>The future affect of the pandemic (as opposed to current impact) estimated using a forward planning tool.</p>
Antigen (see also Haemagglutinin and Neuraminidase)	<p>Antigen is a protein that induces an immune response.</p>
Antigenic drift	<p>Antigenic drift is minor changes in the surface proteins (Haemagglutinin and Neuraminidase) of an influenza virus that usually occurs gradually.</p>
Antigenic shift	<p>Antigenic shift is abrupt and major changes in the surface proteins of an influenza virus.</p>
Antiviral	<p>A type of drug used to help prevent or treat illnesses caused by some viruses, including influenza.</p>
Border measures	<p>A range of measures that can be taken at airports and seaports to delay the spread of illness to or from affected countries (or jurisdictions). Border measures may include:</p> <ul style="list-style-type: none"> • recommending that people do not travel to or from affected countries • requiring air and sea crew to report to Australian authorities on arrival anyone on their vessel who is sick • asking travellers whether they have been in contact with people who have influenza symptoms • screening travellers to check for symptoms of influenza • isolation of potentially infected persons entering the jurisdiction • refusing international vessels entry into Australia's air or sea ports.
Community transmission	<p>Community transmission is the passing of a disease from an infected individual to another individual outside of a known group of contacts, and outside health care settings.</p>
Contact	<p>A person close enough to an infected person so as to have an opportunity to acquire the infection. The exact definition of a contact depends on the nature of the illness.</p>
Contact tracing	<p>The process of identifying and managing people who have been 'in contact' with someone who has an infectious illness.</p>

Contain	The process of stopping spread of illness beyond a confined area. Key containment measures for an influenza pandemic include border measures, quarantine or isolation, social distancing, infection control, contact tracing and use of antivirals.
Cough and sneeze etiquette	Measures individuals can take when we cough, sneeze or blow our nose, to reduce the chance of spreading the virus. This is sometimes referred to as respiratory hygiene.
Endemic	A disease that is routinely found in a given area or country.
Epidemiology	The study of the incidence, prevalence and the cause of disease in populations.
Flu clinic	Flu clinics are specially planned facilities that will be set up during a pandemic for safe medical assessment and management of people with suspected pandemic influenza.
FLUBORDERPLAN	The National Pandemic Influenza Airport Border Operations Plan (FLUBORDERPLAN) outlines the processes to deploy and operate border control measures at designated Australian international airports in response to the threat, or actual transmission, of pandemic influenza. It outlines the roles and responsibilities of Australian Government, state and territory government agencies and the airline sector in this response. Plan endorsed by Council of Australian Governments (COAG).
H5N1 avian influenza	A strain of influenza type A virus affecting mainly birds but transmissible to humans after close contact with sick or dead birds—it causes severe influenza-like symptoms and may result in death.
Haemagglutinin (see also Neuraminidase and Antigen)	A protein found on the surface of influenza viruses, which is responsible for binding the virus to the cell that is being infected.
Hand hygiene	A general term referring to any action of hand cleansing for example, hand washing, antiseptic hand wash, antiseptic hand rub.
Health professional	For the purposes of this document health professional refers to all people (doctors, nurses, support staff working in designated influenza services, aboriginal health workers, dentists, pharmacists, ambulance officers, laboratory and specimen collection technicians, allied health professionals, and aged care, disability service and community care workers) who provide a health service.
Health sector	The health sector is government departments responsible for health, in addition to the private and public health system, and health professionals.
Health care worker, frontline	<p>Health professionals who are:</p> <ul style="list-style-type: none"> • working in a service that forms part of the health sector response to pandemic influenza sanctioned by the state or territory health department, and • providing direct clinical or personal care to suspected and confirmed cases of pandemic influenza, and • are considered to be at high risk of exposure to the pandemic influenza virus. <p>For example, health professionals who work in a flu clinic or general practitioners providing care in areas with no flu clinics.</p>

Host	A living animal (including humans) or plant from which a micro-organism (bacteria or virus) obtains nourishment and shelter.
Infectious	Capable of spreading disease or a disease that is capable of spreading (also known as communicable).
Infectivity	In epidemiology, infectivity refers to the ability of a pathogen (such as a virus) to establish an infection. It should be contrasted with virulence, which refers to the damage done by the pathogen once the infection is established.
Influenza (the flu)	The flu is a highly contagious disease of the respiratory tract, caused by influenza viruses.
Influenza services	All health services that provide care to influenza patients, including flu clinics, hospitals, general practices.
Influenza Type A	Type A influenza is a influenza virus that occurs in humans and animals.
Influenza Type B	Type B influenza is a influenza virus that occurs only in humans.
Intervention	The introduction of a preventative or therapeutic measure.
Isolation	Separation, of infected persons (cases) from other people for the period they are likely to be infectious, in order to prevent or limit the direct or indirect transmission of the virus.
Mitigated	Control measures applied. Verses unmitigated (no control measures applied).
Morbidity	State of disease. The term morbidity rate refers to the numbers of cases of illness in a population divided by the total population considered at risk of that illness.
Mortality	Death—mortality rate is the measure of the number of dead (in general, or due to a specific cause) in a population scaled to the size of that population, per unit time.
National Incident Room (NIR)	The NIR is the operations centre in the DoHA for coordinating national responses to health emergencies.
National Medical Stockpile (NMS)	The NMS is a national strategic reserve of medicines (vaccines, antibiotics, chemical and radiological antidotes) and equipment for health workers.
Neuraminidase (see also Haemagglutinin and Antigen)	This is a protein spiking from the surface of the influenza virus, responsible for releasing the influenza virus from the cell.
P2 Mask	A P2 mask (P2 respirator) is a device specifically designed to provide protection to the wearer's respiratory tract from small infectious particles. A P2 mask is a particulate filter, personal respiratory protection device which, when tested against AS/NZS 1716:2003, does not show penetration of particles with a mass median diameter of 0.3 micro meters, of more than 6%.
Pandemic	A Pandemic is an epidemic on a global scale. Only Type A influenza viruses have been known to cause influenza pandemics.
Personal protective equipment (PPE)	PPE is equipment that can be worn by an individual to protect them or others from infection.

Post-exposure prophylaxis	A dose or doses of a drug (usually antibiotic or antiviral) given immediately after exposure to a disease (such as influenza), but before onset of illness.
Powered Air Purifying Respirators (PAPRs)	A PAPR is a specialised device providing respiratory protection, where a battery powered blower pulls contaminated air through filters, then moves the filtered air to the wearer's facepiece.
Pre-exposure prophylaxis	A dose or doses of a drug (usually antibiotic or antiviral) given before exposure to an infectious disease, to protect the person from being infected.
Preparedness	Undertaking measures to ensure that the health sector is adequately prepared for the event of an influenza pandemic.
Primary care	Health services providing initial care of a patient before they are referred or transferred elsewhere. General practice surgeries and emergency departments are common sites for primary care.
Prophylaxis	Medical or public health procedure designed to prevent infection, rather than treat or cure existing disease.
Quarantine (see also Isolation)	The limitation of freedom of movement for a period of time of well persons who are likely to have been exposed to the virus (contact) to prevent their contact with people who have not been exposed.
Reassortment	Reassortment occurs when the genes from two different and distinct virus strains rearrange and recombine to produce a new, genetically different strain.
Resilience	The capacity to cope with stress or change, and capacity to adapt.
Serial interval	Average length of time between an initial primary case developing symptoms and subsequent secondary cases developing symptoms.
Social distancing	Social distancing is a community level intervention to reduce normal physical and social population mixing in order to slow the spread of a pandemic throughout society. Social distancing measures include school closures, workplace measures, cancellation of mass gatherings, changing public transport arrangements and movement restrictions.
Strain	A group of organisms within a species or type that are genetically similar. Influenza viruses are described by their Type (e.g. Type A, B or C), their subtype (e.g. H5N1), and then their strain (e.g. Hong Kong strain).
Unmitigated	No control measures applied (versus mitigated—control measures implemented).
Vaccine	Vaccine is a medication that stimulates the production of antibodies to protect against a specific disease.
Vaccine, candidate	A vaccine based on the H5N1 strain of the influenza virus. This vaccine may provide partial protection if H5N1 develops into a pandemic strain that is easily transmissible between humans.
Vaccine, customised	A vaccine based on the actual pandemic virus, which cannot be developed until the next pandemic virus emerges.
Vertical transmission	The transmission of disease from mother to child either while the child is unborn, during birth or after birth from breast milk.

Appendix B: Links to other documents

National Action Plan for Human Influenza Pandemic

The *National Action Plan for Human Influenza Pandemic* (NAP) sets out how the Australian government and state, territory and local governments will cooperate in prevention, preparedness, response and recovery from a human influenza pandemic.

The NAP is available at www.pmc.gov.au/publications/pandemic/index.cfm

Annexes to the AHMPPI currently available

- *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings* (June 2006) contains guidance primarily for health professionals regarding infection control, for health care and community settings, in the management of pandemic influenza patients.
- *Interim National Pandemic Influenza Clinical Guidelines* (June 2006) contains guidance primarily for health professionals regarding the assessment and management of avian and pandemic influenza patients.
- The Infection Control Guidelines and the Clinical Guidelines are currently being reviewed and will be combined in a future publication.
- *Communications Strategy Overview* (May 2006). Communicating to businesses, non-government organisations and individuals is an essential component of an influenza pandemic planning and response strategy. This communication strategy supports the preparation for, response to and recovery from an influenza pandemic as outlined in the *Australian Health Management Plan for Pandemic Influenza* (AHMPPI).

These annexes are available at www.flupandemic.gov.au.

Exercise Cumpston '06

Exercise Cumpston '06 tested Australia's preparedness in responding to widespread human-to-human transmission of a new strain of the influenza virus. This report outlines key findings and recommendations. The report is available at www.flupandemic.gov.au.

State and territory pandemic plans

Information on individual state and territory preparedness plans for an influenza pandemic can be found through the following website home pages.

- ACT—Australian Capital Territory www.health.act.gov.au
- NSW—New South Wales www.health.nsw.gov.au

- NT—Northern Territory www.nt.gov.au/health
- QLD—Queensland www.health.qld.gov.au
- SA—South Australia www.health.sa.gov.au
- TAS—Tasmania www.pandemic.tas.gov.au
- VIC—Victoria www.health.vic.gov.au
- WA—Western Australia www.public.health.wa.gov.au

Detailed jurisdictional links can be found on www.flupandemic.gov.au.

World Health Organization pandemic plan

The World Health Organization provides up to date information about avian influenza outbreaks around the world. It also has information regarding preparedness planning for an influenza pandemic and resources that can be used to provide information for planning.

<http://www.who.int/csr/disease/influenza/pandemic/en/index.html>

Business Continuity Guide and Small Business Kit

The Department of Innovation, Industry, Science and Research (DIISR) has developed a Business Continuity Guide and Small Business Kit to help Australian businesses consider what impact a human influenza pandemic might have on their businesses and act to put contingency plans in place.

Information on the Business Continuity Guide and Small Business Kit for an influenza pandemic can be found on the following website www.innovation.gov.au.

Business continuity kit for non-government organisations

The Australian Government Department of Families, Housing, Community Services and Indigenous Affairs has developed a Business Continuity Kit for Non-Government Organisations entitled *Building Resilience Through Business Continuity and Pandemic Planning* to assist community organisations prepare pandemic and business continuity plans. These plans will help community organisations mitigate the adverse community and social impacts of a potential influenza pandemic or other crises/disasters.

The kit is available on the following website
www.facsia.gov.au/communities/pandemic-influenza

Appendix C: National annexes

* These annexes are under development.

Operational objective 1: Communication	
Sub objective	National Implementation Tool
1.1 Information collection	Surveillance Annex*
1.2 Information distribution	Australian Health Pandemic Influenza Communications Strategy (Public Communications Annex) (May 2006)
Operational objective 2: Minimise community transmission	
2.1 Supporting control activities overseas	Policy statement in this plan, no additional tools developed
2.2 Border control	FLUBORDERPLAN Quarantine of Arrivals Plan*
2.3 Slowing the spread in the community	Guidelines for the Public Health Management of Pandemic Influenza*
2.4 Vaccination	Vaccination Annex*
Operational objective 3: Ensure health services are optimised to reduce overall morbidity and mortality	
3.1 Maximise health workforce	Aged Care Annex* Pharmacy Annex* Primary Care Annex* Health Workforce Enhancement Annex*
3.2 Establish and maintain influenza services	Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006) Interim National Pandemic Influenza Clinical Guidelines (June 2006) Pathology Annex* Primary Care Annex* Aboriginal and Torres Strait Islander Annex* Pharmacy Annex*
3.3 Maintain life-saving non influenza health services	Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006) Interim National Pandemic Influenza Clinical Guidelines (June 2006) Aged Care Annex* Blood Annex* Funeral Annex*
3.4 Reduce avoidable demand on health service	Strategy for Prioritising Preventative Services*

There are no additional national implementation tools for Operational objective 4: Work in partnership across governments.

Appendix D: Australia as the source of an influenza pandemic: health strategy

This Appendix provides details of what will take place in the unlikely event that Australia was to be the source of a pandemic. The following activities would have to be undertaken in Australia if AUS3, AUS4 or AUS5 were ever to occur:

STAMP OUT AUS3

Aim: Stamp out disease in animals and control infection in humans

Trigger: Emergence in Australia of a novel influenza strain with pandemic potential

This phase is characterised by a virus with pandemic potential infecting birds or other animals in Australia and causing a small number of human cases. It involves:

- agricultural efforts to stamp out infection in birds or other animals
- protection for humans in close contact with such animals
- heightened surveillance for human cases and provision of appropriate health care.

Australian animal health authorities have strategies for containing infectious diseases in domestic and wild animal populations. The strategy for the control and eradication of avian influenza is an integral part of the Australian Veterinary Emergency Plan (AUSVETPLAN). The development and maintenance of the AUSVETPLAN are conducted under the auspices of the Primary Industries Ministerial Council. Avian influenza is included on the World Organisation for Animal Health (OIE) list of notifiable diseases. This obliges OIE member countries, such as Australia, to notify the OIE of the presence of some types of avian influenza viruses.

AVERT AUS4/AUS5

Aim: Avert a pandemic

Trigger: Emergence in Australia, in humans, of a novel influenza strain with pandemic potential

AUS4 is a small cluster of human cases occurring only in Australia caused by a virus with pandemic potential. It involves:

- extensive public health intervention to try and avert a pandemic
- measures to prevent spread of cases out of Australia (exit screening).

A number of community based public health interventions will be used to implement a strategy of rapid containment of a novel virus should it emerge in Australia, namely:

- early identification and management of people infected with the pandemic influenza virus
- early identification and management of people exposed to the pandemic influenza virus.

Intensive control measures may be implemented such as:

- antiviral prophylaxis in and around the affected area
- social distancing in an infected zone
- movement restrictions into and around an infected zone
- quarantining and isolation.

AUS5 is a larger cluster of human cases caused by a virus with pandemic potential with Australia only one of two countries to be affected globally. Measures to avert or significantly delay the spread of the pandemic virus thought to be worthwhile are:

- extensive public health intervention to try and avert a pandemic
- measures to prevent spread of cases out of Australia (exit screening).

If a pandemic virus emerges, Australia will move into the CONTAIN phase and response measures outlined throughout this document will come into play.

Appendix E: How has the AHMPPI evolved

A Framework for an Australian Influenza Pandemic Plan was first published in 1999. In 2003, a revised version of this framework was developed by the National Public Health Partnership and the Department of Health and Ageing (DoHA) with advice from the National Influenza Pandemic Action Committee.

In 2005, the DoHA released the *Australian Management Plan for Pandemic Influenza* (AMPPI). A second iteration of this plan included 'Health' in the title to emphasise the health sector focus of the plan. This plan was released in July 2006 as the *Australian Health Management Plan for Pandemic Influenza* (AHMPPI).

In October 2006, the Australian Government, working with state and territory governments conducted a live simulation exercise to test Australia's health and broader preparedness and responses to a pandemic influenza outbreak.

A summary of Australian pandemic plans and reports is set out in Box 15.

Box 15: How Australian pandemic plans have developed

1999:	A Framework for an Australian Influenza Pandemic Plan
2003:	Revised framework
2005:	Australian Management Plan for Pandemic Influenza
2006:	Australian Health Management Plan for Pandemic Influenza (2006)
2006:	National Action Plan for Human Influenza Pandemic (focusing on the whole of government)—current
2007:	<i>Exercise Cumpston '06</i> report
2008:	Australian Health Management Plan for Pandemic Influenza (2008)—this plan

Exercise Cumpston '06, a national pandemic exercise proved extremely useful in highlighting a number of areas where pandemic planning and response could be strengthened.

Key recommendations following this exercise included:

- more flexible and tailored responses within a strategic framework
- further streamlining and an evidence based support for decision making
- continued strengthening of communications
- further development of the policies for community control
- further strengthening of the health system.

In response, the Australian Health Protection Committee (AHPC) recommended that a further edition of the AHMPPI be developed to reflect the lessons learnt and incorporate new research findings and global developments in pandemic planning.

What has remained the same in this edition of the AHMPPI

Substantial elements of the preparedness and response measures within the health sector outlined in this version of the AHMPPI remain consistent with previous editions of this plan (see Box 16).

The underlying aims and goals of pandemic preparedness and response have not changed. However, a strategic framework that clarifies the link between the health sector goal and the whole of government aim has been developed. In addition, this framework has allowed the key operational objectives for the health sector and the assumptions underlying the response to be made more explicit and useable.

The previous AHMPPI outlined preparedness measures to be taken before a pandemic strain has emerged. Many of these activities have been completed since that version was published and these achievements are detailed in this plan. However, preparedness and heightened vigilance are actions that must continue until a pandemic begins. This plan therefore details the areas where preparedness is continuing and where enhancements to our systems are ongoing.

The key strategies for controlling the spread of a pandemic, such as border measures, infection control, community control measures, antivirals, vaccines and communication remain the same.

The four main phases of DELAY, CONTAINMENT, MAINTENANCE and RECOVERY are still part of the response, although maintenance is now seen as an exceptional circumstance.

A new SUSTAIN phase has been inserted by shortening the CONTAINMENT phase outlined in the previous plan. It is called 'SUSTAIN' as the actions taken during this phase are about sustaining the response (and the health system) while waiting for a customised pandemic vaccine to become available. In addition, a new CONTROL phase follows SUSTAIN.

Governance structures are essentially the same, with some streamlining in response to the outcomes of *Exercise Cumpston '06*. Linkages with whole of government planning have not changed.

Box 16: What remains the same?

- the underlying aim and goals
- key control measures, and how they might be used
- focus on minimising the impact of the pandemic by reducing the number of people who become infected, treating those who do and protecting those who care for others
- the key strategies to delay, contain, control and recover from an influenza pandemic
- linkages with whole of government planning.

How the phases from AHMPPI (2006) are included in AHMPPI (2008)

The AHMPPI (2006) focused on five main strategies of a pandemic health response: preparedness, delay, containment, maintenance of essential services and recovery, and described 16 different possible phases of pandemic. These are shown in Figure 5.

Figure 5: How the phases from AHMPPI (2006) are included in this plan

AHMPPI 2006 Australian Phase	Description of phase as in AHMPPI 2006	AHMPPI 2008 Australian Phases
Aus 0	No circulating animal influenza subtypes in Australia that have caused human disease	
Overseas 1	Animal infection overseas: the risk of human infection or disease is considered low	
Aus 1	Animal infection in Australia: the risk of human infection or disease is considered low	
Overseas 2	Animal infection overseas: substantial risk of human disease	
Aus 2	Animal infection in Australia: substantial risk of human disease	
Overseas 3	Human infection overseas with new subtype(s) but no human-to-human spread or at most rare instances of spread to a close contact	ALERT
Aus 3	Human infection in Australia with new subtype(s) but no human-to-human spread or at most rare instances of spread to a close contact	
Overseas 4	Human infection overseas: small cluster(s) consistent with limited human-to-human transmission, spread highly localised, suggesting the virus is not well adapted to humans	DELAY
Aus 4	Human infection in Australia: small cluster(s) consistent with limited human-to-human transmission, spread highly localised, suggesting the virus is not well adapted to humans	
Overseas 5	Human infection overseas: larger cluster(s) but human-to-human transmission still localised, suggesting the virus is becoming increasingly better adapted to humans, but may not yet be fully adapted (substantial pandemic risk)	DELAY
Aus 5	Human infection in Australia: larger cluster(s) but human-to-human transmission still localised, suggesting the virus is becoming increasingly better adapted to humans, but may not yet be fully adapted (substantial pandemic risk)	
Overseas 6	Pandemic overseas—not in Australia: increased and sustained transmission in general population	DELAY
Aus 6a	Pandemic in Australia: localised (one area of country)	CONTAIN
Aus 6b	Pandemic in Australia: widespread	SUSTAIN
Aus 6c	Pandemic in Australia: subsided	CONTROL
Aus 6d	Pandemic in Australia: next wave	RECOVER

These phases now included in Appendix D

Appendix F: Health strategy for maintenance

In the exceptional circumstance that our ability to sustain the system is not successful or that the pandemic vaccine is not effective, it will be necessary to shift the focus to maintaining critical services until the pandemic comes under control.

Taking the actions necessary to support an extended containment strategy will rely on cooperation between all levels of government and assistance from the community. An overarching coordinated set of actions by all levels of government is contained in the National Action Plan for Human Influenza Pandemic (NAP), which is available from www.pmc.gov.au. These arrangements will be supported by the National Pandemic Emergency Committee (NPEC).

Aim: Maintain critical services

Triggers: Sustaining health system and critical infrastructure becomes unmanageable. This may occur:

- before the pandemic vaccine available or
- the vaccine proves not to be effective or
- antiviral resistance renders control by use of antivirals ineffective.

A maintenance strategy would require:

- infected people and their contacts to stay at home
- individual infection control efforts to be continued and possibly intensified
- governments to consider closing schools and encouraging people to stay home from work if possible
- a change in the Australian Government's policy on the distribution of antiviral medicines, to focus on maintaining essential services for the community.

Appendix G: Personal protective equipment

The pandemic planning assumptions, relevant to the use of personal protective equipment, are outlined in Part 3. They include:

- Assumption Table 3: Modes of transmission
- Assumption Table 4: Period of communicability
- Assumption Table 5: Respiratory protection zone
- Assumption Table 6: Survival of the virus.

What is personal protective equipment—PPE

PPE, such as P2 masks, surgical masks, goggles, gowns and gloves, is equipment that can be worn by an individual to protect them or other people from infection. The use of protective equipment will be one useful step that can disrupt spread, and should be used in concert with a range of other measures. Along with other resources, PPE may be limited in supply, so needs to be used wisely.

PPE is designed to protect well individuals by:

- providing respiratory droplet protection to prevent the virus from entering the nose or mouth by wearing some form of mask
- protecting eyes from contact with contaminated hands or exhaled virus by wearing eye protection (e.g. goggles, safety spectacles and face shields)
- preventing the transfer of the virus from contaminated surfaces to hands by wearing gloves (note: hand hygiene can also prevent this transfer)
- preventing clothing from becoming contaminated, and then inadvertently transferring virus from one area to another, by wearing gowns.

If a sick person wears a mask, the amount of virus shed into the environment decreases.

What types of masks are available

There is a variety of masks/respirators that could be used during a pandemic depending on the circumstances. They are:

- Surgical masks—reduces chances of inhaling virus that is in respiratory droplets. This protection is most useful in lower risk situations, particularly when the infected patient is able to wear a mask.

- P2 masks (P2 respirator)—reduces chances of inhaling virus that is in the form of fine respiratory particles. This is only recommended for use when undertaking medical procedures that lead to the generation of aerosols, or if the patient is infectious and cannot wear a surgical mask. They are used in high-risk situations where the patient is known to be infectious and distancing is not possible.
- Powered Air Purifying Respirators (PAPR)—may also be used when aerosol-generating procedures are undertaken. Note PAPRs are specialised devices that will be in short supply.
- Other masks. Advice will be provided at the time regarding appropriate alternatives (either homemade or commercially available).

Testing is required so that P2 masks fit properly. A P2 mask fit testing and checking program is needed in hospitals and general practice. Ongoing training (via mask fitting accreditation) will ensure knowledge can be built and sustained. Further details around fit testing will be provided in the *Clinical and Infection Control Annex*.

PPE needs to be used in combination with other control measures

The following control measures will reduce the risk of transmission:

- regular hand cleaning with either soap or alcohol based hand rub, especially after removal of PPE
- cleaning of surfaces
- good respiratory hygiene including disposing of soiled items appropriately
- management of patient so that people who are potentially infectious can be readily identified and segregated to avoid further infection (e.g. isolation and use of cohorting)
- standard and additional precautions (contact, droplet and airborne precautions) according to the level of risk, see the *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings (June 2006)*.
- keeping a distance of at least one metre from anyone who might be infectious and using barriers (e.g. screens) where possible
- asking potentially infectious patients to:
 - wear a surgical mask

- practice good cough etiquette
- clean their hands with soap and water or an alcohol rub.
- antiviral treatment by providing patients with antiviral medication (if clinically indicated) as the antivirals may help to reduce the amount of virus an infectious patient exhales
- antiviral prophylaxis, see Assumption Table 11 in Part 3
- vaccination when available, see Assumption Table 13 in Part 3.

The *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings* (June 2006) provides technical details and further explanation on how best to design services, implement other control measures and use PPE to reduce risks to those in contact with infectious patients.

Assessing the risk

Not every situation has the same level of risk, and the risk may change as we move through the phases of a pandemic. The most important aspect of protection from infection is to use the most appropriate combination of measures for the situation.

To assess if PPE is required, a risk assessment should be undertaken. A risk assessment needs to take into account:

- the number of infectious people in the community at the time (thus the likelihood of coming into contact with infectious case)
 - antivirals are likely to reduce respiratory viral shedding that is, people who have been on antivirals for over 48 hours are likely to be less infectious
- the proximity of contact required with an infectious person—can a one metre distance be maintained
- the additional appropriate barriers that can be put in place to decrease the risk of exposure for example:
 - reorganise work spaces to maintain a one metre distance between people
 - avoid creating situations where crowding of people could occur
 - placing screens between customers and staff
 - use other face covering (e.g. helmets).

Who will have access to stockpiled PPE

It is important to note that PPE stockpiled by the Australian Government and state and territory Health Departments is limited. Decisions regarding the use of items stockpiled in the National Medical Stockpile (NMS) will be made on the advice of AHPC based on risk of exposure and availability of supply.

Health sector

PPE will be prioritised to frontline health care workers who:

- work in a service that forms part of the health sector response sanctioned by the state or territory health department, and
- provide direct clinical or personal care to suspect and confirmed cases of pandemic influenza, and
- are considered to be at high risk of exposure to the pandemic influenza virus.

This may include:

- health professionals working in flu clinics or emergency departments
- a general practitioner who is a designated influenza service
- a general practitioner providing care in areas with no flu clinics.

See Part 1, Section C3.2 for more information on influenza services.

Private hospitals should confirm with their respective state or territory health authorities their role in pandemic plans and if they form part of the sanctioned health sector response.

Other government departments

Responsibility for providing PPE for non-health sector workers in general rests with the employer. There are some circumstances where PPE in the NMS may be issued to certain groups who may be at higher risk. Such groups include:

- International border control—a quantity of PPE from the NMS will be allocated to officers from the Australian Quarantine and Inspection Service, Australian Customs Service, Department of Immigration and Citizenship, and the Australian Federal Police working at the designated international airports and who will be in close contact with passengers from high-risk areas.
- Emergency workers—when there is widespread community transmission, appropriate PPE from the NMS may be issued to emergency workers such as police and fire brigade who encounter infectious people as part of their work. This would be a whole of government decision based on health advice.

Private businesses

Responsibility for providing PPE rests with the employer, and businesses should consider their need to stockpile equipment. Employers should carry out a risk assessment in the workplace as outlined in the section above.

Community

PPE will not be provided for general public use from the NMS or jurisdictional stockpiles. When there is widespread transmission of pandemic influenza in the community, health authorities may advocate use of surgical masks or some alternate covering of the nose and mouth by members of the public entering crowded areas. Advice will be provided at the time regarding appropriate alternatives (either homemade or commercially available). Again, the public should use these measures in combination with good hand hygiene, appropriate cough and sneeze etiquette and the principles of social distancing.

Appendix H: Antivirals

The pandemic planning assumptions, relevant to the use of antivirals, are outlined in Part 3. They include:

- Assumption Table 10: Treatment with Neuraminidase Inhibitor (NI) antivirals
- Assumption Table 11: Antiviral prophylaxis with Neuraminidase Inhibitor (NI) antivirals.

Summary of current antiviral policy

This plan describes a flexible policy for the use of antivirals. The detail of the high level policy described below may be modified at the time as evidence comes in about a range of factors, such as:

- the effectiveness of antivirals in preventing infection and treating cases (including any evidence of antiviral resistance)
- the effectiveness of candidate and customised pandemic vaccine
- the protection offered by natural infection
- the availability of resources
- the anticipated length of time until the customised pandemic vaccine will become available.

Antiviral usage

Antiviral usage includes:

- treatment of cases when clinically appropriate
- post-exposure prophylaxis to reduce the risk of infection in people who have not been able to avoid close unprotected contact with an infectious case, such as:
 - in health care and some other occupational settings
 - in households
 - in the community (e.g. workplace) in the CONTAIN phase.
- pre-exposure prophylaxis to reduce the likelihood of infection when:
 - persons are exposed to an aerosol generating procedure on a case
 - there is likely to be ongoing re-exposure to known infectious cases for example, in influenza services.

If MAINTENANCE phase is ever encountered, the policy on the use of antivirals may include the need to maintain functioning of critical infrastructure. This decision would be made at a whole of government level by the Australian Government in consultation with state and territory governments.

Depending on resource availability the Australian Government will consider reserving some stocks of antivirals for a possible second wave.

Antivirals that are mostly likely to be used for pandemic influenza

There are currently three antiviral medicines registered for influenza use in Australia. They are:

- Oseltamivir (brand name: Tamiflu) that is swallowed either as a capsule or suspension made up from dried powder. Oseltamivir is registered in Australia for both treatment and prevention of influenza in patients over the age of 12 months.
- Zanamivir (brand name: Relenza) that is given as an inhaled powder. It is registered in Australia for both treatment and prevention of influenza in patients aged five years or older.
- Amantadine (brand name: Symmetrel) that is given as a tablet. It is registered in Australia for influenza treatment by patients aged five years or older.

Oseltamivir and zanamivir (which are in the same class of drugs namely neuraminidase inhibitors) are thought to have relatively few side effects and are tolerated well. Amantadine has a number of side effects that make its use, particularly in older people, less well tolerated. However, as amantadine works through a different mechanism to oseltamivir and zanamivir, this drug has been stockpiled to allow its use if circumstances arise that may make this drug (either alone or in combination) the treatment of choice for certain individuals.

Delirium has been reported during oseltamivir administration in patients with influenza, predominately in children and adolescents. The contribution of oseltamivir to those events is unknown; however, patients with influenza should be closely monitored for signs of abnormal behaviours through the treatment period.

A number of other newer antiviral medications are currently undergoing clinical trials. Their development is being monitored.

Details of dosage and side effects can be found in the *Interim National Pandemic Influenza Clinical Guidelines (June 2006)* and *Primary Care Annex*. Information on adverse event reporting and monitoring of effectiveness is outlined in the *Surveillance Annex*.

Appendix I: Information gathering

International monitoring

Situation monitoring

Ongoing international monitoring is vital to understand what is happening globally and determine Australia's pandemic phase. The Department of Health and Ageing (DoHA) maintains an international surveillance system that gathers information from many sources. This system gathers information from the media, from Australian Embassies, other governments and Australian international disease experts. Linkage with monitoring undertaken by the WHO provides important information to this assessment.

International laboratory surveillance

Laboratory surveillance will play a very important public health role throughout the pandemic. The WHO Collaborating Centre for Reference and Research on Influenza (WHOCC) in Melbourne is one of four such WHO collaborating centres in the world and is part of the WHO Global Influenza Surveillance Network (GISN).

The GISN perform laboratory analysis of both seasonal and novel influenza strains collected from over 90 countries around the world. The WHOCC in Melbourne has a particular focus on influenza viruses in the Asia Pacific region, and it supports these countries with their early detection and laboratory analysis.

The Melbourne WHOCC works in collaboration with the WHO National Influenza Centres (NIC). Australia hosts three NICs:

- the Victorian Infectious Diseases Reference Laboratory (VIDRL) in Melbourne
- Institute of Clinical Pathology and Medical Research (ICPMR) in Sydney
- PathWest in Perth.

Australian surveillance system

Case monitoring

Public health units, general practitioners and hospital clinicians are all involved in detecting and reporting cases of seasonal influenza. The seasonal influenza system would be adjusted and enhanced from the DELAY phase onwards to ensure that pandemic influenza cases in Australia can be identified quickly so that a decision to move to CONTAIN can be made as soon as indicated.

Laboratory surveillance in Australia

Australia has one of the world's best networks of diagnostic laboratories, the Public Health Laboratory Network (PHLN). Infectious and dangerous viruses, like a pandemic-causing strain of influenza, can be handled safely by the major public health laboratories in the states and territories. These laboratories have specialist facilities that are secure and safe, as well as the resources to identify new virus strains.

Public and private pathology services refer positive influenza samples to jurisdictional public health laboratories (some of which are NICs) for typing. All laboratories provide samples of their influenza isolates to the WHOCC during an outbreak for detailed genetic and antigenic analysis to identify strains and determine changes in the viral genome.

In the early days of a pandemic, laboratory testing will be of critical importance to detect pandemic influenza as quickly as possible, provide a definitive laboratory confirmation of pandemic influenza for all cases and rapidly reassess the key assumptions that have been made about the behaviour of the virus.

During the SUSTAIN phase it may not be possible or necessary to have a laboratory confirmation of every case of pandemic influenza. It is likely that, for the majority of patients, the diagnosis will be clear on clinical grounds alone. Laboratory services will focus on reassessment of assumptions, monitoring any drift in the virus and assessing effectiveness of antivirals and vaccines.

During the CONTROL and RECOVERY phase definitive, laboratory testing would become important when declaration of freedom from disease may be needed. It would also be required to target action in certain areas, if pockets of infection remain towards the end of the CONTROL phase.

Further details of the role and methods for laboratory testing will be available in the *Surveillance Annex* and *Pathology Annex*.

Assessing current impact

Domestic surveillance systems will be supplemented by additional studies and analysis by public health experts. Information from these systems would be used to monitor the following areas of impact:

- health impact on morbidity (serious illness, complications) and mortality (death rate) in different groups and areas
- health system capacity that is, health system functioning and health workforce capacity
- critical resource usage including supplies in the National Medical Stockpile (NMS).

Assessing anticipated impact

Computer models are being developed to estimate the future impact. This modelling would be run throughout the pandemic to allow decision makers to respond not just to the here and now but also to what might happen in the future.

How effective have our actions been to date

A combination of the international and domestic surveillance systems will be used to provide information to decision makers on the effectiveness of actions taken. Special studies (for example, vaccine efficacy studies) may be required to supplement this information. Computer modelling may also be needed to help answer some specific questions.

What are the public and professional view(s) of the pandemic and the measures that are being taken

It will be very important that public and professional perceptions and concerns be taken into account when decisions about the control of the pandemic are being made. It may not always be possible to use all of the normal consultative mechanisms for involving public in decision-making. Special surveys of public and health professional views and perceptions will be undertaken to provide feedback to governments.

