



Australian Government
Department of Health and Ageing

AUSTRALIAN MANAGEMENT PLAN FOR

PANDEMIC INFLUENZA

JUNE 2005

AUSTRALIAN MANAGEMENT PLAN FOR PANDEMIC INFLUENZA

June 2005

The aim of this document is to provide a detailed guide for the Australian response to a pandemic influenza threat. This plan targets the wide range of people who will be involved in planning and responding to an influenza pandemic: health planners, public and clinical health care providers, border workers, state and territory health departments, essential service providers, and those involved in the media and communications.

Australian Government Department of Health and Ageing

June 2005

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Requests for copies and inquiries regarding the *Australian Management Plan for Pandemic Influenza June 2005* can be made to the following address:

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Biosecurity and Disease Control Branch
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Disclaimer

This is an interim plan which will evolve over time, as new information becomes available on the epidemiological and clinical characteristics of the disease. Readers are advised to visit the Department of Health and Ageing website www.health.gov.au to ensure that they have access to the most current and up to date version of the plan. While this document 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 most important action if a case, or suspected case, were to occur in Australia would be to seek expert 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.

Request for feedback

The *Australian Management Plan for Pandemic Influenza June 2005* is published as an interim version, in recognition of the threat posed by the H5N1 avian influenza outbreaks in Asia as of June 2005 and the need to refine the plan with stakeholder input, acknowledging that there are areas of the plan requiring further development. Submissions and comment on the interim plan are invited. These should be forwarded by 30 August 2005 to:

Pandemic Plan

Biosecurity and Disease Control Branch

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FOREWORD

The prospect of an influenza pandemic is real. It is impossible to predict when a pandemic might occur but it is certainly possible to be prepared. The Government has already put in place measures to ensure Australia is equipped to respond. Among them is a comprehensive guide for the people who will be involved in Australia's response to any outbreak. This Plan, as updated, is an important addition to our preparedness.



Since bird flu broke out in late 2003, a significant part of the Australian Government's health policy has focused on a response plan to a pandemic outbreak. The Government has provided \$156.8 million to ensure Australia is adequately prepared. The Government has funded measures such as the National Medicines Stockpile of antiviral drugs and protective equipment; the establishment of an independent World Health Organization Collaborating Centre on Influenza Reference and Research; and contracts with two of the largest vaccine manufacturers in the world to guarantee sufficient supplies of pandemic vaccine to protect all Australians.

Leading influenza experts across Australia have worked with the Department of Health and Ageing to develop this interim *Australian Management Plan for Pandemic Influenza June 2005* to build national preparedness and capacity for immediate and effective response to any pandemic alert.

The plan centres on the core strategies of containment and maintenance of essential services. This means that, in the early stages, efforts will be concentrated on containing the pandemic to 'buy time' to enable vaccine manufacturers to produce the pandemic influenza vaccine. At best estimates, it will be at least 3 months before a vaccine can be safely given.

If the pandemic becomes widespread, efforts will concentrate on maintaining essential services and, in particular, keeping health services functioning until a pandemic vaccine becomes available.

It is important that the Australian community has confidence in the decision making processes at all stages. The publication of this interim *Australian Management Plan for Pandemic Influenza June 2005* provides a timely opportunity for stakeholders to consider these issues and to contribute to Australia's capacity to respond in the event of a pandemic threat.

While the World Health Organization has said that Australia is as well prepared as any other country to respond to a pandemic flu, this guide will further strengthen our preparedness.

Feedback on the interim plan will help shape the next version of the plan, due to be finalised in the second half of this year.

A handwritten signature in black ink, appearing to read 'Tony Abbott'. The signature is fluid and cursive, with a long horizontal line extending from the top left.

The Hon Tony Abbott MHR
Minister for Health and Ageing
June 2005

SECTION 1: INTRODUCTION

Introduction

An influenza pandemic (or global epidemic) occurs when a new influenza virus subtype to which no-one is immune emerges, is easily spread between humans and is capable of causing severe disease in humans¹. In the absence of immunity, the new subtype can rapidly spread across the globe, causing worldwide epidemics or 'pandemics' with high numbers of cases and deaths.

Aim and objectives of the plan

The aim of this document is to provide a detailed guide for the Australian response to a pandemic influenza threat.

This plan targets the wide range of people who will be involved in planning and responding to an influenza pandemic: health planners, public and clinical health care providers, state and territory health departments, essential service providers, border workers and those involved in the media and communications. As such, it is intended to provide national guidance for key stakeholders in developing and operationalising responses across the public and private sectors at all levels to ensure Australia is optimally prepared and has the capacity to respond to a pandemic threat.

The *Australian Management Plan for Pandemic Influenza June 2005* (AMPPI) is designed to be used at all times from preparedness to pandemic phases, as preparedness is essential for responding to a pandemic event. Therefore, there are actions that can be taken at all phases in the plan. The phases in the plan are consistent with the revised World Health Organization pandemic plan 2005. If necessary, depending upon an assessment of risk to Australia, phases may be declared either before or after the WHO.

The objectives of this plan are to:

- ensure adequate surveillance is in place to detect an emerging threat from the outset
- adequately prepare Australia to enable the smooth and timely implementation of the specific activities required in the various phases of pandemic planning
- ensure rapid characterisation of a new virus subtype and early detection, notification and response
- delay entry of a pandemic virus into Australia
- limit pandemic spread through early containment measures to buy time to implement preparedness measures, including vaccine development
- limit morbidity and mortality arising from infection with a pandemic strain
- ensure maintenance of essential services during a pandemic
- provide the public, health care workers, the media and other service providers with up to date, authoritative and readily available information at all stages
- reduce the stress on the health system and other industries as a result of a pandemic through early identification of additional resources required and implementation of public health and social measures aimed at slowing spread of the virus through the community.

¹WHO Checklist for Influenza Pandemic Preparedness Planning 2005
http://www.who.int/csr/resources/publications/influenza/en/CDS_CSR_GIP_2005_4.pdf

Planning in a rapidly changing environment

The recent risk to human health posed by the avian influenza outbreaks, the increased availability of antiviral medications and the need for more detailed information for the states and territories have led to the development of the *Australian Management Plan for Pandemic Influenza June 2005* (AMPPI) by the Department of Health and Ageing and the National Influenza Pandemic Action Committee (NIPAC) in a relatively short timeframe.

The AMPPI is published as an interim plan in the interests of disseminating a document for stakeholder comment against an increasing pandemic threat, while recognising that there are areas of the plan still requiring further development. As such, the AMPPI is a living document which will be revised in the second half of 2005, in light of further work currently being undertaken by the Australian and state and territory governments and the stakeholder input received from a comprehensive consultation strategy planned over the June – August 2005 period.

Australia's approach to pandemic response

Two major strategies will be used in Australia to respond to a pandemic threat. The aim of the strategies is to minimise the morbidity and mortality associated with the pandemic event. The two major strategies are:

1. Containment: this refers to preventing transmission and spread by border control measures, isolation of the sick, quarantine of contacts and judicious use of antiviral medication.
2. Maintenance of essential services: if there is explosive spread within the general population, containment may not be possible. The strategy will shift to an emphasis on the maintenance of essential services.

The shift from a containment strategy to maintenance of essential services will be determined by the Chief Medical Officer of Australia (CMO) in conjunction with an expert advisory group.

The anticipated events that may cause consideration of the move from containment to maintenance of essential services are:

- first reports of explosive spread and sustained transmission in the general population in Australia (Aus 6a-d);
OR
- pandemic occurrence overseas (Overseas 6) AND clusters with significant pandemic risk in Australia (Aus 5).

However, the exact timing will depend upon consideration of the *Criteria for decisions including determining phases* (see below).

If explosive spread and sustained transmission is occurring within a region that can be isolated, a decision may be made to change strategy to maintaining essential services within that region, whilst continuing the containment strategy in the rest of Australia. This would occur if evidence provided by the expert advisory group to the CMO and agreed by the Inter-Departmental Taskforce (IDTF), indicated that the key objective was to contain the clusters that were occurring in other regions and thus minimise spread across Australia.

Acknowledgements

The *Australian Management Plan for Pandemic Influenza June 2005* brings together contributions from eminent experts in pandemic influenza, both in Australia and worldwide. In particular, the members of NIPAC and the Communicable Diseases Network Australia Jurisdictional Executive Group (CDNA JEG), and staff in the Biosecurity and Disease Control Branch of the Department of Health and Ageing (DoHA). The assistance of the DoHA Library in conducting literature searches and in the provision of reference materials is also acknowledged. A list of contributors can be found at section 6. The plan has also drawn on pandemic influenza plans developed internationally – namely, the WHO², US³, Canadian⁴ and UK⁵ pandemic plans – which have provided a valuable reference point and additional information.

² http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5/en/

³ <http://www.hhs.gov/nvpo/pandemicplan/>

⁴ <http://www.phac-aspc.gc.ca/cpip-pclcpi/index.html>

⁵ http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4104861&chk=KLLK6/h

Abbreviations and acronyms used in pandemic influenza response operations

ACS	Australian Customs Service
ADF	Australian Defence Forces
ADGP	Australian Divisions of General Practice
ADRAC	Adverse Drug Reactions Advisory Committee
AHDMPC	Australian Health Disaster Management Policy Committee
AHMAC	Australian Health Ministers' Advisory Council
AEMC	Australian Emergency Management Committee
AMA	Australian Medical Association
AMPPI	Australian Management Plan for Pandemic Influenza
AQIS	Australian Quarantine and Inspection Service
ASPREN	Australian Sentinel Practice Research Network
AusAID	Australian Agency for International Development
CBER	Center for Biologics Evaluation and Research
CCEAD	Consultative Committee on Emergency Animal Disease
CDNA	Communicable Diseases Network Australia
CHF	Consumers' Health Forum of Australia
CHO	Chief Health Officer
CMO	Chief Medical Officer of Australia
COAG	Council of Australian Governments
CQO	Chief Quarantine Officer
DAFF	Department of Agriculture, Fisheries and Forestry
DBPU	Dead bird pick-up
DEST	Department of Education, Science and Training
DFAT	Department of Foreign Affairs and Trade
DHQ	Director of Human Quarantine
DIMIA	Department of Immigration and Multicultural and Indigenous Affairs
DITR	Department of Industry, Tourism and Resources
DOFA	Department of Finance and Administration
DoHA	Department of Health and Ageing
DOTARS	Department of Transport and Regional Services
EAG	Expert advisory group
ED	Emergency Department
EMA	Emergency Management Australia

FACS	Department of Family and Community Services
FAO	Food and Agriculture Organisation of the United Nations
FECCA	Federation of Ethnic Communities' Councils of Australia
FSANZ	Food Standards Australia New Zealand
HAI	Haemagglutinin inhibition
HCW	Health care worker
HPAI	Highly pathogenic avian influenza
HPAIH	Highly Pathogenic Avian influenza in Humans
ICU	Intensive care unit
IDC	Inter-Departmental Committee
IDTF	Inter-Departmental Taskforce
IFA	Immunofluorescent antigen detection
IPPC	Influenza Pandemic Planning Committee (sub-committee of CDNA)
ILI	Influenza-like illness
NACCHO	National Aboriginal Community Controlled Health Organisation
NAD	Nucleic acid detection
NEMRN	National Emergency Media Response Network
NHMRC	National Health and Medical Research Council
NHSQL	National High Security Quarantine Laboratory
NIBSC	National Institute for Biological Standards and Control
NIC	National Influenza Centres
NIID	National Institute of Infectious Diseases
NIR	National Incident Room
NIPAC	National Influenza Pandemic Action Committee
NMS	National Medicines Stockpile
NNDSS	National Notifiable Diseases Surveillance System
NPA	Naso-pharyngeal aspirate
NPHP	National Public Health Partnership
NT	Neutralisation titres
OCRS	Outbreak case reporting system
OIE	World Organisation for Animal Health
PCR	Polymerase chain reaction
PHD	Population Health Division
PHLN	Public Health Laboratory Network
PM	Prime Minister
PM & C	Department of the Prime Minister and Cabinet

PPE	Personal protective equipment
RACP	Royal Australasian College of Physicians
RACGP	Royal Australian College of General Practitioners
RDAA	Rural Doctors Association of Australia
S/T	State/territory
TGA	Therapeutic Goods Administration
TGAL	Therapeutic Goods Administration Laboratories
Treasury	Department of the Treasury
VIDRL	Victorian Infectious Diseases Reference Laboratory
WHO	World Health Organization
WHOCC	World Health Organization Collaborating Centre for Reference and Research on Influenza

Phases in the plan

The following phases are consistent with the WHO Pandemic Plan 2005.

Table 1: Table of phases

Period	Global phase	Australian Phase	Description of phase	Main strategy	
Inter-pandemic		Aus 0	No circulating animal influenza subtypes in Australia that have caused human disease.	Containment	
	1	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.		
	2	Overseas 2	Animal infection overseas: substantial risk of human disease.		
		Aus 2	Animal infection in Australia: substantial risk of human disease.		
	Pandemic alert	3	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.
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.		
4		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.		
		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.		
5		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).		
		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).		
Pandemic		6	Overseas 6	Pandemic overseas- not in Australia: increased and sustained transmission in general population.	Maintain essential services
			Aus 6a	Pandemic in Australia: localised (one area of country).	
	Aus 6b		Pandemic in Australia: widespread.		
	Aus 6c		Pandemic in Australia: subsided.		
	Aus 6d		Pandemic in Australia: next wave.		

Two phases may be referred to simultaneously, for example, one phase for what is occurring overseas and one phase for Australia. The phases are intended to guide actions rather than be a strict categorisation of the events.

Description of Australian phases

Interpandemic period

Phase Aus 0: No new⁶ influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is not present in animals in Australia.

Rationale: Influenza subtypes that have caused human infection and/or disease may not always be present in wild birds or other animal species in Australia. The WHO global phases do not include a Phase 0 because globally, it is likely that influenza sub-types that have caused human infection and/or disease will always be present in wild birds or other animal species, but this is not the case in Australia. Lack of recognised animal or human infections does not mean that no action is needed. Preparedness requires planning and action in advance.

Phase Overseas 1: No new influenza subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is present in animals overseas. The risk of human infection or disease is considered to be low⁷.

Phase Aus 1: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is present in animals in Australia. The risk of human infection or disease is considered to be low.

Rationale: Although the risk of human infection or disease is considered low, there are actions that differentiate this phase from Phase Aus 0. (For example, enhanced surveillance in animals).

Phase Overseas 2: No new influenza virus subtypes have been detected in humans. However, the presence of a circulating animal influenza virus subtype overseas poses a substantial risk of human disease.

Phase Aus 2: No new influenza virus subtypes have been detected in humans. However, the presence of a circulating animal influenza virus subtype in Australia poses a substantial risk of human disease.

Rationale: Presence of animal infection caused by a virus of known human pathogenicity may pose a substantial risk to human health and justify public health measures to protect persons at risk.

Pandemic alert period

Phase Overseas 3: Human infections(s) with a new subtype overseas, but no

⁶ WHO defines a new subtype as one which has not been circulated in humans for at least several decades and to which the great majority of the human population therefore lacks immunity.

⁷ The new WHO phases states that the distinction between *phase 1* and *phase 2* is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localised and/or other scientific parameters.

human to human spread, or at most rare instances of spread to close contact⁸.

Phase Aus 3: Human infection(s) with a new subtype in Australia, but no human to human spread, or at most rare instances of spread to a close contact.

Rationale: The occurrence of cases of human disease increases the chance that the virus may adapt or re-assort to become transmissible from human to human, especially if coinciding with a seasonal outbreak of influenza. Measures are needed to detect and prevent spread of disease. Rare instances of transmission to a close contact- for example, in a household or health care setting may occur, but do not alter the main attribute of this phase, ie that the virus is essentially not transmissible from human to human.

Examples:

1. One or more unlinked human cases with a clear history of exposure to an animal source/ non-human source (with laboratory confirmation in a WHO Collaborating Centre).
2. Rare instances of spread from a case to close household or unprotected healthcare contacts without evidence of sustained human to human transmission.
3. One or more small independent clusters⁹ of human cases (such as family members) who may have acquired infection from a common source or the environment but for whom human to human transmission cannot be excluded.
4. Persons whose source of exposure cannot be determined, but are not associated with clusters or outbreaks of human cases.

Phase Overseas 4: Small cluster(s) consistent with limited human to human transmission overseas but spread is highly localised, suggesting the virus is not well adapted to humans.

Phase Aus 4: Small cluster(s) consistent with limited human to human transmission in Australia but spread is highly localised, suggesting the virus is not well adapted to humans.

Rationale: Virus has increased human to human transmissibility but is not well adapted to humans and remains highly localised, so that its spread may possibly be delayed or contained.

⁸ The WHO states that the distinction between *phase 3*, *phase 4* and *phase 5* is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains (if derived from an animal strain), and/or other scientific parameters.

⁹ An unusual cluster of cases or deaths from influenza- like illnesses can be defined as a group of cases (suspected and/or confirmed) of individuals with disease onset within a period of two weeks in a same defined geographical area, presenting with similar clinical features including respiratory symptoms, and for which the epidemiological pattern or clinical features do not correspond to usual observation in cases of infection with seasonal influenza. The unusual observations may include: (i) unusual distribution by age group; (ii) severity of illness in adults in the absence of chronic disease; (iii) disease affecting special risk groups such as individuals exposed to potentially infectious live or dead animals, or health care workers.

Examples:

1. One or more clusters involving a small number of human cases, eg a cluster of < 25 cases with the cluster lasting <2 weeks.
2. Appearance of a small number of human cases in one or several geographically-linked areas without a clear history of a non-human source of exposure, for which the most likely explanation is considered to be human to human transmission.

Phase Overseas 5: Larger cluster(s) but human to human spread still localised overseas, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk)⁵.

Phase Aus 5: Larger cluster(s) but human to human spread still localised in Australia, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

Rationale: The virus is more adapted to humans, and therefore more easily transmissible among humans. It spreads in larger clusters, but spread is localised. This is likely to be the last chance for massive coordinated global intervention, targeted to one or more foci, to delay or contain spread. In view of possible delays in documenting spread of infection during Phase 4, it is anticipated that there would be a low threshold for progress to Phase 5.

Examples:

1. Ongoing cluster-related transmission but total number of cases is not rapidly increasing, eg a cluster of 25-50 cases with the cluster lasting from 2-4 weeks.
2. Ongoing transmission but cases appear to be localized (remote village, university, military base, island).
3. In a community known to have a cluster, appearance of a small number of cases whose source of exposure is not readily apparent (eg beginning of more extensive spread).
4. Appearance of clusters caused by same or closely related virus strains in one or more geographic areas without rapidly increasing numbers of cases.

Pandemic period

Phase Overseas 6: Increased and sustained transmission in the general population overseas.

Rationale: Major change in global surveillance and response strategy, since pandemic risk is imminent for all countries. The national response is determined primarily by the disease impact within the country.

Phase Aus 6a: Increased and sustained transmission in the general population in Australia, but cases are still localised to one area of the country.

Phase Aus 6b: Increased and sustained transmission in the general population in Australia and cases are occurring in multiple regions of the country.

Phase Aus 6c: Increased and sustained transmission in the general population in Australia but the number of cases is subsiding.

Phase Aus 6d: The next wave of the pandemic has reached Australia indicated by an increase again in the number of cases.

Rationale: Although a pandemic has been declared, because Australia is not as densely populated as other countries, there still exists the opportunity to try to contain the spread of the pandemic in the later phases.

Post-pandemic period

A return to the inter-pandemic period (the expected levels of disease with a seasonal strain) follows, with regularly updated planning. An intensive phase of recovery and evaluation may be required.

Determination of phases

Designation of global phases, including decisions on upscaling and downscaling, will be made by the Director-General of the WHO. The designation will be made in harmony with the International Health Regulations governing human disease reporting and control and in consultation with other organisations and institutions, as necessary.

The Australian phases will be designated by national authorities as outlined in *Decision making processes, including pandemic phase declaration* below.

Criteria for decisions including determining phases

Determining phases is a decision involving careful consideration of a number of factors, with the final decision requiring judgement on the part of the decision makers involved. In Australia, this responsibility falls to the CMO with advice from an expert advisory group. In making key decisions, including declaring the phases, the following information will be considered:

Animal phases:

- severity of illness in animal and humans
- occurrence in wildlife, livestock and domestic animals
- geographic localization
- speed of spread
- evidence of molecular change (genetic mutation).

Human phases:

- rate of spread
- geographic localisation
- severity of illness in humans
- control capacity (progress in pandemic vaccine development, impact of public health interventions, depletion of National Medicines Stockpile (NMS))
- evidence of molecular change.

Criteria for downscaling phases

With every announcement of a new phase, the WHO and Australia will set a time period at which the designation will be reviewed. In consideration of downscaling, the following criteria will be used:

1. Lack of ongoing disease activity meeting the criteria for the current phase.
2. Adequate national surveillance and international reporting as assessed by the WHO and, for issues relating to infection in animals, in partnership with other organisations such as the Food and Agriculture Organisation of the United Nations (FAO) and the World Organisation for Animal Health (OIE).
3. Adequate, if necessary on-site, risk assessment by the WHO, in partnership with affected countries, and, for issues relating to infection in animals, in partnership with other agricultural organisations such as FAO and OIE.
4. A risk assessment considering the factors that led to designation of the phase, as well as potential other factors. For example, if an influenza illness season is in progress in the region, downscaling might be delayed because of the increased risk that new strains might reassort with seasonal strains, and that

surveillance to detect new strains co-circulating with seasonal strains might be more difficult.

Summary of roles and responsibilities

Clear roles, responsibilities and paths of communication are essential for an effective response to a pandemic influenza event. The state and territory health authorities are responsible for disease control. Although other government agencies may play a lead role in the IDTF, the DoHA will assist in overseeing the national response and will coordinate the supply and distribution of agents, such as antivirals from the NMS and a pandemic vaccine when available. (See also section 4: *Response actions*)

Decision making processes, including pandemic phase declaration

Unless already determined and announced by the WHO, each phase will be determined by the CMO, in conjunction with an expert advisory group drawn from:

- NIPAC
- CDNA JEG
- DoHA.

The process for determining pandemic phases is as follows:

1. Monitoring of international and national events by epidemiologists from the National Incident Room (NIR).
2. Based on NIR monitoring, DoHA staff will consider convening the CMO's expert advisory group. Members of the expert advisory group can also request convening of the group.
3. The expert group will determine the recommended phase.
4. The expert group will then advise the CMO.
5. The CMO will brief the Deputy Secretary and the Secretary of the DoHA about the evidence for, and impact of, a change in phase.
6. The Secretary of the DoHA/CMO will advise the Minister for Health and Ageing. The Minister will inform the Prime Minister (PM).
7. At a change in phase, the CMO will inform the Chief Health Officer (CHO) of each jurisdiction and the Deputy Secretary will convene the Australian Health Disaster Management Policy Committee (AHDMP).
8. Depending upon the change in phase and the recommendation of AHDMP, an IDTF will be convened by DoHA. DoHA will plan to lead the IDTF, at least up to Phase Aus 5. The Government will decide on governance arrangements in a significant domestic pandemic with regard to its seriousness and impact on social functioning and the economy.

Other technical advice will be provided by the CDNA, NIPAC (and DoHA). Generally, the IDTF will be responsible for national pandemic influenza decisions other than those for which the CMO is responsible. The AHDMP will be responsible for advice to state and territory governments regarding jurisdictional action. Ongoing communication processes will be in place to ensure information flows between CDNA, NIPAC, AHDMP and the IDTF.

Prior to formation of an IDTF, when decisions require the input of different agencies,

the CMO's expert advisory group and the AHDMPC will advise an Inter-departmental Committee (IDC).

For decisions requiring application of quarantine powers under the *Quarantine Act 1908* the CMO, as Director of Human Quarantine, may make the final decisions following consultation with relevant agencies and states and territories.

Roles of committees and agencies involved in pandemic response

Australian Government Inter- Departmental Taskforce/Committee

- Coordinates Australian Government response and assessment.
- Recommends actions to the Australian Government.
- The IDC consists of representatives from Australian Government agencies including:
 - Australian Quarantine and Inspection Service (AQIS)
 - Australian Agency for International Development (AusAID)
 - Australian Customs Service (ACS)
 - Department of Agriculture, Fisheries and Forestry (DAFF)
 - Department of Education, Science and Training (DEST)
 - Department of Foreign Affairs and Trade (DFAT)
 - Department of Industry, Tourism and Resources (DITR)
 - DoHA
 - Department of Immigration and Multicultural and Indigenous Affairs (DIMIA)
 - Department of Finance and Administration (DOFA)
 - Department of Transport and Regional Services (DOTARS)
 - Department of Family and Community Services (FACS)
 - Department of the Prime Minister and Cabinet (PM & C)
 - Department of the Treasury (Treasury).

CMO's expert advisory group

- Provides medical, scientific and epidemiological advice to the CMO relating to determination of pandemic influenza phases.

Australian Health Disaster Management Policy Committee (AHDMPC)

- Provides advice to the states and territories regarding recommended jurisdictional actions such as closure of schools, designation of influenza only hospitals and curtailing of mass gatherings.
- Advises the IDTF through DoHA on jurisdictional issues.
- Coordinates the state/territory response to pandemic influenza. (Investigation and some response activities, such as contact tracing and individual quarantine and isolation will be coordinated by the CDNA JEG.)

National Influenza Pandemic Action Committee (NIPAC)

- Provides scientific and clinical advice on pandemic influenza preparedness and response.

Communicable Diseases Network Australia

- Provides communicable disease control and epidemiological advice to assist the CMO, IDTF and AHDMPC.
- Establishes methods for national surveillance of cases and contacts, including case definitions.

- Assists DoHA in developing public health protocols and guidelines as the need arises.
- Provides an operational resource for the investigation and control of outbreaks of pandemic influenza in Australia.

Public Health Laboratory Network (PHLN)

- Advises on diagnostic capability.
- Assists in evaluation of screening tests and development of diagnostic tests.
- Provides input into surveillance and response.

State and territory governments

Pandemic influenza is an issue with international and national significance. Accordingly, the response will be initiated nationally by the IDC/IDTF with direction to the jurisdictions provided through AHMAC (Australian Health Ministers' Advisory Council), AHDMPC CHOs, CDNA and NIPAC.

The states and territories will implement many of the decisions made in national coordination. The way in which state and territory plans fit with the national plan will need to be reviewed following publication of the national plan. State and territory pandemic influenza response plans are giving consideration to:

- Provision of health care services
 - establishment of fever clinics for assessment of suspected cases of pandemic influenza
 - designated influenza hospitals or care centres to reduce spread of infection across the health system
 - operational plans for hospitals to meet increased demands and reduced workforce capacity
 - implementation of infection control measures in health care facilities to reduce pandemic spread
 - dissemination of educational materials including infection control information for households.
- Quarantine functions
 - planning for establishment of appropriate quarantine facilities
 - consideration of how and where social distancing measures might be instituted – such as closure of schools and limiting mass gatherings.
- Adequate laboratory resources and surge capacity to ensure that diagnosis of cases can be made rapidly in the early phases with the aim of reducing spread.
- Management of antivirals and other supplies to ensure rapid deployment to priority groups
 - processes for requesting resources from the NMS if required
 - NMS distribution plans
 - security at relevant facilities (eg vaccine and antiviral facilities)
 - arrangement for management/distribution of existing jurisdictional supplies of antivirals, personal protective equipment (PPE) and other medical equipment.
- Antivirals and vaccine registers
 - maintenance of a register of vaccinated health care and emergency service workers and those receiving antivirals
 - maintenance of a register of border personnel employees who are vaccinated or have been provided with antivirals by states and territories.
- Surveillance with data collection and data transfer to national collection to assist with rapid detection and epidemiological analysis.

- Establishment of pandemic influenza vaccination centres to achieve maximal vaccination numbers as soon as possible.
- Media liaison and public communication, as an adjunct to NEMRN to ensure effective communication to all sectors of the community.

Department of Health and Ageing

- Prior to activation of the IDTF, coordination of the Australian Government response and assessment through the avian influenza IDC.
- Lead IDTF once established.
- Provide advice to the Australian Government.
- Communicate with the states and territories through the AHMAC, AHDMPC CHOs, CDNA and NIPAC.

Specific pandemic influenza response and management at the Australian Government level will include:

- assistance to jurisdictions in coordinating their responses
- rationing of NMS goods and pandemic vaccines and distribution to the jurisdictions, according to the criteria outlined at the different phases
- through CDNA and NIPAC, establishment of methods for national surveillance of cases and contacts and provision of an outbreak management program to the jurisdictions
- national situation reports
- communication of the national status of an outbreak to the media and the general public, and to the international community through the WHO
- coordinating AHDMPC and CMO's expert advisory group
- communication with national clinical and other stakeholder groups
- activation of powers under the Quarantine Act as required
- advising on social strategies to minimise disruption and impact on communities.

SECTION 2: BACKGROUND

Background on influenza and pandemic influenza^{10,11,12,13}

Influenza

Influenza is a highly contagious viral disease of the respiratory tract. It derives its public health significance from the rapidity by which epidemics evolve and spread amongst the community, and associated widespread morbidity and serious complications such as viral or bacterial pneumonia which may be fatal.

The influenza virus contains two surface proteins, haemagglutinin (H) and neuraminidase (N), which are involved in the infection of the host and production of new virus. The H protein is involved in attaching the virus to the cells it infects, while the N protein assists the virus in detaching from the cell in which it is produced. For influenza A, 16 distinct forms of H have been identified (designated H1 to H16) and 9 distinct forms of the N (designated N1 to N9). For the influenza B virus, only one H and one N have been identified.

Epidemics of influenza

The influenza virus has very high mutation rates and the surface antigens are prone to variation. Small mutations give rise to 'antigenic drift' which results in the emergence of new strains of influenza A and B. Essentially this involves small changes to the viruses that are already circulating around the world. Every year, this process results in widespread epidemics, usually between late autumn and early spring. During these seasonal epidemics, attack rates usually depend upon age, reflecting whether the person has been exposed to the circulating strain before.

Pandemic influenza

Pandemic influenza involves significant genetic variation ('antigenic shift') in the influenza A virus resulting in a new virus subtype. The surface proteins are not modified but replaced by significantly different proteins. When antigenic shift occurs, the entire community is usually immunologically naïve because a whole new virus subtype is circulating. For example, in 1957 a new influenza A subtype designated H2N2 replaced the H1N1 subtype that had been in the human population for almost four decades. To date, only influenza A viruses have been known to cause pandemics.

Factors that influence the likelihood of a pandemic include: the emergence of a new viral subtype; the capacity for the virus to spread efficiently from person to person; and being virulent enough to cause disease. It is not possible to predict when the next pandemic will occur or how long it will last. It is over 35 years since the last pandemic.

¹⁰ Australian Action Plan for Pandemic Influenza (2003)

¹¹ A Framework for an Australian Influenza Pandemic Plan Version 1, June 1 1999

¹² Avian influenza: assessing the pandemic threat. *World Health Organization*. January 2005

¹³ Yohannes K, Roche P, Hampson A, Miller M, Spencer J. Annual Report of the National Influenza Surveillance Scheme, 2003. *Communicable Diseases Intelligence* 2004; 28(2); 160-168

Avian influenza

Avian influenza is an infectious disease of birds caused by the influenza A virus. Although some species are more resistant to infection than others, all birds are believed to be susceptible to avian influenza viruses. Infection can cause a wide variety of symptoms in birds, from mild illness to a rapidly fatal disease resulting in severe epidemics. The latter is known as 'highly pathogenic avian influenza'. Sixteen subtypes of influenza virus are known to infect birds, but to date, all outbreaks of the highly pathogenic form have been caused by the subtypes H5 and H7.

The natural reservoir of avian influenza viruses are migratory waterfowl, most notably wild ducks, and these birds are also the most resistant to disease. Domestic poultry, including chickens and turkeys, are particularly susceptible. Domestic flocks coming into contact with wild migratory waterfowl have been implicated as a frequent cause of outbreaks and live bird markets have also played a significant role in the spread of epidemics.

Usually avian influenza viruses do not cause disease in species other than birds and pigs. In Hong Kong in 1997, the first documented infection of humans with an avian influenza virus occurred. Infection with the H5N1 strain caused severe respiratory disease in 18 humans, of whom 6 died. This coincided with an epidemic of highly pathogenic avian influenza, caused by the same strain in poultry in Hong Kong.

It was determined that close contact with live infected poultry was responsible for human infection. Genetic studies showed that the virus had jumped directly from birds to humans. The rapid destruction of Hong Kong's entire poultry population was thought to have reduced further opportunities for direct transmission to humans, and may have averted a pandemic.

These events in 1997 marked the first time that an avian influenza virus was transmitted directly to humans and caused severe disease with high mortality. In February 2003, another outbreak of H5N1 avian influenza in Hong Kong occurred, causing 2 cases and 1 death in members of a family who had recently travelled to southern China.

Recently, two other avian influenza viruses have caused illness in humans. An outbreak of the highly pathogenic H7N7 avian influenza strain, which began in the Netherlands in February 2003, caused mild illness in 83 humans and the death of 1 veterinarian. Mild cases of avian influenza H9N2 (which is not highly pathogenic in birds) in children occurred in Hong Kong in 1999 (two cases) and in mid-December 2003 (one case).

The most recent cause for concern occurred in December 2003/January 2004, when laboratory tests confirmed the presence of H5N1 avian influenza virus in human cases of severe respiratory disease in Viet Nam. Since then there have been three waves of disease, affecting multiple countries in Asia. As of February 2005, 55 human cases had been reported to the WHO and 42 deaths attributed to the virus. Fortunately, none of the avian influenza viruses have developed the ability to spread easily from person to person, which is a prerequisite for a pandemic

Likely impact of an influenza pandemic in Australia

Lessons from previous pandemics¹⁴

Not knowing which influenza virus strain is going to cause the next pandemic makes planning for it very challenging. The likely impact of a pandemic depends upon characteristics of the virus such as its infectivity, attack rates in different ages (ie the proportion of the population infected for each age group) and the severity of disease it causes. A description of the three pandemics of the 20th century demonstrates the variation in mortality, severity of illness and patterns of spread that can occur.

Consistent features of pandemics include sudden increases in morbidity and mortality, with rapid spread around the world (due to being caused by a highly contagious virus to which the population has little immunity). Pandemics usually spread to all parts of the globe within less than a year and affect more than a quarter of the total population. The ability of health and emergency systems to respond can be overwhelmed by the rapid increase in illness in the community. There is a tendency for pandemics to recur in second and sometimes third waves, which may begin simultaneously in different parts of the world.

Spanish influenza, 1918-1919

The influenza pandemic of 1918-1919, caused by the H1N1 subtype was unprecedented in terms of loss of human life. The illness was notorious for its rapid onset and progression to respiratory failure and death. It is estimated that between 20 and 40 million people died worldwide, with the highest number of deaths in young and healthy persons in the age range of 15 to 35 years. Approximately 25% of the population in the United Kingdom and United States developed illness. It was first notified in Australia in Victoria in 1919 and then New South Wales, where hospitalisation rates in Sydney for influenza increased exponentially. The virus retained its preference for the young and healthy in Australia, with 60% of deaths occurring in those aged 20 to 45 years. By the end of 1919, some 11,500 Australians had died.

Asian influenza, 1957-1958

This pandemic was caused by a milder virus than the pandemic of 1918-1919, and the world was better prepared. In 1957 a new H2N2 subtype was reported in Singapore to the WHO. The virus had spread throughout the world by May 1958. Rates of infection were reported to be 20 to 70%, including an estimated 10 to 20% subclinical rate (ie infected but asymptomatic). Overall case fatality rates were low, ranging from 1 in 2,000 to 1 in 10,000 infections. Mortality patterns more characteristic of seasonal influenza infections were seen, with excess deaths confined to infants and the elderly. The first wave was concentrated in school aged children and the second wave in the elderly, with an associated higher mortality in the second wave. Quarantine measures were not implemented in Australia during this pandemic as the virus had already been seeded widely over a short period of time. A WHO expert panel found that spread within some countries followed mass gatherings, such as conferences and festivals.

Hong Kong influenza, 1968-9

In July 1968 a new subtype, H3N2, emerged in Hong Kong, and caused a pandemic

¹⁴ Avian influenza: assessing the pandemic threat. *World Health Organization*. January 2005

that was milder than previously. In most countries, disease was less severe with a low mortality rate and spread was slow. The relative mildness of this pandemic is thought by some to be due to the genetic similarity between the H3N2 virus and the H2N2 virus, resulting in some segments of the population possibly having partial protection either against infection or severe disease. In Australia, mortality rates were similar to those caused by the Asian influenza virus and were greatest in those over the age of 65 years.

Estimates of morbidity and mortality in Australia

If a pandemic with an attack rate of 25% (ie 25% of the population affected) were to occur again in Australia and there was no pandemic vaccine or treatment available, over a 6-8 week period it could lead to:

- 13,000-44,000 deaths
- 57,900-148,000 hospitalisations
- 2,600,000-7,500,000 outpatient visits¹⁵.

The figures are estimates only and the likely outcomes associated with a pandemic will depend upon many factors such as the transmissibility and virulence of the virus, and the availability and success of health and social interventions.

In the absence of actual data on the potential pandemic virus, mathematical modelling, whereby various assumptions about the virus are included in a theoretical model to test various research questions and proposed strategies (such as school closures and quarantine measures), can provide a useful pandemic planning tool. Work is underway through NIPAC to examine the role of modelling in informing the national plan.

Legal powers: *Quarantine Act 1908*

Introduction

The objectives of quarantine activities in Australia are to ensure that, as far as possible, diseases of human quarantine concern do not enter the country, and to control and eradicate these diseases if they are identified in Australia.

The Australian Government has responsibility for quarantine under the Australian Constitution. Responsibility for human quarantine is exercised by the Minister for Health and Ageing through the *Quarantine Act 1908* (the Act). The Minister is able to delegate to the Director of Human Quarantine (DHQ), who is the Australian Government CMO. Responsibility for plant and animal quarantine is exercised by the Minister for the DAFF, also through the Act.

The human diseases that are currently subject to quarantine controls in Australia are cholera, plague, rabies, smallpox, SARS, Highly Pathogenic Avian Influenza in Humans (HPAIH), viral haemorrhagic fever and yellow fever.

The management of human quarantine is undertaken by the DoHA, AQIS, and state/territory health authorities.

¹⁵ These projections have used the FluAid Meltzer model (now FluAid 2.0) developed by the Centers for Disease Control and Prevention (CDC) <http://www.cdc.gov/od/nvpo/pandemics/>.

Quarantine powers in relation to pandemic influenza

H5N1 was declared a quarantinable disease on 23 March 2004 and consequently became subject to the routine quarantine powers available under the *Quarantine Act 1908*.

Roles and responsibilities in relation to human quarantine

The DoHA has primary responsibility for human quarantine activities in Australia. The purpose of these activities is to allow for the identification, surveillance and management of persons who have been potentially exposed to, or have symptoms of, a quarantinable disease.

The DHQ (CMO) has overall responsibility for human quarantine policy. The CMO has available to him the powers of the Act and is responsible for providing directions to the Chief Quarantine Officers (CQO) for human quarantine. (The CQOs are senior public health medical officers employed by state and territory health authorities.) For decisions requiring application of quarantine powers under the *Quarantine Act 1908* the CMO, as DHQ, may make the final decisions following consultation with relevant agencies and states and territories.

The AQIS has responsibility for plant and animal quarantine and for the application of human quarantine controls at Australian air and sea ports.

The day to day delivery of human quarantine activities is the responsibility of AQIS and state/territory health authorities, with administrative support being provided by DoHA officers.

Each state and territory health authority provides a senior public health medical officer to perform the duties of the CQO for its jurisdiction. CQOs are appointed by the federal Minister for Health and Ageing under the Act and are responsible to the DHQ for human quarantine matters within their jurisdictions.

In conjunction with relevant clinicians, CQOs are also responsible for the management of a case of a quarantinable disease that is identified within Australia. Under the supervision of a CQO, officers from a state or territory health authority will undertake any necessary public health action which may be required in the event of an outbreak of a quarantinable disease in Australia.

SECTION 3: BUILDING BLOCKS FOR PANDEMIC PLANNING

A critical part of pandemic planning is ensuring that the building blocks are in place ahead of an actual pandemic threat. Thus, Australia's preparedness for a pandemic rests on a number of major strategic measures including:

- ensuring Australia has the laboratory capacity and capability to allow rapid and accurate identification of emerging subtypes, including appropriate biosecure facilities and national guidelines for the handling and testing of specimens
- instituting and maintaining appropriate national surveillance activities to ensure early detection of virus subtypes in both animal and human populations
- consideration of border control measures with the aim of preventing pandemic spread into Australia
- consideration of social distancing measures that may need to be implemented in a pandemic
- building a pandemic therapeutic "armamentarium" through development of the NMS containing antiviral agents, PPE and other equipment required in a pandemic
- ensuring health services can be adequately maintained in the face of a pandemic
- preparedness for pandemic vaccination development and administration
- development and implementation of a detailed communications strategy for all phases
- providing advice and assistance in the event of a pandemic to Australians travelling or residing overseas
- maintaining the NIR to facilitate a rapid response to national health emergencies
- ensuring that appropriate decision making bodies are in place and have the necessary expertise and authority to make decisions quickly and effectively in the face of rapidly developing situations
- working with industry to plan for workforce disruption and support
- ensuring an adequate civil emergency response can be implemented in states and territories
- developing the evidence base for decisions, such as implementation of quarantine measures, that need to be considered in a pandemic, including targeted research projects to address gaps in current knowledge
- close collaboration with states and territories to develop action plans in all jurisdictions that achieve national consistency and coordination of effort.

This section of the plan provides an overview of key issues within each of the above measures. Section 4 maps out the timing for when each of these measures will be considered and implemented according to each pandemic phase.

Influenza pandemic planning is a high priority for the Australian and state/ territory governments and other organisations, and substantial progress has been made in recent times.

History of pandemic plans in Australia

A Framework for an Australian Influenza Pandemic Plan Version 1, 1 June 1999

This framework was developed by a sub-committee of CDNA, the Influenza

Pandemic Planning Committee (IPPC), in 1999. It provided a strategic framework for the detection and management of pandemic influenza in Australia, and provided a national framework for policy. It also provided direction for the development of plans at the state/ territory level and local level.

Australian Action Plan for Pandemic Influenza (2003)

This plan was also developed by the IPPC, based on *A Framework for an Australian Influenza Pandemic Version 1, 1 June 2003* and aimed to facilitate an organised and effective national response in the event of an influenza pandemic. One of its objectives was to define the roles and responsibilities of the states/ territories, the Australian Government and the NIPAC. It outlined the main actions at the different phases of a pandemic.

The recent risks to human health posed by the avian influenza outbreaks, the increased availability of antiviral medications and the need for more detailed information for the jurisdictions prompted NIPAC and the DoHA to produce the *Australian Management Plan for Pandemic Influenza June 2005 (AMPPI)* which now supersedes the 2003 pandemic plan and the 1999 framework document.

Diagnostic testing

In the event of a pandemic strain entering Australia there will be a need to rapidly and accurately identify the influenza type (as influenza A or B) and to subtype influenza A virus haemagglutinin to determine whether it is the pandemic strain. While many laboratories can provide identification of influenza, only a limited number can provide the diagnostic capacity required for pandemic influenza. The PHLN members can provide testing or ongoing referral of samples. Some are also World Health Organization National Influenza Centres (NIC). The PHLN or NIC will provide services for identification of pandemic strains. In addition, the World Health Organization Collaborating Centre for Influenza (WHOCC) in Melbourne provides the highest level of influenza testing, including detailed genetic and antigenic analysis of strains. The WHOCC provides diagnostic support and will be responsible for final confirmation of pandemic strains.

Respiratory tract samples collected within one week after onset of illness, preferably within the first three days, are suitable for influenza virus detection. Combined nose and throat swabs, nasopharyngeal swabs, nasopharyngeal aspirates (NPA) and nasal washes may all be used for influenza detection. Staff collecting samples should follow all recommended infection control precautions, particularly for aerosol-producing procedures such as NPA, nasal washes or bronchoalveolar lavage samples.

In the phase before the pandemic strain enters Australia, or if activity is detected within a new region of Australia, it is important that tests with high sensitivity and specificity are used in order to ensure accurate identification. Cell culture and nucleic acid detection by polymerase chain reaction (PCR) are the preferred methods and it is important to ensure that these tests are readily available. However, cell culture can only be attempted in laboratories with adequate containment facilities. Alternative tests, such as immunofluorescent antigen detection may be suitable, but only once their reliability has been established for the new strain. Point of care tests will not be suitable during this phase as they are too insensitive under any circumstances, and their performance for new strains may be even less satisfactory.

During the phase prior to the entry of the pandemic strain into Australia, all patients with suspected pandemic influenza should have a suitable nucleic acid determination

(NAD) and cell culture performed. Antigen detection tests, excluding point of care tests, may have a role once their reliability has been established. If antigen detection tests are used due to clinical necessity, usually due to lack of immediate access to the preferred tests, then samples should also be referred for NAD and cell culture. In all cases any sample that tests positive for influenza from a patient with suspected pandemic influenza must be referred for cell culture and must be referred urgently to the WHOCC via the nearest PHLN laboratory.

An acute-phase serum specimen (7-10 ml of whole blood) should be taken soon after onset of clinical symptoms and not later than seven days after onset. A convalescent-phase serum specimen should be collected 14 days after the onset of symptoms. Convalescent samples should be collected even when acute samples have not as they may still assist in diagnosing or excluding infection.

Testing should also be undertaken for other significant viral and bacterial infections that may cause a similar illness, or that might occur as a secondary complication of influenza infection.

Once pandemic influenza has entered Australia, the necessity for highly accurate testing will diminish. Other tests that have been shown to detect the pandemic strain, even if sensitivity is suboptimal, will have an important role in reducing the demand on reference laboratories. Where it is an area of known high pandemic activity, diagnostic testing will usually not be needed at all. However, highly accurate testing is still necessary whenever pandemic activity is detected in a previously uninvolved area, or when it is critical to the management of individual patients, or in the public health management of the pandemic. Throughout this period, there will be ongoing cell culture of a proportion of samples in order to allow antigenic and genetic monitoring of the strain.

During the late phases of the pandemic, there shall be a return to the routine use of highly accurate testing so that the end of the pandemic can be confidently identified.

See annex 5: *Laboratory guidelines*, for additional detail.

Surveillance

The human surveillance activities during an influenza pandemic are described in table 2.

Clinical and laboratory surveillance activities are described by WHO levels and the corresponding phases described in section 1 of this plan. A description of surveillance systems are provided in the notes to table 4. Protocols for border screening and the case report form for early cases of pandemic influenza are found in annexes 1 and 2.

Surveillance activities in Australian poultry and livestock which will be developed in accordance with OIE regulations will be added to this surveillance plan.

Table 2: Surveillance activities in an influenza pandemic

Inter-pandemic

WHO Phase	Aust Phases	Description of phases	Surveillance objectives	Surveillance activities
0	Aus 0	No circulating animal influenza subtypes in Australia that have caused human disease	To detect unusual clusters or cases that may be due to a new influenza virus	Conduct routine influenza surveillance through sentinel GPs and the NNDSS (1,2) Undertake laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains (3)
	Overseas 1	Animal infection overseas: the risk of human infection or disease is considered low	As above	Conduct routine influenza surveillance through sentinel GPs and the NNDSS (1,2) Undertake laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas (3)
2	Aus 1	Animal infection in Australia: the risk of human infection or disease is considered low	As above	As for Overseas 1, with addition of: Undertake serosurveys, data collection and epidemiological analysis to identify human respiratory infections associated with exposure to infected animals eg poultry workers, vets and cullers through OCRS (4) Monitor passive reporting of unusual clusters of influenza-like illness or acute respiratory disease (5)
	Overseas 2 Aus 2	Animal infection overseas – substantial human public health risk Animal infection in Australia – substantial risk of human disease	As above As above	As for Overseas 1 As for Aus 1, with addition of: DAFF to compile data on infected flocks and other species by DAFF provided to DoHA

Pandemic alert

WHO phases	Aust Phases	Description of phases	Surveillance objectives	Surveillance activities
3	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	<p>To detect the first case/s of pandemic influenza at Australian border</p> <p>To collect and share clinical and epidemiological data on suspect / possible and confirmed cases</p>	<p>Conduct routine influenza surveillance through sentinel GPs and the NNDSS (1,2)</p> <p>Undertake laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas (3)</p> <p>Implement data collection and epidemiological analysis on suspect, possible and confirmed cases in those with travel history in affected area through OCRS (4)</p> <p>Monitor passive reporting of unusual clusters of influenza-like illness or acute respiratory disease (5)</p>
	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 contact	<p>To rapidly detect new clusters of cases in Australia</p> <p>To collect and share clinical and epidemiological data on suspect / possible and confirmed cases</p> <p>To provide data to inform policy decisions</p>	<p>Conduct routine influenza surveillance through sentinel GPs and the NNDSS (1,2)</p> <p>Undertake laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or in Australia (3)</p> <p>Isolate the pandemic virus strain for vaccine production (3)</p> <p>Undertake data collection and epidemiological analysis on suspect, possible and confirmed cases through OCRS (4)</p> <p>Monitor passive reporting of unusual clusters of influenza-like illness or acute respiratory disease (5)</p>

Pandemic alert (continued)

WHO phases	Aust Phases	Description of phases	Surveillance objectives	Surveillance activities
4	Overseas 4	Human infection overseas – small cluster(s), limited human to human transmission, spread highly localised; virus is not well adapted to humans	To detect the first case/s of pandemic influenza at Australian border To collect and share clinical and epidemiological data on suspect/possible and confirmed cases	As for Overseas 3, with addition of: Conduct border screening for ILI in travellers from affected regions (6)
	Aus 4	Human infection in Australia – small cluster(s), limited human to human transmission, spread highly localised; virus is not well adapted to humans	To monitor the geographical spread of pandemic influenza within Australia To monitor the distribution of pandemic by time, place and person To guide the appropriate allocation of national resources	Conduct routine influenza surveillance through sentinel GPs and the NNDSS (1,2) Undertake laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia (3) Isolate the pandemic virus strain for vaccine production (3) Undertake data collection, laboratory testing and epidemiological analysis on suspect, possible and confirmed cases through OCRS (4) Monitor passive reporting of unusual clusters of influenza-like illness or acute respiratory disease (5) Conduct border screening for ILI in travellers from affected regions (6) Undertake surveillance of ILI in health care workers exposed to suspect, probable or confirmed pandemic flu cases or their specimens (7)

5	Overseas 5	Human infection overseas – larger cluster(s) but human to human transmission still localised; virus is becoming better adapted to humans (substantial pandemic risk)	To detect the first case/s of pandemic influenza at Australian border To collect and share clinical and epidemiological data on suspect/possible and confirmed cases	As for Overseas 4 with addition of: Conduct sentinel surveillance if out of season (1)
	Aus 5	Human infection in Australia – larger cluster(s), substantial pandemic risk	As for Aus 4	As for Aus 4, with addition of exit screening (6)

Pandemic

WHO phases	Aust Phases	Description of phases	Surveillance objectives	Surveillance activities
6	Overseas 6	Pandemic overseas – not in Australia: increased and sustained transmission in general population	<p>To detect the first case/s of pandemic influenza at Australian border</p> <p>To collect and share clinical and epidemiological data on suspect/possible and confirmed cases</p>	<p>Conduct routine influenza surveillance through sentinel GPs and the NNDSS (1,2)</p> <p>Initiate sentinel surveillance if out of season (1)</p> <p>Undertake laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or in Australia (3)</p> <p>Undertake data collection and epidemiological analysis on suspect, possible and confirmed cases through OCRS (4)</p> <p>Monitor passive reporting of unusual clusters of influenza-like illness or acute respiratory disease (5)</p> <p>Conduct border screening for ILI in travellers from affected regions (6)</p>
Aus 6a	Pandemic in Australia – localised (one area of country)		<p>To monitor the distribution of pandemic by time, place and person</p> <p>To monitor the impact of the pandemic on health and essential services staffing</p> <p>To measure the effectiveness of pandemic influenza vaccines</p> <p>To define susceptibility of virus to antiviral drugs</p> <p>To monitor adverse events following vaccination with pandemic influenza vaccine</p>	<p>As for Overseas 6, with the addition of:</p> <p>Conduct entry and exit border screening (6)</p> <p>Undertake surveillance of ILI in health care workers exposed to suspect, probable or confirmed pandemic flu cases or their specimens (7)</p> <p>Undertake hospital-based surveillance (7)</p> <p>Monitor absenteeism among essential services personnel (9)</p> <p>Undertake studies to measure effectiveness of antivirals and/or vaccines and adverse events associated with antiviral and/or vaccine use (9)</p>

6	Aus 6b	Pandemic in Australia – widespread (multiple areas)	<p>To guide the appropriate allocation of national resources</p> <p>To monitor the distribution of pandemic by time, place and person</p> <p>To assess if there is adequate staffing to maintain essential services</p> <p>To assess the match between candidate pandemic vaccine and local influenza strain variants</p> <p>To ensure appropriate treatment and prophylaxis</p>	<p>Undertake surveillance through routine and hospital systems (1,2, 7)</p> <p>Undertake selected laboratory surveillance to isolate local pandemic virus to compare with vaccine strains and assess susceptibility to antiviral drugs (3, 8)</p> <p>Monitor absenteeism among essential services personnel (9)</p>
Aus 6c	Pandemic in Australia – subsided	As above	As above	
Aus 6d	Pandemic in Australia – next wave	As above	As above	

Notes:

1. Monitoring influenza-like illness (ILI) in sentinel GP schemes

There are eight sentinel general practice surveillance schemes that monitor influenza-like illness in Australia: one national (ASPREN) and state-based systems in ACT, NSW, NT, Qld, SA, Victoria and SA. Sentinel surveillance is year round in ASPREN, NT and SA and runs between May and October in other schemes. All schemes use a common surveillance case definition for ILI of fever, cough and fatigue.

2. Surveillance of laboratory-confirmed influenza through the National Notifiable Diseases Surveillance System (NNDSS)

Laboratory confirmed influenza is a notifiable disease in all Australian states and territories and data are sent daily to the Department's National Notifiable Diseases Surveillance System (NNDSS).

3. Laboratory surveillance

Surveillance of influenza isolates and identification of novel strains will occur through the coordination of public health laboratories and the WHOCC for Influenza. Pandemic strains will be isolated at the WHOCC.

4. Data collection on possible and confirmed cases of pandemic influenza

The DoHA has a web-based database for collection of demographic, clinical, laboratory and epidemiological data on each possible and confirmed human case of pandemic influenza. The collection of data will be directed by the WHO recommended case definition which will be adapted for emerging clinical features of pandemic influenza, the phases of the pandemic and for Australian requirements.

5. Passive reporting of unusual clusters of ILI or acute respiratory disease

Hospitals and general practitioners will be encouraged to report any unusual clusters of cases of influenza-like illness or other acute respiratory disease to their state or territory health departments. The significance of these clusters will be determined by the CDNA.

6. Border screening for ILI in travellers from pandemic influenza affected regions

Passengers with fever arriving from affected countries will be referred for examination by nurses and, if necessary, by the CQO. Suspect cases may be hospitalised for examination and management. Health declaration cards for incoming passengers will be implemented to detect human cases of avian influenza once human to human transmission has been confirmed.

7. Hospital based surveillance during pandemic, including mortality

Hospital surveillance will cover a range of surveillance activities, shown in table 3. These activities will be undertaken during the pandemic phases only, with the exception of detection of ILI in health care workers (including laboratory workers), which will occur in the pandemic alert phases.

Table 3: Hospital surveillance during pandemic phases

Type of hospital Surveillance	Objectives	Data, type and frequency
ED presentations of influenza-like illness and acute respiratory illness	<ul style="list-style-type: none"> To monitor presentations of ILI as a proxy for influenza activity To assess hospital workloads 	<ul style="list-style-type: none"> Rate of ILI as presenting symptom / 1,000 presentations; daily (S&T) Aggregated at state level weekly and collated nationally by DoHA
Admissions of influenza and pneumonia cases	<ul style="list-style-type: none"> To assess admission rates as a proxy measure of respiratory disease To assess hospital workloads 	<ul style="list-style-type: none"> Admissions with diagnosis ICD-10 J10 – J18 per day (S&T) Aggregated at state level weekly and collated nationally by DoHA
ICU bed occupancy by influenza and pneumonia cases	<ul style="list-style-type: none"> To assess admission rates as a proxy measure of severe respiratory disease To assess critical hospital capacity 	<ul style="list-style-type: none"> Daily ICU bed occupancy by patients with primary diagnosis ICD-10 J10 – J18 (S&T) Aggregated at state level weekly and collated nationally by DoHA
Deaths in hospital from influenza or pneumonia	<ul style="list-style-type: none"> To rapidly assess mortality rates in a pandemic 	<ul style="list-style-type: none"> Weekly collation of deaths (S&T and DoHA)
Health care worker (HCW) ILI or respiratory illness	<ul style="list-style-type: none"> To assess HCW (including laboratory workers) at risk of infection with pandemic influenza 	<ul style="list-style-type: none"> Presentation to staff clinics of ILI Rates of ill staff at designated 'fever' hospitals
HCW absenteeism	<ul style="list-style-type: none"> To assess impact of pandemic influenza on hospital services to inform redeployment of HCW to cover shortages 	<ul style="list-style-type: none"> Daily absenteeism rate (3 consecutive days or more) per 100 employees

8. Studies to measure effectiveness of, and adverse events associated with, antivirals and vaccines

Studies will be undertaken in HCW as a proxy for all at risk groups, given HCW are a readily accessible population group. Vaccine effectiveness of pandemic vaccines will be assessed by studies in health care workers. *In vitro* testing of the effectiveness of antiviral drugs against circulating pandemic influenza strains will be carried out throughout the pandemic. Adverse events associated with consumption of antiviral drugs or administration of new influenza vaccines will be measured in health care workers receiving these prophylactics.

9. Monitoring absenteeism of essential services personnel

Essential service will monitor absenteeism rates to ensure adequate staffing to maintain services throughout a pandemic.

Disease control measures

Border control

Australia, being an island nation, has a greater opportunity than other countries to prevent or delay the entry of pandemic influenza into Australia, as it did in 1918. Accordingly, the Government is prepared to implement border measures with this objective. When pandemic influenza events escalate overseas, consideration by the IDC/ IDTF will be given to commencing entry screening to detect cases of pandemic influenza at Australia's international airports – while recognising that individuals may be incubating the disease and have no symptoms.

Positive pratique will be required of aircraft commanders replacing the current pratique by exception. Positive pratique requires the aircraft commander to declare the health of all people on board, whereas current pratique requires the commander only to notify if an ill passenger is on board.

Entry screening will include health declaration cards, handed out by airlines and checked by Customs officers. Additional AQIS staff will assist with thermal scanning equipment to detect passengers with a fever. Those identified as possible cases (for example, high temperature on thermal scanner or symptoms of influenza on the health declaration card) will be assessed by a border nurse. Nurses placed at the border will assess the passenger as described by an algorithm (annex 1) and contact the CQO in the state or territory, as required.

In some situations, large numbers of people arriving at the border may need to be quarantined from others, to prevent transmission of pandemic influenza.

If the pandemic reaches Australia, and is not widespread in other parts of the world, the IDTF will consider instituting exit screening of outgoing passengers. This will also include thermal imaging and health declaration cards and is designed to prevent people with pandemic influenza from travelling to countries that are free of disease. This is in keeping with international obligations to prevent the spread of disease.

Measures to increase social distance

Background

During a pandemic of influenza, measures to increase social distance may be instituted or recommended. These measures, which include closure of schools and restricting mass gatherings such as concerts, are intended to prevent transmission of influenza between people. In the setting of influenza, as people may be infectious before the onset of symptoms, measures that reduce contact between people regardless of symptom status may be particularly effective.

The *WHO consultation on priority public health interventions before and during an influenza pandemic 2004* recommended that authorities consider measures such as closure of schools, closing workplaces and discouraging mass gatherings, depending upon epidemiological characteristics of the particular virus such as attack rates in different age groups (ie proportion of the different age groups infected) and transmission characteristics.

In recommending measures to increase social distance, other considerations will include mathematical modelling of the effectiveness of the interventions and feasibility of the interventions, given their significant social and economic implications.

In April 2005, the NIPAC made recommendations about restricting mass gatherings and school closures in light of the current evidence. The evidence will be continually reviewed and the recommendations adjusted accordingly. NIPAC recommends restriction of mass gatherings and closure of schools and day care centres once effective transmission is occurring in Australia (Phase Aus 5). Depending on the characteristics of the epidemic, this may not necessarily be uniformly applied across Australia.

The evidence for, and implications of, these measures will be continually reviewed by the NIPAC, CDNA, AHDMPC and the IDTF. When effective human to human transmission is occurring in Australia, recommendations will be made to the relevant state(s)/territory(s) through AHDMPC.

Clearly, the nature and timing of implementation of social distancing measures will require careful consideration and judgement in light of the severity and mortality of the pandemic strain.

Restricting mass gatherings

During the 1957-1958 pandemic, a WHO expert panel found that spread within some countries followed public gatherings, such as conferences and festivals¹⁶. This panel also observed that in many countries the pandemic broke out first in camps, army units and schools; suggesting that the avoidance of crowding may be important in reducing the peak incidence of an epidemic¹⁷.

Closure of schools

Closure of schools may be particularly effective in a pandemic of influenza because of the role children play in spreading influenza¹⁸. Also, during the first wave of the Asian influenza pandemic of 1957-1958, the highest attack rates were seen in school aged children. This has been attributed to their close contact in crowded settings¹⁹. A recently published study found that during an influenza outbreak, school closures were associated with significant decreases in the incidence of viral respiratory diseases and health care utilization among children aged 6-12 years²⁰.

¹⁶ Avian influenza: assessing the pandemic threat. *World Health Organization*. January 2005

¹⁷ WHO Technical Report Series 1959: Expert Committee on Respiratory Virus Diseases. First Report

¹⁸ Longini I, Koopman JS, Monto AS et al. Estimating household and community transmission parameters for influenza. *American Journal of Epidemiology* 1982;115: 736-751.

¹⁹ Woodall J, Rowson KEK and McDonald JC. Age and Asian influenza, 1957. *British Medical Journal* 1958; Nov 29: 1316-1318.

²⁰ Heyman AH, Chodick G, Reichman B et al. Influence of school closures on the incidence of viral respiratory diseases among children and on health care utilisation. *The Paediatric Infectious Diseases Journal* 2004; 23(7): 675-677.

The National Medicines Stockpile (NMS)

Background

The NMS was established by the Australian Government in 2002, initially as a national strategic reserve of essential vaccines, antibiotics, antiviral drugs, chemical and radiological antidotes. The NMS supplements existing medical stocks kept in the Australian health system and provides rapid access to large quantities of medications that may not be regularly used.

Influenza antiviral drugs will play an important role during a pandemic, particularly during the first wave of infection when pandemic vaccines may not be available. In the absence of vaccines, antivirals are the only medical intervention for providing protection against disease and some therapeutic benefit in those who are ill.

Priority groups

The role of influenza antivirals will be constrained, however, by their finite supply, negligible surge capacity for production, and cost. Because of this, priority groups for their use must be determined to ensure that they are used to Australia's best advantage. As the overall aim underlying Australia's response to a pandemic influenza threat is to reduce the associated population wide morbidity and mortality, their use will be determined within this principle.

The NIPAC made recommendations about antiviral priority groups in April 2005 in light of the current evidence. New evidence will need to be considered continually and the recommendations revised accordingly. These recommendations can be found in annex 4.

Determination of the use of antivirals will be:

- assessed by the AHDMPC drawing on advice from NIPAC, CDNA and DoHA
- reviewed by the CMO in conjunction with the expert advisory group
- decided by the IDTF.

Activation and deployment of the NMS

The process to activate the NMS deployment plan is that the CHO of an affected state/territory or Deputy Secretary from an Australian Government Department (such as AQIS or DAFF) provides written request to the NIR for access to the NMS²¹.

The amount of antivirals deployed will be a decision of the CMO after due consideration.

Each state/territory or requesting agency is required to have distribution plans in place, including details of security measures and arrangements for dispensing including supervision, records of treatment and monitoring of outcomes, including adverse reactions. The DoHA has ownership of the stockpile until each item is used/consumed/expired.

In the event of a state/territory requiring additional drugs - for example antibiotics for

²¹ Details of agreements with the jurisdictions on security and distribution of stockpile agents are in the stockpile deployment plan which is subject to a high level of confidentiality.

secondary chest infections - the above process will need to be carried out for each drug.

Health service delivery

Maintaining health services in the setting of unprecedented demands and disruptions will be a challenging, but vital, aspect of the pandemic influenza response.

States, territories and stakeholder groups responsible for direct health service delivery are considering the following issues in pandemic planning:

- **Cases identified at the border**

The measures that will need to be implemented in response to the first cases of pandemic influenza being detected at the border.

- **Detecting the first cases of pandemic influenza in community settings**

A national education campaign is being delivered (May – June 2005). This focuses on how first line health care workers can identify suspected cases of severe respiratory diseases in returned travellers, the measures they can take to protect themselves and their patients, and the importance of talking to public health units about such patients.

- **Fever clinics and designated isolation facilities**

When cases in Australia increase, states/territories, through AHDMPC, will consider setting up fever clinics and designated isolation facilities which are staffed by protected or immune staff. Fever clinics are triage settings in which all suspected cases of pandemic influenza can be assessed to determine whether they are likely to have influenza and where they are best managed. Designated isolation facilities are places where patients that require hospitalisation are managed. The purpose of these clinics/facilities is to streamline the delivery of care to these patients, cope with the rapid increase in illness in the community and lessen the transmission of influenza to patients that are not infected.

- **Home care**

Health authorities, in conjunction with community care services, will consider aspects such as provision of meals and access to medical review and medications for those not admitted to hospital. Community care and hospital in the home arrangements that some hospitals currently utilise will take on increasing importance.

- **Hospitals**

Hospitals may activate their emergency plans enabling them to cease elective admissions and discharge suitable patients. Within hospitals/isolation facilities, providing care for influenza patients will ideally take place in negative pressure isolation rooms, or if these are not available, by collocating influenza patients.

- **Public health units and contact tracing**

Public health units will play an important role in providing information to health professionals and the public about aspects of the management of people with or exposed to pandemic influenza, such as the need for testing, notification, isolation and quarantine. At least in the early phases, public health units will be involved in contact tracing to identify those who have been exposed to a particular patient and need to be quarantined.

- **Isolation**

Patients who are suspected to be infected with influenza because they are symptomatic need to be isolated from others. This will occur either in the home or a health care setting and will be for the duration of the infectious period. This is to

prevent them from infecting others. Patients and their families will be given educational materials which will include advice about infection control practices that can prevent/ reduce transmission between the patient and others.

- **Quarantine**

Depending upon the pandemic phase, those who have been exposed to a person with influenza but do not have symptoms should be quarantined. This is to lessen the chance that, have they been infected, they transmit the infection to others.

- **Clinical care guidelines**

Clinical care guidelines will be a critical tool for all health care workers in triaging, assessing and managing possible and confirmed cases. DoHA is currently consulting with infection control clinicians on the content of national guidelines and responsibility for their development.

Future work with states and territories is required as a consequence of the AMPPI to ensure that these measures are readily operationalised. This work will be undertaken in collaboration with NIPAC, CDNA JEG and AHDMPC.

Pandemic vaccination

Pandemic influenza vaccine

Pandemic influenza vaccination is an essential component of the response. In late 2004 the Australian Government signed agreements with two pharmaceutical companies, CSL Ltd and Sanofi Pasteur Pty Limited, to supply the normal seasonal influenza vaccine for the next three influenza seasons (2005-08) as well as pandemic vaccine production capacity. These companies have the capability to produce pandemic vaccine if given a seed virus and will close down normal operations to do this for Australia.

The agreements also include industry development initiatives such as:

- development of 'mock up' vaccines using the most relevant strain available
- clinical trials using adjuvants and different antigenic doses.

The influenza vaccine composition depends upon the particular strain that is causing the pandemic, and this cannot be known in advance. Vaccine production is also subject to complex processes, and although options to shorten the lead-time for vaccine production are being developed, it may take some months before the vaccine is available. Until a vaccine is available, other measures to protect the population, such as PPE, antiviral medications and isolation of affected persons will be utilised.

Initially, the vaccine will be in short supply and its use will have to be prioritised. Priority groups being considered include essential workers such as health care staff and emergency personnel. These priority groups will be continually revised in light of new information that is learnt about the pandemic virus, who it is affecting, and what is required to maintain effective services. When sufficient pandemic influenza vaccine is available, the entire Australian population will be offered vaccination.

The Australian Government DoHA has the primary responsibility for coordinating the procurement and distribution of vaccines to the states and territories during an

influenza pandemic. The states/territories are required to develop distribution plans that include details of security measures and arrangements for dispensing such as:

- supervision of dispensing
- records of treatment
- monitoring of outcomes including adverse reactions.

Other vaccines

Attaining high rates of coverage of the normal seasonal influenza vaccine and the pneumococcal vaccine in identified cohorts and high risk groups during the inter-pandemic (or non-pandemic period) was identified as a priority in the *Australian Action Plan for Pandemic Influenza* (2003).

For further details see annex 3: *Pandemic vaccines*.

Communications

Information for, and management of, Australians overseas

DFAT's missions provide consular contingency support for all Australians in-country, including mission staff from all agencies, and could be drawn upon quickly in the event of a pandemic.

DFAT's travel advice, which is developed in consultation with DoHA and considered by the IDTF if necessary, will continue to be the primary mechanism for informing the Australian travelling public about the risk of pandemic influenza (website: www.smartraveller.gov.au). Advice appropriate to the phase of the pandemic and assessed risk will be communicated via travel advisories, including if necessary, a recommendation to avoid all travel to affected areas and urging travellers in the affected regions to return to Australia.

Those returning to Australia from affected areas may be required to undergo additional disease screening and quarantine measures.

A prepared public through a prepared media

Due to the ongoing concerns about avian influenza outbreaks in Asia, Australia has a range of communications activities and tools already in place to inform and reassure the public, and the media, about Australia's preparations for an influenza pandemic.

This communications plan outlines the main steps that have already been taken in preparation and steps that will be activated in the event of an Influenza pandemic. The plan follows the WHO and Australia's key alert periods and action phases, although the communications plan remains flexible and adaptable to the circumstances of the time.

Free Call Information Line: 1800 004 599

This line has been established by the Australian Government DoHA for the

information of a range of public interests.

Phases: Overseas 1, Overseas 2, Overseas 3, Australia 0, Australia 1 and Australia 2

At this stage, the hours of operation for the hotline are 8am-6pm Monday to Friday. A recorded message is available at other times, directing callers to the department's website and advising of the information lines hours of operation. The call centre personnel are well briefed on pandemic and other health emergency issues with an approved set of questions and answers and referrals to other relevant departments where further information can be obtained. In an emergency, this phone line has the capacity to significantly expand its capability and its hours of operation.

Phases: Overseas 4, Overseas 5, Australia 3, Australia 4 and Australia 5

During these phases the hotline capacity would be enhanced by:

- call centre management advised of the need for increased staff, more phone lines and a 24 hour roster (Media Unit)
- additional 1800 phone number to be established especially for health care professionals – medical officer(s) required to provide this service (Media Unit and NIR)
- revised Q & As, as developed and provided to call centre (NIR)
- meeting held to brief call centre staff on the new developments (Media Unit and NIR)
- daily reports required by DoHA of numbers and nature of calls (call centre)
- departmental contacts to be provided to call centre for difficult questions
- coordination between the Australian Government DoHA hotline and those in other agencies (such as the Centrelink hotline) and in the states and territories.

Phases: Overseas 6, Australia 6a, Australia 6b, Australia 6c and Australia 6d

During these phases the hotline capacity would be enhanced by:

- development of further phone lines and call centre staff, possibly involving the involvement of several call centre agencies.

Websites

The Australian Government DoHA website at www.health.gov.au will play a vital role in informing the public and the media about health measures, warnings and the current situation²². It will be particularly useful in providing media with messages, media transcripts, photos and vital public health information.

Phases: Overseas 1, Overseas 2, Overseas 3, Australia 0, Australia 1 and Australia 2

During this phase the website www.health.gov.au has a dedicated biosecurity website, accessed from the homepage, that links to avian influenza information for

²² http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-avian_influenza-index.htm

the public, health professionals and the media. This site is regularly updated and contains:

- general information about avian influenza and the global situation
- pandemic influenza preparedness
- frequently asked questions (FAQs)
- fact sheets
- a special section for health professionals
- media releases, transcripts and sound bytes
- links to relevant national and international websites.

Phases: Overseas 4, Overseas 5, Australia 3, Australia 4 and Australia 5

During this phase extra attention will be paid to the website to enhance its capacity to be a vital source of information. Actions will include:

- web and online staff capacity increased to give priority to posting pandemic information (Business Group/Communications Branch and PHD web services)
- website to be updated and maintained on a daily basis (Media Unit)
- posting twice daily of avian or pandemic influenza news bulletins from the CMO (Media Unit)
- regular posting of media interviews, including MP3 sound bytes, pictures and educational materials by the CMO, ministers and the PM (Media Unit)
- regular liaison with other agencies, including medical colleges and associations and state and territory public affairs counterparts to ensure consistency of messages and links with their websites.

Phases: Overseas 6, Australia 6a, Australia 6b, Australia 6c and Australia 6d

During this phase the website will become even more important and actions to be undertaken to enhance its capacity to include:

- establishment of a separate, dedicated influenza pandemic website (Media Unit/Webs)
- full time webmaster assigned to manage the site (Media Unit)
- regular updating of information including health messages, warnings, educational literature and frequently asked questions
- special attention given to health professionals' subsite and media centre site.

Media Relations Actions by the Department of Health and Ageing

From the onset of the Asian avian influenza outbreaks, Australia's CMO, has been making himself freely available to a wide range of media, including medical press, in an effort to inform the public and health professionals about Australia's preparedness for a pandemic.

Phases: Overseas 1, Overseas 2, Overseas 3, Australia 0, Australia 1 and Australia 2

During this present stage a range of communications activities are being undertaken

including:

- regular media interviews and briefings by the CMO
- special articles and interviews arranged for the CMO with medical media
- coordination of media responses between the Commonwealth and the states and territories
- formal background briefings between the CMO and media editors to lay the foundations for what the public may face during an influenza pandemic
- publicising of announcements on Australia's health response to a pandemic by ministers and the Prime Minister.

Phases: Overseas 4, Overseas 5, Australia 3, Australia 4 and Australia 5

During this phase communications with the public via the media will be crucial. Actions will include:

- establishing a dedicated media conference room in Amenities Room, Ground Floor, Alexander Building – lectern, microphone and sound equipment are on 24 hour standby and a CMO/Departmental backdrop has been produced (Media Unit)
- activating the Media Liaison surge team – 10 public affairs officers from the Communications Branch of DoHA have been identified (with relevant security clearances), to provide surge capacity for media liaison in a health emergency (Media Unit)
- expanding the capacity of existing media relations 1800 number – additional phone lines to be attached to this number to cope with calls (Media Unit)
- priority for media monitoring and tracking by the existing media monitoring team within the Communications Branch (Editorial and Media Relations Unit)
- production of daily news bulletins from the CMO (Media Unit)
- the holding of one main media conference per day by the CMO, with transcripts and sound bytes posted on the DoHA website for downloading and use by media that cannot attend the media conference in person (Media Unit)
- assistance given to the ministers and Prime Minister to deal with media inquiries or announcements (Media Unit)
- close liaison with public affairs counterparts in other agencies and states and territories.

Phases: Overseas 6, Australia 6a, Australia 6b, Australia 6c and Australia 6d

At this stage media management and communications with the public will be intensified. Actions will include:

- activation of an expanded media liaison team including coopting emergency trained public affairs officers from other agencies, states and territories and the private sector (Media Unit/Communications Branch)
- deployment of media liaison officers to key trigger points, such as where antivirals are being sent, areas quarantined etc
- briefing media editors about an orderly flow of information, including setting clear guidelines for media access to the CMO with one main media conference per day, with transcripts and sound bytes posted on the DoHA website (Media Unit)

- utilising the media centre of Emergency Management Australia (EMA) if required
- enlisting the services of Australian Associated Press as a one-stop shop information service
- enhanced media monitoring
- working closely with the National Emergency Media Response Network (NEMRN) including medical colleges and associations.

National Emergency Response Network (NEMRN)

In an effort to spread the message widely, the Media Unit, which supports the CMO, has formed an information sharing network comprising media liaison managers in all state and territory health departments and other relevant national government agencies such as DAFF, ACS, EMA and AQIS.

The public affairs officers of all medical colleges and associations (AMA, RACGP etc) are a vital part of this network. The network, which works closely with similar public health, emergency services and national security media liaison groups, meets regularly and holds exercises and workshops to continually refine coordinated public and media responses about new and emerging health crises. NEMRN will play a vital role in informing the public and media during a pandemic.

Phases: Overseas 1, Overseas 2, Overseas 3, Australia 0, Australia 1 and Australia 2

In this period the NEMRN is consulted on a range of health emergencies – for example the Australian response to the Indian Ocean tsunamis, the 2005 influenza vaccine delay and other issues as they emerge. Contact includes:

- NEMRN involvement in emergency health exercises with the Commonwealth (Media Unit and DoHA officers)
- keeping in touch on a regular basis about significant health issues that may need a media response, via email (Media Unit)
- holding teleconferences of NEMRN to coordinate responses during health emergencies
- keeping in touch by phone or email on a bilateral basis as the need arises
- involving only health public affairs people if appropriate, or the whole network as required
- ensuring that members of NEMRN are linked in with other media liaison networks such as DAFF, EMA and the national security media liaison networks of the Attorney General's Department
- holding of exercises and face to face meetings
- coordination of federal and state and territory influenza pandemic communications plans.

Phases: Overseas 4, Overseas 5, Australia 3, Australia 4 and Australia 5

During this phase the role of NEMRN will be vital as the coordinated management of messages to the public and the media will be crucial. Actions to involve the network at this stage would include:

- daily teleconference of the whole network and additional ones with the Health representatives only if required
- daily distribution of relevant information via email
- coordination of website information by all jurisdictions
- clear decisions on which jurisdiction is the spokesperson for the health emergency, or how the media response should be divided up
- activation of conference text messaging service for all members of NEMRN (Media Unit).

Phases: Overseas 6, Australia 6a, Australia 6b, Australia 6c and Australia 6d

In this phase it will be essential for the NEMRN to:

- activate coordinated federal and state and territory influenza pandemic communications plans
- hold daily teleconferences
- share of information via email
- provide assistance by the Media Unit to states/ territories during crucial public health measures
- provide from the NEMRN, suitably trained public affairs officers to the Australian Government DoHA Media Unit if required.

Educational resources

A range of educational resources has already been produced, including for general practitioners, to help doctors and the public prepare for an influenza pandemic. Additional artwork, display stands, a media buying plan and priority printing arrangements are in place to scale up public information resources as required.

Phases: Overseas 1, Overseas 2, Overseas 3, Australia 0, Australia 1 and Australia 2

Resources developed include:

- *Been Away, Feel OK* Incoming Passenger Pamphlet

This pamphlet is a generic respiratory health alert publication which is being given to all incoming international passengers to Australia. 2.5 million of these pamphlets have been printed in English and Simplified Chinese, Traditional Chinese and Japanese and there is a capacity to quickly change the wording to suit a pandemic.

- Information Kit for GPs

In the event of a pandemic influenza, the public will rely heavily on their general practitioners and to assist health care professionals in the private sector to prepare, an information kit is being delivered (May-June 2005) to every GP outlining precautionary actions along with instructions on what to do in a health emergency. The kit comprises an instructional brochure, posters and fact sheets.

- DVD on Personal Protection

A DVD on how to correctly fit personal protective equipment is being produced (May-June 2005). The main purpose of the DVD is to train those people without clinical training, like border workers and GP receptionists, about how to prevent the spread

of infectious diseases such as influenza. Posters for the public about infection control have also been developed to be displayed in doctors' rooms.

Phases: Overseas 3, Overseas 4, Overseas 5, Australia 3, Australia 4 and Australia 5

Additional resources, on standby, will be produced to improve surveillance and heighten the public's awareness about the need for health vigilance. These include:

- **Health declaration card**

Copies of a more comprehensive health declaration card have been printed in several languages to be issued to incoming passengers.

- **Displays**

Art work for displays and health warnings at airports and sea ports have been developed and will be produced to impart important health messages to the public.

- **Media buying plan**

A media buying plan will be activated to place advertisements and health messages in media as required.

- **Fact sheets**

Fact sheets informing the public about personal protection, infection control and actions they should take to limit their exposure to influenza will be developed and posted on the web and be distributed through shopping centres, public places, schools and by fax or post.

Phases: Overseas 6, Australia 6a, Australia 6b, Australia 6c and Australia 6d

Actions in this phase to include:

- developing fact sheets appropriate to the health situation for wide distribution through shopping centres and other community outlets, on the website and available by fax or post on request
- activating the pre-arranged media buying plan, in conjunction with other agencies like AQIS and Attorney General's Department to secure advertising space in the media for important health warnings or messages (Media Unit/Government Communications Unit of PM & C)
- recording special broadcasts and video of CMO providing advice to the community on current public health arrangements including quarantine restrictions if required.

International collaboration

The NIR response team will facilitate international teleconferences with global authorities and other agencies as needed.

Stakeholder engagement

Stakeholder engagement beyond government, NIPAC and CDNA is critical in both the containment and maintenance phases to achieve maximum cooperation and communication across the health and community sectors. Responsibility for implementing the AMPPI will lie with health services, emergency services and

governments at all levels. The media, wider community and industry also have key roles to play in ensuring a responsible national response.

The DoHA will convene meetings of peak national stakeholder groups in the process of developing the pandemic plan and during the pandemic as needed. Stakeholder representation will include:

- Medical practitioners
AMA, RACGP, RACP, Royal Australasian College of Surgeons, RDAA, ADGP, Royal College of Pathologists of Australasia, ACRRM, Committee of Presidents of Medical Colleges, emergency physicians, medical administrators, specialist groups in respiratory medicine, infectious diseases, thoracic surgery, intensive care.
- Consumers
Consumers' Health Forum (CHF), Australian Federation of Aids Organisations, Council of the Ageing, Federation of Ethnic Communities' Councils of Australia (FECCA)
- Aboriginal and Torres Strait Islander health services
National Aboriginal Community Controlled Health Organisation (NACCHO)
- Nursing
Australian Nursing Federation, Royal College of Nursing
- Public health
Public Health Association of Australia
- Pharmacists
Pharmacy Guild, Pharmaceutical Society of Australia (PSA), Society of Hospital Pharmacists of Australia
- Non-Government hospital sector
Australian Private Hospitals Association, Catholic Health Australia, private aged care facilities sector
- Laboratory and mortuary staff, funeral directors
- Local Government Association
- Business sector
- Education sector.

Additionally, a stakeholder engagement strategy will be developed to ensure that other key community groups are engaged in the wider community education and dissemination of information.

Groups involved in pandemic response in Australia

The Department of Health and Ageing's National Incident Room (NIR)

The DoHA has established a NIR to facilitate a response to national health emergencies. The incident room team enables efficient coordination and communication between the Department's emergency response (or surge) team and state and territory health authorities, international agencies such as the WHO and other Australian Government agencies who participate in an IDC for SARS and avian influenza.

The NIR team constantly reviews events relating to pandemic influenza overseas and keeps central agencies, expert groups and the jurisdictions informed through

regular situation reports. In the event of escalation of pandemic influenza events, the NIR functions will be activated to a higher level, providing intelligence to the IDC / IDTF.

During a pandemic the NIR team will produce situation reports that include:

- rates of surveillance of people screened at the borders and outcomes of screening
- cases in Australia – the detail in case reports will differ during phases of the pandemic
- international situation and response
- public health interventions and impact.

The NIR team is also responsible for: deployment of the NMS; teleconferences with the AHDMPC and CDNA; national communications; liaison with Australian Government agencies; and convening of the IDTF in the case of a pandemic.

Additional relevant data, such as measures of vaccine efficacy and community effectiveness, will be analysed by the Biosecurity and Disease Control Branch, DoHA and reported to the NIR.

Communicable Diseases Network Australia (CDNA)

The CDNA was established in October 1989. In its usual role, the Network helps coordinate national communicable disease control and surveillance, as well as outbreak control where a national response is required.

Its membership includes federal, state and territory health authorities and representatives from other government agencies including the Australian Defence Forces (ADF), the DAFF, Food Standards Australia New Zealand (FSANZ) and other key organisations that contribute to communicable disease control in Australia.

CDNA meets via teleconference fortnightly and more frequently when responding to a communicable diseases emergency. CDNA reports to the AHMAC through the National Public Health Partnership (NPHP).

The Public Health Laboratory Network (PHLN) is a subcommittee of CDNA. It meets via teleconference monthly, and more frequently as required. It addresses laboratory issues related to diseases of public health importance.

WHO Collaborating Centre for Reference and Research on Influenza (WHOCC)

The WHOCC, based in Melbourne, is part of the WHO influenza surveillance network, comprising 4 collaborating centres worldwide. Additionally, there are 3 National Influenza Centres (NIC) in Australia that are part of the global WHO influenza network (Victorian Infectious Disease Laboratory (VIDRL), the Institute of Clinical Pathology & Medical Research, Westmead Hospital, NSW and the Centre for Pathology and Medical Research (PathCentre), WA).

The National Influenza Pandemic Action Committee (NIPAC)

The NIPAC was formed following the development and endorsement of the

Australian Action Plan for Pandemic Influenza (2003). NIPAC reports to the Executive of the DoHA through the Population Health Division (PHD) and the Commonwealth CMO. NIPAC has a membership of experts in influenza, representation from the states and territories and from EMA, ADF and DAFF.

During the non-pandemic period, NIPAC advises the DoHA on influenza pandemic preparedness with reference to the *Australian Action Plan for Pandemic Influenza* (2003), specifically providing expert advice on the development and implementation of national strategies on influenza-related matters, including:

- vaccines, influenza antiviral drugs and related materials
- influenza surveillance in human and animal population
- health and emergency services preparedness planning
- strategies for slowing influenza transmission in a pandemic
- research priorities
- communications.

Workforce issues

All organisations may be affected by staff absence because of sickness, the need to take time off to care for others, or the fear of contracting pandemic influenza. This will occur at a time when, for some organizations, the workload may be greater than normal.

There will be a very important pool of health care (and other) workers who contract the disease but survive and hence become immune. If a database of these individuals was kept, perhaps in each hospital, it would make staffing front-line areas such as emergency departments easier. Also, this group would not require vaccination when it did eventually become available, thereby easing the pressure on vaccinating the remaining non-immune population.

Further work on these issues will be undertaken with states and territories and industry. Consideration of this issue should include:

- establishing minimal staffing levels
- the need for staff to work in areas they are not formally trained in
- utilising volunteers, retired or 'trainee' staff (eg medical and nursing students)
- accommodation for staff in between shifts, when transport home may be disrupted or not advised
- psychological support for staff.

Particular issues for staff with occupational exposures to pandemic influenza and other essential workers who may be provided with antivirals and PPE include:

- monitoring of staff for illness and adverse reactions to antiviral medications
- implementing six week rotations of staff on antivirals
- supervised and recorded dosing of antivirals.

For further detail, see annex 4: *Antivirals*.

The civil emergency responses

Responsibility for management of emergencies lies with the individual states and territories. Accordingly, the immediate response to an influenza pandemic would be controlled and coordinated by the health and emergency services of the individual jurisdiction affected. Once the emergency escalates beyond the capability of the jurisdiction, there are arrangements in place that will enable the jurisdiction to request Australian Government to provide physical or technical assistance to support the jurisdictional response.

The arrangements for the provision of Australian Government assistance within Australia are detailed in COMDISPLAN. AUSASSISTPLAN provides details for the provision of Australian Government assistance overseas.

Mutual aid arrangements between jurisdictions may provide an avenue for assistance, and may need to be considered in AHDMPC meetings.

The jurisdictional emergency response will be coordinated by the state and territory

emergency management committees via the state and territory emergency operations centres. State and territory emergency management committees include state and territory health departments.

At the national level the emergency response is coordinated by the Australian Emergency Management Committee (AEMC) via the National Emergency Management Coordination Centre (operated by EMA). The EMA also participates in AHDMPC meetings.

Research

The WHO global influenza programme was established in 1947 and has as its objective to obtain an ongoing representative picture, at the global level, of how the virus is changing and what this means for human health. The network promotes international scientific collaboration to safeguard public health. Today the WHO Global Influenza Surveillance Network consists of 113 NIC located in 84 countries and four collaborating centres for influenza research and reference, including one in Melbourne Australia.

Much has been learnt about influenza viruses and their pandemic potential over the years. The emergence of the H5N1 virus provided the impetus for increased research which is improving our understanding of factors such as:

- the origins of the virus
- patterns of evolution
- behaviour in various species.

Research sub-group of NIPAC

There are still many gaps in our understanding of influenza viruses, and the WHO has identified some urgent research priorities. A symposium, proposed by NIPAC and hosted by DoHA and NHMRC, was held in April 2005. About 30 leading researchers in Australia developed a research priority plan for Australia, which builds on the existing synergies in the Australian research community and harmonises our research with that being done internationally.

Although the outcomes and recommendations from the symposium are being finalised, the overall priority areas of research identified included:

- modelling of the effectiveness of public health interventions in averting or slowing down the spread of a pandemic
- studies on vaccines and antivirals, including their role in the region
- evaluation of diagnostic tests, including rapid point of care tests
- assessment of the effectiveness surveillance and communications systems
- the social and economic impact of a pandemic.

State/territory pandemic influenza plans

The national response to a pandemic will largely reflect the ability of states and territories and local areas to respond. All states and territories have prepared action plans. The CDNA and NIPAC are currently reviewing all plans to ensure consistency and identify any gaps.

The international context

The Australian Government keeps up to date with the international situation through a variety of strategies:

- representation at international meetings
- close communication with international organisations and the governments of other countries
- the NIR team monitors and analyses reports of all possible pandemic influenza outbreaks .

Additionally, the Australian Government will fulfil its obligations to report and participate in the global response to pandemic influenza.

SECTION 4: RESPONSE ACTIONS

This section outlines the recommended actions at each phase of the pandemic.

INTERPANDEMIC PERIOD

Australia 0 (Aus 0): No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is not present in animals in Australia.

Goal: To adequately prepare Australia to enable the smooth and timely implementation of the specific activities required in the various phases of pandemic planning.

Influenza subtypes that have caused human infection and/or disease may not always be present in wild birds or other animal species in Australia. Lack of recognised animal or human infections does not mean that no action is needed. Preparedness requires planning and action in advance.

Aus 0 Interpandemic period No influenza subtypes in animals responsible for human infection detected in Australia.		
	Action	Responsibility
Planning and coordination	<ul style="list-style-type: none"> Develop and maintain the national pandemic action plan (Australian Management Plan for Pandemic Influenza (AMPPi)). 	DoHA, NIPAC, in consultation with CDNA, AHDMPC
	<ul style="list-style-type: none"> Identify research gaps and priorities. 	NIPAC, CDNA, NHMRC
Monitoring and surveillance	<ul style="list-style-type: none"> Establish and maintain national and international monitoring and reporting capacity and surge capacity. 	DoHA, WHO Collaborative Research Centre (WHOCC)
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and National Notifiable Diseases Surveillance System. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains. 	Public Health Laboratory Network (PHLN), WHOCC
	<ul style="list-style-type: none"> Facilitate mechanisms for monitoring global outbreaks. 	DoHA
	<ul style="list-style-type: none"> Review and maintain security at points of entry into Australia. Review and maintain biosecurity for poultry owners and awareness campaign. 	DAFF, AQIS
Public health measures <ul style="list-style-type: none"> Non-pharmacological measures 	<ul style="list-style-type: none"> Prepare materials and equipment required for urgent deployment at the declaration of particular phases of a pandemic – such as infection control posters, passenger arrival information cards, personal protective equipment. 	DoHA, NIPAC, CDNA, states and territories

<ul style="list-style-type: none"> Vaccines and antivirals 	<ul style="list-style-type: none"> Agree on key essential services to target for additional infection protection measures during an influenza pandemic (eg health care workers, public utilities workers, police). Identify personnel for designated essential services teams in these services. 	State and territory health authorities, AHDMPC, DoHA
	<ul style="list-style-type: none"> Review legal framework for pandemic interventions (including preparatory instruments). 	DoHA, Attorney-General's Department, TGA
	<ul style="list-style-type: none"> Review and maintain National Medicines Stockpile. 	DoHA
	<ul style="list-style-type: none"> Develop antiviral/vaccine deployment plans. 	State and territory health authorities
	<ul style="list-style-type: none"> Define and review priority groups for NMS antivirals in containment and maintenance phases. 	DoHA, NIPAC, CDNA, EAG
	<ul style="list-style-type: none"> Ensure access to pandemic vaccine production. 	DoHA
	<ul style="list-style-type: none"> Promote use of interpandemic (or seasonal) and pneumococcal vaccine to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> Develop and maintain pandemic influenza plans in all jurisdictions. 	State and territory health authorities, DoHA, CDNA, NIPAC, AHDMPC
	<ul style="list-style-type: none"> Test and review health sector and emergency services capacity to respond to a pandemic threat. 	DoHA, DAFF, states and territories, AHDMPC, EMA
Communications	<ul style="list-style-type: none"> Review communications strategy to ensure readiness for urgent deployment at the declaration of particular phases of a pandemic. 	DoHA, NEMRN, NIPAC, CDNA

INTERPANDEMIC PERIOD – GLOBAL PHASE 1

Goal: Limit risks of human infection in close collaboration with animal health authorities.

(a) Overseas 1: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is present in animals overseas. The risk of human infection or disease is considered to be low.

(b) Australia 1 (Aus 1): No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is present in animals in Australia. The risk of human infection or disease is considered to be low.

Priority actions at this level are: effective prevention or containment of the animal outbreak with minimal impact on the community; increased surveillance for evidence of changes in the epidemiology of the influenza strain in animals and humans; and ensuring response capacity to assess possible human cases.

(a) Animal cases outside Australia

Overseas 1 Interpandemic period Influenza subtype in animals overseas, low risk to humans.		
Action		Responsibility
Planning and coordination	<ul style="list-style-type: none"> Review national, state and territory plans, assess preparedness status and identify immediate actions to fill gaps. 	DoHA, state and territory health authorities, NIPAC, CDNA, AHDMPC
Monitoring and surveillance	<ul style="list-style-type: none"> Upgrade domestic animal surveillance (including investigation of possible cases) and biosecurity for poultry owners or owners of other affected species. Implement substantial awareness campaign. 	DAFF
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DAFF, DoHA
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and NNDSS. 	DoHA, states and territory health authorities, CDNA
	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas. 	PHLN, WHOCC
	<ul style="list-style-type: none"> Collaborate with international surveillance efforts. 	DoHA, WHOCC, DAFF

Public health measures <ul style="list-style-type: none"> • Non-pharmacological measures • Vaccines and antivirals 	<ul style="list-style-type: none"> • Implement specific import restrictions related to species of animal and animal products from affected areas. 	DAFF, AQIS, Customs
	<ul style="list-style-type: none"> • Review quarantine legislation. 	DoHA, DAFF
	<ul style="list-style-type: none"> • Review vaccine and antiviral strategies and priority groups. 	DoHA, NIPAC, CDNA, EAG
	<ul style="list-style-type: none"> • Promote use of interpandemic influenza and pneumococcal vaccines to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> • Develop and maintain pandemic influenza plans in all jurisdictions. 	State and territory health authorities, AHDMPC, DoHA, CDNA, NIPAC
	<ul style="list-style-type: none"> • Update existing infection control guidelines for those with exposure to an affected animal or its environment overseas, including monitoring/ education. • Update existing detection and clinical care guidelines for human cases. 	DoHA, DAFF, NIPAC, CDNA, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> • Inform state and territory animal health and human health authorities about the animal infection. 	DAFF, DoHA
Communications	<ul style="list-style-type: none"> • Inform key industry, media and other stakeholders about the animal infection. 	DAFF, DoHA
	<ul style="list-style-type: none"> • Review and maintain communications strategy including free call information line, website, media relations activities, education resources (including GP information kits, incoming passenger pamphlets, PPE education). 	DoHA, NEMRN

(b) Animal cases within Australia

Aus 1 Interpandemic period Influenza subtype in animals in Australia, low risk to humans.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status for human disease and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Convene IDC with relevant government agencies. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Convene Consultative Committee on Emergency Animal Diseases. 	DAFF
	<ul style="list-style-type: none"> Intensive animal surveillance to identify new cases, with enhanced biosecurity precautions. Conduct diagnostic testing using established algorithms. 	DAFF
	<ul style="list-style-type: none"> Implement disease control measures at all outbreak sites using established guidelines, in consultation with FAO and OIE. 	DAFF
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Serosurveys, data collection and epidemiological analysis to identify human respiratory infections associated with exposure to infected animals (eg poultry workers, vets and poultry cullers) through Outbreak Case Reporting System (O CRS). Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas using national guidelines, in consultation with WHO. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DAFF, DoHA
	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia. 	PHLN, WHOCC
Public health measures		
<ul style="list-style-type: none"> Non-pharmacological measures 	<ul style="list-style-type: none"> Implement specific transport/ export restrictions related to species of animal and animal products from affected areas. 	DAFF, AQIS, Customs
	<ul style="list-style-type: none"> Review NMS stocks of PPE, antivirals. 	DoHA, AHDMPC
	<ul style="list-style-type: none"> If the novel virus is highly pathogenic to poultry, institute 'stamping out'. 	DAFF
	<ul style="list-style-type: none"> Review quarantine legislation re scope of quarantinable diseases. 	DoHA
<ul style="list-style-type: none"> Vaccines and antivirals 	<ul style="list-style-type: none"> Assess influenza virus susceptibility. 	DoHA, NIPAC

	<ul style="list-style-type: none"> • Review vaccine and antiviral strategies and priority groups. 	DoHA, NIPAC, CDNA, EAG
	<ul style="list-style-type: none"> • Recommend use of PPE and antivirals for poultry workers. 	DAFF, DoHA
	<ul style="list-style-type: none"> • Enhanced promotion of interpandemic influenza for poultry cullers. • Promote interpandemic influenza and pneumococcal vaccination for other high risk groups. 	DoHA, DAFF, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> • Antivirals for exposed. 	State and territory health authorities.
	<ul style="list-style-type: none"> • Maintain register of all individuals receiving antivirals. 	State and territory health authorities
	<ul style="list-style-type: none"> • Facilitate vaccine manufacturers' access to vaccine prototypes. 	DoHA, WHOCC, vaccine manufacturers
Health care and emergency response	<ul style="list-style-type: none"> • Test and review health sector and emergency services capacity to respond to pandemic threat. 	DoHA, DAFF, AHDMPC, EMA, states and territories
	<ul style="list-style-type: none"> • Disseminate and implement infection control guidelines for those with exposure to an affected animal or its environment, including monitoring/ education. • Update and disseminate detection and clinical care guidelines for human cases. 	DoHA, DAFF, NIPAC, CDNA, state and territory health authorities, health care colleges and professional associations
Communications	<ul style="list-style-type: none"> • Review and maintain communications strategy including free call information line, website, media relations activities, education resources (including GP information kits, incoming passenger pamphlets, PPE education). 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Inform key industry and other stakeholders about the novel strain. 	DAFF, DoHA

INTERPANDEMIC PERIOD - GLOBAL PHASE 2

Goal: Containment of animal outbreaks and prevention of human cases.

(a) Overseas 2: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is present in animals overseas. The risk of human infection or disease is considered to be substantial.

(b) Australia 2 (Aus 2): No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease is present in animals in Australia. The risk of human infection or disease is considered to be substantial.

Priority actions at this level are measures to prevent or contain animal outbreaks, increase surveillance for human cases and reduce the risk of the emergence of a new human pandemic strain.

(a) Animal cases outside Australia

Overseas 2 Interpandemic period Influenza subtype in animals overseas, substantial risk to humans.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. Prepare to move from preparedness to response. 	DoHA, NIPAC, CDNA, AHDMPC, state and territory health authorities
	<ul style="list-style-type: none"> Convene more frequent meetings of CDNA, NIPAC, IDC. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Convene Consultative Committee on Emergency Animal Diseases. 	DAFF
	<ul style="list-style-type: none"> Intensified security at points of entry into Australia and upgraded biosecurity for poultry owners and owners of other affected species. Implement substantial awareness campaign. 	DAFF
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DAFF, DoHA
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and National Notifiable Diseases Surveillance. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas. 	PHLN, WHOCC
	<ul style="list-style-type: none"> Collaborate with international monitoring, surveillance and containment efforts. 	WHOCC, DoHA, CDNA

Public health measures	<ul style="list-style-type: none"> • Non-pharmacological measures 	<ul style="list-style-type: none"> • Implement specific import restrictions related to species of animal and animal products from affected areas. 	DAFF, AQIS, Customs
		<ul style="list-style-type: none"> • Review NMS (PPE, antivirals). 	DoHA, AHDMPC
	<ul style="list-style-type: none"> • Vaccines and antivirals 	<ul style="list-style-type: none"> • Review quarantine legislation. 	DoHA, DAFF
		<ul style="list-style-type: none"> • Facilitate development of vaccine reference strain and reagents for possible vaccine production and evaluation. • Review regulation affecting pandemic vaccination. 	DoHA, TGA
		<ul style="list-style-type: none"> • Review vaccine and antiviral strategies and priority groups. 	DoHA, NIPAC, CDNA, EAG
		<ul style="list-style-type: none"> • Promote use of interpandemic influenza and pneumococcal vaccines to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> • Test and review health sector and emergency services capacity to respond to a pandemic threat. 	DoHA, DAFF, AHDMPC, EMA, states and territories	
	<ul style="list-style-type: none"> • Update, disseminate and implement infection control guidelines for those with exposure to an affected animal or its environment overseas, including monitoring/ education. • Update and disseminate detection and clinical care guidelines for human cases. 	DoHA, DAFF, states and territory health authorities, CDNA, NIPAC, health care colleges and professional associations	
Communications	<ul style="list-style-type: none"> • Inform key industry, health care sector and other stakeholders about the novel strain. 	DAFF, DoHA	
	<ul style="list-style-type: none"> • Review and maintain communications strategy including free call information line, website, media relations activities, education resources (including GP information kits, incoming passenger pamphlets, PPE education). 	DoHA, NEMRN	
	<ul style="list-style-type: none"> • Provide specific information to primary care providers about possibility of illness in returned travellers. 	DoHA	
	<ul style="list-style-type: none"> • Review travel advisories. 	DoHA, DFAT	

(b) Animal cases within Australia

Aus 2 Interpandemic period Influenza subtype in animals in Australia, substantial risk to humans			
Action		Responsibility	
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, AHDMPC, NIPAC, CDNA	
Situation monitoring and assessment	<ul style="list-style-type: none"> Convene Consultative Committee on Emergency Animal Diseases. 	DAFF	
	<ul style="list-style-type: none"> Intensified security at points of entry into Australia and upgraded biosecurity for poultry owners/other affected species. Implement substantial awareness campaign. 	DAFF	
	<ul style="list-style-type: none"> Increased testing of infected flocks and other species, compile data and provide to DoHA 	DAFF	
	<ul style="list-style-type: none"> Implement disease control measures at all outbreak sites using established guidelines, in consultation with FAO and OIE. 	DAFF	
	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas using national guidelines, in consultation with WHO. 	DoHA, state and territory health authorities, CDNA	
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DAFF, DoHA	
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Serosurveys, data collection and epidemiological analysis to identify human respiratory infections associated with exposure to infected animals (eg poultry workers, vets and poultry cullers) through Outbreak Case Reporting System (OCRS). Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. 	DoHA, state and territory health authorities, CDNA	
	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia. 	PHLN, WHOCC	
Public health measures	<ul style="list-style-type: none"> Non-pharmacological measures 	<ul style="list-style-type: none"> Implement specific transport/ export restrictions related to species of animal and animal products from affected areas. 	DAFF, AQIS, Customs
		<ul style="list-style-type: none"> Review NMS stocks (PPE and other equipment). 	DoHA, AHDMPC
		<ul style="list-style-type: none"> PPE for poultry cullers. 	DoHA, DAFF
		<ul style="list-style-type: none"> Antivirals for poultry cullers. 	DoHA, DAFF
	<ul style="list-style-type: none"> Vaccines and antivirals 	<ul style="list-style-type: none"> Antivirals for exposed. 	DoHA, state and territory health authorities

	<ul style="list-style-type: none"> Enhanced promotion of interpandemic influenza vaccination for poultry cullers. Promote use of interpandemic influenza and pneumococcal vaccine for high risk groups. 	DoHA, DAFF, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> Maintain register of individuals given antivirals. 	State and territory health authorities
	<ul style="list-style-type: none"> Facilitate development of vaccine reference strain and reagents for possible vaccine production and evaluation. Review regulation affecting pandemic vaccination. 	DoHA, TGA
Health care and emergency response	<ul style="list-style-type: none"> Test and review health sector and emergency services capacity to respond to a pandemic threat. 	DoHA, DAFF, EMA, AHDMPC, states and territories
	<ul style="list-style-type: none"> Disseminate and implement infection control guidelines for those with exposure to an affected animal or its environment, including monitoring/ education. Update and disseminate detection and clinical care guidelines for human cases. 	DoHA, DAFF, state and territory health authorities, CDNA, NIPAC, health care colleges and professional associations
Communications	<ul style="list-style-type: none"> Inform state and territory animal health and human health authorities about the animal infections, in particular, the risks to human health. 	DAFF, DoHA
	<ul style="list-style-type: none"> Inform key industry, media, health care workers and other stakeholders about the animal infections. 	DoHA, DAFF
	<ul style="list-style-type: none"> Review and maintain communications strategy including free call information line, website, media relations activities, education resources (including GP information kits, incoming passenger pamphlets, PPE education). 	DoHA, NEMRN

PANDEMIC ALERT – GLOBAL PHASE 3

Goal: Ensure rapid characterisation of the new virus subtype and early detection, notification and response to additional cases.

(a) Overseas 3: Human infections(s) with a new subtype overseas, but no human to human spread, or at most rare instances of spread to a close contact.

(b) Australia 3 (Aus 3): Human infections(s) with a new subtype in Australia, but no human to human spread, or at most rare instances of spread to a close contact.

The occurrence of cases of human disease increases the chance that the virus may adapt or reassort to become transmissible from human to human, especially if coinciding with a seasonal outbreak of influenza. Priority actions are to detect and prevent spread of disease.

(a) Human cases outside Australia

Overseas 3 Pandemic alert period Human cases overseas, none or rare instances of human to human spread.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Declaration of pandemic alert. 	WHO, Minister for Health and Ageing, CMO
	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA
	<ul style="list-style-type: none"> Coordinate information sharing with other agencies and states and territories. 	DoHA, AHDMPC
	<ul style="list-style-type: none"> Convene regular meetings of CMO's Expert Advisory Group. 	DoHA, EAG
	<ul style="list-style-type: none"> Convene meetings of IDC as required. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas using national guidelines, in consultation with WHO. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> Consider enhanced implementation of border entry screening. 	IDC, DoHA
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and NNDS. Data collection and epidemiological analysis on suspect, possible and confirmed cases in those with travel history in affected area through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. 	DoHA, state and territory health authorities, CDNA

	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas. Identification of labs for diagnosis of new strain – distribution of reagents. 	PHLN, WHOCC
	<ul style="list-style-type: none"> Ensure laboratories can safely test samples for pandemic strain and forward to WHO Collaborating Centre. 	PHLN, WHOCC
	<ul style="list-style-type: none"> Increased collaboration with international surveillance and containment measures. 	WHOCC, DoHA
Public health measures		
<ul style="list-style-type: none"> Non-pharmacological measures 	<ul style="list-style-type: none"> Measures to manage possible cases at international borders. 	DoHA, AQIS
	<ul style="list-style-type: none"> Accelerate pandemic preparedness – NMS. 	DoHA
	<ul style="list-style-type: none"> Consider invoking of quarantine powers. 	DoHA
	<ul style="list-style-type: none"> Prepare strategies to prevent spread of infection to Australia – such as travel advisories or precautions, health declaration cards, thermal screening, nurse assessments at international borders. 	DOHA, DFAT, AQIS, Customs
<ul style="list-style-type: none"> Vaccines and antivirals 	<ul style="list-style-type: none"> Antivirals for exposed and cases. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Maintain register of individuals administered antivirals. 	State and territory health authorities
	<ul style="list-style-type: none"> Commence negotiations with vaccine manufacturers re vaccine production. 	DoHA
	<ul style="list-style-type: none"> Promote use of interpandemic influenza and pneumococcal vaccines to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> Review plans for health care delivery and community support. Consider sites/ equipment for designated influenza hospitals/ fever clinics. Consider sites/ equipment for designated mass quarantine areas. Review availability of personnel, supplies and materials for infection control and clinical care. 	DoHA, state and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> Update and disseminate infection control guidelines for human cases and those with exposure to cases overseas. For those with exposure to cases, initiate monitoring/ education through public health units. Update and disseminate detection and clinical care guidelines for human cases. 	DoHA, state and territory health authorities, CDNA, NIPAC, health care colleges and professional associations
Communications	<ul style="list-style-type: none"> Review and maintain communications strategy including free call information line, website, media relations activities, education resources (including GP information kits, incoming passenger pamphlets, PPE education). 	DoHA, NEMRN

	<ul style="list-style-type: none"> Consult with key national stakeholders regarding pandemic planning and response. 	DoHA
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(b) Human cases within Australia

Aus 3 Pandemic alert period Human cases in Australia, none or rare instances of human to human spread.		
	Action	Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Declaration of pandemic alert in Australia. 	Minister for Health and Ageing, CMO, EAG
	<ul style="list-style-type: none"> Convene meetings of IDC/ Inter-Departmental Taskforce. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas using national guidelines, in consultation with WHO. 	DoHA, CDNA, state and territory health authorities
	<ul style="list-style-type: none"> Implementation of detailed clinical studies to evaluate efficacy/ effectiveness and sensitivity of antivirals. 	DoHA
	<ul style="list-style-type: none"> Activate laboratory testing, reporting. 	DoHA, PHLN, WHOCC
	<ul style="list-style-type: none"> Consider enhanced implementation of border entry screening. 	IDC, DoHA
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Data collection and epidemiological analysis on suspect, possible and confirmed cases through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. 	DoHA, states and territory health authorities, CDNA
	<ul style="list-style-type: none"> Ensure laboratories can safely test samples for pandemic strain and forward to WHO Collaborating Centre. Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia. Isolation of pandemic virus strain for vaccine production. 	PHLN, WHOCC
Public health measures <ul style="list-style-type: none"> Non-pharmacological measures 	<ul style="list-style-type: none"> Prepare for invoking quarantine powers. 	Minister for Health and Ageing, DoHA, CMO
	<ul style="list-style-type: none"> Assess NMS, state and territory antiviral stocks. Assess state and territory antiviral deployment plans. 	DoHA, state and territory health authorities, AHDMPC

<ul style="list-style-type: none"> • Vaccines and antivirals 	<ul style="list-style-type: none"> • Antivirals for HCWs, exposed and cases. • Maintain register of individuals administered antivirals. 	DoHA, state and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> • Promote use of pneumococcal and inter-pandemic influenza vaccine to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> • Facilitate development of vaccine reference strain and reagents for vaccine production and evaluation. 	DoHA, WHOCC, vaccine manufacturers
	<ul style="list-style-type: none"> • Consider vaccine production. 	DoHA, vaccine manufacturers
Health care and emergency response	<ul style="list-style-type: none"> • Review plans for health care delivery and community support. • Consider sites/ equipment for designated influenza hospitals/ fever clinics. • Consider sites/ equipment for designated mass quarantine areas. • Review availability of personnel, supplies and materials for infection control and clinical care. 	DoHA, AHDMPC, state and territory health authorities
	<ul style="list-style-type: none"> • Disseminate and implement infection control guidelines for human cases and those with exposure to cases. • Contact monitoring/ education through public health units. • Disseminate and implement detection and clinical care guidelines for human cases. 	DoHA, CDNA, NIPAC, state and territory health authorities, health care colleges and professional associations
Communications	<ul style="list-style-type: none"> • Inform state and territory health authorities about the novel strain. 	DoHA
	<ul style="list-style-type: none"> • Inform key industry, media and other stakeholders about the novel strain. 	DoHA
	<ul style="list-style-type: none"> • Increase hotline capacity to 24 hour availability; additional 1800 number for health professionals; daily call monitoring; coordination between Australian Govt hotline and other agencies, jurisdictions. 	DoHA
	<ul style="list-style-type: none"> • Increase web and online staff capacity – daily posting and updating. 	DoHA
	<ul style="list-style-type: none"> • Activate media liaison surge team; accelerate media monitoring and engagement; close liaison with state and territory media units. 	DoHA
	<ul style="list-style-type: none"> • Escalate involvement of NEMRN – daily basis. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Additional resources on standby to improve surveillance and heighten public awareness (eg Health Declaration Card for incoming passengers, border displays, media buying plan, wide community dissemination of fact sheets). 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Continue consultation with key national stakeholders regarding pandemic planning and response 	DoHA

PANDEMIC ALERT – GLOBAL PHASE 4

Goal: Contain the new virus within limited foci or delay spread to gain time to implement preparedness measures, including vaccine development.

(a) Overseas 4: Small cluster(s) consistent with limited human to human transmission overseas but spread is highly localised, suggesting the virus is not well adapted to humans.

(b) Australia 4 (Aus 4): Small cluster(s) consistent with limited human to human transmission in Australia but spread is highly localised, suggesting the virus is not well adapted to humans.

Virus has increased human-to-human transmissibility but is not well adapted to humans and remains highly localised, so that its spread may possibly be delayed or contained.

(a) Cases outside Australia

Overseas 4 Pandemic alert period Small clusters overseas consistent with limited human to human transmission.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Convene regular meetings of CDNA, NIPAC, EAG. 	DoHA
	<ul style="list-style-type: none"> Provide national agencies with regular updates on the pandemic alert. Regular IDC meetings. 	DoHA, IDC
	<ul style="list-style-type: none"> Consider need for Inter-Departmental Taskforce. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas as designated by WHO using national guidelines. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> Border screening for influenza-like illness in travellers from affected regions (positive pratique, health declaration cards, thermal scanning, nurse assessments). 	DoHA, IDC, Customs, AQIS, state and territory health authorities
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Data collection and epidemiological analysis on suspect, possible and confirmed cases in those with travel history in affected area through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. 	DoHA, states and territory health authorities, CDNA

	<ul style="list-style-type: none"> • Ensure laboratories can safely test samples for pandemic strain and forward to WHO Collaborating Centre. • Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas. 	PHLN, WHOCC
	<ul style="list-style-type: none"> • Collaborate with international surveillance and containment activities. 	DoHA, WHOCC,
Public health measures		
<ul style="list-style-type: none"> • Non-pharmacological measures 	<ul style="list-style-type: none"> • Measures to manage possible cases at international borders. 	DoHA, AQIS
	<ul style="list-style-type: none"> • Consider implementation of mass quarantine measures at international borders. 	IDC, DoHA, CMO, CQOs,
	<ul style="list-style-type: none"> • As appropriate, implement travel advisories, precautions and restrictions. 	DoHA, DFAT
<ul style="list-style-type: none"> • Vaccines and antivirals 	<ul style="list-style-type: none"> • Antivirals for border workers and health care workers. • Antivirals for the exposed and cases. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> • Prepare for/ initiate pandemic vaccine production. 	DoHA, vaccine manufacturers
	<ul style="list-style-type: none"> • Promote use of pneumococcal vaccine to high risk groups. • If still in production, promote use of interpandemic influenza vaccine to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> • Review readiness of deployment strategies of antivirals and vaccines. • Organise storage of vaccine and antivirals. 	State and territory health authorities
	<ul style="list-style-type: none"> • Maintain register of individuals administered antivirals and vaccines. 	State and territory health authorities
	<ul style="list-style-type: none"> • Monitor adverse reactions of antivirals and vaccines. 	TGA
	<ul style="list-style-type: none"> • Assess antiviral resistance of novel strain. 	WHOCC
Health care and emergency response	<ul style="list-style-type: none"> • Review plans for health care delivery and community support. • Activate contingency plans for system case management capacity. • Consider sites/ equipment for designated influenza hospitals, fever clinics. • Review availability of personnel, supplies and materials for infection control and clinical care. 	DoHA, states and territories, AHDMPC
	<ul style="list-style-type: none"> • Update, disseminate and implement infection control guidelines for human cases and those with exposure to cases. • Initiate contact quarantine. • Update and disseminate detection and clinical care guidelines for human cases. • Update and reinforce alert messages to health care facilities and work force. 	DoHA, CDNA, NIPAC, state and territory health authorities, health care colleges and professional associations

Communications	<ul style="list-style-type: none"> • Regularly brief state and territory health authorities about the novel strain. • Increase hotline capacity to 24 hour availability; additional 1800 number for health professionals; daily call monitoring; coordination between Australian Govt hotline and other agencies, jurisdictions. • Increase web and online staff capacity – daily posting and updating. • Activate media liaison surge team; accelerate media monitoring and engagement; close liaison with state and territory media units. 	DoHA
	<ul style="list-style-type: none"> • Escalate involvement of NEMRN – daily basis. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Additional resources on standby to improve surveillance and heighten public awareness (eg Health Declaration Card for incoming passengers, border displays, media buying plan, wide community dissemination of fact sheets). 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Continue consultation with key national stakeholders regarding pandemic planning and response 	DoHA

(b) Cases within Australia.

Aus 4 Pandemic alert period Small clusters in Australia consistent with limited human to human transmission.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Convene frequent meetings of NIPAC, EAG, CDNA, IDC. 	DoHA
	<ul style="list-style-type: none"> Consider convening of Inter-Departmental Taskforce. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas using national guidelines in consultation with WHO. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> Border screening for influenza-like illness in travellers from affected regions. Consider exit screening for travellers going to unaffected countries. 	DoHA, IDC, AQIS, Customs, state and territory health authorities
	<ul style="list-style-type: none"> Ensure laboratories can safely test samples for pandemic strain and forward to WHO Collaborating Centre. Isolation of pandemic virus strain for vaccine production. Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia. 	PHLN, WHOCC
	<ul style="list-style-type: none"> Routine influenza surveillance through sentinel GPs and the NNDSS. Data collection, laboratory testing and epidemiological analysis on suspect, possible and confirmed cases through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. Surveillance of influenza-like illness in health care workers exposed to suspect, probable or confirmed pandemic influenza cases or their specimens. 	DoHA, CDNA, state and territory health authorities
	<ul style="list-style-type: none"> Collaborate with international surveillance and containment activities. 	DoHA, CDNA, WHOCC
Public health measures	<ul style="list-style-type: none"> Non-pharmacological measures Consider internal regional quarantine measures (eg isolation of a town or region). 	DoHA, EAG, CMO, AHDMPC, states and territories, CQOs
	<ul style="list-style-type: none"> Review quarantine legislation. 	DoHA

<ul style="list-style-type: none"> • Vaccines and antivirals 	<ul style="list-style-type: none"> • Antivirals for border workers and health care workers. • Antivirals for the exposed and cases. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> • Promote use of pneumococcal vaccine to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> • Prepare for/ initiate pandemic vaccine production. 	DoHA, vaccine manufacturers
	<ul style="list-style-type: none"> • Maintain registers of individuals administered antivirals and vaccines. 	State and territory health authorities
Health care and emergency response	<ul style="list-style-type: none"> • Activate designated influenza hospitals, fever clinics. • Activate contingency plans for system case management capacity. 	States and territories, AHDMPC
	<ul style="list-style-type: none"> • Update and reinforce alert messages to health care facilities and work force. • Disseminate and implement infection control guidelines for human cases and those with exposure to cases. • Implement contact quarantine. • Disseminate and implement detection and clinical care guidelines for human cases. 	DoHA, CDNA, NIPAC, state and territories, health care colleges and professional associations
	<ul style="list-style-type: none"> • Activate emergency services preparedness plans. 	AHDMPC, EMA
	<ul style="list-style-type: none"> • Increase hotline capacity to 24 hour availability; additional 1800 number for health professionals; daily call monitoring; coordination between Australian Govt hotline and other agencies, jurisdictions. • Increase web and online staff capacity – daily posting and updating. • Activate media liaison surge team; accelerate media monitoring and engagement; close liaison with state and territory media units. 	DoHA
Communications	<ul style="list-style-type: none"> • Escalate involvement of NEMRN – daily basis. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Additional resources on standby to improve surveillance and heighten public awareness (eg Health Declaration Card for incoming passengers, border displays, media buying plan, wide community dissemination of fact sheets). 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Seven days a week NIR operations and situation reports, activation of surge team. 	DoHA, AHDMPC
	<ul style="list-style-type: none"> • Daily reports to WHO. 	DoHA
	<ul style="list-style-type: none"> • Continue consultation with key national stakeholders regarding pandemic planning and response. 	DoHA

PANDEMIC ALERT – GLOBAL PHASE 5

Goal: Maximise efforts to contain or delay spread, to possibly avert a pandemic and to gain time to implement pandemic response.

(a) Overseas 5: Larger cluster(s) but human to human spread still localised overseas, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk)⁵.

(b) Australia 5 (Aus 5): Larger cluster(s) but human to human spread still localised in Australia, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk)⁵.

The virus is more adapted to humans, and therefore more easily transmissible among humans. It spreads in larger clusters, but spread is localised. This is likely to be the last chance for massive coordinated global intervention, targeted to one or more foci, to delay or contain spread. In view of possible delays in documenting spread of infection during Phase 4, it is anticipated that there would be a low threshold for progress to Phase 5.

(a) Cases outside Australia

Overseas 5 Pandemic alert period Large clusters of human cases overseas, substantial pandemic risk.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Regular briefings with key national agencies. Establishment of Inter-Departmental Taskforce. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link to affected areas using national guidelines, in consultation with WHO. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> Border screening for influenza-like illness in travellers from affected regions. 	DoHA, IDC/ taskforce, Customs, AQIS, state and territory health authorities
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Data collection and epidemiological analysis on suspect, possible and confirmed cases in those with travel history in affected area through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. Initiate sentinel surveillance if out of season. 	DoHA, states and territory health authorities, CDNA

	<ul style="list-style-type: none"> • Ensure laboratories can safely test samples for pandemic strain and forward to WHOCC. • Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in travellers returning from high risk areas overseas. 	PHLN, WHOCC
	<ul style="list-style-type: none"> • Collaboration with international surveillance and containment activities. 	DoHA, WHOCC
Public health measures		
<ul style="list-style-type: none"> • Non-pharmacological measures 	<ul style="list-style-type: none"> • Measures to manage possible cases at international borders. 	DoHA, AQIS
	<ul style="list-style-type: none"> • Consider implementation of mass quarantine measures at international borders. 	IDC/ Taskforce, DoHA, CMO, CQOs
	<ul style="list-style-type: none"> • As appropriate, implement travel advisories, precautions and restrictions. 	DoHA, DFAT
	<ul style="list-style-type: none"> • Review NMS antiviral stocks and deployment priorities. 	DoHA, AHDMPC
<ul style="list-style-type: none"> • Vaccines and antivirals 	<ul style="list-style-type: none"> • Antivirals for border workers, health care workers. • Antivirals for the exposed and cases. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> • Initiate pandemic vaccine production. 	DoHA, vaccine manufacturers
	<ul style="list-style-type: none"> • Promote use of pneumococcal vaccine to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> • Consider sites/equipment for designated influenza hospitals, fever clinics. • Activate contingency plans for system case management capacity. 	DoHA, state and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> • Update and reinforce alert messages to health care facilities and work force. • Update and disseminate detection and clinical care guidelines for human cases. • Update, disseminate and implement infection control guidelines for human cases and those with exposure to cases. • Implement contact quarantine. 	DoHA, CDNA, NIPAC, states and territories, health care colleges and professional associations
	<ul style="list-style-type: none"> • Activate emergency service preparedness plans. 	EMA, AHDMPC
Communications	<ul style="list-style-type: none"> • Increase hotline capacity to 24 hour availability; additional 1800 number for health professionals; daily call monitoring; coordination between Australian Govt hotline and other agencies, jurisdictions. • Increase web and online staff capacity – daily posting and updating. • Activate media liaison surge team; accelerate media monitoring and engagement; close liaison with state and territory media units. 	DoHA
	<ul style="list-style-type: none"> • Escalate involvement of NEMRN – daily basis. 	DoHA, NEMRN

	<ul style="list-style-type: none"> Additional resources on standby to improve surveillance and heighten public awareness (eg Health Declaration Card for incoming passengers, border displays, media buying plan, wide community dissemination of fact sheets). 	DoHA, NEMRN
	<ul style="list-style-type: none"> NIR active on a 24 hour basis. Continue consultation with key national stakeholders regarding pandemic planning and response. 	DoHA

(b) Cases within Australia

Aus 5 Pandemic alert period Large clusters of human cases in Australia, substantial pandemic risk.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Consider change in strategy from containment to maintenance of essential services. 	CMO, EAG
	<ul style="list-style-type: none"> Daily conferencing of CMO and EAG. 	CMO, EAG
	<ul style="list-style-type: none"> Increased frequency of IDC meetings. Establishment of Inter-Departmental Taskforce. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases with an epidemiological link using national guidelines. 	DoHA, CDNA, state and territory health authorities
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> Border entry screening. Border exit screening. 	IDC/ IDTF, DoHA, Customs, AQIS, DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Data collection, laboratory testing and epidemiological analysis on suspect, possible and confirmed cases through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. Surveillance of influenza-like illness in health care workers exposed to suspect, probable or confirmed pandemic influenza cases or their specimens. 	DoHA, CDNA, state and territory health authorities
	<ul style="list-style-type: none"> Ensure laboratories can safely test samples for pandemic strain and forward to WHOCC. Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia. Isolation of pandemic virus strain for vaccine production. 	PHLN, WHOCC

Public health measures		
Non-pharmacological measures	<ul style="list-style-type: none"> Review quarantine legislation. 	DoHA
	<ul style="list-style-type: none"> Consider internal regional quarantine measures (eg isolation of a town or region). 	DoHA, CMO, EAG, AHDMPC, states and territories, CQOs
	<ul style="list-style-type: none"> Consider measures to increase social distance (eg school and work closures, limiting mass gatherings). 	DoHA, CMO, ADHMPC, state and territory health authorities
	<ul style="list-style-type: none"> Antivirals for agreed priority groups. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Promote use of pneumococcal vaccine for high risk groups. 	DoHA, state and territories, health care colleges and professional associations
	<ul style="list-style-type: none"> Initiate pandemic vaccination production. 	DoHA, vaccine manufacturers
Vaccines and antivirals	<ul style="list-style-type: none"> Maintain registers of individuals administered antivirals and vaccine. 	State and territory health authorities
	<ul style="list-style-type: none"> Activate designated influenza hospitals and fever clinics. Activate contingency plans for system case management capacity. 	State and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> Update and reinforce alert messages to health care facilities and work force. Disseminate and implement infection control guidelines for human cases and those with exposure to cases. Disseminate and implement detection and clinical care guidelines for human cases Implement contact quarantine. 	DoHA, NIPAC, CDNA, states and territories, health care colleges professional and associations
	<ul style="list-style-type: none"> Activate emergency preparedness plans. 	EMA, AHDMPC
Health care and emergency response	<ul style="list-style-type: none"> Increase hotline capacity to 24 hour availability; additional 1800 number for health professionals; daily call monitoring; coordination between Australian Govt hotline and other agencies, jurisdictions. Increase web and online staff capacity – daily posting and updating. Activate media liaison surge team; accelerate media monitoring and engagement; close liaison with state and territory media units. 	DoHA
	<ul style="list-style-type: none"> Escalate involvement of NEMRN – daily basis. Additional resources on standby to improve surveillance and heighten public awareness (eg Health Declaration Card for incoming passengers, border displays, media buying plan, wide community dissemination of fact sheets). 	DoHA, NEMRN
	<ul style="list-style-type: none"> NIR operations and situation reports 24 hours a day. Daily reports to WHO. 	DoHA
Communications		

	<ul style="list-style-type: none"> Continue consultation with key national stakeholders regarding pandemic planning and response. 	DoHA
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PANDEMIC - GLOBAL PHASE 6

Goal: Delay of entry of pandemic virus into Australia; containment of human outbreaks once Australia is affected; while chains of transmission are still identifiable, to delay rate of spread; and, once pandemic is established in Australia, maintain essential services.

(a) Overseas 6: Increased and sustained transmission in the general population overseas.

Major change in global surveillance and response strategy, since pandemic risk is imminent for all countries. The national response is determined primarily by the disease impact within the country.

(b) Australia 6a (Aus 6a): Increased and sustained transmission in the general population in Australia, but cases are still localised to one area of the country.

(c) Australia 6b (Aus 6b): Increased and sustained transmission in the general population in Australia and cases are occurring in multiple regions of the country.

(d) Australia 6c (Aus 6c): Increased and sustained transmission in the general population in Australia and but the number of cases is subsiding.

(e) Australia 6d (Aus 6d): The next wave of the pandemic has reached Australia indicated by an increase again in the number of cases.

Although a pandemic has been declared, because Australia is not as densely populated as other countries, there still exists the opportunity to try to contain the spread of the pandemic. This means that the actions at the later pandemic phases may still vary. Measures will aim to reduce the morbidity and mortality from influenza and its complications, preserve health care systems, minimise social disruption and economic impacts, and evaluate and forecast.

(a) Pandemic overseas

Overseas 6 Pandemic period Increased and sustained transmission in the general population overseas.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, AHDMPC, NIPAC, CDNA
	<ul style="list-style-type: none"> Declaration of pandemic. 	WHO, Minister for Health and Ageing, CMO
	<ul style="list-style-type: none"> Consider change to maintenance of essential services. 	CMO, EAG

	<ul style="list-style-type: none"> Maintain Inter-Departmental Taskforce with objective of minimising morbidity and mortality, maintaining social stability and economic support. 	Relevant Australian Government agencies
Monitoring and surveillance	<ul style="list-style-type: none"> Investigate within 24 hours all reports of possible human cases. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> Border entry screening. 	DoHA, IDC/ taskforce, Customs, AQIS, state and territory health authorities
	<ul style="list-style-type: none"> Maintain routine influenza surveillance through sentinel GPs and the NNDSS. Sentinel surveillance if out of season. Data collection and epidemiological analysis on suspect, possible and confirmed cases through OCRS. Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas overseas or within Australia. 	PHLN, WHOCC
Public health measures <ul style="list-style-type: none"> Non-pharmacological measures Vaccines and antivirals 	<ul style="list-style-type: none"> Measures to manage possible cases at international borders. 	DoHA, AQIS
	<ul style="list-style-type: none"> Consider implementation of mass quarantine measures at international borders. 	IDC/ taskforce, DoHA, CMO, CQOs,
	<ul style="list-style-type: none"> As appropriate, implement travel advisories, precautions and restrictions. 	DoHA, DFAT
	<ul style="list-style-type: none"> Antivirals for agreed priority groups. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Review NMS deployment strategies. Review vaccine deployment strategies. 	DoHA, states and territories
	<ul style="list-style-type: none"> Pandemic vaccination. 	DoHA, states and territories, health care providers
	<ul style="list-style-type: none"> Maintain registers of those receiving pandemic vaccine and antivirals. 	State and territory health authorities
	<ul style="list-style-type: none"> Promote use of pneumococcal vaccine to high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> Consider sites/ equipment for designated influenza hospitals, fever clinics. Activate contingency plans for system case management capacity. 	State and territory health authorities, AHDMPC

	<ul style="list-style-type: none"> • Update and reinforce alert messages to health care facilities and work force. • Update, disseminate and implement infection control guidelines for human cases and those with exposure to cases. • Update and disseminate detection and clinical care guidelines for human cases. 	DoHA, CDNA, NIPAC, state and territory health authorities, health care colleges and associations
	<ul style="list-style-type: none"> • Activate emergency pandemic preparedness plans. 	EMA, AHDMPC
Communications	<ul style="list-style-type: none"> • Enhanced hotline phone capacity (increased staff and phone lines). 	DoHA
	<ul style="list-style-type: none"> • Establish of separate, dedicated pandemic website with increased focus on health professionals' subsite and media centre site. 	DoHA
	<ul style="list-style-type: none"> • Activate expanded media liaison team; deployment of media liaison officers to key trigger points; work closely with NEMRN; enhanced media monitoring. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Increased engagement of NEMRN, including activation of coordinated federal, state and territory influenza pandemic communications plans. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Accelerated community distribution of fact sheets; activate media advertising strategy; advertise at borders; record special broadcasts and video of CMO. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • NIR operations and situation reports 24 hours a day. NIR reporting daily to WHO. 	DoHA
	<ul style="list-style-type: none"> • Continue consultation with key national stakeholders regarding pandemic planning and response. 	DoHA

(b) Early pandemic phase in Australia

Aus 6a Pandemic period Increased and sustained transmission in the general population in Australia, but cases are still localised to one area of the country.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> • Declaration of pandemic in Australia. • Consider change to maintenance of essential services. 	Minister for Health and Ageing, CMO, EAG
	<ul style="list-style-type: none"> • Frequent meetings of all national bodies (NIPAC, CDNA, Inter-Departmental Taskforce). • Daily meetings of EAG and CMO. 	Relevant government agencies, NIPAC, CDNA, AHDMPC, EAG
Monitoring and surveillance	<ul style="list-style-type: none"> • Review and, where required, enhance laboratory diagnostic capacity for novel strain. 	DoHA
	<ul style="list-style-type: none"> • Border exit screening (to unaffected countries). • Border entry screening. 	DoHA, taskforce, state and territory health authorities, AQIS, Customs
	<ul style="list-style-type: none"> • Maintain routine influenza surveillance through sentinel GPs and the NNDSS. • Sentinel surveillance if out of season. • Data collection and epidemiological analysis on suspect, possible and confirmed cases through OCRS. • Passive reporting of unusual clusters of influenza-like illness or acute respiratory disease. • Surveillance of influenza-like illness in health care workers exposed to suspect, probable or confirmed pandemic influenza cases or their specimens. • Hospital-based surveillance. • Monitor absenteeism among essential services personnel. • Studies to measure effectiveness of antivirals and/or vaccines and adverse events associated with antiviral and/or vaccine use. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> • Additional laboratory resources operational and resourced. 	DoHA, PHLN, WHOCC
	<ul style="list-style-type: none"> • Laboratory surveillance to monitor influenza virus isolates and detect local novel influenza strains in those from high risk areas- overseas or within Australia. 	PHLN, WHOCC

Public health measures <ul style="list-style-type: none"> • Non-pharmacological measures • Vaccines and antivirals 	<ul style="list-style-type: none"> • Consider internal regional quarantine measures (eg isolation of a town or region). 	DoHA, CMO, AHDMPC, state and territories authorities, CQOs
	<ul style="list-style-type: none"> • Consider measures to increase social distance (eg school and work closures, limiting mass gatherings.) 	DoHA, ADHMPC, CMO, state and territory health authorities
	<ul style="list-style-type: none"> • Antivirals for agreed priority groups. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> • Pandemic vaccination. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> • Maintain a register of those receiving antivirals and pandemic vaccine. 	State and territory health authorities
	<ul style="list-style-type: none"> • Promote use of pneumococcal vaccine for high risk groups. 	DoHA, state and territory health authorities, health care colleges and professional associations
Health care and emergency response	<ul style="list-style-type: none"> • Activate designated influenza hospitals, fever clinics. • Activate contingency plans for system case management capacity. 	State and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> • Update and reinforce alert messages to health care facilities and work force. • Disseminate and implement infection control guidelines for human cases and those with exposure to cases. • Disseminate and implement detection and clinical care guidelines for human cases. 	DoHA, CDNA, NIPAC, state and territory health authorities, health care colleges and professional and associations
	<ul style="list-style-type: none"> • Activate emergency response plans. 	EMA, AHDMPC
Communications	<ul style="list-style-type: none"> • Enhanced hotline phone capacity (increased staff and phone lines). 	DoHA
	<ul style="list-style-type: none"> • Establish separate, dedicated pandemic website with increased focus on health professionals' subsite and media centre site. 	DoHA
	<ul style="list-style-type: none"> • Activate expanded media liaison team; deployment of media liaison officers to key trigger points; work closely with NEMRN; enhanced media monitoring. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Increased engagement of NEMRN, including activation of coordinated federal, state and territory influenza pandemic communications plans. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Accelerated community distribution of fact sheets; activate media advertising strategy; advertise at borders; record special broadcasts and video of CMO. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • NIR operations and situation reporting 24 hours per day. Daily reports to WHO. • Continue consultation with key national stakeholders regarding pandemic response. 	DoHA

(c) Multiple regions in Australia affected

Aus 6b Pandemic period Increased and sustained transmission in the general population in Australia and cases are occurring in multiple regions of the country.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
	<ul style="list-style-type: none"> Change to maintenance of essential services. 	CMO, EAG
	<ul style="list-style-type: none"> Maintain Inter-Departmental Taskforce. 	DoHA
Monitoring and surveillance	<ul style="list-style-type: none"> Review and, where required, enhance laboratory diagnostic capacity for isolating local pandemic influenza virus. 	DoHA
	<ul style="list-style-type: none"> Surveillance through routine and hospital systems. Monitor absenteeism among essential services personnel. 	State and territory health authorities, DoHA, CDNA
	<ul style="list-style-type: none"> Selected laboratory surveillance to isolate local pandemic influenza virus to compare with vaccine strains and assess susceptibility to anti-viral drugs. 	PHLN, WHOCC
Public health measures	<ul style="list-style-type: none"> Consider measures to increase social distance (eg school and work closures and limiting mass gatherings). 	DoHA, CMO, AHDMPC, state and territory authorities
	<ul style="list-style-type: none"> Evaluate NMS supplies and evidence of effectiveness. 	DoHA
	<ul style="list-style-type: none"> Antivirals distributed according to agreed priority groups – essential workers once change to maintenance declared. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Pandemic vaccination. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Maintain register of those receiving pandemic vaccine and antivirals. 	State and territory health authorities
Health care and emergency response	<ul style="list-style-type: none"> Activate designated influenza hospitals, fever clinics. Activate contingency plans for system case management capacity. Activate teams of essential workers. 	State and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> Update and reinforce alert messages to health care facilities and work force. Update, disseminate and implement infection control guidelines for human cases and those with exposure to cases. Review feasibility of contact tracing. Review contact quarantine (may be through media messages rather than public health units). Update, disseminate and implement case detection and clinical care guidelines. 	DoHA, NIPAC, CDNA, state and territory health authorities, health care colleges and associations

	<ul style="list-style-type: none"> • Activate emergency pandemic preparedness plans. 	EMA, AHDMPC
Communications	<ul style="list-style-type: none"> • Enhanced hotline phone capacity (increased staff and phone lines). 	DoHA
	<ul style="list-style-type: none"> • Maintain separate, dedicated pandemic website with increased focus on health professionals' subsite and media centre site. 	DoHA
	<ul style="list-style-type: none"> • Activate expanded media liaison team; deployment of media liaison officers to key trigger points; work closely with NEMRN; enhanced media monitoring. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Increased engagement of NEMRN, including activation of coordinated federal, state and territory influenza pandemic communications plans. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Accelerated community distribution of fact sheets; activate media advertising strategy; advertise at borders; record special broadcasts and video of CMO. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • NIR operations and situation reporting 24 hours a day. Daily reporting to WHO. 	DoHA
	<ul style="list-style-type: none"> • Continue consultation with key national stakeholders regarding pandemic response. 	DoHA

(d) Pandemic subsiding

Aus 6c Pandemic period Increased and sustained transmission in the general population in Australia but the number of cases is subsiding.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
Monitoring and surveillance	<ul style="list-style-type: none"> Review need for border screening 	DoHA, taskforce, state and territory health authorities, AQIS, Customs
	<ul style="list-style-type: none"> Continued surveillance through routine and hospital systems. Monitor absenteeism among essential services personnel 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Selected laboratory surveillance to isolate local pandemic virus to compare with vaccine strains and assess susceptibility to antiviral drugs. 	PHLN, WHOCC
	<ul style="list-style-type: none"> Analysis of match between circulating strain(s) and pandemic vaccine. 	TGA, vaccine manufacturers, WHOCC
Public health measures <ul style="list-style-type: none"> Non-pharmacological measures Vaccines and antivirals 	<ul style="list-style-type: none"> Consider measures to increase social distance (eg school and work closures, limiting mass gatherings). 	DoHA, CMO, AHDMPC, state and territory authorities
	<ul style="list-style-type: none"> Antivirals distributed according to agreed priority groups. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Pandemic vaccination. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Maintain register of those receiving pandemic vaccine and antivirals. 	State and territory health authorities.
Health care and emergency response	<ul style="list-style-type: none"> Activate designated influenza hospitals, fever clinics. Activate contingency plans for system case management capacity. 	State and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> Update and reinforce alert messages to health care facilities and work force. Update, disseminate and implement infection control guidelines for human cases and those with exposure to cases. Update, disseminate and implement detection and clinical care guidelines for human cases. Review contact tracing and quarantine. 	DoHA, CDNA, NIPAC, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> Activate emergency pandemic preparedness plans. 	EMA, AHDMPC

Communications	<ul style="list-style-type: none"> • Inform state and territory health authorities about the novel strain. • Enhanced hotline phone capacity (increased staff and phone lines). • Maintain separate, dedicated pandemic website with increased focus on health professionals' subsite and media centre site. 	DoHA
	<ul style="list-style-type: none"> • Activate expanded media liaison team; deployment of media liaison officers to key trigger points; work closely with NEMRN; enhanced media monitoring. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • Increased engagement of NEMRN, including activation of coordinated federal, state and territory influenza pandemic communications plans. 	DoHA, NEMRN
	<ul style="list-style-type: none"> • NIR operations and situation reporting 24 hours per day. Daily reporting to WHO. • Continue consultation with key national stakeholders regarding pandemic response. 	DoHA

(e) Next wave of pandemic in Australia

Aus 6d Pandemic period The next wave of the pandemic has reached Australia indicated by an increase again in the number of cases.		
Action		Responsibility
Planning and Coordination	<ul style="list-style-type: none"> Assess preparedness status and identify immediate actions to fill gaps. 	DoHA, NIPAC, CDNA, AHDMPC
Situation monitoring and assessment	<ul style="list-style-type: none"> Review need for border screening. 	DoHA, taskforce, state and territory health authorities, AQIS, Customs
	<ul style="list-style-type: none"> Continue surveillance through routine and hospital systems. Monitor absenteeism among essential services personnel. 	DoHA, state and territory health authorities, CDNA
	<ul style="list-style-type: none"> Analysis of match between circulating strain(s) and pandemic vaccine. 	WHOCC, TGA, vaccine manufacturers
	<ul style="list-style-type: none"> Additional laboratory resources operational and resourced. 	DoHA
	<ul style="list-style-type: none"> Selected laboratory surveillance to isolate local pandemic influenza virus to compare with vaccine strains and assess susceptibility to antiviral drugs. 	PHLN, WHOCC
Public health measures <ul style="list-style-type: none"> Non-pharmacological measures Vaccines and antivirals 	<ul style="list-style-type: none"> Consider measures to increase social distance (eg school and work closures, limiting mass gatherings). 	DoHA, CMO, AHDMPC, state and territory authorities
	<ul style="list-style-type: none"> Pandemic vaccination. 	DoHA, state and territory health authorities
	<ul style="list-style-type: none"> Maintain a register of those receiving pandemic vaccine and antivirals. 	State and territory health authorities
Health care and emergency response	<ul style="list-style-type: none"> Activate designated influenza hospitals and fever clinics. Activate contingency plans for system case management capacity. 	State and territory health authorities, AHDMPC
	<ul style="list-style-type: none"> Update and reinforce alert messages to health care facilities and work force. Review, disseminate and implement infection control guidelines for human cases and those with exposure to cases. Review, disseminate and implement detection and clinical care guidelines for human cases. Review contact monitoring and contact quarantine. 	DoHA, NIPAC, CDNA, state and territory health authorities, health care colleges and professional associations
	<ul style="list-style-type: none"> Activate emergency pandemic preparedness plans. 	EMA, AHDMPC

Communications	<ul style="list-style-type: none"> Enhanced hotline phone capacity (increased staff and phone lines). 	DoHA
	<ul style="list-style-type: none"> Maintain separate, dedicated pandemic website with increased focus on health professionals' subsite and media centre site. 	DoHA
	<ul style="list-style-type: none"> Activate expanded media liaison team; deployment of media liaison officers to key trigger points; work closely with NEMRN; enhanced media monitoring. 	DoHA, NEMRN
	<ul style="list-style-type: none"> Increased engagement of NEMRN, including activation of coordinated federal, state and territory influenza pandemic communications plans. 	DoHA, NEMRN
	<ul style="list-style-type: none"> Accelerated community distribution of fact sheets; activate media advertising strategy; advertise at borders; record special broadcasts and video of CMO. 	DoHA, NEMRN
	<ul style="list-style-type: none"> NIR operations and situational reporting 24 hours per day. Daily reports to WHO. 	DoHA
	<ul style="list-style-type: none"> Continue consultation with key national stakeholders regarding pandemic response. 	DoHA

SECTION 5: ANNEXES

ANNEX 1: Border control for pandemic influenza

International airport procedures for border nurse referrals

March 2005

Border nurses are placed at international airports for the purposes of screening travelers for influenza only. They are not provided for general medical assessment

From the health declaration card, incoming travellers may be referred by AQIS staff for assessment by a nurse because they are unwell or because they have been in contact with a person with severe respiratory disease. Those identified as being unwell will be issued with a surgical mask and escorted to an interview room.

From the infra-red thermal imaging, incoming travellers may be referred for assessment by a nurse because they are suspected to have a fever, a prominent symptom of influenza. Those identified as having fever will be issued with a surgical mask and escorted to an interview room.

Prior to interview of the 'at risk' traveller, the interviewing border nurse should be aware of the infection control guidelines. AQIS staff should organise a medical interpreter if required. Care must also be taken to ensure that the interpreter is adhering to the infection guidelines.

In the interview room, the following questionnaire is to be administered to determine whether the unwell traveller should be referred to the CQO.

Actions by the border nurse

People who **have symptoms of influenza like illness and have been in an affected area** should be managed according to the flow chart.

Outcomes

1. Isolate

People who have signs or symptoms of influenza like illness or contact with person(s) with influenza like illness before the onset of illness and have been in an affected area should be provided with a surgical mask.

The nurse should:

- report the case to the CQO or duty medical officer by telephone; and
- **fax this record to an appropriate public health unit.**

2. Health advice

People **who do not need isolation after the assessment** will be released with health advice given by the nurse. The nurse should advise them to continue monitor for any signs or symptoms of influenza like illness. If symptoms occur, these people should seek medical attention immediately and report their travel histories to the physician.

If the person is **symptomatic and his/her temperature is less than 38°C**, apart from health advice given, he/she should be

- provided with a surgical mask; AND
- provided with printed advice on managing their symptoms; AND
- a telephone number of an appropriate public health unit.

What is the outcome of the assessment of this traveller? (Please circle one of the following)

Isolation & contact CQO / Released with health advice

*** Fax the border nurse assessment summary form(s) at the end of each shift to the National Incident Room on (02) 6289-3041.**

Border nurse

Name _____

Telephone number _____ Date ___ / ___ / ___

ANNEX 2: Pandemic influenza surveillance form

Proposed data fields for data collection from suspect, possible or confirmed cases of avian influenza in the pandemic alert period

1. Source of information

1.1 Date of Notification ___/___/____(D/M/Y)

Jurisdiction (state or territory) _____[QLD, NSW, Tas, Vic, WA, ACT, SA, NT]

Notification Completed by

Reference Number _____ [eg QLD10989 or jurisdiction based ID number]

2. Demography

DOB ___/___/____(D/M/Y)

Age _____

Sex _____ [1=male, 2=female]

Postcode of residence _____

Postcode of diagnosis _____

Country of birth _____

Existing medical condition _____ [1=Y,2=N, 9=unknown]

If No or Unknown go to 3

Detail of medical condition

3. Symptoms, exposure and laboratory test results

3.1 Symptoms

Fever > 38 °C _____ [1= Y, 2 =N, 9=unknown]

Date of onset of fever ___/___/____(D/M/Y)

Cough _____ [1=Y,2=N, 9=unknown]

Date of onset of cough ___/___/____(D/M/Y)

Sore throat _____ [1=Y,2=N, 9=unknown]

Date of onset of sore throat ___/___/____(D/M/Y)

Fatigue _____ [1=Y,2=N, 9=unknown]

Date of onset of fatigue ___/___/_____(D/M/Y)

Shortness of breath _____ [1=Y,2=N,9=unknown]

3.1.6.1 Date of onset of shortness of breath ___/___/_____(D/M/Y)

Other symptoms _____ [1=Y,2=N, 9=unknown]

If No or Unknown go to 3.2

Detail of other symptoms

3.2 Exposure

Contact with a confirmed human case of avian/pandemic influenza A during the infectious period (within 7 days of onset of symptoms) _____ [1=Y,2=N, 9=unknown]

If No or Unknown go to 3.2.4

Date of last contact ___/___/_____(D/M/Y)

Country where contact with confirmed case occurred

3.2.1 Visit to a poultry farm or other bird contact in an area known to have outbreaks of notifiable avian influenza (as defined by OIE) within 7 days of the onset of symptoms _____ [1=Y,2=N, 9=unknown]

If No or Unknown go to 3.2.6

Other animal contact _____ [1=Y, 2=M, 9=unknown]

Name of country _____

3.2.2 Worked in a laboratory that is processing samples from persons or animals suspected to be infected with avian/pandemic influenza _____ [1=Y,2=N, 9=unknown]

If No or Unknown go to 3.3

Name _____ and _____ location _____ of _____ laboratory

Last day of work ___/___/_____(D/M/Y)

3.3 Laboratory test results

Influenza virus isolated by culture _____ [1=Y,2=N, 9=results pending]

Other pathogens isolated by culture? _____ [1=Y,2=N]

If other pathogens isolated by culture please give details _____

Pandemic influenza virus detected by nucleic acid testing _____ [1=Y,2=N, 9=results pending]

Pandemic influenza virus antigen detected _____ [1=Y,2=N, 9=results pending]

Single high titre antibody to pandemic influenza virus or a fourfold or greater rise in titre to pandemic influenza virus obtained _____ [1=Y,2=N, 9=results pending]

Immunofluorescence antibody (IFA) positive _____ [1=Y,2=N, 9=results pending]

4 Case classification

Initial case classification _____ [1= Possible case, 2= Confirmed case, 3=suspect case]

Final case classification _____ [1= Possible case, 2=Confirmed case, 3= Alternative diagnosis]

5 Clinical information

Hospitalised _____ [1=Y,2=N]

Hospital _____ Name

Date Hospitalised ___/___/_____(D/M/Y)

5.4 ICU admission _____ [1=Y, 2=N]

5.5 Admission to isolation ward _____ [1=Y, 2=N]

5.6 Date discharged ___/___/_____(D/M/Y)

5.7 Received antiviral prophylaxis _____ [1=Y,2=N, 9=unknown]

5.8 Antiviral administered _____ Days of administration _____

5.9 Other treatment received (*please specify*)

5 Outcome _____ [1= recovered, 2=deceased, 3=left country, 4= lost to follow up]

6 Contacts (repeat for each contact)

Contact 1:

Reference number: _____

DOB ___/___/___(D/M/Y) Sex _____[1=M, 2=F]

Postcode of residence: _____

Type of contact with index patient _____[1=household; 2=occupational; 3=casual]

Contact with index case during incubation period ___ [1=Y, 2=N, 9=unknown]

Symptoms: Fever > 38 °C _____ [1=Y, 2=N, 9=unknown]

Cough _____ [1=Y, 2=N, 9=unknown]

Sore throat _____ [1=Y, 2=N, 9=unknown]

Fatigue _____ [1=Y, 2=N, 9=unknown]

Shortness of breath _____ [1=Y, 2=N, 9=unknown]

Other symptoms _____ [1=Y, 2=N, 9=unknown]

Detail of other symptoms _____

6.9 Laboratory test results

Influenza virus isolated by culture _____ [1=Y, 2=N, 9=results pending]

Other pathogens isolated by culture? _____ [1=Y, 2=N]

If other pathogens isolated by culture please give details _____

Pandemic influenza virus detected by nucleic acid testing _____ [1=Y, 2=N, 9=results pending]

Pandemic influenza virus antigen detected _____ [1=Y, 2=N, 9=results pending]

Single high titre antibody to pandemic influenza virus or a fourfold or greater rise in titre to pandemic influenza virus obtained _____ [1=Y, 2=N, 9=results pending]

Immunofluorescence antibody (IFA) positive _____ [1=Y, 2=N, 9=results pending]

6.10 Clinical information

Hospitalised _____ [1=Y, 2=N]

Received antiviral prophylaxis _____ [1=Y, 2=N, 9=unknown]

Other treatment received (please specify) _____

ANNEX 3: Pandemic vaccines

Types of vaccines, doses, and dosing schedule

Current influenza vaccines contain either inactivated influenza virus antigens or living, attenuated virus. Although there is some progress to registration of vaccines prepared from viruses grown in cell culture, the great majority are prepared from influenza cultivated in embryonated chicken eggs. Currently only inactivated, egg-grown, split-product, sub-unit and an adjuvanted sub-unit vaccine are licensed for use in Australia.

Annual influenza vaccine formulation follows recommendations made by the World Health Organization and local regulatory bodies. In the case of Australia this is the Australian Influenza Vaccine Committee which is convened by the Therapeutic Goods Administration Laboratories (TGAL). In recent years, vaccines for children and adults have contained 15 micrograms each of the haemagglutinin antigens of three viruses, representing the two circulating subtypes of influenza A plus influenza B. A reduced antigen dose (half the adult dose) is recommended for children aged two – six years and a quarter of the adult dose for children six months to two years of age. Vaccination is not recommended for children under six months of age.

In immunologically 'primed' populations (ie individuals who have experienced antigenically related viruses or virus antigens of the same type and, in the case of influenza A, subtype) a single vaccine dose is required to provide optimal immunity. This is generally achieved within 2 weeks post-vaccination. In unprimed populations (young children, or in the case of a new pandemic virus, all of the population) two vaccine doses, spaced by an interval of 4 weeks, are required to achieve optimal immunity.

Current influenza vaccine development and production

Registration of influenza vaccines in Australia is by the Therapeutic Goods Administration (TGA) and batch release is by the TGA Laboratories (TGAL).

Currently, only influenza viruses that have been isolated and passaged exclusively in embryonated chicken eggs, or primary cell cultures derived from these, are permitted for use as vaccine strains. Reference viruses suitable for preparation of vaccine seed viruses are prepared and made available to vaccine manufacturers through the WHO Global Influenza Program.

In the case of influenza A, it has become routine to prepare a high-yield version of required strains by genetic reassortment with a laboratory strain A/PR/8/34. This has conventionally been achieved by mixed infection in embryonated eggs, selection by passaging in antiserum and limit-dilution purification. This process, including characterisation of the reassortant virus, takes several weeks and, on occasions, is not commenced until the initial WHO recommendation has been made. A directed reassortment process using a molecular manipulation procedure (reverse genetics) can prepare reassortants more quickly and with greater certainty. However, this is subject to intellectual property constraints and additional regulatory controls by gene regulatory agencies.

Standardisation of the antigenic content of influenza vaccines is based on an immunodiffusion assay which requires preparation of antiserum against the purified haemagglutinin antigen of each component strain and stocks of a lyophilised,

internationally standardised reference antigen preparation. These are prepared by, or on behalf of, the principal regulatory agencies (National Institute for Biological Standards and Control (NIBSC), Center for Biologics Evaluation and Research (CBER), TGAL and National Institute of Infectious Diseases (NIID) who then participate in a collaborative standardisation. This process takes around eight weeks.

Vaccine manufacturers receiving reference strains through the WHO network prepare seed lots from these and test them for suitability according to national/regional requirements. Vaccines are produced on a monovalent batch basis involving concentration and purification of the virus, most commonly employing a zonal ultracentrifuge process, chemical inactivation and subsequent 'splitting' (disruption) with detergents or solvents. Tested monovalent vaccine lots are pooled and diluted to prepare trivalent vaccine of the required potency and then dispensed into appropriate containers.

In Australia, only single dose containers are currently approved and vaccines are supplied packaged as a 0.5ml dose in single-use syringes. Release of the final vaccine is based on a number of compendial tests including antigenic potency and bacterial/mycotic sterility.

Vaccine production is typically undertaken as a seasonal campaign for the Northern and Southern hemispheres respectively. Vaccine supplies are normally first released approximately five months after the vaccine formulation decision, with continuing release and administration largely over the following two month period.

Vaccine development and production in the event of a pandemic

Registration of influenza vaccines for use in a pandemic may differ in a number of respects from the normal inter-pandemic vaccine. This may include use of a monovalent formulation, changes in antigen content, use of whole virus vaccines, incorporation of adjuvants, and distribution in multi-dose containers.

It is proposed that, in Australia, these changes will be expedited by a process of licensing a 'mock-up' pandemic vaccine with TGAL, ahead of the time when the pandemic vaccine strain is known, similar to the approach to be undertaken by the European Agency for the Evaluation of Medicinal Products (EMA) in Europe.

It is expected that reference viruses for development of vaccine strains will be available through the WHO network as usual. However, viruses that show pandemic potential, or that have started to spread in pandemic fashion, may present particular problems, requiring different approaches to inter-pandemic viruses, including the need for higher levels of biosecurity in their handling.

Previous studies with potential pandemic viruses (H5N1 and H9N2) have indicated that lower than expected serological responses may be achieved using two doses at the usual 15 micrograms /dose vaccine concentration. Vaccine manufacturers, in conjunction with NIPAC, will consider clinical dose-ranging studies ahead of final formulation and use and, if necessary, the use of whole virus and/or adjuvanted formulations to improve the response.

Production capacity and factors limiting availability

Factors that may prove limiting for pandemic vaccine production and possible responses to these are:

1. Vaccine virus availability

The development time for a vaccine virus from first identification of a potential candidate varies. In most cases diagnostic laboratories isolate viruses in cell culture and these are not acceptable for vaccine use. Preparation of a high-yielding influenza A virus, suitable for use as a vaccine strain, by standard methods involves egg isolation, genetic reassortment and characterisation. This normally takes four weeks or more. Preparation of a suitable reassortant by reverse genetics may be achieved more rapidly, however, if the starting strain has undesirable characteristics such as high-level avian pathogenicity authorities may require confirmation that this has been removed. Anticipation of potential pandemic strains and preparation of candidate vaccine viruses can substantially reduce these delays. It has been proposed that candidate vaccine seeds of all known avian influenza A subtypes should be prepared and characterised.

2. Reagents for vaccine standardisation

Standardisation of the haemagglutinin antigen content of inactivated influenza vaccines, an essential step in final formulation, is achieved by an immunodiffusion test (single radial immunodiffusion [SRID]). This test requires the preparation of high potency specific antisera and an antigen preparation standardised by international collaborative assay with a lead-time of six weeks or more.

Prior preparation of candidate vaccine strains and matching reagents for vaccine standardisation could substantially reduce this delay. Alternatively, vaccine manufacturers have substantial historical data on the ratio between the haemagglutinin antigen content and total protein content of their vaccines over a wide range of influenza A virus strains. This could provide a surrogate basis for standardisation of early batches ahead of the availability of SRID reagents.

3. Embryonated egg supply

If a production campaign is required outside of the previously scheduled program, egg supply may prove limiting. The unlikely event of wide-spread avian influenza in flocks supplying eggs for vaccine manufacture could result in severe limitations on manufacture.

4. Dispensing and packaging of vaccine

Influenza vaccines registered in Australia are currently distributed as single dose product pre-dispensed in disposable syringes. In the event of a pandemic it is likely that even if antigen production can be increased the availability of suitable syringes will become limiting. The DoHA is procuring sufficient equipment for vaccination of the Australian population.

5. Product release

The potential streamlining of other aspects of product release and the potential benefits of changed formulations (whole virus, adjuvanted etc) need to be addressed by the regulatory body (TGA) in advance.

Distribution of the pandemic vaccine

The Australian Government signed agreements with two pharmaceutical companies in 2004 to supply the normal seasonal influenza vaccine for the next three influenza seasons. The two companies, CSL Ltd and Sanofi Pasteur Pty Limited, also made a contractual commitment to provide sufficient vaccine to treat Australians in the event of an influenza pandemic.

The Government will place purchase orders for the supply and delivery of pandemic vaccines supplies with the vaccine manufacturers in the event that a pandemic is declared or notified by WHO. Additionally, DoHA may request the supplier to commence production of pandemic vaccines earlier in the event of an escalating and inevitable pandemic threat.

Pandemic vaccine priority groups

Initially, the vaccine will be in short supply and so its use will have to be prioritised. Although NIPAC has not yet made formal recommendations about priority groups for the pandemic vaccine, they will be determined within the overall aim of reducing morbidity and mortality through containment initially and then maintenance of essential services.

Figure 1 identifies some of the likely priority groups for pandemic influenza vaccination when available and the prioritisation rationale.

Figure 1: Priority groups for pandemic vaccine

Group	Rationale
Health care workers	Health care workers are at increased risk of acquiring infection and passing it on to vulnerable patients. Health care workers perform essential services. Having health care staff available to care for the sick will reduce morbidity and mortality.
Other essential workers such as emergency personnel	To maintain essential services.
Other groups most likely to transmit the virus such as children	Consistent with the goal of containment.
Those at risk of severe outcome	Reduction in demand for health care services. Reduction in morbidity and mortality.

Even when the recommended priority groups are determined, they will be continually revised in light of new information that is learnt about the pandemic virus.

When sufficient pandemic influenza vaccine is available, the entire Australian population will be offered vaccination.

Seasonal influenza vaccine

The seasonal influenza vaccine normally contains three strains of virus, two current influenza A subtypes and influenza B, representing recently circulating viruses. The composition of vaccines for use in Australia is determined each year by the Australian Influenza Vaccine Committee in light of recommendations from the WHO.

During the lead up to a pandemic, when the seasonal influenza vaccine is still in production, it will have an important role to play in preventing simultaneous infection with the seasonal influenza strain and a novel influenza strain. There is the small possibility that if a person is infected with both of these viruses at the same time, the virus could share genetic material to produce a new and highly transmissible virus that poses the threat of a pandemic. Therefore, it is recommended that poultry workers who are, or will be exposed to infected or potentially infected poultry or their environment, receive the seasonal influenza vaccine²³.

Attaining high rates of coverage of the normal seasonal influenza vaccine and the pneumococcal vaccine in identified cohorts and high risk groups during the non-pandemic period was identified as a priority in the *Australian Action Plan for Pandemic Influenza* (2003).

Seasonal influenza vaccination is also recommended for certain high risk groups to lessen the morbidity and mortality associated with seasonal influenza infection. The NHMRC recommends annual influenza vaccination for the following groups:

1. All individuals aged 65 years and over.
2. Aboriginal and Torres Strait Islander people aged 50 years and over.
3. Children (\geq six months of age) and adults with chronic cardiac conditions including cyanotic congenital heart disease, coronary artery disease and congestive heart disease.
4. Children (\geq six months of age) and adults with chronic suppurative lung disease, including bronchiectasis, cystic fibrosis and chronic emphysema.
5. Children (\geq six months of age) and adults with chronic illnesses requiring regular medical follow-up or hospitalisation in the preceding year.
6. Persons with immune deficiency, including HIV, malignancy and chronic steroid use.
7. Residents of nursing homes and other long-term care facilities, due to high rates of transmission during outbreaks.
8. Contacts of high risk patients, including health care providers, staff of nursing homes and long-term care facilities, household members of persons in high-risk groups²⁴.

For further details about recommendations, transport, storage, handling, dosage, administration, adverse events, precautions, contra-indications, and use in

²³ AUSVETPLAN 2004. Disease Strategy: Highly pathogenic avian influenza. Appendix 5: National Guidelines for the protection of people exposed to animal infected or potentially infected with avian influenza viruses with zoonotic potential in Australia. Primary Industries Ministerial Council of Australia and New Zealand. Page 55

²⁴ *The Australian Immunisation Handbook 8th Edition 2003*. National Health and Medical Research Council. Pages 171-173.

pregnancy refer to *The Australian Immunisation Handbook 8th Edition 2003*. For details about the Australian Government DoHA immunisation programs refer to the website:

<http://www.immunise.health.gov.au/>

The pneumococcal vaccine

Many deaths and severe infections precipitated by influenza are due to secondary infection with bacterial pathogens such as *Streptococcus pneumoniae*. The pneumococcal vaccine, administered to high-risk groups of the population, can significantly reduce the incidence of this secondary infection and hence reduce the morbidity and mortality associated with influenza. Increasing pneumococcal vaccine coverage in high risk groups will therefore have a role in potentially lessening the impact of an influenza pandemic.

The Australian Government funds a number of national pneumococcal programs: the National Childhood Pneumococcal Vaccination Program, the National Indigenous Pneumococcal and Influenza Immunisation Program and the National Pneumococcal Vaccination Program for Older Australians.

The NHMRC recommends the 23-valent pneumococcal polysaccharide vaccine for:

1. All individuals aged 65 years and over.
2. Aboriginal and Torres Strait Islander people aged 50 years and over and those aged 15-49 years who have any of the high-risk underlying conditions.
3. Children aged 5 years and over who have underlying chronic illnesses predisposing to invasive pneumococcal disease (including asplenia and immunocompromise).
4. Individuals aged over five years with asplenia, either functional or anatomical.
5. Immuno-compromised persons aged over five years at increased risk of invasive pneumococcal disease (eg patients with HIV infection before the development of AIDS, acute nephrotic syndrome, multiple myeloma, lymphoma, Hodgkin's disease and organ transplantation).
6. Immunocompetent persons aged over five years at increased risk of complications from invasive pneumococcal disease because of chronic illness (eg chronic cardiac, renal, or pulmonary disease, diabetes, alcohol-related problems).
7. Persons with CSF leaks (aged over five years).
8. Tobacco smokers.
9. As a booster dose, at 18 to 24 months of age, following a primary course of the 7-valent pneumococcal conjugate vaccine, in Aboriginal and Torres Strait Islander children in geographic regions of high incidence.
10. As a booster dose, at four-five years of age, following a primary course of the 7-valent pneumococcal conjugate vaccine, in children at risk of either high incidence or severity of invasive pneumococcal disease because of predisposing medical conditions²⁵.

²⁵ *The Australian Immunisation Handbook 8th Edition 2003*. National Health and Medical Research

The NHMRC recommends the 7-valent pneumococcal conjugate vaccine for:

1. All infants from two months of age.
2. Children under the age of five years with underlying medical conditions predisposing them to invasive pneumococcal disease:
 - diseases compromising immune response to pneumococcal infection such as congenital immune deficiency, immunosuppressive therapy, compromised splenic function, HIV infection before and after the development of AIDS, renal failure and Down's syndrome
 - anatomical or metabolic abnormalities associated with higher rates or severity of IPD such as cardiac disease, premature infants with chronic lung disease, infants born at less than 28 weeks gestation, cystic fibrosis, insulin-dependent diabetes mellitus, CSF leaks and intra-cranial shunts and cochlear implants²⁶.

For further details about recommendations, transport, storage, handling, dosage, booster doses, catch-up schedules, administration, adverse events, precautions, contra-indications, and use in pregnancy refer to *The Australian Immunisation Handbook 8th Edition 2003*. For details about the Australian Government DoHA immunisation programs see the website:

<http://www.immunise.health.gov.au/>

Council. Pages 223-225.

²⁶ *The Australian Immunisation Handbook 8th Edition 2003*. National Health and Medical Research Council. Pages 225-232.

ANNEX 4: Antivirals

Background to the National Medicines Stockpile (NMS)

The NMS was established by the Australian Government in 2002, initially as a national strategic reserve of essential vaccines, antibiotics, antiviral drugs, chemical and radiological antidotes. The NMS supplements existing medical stocks kept in the Australian health system and provides rapid access to large quantities of medications that may not be regularly used.

Influenza antiviral drugs will play an important role during a pandemic, particularly during the first wave of infection when pandemic vaccines may not be available. In the absence of vaccines, antivirals are the only medical intervention for providing protection against disease and some therapeutic benefit in those who are ill. Unlike pandemic vaccines, antivirals are expected to be immediately effective.

Activation and deployment of the NMS

The process to activate the NMS deployment plan is that the CHO of an affected state/territory or Deputy Secretary from an Australian Government Department (such as AQIS or DAFF) provides written request to the NIR for access to the NMS²⁷.

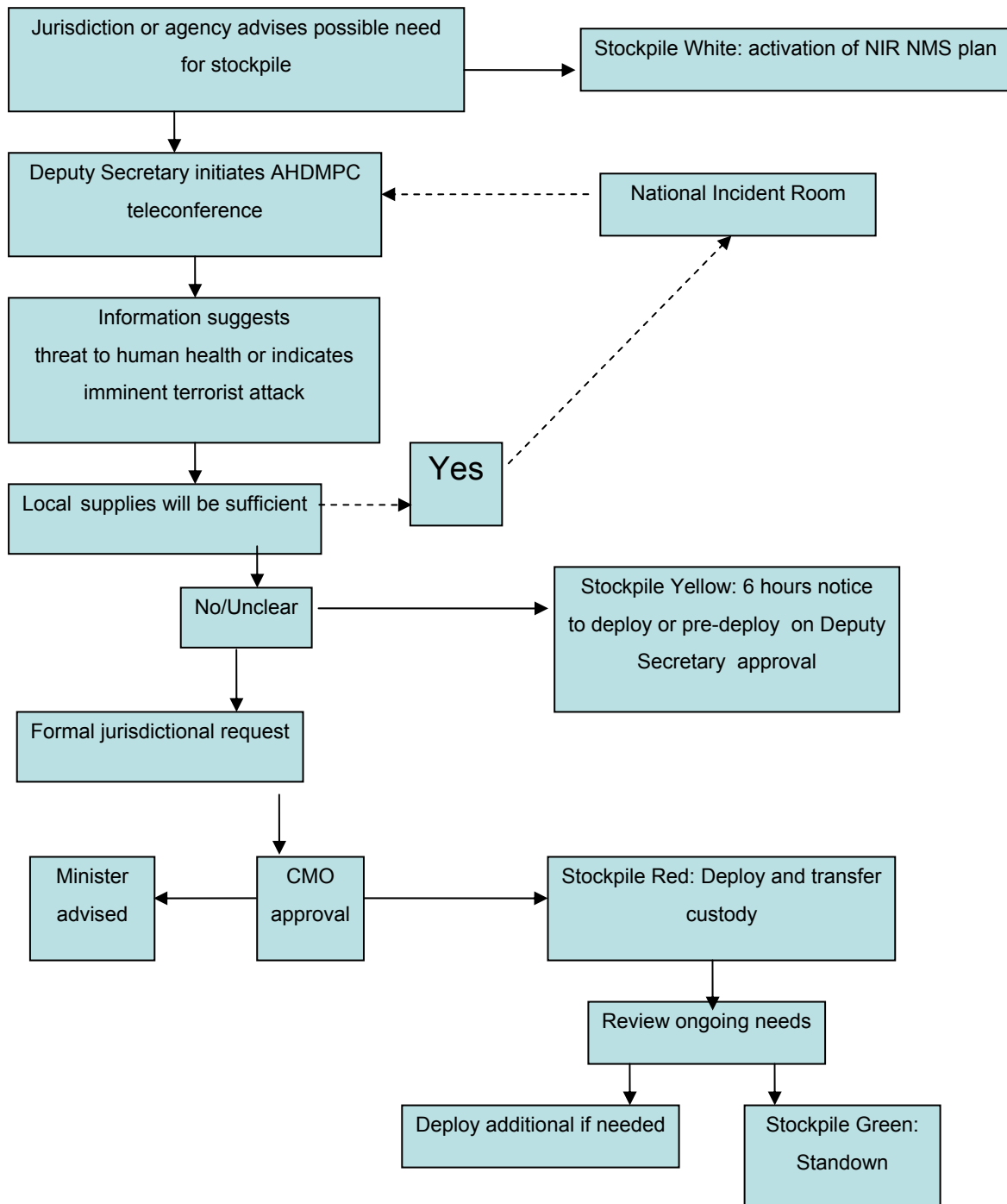
The amount of medication deployed will be a decision of the CMO after discussion with the AHDMP members. Each state/territory or Australian Government Department requesting agency is required to have distribution plans in place, including details of security measures and arrangements for dispensing including supervision, records of treatment and monitoring of outcomes, and adverse events. The DoHA has ownership of the stockpile until each item is used/consumed/expired.

In the event of a state/territory or Australian Government department requiring additional medicines – for example, antibiotics for secondary bacterial chest infections – or personal protective equipment, the above process will need to be carried out for each request.

Figure 2 illustrates the processes involved in activating NMS deployment.

²⁷ Details of agreements with the jurisdictions on security and distribution of stockpile agents are in the stockpile deployment plan which is subject to a high level of confidentiality.

Figure 2: FLOW DIAGRAM OF NATIONAL MEDICINE STOCKPILE ACTIVATION



Priority groups

The role of influenza antivirals will be constrained, however, by their finite supply, negligible surge capacity for production, and cost. Because of this, priority groups for their use will be determined to ensure that they are used to Australia's best advantage. As the overall aim underlying Australia's response to a pandemic influenza threat is to reduce the associated population-wide morbidity and mortality, their use will be determined within this principle.

The NIPAC made recommendations about antiviral priority groups in April 2005 in light of the current evidence. New evidence will need to be considered continually and the recommendations revised accordingly.

Determination of the use of antivirals will be:

- assessed by the AHDMPC drawing on advice from NIPAC, CDNA and DoHA
- reviewed by the CMO in conjunction with the expert advisory group
- decided by the IDTF.

The recommended priority groups will be based on the best available evidence. Currently this includes:

- antivirals— both neuraminidase inhibitors and ion blockers— are effective in preventing influenza. The effectiveness in studies ranges from 70-80%
- if given within 48 hours, antivirals are effective in reducing the severity of the symptoms of influenza and shortening of the course of illness
- it is unproven that the use of antivirals for treatment also reduces transmission of the virus
- it is unproven that antivirals used for treatment of influenza reduce mortality in humans, although in some animal studies mortality is reduced.

During a pandemic, urgent research will be undertaken to determine transmission dynamics and efficacy of treatment.

Containment phase

During the early phases, containing the spread of a pandemic, and thus preventing infections from occurring in the first place, will be the strategy for reducing morbidity and mortality. During these phases, antivirals may be best used to prevent entry of the virus into Australia or limit the spread amongst those who are exposed to human or animal cases of pandemic influenza. With this approach, antivirals may be given as post-exposure prophylaxis to those who have been exposed and to those with ongoing occupational exposures (health care workers, border workers and poultry cullers) as longer-term prophylaxis.

Treatment

In the early phases, a proportion of the antiviral stock will be set aside for identified cases and their close contacts.

Prophylaxis

With regard to prophylaxis, it is recommended that the antivirals are used in the containment phase for those individuals:

- who are exposed to a person or animal likely to be infected with pandemic influenza
- who work in areas where there is a high likelihood of exposure, such as:
 - poultry workers and animal disease control officers exposed to HPAI
 - border workers who are at higher risk of exposure
 - health care workers caring for influenza patients or patients with undiagnosed respiratory disease in which pandemic influenza is a differential diagnosis
 - staff at quarantine facilities
 - public health staff exposed to potential cases
 - laboratory staff at high risk of exposure.

Maintenance of essential services phase

During the later phases, containment may not be possible and the optimal strategy for reducing morbidity and mortality will be to maintain essential services. This will ensure minimal disruption to the provision of health and emergency services to the community. It will be vital, therefore, to provide antivirals as longer-term prophylaxis to essential service workers.

Teams providing essential services will need to be designated by all governments and may include:

- health care workers at designated-influenza treatment facilities
- laboratory personnel
- power supply
- water supply
- telecommunications personnel
- sewerage workers
- funeral workers
- emergency service workers
- those involved in the production of the pandemic vaccine
- key decision makers.

Longer-term prophylaxis

It is recommended that antivirals for ongoing prophylaxis should be provided on a daily basis for a period of up to 6 weeks. There are no studies examining the effect of continuing antivirals for longer periods. Therefore, continued prophylaxis should be considered in clinical grounds and if the antivirals are continued, the person should be monitored for adverse effects.

Review of priority groups

It is recommended that the designation of antiviral priority groups is reconsidered both in containment and maintenance of essential services phases frequently in relation to:

- location of cases
- rate of transmission
- attack rates in different age groups
- clinical severity in different age groups (for example isolated overseas outbreak)
- potential strategies for control

- depletion of the antiviral stockpile.

Resistance

The efficacy of the antivirals and the development of clinical resistance in the pandemic virus needs to be monitored for both treatment and prophylaxis. The H5N1 strain of influenza A currently (2005) circulating in some parts of the world is resistant to amantadine.

Influenza antivirals available in Australia

There are currently four antiviral medicines that can shorten the course of infection if given early in the disease (treatment) and provide short-term protection against influenza (prophylaxis). These are: amantadine, rimantadine, oseltamivir and zanamivir. Amantadine, oseltamivir and zanamivir are registered for supply in Australia, but rimantadine is not registered for use in Australia.

Table 4: Antivirals available in Australia

Drug class	Generic name (Brand name)	Route of administration	Indication *
Neuraminidase inhibitor	Oseltamivir (Tamiflu)	Oral (Tablet or Suspension)	Prophylaxis – Age ≥ 13 years Treatment – Age ≥ one year
Neuraminidase inhibitor	Zanamivir (Relenza)	Inhalation (Diskhaler)	Prophylaxis and Treatment – Age ≥ five years **
M2 inhibitor	Amantadine (Symmetrel)	Oral	Prophylaxis – Age ≥ five years

* When used for treatment, neuraminidase inhibitors must be commenced within 48 hours of onset of symptoms. After this time, they are not effective.

The NMS contains a mix of these three medicines. Oseltamivir stocks represent the largest component of the antiviral component of the stockpile due to its ease of administration when compared to zanamivir, particularly in mass pre-exposure prophylaxis settings, and its side-effect profile and resistance propensity when compared to Amantadine.

Abbreviated product information for each these three medicines is attached below for general information. The full product information for any medicine should be consulted prior to its clinical use.

1. OSELTAMIVIR

Marketed as Tamiflu; supplied by Roche Products Pty Ltd.

Oseltamivir phosphate is a pro-drug of the active metabolite oseltamivir carboxylate. The active metabolite is a selective inhibitor of influenza virus neuraminidase enzymes, which are glycoproteins found on the virion surface. Viral neuraminidase is essential for the release of recently formed virus particles from infected cells and the further spread of infectious virus in the body.

Oseltamivir inhibits neuraminidases of influenza viruses of both types A and B. The active metabolite also inhibits influenza virus growth *in vitro* and inhibits influenza virus replication and pathogenicity in animal models. Oseltamivir is approved for both treatment of infections due to influenza A and B viruses in adults and children aged one year and older and prevention of influenza in adults and adolescents 13 years and older.

Treatment should commence as soon as possible, but no later than 48 hours after the onset of the initial symptoms of infection. Vaccination is the preferred method of routine prophylaxis against infection with influenza virus.

Resistance

The incidence of viral resistance in samples derived from clinical isolates is about 2%, depending on viral subtype. The limited resistance data available relates predominantly to H3N2 isolates, with few H1N1 or B virus isolates currently studied.

Resistance to neuraminidase inhibitors can occur by neuraminidase mutations or haemagglutinin mutations. While haemagglutinin mutations reduce viral dependence on neuraminidase activity and confer cross resistance to all neuraminidase inhibitors, neuraminidase mutations, to some extent, appear to be drug specific. Both mutations were selected *in vitro* after several passages in canine kidney cells in the presence of the active metabolite. There is no evidence for drug related haemagglutinin mutations preceding neuraminidase mutations in the clinical setting. Infectivity and pathogenicity in mice were not compromised by haemagglutinin mutations, but neuraminidase mutants were less infectious and pathogenic in mice and ferrets. The clinical impact of haemagglutinin mutations is not known, but neuraminidase mutants may be less contagious in humans.

In clinical studies in naturally acquired infection, 0.33% of adults and adolescents and 4% of children aged one to 12 were found to transiently carry influenza A virus with decreased neuraminidase susceptibility to oseltamivir carboxylate. Patients carrying resistant (reduced sensitivity) virus cleared the virus normally and showed no clinical deterioration. There is no evidence for resistance in influenza B *in vitro* or in clinical isolates.

In clinical studies conducted to date in post-exposure (seven days) and seasonal (42 days) prophylaxis of influenza, there was no evidence for emergence of drug resistance associated with the use of oseltamivir. In studies of preventing naturally occurring influenza, very few subjects became infected and shed virus; virus samples from 14 of 2,000 patients receiving oseltamivir were available for neuraminidase phenotypic assay and none showed any evidence of resistance.

Precautions

Influenza with complications eg pneumonia; renal impairment; repeated courses (no data); fructose intolerance (oral suspension); pregnancy, lactation, children < one yr.

Adverse reactions

Gastrointestinal upset; insomnia; headache; fatigue; others, see full product information.

The adverse events reported in prophylaxis studies were consistent with the established safety profile for oseltamivir in the treatment of influenza. Adverse events experienced more frequently by subjects taking oseltamivir than placebo included nausea (8.0 compared with 4.3%), vomiting (2.1 compared with 1.0%), diarrhoea (3.2 compared with 2.6%) and abdominal pain (2.0 compared with 1.6%). Headache was the most frequent adverse event with an incidence of 17.5% in the placebo group and 20.1% in the group receiving oseltamivir.

Dosage and administration

Oseltamivir is administered as an oral capsule of 75mg, or as an oral suspension of 12mg/ml.

Treatment of influenza: Adults and adolescents. The recommended oral dose of oseltamivir in adults and adolescents 13 years of age and older is 75 mg **TWICE** daily for five days. Oseltamivir can be given to patients one year of age and older – see full product information for paediatric dosing.

Prophylaxis of influenza: Adults and adolescents. The recommended oral dose of oseltamivir in adults and adolescents 13 years of age and older is 75 mg **ONCE** daily for five days. Oseltamivir can be given to patients one year of age and older – see full product information for paediatric dosing.

Safety and effectiveness have been shown in patients taking oseltamivir for up to six weeks.

2. ZANAMAVIR

Marketed as Relenza; supplied by GlaxoSmithKline Australia

Zanamivir is a potent and highly selective inhibitor of the influenza virus surface enzyme neuraminidase. Viral neuraminidase may facilitate access of virus to cell surfaces and aid the release of newly formed virus particles from infected cells, to allow viral infection of other cells. The inhibition of this enzyme is demonstrated by both *in vitro* and *in vivo* activity against influenza A and B virus replication and encompasses all known neuraminidase subtypes of influenza A viruses.

Influenza viral replication is confined to the superficial epithelium of the respiratory tract. The activity of zanamivir is extracellular. It inhibits the release of infective influenza virions from the epithelial cells of the respiratory tract, thereby reducing the propagation of both influenza A and B viruses. The efficacy of zanamivir following oral inhalation to the respiratory tract has been confirmed in clinical studies. Clinical trial data have shown that treatment of acute influenza with zanamivir produces reductions in virus shedding from the respiratory tract compared to placebo.

Zanamavir is approved for both treatment and prophylaxis of infections due to influenza A and B viruses in adults and children aged five years and older. Zanamivir can reduce the period of illness caused by current epidemic strains when administered early in the infection. Treatment should commence as soon as possible, but no later than 48 hours after the onset of the initial symptoms of infection.

For prophylaxis, vaccination remains the primary method of preventing and controlling influenza. Zanamavir is indicated for prophylaxis of infection due to influenza A and B viruses in circumstances where prophylaxis of healthy young adults is justified, such as a pandemic with a strain that is not included in the annual vaccine or when vaccine is unavailable. It is not recommended for routine prophylaxis against influenza infection.

Studies indicate that when taken therapeutically to treat an existing influenza infection, it does not interfere with the development of immunity. Based on human challenge studies, in successful prophylaxis most individuals do not develop immunity to influenza and remain fully susceptible to infection when the drug is ceased. It remains to be determined whether the drug is equally effective under pandemic conditions. It would be expected (although untested) that zanamivir would be active against any strain of influenza virus.

Resistance

Influenza viruses with reduced susceptibility to zanamivir have been recovered *in vitro* by passage of the virus in the presence of increasing concentrations of the drug. Genetic analysis of these viruses showed that the reduced susceptibility *in vitro* to zanamivir is associated with mutations that result in amino acid changes in the viral neuraminidase or viral haemagglutinin or both. Even though exhibiting a drug resistant phenotype *in vitro*, based on *in vivo* studies to date, a virus with such combinations of mutations would be expected to have reduced pathogenicity and transmissibility in the clinical setting.

There has been no detectable emergence of virus to date with reduced susceptibility to zanamivir during the clinical development program. Data obtained from *in vitro* studies and from clinical treatment and prophylaxis

studies suggest that the potential for the development of reduced clinical susceptibility to zanamivir in the future is low.

Precautions

Underlying respiratory disease especially severe asthma or chronic obstructive pulmonary disease; not for routine prophylaxis; pregnancy, lactation.

Adverse Reactions

Gastrointestinal upset; dizziness (possible); bronchospasm, respiratory function decline; headache; others, see full product information.

In clinical trials, most common adverse events were indistinguishable from signs and symptoms of influenza-like illness. Diarrhoea, dizziness, nausea and vomiting have been reported but there was no clear causal association with study treatment in the adult studies.

Dosage and Administration

Treatment of influenza: The recommended dose of zanamavir is two oral inhalations (2 x 5 mg) twice daily for five days providing a total daily inhaled dose of 20 mg. Administration is by oral inhalation, requiring instruction for those not accustomed with inhalers.

Prophylaxis of influenza: The recommended dose of zanamavir is two inhalations (2 x 5 mg) once daily, providing a total daily inhaled dose of 10 mg, for ten days. This may be increased up to 28 days if the period of exposure risk extends beyond ten days.

Zanamivir is administered via oral inhaler, Relenza Rotadisks 5mg/blister, using the Diskhaler device provided. Patients scheduled to take inhaled drugs, eg fast acting bronchodilators, at the same time as zanamavir, should be advised to administer that drug prior to administration of zanamavir.

3. Amantadine

Marketed as Symmetrel; supplied by Novartis Pharmaceuticals Australia Pty Ltd

Amantadine hydrochloride inhibits the replication of influenza A viruses at low concentrations. The exact mechanism of action is unknown. In vitro human influenza viruses, including H1N1, H1N2, H2N2 and H3N2 subtypes are inhibited by 0.2 to 0.7 micrograms/ml or less of amantadine. It is recognised, however, that not all strains susceptible under in vitro conditions will be similarly affected in clinical practice.

Amantadine is active only against type A influenza viruses. When used as treatment it does not prevent the host immune response to influenza A infection. Prophylactic administration has no effect on the host immune response to vaccination with the current inactivated influenza virus vaccines.

Contraindications

Pregnancy

Precautions

Glaucoma, prostatic enlargement; epilepsy; confusional, hallucinatory or psychotic states; gastric ulceration (or history); congestive heart failure, orthostatic hypotension; cardiovascular disorders; hepatic, renal impairment; recurrent eczema; abrupt withdrawal (also of concomitant antiparkinsonian drugs); resistance development (influenza A); elderly; children < five years; lactation; others, see full product information.

Adverse Reactions

Gastrointestinal upset; nervous excitement; increased drive; concentration difficulties; dizziness; anticholinergic effects; peripheral oedema; livedo reticularis; others - see full product information.

Resistance

When influenza-infected patients are treated with amantadine, they may shed viruses that are resistant to it. It is not known how often drug resistant viruses occur in treated individuals; however, viruses readily develop drug resistance *in vitro* and resistant viruses demonstrate similar transmissibility and virulence to non-resistant viruses.

Resistance to amantadine can be readily measured by standard viral inhibition tests in cell culture. The genetic changes associated with development of resistance are well characterised and may also be detected by sequence analysis of the viral M protein.

Dosage and administration

Prophylaxis of type A virus influenza (not used for treatment)

Children aged five-nine years: 100mg once daily.

Children and adults aged 10-65 years: 100mg twice daily. Effective prevention of influenza A has been reported with a dosage of 100mg daily. This dosage may be indicated for persons who have demonstrated intolerance to 200mg daily.

Adults over 65 years: 100mg once daily.

Dosage with amantadine should start immediately after suspected exposure and continue for at least 10 days. When exposure to infection is recurrent or prolonged, treatment throughout the epidemic may be indicated. Amantadine is effective for prophylaxis only during the period of its administration.

The recommended dosage should not be exceeded.

Dosage in renal impairment:

In patients with compromised renal function and in those on haemodialysis the elimination half-life of amantadine is substantially prolonged, resulting in elevated plasma concentrations. Careful adjustment of the dose of amantadine by increasing the dosing interval according to the creatinine clearance is required in these patients. Ideally, amantadine plasma concentrations should be monitored. Careful surveillance of the patient is recommended.

Other information

Although amantadine is approved for the prevention and treatment of influenza, it is not currently listed on the Pharmaceutical Benefits Schedule for subsidy for this indication (it is listed for use in Parkinson's Disease).

Individuals already on amantadine for other conditions (eg Parkinson's disease) will need to have their supply maintained during the increased demand in an influenza pandemic.

Amantadine is supplied as 100mg soft gelatin capsules. Shelf-life is up to five years.

Amantadine must be imported, as it is not manufactured in Australia. Inter-pandemic use in Australia for the prevention and treatment of influenza is low.

ANNEX 5: Laboratory guidelines

Guidelines for the collection of human specimens for laboratory diagnosis of influenza with pandemic potential

All patients with suspected pandemic influenza should have respiratory tract samples collected for virus detection, as well as acute and convalescent serum samples. Specimens for virus isolation or for detection of viral nucleic acids or antigens should be taken preferably during the first three days after onset of clinical symptoms, but may be taken up to a week after onset, or even later in severely ill or immunocompromised patients. Investigations should also be undertaken for other potential causes of the illness as deemed appropriate by the attending physician.

Type of specimens

In all cases an upper respiratory tract sample should be collected. A swab collected from each nostril, and a throat swab pooled into the same container of viral transport medium is the specimen of choice. Nasopharyngeal swabs may be collected instead of nose and throat swabs. Swabs pose a lower risk of infection of staff than do nasopharyngeal aspirates (NPA) or nasal washes, both of which may generate aerosols. They are suitable for testing by polymerase chain reaction (PCR) which is a rapid, sensitive test employed by most public health laboratories. They can also be used for virus isolation, but are not suitable for antigen detection test such as immunofluorescent antigen detection (IFA).

Where antigen detection tests are the only rapid tests available, then NPA or a nasal wash should be collected, provided that they can be performed within a controlled environment using suitable respiratory precautions. Samples collected for antigen detection tests may also be used for NAD and culture.

In addition to swabs from the upper respiratory tract, invasive procedures such as bronchoalveolar lavage or lung biopsy can be performed for the diagnosis of virus infections of the lower respiratory tract where clinically indicated. Post mortem samples may also be submitted. In all cases these procedures must be performed within a controlled environment using suitable respiratory precautions.

An acute-phase serum specimen (7-10 ml of whole blood) should be taken soon after onset of clinical symptoms and not later than seven days after onset. A convalescent-phase serum specimen should be collected 14 days after the onset of symptoms. Where patients are near death, a second ante-mortem specimen should be collected even if 14 days has not elapsed.

Specimen collection, storage and transport

Specimen collection poses a risk of aerosol production and recommended precautions should be followed closely. Consult annex 6: *Infection control* for further details.

Specimens should be packaged and transported as per standard recommendations for infectious substances. Use a 'No Touch' technique when packing samples and ensure that the exterior surface of the package should be clean. Double-bag if necessary. Pneumatic tube delivery systems should not be used, as any breakage or leakage within the pneumatic system could contaminate an entire institution.

Samples for transport between laboratories should be transported in the usual manner. It is essential that the laboratory receiving the sample is aware that it comes from a potential pandemic influenza case and that it has the facilities required to safely handle the sample.

Where an isolate or suspicious organism is being referred to a reference laboratory for further testing, then transport the specimen as an Infectious Substance (Model Regulations and Packing Instruction 602 of the IATA Dangerous Goods Regulations). Telephone contact should be made with the receiving public health laboratory to facilitate safe and rapid processing of the specimens.

Once cases of influenza are sufficiently widespread in the community this individualised management of specimens may cease by agreement between the laboratory and public health officers.

Nasal swab

A dry swab is inserted into the nostril (only as far as the anterior end of the nasal turbinate), parallel to the palate, and left in place for a few seconds. It is then slowly withdrawn with a rotating motion. Specimens from both nostrils are obtained with the same swab. The tip of the swab is put into a vial of virus transport medium and the applicator stick is broken off. This can be combined with the throat swab and/or nasopharyngeal swab in a single vial of virus transport medium. The virus transport medium should be stored and transported at 4°C and delivered promptly to the laboratory.

Nasopharyngeal swab

A flexible, fine-shafted swab is inserted into the nostril and back to the nasopharynx and left in place for a few seconds. It is then slowly withdrawn with a rotating motion. A second swab should be used for the second nostril. The tip of the swab is put into a vial of virus transport medium and the applicator stick is broken off. This can be combined with the throat swab and/or nasal swab in a single vial of virus transport medium. The virus transport medium should be stored and transported at 4°C and delivered promptly to the laboratory.

Nasopharyngeal aspirate

Nasopharyngeal secretions are aspirated through a catheter connected to a mucus trap and fitted to a vacuum source. The catheter is inserted into the nostril parallel to the palate. The vacuum is applied and the catheter is slowly withdrawn with a rotating motion. Mucus from the other nostril is collected with the same catheter in a similar manner. After mucus has been collected from both nostrils, the catheter is flushed with 3 ml of transport medium. The virus transport medium should be stored and transported at 4°C and delivered promptly to the laboratory. Specimens for direct detection of viral antigens by immunofluorescence staining of infected cells should be processed within 1–2 hours.

Nasal wash

The patient sits in a comfortable position with the head slightly tilted backward and is advised to keep the pharynx closed by saying "K" while the washing fluid (usually physiological saline) is applied to the nostril. With a transfer pipette, 1–1.5 ml of

washing fluid is instilled into one nostril at a time. The patient then tilts the head forward and lets the washing fluid flow into a specimen container. The process is repeated with alternate nostrils until a total of 10–15 ml of washing fluid has been used. Dilute approximately 3 ml of washing fluid 1:2 in transport medium.

Throat swab

Both tonsils and the posterior pharynx are swabbed vigorously. The tip of the swab is put into a vial of virus transport medium and the applicator stick is broken off. This can be combined with the nasopharyngeal swab and/or nasal swab in a single vial of virus transport medium. The virus transport medium should be stored and transported at 4°C and delivered promptly to the laboratory.

Serum

Blood should be collected in the usual manual for serum samples. Specimens should be stored and transported at 4°C and delivered promptly to the laboratory.

Specimen processing

Specimens processing and laboratory biosafety

1. Requirements for laboratory staff involved in the collection and processing of samples

Staff who are in one of the recognised NHMRC high risk groups for complicated influenza should be excluded from these activities unless absolutely necessary. High standards of personal hygiene are important in minimising the risk to staff.

2. Laboratory staff prophylaxis

Laboratory staff should be vaccinated against the currently circulating influenza strain, and if available, the new pandemic strain. Staff involved in cell culture in BSL3 conditions should be offered prophylaxis with a neuraminidase inhibitor. A protocol for management of accidental exposure of staff to a pandemic influenza strain, including post-exposure prophylaxis with a neuraminidase inhibitor antiviral drug should be in place in laboratories processing respiratory specimens, and doses of an appropriate drug stored in the laboratory for this purpose.

As the pandemic progresses, it is anticipated that there will be staff who will have acquired infection in the community and recovered. Those staff should be preferentially used for specimen collection and processing.

3. Personal protective equipment (PPE)

All staff potentially exposed to samples known or suspected to contain pandemic

influenza should wear suitable PPE and must be trained in its proper use.

4. Decontamination

Work surfaces and equipment should be decontaminated after specimen processing. Standard laboratory decontamination protocols using 0.5% hypochlorite or 2% glutaraldehyde are sufficient.

5. Specimen processing

Blood and urine specimens processed outside of microbiology or histopathology laboratories should be handled using standard precautions²⁸ in BSL2 laboratories.

For microbiological and anatomical pathology laboratory specimens the following procedures can be carried out under BSL2 precautions:

- pathological examination and processing of formalin-fixed or otherwise inactivated tissues
- molecular analysis of extracted nucleic acid preparations
- electron microscopic studies with glutaraldehyde-fixed grids
- routine examination of bacterial and fungal cultures following the initial inoculation
- routine staining and microscopic analysis of fixed smears
- final packaging of specimens for transport to diagnostic or reference laboratories for additional testing. Specimens should already be in a sealed, decontaminated primary container.

Activities involving manipulation of untreated respiratory specimens may be performed in BSL2 facilities, but with more stringent work practices as described below. These activities include:

- cut up, blocking and macroscopic description of respiratory tissue
- aliquoting and/or diluting specimens
- inoculation of bacterial, fungal and virological culture media
- performing diagnostic tests that do not involve propagation of viral agents
- nucleic acid extraction procedures involving untreated specimens
- preparation and chemical- or heat-fixing of smears for microscopic analysis.

Stringent measures to be employed for these activities in BSL2 facilities include:

- Medical laboratory staff should wear protective equipment, including disposable gloves, disposable solid front gowns with cuffed sleeves that are either impermeable or covered with a plastic apron, full eye protection²⁹ and respiratory protection, preferably a N-95 particulate filter mask but a surgical mask may be substituted if necessary provided that the work is carried out in a biological safety cabinet. Personnel who cannot wear these masks because of facial hair or other fit-limitations should wear loose fitting hooded or helmeted PAPRs.

²⁸ As per AS/NZS 2243.3:2002

²⁹ Ordinary spectacles are not sufficient. Dedicated fully protective goggles should be used.

- Gowns, gloves and masks should be discarded after the specimens have been processed. Remove the mask after the gown and gloves. Do not touch the mask front when removing mask from face- the mask tabs only should be touched. Careful attention should be given to hand hygiene after removal of protective clothing and especially before touching the face; contact with eyes and mucosal surfaces should be minimised.
- All specimen manipulations should be carried out in a certified biological safety cabinet class 1, 2 or 3. Aerosol producing procedures should be carried out in a biological safety cabinet and centrifugation should be carried out using sealed centrifuge cups or rotors that are unloaded in a biological safety cabinet.

6. The following activities require PC3 facilities and PC3 work practices:

- viral cell culture procedures other than the primary inoculation
- initial characterisation of viral agents recovered in cultures.

Once viable virus has been inactivated (for example by addition of guanidinium isothiocyanate in a nucleic acid extraction protocol, use of a solvent fixative such as 2% glutaraldehyde for electron microscopic examination or acetone for immunofluorescent examination, exposure to 50 kG γ -irradiation or other inactivation protocol with demonstrated efficacy) material may be removed from the PC3 facility for further characterisation. Particular care should be taken to ensure that the inactivation protocol is properly executed. The outside of specimen containers must be decontaminated prior to removal from the PC3 facility to ensure no transfer of viable virus.

Care of the deceased

The care of deceased pandemic influenza patients raises infection control issues, along with significant social and religious considerations. DoHA and NIPAC are developing detailed guidelines in consultation with relevant professional associations.

In the interim, deceased pandemic influenza patients should be sealed for transportation in an impermeable body bag. If the body bag is thought to be permeable then double bagging should occur, and the zip or other openings sealed with airtight tape. Alternatively, the bag may be placed within a large thick plastic outer bag that can be sealed.

All *post mortem* procedures require adherence to standard precautions. All procedures performed on respiratory specimens from potential cases of influenza due to a new pandemic strain should be undertaken in a PC3 facility using PC3 work practices, until pandemic influenza cases are widespread in the community.

Testing protocols

1. Nucleic acid testing

In most Australian public health laboratories the test of choice for detection of influenza due to a potential new pandemic strain will be PCR using primers capable of detecting all 16 potential haemagglutinin (HA) types of influenza. The matrix (M) protein is the influenza gene target most commonly employed for such broadly

reactive assays. Ideally these broadly reacting tests would be used at all times for influenza diagnosis and surveillance, but as a minimum should be available during periods of heightened risk of cases of pandemic influenza.

If broadly reactive PCR primers are used, reactive specimens from potential cases of pandemic influenza will require typing using HA type specific primers, or an equivalent rapid typing test. Suitable PCR tests for H5 influenza are available in many Australian public health laboratories, or are accessible by urgent referral to National Influenza Centres (NIC) or the WHO Collaborating Centre for Influenza, Melbourne (WHOCC).

Once the identity of a new pandemic strain is known it may be possible to make greater use of HA type specific PCR assays in primary diagnosis. Once cases are widespread in the community, a type-specific laboratory diagnosis of influenza will probably become superfluous, unless multiple different strains are circulating concurrently.

2. Immunofluorescent assays

Immunofluorescent (IFA) assays using standard reagents potentially provide a rapid non-type specific laboratory diagnosis of influenza in jurisdictions where PCR is not available. Standard influenza IFA reagents in use in Australia are capable of detecting H5N1 influenza. Specific reagents for H5 influenza are becoming available. IFA's effectiveness in detecting other potential pandemic influenza strains remains to be established, and it is less sensitive than PCR. Therefore, in the early stages of a pandemic, all samples from suspected cases must be referred for testing by PCR and cell culture in addition.

As IFA usually requires an NPA or nasal wash, laboratories should be aware of the additional infection control precautions required for collection of these specimens.

3. Viral cell culture and rapid cell culture

Viral cell culture procedures, with the exception of initial inoculation of tube cultures with primary specimens, should be performed in a PC3 facility using PC3 work practices. Similarly characterisation of isolates recovered from such cultures should be undertaken in a PC3 facility using PC3 work practices. Material recovered from all cell cultures may be removed from the PC3 facility for further analysis once viable virus has been inactivated by a suitable protocol, as above.

Viral culture using Madin Darby Canine Kidney (MDCK) or Primary Monkey Kidney (PMK) cell lines using standard protocols will detect potential new pandemic strains. PCR provides the most reliable approach to identification of isolates until the effectiveness of IFA against the new pandemic strain is established.

Conventional tube culture may take 4-7 days. This can be reduced to 1-3 days using shell vial or multi-well plates and staining after 48 hours of culture with commercially available monoclonal antibodies (Mabs). The efficacy of Mabs against a new pandemic strain would need to be established before this latter approach could be recommended.

4. Typing and subtyping

Public health laboratories with appropriate local capacity would use a rapid typing

test, most probably specific PCR primers for detection of the new pandemic influenza strain in specimens positive in more broadly reactive tests.

Jurisdictions without local capacity to type within suitable timeframes or to meet demand may refer specimens urgently to a NIC or the WHOCC for Influenza. In the early stages of a pandemic or where activity is identified in a new region, provisional identification of a pandemic strain using PCR methods should be achieved within 72 hours of sample collection.

Definitive typing will be undertaken by the WHOCC using reference methods, including serological typing employing WHO reference antisera, and nucleic acid sequencing.

5. Point of care tests

No point of care tests with demonstrated efficacy in detecting a broad range of influenza subtypes are currently available.

6. Serology

Due to the delays in serological responses, the utility of serology tests for identifying pandemic activity will be limited. However they are likely to find use as a final exclusion of infection, or to maximise the case ascertainment rate in cases, especially where direct detection was not performed or was inadequate. There is a wide variety of approaches to serological testing for influenza antibodies exist and varying capacity and methodology is available in Australian public health laboratories.

Samples from suspected cases should be submitted to the local public health laboratory for testing either at that laboratory or be referred to a NIC or the WHOCC. Tests that will specifically detect antibody to the pandemic strain are required. Traditional haemagglutinin inhibition (HAI) provides a type specific diagnosis by demonstrating a single high titre or, preferably a rise in antibody between paired sera. This test is currently available for H5 influenza, but would not be available for other pandemic strains until antigen was supplied.

Neutralisation titres (NT) are technically more difficult but can be performed in laboratories that have the appropriate facilities for culture of the pandemic strain. If needed these tests would be made available through the public health laboratories.

7. Diagnostic criteria

During the initial phase of laboratory screening for the first case, or cases of influenza attributable to a new pandemic strain, a highly specific laboratory case definition is recommended.

A laboratory proven case should be defined as one in which two different laboratory methods have given reactive results, or two different specimens have given reactive results, or alternatively in which reactivity has been confirmed in a second laboratory. When pandemic activity is first identified in Australia, positive results must be confirmed by the WHOCC by testing of the positive material (eg nucleic acid extract or isolate) and the original sample.

This degree of specificity, and possibly laboratory diagnosis itself will become superfluous as cases become widespread in the community.

Phased approach to diagnosis

Diagnostic activities may usefully be considered in several phases:

Table 5: Phased approach to diagnosis

PANDEMIC PHASE	TESTING SCHEME
Phases Overseas 0-2 Animal cases overseas, no human cases	<p>Testing of travellers meeting a case definition for influenza due to a novel subtype.</p> <p>All samples to be tested by PCR and cell culture that are capable of identifying potential pandemic strains.</p> <p>Test methods should be capable of identifying influenza within 24 hours of receipt of sample, and identifying a likely pandemic strain within 48 hours of receipt.</p>
Phases Overseas 3-5 Human cases overseas, no human cases in Australia	<p>As above, the case definition probably having been relaxed, for example to include febrile travellers detected at border posts.</p> <p>Diagnostic test methods as above.</p>
Phases Aus 3-5 Human cases in Australia	<p>Testing of individuals meeting a case definition of influenza.</p> <p>Diagnostic test methods as above.</p>
Phases 6a-d Pandemic declared in Australia	<p>Testing of selected individuals as required for clinical management or to identify spread into new areas.</p> <p>Diagnostic test methods as above should used for identifying new activity.</p> <p>Other test methods that have been shown to be reliable may be used for patient management purposes. The type of test and the turnaround time required should be dictated by the patient management requirements.</p>

Laboratories able to provide influenza typing

WHO Collaborating Centre for Reference and Research on Influenza
CSL Limited
45 Poplar Road
Parkville VIC 3052
Telephone: +61 3 93891911

Department of Virology
CIDMLS
ICPMR*
Westmead NSW 2145
Telephone: +61 2 98456255

VIDRL*
10 Wrecklyn St
North Melbourne VIC 3051
Telephone: +61 3 93422600

PathCentre*
Locked Bag 2009
Nedlands WA 6009
Telephone: +61 3 93422600
Health Scientific Services
Telephone: +61 9 3462274

SEALS
Prince of Wales Hospital
Randwick NSW 2031
Telephone: +61 2 93829113

Queensland Health Scientific Services
39 Kessels Road
Coopers Plains Qld 4108
Telephone: +61 7 32749151

Department of Virology
IMVS 39 Kessels Road
Frome St
Adelaide
Telephone: +61 8 82223000

* WHO National Influenza Centres

ANNEX 6: Infection control

Based in part on the *Influenza A (H5N1): WHO Interim Infection Control Guidelines for Health Care Facilities, March 2004*³⁰.

DoHA and NIPAC are revising this annex in conjunction with relevant stakeholders, and it should be considered as a basis for future pandemic influenza infection control guidelines. The need for, and detail required in clinical care guidelines is also being considered.

Characteristics of influenza infection

The management of infectious cases of pandemic influenza and their contacts is determined by the mode of transmission, the incubation period and the infectious period³¹.

Transmission

- Droplet (respiratory secretions) transmission is common among close (within one metre) contacts.
- Contact (respiratory secretions) transmission may occur through hand-to-mouth or hand-to-eye transmission after touching an influenza virus-contaminated object or surface.
- Airborne transmission predominates among crowded populations in enclosed spaces.

Incubation period

The incubation period for human influenza viruses is two to three days, with a range of one to seven days.

Infectious period

The infectious period is usually from the onset of symptoms to:

- seven days since resolution of fever (in those > 12 years); and
- 21 days since onset of illness (in those ≤ 12 year).

A small proportion of patients may be infectious from just before symptoms appear.

Case definitions

Clinical and surveillance case definitions will vary through the phases of the pandemic, and definitions will be updated.

The current possible case definition, based on WHO recommendations for H5N1 infections is:

³⁰ http://www.who.int/csr/disease/avian_influenza/guidelines/infectioncontrol1/en/

³¹ These guidelines will be amended as new knowledge emerges.

Possible case of Influenza A (H5)³²

Person with acute respiratory illness, characterized by fever (temperature >38 C) and cough and fatigue with onset of symptoms within seven days of:

- a. contact with a confirmed case of influenza A(H5) during the infectious period
OR
- b. visit to a poultry farm or other poultry contact in an area known to have outbreaks of influenza A(H5) OR
- c. having worked in a laboratory that is processing samples from persons or animals that are suspected to have influenza A(H5) infection.

For details on diagnostic testing and laboratory confirmation see annex 5: *Laboratory guidelines*.

An **infectious case** of pandemic influenza is a confirmed or suspected case for which the infectious period has not expired.

Contact definition

A contact of pandemic influenza is a person who had close (ie within one metre) contact with an infectious case or who has spent more than 60 minutes in a confined space (such as an aeroplane, or an enclosed room) with an infectious person.

Infection control precautions

The WHO currently recommends strict adherence to standard and additional precautions to minimise contact, droplet and air-borne transmission of the disease in the care of patients with known or suspected avian influenza.

Standard precautions

- handwashing and antisepsis (hand hygiene)
- use of personal protective equipment (PPE) when handling blood, body substances, excretions and secretions
- appropriate handling of patient care equipment and soiled linen
- prevention of needlestick/sharp injuries
- environmental cleaning and spills-management
- appropriate handling of waste.

Additional (transmission-based) precautions

These are taken while still ensuring standard precautions are maintained:

- droplet precautions
- contact precautions
- airborne precautions (including the use of high efficiency masks (P2/N95) and negative pressure rooms if available).

³² http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-avian_influenza-protocol.htm

Personal protective equipment (PPE)

PPE includes:

- P2 (N95) mask³³
- disposable gloves
- protective eyewear (ie goggles/visor/shield)
- long-sleeved cuffed gown
- cap (in high-risk situations where there may be increased aerosols)
- plastic apron (if splashing of blood, body fluids, excretions or secretions is anticipated).

PPE should be worn by:

- all people who provide direct patient care (eg doctors, nurses, radiographers, physiotherapists, border workers and airline staff)
- all supporting staff, including medical aides and cleaning staff
- all laboratory workers handling specimens from a patient being investigated for pandemic or avian influenza
- all sterilizing services workers handling equipment that requires decontamination and has come from a patient with pandemic or avian influenza
- family members or visitors.

Masks

P2 (N95) masks are expected to minimise air-borne and droplet transmission of respiratory secretions from an infectious case to the attending person. If used, they should be properly fit tested.

Surgical masks are expected to minimise droplet transmission of respiratory secretions from an infectious case to other close contacts. Unless it needs to be removed for examination purposes, the infectious case should wear a surgical mask to minimise exhalation of respiratory secretions when other people are within 1 metre or are in the same room.

Cleaning and disinfection

The H5N1 influenza virus is inactivated by alcohol and by chlorine. Cleaning of environmental surfaces with a neutral detergent followed by a disinfectant solution is recommended. Refer to the table below for appropriate concentrations of the disinfectant.

³³ The optimal mask for protecting attending staff is a P2 (N95) mask. However, if they are not available then a surgical mask is the next best option.

Table 6: Disinfectants

Disinfectants	Recommended use	Precautions
Sodium hypochlorite: 1000 parts per million of available chlorine, usually achieved by a 1 in 5 dilution of hospital grade bleach	Disinfection of material contaminated with blood and body fluids	Should be used in well - ventilated areas Protective clothing required while handling and using undiluted Do not mix with strong acids to avoid release of chlorine gas Corrosive to metals
Granular chlorine: eg Det-Sol 5000 or Diversol, to be diluted as per manufacturer's instructions	May be used in place of liquid bleach if this is unavailable	Same as above
Alcohol: eg Isopropyl 70%, ethyl alcohol 60%	Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used	Flammable, toxic, to be used in well-ventilated area, avoid inhalation Keep away from heat sources, electrical equipment, flames, hot surfaces Allow it to dry completely, particularly when using diathermy as this can cause diathermy burns

Management of cases

These guidelines apply to infectious cases.

The objectives of the management of an infectious case are to provide adequate health care and to minimise transmission. These guidelines focus on minimising transmission.

Air travel

Transmission of influenza has been reported among aircraft passengers.

Close contacts (eg adjacent passengers) of an infectious case are at highest risk of infection.

Aircraft should have sufficient PPE and hand washing facilities (or alcohol-based hand wash), to manage infectious cases and protect staff.

Prior to departure, passengers should be advised to immediately report symptoms of influenza to the crew.

Symptomatic passengers

If a passenger reports or is observed to have symptoms of influenza, and the infectious period has not passed, then:

- the passenger should be isolated as much as possible from other passengers and crew
- the passenger should be given a surgical mask to wear
- attending crew should wear full PPE as outlined under *Personal protective equipment*
- for meals, the passenger should remove the mask and place it in a disposable bag, then wash his or her hands with an alcohol-based hand wash and place it in the disposable bag with the mask, and then dispose of the bag in general waste
- once his or her meal is finished, the passenger should be supplied with a new mask
- the mask should be changed when it becomes moist or damaged
- the captain of the aircraft must report the presence of symptomatic passengers to AQIS, prior to landing.

Attending crew

Crew members should wear full PPE when attending a symptomatic passenger and immediately wash their hands after removing their gloves and masks. If running water and soap are not available, then crew members should use alcohol-based hand wash to wash their hands. Used gloves and masks should be placed in a disposable bag, sealed, and disposed in general waste.

Cleaning passenger aircraft

Once an infectious passenger has left an aircraft, the main source of infection (ie respiratory secretions) has been removed. However, there may be residual respiratory secretions on environmental surfaces (eg seats). Thus, crew members cleaning the interior of passenger aircraft may be infected if they transfer respiratory secretions (eg with their hands) from an environmental surface to their eyes, noses or mouths. Cleaners should wear full PPE, avoid touching their eyes, noses or mouths, and immediately wash their hands after removing and disposing of their gloves in disposable bags in general waste.

Linen

Linen, such as pillows and blankets that have been in contact with a symptomatic passenger, should be transported in leak-resistant, closed laundry bags for washing. Special cleaning of upholstery, carpets and storage compartments is not required.

Sea travel

Transmission of influenza has been reported among ship passengers.

Close contacts of an infectious case are at highest risk of infection.

Ships should have sufficient PPE and hand washing facilities (or alcohol-based hand wipes), to manage infectious cases and protect staff.

Prior to departure, passengers should be advised to immediately report symptoms of

influenza to the crew.

In general, the recommended infection control precautions for sea travel are the same as for air travel. However, the following, additional recommendations apply:

- infectious cases should be isolated from other travelers as soon as possible
- if the infectious case is a crew member, then the person should be relieved of his or her duties and be isolated
- the master of the vessel should immediately inform the AQIS about the suspected case and record the name, the date of onset of symptoms and the symptoms of the suspected case, and the names, cabin numbers, home addresses and phone numbers of the crew and passengers who were on board the vessel at the same time as the infectious case.

Assessment of infectious cases on arrival in Australia

Passengers or crew may be referred for assessment because they were symptomatic during travel or on arrival, because they were detected as having a temperature on thermal scanners or because they reported contact with an infectious case. In this situation, an AQIS officer will conduct the initial assessment in accordance with established AQIS procedures.

Clinical assessment of passengers

After initial assessment, passengers may be referred to a nurse or doctor for clinical assessment.

Nurses or doctors should wear P2 (N95) masks, disposable gloves, protective eyewear, and long-sleeve, disposable gowns. In high-risk situations, cap and plastic apron may be required (see *Personal protective equipment*).

Nurses or doctors should avoid touching their eyes, noses or mouths until they have completed the clinical assessment, removed themselves from the enclosed space with infectious cases, disposed of their gloves, eyewear, masks, gowns, and washed their hands. If hand-washing facilities are not available, then an alcohol-based hand wash should be used.

Used masks, gloves, and gowns should be disposed of in a sealed bag in general waste, and reusable eyewear should be disinfected according to manufacturer's instructions.

Clinical equipment, such as stethoscopes, should be disinfected after the examination.

Assessment of infectious cases by medical practices

During a pandemic, infectious cases may telephone or present to community medical practices (eg GPs' surgeries). In this situation, the objective is to prevent transmission to attending medical practice staff and patients.

Medical practice staff who are eligible for antiviral prophylaxis should be provided with the medication (if it is available) and written information about its use, recommended infection control precautions, and what to do if they develop symptoms of infection.

Prior to clinical assessment of an infectious case

Any patient who telephones or presents at a medical practice for an appointment should immediately be questioned to determine if he or she could be an infectious case.

The suspected case should be provided with a surgical mask prior to entering the medical practice, ambulance or assessment by the GP.

If the patient telephoning the medical practice appears to be an infectious case, then the GP should refer the patient to the relevant hospital or clinic, or if possible, assess the patient at the patient's residence. If the GP assesses the patient at the medical practice, the patient should wear a surgical mask and be separated from other patients and staff. If the GP assesses the patient in person, then the GP should assess the patient in isolation, wearing the recommended PPE.

If the GP considers the patient to require immediate hospitalisation, then the GP should telephone the ambulance service and advise the ambulance officer that the patient is an infectious case and that the attending ambulance officer should wear the recommended PPE and inform the receiving hospital emergency department or clinic prior to the patient's arrival.

If an infectious case presents to the medical practice without telephoning, then the patient should immediately be provided with a surgical mask and separated from other patients and staff prior to assessment by the GP.

During clinical assessment of an infectious case

The attending GP or any other person entering the room containing the infectious case should wear full PPE.

Following clinical assessment of an infectious case

Attending GPs should avoid touching their own eyes, noses and mouths until they have removed themselves from the enclosed space with the infectious cases, disposed of their gloves, eyewear, masks, gowns, and washed their hands.

Used masks, gown, and gloves should be disposed of in a sealed bag in general waste and reusable PPE (ie goggles/visor/shield) should be kept in a sealed bag and disinfected as per the manufacturer's instructions.

If the patient is discharged home, then the patient should be advised to avoid contact with other persons until the infectious period has passed, and should be provided with written information advising the patient what infection control precautions to take and what actions to take if the symptoms worsen.

Non disposable equipment used on the patient should be disinfected according to manufacturer's instructions.

Assessment of infectious cases by hospitals (eg emergency departments)

During a pandemic, infectious cases may telephone or present to hospitals. In this situation, the objective is to prevent transmission to attending hospital staff and patients.

Hospital staff who are eligible for antiviral prophylaxis should be provided with the medication (if it is available) and written information about its use, recommended infection control precautions, and what to do if they develop symptoms of infection.

Prior to clinical assessment of an infectious case

Any person who telephones or presents at a hospital should immediately be questioned to determine if he or she could be an infectious case.

If the patient is being escorted to the hospital, then the escort should be instructed to collect a mask from the triage desk and to provide the mask to the infectious case to wear before he or she enters the facility.

During clinical assessment of an infectious case

The patient should immediately be isolated in a single room (preferably a negative pressure room), and should wear a surgical mask until he or she is advised to remove it by attending staff.

The door to the patient's room should remain closed and attending staff and the patient should be informed of this requirement, including appropriate signage.

The patient's movement should be restricted. If the patient must leave his or her room, then he or she should only do so while wearing a surgical mask.

If oxygen is required, nasal oxygen prongs should be used and covered with a surgical mask.

Disposable equipment should be used wherever possible during the treatment and care of patients and should be disposed of appropriately in the general waste. If equipment is to be reused, then it should be disinfected in accordance with the manufacturer's instructions.

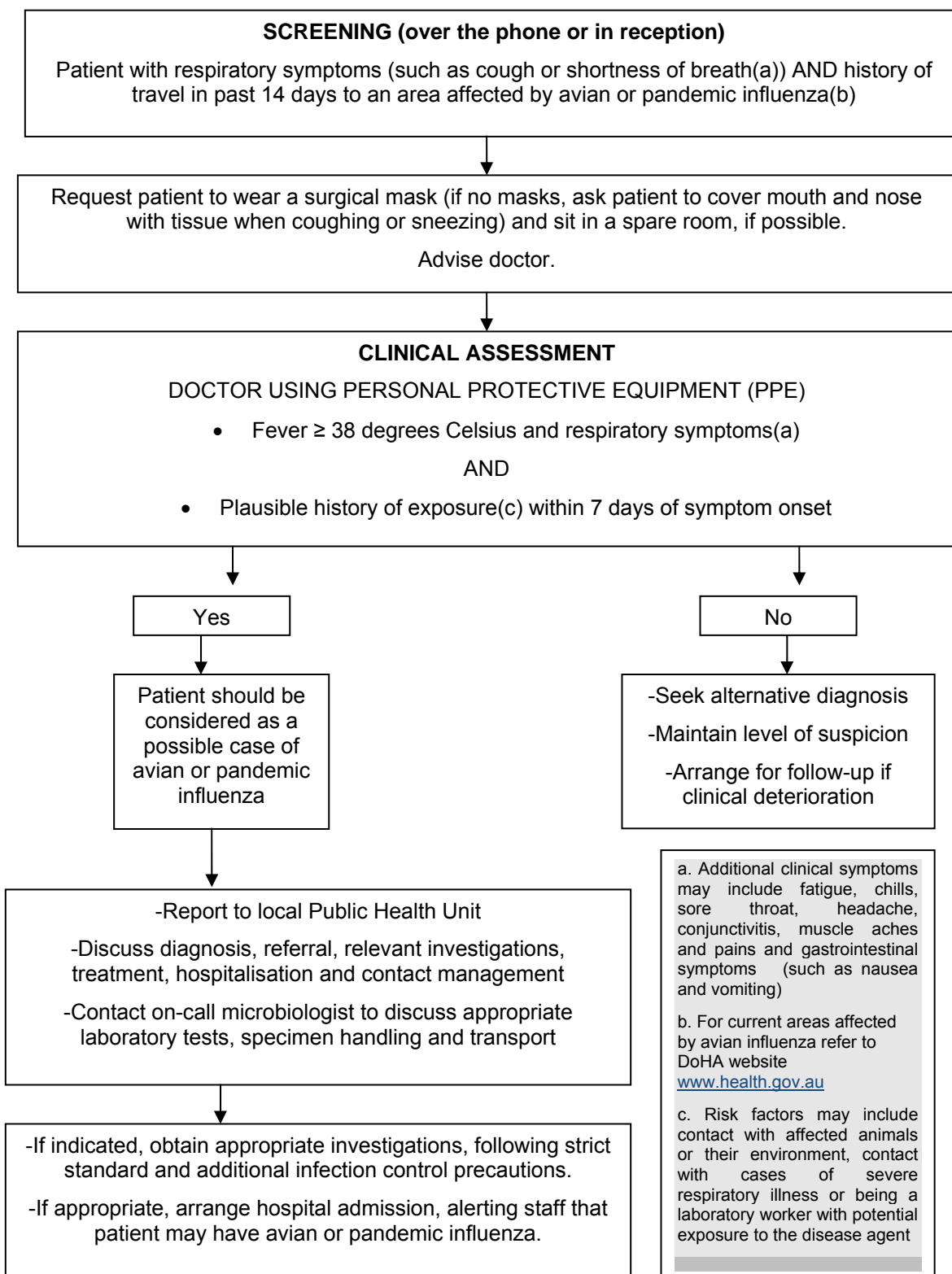
Following clinical assessment of an infectious case

If the patient is discharged home, then the patient should be advised to avoid contact with other persons until the infectious period has passed, and should be provided with written information advising the patient what infection control precautions to take and what actions to take if his or her symptoms worsen.

AVIAN OR PANDEMIC INFLUENZA DETECTION CHART

A MODEL PLAN FOR THE DETECTION AND MANAGEMENT OF SUSPECTED AVIAN OR PANDEMIC INFLUENZA CASES

This is based on what is currently known about avian and pandemic influenza and will be updated in light of new information.



Assessment of infectious cases by ‘fever clinics’

During the 2003 SARS epidemic, ‘fever clinics’ were established by some health authorities to reduce the risk of serial outbreaks of SARS in hospitals and medical practices caused by new cases of infectious SARS presenting to these facilities before transmission could be prevented by infection control precautions.

Persons with a fever or other early symptoms of SARS were referred by hospitals or GPs or presented themselves to these fever clinics (in accordance with broadcast media advisories) for SARS assessment under strict infection control precautions.

As well as reducing the risk of outbreaks among hospital and medical practice staff and patients, these fever clinics significantly reduced the health care demands on these facilities from SARS assessments. The fever clinics efficiently processed large numbers of referred or presenting symptomatic persons, most of whom did not have SARS. If a suspected SARS case was detected by a fever clinic, then the patient was transported to hospital with infection control precautions that prevented transmission to hospital staff and patients.

During a pandemic, when there is widespread community transmission, states and territories will consider establishing fever clinics staffed by HCW on antivirals or immune, to reduce the risk of transmission in hospitals and medical practices, to reduce the health care demands on these facilities and to allow rationalization of resources such as antivirals.

Cohorting of infectious cases in ‘influenza hospitals’

During a pandemic, states and territories should consider cohorting (or collocating) cases in designated ‘influenza hospitals’ staffed by HCW on antivirals or immune, to reduce the risk of transmission to staff and patients in the other hospitals, reduce the health care demands on these facilities and to allow rationalization of resources such as antivirals. Like fever clinics, influenza hospitals could maximise the safety and efficiency of the management of infectious cases.

Transport of an infectious case to hospital

During a pandemic, infectious cases may require transport to hospital by ambulance. In this situation, the objective is to prevent transmission to attending ambulance officers and hospital staff.

An infectious case should be given a surgical mask to wear prior to travel in an ambulance.

The attending ambulance officers should be trained in the transport of infectious cases by ambulance, particularly the application of recommended infection control precautions, including the use of PPE and disinfection.

The recommended procedures for transporting infectious cases should be incorporated into the standard operating procedures for the ambulance service.

Hospital inpatient care

During a pandemic, infectious cases may be admitted to hospital. In this situation, the objective is to provide adequate health care and prevent transmission to attending hospital staff and patients.

The attending hospital staff should be trained in the management of infectious cases, particularly the application of recommended infection control precautions and use of PPE.

If an infectious case is admitted to hospital, then the attending infection control staff should immediately be notified.

The patient should be isolated in a single room and wear a surgical mask when other persons are present in the room. If a single room is not available, influenza patients should be cohorted (or collocated) in designated multi-bed rooms or wards. The rooms should ideally have monitored negative airflow pressure. Single rooms should have hand-washing facilities, toilet and bathroom facilities and an anteroom to support the use of PPE.

The door to the patient's room should remain closed and attending staff and the patient should be informed of the need for this, including signage.

The patient's movement should be restricted. If the patient must leave his or her room, then he or she should only do so while wearing a surgical mask.

If oxygen is required, nasal oxygen prongs should be used and covered with a surgical mask.

Disposable equipment should be used wherever possible during the treatment and care of patients and should be disposed of appropriately in the general waste. If equipment is to be reused, then it should be disinfected in accordance with the manufacturer's instructions.

Clinical management of a hospitalised patient will depend on the severity of the influenza, the age of the patient (paediatric, adult, elderly adult), the presence of underlying comorbidities (eg cardiorespiratory disease, diabetes, immunosuppression, other chronic diseases, pregnancy etc), the occurrence of secondary complications and the level of services available in the institution.

The mainstays of treatment will include:

- general support including oxygenation, intensive care where required, antipyretics (not aspirin in children), intravenous or oral fluids, nutrition, bed rest. These will vary depending on whether the patients are adult or paediatric, and the severity of the illness. The level of general support will vary depending on the type of facility to which the case has been admitted eg regional or local hospitals, 'influenza' hospitals, nursing homes
- antibiotics for bacterial complications of influenza
- antiviral therapy if presentation has been within 48 hours of disease onset (and depending on their availability within the context of pandemic requirements)
- management of contacts may include antiviral prophylaxis and advice about relevant vaccination (eg pandemic strain vaccine if available, usual influenza vaccination, pneumococcal vaccination).

Pathology specimen collection

See annex 5: *Laboratory guidelines*.

Cleaning

Environmental surfaces

The door to the infectious case's room should be kept closed until the room is

cleaned and windows should be kept open if possible. Surfaces that have been directly touched by the patient (eg light switches, door knobs, toilets, hand basins, horizontal surfaces) should be cleaned with neutral detergent and warm water and then disinfected with broad-spectrum antiviral disinfectants. (see *Cleaning and Disinfection*).

Linen

Linen used by infectious cases should be transported in a sealed plastic bag and then decanted directly from the plastic bag into the washing machine without contact. It should be laundered on a normal hot cycle and then aired or tumble-dried.

Management of cases in the community

During a pandemic it is likely that access to hospital beds will be limited and thus it will be necessary for some cases to be cared for at home. The same principles would apply in residential care.

In this situation, the objective is to provide adequate treatment and care for the case and to minimise secondary transmission, especially to uninfected contacts at high risk of complications.

If an infectious case is isolated at home, then visitors should be discouraged and be provided with written information about what to do if symptoms worsen and what infection control precautions to practise.

Infectious cases who are isolated at home are advised to:

- minimise contact with other uninfected persons
- use separate living, dining, bathing, laundry and toilet facilities to uninfected household contacts (if available) or to immediately clean the objects that they used/touched in these facilities after they have used/touched them
- minimise use or handling of (and regularly clean) items or surfaces in the home that might have contact with uninfected household contacts
- wear a mask (if available), or cover their mouths and nose while in close contact with uninfected household contacts
- cease isolation once their infectious periods have passed.

The mainstays of the clinical management of cases in the community will include:

- general support and advice about the use of antipyretics (not aspirin in children), oral fluids, nutrition, bed rest, no smoking (these will vary depending on whether the patients are adult or paediatric)
- ensuring adequate supervision within the home of the ill case
- advice to the case or the care-giver about seeking clinical review if further deterioration
- antibiotics for bacterial complications of influenza
- antiviral therapy if presentation has been within 48 hours of disease onset (and depending on their availability within the context of pandemic requirements)
- management of contacts may include antiviral prophylaxis, advice about relevant vaccination (eg pandemic strain vaccine if available, usual influenza vaccination, pneumococcal vaccination).

Management of contacts

Based in part on the CDNA and DoHA *Recommendations for Tracing and Managing Contacts of SARS Cases*, 22 May 2003³⁴.

When a patient is diagnosed with pandemic influenza, public health units will become involved. They will perform contact tracing to identify close contacts - for example, family members, work or classroom contacts. Once a pandemic is established it may not be possible to do this because of the increasing number of contacts.

Depending upon the transmissibility of the virus and the demands on public health units, contacts will undergo monitoring (passive surveillance or active surveillance) and quarantine. It is likely that contact monitoring will be instituted in Phase Overseas 3, when the first human cases are occurring. Quarantine of contacts, in conjunction with monitoring will be implemented in Phase Overseas 4, when human to human transmission is occurring in small clusters.

When animal disease is present, a person who has had exposure to an animal or its environment in an area known to have outbreaks will also require monitoring through public health units. This monitoring is likely to start at Phase Overseas 1.

Duration

Provided the person who is a contact does not become symptomatic, the duration of monitoring and quarantine will be for:

- two times the incubation period of the virus, from the day of last exposure; OR
- until the diagnosis of pandemic influenza has been excluded in the index case.

Monitoring

Active surveillance

Public health staff will contact a person daily to assess the person's health, either by telephone or in person. All people on active daily surveillance should measure and record their temperatures twice daily (at least 4 hours after any medications that may lower fever).

Passive surveillance

Contacts will be asked to monitor their own health, record their temperatures daily and report to the public health unit if they develop a fever or respiratory symptoms.

Quarantine

Quarantine applies to people who have been exposed to someone with pandemic influenza and may be infected, but are not symptomatic. Separating exposed people and restricting their movements is intended to stop the spread of pandemic influenza. People may be quarantined in their own homes or in another facility. In

³⁴ <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-sars-guidelines-index.htm>

most cases, quarantine is voluntary; however, state, territory and the Australian governments have authority to compel quarantine to protect the public. Those in quarantine will still be monitored.

Antivirals

Uninfected contacts who are eligible for antiviral prophylaxis should be provided with the medication (if it is available) and written information about its use, recommended infection control precautions, and what to do if they develop symptoms of infection.

Education

Uninfected contacts quarantined at home with an infected case are advised to:

- minimise close contact with the infectious case
- use separate living, dining, bathing, laundry and toilet facilities to the infectious case (if available)
- minimise use or handling of (and regularly clean) items or surfaces in the home that might be used/touched by the infectious case
- wear masks (if available), or cover their nose and mouth while in close contact (ie less than one metre) or while in a confined space with the infectious case.

Care of the deceased

The care of deceased pandemic influenza patients raises infection control issues, along with significant social and religious considerations. DoHA and NIPAC are developing detailed guidelines in consultation with relevant professional associations.

Key infection control messages for the general public

Box 1: Protecting yourself and others against respiratory illness

PROTECTING YOURSELF AND OTHERS AGAINST RESPIRATORY ILLNESS

- ❖ HANDWASHING IS ONE OF THE MOST IMPORTANT MEASURES TO PREVENT THE SPREAD OF INFECTION
- ❖ Anyone with respiratory-type illness should be careful with secretions from the nose and mouth
- ❖ Cover the nose and mouth when coughing or sneezing - use a tissue and dispose of this once used in the waste
- ❖ Always wash hands after having any contact with respiratory secretions
- ❖ Be careful with respiratory secretions (eg coughing and sneezing) when around other people. It may be best to avoid contact with individuals at risk (small children or those with underlying or chronic illnesses such as immune- suppression or lung disease) until respiratory symptoms have resolved
- ❖ Avoid contact with secretions of people who have respiratory illnesses
- ❖ Ask people to use a tissue and cover their nose and mouth when coughing or sneezing

TRAVEL HEALTH

Have you recently arrived from overseas or returned from overseas?

Do you have fever, bad cough, trouble breathing, or otherwise feel unwell?

Please see a doctor about your symptoms

- ❖ When you see a doctor, tell them about your symptoms and that you have been overseas, without waiting to be asked
- ❖ Cover your nose and mouth with a tissue when coughing or sneezing
- ❖ Throw the tissue away in a bin afterwards and then wash your hands with soap and water

ANNEX 7: Aboriginal and Torres Strait Islander communities

Introduction

The purpose of this section is to outline a number of issues to be considered and actions that should be undertaken in relation to Aboriginal and Torres Strait Islander people in Australia during an influenza pandemic. This is because Aboriginal and Torres Strait Islander people are likely to be at higher risk of illness during a pandemic than the general population.

Pandemic planning for Aboriginal and Torres Strait Islander communities will need to focus on:

- close consultation with, and the use of, community controlled health organisations to assist in the distribution and supervision of antivirals and vaccine
- training of Aboriginal and Torres Strait Islander health care workers in the prevention, detection and management of pandemic influenza
- maximising the uptake of inter-pandemic influenza and pneumococcal vaccine to reduce the incidence of secondary infections
- development of a range of communications materials which meet community needs.

Background

A number of factors place Aboriginal and Torres Strait Islander people at much higher risk of disease and complications during a pandemic. These include:

- high rates of influenza and pneumonia in non-pandemic years. Hospitalisations and of Aboriginal and Torres Strait Islander people for influenza and pneumonia were three times those for non-Indigenous Australians in 1999-2002. Deaths from influenza and pneumonia were similarly three times higher, with the highest rates in children and young adults
- causes of death – leading causes of death and hospitalisation include circulatory and respiratory diseases, cancer, endocrine, nutritional and metabolic diseases
- other risk factors for influenza and its complications – Aboriginal and Torres Strait Islander people have significantly higher rates of smoking than non-Indigenous Australians. At least 50% of Aboriginal and Torres Strait Islander adults smoke
- housing is generally in poorer condition and more crowded, particularly in remote and very remote settings
- population distribution – although around two thirds of Aboriginal and Torres Strait Islander people live in major cities, more than one quarter (27%) live in remote or very remote areas (compared to 2% of the total population). The onset of influenza is often earlier in Northern Australia and Aboriginal and Torres Strait Islander people may therefore acquire the virus ahead of the general population
- language and education – Aboriginal and Torres Strait Islander peoples generally have lower levels of education compared to the rest of the population. Many Indigenous Australians in remote and very remote areas do not use English as a first language
- mobility – some Aboriginal and Torres Strait Islander people are more mobile,, especially in remote and very remote areas, but also between urban and rural/remote areas; this may depend on, for example, seasonal variations in

- northern Australia and movement for temporary employment
- access to health services - Aboriginal and Torres Strait Islander people do not access health services in the same way as the rest of the population – there are different usage patterns of all elements of the health sector
- other social issues – Aboriginal and Torres Strait Islander people have lower incomes, lower levels of employment and lower educational outcomes
- the range of co-morbidities and social circumstances of many Aboriginal and Torres Strait Islander people may place them at high risk of contracting influenza and of having poorer outcomes compared to the rest of the population.

Underlying principles

The *National Strategic Framework for Aboriginal and Torres Strait Islander Health* (2004) identifies nine principles for the way that health care should be provided for Indigenous Australians and are of relevance to this plan:

- cultural respect
- holistic approach
- health sector responsibility – improving health of Aboriginal and Torres Strait Islander people is the responsibility of the whole health sector
- community control of primary health care
- working together
- localised decision making
- promoting good health
- building capacity
- accountability.

Use of health care services

Like the rest of the population, Aboriginal and Torres Strait Islander people receive health care from a variety of sources, including hospitals, private general practices, specialist care and primary health care services. Aboriginal and Torres Strait Islander people access private general practice less than other Australians, and utilise hospital emergency services more.

The provision of primary health care to Aboriginal and Torres Strait Islander people is complex and comprises a range of services including Aboriginal Community Controlled Health Services, private general practices, state/territory funded services and the Royal Flying Doctor Service (RFDS). The provision of health care needs to take account of issues such as cultural sensitivity, language and educational level, economic circumstances and location.

Key participants and structures

There are a number of key groups and organisations that need to be involved in both planning for and during a pandemic. These include, but are not limited to:

- National Aboriginal Community Controlled Health Organisation and state/territory organisations representing Aboriginal community controlled health services;
- Australian and state/territory government offices for Aboriginal and Torres Strait Islander health, eg Australian government Office for Aboriginal and Torres Strait Islander Health, Western Australian Office of Aboriginal Health

- Royal Flying Doctor Service
- Divisions of General Practice, especially those in rural, remote and very remote areas
- Royal Australian College of General Practice
- Office of Indigenous Policy Coordination and Indigenous Coordinating Centres;
- regional planning groups
- ACCRM, NRHA, AIDA, CRANA, CATSIN.

These groups will be consulted on the development and implementation of the plan and will be briefed at key phases of a pandemic. It is also recommended that key community leaders are invited to participate where appropriate. This would be of particular importance at the local/regional level.

Remoteness

As noted above, remoteness is a significant factor for Aboriginal and Torres Strait Islander peoples. Around 27% of Aboriginal and Torres Strait Islander people live in remote and very remote areas. Many of these communities are small and have variable access to health services.

It is difficult to predict what effect the isolation of remote communities may have during a pandemic. While isolation may have a protective effect, this may be countered by the fact that remote communities experiencing influenza cases are further removed from ready access to health services. Small, close communities may be at increased risk of high attack rates if pandemic influenza is introduced. If this occurs such communities may require an influx of health services and/or large numbers of evacuations.

Communication with remote communities may also be difficult – telephones and radios may be unreliable, road access can often be difficult, and air access may be affected by poorly maintained landing sites or wet weather. Depending on the phase, consideration will need to be given to communications with remote communities to put protective measures in place.

Links with state/territory plans

Although a significant proportion of primary health care for Aboriginal and Torres Strait Islander people is provided through Australian Government funded Aboriginal Community Controlled Health Services, states and territories are key participants in ensuring that health care is provided in an appropriate manner. It is anticipated that state and territory pandemic influenza plans will include special reference to Aboriginal and Torres Strait Islander people, complementing the national management plan.

Vaccination

Aboriginal and Torres Strait Islander people generally have a much lower health status and are therefore at high risk of contracting influenza. Aboriginal and Torres Strait Islander people over the age of 50 are recognised by the NHMRC as a priority group for vaccination in the inter-pandemic period. In addition, many Aboriginal and Torres Strait Islander people under the age of 50 years are at risk of influenza and are currently eligible for free inter-pandemic influenza vaccination under the National

Indigenous Pneumococcal and Influenza Immunisation Program. In a pandemic, priority groups for early pandemic vaccination will need to be considered in the context of the clinical and epidemiological characteristics of the pandemic.

Communication

During a pandemic, communication will play a key role in disease management. A variety of communication routes need to be considered, including:

- Aboriginal and Torres Strait Islander radio
- Aboriginal and Torres Strait Islander television
- Aboriginal and Torres Strait Islander print media
- internet and email
- RFDS radio
- School of the Air
- RACGP “Friday fax”
- faxes/emails to Australian Government funded ACCHSs.

A detailed pandemic communication strategy is under development which will include specific measures to reach isolated communities, including materials for indigenous communities in a variety of culturally appropriate formats.

ANNEX 8: Agriculture response relating to a human influenza pandemic

Background

All commercial or domesticated poultry and numerous wild bird species are susceptible to infection with avian influenza virus. However, disease outbreaks occur most frequently in chickens and turkeys.

Avian influenza viruses can be brought into Australia by nomadic or migratory wild birds and then cycle through Australian wild or free-living waterfowl. The virus is more commonly associated with waterfowl (especially geese, ducks and swans) that generally show no signs of disease. However, if infected wild birds or their excretions (especially through contaminated water) come into contact with, and infect, domestic poultry outbreaks of severe disease can occur.

There have been five outbreaks of highly pathogenic avian influenza (all H7) in Australia; during the period 1976 to 1997 in all cases associated with poor biosecurity. Two possible explanations for avian influenza's presence in Australia have been proposed:

- either avian influenza is coming into Australia at low levels and low frequency via migratory shorebirds, being amplified in waterbirds, then being transmitted to poultry OR
- the virus is surviving endemically somewhere, and possibly due to unidentified epidemics and poor biosecurity enters commercial poultry.

Current evidence suggests that Australian H7 isolates are genetically different, and therefore geographically separate to Northern/ Eurasian H7 isolates. However, other sub-types have not been compared. This could suggest that migratory birds are not very good at bringing virus into Australia. They may do all the shedding/spreading of virus whilst under the stresses of breeding, nesting and fledging in the North. When they return to Australia the birds are under little stress and there may therefore be little shedding. These factors could help explain the low frequency and limited focal nature of the occurrences of avian influenza which Australia has experienced to date.

Subtypes H5 and H7 are almost completely asymptomatic in waterfowl. In the Asian avian influenza outbreak H5N1 has caused clinical signs and mortalities in waterfowl. For pathogenicity to develop in poultry (chickens or turkeys) the virus needs to be passed through domestic flocks.

Animal infection overseas- low human public health risk (in Australia)

Current policy involves increased security at points of entry into Australia, upgraded biosecurity for poultry owners and a substantial on-going awareness campaign.

Animal infection overseas-substantial human public health risk (current situation)

As above, but more intensive.

Animal infection in Australia- low human public health risk

A consultative committee is convened and intensive surveillance aimed to identify potential new cases instituted. Because of the risk of spread of virus by personnel, equipment and vehicles, the following procedures would be adopted to enable continuing surveillance while minimising multiple farm visits by inspectors and industry personnel:

- dead bird pick-up (DBPU) and transport to a laboratory, for sampling and sending samples to a laboratory
- report on flocks by visits or telephone
- telephone survey
- serological testing.

There would be three phases for surveillance:

- early in an outbreak to define the extent of infection by clinical signs and virus isolation
- later in an outbreak to re-enforce that the extent of infection has been determined when recovered flocks have seroconverted
- if the disease becomes established and control procedures are applied, such as vaccination, some surveillance would continue to determine where infection has spread.

If the disease is designated to be highly pathogenic for poultry 'stamping out' would be instituted. This involves destruction of the infected poultry plus the sanitary disposal of the carcasses and any contaminated poultry products to remove the source of infection.

Animal infection in Australia- substantial human public health risk

As above, plus increased testing of other bird species in particular waterfowl will be carried out in the vicinity of the flocks and sentinel areas distant from the flocks. The extent of this will be determined by the consultative committee.

Any other species exhibiting influenza-like illness will be tested and appropriate testing and surveillance of additional species as deemed appropriate by the CCEAD.

DAFF will compile data on infected flocks and other species and provide this to DoHA.

Inter-pandemic (or non-pandemic) period

The aim is to undertake a risk assessment and to then develop a surveillance program that will encourage a better understanding of avian influenza virus in birds in Australia. Such a system, although far from ideal due to the usually low prevalence of the virus, would also provide an early warning system.

Although Australia is considered free of swine influenza some testing of pigs may also occur.

Testing for avian influenza through the north Australia quarantine strategy would also continue.

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