



Australian Government
Department of Health and Ageing

**Interim National Pandemic Influenza
Clinical Guidelines
(June 2006)**

Annex to

**Australian Health
Management Plan for**

**PANDEMIC
INFLUENZA**

IMPORTANT INFORMATION FOR ALL AUSTRALIANS

2006

ISBN: 0 642 82886 5

Online ISBN: 0 642 82887 3

Publications Approval Number: 3816

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These guidelines 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. 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 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.

INTERIM NATIONAL PANDEMIC INFLUENZA CLINICAL GUIDELINES

AUSTRALIAN GOVERNMENT DEPARTMENT OF HEALTH AND AGEING
JUNE 2006

This document contains guidance primarily for health professionals regarding the assessment and management of avian and pandemic influenza patients, agreed by experts from a clinical working group of the National Influenza Pandemic Action Committee. It covers treatment in hospitals and the community, of both adults and children, but may need to be adapted for use in different settings. It is intended for use in Australia throughout the pandemic alert and pandemic periods (i.e., from phase Overseas 3 onwards).

Appendix A contains information to be used by the general public, to guide them in how to look after themselves in the event of a pandemic (phase Australia 6), including some preparative steps and information that will be useful during the pandemic alert period (i.e., from phase Overseas 3 onwards). This material may be given to patients by health care professionals or the general public may access it of their own accord.

REQUEST FOR FEEDBACK

Pandemic planning is an ongoing activity. These clinical guidelines, including Appendix A, will need frequent revision to incorporate new information on the clinical and epidemiological features of the virus and local arrangements for access to medical care. Submissions and comment are invited and will contribute to future versions of the guidelines. These should be forwarded to:

National Influenza Clinical Guidelines

Office of Health Protection
MDP 14
Department of Health and Ageing
GPO Box 9848
Canberra ACT 2601
Australia

Email: Pandemic_Clinical_Guidelines@health.gov.au

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AUTHORS AND ACKNOWLEDGEMENTS

The Interim 'National Pandemic Influenza Clinical Guidelines' have been developed by a working group of the National Influenza Pandemic Action Committee (NIPAC). NIPAC Core Group have endorsed this document. Members of the working group were:

Dr Dominic Dwyer (Chair)	NIPAC Core and Australasian Society for Infectious Diseases
Dr John Carnie	NIPAC Core and Faculty of Public Health Medicine Australia
Dr Charlie Corke	Joint Faculty of Intensive Care Medicine
Dr Anne Gardner	Royal College of Nursing Australia
Professor David Isaacs	Australasian College of Physicians
Associate Professor Phil Jones	Australasian Society of Infectious Diseases
Associate Professor Tom Kotsimbos	The Thoracic Society of Australian and New Zealand
Mr Kevin Masci	Convention of Ambulance Authorities
Dr Ron McCoy	Royal Australian College of General Practitioners
Dr Andrew Maclean	Australasian College for Emergency Medicine
Ms Irene Wilkinson	Australian Infection Control Association
Dr Clare Wylks	Department of Health and Ageing
Ms Angie Liu	Department of Health and Ageing

The working group would like to acknowledge the following valuable sources of information on the clinical care of pandemic influenza, which were used as the basis for these guidelines:

- Canadian Pandemic Influenza Plan, Clinical Care Guidelines and Tools
- NSW draft pandemic influenza clinical guidelines.

Thanks also to Professor Beverley Raphael, Professor Ian Spence, Professor Ian Gust, Dr Paul Armstrong, Dr Ann Koehler, Dr Graham Tallis and others who have contributed. Additional reference materials are found in the *Reading List*.

ABBREVIATIONS AND ACRONYMS

ABG	arterial blood gas
a/h	after hours
AIDS	acquired immuno-deficiency syndrome
ARDS	adult respiratory distress syndrome
ATSI	Aboriginal and Torres Strait Islander
CK-MB	creatinine kinase-MB
CXR	chest X-ray
CNS	central nervous system
DOB	date of birth
ECG	electrocardiogram
EUC	electrolytes, urea, creatinine
FBC	full blood count
GP	General Practitioner
HCWs	healthcare workers
HIV	human immunodeficiency virus
ICU	intensive care unit
LFT	liver function tests
N/A	not applicable
NMS	National Medicines Stockpile
PCR	polymerase chain reaction
PHU	Public Health Unit
PPE	personal protective equipment
RSV	respiratory syncytial virus
WHO	World Health Organization

INTRODUCTION

I. PURPOSE AND SCOPE

These guidelines are written from the national perspective, and are intended to be adapted for use in varying health care settings across Australia. They are intended to be used throughout the pandemic alert and pandemic phases. The different phases leading up to and including the pandemic are listed in the *Australian Health Management Plan for Pandemic Influenza 2006*.

Logistic and operational issues, such as the use of influenza-specific hospitals, fever clinics or other facilities, are being further considered at the jurisdictional and local level. The principle of keeping influenza patients separated from non-influenza patients in the interests of reducing spread of the virus is supported.

The management of patients with pandemic influenza is complicated by the uncertainty that may exist about the clinical and epidemiological features of a newly emergent influenza virus, the wide spectrum of clinical presentations in different age groups, the largely non-specific nature of the initial signs and symptoms of influenza, and the need for different approaches to management during the different phases of a pandemic.

As new information becomes available on the clinical and epidemiological characteristics of the disease these guidelines will be updated.

II. VARYING APPROACH THROUGH THE PHASES

It is impossible to predict which strain of influenza A will cause the next pandemic. It is not certain that the H5N1 avian influenza virus that re-emerged in Asia in December 2003 and has since spread widely will be responsible.

Although there are many crucial differences between a pandemic influenza virus and the H5N1 avian influenza virus that is currently causing sporadic human infections (the most important being that the current H5N1 virus does not transmit effectively between humans whereas a pandemic influenza virus does), the mainstays of management of individual patients are expected to be similar. Therefore, these guidelines have been developed for the care of patients infected with an avian influenza or pandemic influenza virus. Where there are differences (e.g., case definitions, use of antivirals and laboratory testing), they are outlined.

The aim of the Australian response to pandemic influenza in the early phases is to contain the spread of the virus. Along with the judicious use of antiviral medications, crucial strategies for containing the spread of the virus are detection and isolation of cases, identification and monitoring of contacts, strict adherence to infection control precautions, and in some instances, measures such as quarantine to restrict the movement of potentially infected persons. If transmission can be slowed, the impact on health services may be reduced and more time made available for the production of a pandemic vaccine.

Once a pandemic is established, because containment may not be as effective a strategy and may not be feasible due to the large numbers of cases, the strategy may change to maintenance of social function.

Different approaches to the assessment and management of cases may be needed depending upon the phase of the pandemic because of the need to try to contain the spread of the virus in the early phases, the varying case and exposure definitions during the different phases, the differential approach to the use of antiviral medications and diagnostic testing according to the phase of the pandemic. For example, before the pandemic strain enters Australia (or when the first few cases occur), very sensitive and specific diagnostic testing of all suspected and confirmed cases will be important. In contrast, in an area of high known pandemic activity, clinical diagnosis alone may suffice for most cases. In the early phases

of a pandemic that originates overseas, a travel history would be required to raise the suspicion of the diagnosis, whereas later, symptoms and signs would be sufficient. In all phases, known contact with proven or suspect cases will be an important clinical feature.

More importantly, when the number of cases in Australia increases, measures such as the use of negative pressure isolation rooms and contact tracing may not be achievable. In these later phases, healthcare workers (HCWs) will need to do the best that is possible given the available resources. An influenza pandemic will not be 'business as usual' for health services in Australia. Staff will be required to work flexibly to meet increased demands and usual clinical and infection control practices may need to be altered to accommodate the exceptional circumstances.

III. OUTLINE

Parts one to three of these guidelines are intended to be used by health professionals, or others that may be required to assess and triage patients in the event of a pandemic. Appendix A is intended to be used by the general public and could be the basis of general educational materials.

Part one is a general approach to the assessment and management of suspected and confirmed pandemic influenza patients for use throughout the various phases of the pandemic.

Part two consists of some assessment and management tools that can also be applied throughout the phases, but will be particularly relevant when the pandemic has been declared in Australia (roughly from phases Aus 6a onwards) when the demand for services is high and large numbers of people are being triaged quickly and potentially by people with minimal experience.

Part three contains information resources for health professionals, including the contact numbers for public health units.

Appendix A contains information intended to be used by the general public to guide them in how to look after themselves in the event of pandemic, including some preparative steps and information about pandemic influenza that will also be useful now. When transmission is widespread in Australia and disease is common, people whose illness is less severe and who are otherwise in good health will be best cared for in the home. Appendix A may be given to patients by health care professionals or it may be accessed directly by the general public.

IV. ETHICAL AND STAFFING CHALLENGES

During a pandemic, HCWs are likely to be faced with many challenging situations because of the large increase in workload. Ethical dilemmas may arise as HCWs balance the responsibilities they have to their patients, their own health and that of their families. All institutions and private practices need to consider how to deal with these challenges ahead of time and work on solutions to staff concerns or possible shortages (e.g., pooling resources locally for private practices). Clear communications strategies and effective and reliable information flows will be needed for HCWs.

V. PSYCHOSOCIAL AND MENTAL HEALTH ASPECTS

All those working in response to a potential or actual pandemic are likely to have concerns. Many will, quite naturally, feel anxious as they face the joint tasks of limiting and containing the spread of disease, and treating those individuals directly affected. Individuals and families may become quite fearful about the risk of becoming infected, about how they will manage their sickness and the consequences if they

do, and the potential threat to life if the condition is severe. It is helpful to acknowledge concerns, to highlight information available, answer queries honestly, and offer supportive advice if this is required.

Strategies that HCWs can utilise in responding to the psychosocial and mental health aspects of pandemic influenza are outlined in Part 1.3.5 *Psychosocial and mental health aspects*. The information contained in this section may be useful for HCWs, both personally and in providing care to their patients.

PART ONE

GENERAL APPROACH TO ASSESSMENT AND MANAGEMENT OF PATIENTS

1.1 EPIDEMIOLOGY AND CLINICAL FEATURES

1.1.1 Aetiology

Pandemic influenza is caused by a subtype of the influenza A virus that has not circulated in the human population in recent times, and is capable of causing severe disease and spreading easily from human to human.

1.1.2 Epidemiology

It is impossible to predict the exact behaviour of a newly emergent virus. The following features are estimates.

a. Attack rates

For planning purposes, the WHO advises that national plans are based on a cumulative clinical attack rate in the community of 25% but this may vary widely.

b. Age

Whereas seasonal influenza often more severely affects the very young and the elderly, pandemic strains have the potential to affect all age groups.

c. Transmission

For further information on infection control see the latest version of the Interim *Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings*, Annex to the *Australian Health Management Plan for Pandemic Influenza*.

When influenza viruses pass from human to human, as is the case with the normal human seasonal influenza, they are transmitted by contact with virus-containing respiratory droplets or droplet nuclei, produced by coughing, sneezing, talking or procedures such as suctioning or bronchoscopy.

The three potential modes of the spread of the virus are:

1. Droplet: Droplet transmission occurs when large (greater than or equal to five micrometres) droplets are generated, propelled a distance of about one metre and deposited on the mucous membranes (mouth or nose) or conjunctivae of another person
2. Contact: Direct contact transmission occurs when the virus comes into contact with a person's hand and then that person touches his or her mouth, nose or eyes (self-inoculation). Direct contact transmission can also occur when skin-to-skin contact results in the physical transfer of the virus (e.g., kissing). Indirect contact transmission occurs when the virus is transferred to a person's eyes, mouth or nose after coming into contact with a contaminated object such as a pen or cup
3. Airborne: When smaller (less than five micrometres) droplets or dust particles containing the infectious agent are produced (e.g., from the evaporation of water from larger droplets) they may remain suspended in the air, dispersed by air currents, and may be inhaled by a person who is some distance (e.g., in the same room) from the source patient.

The relative importance of these three modes of transmission are not certain, although it appears that droplet and contact transmission are the most important. There is no evidence to support the notion that influenza can be transmitted through ventilation systems (refer to Part 3.2: *reading list*).

The H5N1 avian influenza virus that re-emerged in Asia in December 2003 and has since spread widely, is usually transmitted to humans via direct contact with infected poultry, or surfaces contaminated by their secretions. It is possible that contact with raw contaminated poultry products, including blood, may be a source of transmission. It is probable that the current H5N1 subtype has been transmitted sporadically from human to human in a limited manner after very close and prolonged contact with a person suffering from the disease and without the use of appropriate precautions (refer to Part 3.2: *reading list*).

d. Incubation period

Human influenza usually has a short incubation period of one to three days. The incubation period for avian H5N1 influenza may be longer; most cases have occurred within two to four days of exposure, although the range has been up to eight days. For the purpose of these guidelines, an incubation period of seven days will be assumed but this may be altered in light of what is learnt of the epidemiology of the disease early in the pandemic.

e. Period of communicability

Approximately seven days from the onset of symptoms for those greater than 12 years, 14 days for school aged children less than or equal to 12 years and 21 days for pre-school aged children. Individuals may be infectious from 24 hours before the onset of symptoms. The risk is greatest during the period that the patient is symptomatic (e.g., coughing and sneezing).

1.1.3 Case definitions

When influenza is circulating in the community, the presence of fever, cough and fatigue are good predictors of influenza, especially when the temperature is greater than 38 degrees Celsius and the onset of illness is acute.

Box 1: Provisional clinical case definition for phase Overseas 3 (avian influenza affecting humans)

A high index of suspicion should be maintained during the assessment of any patient with an acute, febrile, respiratory illness who has recently been overseas.

Suspected H5N1 avian influenza:

Fever > 38 degrees Celsius, cough and fatigue of acute onset,

AND

One of the following exposures within seven days of symptom onset:

- a. Contact with a confirmed case of influenza A (H5N1) 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 (H5N1)
OR
- c. Having worked in a laboratory that is processing samples from persons or animals that are suspected to have influenza A (H5N1) infection.

Because the clinical and epidemiological features may vary during the different phases, an accurate case definition for influenza caused by a pandemic strain cannot be made until the pandemic commences. Below is a provisional case definition for pandemic influenza.

Box 2: Provisional clinical case definition when pandemic influenza is circulating in Australia.

Suspected influenza: Presence of fever, cough and fatigue of acute onset.

Probable influenza: Fever > 38 degrees Celsius, cough and fatigue of acute onset

AND

History of exposure to person with pandemic influenza

Note that this case definition will be adjusted at the time the virus is circulating in Australia

Likewise, laboratory case definitions cannot be determined in advance. However, the laboratory case definition for avian or pandemic influenza is likely to be similar to that used for seasonal influenza which is shown below. Nucleic acid testing on respiratory tract samples for the pandemic strain is likely to be the most widely available test for early diagnosis.

Box 3: Laboratory case definition for seasonal influenza

1. Isolation of influenza virus by culture from appropriate respiratory tract specimen

OR

2. Detection of influenza virus by nucleic acid testing from appropriate respiratory tract specimen

OR

3. Detection of influenza virus antigen from appropriate respiratory tract specimen

OR

4. IgG seroconversion or a significant increase in antibody level or a fourfold or greater rise in titre to influenza virus

OR

5. Single high titre to influenza virus.

Note that this case definition will be adjusted at the time the virus is circulating in Australia

1.1.4 Symptoms of influenza

Constitutional	Respiratory	Gastrointestinal	Neurological
Fever	Cough	Vomiting	Confusion
Chills	Sore throat	Diarrhoea	Drowsiness
Headache	Hoarseness	Abdominal pain (mainly in children and elderly).	Convulsions
Marked malaise	Stuffy or runny nose		Meningism (mainly in children).
Muscle and joint pains.	Shortness of breath		
	Pleuritic chest pain		
	Retrosternal pain		
	Sputum production and haemoptysis		
	Earache (mainly in children).		

1.1.5 Signs of influenza

- Fever
- Tachypnoea
- Respiratory distress
- Tachycardia
- Postural drop in blood pressure
- Cyanosis
- Chest crackles
- Wheeze
- Consolidation
- Confusion.

1.1.6 Atypical presentations

The very young and elderly, pregnant women, or the immunosuppressed, may not present with the usual signs and symptoms of influenza, and require special attention in assessment. They may not necessarily have to meet the provisional case definition to be considered as a possible case of pandemic influenza (see *Box 4: Special considerations in the young*, *Box 5: Special considerations in the elderly*, *Box 7: Special considerations for pregnant women* and *Box 8: Special considerations for immunosuppressed individuals*). Different strains of influenza may also be associated with different symptoms, as well as varying severity. For example, some human infections caused by the H5N1 strain in 2004–05 have been associated with gastrointestinal and neurological symptoms in addition to the respiratory features.

Box 4: Special considerations in the young

Uncomplicated influenza in children may be similar to that experienced by adults. However, there are some age related differences in children and adults:

1. Young children usually develop higher temperatures (often over 39.5 degrees Celsius) and may have febrile seizures.
2. Unexplained fever can be the only manifestation of the disease in neonates and infants.
3. Influenza viruses are an important cause of laryngotracheobronchitis (croup), pneumonia and pharyngitis-bronchitis in young children. Both influenza types, A and B, are significant causes of lower respiratory tract infections.
4. Gastrointestinal manifestations, such as nausea, vomiting, diarrhoea and abdominal pain, are found in 40–50% of patients, with an inverse relation to age (mainly three years or younger).
5. Otitis media and non-purulent conjunctivitis are more frequent in younger ages.
6. A variety of central nervous system findings, including apnoea and seizures may appear in as many as 20% of infants. Children may also present with symptoms suggestive of meningitis or encephalitis, e.g., headache, vomiting, irritability and photophobia.
7. Myositis is a common complication in young children, especially with influenza B.

In adolescents and children over five years of age, the most frequent symptoms are fever, cough, non-localising throbbing headache, chills, myalgia and sneezing. The temperature range is usually 38–40 degrees Celsius and a second peak of fever, without bacterial superinfection, may occur around the fourth day of illness. Backache, sore throat, conjunctival burning with watery eyes and epistaxis may be present, but gastrointestinal symptoms are infrequent. Chest auscultation is usually normal, but occasionally coarse breath sounds and crackles may be heard.

Respiratory illness cause by influenza is non-specific and difficult to distinguish from illness caused by other respiratory pathogens on the basis of symptoms alone. Many viral infections (e.g., respiratory syncytial virus, parainfluenza viruses, adenovirus and rhinovirus), as well as other pyrexial diseases, can cause illnesses clinically indistinguishable from influenza.

Box 5: Special considerations in the elderly

All people over the age of 65 years, particularly those in residential care facilities or who are immunosuppressed, are at increased risk of complications from influenza. Aboriginal and Torres Strait Islander people are at increased risk from the age of 50 years.

Although viral pneumonia and bacterial pneumonia following influenza are considered the main causes of influenza-related hospitalisation in the elderly, many hospitalisations are attributed to the exacerbation of chronic obstructive pulmonary disease or congestive heart failure. It is therefore important to consider influenza in someone presenting with exacerbations of underlying diseases.

The symptoms and signs seen in older adults are similar to those in younger individuals, but most cases are characterized by the presence of dyspnoea, wheezing, sputum production and temperatures of 38 degrees Celsius. In addition, any unexplained acute deterioration in health status associated with fever may be a manifestation of influenza in elderly individuals.

Influenza-like illness in older adults can also be caused by other viruses, mainly RSV or parainfluenza. RSV infections are an important cause of hospitalisation and death of elderly individuals and it is impossible to distinguish between RSV and influenza on the basis of clinical manifestations alone.

1.1.7 Risk factors/exposures

It is also important to assess whether a patient has been exposed to pandemic influenza in the seven days prior to the onset of their symptoms, as this increases the likelihood of the diagnosis and may also determine subsequent public health management.

Prior to the pandemic reaching Australia, and before the virus with pandemic potential is transmitting effectively from human to human, a history of travel to an affected country and contact with poultry or contact with a person with avian influenza would be important in determining the likelihood of infection.

If effective human to human transmission is occurring overseas, then merely having been in an affected area would be a sufficient history of exposure.

In a person who has travelled overseas it is important to also consider other diseases that present with a febrile illness such as malaria and typhoid.

Once there is widespread transmission of the pandemic strain in the general population in Australia, then anyone presenting with symptoms and signs of influenza would be considered a suspected case.

Box 6: Taking an exposure history

Dependent upon the phase of the pandemic, the following exposures occurring in the seven days prior to the onset of symptoms, should be asked, in taking a history from the patient:

- Overseas travel to an affected area
- Contact with poultry in an affected area
- Contact with a person with a respiratory illness
- Occupation: (e.g., laboratory worker handling respiratory tract specimens or HCWs with direct patient contact.)

1.1.8 Complications of influenza

- Primary viral pneumonia
- Secondary bacterial pneumonia
- Exacerbation of cardiorespiratory or other underlying health conditions
- Middle ear infection
- Reye syndrome (rare).

In assessing a patient who has already been diagnosed with pandemic influenza or may be presenting late in the illness, be alert for these complications.

Primary viral pneumonia and secondary bacterial pneumonia

To ensure the appropriate use of antibiotics it is important, where possible, to differentiate between primary viral pneumonia and secondary bacterial pneumonia. The following descriptions of primary viral pneumonia and secondary bacterial pneumonia may assist, although the pattern of pneumonia associated with a new pandemic strain may be different.

During an outbreak of influenza many cases are observed that do not clearly fit into either of these two categories, making differentiation difficult. Indeed, a patient with primary viral pneumonia may have a superimposed bacterial pneumonia and non-influenza community-acquired and nosocomial-acquired pneumonia may occur.

Primary viral pneumonia

Primary viral pneumonia involves the typical onset of influenza followed by rapid progression within a few days of fever, cough and cyanosis. If severe bilateral chest findings are revealed on physical examination and chest X-ray (CXR). Similar to adult respiratory distress syndrome (ARDS), consolidation is not evident on physical examination or CXR. Blood gas analysis shows marked hypoxia. Gram stain of the sputum does not reveal significant bacteria and bacterial culture yields sparse growth of normal flora, whereas viral testing yields high titres of influenza A virus. Such patients do not respond to antibiotics and have a high mortality.

Secondary bacterial pneumonia

Secondary bacterial pneumonia usually develops following a classic influenza illness and a period of improvement lasting four to 14 days. Recurrence of fever is associated with the classic symptoms and signs of bacterial pneumonia such as cough, sputum production and an area of consolidation evident on physical examination and CXR. Gram staining and culture of the sputum reveal a predominance of bacterial pathogens, usually *Streptococcus pneumoniae*, *Staphylococcus aureus* or *Haemophilus influenzae*. Such patients usually respond to specific antibiotic therapy.

See also Part 1.3.1 for information on the use of antibiotics.

1.1.9 The effect of co-morbidity

The following are associated with increased morbidity and mortality with seasonal human influenza:

1. Age < 5 yrs or ≥ 65 yrs, ≥ 50 years for Aboriginal and Torres Strait Islander people
2. Pregnancy (2nd or 3rd trimester)
3. Chronic lung disease
4. Chronic cardiac disease
 - congenital, rheumatic, or ischaemic heart disease
 - congestive cardiac failure
 - (not hypertension alone)
5. Diabetes
6. Renal failure
7. Malignancy
8. Immunosuppression
9. Haematological abnormalities
10. Hepatic disease
11. Long term aspirin therapy (rare association with Reye syndrome in those less than 18 years of age).

1.1.10 Severity of illness/prognosis

There is wide variation in influenza severity, from asymptomatic infection to fatal disease (frequently associated with viral or secondary bacterial pneumonia). Previous exposure to an antigenically related virus is associated with less severe disease. Therefore, in a pandemic situation when a novel virus is circulating, the severity and length of illness may be greater than with seasonal influenza. Age, pregnancy and pre-existing disease also influence outcomes. In addition, viral factors have been implicated in the severity of disease. For example, the high case fatality rate associated with human H5N1 influenza virus infections may be related to viral proteins inducing ARDS.

The three pandemics of the last century had varying case fatality rates. The 1918–19 'Spanish' influenza pandemic had a case fatality rate of approximately 1% whereas the 'Asian' influenza pandemic of 1957–58 had a lower case fatality rate, ranging from 1 in 2,000 to 10,000.

Pregnant women

Pregnant women, especially those in their second and third trimesters of pregnancy, are particularly vulnerable to the consequences of influenza infection. See below *Box 7: Special considerations for pregnant women*.

Box 7: Special considerations for pregnant women.

Women with influenza infection in their second and third trimesters of pregnancy are at increased risk of hospitalisation for cardiorespiratory disorders. This is probably due to the increase in heart rate, stroke volume, and oxygen consumption observed in these months, as well as decreases in lung capacity and changes in immunological function.

Fatal influenza in pregnant women is characterised by the rapid development of cardiovascular and/or pulmonary insufficiency after several days of classic influenza-like illness. Fulminating viral or bacterial pneumonia may follow the initial illness.

An increase in mortality of pregnant women, miscarriages, premature births and stillbirths was documented during the 1918–19 and the 1957–58 pandemics. The reported mortality rate of pregnant women admitted to hospital with influenza in 1918 was 51% compared to 33% in hospitalised influenza patients from the general population. Influenza deaths in pregnant women represented 50% of all deaths in women of childbearing age, and 10% of deaths from influenza during the epidemics of 1957–58 in New York City and Minnesota. A review of 30 deaths from pneumonia and influenza in pregnant women in Massachusetts between 1954–74 showed more fatalities towards the last trimester and early puerperium (no deaths occurred in the first trimester), and the risk was higher with increasing maternal age. Only four of the 30 women had underlying pulmonary or cardiac conditions.

Immunosuppressed individuals

See *Box 8: Special considerations for immunosuppressed individuals*.

Box 8: Special considerations for immunosuppressed individuals.

Seasonal influenza may cause more severe disease in immunosuppressed individuals, depending upon the underlying disease or immunosuppressive medication (e.g., corticosteroids, chemotherapy, immunomodulation) and the degree of immunosuppression (e.g., asymptomatic HIV seropositivity versus AIDS). Clinical presentations may be atypical (e.g., reduced fever) and viral shedding more prolonged. Responses to antiviral medications may be slower and require longer courses of therapy (raising the possibility of the development of antiviral resistant virus). Complications may be more common, and convalescence longer. The effects of pandemic influenza infection in immunosuppressed individuals are currently unknown, and management of such cases may require specialist assistance.

1.1.11 Differential diagnosis

Below are some of the conditions that may be misdiagnosed as influenza. The list is not intended to be all-inclusive.

1. Any other upper respiratory tract infection.
2. Bacterial or non-influenza viral pneumonia.
3. Sepsis syndrome and ARDS.
4. In a returned traveller, diseases such as malaria and typhoid.

1.2 INVESTIGATIONS

In the early phases of a pandemic where pandemic influenza is suspected, it is important to discuss specimen collection and transport, and appropriate tests with the local public health unit (PHU) initially. The specific specimens to collect and laboratory tests for pandemic influenza are addressed in Annex 5: *Laboratory guidelines* in the *Australian Management Plan for Pandemic Influenza* (June 2005).

Additional tests for assessing severity and ruling out other diagnoses or complications should be ordered as needed. For example:

- CXR
 - Features include diffuse, multifocal or patchy infiltrates, interstitial infiltrates, and segmental, multifocal or lobular consolidation with air bronchograms
 - These may be apparent within one week of the onset of fever
 - There may be progression to the features of ARDS.
- Arterial blood gas (ABG)
- Sputum sample for Gram stain and bacterial culture
- Blood cultures
- Full blood count (FBC); electrolytes, urea, creatinine (EUC); liver function tests (LFT)
 - Features may include leucopenia, lymphopenia, thrombocytopenia and elevated aminotransferase levels generally in the first week. Multiorgan failure may develop.
- Acute and convalescent serology for atypical pneumonia pathogens.

In the later phases, when the pandemic is spreading in Australia, the necessity for highly accurate laboratory testing for pandemic influenza may diminish. Other tests that detect the pandemic strain, even if sensitivity is sub-optimal, may play an important role in reducing the demand on reference laboratories. In an area of known high pandemic activity, laboratory confirmation may not be needed at all. However, highly accurate testing is still necessary in a previously uninvolved area, or when it is critical to the management of individual patients, or in guiding the public health management of the pandemic.

1.3 MANAGEMENT

1.3.1 General principles

The mainstays of management of the affected individual will include:

- Attention to infection control immediately the diagnosis is considered, including isolating the patient and avoiding the use of nebulizers (see Part 1.3.3 *Infection control*)
- Maintenance of oxygenation, with assisted ventilation where required
- Maintenance of hydration with oral or intravenous fluids
- Nutrition
- Bed rest
- Antiviral therapy with neuraminidase inhibitors if presentation has been within 48 hours of disease onset and if available (see below)
- Antibiotics for bacterial complications of influenza, where required (see below)
- Public health considerations, including management of contacts.

When to prescribe antibiotics

Whether to prescribe antibiotics will be an individual decision made by the treating physician. The following principles may guide that decision making process.

If the patient is suspected to have viral pneumonia in the absence of bacterial pneumonia, antibiotics should not be commenced. If antibiotics are used inappropriately, potential consequences include the development of resistance, adverse events and wasted resources. Resource considerations may be particularly relevant in the later phases of the pandemic.

Issues to consider in excluding bacterial pneumonia are:

- The clinical status of the patient. The threshold for prescribing antibiotics may be lower in a patient with severe illness
- The presence or absence of underlying conditions such as chronic cardio-respiratory disease, which make the distinction between viral and bacterial pneumonia difficult and place the patient at a greater risk of bacterial pneumonia when infected with influenza
- The results of early microbiological investigations, including sputum microscopy, to detect bacterial pneumonia
- The clinical and radiological presentation.

If the decision is made to prescribe antibiotics, standard antibiotics for bacterial pneumonia should be commenced. These can be found in the Therapeutic Guidelines Antibiotic (Version 12, 2003. www.tg.com.au).

See also Part 1.1.8 *Complications of influenza* for information about differentiating between primary viral pneumonia and secondary bacterial pneumonia.

1.3.2 Antiviral medications

Availability of antiviral medications

In the very early phases of the pandemic, antivirals may be available in community pharmacies on prescription or through hospital pharmacies. The National Medical Stockpile (NMS) also contains influenza antivirals, for use in both treatment and prophylaxis. The proportion of antivirals from the NMS allocated for treatment or prophylaxis will depend upon factors such as their clinical effectiveness against the pandemic strain, rate of depletion of the NMS and the delay until a pandemic vaccine is available.

Antiviral treatment

Indications for antiviral treatment

Depending upon their availability within the context of pandemic requirements, and provided they can be administered within 48 hours of symptom onset, the indication for antiviral treatment is patients fitting the clinical or laboratory case definition of pandemic influenza.

Whether the clinical or laboratory case definition is used will depend upon the laboratory turnaround time and the phase of the pandemic. For example, in the earlier phases laboratory confirmation would be important whereas later, the clinical case definition would be sufficient. However, in the containment phases, if public health authorities are recommending an aggressive approach be taken to contain the spread of the virus, antiviral therapy may be commenced in a case that satisfies the clinical case definition prior to laboratory confirmation, and then ceased if the diagnosis is excluded.

The product information for the antiviral medication should also be reviewed.

Clinical studies during a pandemic

Clinical studies are required for the early phases of the pandemic to evaluate the effectiveness of antiviral treatment. This information will be used to modify antiviral strategies. Therefore, HCWs may be involved in collecting data on patients who are enrolled in the studies.

Onset, dose and duration of antiviral treatment

The neuraminidase inhibitor class of antivirals is recommended for treatment of human H5N1 infections because of the high frequency of M2 channel inhibitor resistance in human isolates of the virus.

As the antivirals for seasonal influenza are only effective if commenced in the first 48 hours, generally they should not be used if they are to be commenced after this time. The earlier treatment can be initiated within the 48 hours the better the patient's outcome is likely to be.

Only consider treatment onset beyond 48 hours if:

- The patient is severely ill and hospitalised AND there is clinical evidence of primary viral pneumonia or the person is immunosuppressed. This should be done in conjunction with an infectious diseases physician
- Clinical data emerges that treatment after this period is efficacious.

The recommended dose according to age is outlined in Table 1: Antiviral medications. The usual duration of therapy is five days.

Despite recent case reports of oseltamivir resistance emerging in patients¹ treated for influenza A H5N1 infection with the currently recommended regimen of oseltamivir therapy, there is no current evidence to support the use of higher doses, longer durations of therapy or combination therapy. However, this issue will be closely followed and the recommendation adjusted accordingly in light of new data related to clinical efficacy and patterns of resistance. Persistent detection of virus may be a marker of the emergence of resistance.²

Based on experience with human influenza, use of neuraminidase inhibitors and amantadine to treat clinical cases will not affect the development of an immune response to the infecting influenza strain.

Antiviral prophylaxis

Indication for antiviral post-exposure prophylaxis

The index case should ideally meet the laboratory case definition before commencing contacts on antivirals, to minimise wastage of limited resources. However, in the early phases, if an aggressive approach is being recommended by public health authorities to contain the spread of the virus, antiviral therapy may be commenced prior to laboratory confirmation of the index case and then ceased if the diagnosis is excluded.

- Close contacts of confirmed cases (see Part 1.3.6) *Public health aspects* for further information on contacts.

Onset and duration of post-exposure antiviral therapy

The neuraminidase inhibitor class of antivirals is recommended for prophylaxis against H5N1 infections because of the high frequency of M2 inhibitor resistance in human isolates of the virus. However, if the circulating strain was known to be susceptible to M2 channel inhibitors, amantadine may be considered as an alternative.

Post-exposure prophylaxis should be commenced as soon as possible but no later than within the incubation period³. Prophylaxis should be continued for 10 days.

In a setting of ongoing exposure, (e.g., household) the first exposure should be regarded as 24 hours before the onset of symptoms in the index case. Therefore, post-exposure prophylaxis should be commenced within six days of the index case first developing symptoms. If the exposure was an isolated event, post-exposure prophylaxis should be commenced within seven days of the exposure (based on an incubation period of seven days).

If a contact develops clinical features of influenza whilst on prophylaxis, then full therapeutic doses should be administered.

1 Resistance was demonstrated in two patients treated with the recommended regimen of oseltamivir therapy. In one patient however, therapy was initiated on the sixth day of illness. Partial oseltamivir resistance has been demonstrated in another patient who was initially treated with a prophylactic regimen despite being symptomatic and probably requiring a therapeutic regimen.

2 It is important to note that antiviral sensitivity testing is not routinely available in Australia at this stage.

3 Note that this is not consistent with the product information for oseltamivir, zanamivir or amantadine. Off label use as outlined above is considered appropriate because of the longer incubation period observed for avian influenza infections in humans than with seasonal influenza. Efficacy is likely to be greater with early (i.e., within 48 hours of exposure) onset of therapy.

Long-term prophylaxis

Long-term prophylaxis for seasonal influenza (e.g., for occupational exposure or high risk) has been used for 4–6 weeks; the safety, tolerability and efficacy of longer term prophylaxis is unknown. During a pandemic, it may be necessary to provide long term prophylaxis to those at frequent high risk of exposure or in particular occupations.

Table 1: Antiviral medications

Drug Class	Generic name (Brand name)	Indication	Dose, duration and route of administration	Contra-indications
Neuraminidase inhibitor	Oseltamivir (Tamiflu) ⁴	Treatment (age \geq 1 year) ⁵	2mg/kg (up to 75mg) twice daily for 5 days	Previous hypersensitivity reaction to the medication. See product information for precautions.
		Prophylaxis (age \geq 13 years)	\geq 13 years: 75 mg once daily for 10 days (may continue to 42 days if necessary)	
		Prophylaxis (age <13 years)*	2mg/kg (up to 75mg) once daily for 10 days. [Whilst oseltamivir is currently only registered for post-exposure prophylaxis in people aged greater than 12 years, during a pandemic it may be considered for off label use in contacts over one year of age. Only if the child was less than one year of age would this require consultation with a paediatrician.]	

*In some countries, oseltamivir is approved for prophylaxis in children over one year of age.

4 A reduction in the dose of oseltamivir is recommended for persons with creatinine clearance < 30 mL/min or weight < 40kg.

5 Whilst oseltamivir is only registered for children over one year of age, it may be considered for off label use by a paediatrician at a dose of 2mg per kg twice daily for five days for those less than one year.

Table 1: Antiviral medications (continued)

Drug Class	Generic name (Brand name)	Indication	Dose, duration and route of administration	Contra-indications
Neuraminidase inhibitor	Zanamivir (Relenza) ⁶	Treatment (\geq 5 yrs)	10mg twice daily for 5 days	Previous hypersensitivity. See product information for precautions.
		Prophylaxis (age \geq 5 yrs)	10mg once daily for 10 days (may continue to 28 days if necessary in adults) [Whilst zanamivir is only registered for post-exposure prophylaxis in young, healthy adults, during a pandemic it may be considered for off label use in contacts aged \geq 5 yrs.]	
M2 channel inhibitor	Amantadine (Symmetrel) ⁷	Prophylaxis (age \geq 5 yrs)	5–9 years: 5mg/kg/day in 2 divided doses, up to 150mg/day for 10 days 10–64 years: 100mg twice daily for 10 days > 65 years: 100mg once daily for 10 days	Previous hypersensitivity. Pregnancy. See product information for precautions.

6 Zanamivir is administered through inhalation by using a plastic device included in the medication package. Patients will benefit from instruction and demonstration of correct use of the device.

7 The product information should be consulted for dosage recommendations in renal impairment.

Table 2: Side effects of antiviral medications

Drug	Side effects
Oseltamivir treatment:	<p><i>Serious or life-threatening (<1%)</i> Aggravation of diabetes, arrhythmia, confusion, hepatitis, pseudomembranous colitis, pyrexia, rash, seizure, swelling of face or tongue, toxic epidermal necrolysis, unstable angina.</p> <p><i>Minor</i> Central nervous system: insomnia (adults, 1%), vertigo (1%). Gastrointestinal system: nausea (10%), vomiting (9%).</p>
Oseltamivir prophylaxis:	<p>Similar to those reported during treatment, but generally with lower incidence.</p> <p>More common with prophylactic use: headache (20%), fatigue (8%), cough (6%), diarrhoea (3%).</p>
Zanamivir:	<p><i>Serious or life threatening (<1.5%)</i> Allergic or allergic-like reaction, arrhythmia, bronchospasm, dyspnoea, facial oedema, rash, seizure, syncope, urticaria.</p> <p><i>Minor</i> Central nervous system: headache (2%), dizziness (2%). Gastrointestinal system: nausea (3%), diarrhoea (adults, 3%; children, 2%), vomiting (adults, 1%; children 2%). Respiratory system: sinusitis (3%), bronchitis (2%), cough (2%), other nasal symptoms and signs (2%), infection (ear, nose and throat: adults, 2%; children, 5%).</p>
Amantadine:	<p><i>Serious or life threatening</i> Congestive heart failure, arrhythmia, cardiac arrest, psychosis, neuroleptic malignant syndrome, visual impairment, respiratory failure, pulmonary oedema, anaphylactoid reactions.</p> <p><i>May also cause</i> Nausea, dizziness, insomnia, depression, anxiety, irritability, hallucinations, confusion, anorexia, dry mouth, constipation, peripheral oedema, headache, orthostatic hypotension, somnolence, diarrhoea.</p>

Drug interactions with oseltamivir and zanamivir

No clinically significant drug interactions have been reported in clinical studies to date. Information derived from pharmacology and pharmacokinetic studies of oseltamivir phosphate suggest that clinically significant drug interactions are unlikely.

The suggestion that supplies of oseltamivir can be extended by simultaneous use of probenecid is not well supported by scientific studies and probenecid is not registered for this indication.

Drug interactions with amantadine:

Caffeine, opiates and central nervous system (CNS) depressants are associated with increased risk of constipation/paralytic ileus. Antihistamines, albuterol, anticholinergics, fluoxetine and olanzapine are associated with increased anticholinergic adverse effects. Hydrochlorothiazide/triamterene combination may increase amantadine levels.

Antivirals during pregnancy

Table 3: Antivirals during pregnancy

Medication	Product information	Pregnancy Category ⁸
Zanamivir	There is no information on the outcome of human pregnancies exposed to zanamivir or on placental transfer in humans. In rats, low level placental transfer was noted after intravenous administration of zanamivir. There were no malformations observed in animals with intravenous or subcutaneous administration. No recommendation given.	B1
Oseltamivir	Animal studies revealed no teratogenic effect. Because animal reproductive studies may not be predictive of human response and there are no adequate and well controlled studies in pregnant women, it is recommended that oseltamivir only be used in pregnancy if the potential benefit justifies the potential risk to the foetus.	B1
Amantadine	Amantadine related complications during pregnancy have been reported. The use of amantadine during pregnancy is absolutely contraindicated.	B3

The benefits and risks of the use of antivirals during pregnancy need to be weighed up and considered on a case by case basis and, if possible, in consultation with an obstetrician. During a pandemic, and because of the increased morbidity and mortality experienced by pregnant women, especially during the 2nd and 3rd trimester, the potential benefits of zanamivir and oseltamivir may justify the potential risk to the foetus.

⁸ Australian categorization of risk of drug use in pregnancy.

Antivirals during breastfeeding

Table 4: Antivirals during breastfeeding

Medication	Product information
Zanamivir	There is no information on secretion of zanamivir in milk in humans. In rats, the drug has been found to be secreted into milk, although this did not appear to affect the perinatal and postnatal development of the offspring.
Oseltamivir	It is not known whether oseltamivir or the active metabolite are excreted in human milk. In lactating rats, oseltamivir and the active metabolite are excreted in the milk. Offspring development was not affected at maternal doses of 1,500mg/kg/day. Oseltamivir should only be used if the potential benefit for the lactating mother justifies the potential risk for the breastfed infant.
Amantadine	Amantadine has been demonstrated in human milk. Undesirable effects may occur in breastfed infants. Use of amantadine during lactation is not recommended.

1.3.3 Infection control

Introduction

The use of appropriate infection control measures for pandemic influenza is addressed in the latest version of the *Infection Control Annex to the Australian Health Management Plan for Pandemic Influenza*. The revised annex will contain detailed information, including recommendations on how to isolate patients in medical practice settings. This section is an outline of the general infection control principles applicable to the care of patients with suspected or confirmed avian or pandemic influenza. Guidelines for seasonal influenza are found in the *Infection control guidelines for the prevention of transmission of infectious diseases in the health care setting* which are accessible from:

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

The recommendations are different for the early phases of a pandemic compared to seasonal influenza because with a newly emergent pandemic virus, the population will have no immunity, there is unlikely to be a vaccine available and the behaviour of the virus will be unknown. Throughout the phases of a pandemic, general hygiene measures such as hand and respiratory hygiene and cough etiquette will be crucial.

General infection control principles

The WHO recommends strict adherence to standard and additional precautions to minimise contact, droplet and, in some cases, airborne transmission of the disease in the care of patients with known or suspected H5N1 avian or pandemic influenza. These guidelines are accessible from:

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

http://www.who.int/csr/resources/publications/influenza/Mask%20Clarification10_11.pdf

Airborne precautions include the use of properly fitted high efficiency masks (P2 (N95)) and negative pressure rooms, if available. In the later phases when infection is widespread in the community, full airborne measures may not be feasible or practical.

Further information about the use of appropriate personal protective equipment (PPE), including who needs to be provided with appropriate PPE, will be included in the revised *Infection Control Annex* of the *Australian Health Management Plan for Pandemic Influenza*. Appropriate PPE includes:

- Gown (fluid repellent, long sleeved, cuffed)
- Plastic apron (if fluid repellent gown is not available)
- Disposable gloves
- Properly fitted P2 (N95) mask (if available and appropriate) or surgical mask
- Eye protection
- Cap (in high risk situation where there may be increased aerosols).

The patient with suspected or confirmed pandemic influenza should be isolated from other patients. The patient should wear a surgical mask when other people are in the same room or if being transported.

Disposable equipment is preferred in the treatment and care of patients with suspected pandemic influenza and, except for sharps, this should be disposed of carefully in the general waste. If equipment is to be reused, it should be cleaned and reprocessed in accordance with the manufacturer's instructions. Furnishings should also be cleaned and disinfected.

The number of different staff caring for the patient should be minimised.

If oxygen is required, nasal oxygen masks should be used and covered with a surgical mask. If high-flow oxygen is required, a non-rebreather oxygen mask should be used.

Nebulizers should not be used in any patient suspected to have pandemic influenza because of the infection control hazards associated with their use, and the increasing body of evidence that spacers are just as effective in delivering the medication. Other high risk activities that disrupt the airway and potentially generate aerosols (e.g., suctioning and intubation) need to be performed with caution and with the minimal number of staff in the room. Full PPE for staff involved in these high risk procedures is of utmost importance.

Institutions should be vigilant in maintaining accurate records of patients with suspected or confirmed pandemic influenza. This information should include the HCWs who cared for the patient and breaches in infection control. The detail that is recorded about breaches in infection control may be affected by the volume of patients and staff workloads. Further information regarding occupational health issues will be included in the revised *Infection Control Annex* of the *Australian Health Management Plan for Pandemic Influenza*.

1.3.4 Vaccination

When assessing a patient with suspected pandemic influenza, enquire about his/her vaccination status, including the currently available pneumococcal and human influenza vaccines.

These vaccines do not have a role in the acute management of a suspected pandemic influenza patient. The vaccines are contraindicated in people with a high fever, and a sufficient immune response may take two to three weeks to develop. Prior pneumococcal vaccination may reduce complications of secondary pneumococcal infection in cases of pandemic influenza. It is unknown but unlikely that prior human influenza vaccine offers any protection against a pandemic influenza strain.

Should pandemic influenza strain vaccines become available during a pandemic, recommendations for their use will be developed.

1.3.5 Psychosocial and mental health aspects

All those working in response to a potential or actual pandemic are likely to have concerns. Many will, quite naturally, feel anxious as they face the joint tasks of limiting and containing the spread of the disease, and treating those individuals directly affected. Individuals and families may become quite fearful about the risk of becoming infected, about how they will manage their sickness and the consequences if they do, and the potential threat to life if the condition is severe. It is helpful to acknowledge concerns, to highlight information available, answer queries honestly, and offer supportive advice if this is required. The following strategies can be utilised:

- **Open communication and accurate information**

Open communication and accurate information are vital to support psychosocial well-being. It is helpful to provide a direct response to questions about the illness, or to refer to government or official websites or other resources. It is useful to explain what is known, what is uncertain, what is in place to deal with the epidemic, and what actions they can take that are likely to be helpful. This should cover both what is important for themselves as individuals, but also to play their part in helping the community to deal with the epidemic.

- **Simple anxiety management techniques**

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

- **Positive coping strategies**

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

- **Keeping in touch**

If people have to stay at home or be isolated because of infection risk, or 'social distancing' strategies being used to contain the pandemic, suggest they set up phone, text messaging or email/internet support systems to assist themselves and others through this time. This will be particularly important for those who live alone.

- **Special support for children**

Children/parents are likely to be particularly anxious if illness affects young children, and may require special support both to deal with their fears and the illness.

- **Support through death**

Should death occur from influenza or associated disease it is likely that those bereaved will benefit from support and recognition of their loss.

- **Other considerations**

HCWs are likely to require particular support both because of their heightened risk associated with their work in response to the pandemic, and because of fears for themselves and their families. Challenges associated with this circumstance can be supported by information, support programs through their workplace and identifying family support issues that will assist.

People with presenting chronic and enduring mental illness, people disabled and in institutional care may also require additional psychosocial support in the event of a pandemic.

Post influenza syndromes, such as depression, fatigue even organic conditions may need to be monitored in the aftermath. Depression should be suspected if there are feelings of hopelessness, prolonged negative mood and thoughts, sleep disturbance or even suicidal preoccupation. Organic conditions may be suspected if there is prolonged confusion, memory impairments, disinhibition or major behavioural change. In either case, further detailed assessment can be useful to clarify these potential complications. These conditions should be considered in determining whether a person is fit to return to work.

1.3.6 Public health aspects

Notification

Highly pathogenic avian influenza in humans is a quarantinable disease, under the *Quarantine Act 1908*. Clinicians should report suspected and confirmed cases to the local PHU. Laboratories should report laboratory diagnoses of pandemic influenza.

Contacts

At least in the early phases, the PHU will perform contact tracing. Close contacts are likely to be offered antiviral prophylaxis for seven to 10 days and will be monitored for the development of symptoms.

The definition of a contact is likely to change once the transmission characteristics of the pandemic strain are known and depending upon the phase of the pandemic. A more sensitive definition may be used in the early containment phases and a less sensitive definition in the later phases.

Contacts may include:

1. Close contact

- People who have had within one metre contact with an infectious case including physical contact or exposure to their respiratory droplets or droplet nuclei.

OR

2. Enclosed space

- People who have spent more than 15 minutes in a confined space with the infectious patient. This time period may be adjusted following consideration of the room's size, ventilation, humidity and the number of people in the room. For example:
 - People living in the same house as patient
 - Day care centre co-inhabitants
 - Schools—classmates/teachers/playmates
 - Nursing home co-inhabitants
 - Contacts in an aeroplane
 - Potentially, some work mates.

For contacts, consider widespread use of pneumococcal vaccine in high risk groups and the inter-pandemic seasonal influenza vaccine (if still in production).

1.3.7 *Where to manage the patient*

This will be a decision of the treating clinician based on factors such as the severity of the patient's illness and the presence of pre-existing co-morbidities.

If hospitalisation is required, some areas may have dedicated influenza hospitals. The aim of designating certain hospitals as influenza hospitals during a pandemic is to reduce the overall risk of hospital-transmitted infection as well as allowing others to continue caring for patients with illnesses other than influenza.

'Staging facilities'⁹ may be used to accommodate patients when:

- Patients are not unwell enough to require acute hospital care but are unable to be managed at home because of lack of adequate social supports (e.g., travellers or the frail elderly)
- When hospitals are full, in which case the facility can be regarded as an 'overflow' facility
- When convalescing patients need a higher level of support than they can receive at home, in which case the facility can be regarded as a 'step-down' facility.

When transmission is widespread in Australia and disease is common, people whose illness is less severe and who are otherwise in good health will be best cared for in the home.

Additional considerations for those being managed in the home will include:

- Assistance with activities of daily living to allow the patient to stay in the home during the isolation period
- The patient will need to be educated about infection control measures to reduce the spread of the virus to other household members or visitors
- Follow-up of the patient and, in the early phases, his/her contacts.

1.3.8 *If discharged home*

Advice to patients who are sent home

The following measures may help relieve symptoms:

1. Paracetamol or ibuprofen to treat myalgia and arthralgia.
2. Fluids.
3. Bed-rest.
4. Decongestants.
5. Avoid smoking/smoke.
6. Institute infection control measures.
7. Seek help if you experience:
 - Increasing shortness of breath
 - New chest pain
 - New yellow/green sputum

⁹ 'Staging facility' is a general term for a facility to accommodate patients where it is impractical to manage them at home or in a hospital. The role will vary according to the size of the pandemic but would, in general, have a supportive role for patients rather than an interventional one.

- Persistent vomiting
- Inability to eat or drink
- Severe weakness
- Inability to cope at home.

Appendix A: *Information for the general public—looking after yourself during a pandemic* should be given to patients who are discharged home, and their household contacts.

PART TWO

ASSESSMENT AND MANAGEMENT TOOLS

2.1 INTRODUCTION

These assessment and management tools are designed to be used throughout the phases of a pandemic, but will be particularly useful during the pandemic period (from phase Aus 6a onwards), when large numbers of patients are presenting to general practices and emergency departments and the people assessing them may be unfamiliar with usual triage practices. Assessment centres for pandemic influenza patients may be set up in particular hospitals and mobile assessment teams may be evaluating patients in their homes. The guidelines may also be useful in assessing patients in these settings. During the later phases, the demand for hospital beds will be very high, and where possible patients will need to be managed at home. Appendix A: *Information for the general public—looking after yourself during a pandemic* information should be given to patients who are discharged home, and their household contacts.

In the earlier phases, when there is more uncertainty about the clinical presentations and outcomes of pandemic influenza, the fewer patients that are presenting to hospitals and GPs will probably be more closely monitored and investigated. During these phases, infection control, isolation and quarantine will be absolutely crucial to try to contain the spread of the emerging pandemic. There is likely to be greater use of antivirals for treatment of cases and prophylaxis of contacts. Case definitions will require a history of travel to an affected area and possibly even a history of exposure to poultry or a person with a respiratory illness.

2.2 SCREENING IN GENERAL PRACTICE

The following sample screening questions may be useful in the general practice setting when the pandemic is occurring in Australia (from phase Aus 6a onwards). The aim of screening over the telephone is to detect suspected pandemic influenza patients and prevent them from coming into contact with patients who do not have pandemic influenza, thereby minimising transmission. It will also allow the patient to be directed to the most appropriate assessment location and allow people who attend to the patient to wear PPE. If used in the earlier phases, the exposure questions will have to be modified.

If pandemic influenza is suspected, the location of the subsequent assessment will depend upon whether the area has established an 'influenza clinic'. Influenza clinics are discrete facilities for assessing and triaging symptomatic individuals during an infectious disease emergency.

Checklist for telephone enquiries in general practice during a pandemic

QUESTIONS

Screening questions by receptionist:

1. Do you have fever, cough and tiredness of sudden onset?

If yes:

2. Check patient's telephone number and inform the patient that the GP or practice nurse will call back.

Screening questions by GP/Practice nurse:

1. Do you have fever?
2. Do you have cough?
3. Do you have extreme weakness or tiredness?

If yes to the above questions (1 to 3):

4. Did your symptoms come on suddenly?

If yes ?

5. During the seven days before your symptoms began did you have contact with a person with a respiratory illness? Was the diagnosis pandemic influenza?

ACTIONS TO BE TAKEN

If answers suggest possibility of pandemic influenza, offer either¹⁰:

- Assessment at GP's practice early in the course of pandemic when cases are few (with attention to separation of the possible pandemic influenza patient from others)
- Referral to hospital emergency department
- Later in the pandemic, referral to a designated hospital emergency department or designated influenza clinic, if established in local area
- Assess patient at home.

If severely unwell:

- Refer to hospital and inform by telephone the hospital concerned of the possible diagnosis.

¹⁰ The location of the subsequent assessment will depend upon whether the area has established an influenza clinic.

2.3 SCREENING IN AMBULANCE SETTING

2.3.1 *Screening at point of call (i.e. calls received at 000)*

It is important to note that Ambulance Services should implement their locally developed policy and procedures in the event of a pandemic. Information below should be seen as a guideline to the policy and procedures of each ambulance service.

If possible screening should commence at phase 3 (Australia) of the pandemic but definitely should be implemented when there has been effective human to human transmission overseas (phase Overseas 4–5).

Questioning by ambulance call takers should occur early in the call after the location information and the main presenting problem of the patient has been ascertained. As the clinical and epidemiological features may vary during the different phases, questions to identify possible cases of pandemic influenza may need to change. Below is a provisional call taking definition to aid in identifying possible cases of avian or pandemic influenza.

Questions should be:

- Does the patient have any influenza-like symptoms (e.g., fever, cough and fatigue)?
- Has the patient been overseas to an affected country in the seven days before the symptoms started?

If the answer to these questions is yes then the information should be referred to the appropriate person in the communications centre who will notify the appropriate authorities, hospitals etc.

If an ambulance is dispatched to this event then the information should be referred to the appropriate person in the communications centre who will notify ambulance crew and to allow them to apply PPE and implement local management plans. It should be noted that for the patient to be considered a suspected case, a travel history is unlikely to be sufficient exposure. Further assessment of exposure to influenza will be required when the patient is attended to, and the assessment will depend upon the current case definition.

2.3.2 *Screening when attending a patient*

This screening should be carried out from phase Overseas 3. It is important to note that because the clinical and epidemiological features may vary during the different phases, the clinical case definition may change.

If Ambulance Paramedics attend a patient with influenza-like symptoms they should, once they have completed their primary survey of the patient, ask the following questions:

- 1) Do you have a fever?
- 2) Do you have a cough?
- 3) Do you have extreme weakness or tiredness?

If yes to the above questions (1 to 3):

- 4) Have you had contact with a person affected by avian or pandemic influenza?

OR

- 5) Have you visited a poultry farm or had some other poultry contact in an areas with outbreaks of avian influenza?

OR

- 6) Have you been working in a laboratory that is processing samples from persons or animals that are suspected to have avian or pandemic influenza?

If the answer to these questions is **yes** then the crews must continue with the use of appropriate PPE and inform the receiving institution as early as possible to allow them time to prepare.

Actions to be taken if the patient meets the suspected case definition:

Further infection control guidelines are found in *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings*. Included below are some general infection control principles:

- Paramedics should be diligent in their use of PPE and adherence to infection control precautions
- The patient should be given a surgical mask to wear
- The paramedic should notify his/her communications centre
- The hospital the ambulance will attend should be notified; if there is a designated influenza hospital then the patient should be taken there
- Disposable equipment is preferred in the treatment and care of patients with suspected avian or pandemic influenza and this should be disposed of carefully in the general waste. If equipment is to be reused, it should be disinfected in accordance with the manufacturer's instructions
- The number of staff caring for the patient should be minimised. If the patient is to be transferred on then the original crew should be utilised if possible
- All officers should wear PPE for the duration of the trip
- If oxygen is required, nasal oxygen prongs should be used and covered with a surgical mask. If high-flow oxygen is required, a non-rebreather oxygen mask should be used and covered with a surgical mask
- If the patient has symptoms such as wheezing a nebuliser should not be used. **Each Ambulance Service should refer to their clinical practice guidelines for alternative treatment options.**
- Other high risk activities that disrupt the airway, such as suction and intubation need to be performed with caution
- On decamping the patient at the hospital, the ambulance should be appropriately cleaned (each ambulance organisation should have appropriate procedures for this, however guidelines for disinfection can be found in *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings*)
- Each suspected case of pandemic influenza needs also to be reported to the local PHU. This will be the responsibility of the medical staff
- Ambulance services should keep accurate records of any attendances and/or transports of suspected pandemic influenza cases. This information should include the officers who cared for the patient and any breaches in infection control. Further information regarding occupational health is available in the *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings*.

2.3.3 Communication.

Effective communication strategies providing up to date information to the work force should be initiated as soon as is practical for each ambulance service.

2.4 ALGORITHMS FOR USE IN ASSESSMENT CENTRES, GENERAL PRACTICE AND EMERGENCY DEPARTMENTS

2.4.1 Notes on assessment algorithms

Resource considerations

The algorithms, in particular those for secondary assessment, will need to be adjusted during the pandemic to take into account the availability of resources (e.g., availability of radiography and pathology services and capacity of health services to follow-up patients).

Age limits for algorithms

The algorithms are classified as being applicable to adults or children. A very approximate age limit for use of these algorithms is greater than 12 for the adult algorithms and less than or equal to 12 for the childhood algorithms.

Guidelines for primary/initial assessment of adult patients

This algorithm is designed to be used for making the initial assessment of adult possible pandemic influenza patients. Potential settings for the assessment are in the patient's home, general practices, influenza clinics, emergency departments or other locations designated for the assessment of potential pandemic influenza patients. If the evaluation indicates that a further assessment is needed, the *Guidelines for secondary/further assessment of adult patients* should be used.

Guidelines for the secondary/further assessment of adult patients

This algorithm is designed for making further assessments of patients whose clinical indicator(s) was/were abnormal on primary assessment. The secondary assessment may occur at the same location as the primary assessment, however because of the likelihood for investigations it may be preferable for them not to occur in the general practice setting or in the patient's home.

Guidelines for assessing children in general practice or other primary/initial assessment centre

This algorithm is designed to be used for making the initial assessment of childhood age possible pandemic influenza patients. Potential settings for the assessment are in the patient's home, general practices, influenza clinics, emergency departments or other locations designated for the assessment of potential pandemic influenza patients. If the evaluation indicates that a further assessment is needed, the *Guidelines for assessing children in the emergency department or other secondary/further assessment centre* should be used.

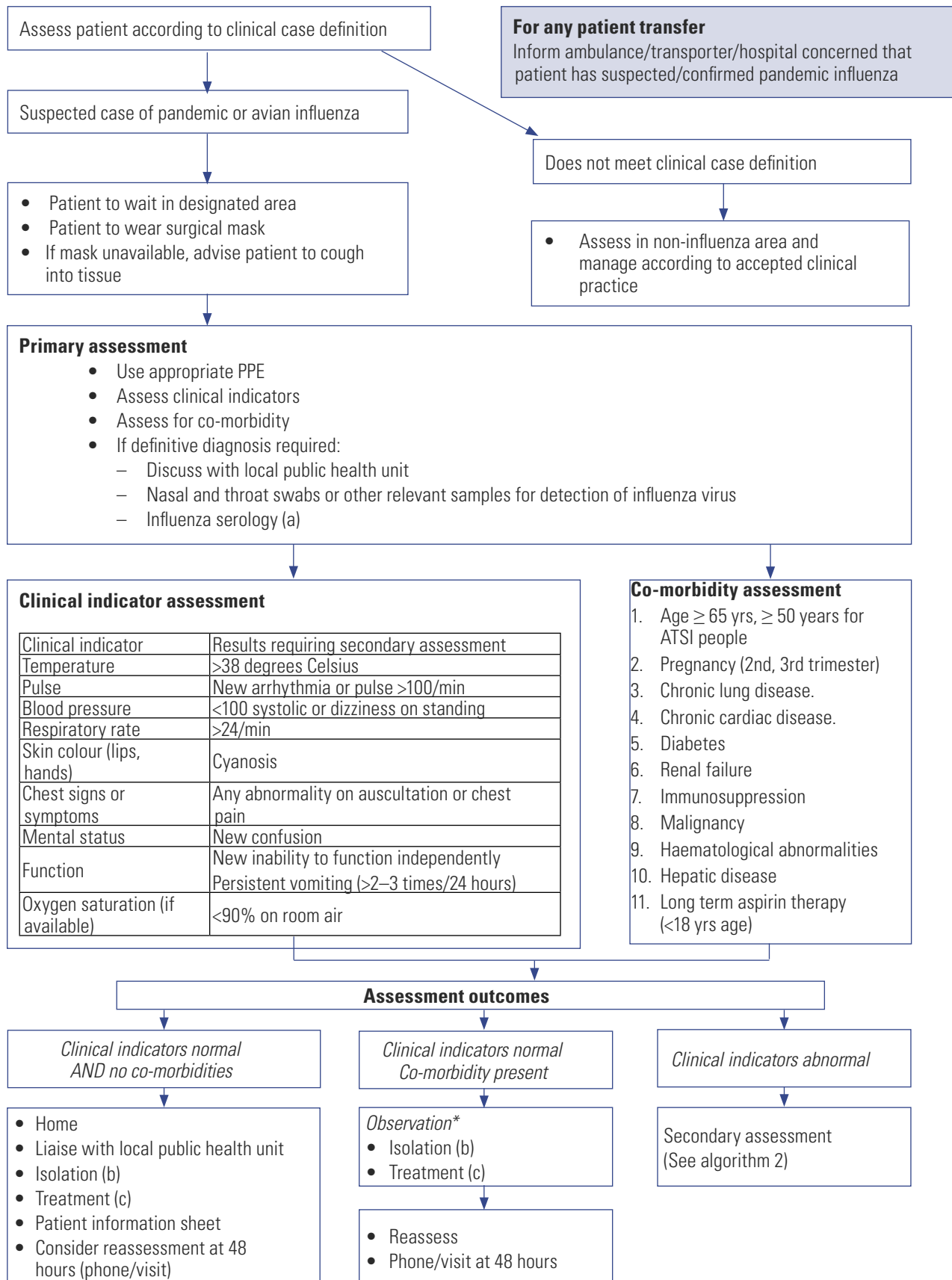
Guidelines for assessing children in the emergency department or other secondary/further assessment centre

This algorithm is designed for making further assessments of childhood age patients whose assessments were not conclusive or have co-morbidities or danger signs present. Because of the difficulties in assessing children and the likelihood for investigations it may be preferable for the secondary assessment not to occur in the general practice setting or in the patient's home.

Legend for algorithms

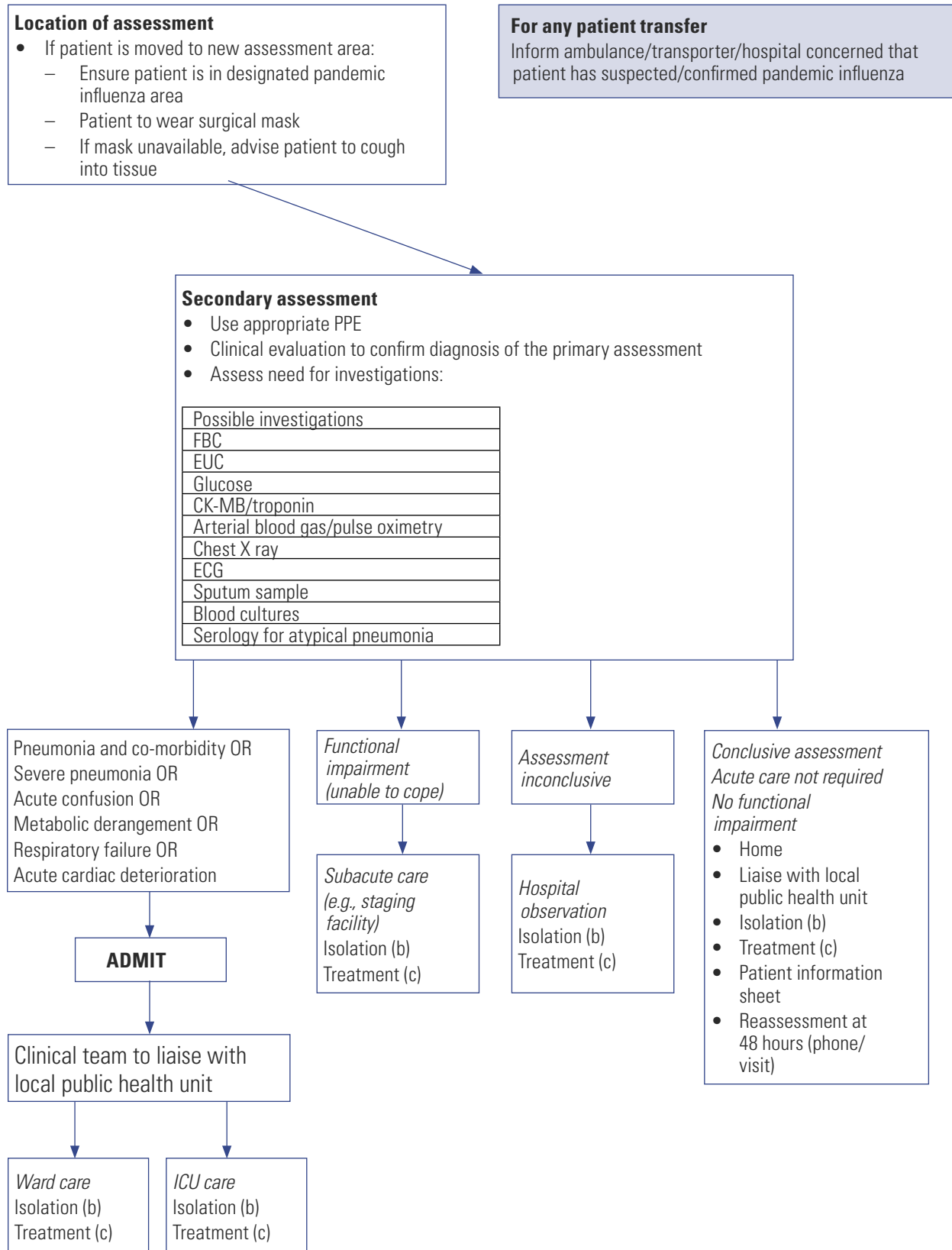
- a. Influenza serology: acute and convalescent serology can be used to confirm the diagnosis of influenza, but only retrospectively. If a definitive diagnosis is required, the relevant swabs are essential for confirming the diagnosis at presentation.
- b. Consider antiviral treatment if available.
- c. Isolate pending confirmation of influenza. Duration of isolation is to be decided in consultation with Infection Control Department guidelines (for hospitalised patients) or PHU (for non-hospitalised patients), based on the infectious period.

Algorithm 1 Guidelines for primary/initial assessment of adult patients

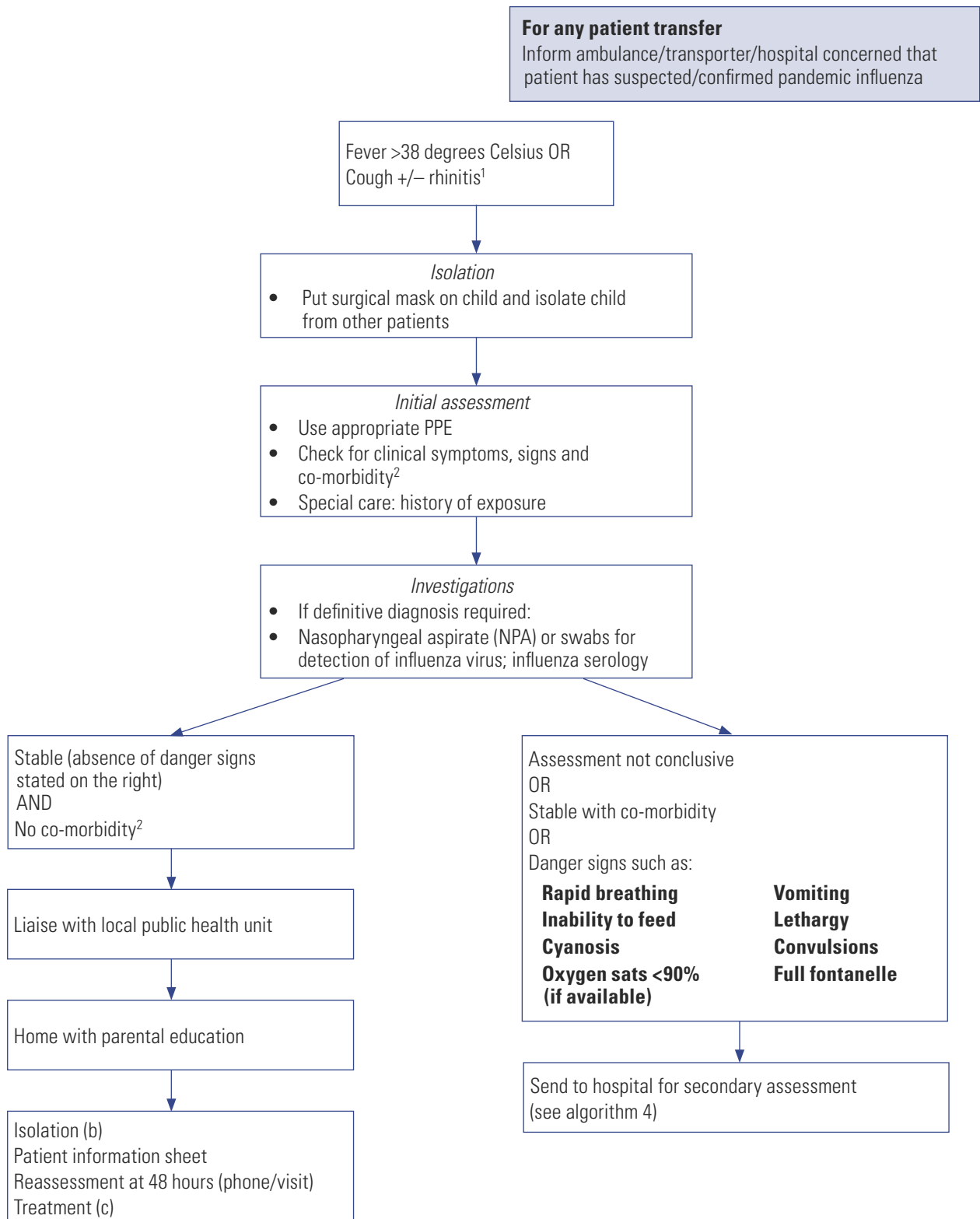


*Observation may be in a setting such as a sub-acute observation centre in a hospital, staging facility or in the home

Algorithm 2 Guidelines for secondary/further assessment of adult patients



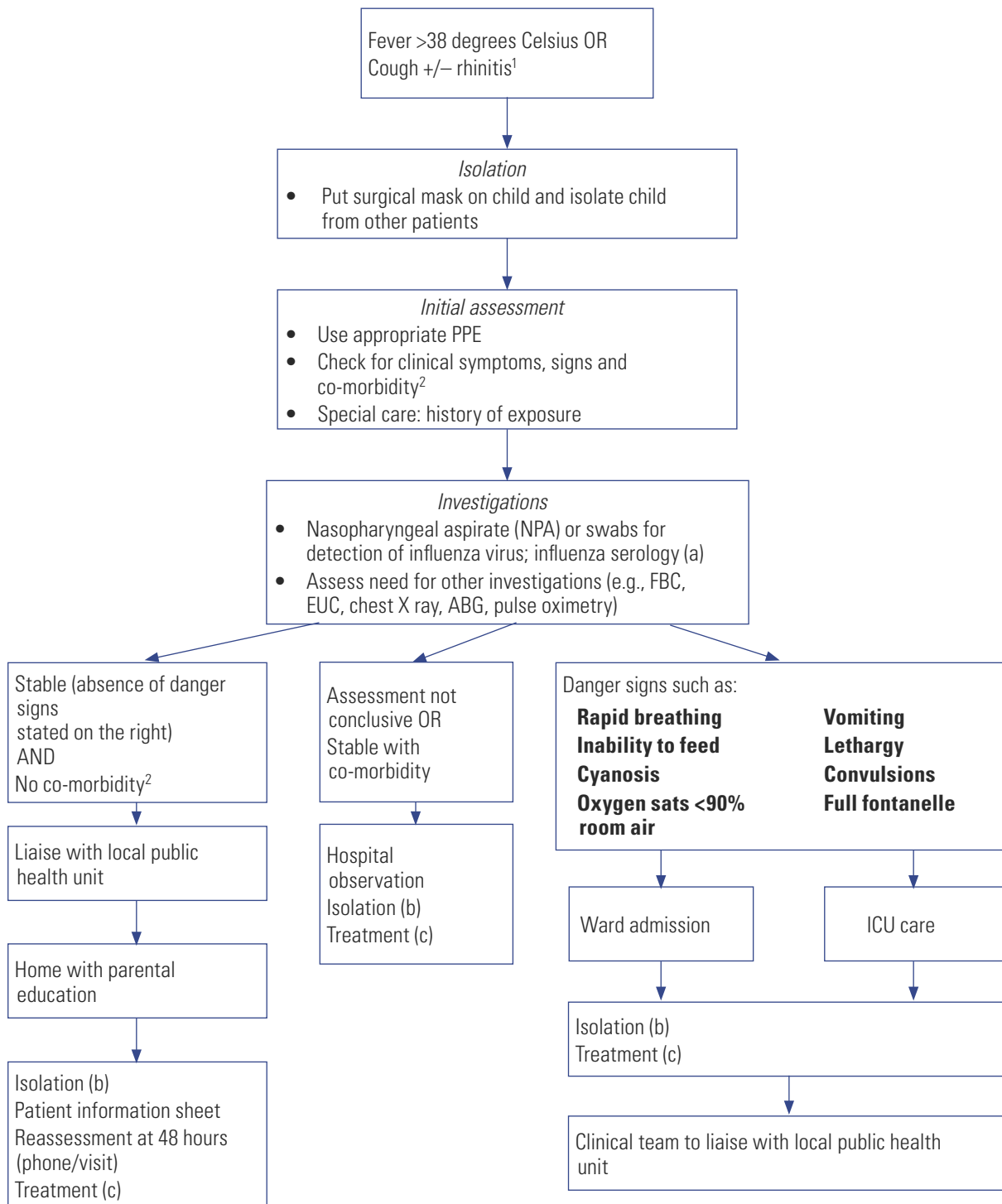
Algorithm 3 Guidelines for assessing children in general practice or other primary/initial assessment centre



- 1 Fever and sudden cough is commonest presentation in children, but infants may have no cough and may present with apnoea, poor feeding and fever or hypothermia. Current Case Definition may change.
- 2 Congenital heart disease, suppurative lung disease, immune deficiency, chronic conditions e.g., diabetes, metabolic disease, long term aspirin therapy

Algorithm 4 Guidelines for secondary assessment of children in the emergency department or other secondary assessment centre

For any patient transfer
Inform ambulance/transporter/hospital concerned that patient has suspected/confirmed pandemic influenza



1 Fever and sudden cough is commonest presentation in children, but infants may have no cough and may present with apnoea, poor feeding and fever or hypothermia. Current Case Definition may change.
2 Congenital heart disease, suppurative lung disease, immune deficiency, chronic conditions e.g., diabetes, metabolic disease, long term aspirin therapy

2.5 DRAFT FORMS FOR USE IN ASSESSMENT CENTRES

The following material may be adapted for keeping records in assessment centres. They are designed to be used for assessing large numbers of patients and potentially by people with minimal triage experience. The forms will need to be adjusted according to the circumstances at the time the forms are used, including the setting in which they are being used. Feedback is actively sought to assist in refining the draft forms.

2.5.1 Primary/initial assessment centre

a) Adults

This form is only to be completed for patients who meet the clinical case definition for pandemic influenza.

Identification	
Name of patient (surname, first name)	
Medicare/medical record number	
Address	
Phone number	
Occupation	
Other household members?	
Other significant contacts?	
Other close contact(s) (eg workplace details)	
Age (years)	
DOB (day/month/year)	
Date of assessment (day/month/year)	
Time of assessment	
Place of assessment	
Name of person who completed assessment	
Name and address of general practitioner	
Was definitive clinical diagnosis and/or laboratory diagnosis made? (If yes, provide details)	

Vaccination status						
Details of vaccination	Yes	No	N/A	Batch number	Date given (day/month/year)	Tick if given <14 days ago. For pandemic vaccine tick if given <14 days ago or if only one dose received.
Pandemic influenza vaccine within the last 12 months						
Seasonal influenza vaccine within the last 12 months						
Pneumococcal vaccine within the last 5 years						
Date of onset of symptoms						

Symptoms (tick if present)			
Fever		Chills	
Aching muscles/joints		Stiffness	
Headache		Tiredness/weakness	
Runny/stuffy nose		Cough	
Sore throat/hoarseness		Sputum, including colour	
Pain on breathing in		Breathlessness	
Loss of appetite		Vomiting	
Diarrhoea		Confusion/drowsiness	
Rash		Others	
In contact with someone with influenza in last 7 days (yes/no)			

Details of current medications	
Name	Dose, frequency
Co-morbidity assessment	Tick if present
Age \geq 65 yrs, \geq 50 yrs for ATSI people	
Pregnant (2nd or 3rd trimester)	
Chronic lung disease	
Chronic cardiac disease (hypertension is not enough)	
Diabetes	
Renal failure	
Malignancy	
Immunosuppression	
Haematological abnormalities	
Hepatic disease.	
Long term aspirin therapy (<18 yrs age)	

Clinical indicator assessment or examination findings	Record result	Abnormal result	Tick if result abnormal (one tick indicates need for secondary assessment)
Temperature		<35 or >38 degrees Celsius	
Pulse		New arrhythmia or pulse >100/min	
Blood pressure		<100 systolic or dizziness on standing	
Respiratory rate		>24/min	
Skin colour (lips, hands)		Cyanosis	
Chest signs or symptoms		Any abnormality on auscultation or chest pain	
Mental status		New confusion	
Function		New inability to function independently or persistent vomiting (>2–3 times/24 hours)	
Arterial oxygen saturation (if available)		<90% on room air	

Assessment summary	Tick applicable summary	Subsequent management recommended	Subsequent management taken
Clinical indicators normal and no co-morbidities		Home	
Clinical indicators normal but co-morbidity present		Observation	
Clinical indicators abnormal		Secondary assessment	
Give details of antiviral therapy if commenced			
Give details of any other therapy administered			
If public health unit was contacted give details			
If reassessment was arranged give details			
If observation was arranged give details			
If patient was sent for secondary assessment give details			

A copy of this form should be forwarded to the patient's general practitioner and:

- If sent to a secondary assessment centre the form should accompany the patient
- If observation was arranged the form should accompany the patient
- If the public health unit was contacted for contact tracing or follow-up of the patient the public health unit should receive a copy of the form.

b) Children

This form is only to be completed for patients who meet the clinical case definition for pandemic influenza

Identification	
Name of patient (surname, first name)	
Medicare/medical record number	
Address	
Phone number	
Parents' names	
Other household members?	
Other significant contacts	
Age (years)	
DOB (day/month/year)	
Date of assessment (day/month/year)	
Time of assessment	
Place of assessment	
Name of person who completed assessment	
Name and address of general practitioner	
Was definitive clinical diagnosis and/or laboratory diagnosis made? (If yes, provide details)	

Vaccination status						
Details of vaccination	Yes	No	N/A	Batch number	Date given (day/month/year)	Tick if given <14 days ago. For pandemic vaccine tick if given <14 days ago or if only one dose received.
Pandemic influenza vaccine within the last 12 months						
Seasonal influenza vaccine within the last 12 months						
Pneumococcal vaccine within the last 5 years						
Date of onset of symptoms						

Symptoms (tick if present)			
Fever		Chills	
Aching muscles/joints		Stiffness	
Headache		Tiredness/weakness	
Runny/stuffy nose		Cough	
Sore throat/hoarseness		Sputum, including colour	
Pain on breathing in		Breathlessness	
Loss of appetite/feeding		Vomiting	
Diarrhoea		Confusion/drowsiness	
Rash		Others	
In contact with someone with influenza in last 7 days (yes/no)			

Details of current medications	
Name	Dose, frequency
Co-morbidity assessment	Tick if present
Congenital heart disease	
Suppurative lung disease	
Immune deficiency	
Diabetes	
Metabolic disease	
Other chronic disease	
Long term aspirin therapy	
Vital signs	Record result
Temperature	
Pulse	
Blood pressure	
Respiratory rate	
Arterial oxygen saturation (if available)	
Danger signs (tick if present)—one tick indicates that secondary assessment it needed	
Rapid breathing	
Inability to feed	
Cyanosis (blue hands or lips)	
Vomiting	
Lethargy	
Convulsions	
Oxygen saturations less than <90%	
Full fontanelle	

Assessment summary	Tick applicable summary	Subsequent management recommended	Subsequent management taken
No danger signs and no co-morbidities		Home	
No danger signs but co-morbidity present OR Danger sign present OR Assessment not conclusive		Secondary assessment required	
Give details of antiviral therapy if commenced			
Give details of any other therapy administered			
If public health unit was contacted give details			
If reassessment was arranged give details			
If observation was arranged give details			
If patient was sent for secondary assessment give details			

A copy of this form should be forwarded to the patient's general practitioner and:

- If sent to a secondary assessment centre the form should accompany the patient
- If observation was arranged the form should accompany the patient
- If the public health unit was contacted for contact tracing or follow-up of the patient the public health unit should receive a copy of the form.

2.5.2 Secondary/further assessment centre

a) Adults

A new clinical evaluation should always be performed as part of the secondary assessment.

Identification	
Name of patient (surname, first name)	
Medicare/medical record number	
Address	
Phone number	
Occupation	
Other household members?	
Other significant contacts	
Age (years)	
DOB (day/month/year)	
Date of assessment (day/month/year)	
Time of assessment	
Place of assessment	
Name of person who completed assessment	
Name and address of general practitioner	
Was definitive clinical diagnosis and/or laboratory diagnosis made? (If yes, provide details)	

The primary assessment forms, or part of the primary assessment forms may be completed here.

Not all of the investigations listed below may be needed for the patient.

Details of investigations performed	
FBC	
Haemoglobin	
WBC	
Bands	
Platelets	
EUC	
Na	
K	
Urea	
Creatinine	
Glucose	
CK-MB (only if ischaemic chest pain)	
Troponin (only if ischaemic chest pain)	
Arterial oxygen saturations	
Arterial blood gas	
pH	
Oxygen	
Carbon dioxide	
CXR	
ECG	
Sputum samples	
Respiratory tract swabs or nasopharyngeal aspirate	
Blood culture	
Serology for atypical pneumonia and influenza	
Other investigations:	
Diagnosis/diagnoses	

Assessment summary	Tick applicable summary	Subsequent management recommended	Subsequent management taken
Pneumonia and co-morbidity OR Severe pneumonia OR Acute confusion OR Metabolic derangement OR Respiratory failure OR Acute cardiac deterioration		Admit	
Functional impairment		Subacute care	
Assessment not conclusive		Hospital observation	
Conclusive assessment Acute care not required No functional impairment		Home with follow-up	
Give details of antiviral therapy if commenced			
Give details of any other therapy administered			
If public health unit was contacted give details			
If observation was arranged give details			
If subacute care was arranged give details			
If patient was discharged give details			
If patient was admitted, to which ward?			

A copy of this form should be forwarded to the patient's general practitioner and:

- If observation or sub-acute care was arranged the form should accompany the patient
- If the public health unit was contacted for contact tracing or follow-up of the patient the public health unit should receive a copy of the form.

b) Children

A new clinical evaluation should always be performed as part of the secondary assessment.

Identification	
Name of patient (surname, first name)	
Medicare/medical record number	
Address	
Phone number	
Parents' names	
Other household members?	
Other significant contacts	
Age (years)	
DOB (day/month/year)	
Date of assessment (day/month/year)	
Time of assessment	
Place of assessment	
Name of person who completed assessment	
Name and address of general practitioner	
Was definitive diagnosis made? (If yes, provide details)	

The primary assessment forms, or part of the primary assessment forms may be completed here.

Not all of the investigations listed below may be needed for the patient.

Co-morbidity assessment	
Suppurative lung disease	
Immune deficiency	
Diabetes	
Metabolic disease	
Other chronic disease	
Long term aspirin therapy	
Full fontanelle	
Danger signs (tick if present)	
Rapid breathing	
Inability to feed	
Cyanosis (blue hands or lips)	
Vomiting	
Lethargy	
Convulsions	
Oxygen saturations less than <90%	
Full fontanelle	

Details of investigations performed	
FBC	
Haemoglobin	
WBC	
Bands	
Platelets	
EUC	
Na	
K	
Urea	
Creatinine	
Glucose	
Arterial blood gas	
pH	
Oxygen	
Carbon dioxide	
CXR	
Sputum sample	
Respiratory tract swabs or nasopharyngeal aspirate	
Blood culture	
Serology for atypical pneumonia and influenza	
Diagnosis/diagnoses	

Assessment summary	Tick applicable summary	Subsequent management recommended	Subsequent management taken
No danger signs and no co-morbidity		Home with follow-up	
Assessment not conclusive OR No danger signs but co-morbidity present		Hospital observation	
Danger signs		Admit	
Give details of antiviral therapy if commenced			
Give details of any other therapy administered			
If public health unit was contacted give details			
If observation was arranged give details			
If discharge home was arranged give details			
If patient was admitted, to which ward?			

A copy of this form should be forwarded to the patient's general practitioner and:

- If observation was arranged the form should accompany the patient
- If the public health unit was contacted for contact tracing or follow-up of the patient the public health unit should receive a copy of the form.

PART THREE

RESOURCES FOR HEALTH PROFESSIONALS

3.1 USEFUL NUMBERS FOR HEALTH PROFESSIONALS

1. Department of Health and Ageing Public Information Hotline: 1800 004 599

The following numbers are for health professionals. Please ensure that the general public are directed towards the numbers in Appendix A: *Information for the general public—looking after yourself in a pandemic. Useful numbers.*

2. State and Territory public health unit contact details (**for health professionals**):

Australian Capital Territory	(02) 6205 2155
New South Wales	See list below
Northern Territory	(08) 8922 8044 a/h Royal Darwin Hospital: (08) 8922 8888
Queensland	See list below
South Australia	(08) 8226 7177
Tasmania	1800 671 738
Victoria	1300 651 160
Western Australia	1800 022 222

New South Wales

The reporting of communicable disease cases in New South Wales is facilitated by the individual public health units listed below:

Metropolitan areas			Rural areas		
Northern Sydney/ Central Coast	Hornsby	02 9477 9400	Greater Southern	Goulburn	02 4824 1837
	Gosford	02 4349 4845		Albury	02 6021 4799
South Eastern Sydney/Illawarra	Randwick	02 9382 8333	Greater Western	Broken Hill	08 8080 1499
	Wollongong	02 4255 2200		Dubbo	02 6841 5569
Sydney South West	Camperdown	02 9515 9420	Hunter/ New England	Bathurst	02 6339 5601
	Liverpool	02 9828 5944		Newcastle	02 4924 6477
Sydney West	Penrith	02 4734 2022	North Coast	Tamworth	02 6767 8630
	Parramatta	02 9840 3603		Port Macquarie	02 6588 2750
Justice Health Service	Matraville	02 9289 2993		Lismore	02 6620 7500
NSW Department of Health—02 9391 9000 (North Sydney)					

Queensland

The reporting of communicable disease cases in Queensland is facilitated by the individual public health units listed below:

Bundaberg	07 4150 2785
Brisbane Northside	07 3624 1111
Brisbane Southside	07 3000 9148
Cairns	07 4050 3600
Darling Downs	07 4631 9888
Hervey Bay	07 4120 6000
South Coast	07 5509 7222
Mackay	07 4968 6611
Mt Isa	07 4744 4404
Rockhampton	07 4920 6989
Sunshine Coast	07 5409 6600
Townsville	07 4750 4000
Wide Bay	07 4120 6000

3.2 READING LIST

1. Bridges CB, Kuehnert MJ, Hall CB. Transmission of influenza: implications for control in health care settings. *Healthcare Epidemiology* 2003; 37: 1094–1101.
2. de Jong, MD, Thanh TT, Khanh TH, et al. Oseltamivir resistance during treatment in influenza A (H5N1) Infection. *The New England Journal of Medicine* 2005; 353: 2667–2672.
3. Hall CB, Douglas RG, Gieman JM. Viral shedding patterns of children with influenza B infection. *The Journal of Infectious Diseases* 1979; 140(4): 610–613.
4. Hall CB, Douglas RG. Nosocomial influenza infection as a cause of intercurrent fevers in infants. *Pediatrics* 1975; 55(5): 673–677.
5. Hayden F, Klimov A, Tashiro M, et al. Neuraminidase inhibitor susceptibility network position statement: antiviral resistance in influenza A/H5N1 viruses. *Antiviral Therapy* 2005; 10: 873–877.
6. Kilbourne ED (ed). *The influenza viruses and influenza*. London: Academic Press, 1975.
7. Lindsay MI, Herrmann EC, Morrow GW, et al. Hong Kong influenza clinical, microbiologic and pathologic features in 127 Cases. *The Journal of the American Medical Association* 1970; 214(10): 1825–1832.
8. Mandell GL, Bennett JE, Dolin R (ed). *Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases* 4th Edition. New York. Churchill Livingstone, 1994.
9. MIMS Online database. MIMS Australia, HCN (vendor), bimonthly updating, viewed 29 November 2005.
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11. Munoz FM, Campbell JR, Atmar RL. Influenza A virus outbreak in a neonatal intensive care unit. *Pediatric Infectious Disease Journal* 1999; 18(9): 811–815.
12. National Health and Medical Research Council. *The Australian immunisation handbook*. 8th edn. Canberra: National Health and Medical Research Council, 2003.
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14. Ungchusak K, Auewarakui P, Dowell SF, et al. Probable person to person transmission of avian influenza A(H5N1). *The New England Journal of Medicine* 2005; 352(4): 333–340.
15. World Health Organization. Avian influenza: assessing the pandemic threat. World Health Organization, January 2005, viewed 12 September 2005 <<http://www.who.int/csr/disease/influenza/H5N1-9reduit.pdf>>
16. World Health Organization. Influenza A (H5N1): WHO interim infection control guidelines for health care facilities. World Health Organization, updated 10 March 2004, viewed 12 September 2005, http://www.who.int/csr/disease/avian_influenza/guidelines/Guidelines_for_health_care_facilities.pdf
17. Writing Committee of the World Health Organization (WHO) Consultation on Human Influenza A/H5. Avian influenza A(H5N1) infection in humans. *New England Journal of Medicine* 2005; 353(13): 1374–1384.

3.3 USEFUL WEBSITES

1. Department of Health Pandemic Influenza homepage: <http://www.health.gov.au/pandemic>
2. Department of Health and Ageing Infection Control Guidelines: <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/icg-guidelines-index.htm>
3. World Health Organisation Infection Control Guidelines for avian influenza: http://www.who.int/csr/disease/avian_influenza/guidelines/infectioncontrol1/en/index.html
4. World Health Organisation Clarification document on the use of masks by healthcare workers in a pandemic setting: http://www.who.int/csr/resources/publications/influenza/Mask%20Clarification10_11.pdf
5. World Health Organisation Website: <http://www.who.int/en/>
6. Centres for Disease Control Website: <http://www.cdc.gov>

APPENDIX A

INFORMATION FOR THE GENERAL PUBLIC—LOOKING AFTER YOURSELF
IN A PANDEMIC

A.1 STAYING WELL

A.1.1 *Be informed about influenza*

a) What is influenza?

Influenza, or 'the flu', is a viral infection of the lining of the lungs and airways (the respiratory system). In Australia it usually affects people during the winter months from June to September. The influenza viruses that circulate every winter are often only slightly different to those from the preceding winter, meaning that there is already a level of immunity ('body defences') in the community. During these annual epidemics, influenza most commonly affects the very young or the elderly.

At unpredictable intervals, a totally new influenza virus appears in the human population. If this virus can spread easily from person to person and cause severe disease, then a worldwide epidemic (in other words, a pandemic) may occur.

If the pandemic is caused by an entirely new influenza strain, no-one in the community will have immunity to it. Some pandemics have been due to the reappearance of viruses which had not circulated in humans for many years. In these circumstances, people who were alive at the time that the virus previously circulated had some immunity. When population immunity is lacking, the virus can spread very quickly before a vaccine becomes available, affecting a greater number of people and likely causing greater sickness and death than the usual winter outbreak of flu.

b) How is influenza spread?

Influenza is very contagious. Adults can spread the virus for up to seven days, primary school aged children for up to 14 days and pre-school aged children for up to 21 days. People are most infectious when they are still coughing and sneezing. In some people, the contagious period can begin the day before symptoms develop. People breathe in the virus from particles in the air when they are around others with the flu who have been talking, coughing or sneezing. The virus can travel in droplets in the air, and can live for several minutes on your hands and for many hours on surfaces. People can also become infected when they touch respiratory secretions from those who are ill or objects on which viruses have landed, and then touch their own nose, mouth or eyes. It is especially easy for the virus to spread where there are crowds or where people live or work/study close together.

c) What are the symptoms of influenza?

A person usually develops symptoms of the flu within one to three days after becoming infected with the virus. They suddenly develop a fever, and possibly chills, and may have a headache and aching muscles. They usually have a dry cough and feel weak and tired. Some people have a sore throat and a runny or stuffy nose, and don't feel like eating. The fever usually subsides in three to five days, and the person begins to feel better. The tiredness and cough may however, persist for a few weeks. Sometimes, usually in young children and the elderly, flu is associated with vomiting and diarrhoea.

The flu is often confused with the common cold. The flu is different from a cold, as a cold comes on slowly, and rarely causes a fever or muscle aches. A cold is generally milder than the flu, and people can usually carry on with their usual activities. People with the flu feel very sick and want to stay in bed.

d) How serious is influenza?

Most healthy people recover from influenza without any serious problems. However, there are certain groups of people who are 'at risk' of developing complications which can be very serious, and even cause death. It is also difficult to predict who will be affected the most severely in a pandemic, as it is a 'new' virus.

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

People with chronic medical conditions such as heart disease, lung disease (e.g., asthma, cystic fibrosis), kidney disease and diabetes, are also 'at risk' from influenza. This is because when the body is affected by other conditions, it is easier for bacteria to invade the cells that have been damaged by the flu virus and cause other illnesses such as pneumonia. Influenza can also stress the body so much that the underlying illness may worsen.

Children under the age of 18 years with influenza should avoid taking aspirin containing medications. This is because they can develop a very serious illness affecting the nervous system and liver, called Reye syndrome. It is important for parents of children who need to take aspirin containing medications on a regular basis for a health problem to discuss with their regular doctor the possible complications associated with influenza, and find out what they can do to reduce the risk.

e) For more information

If there is an outbreak of pandemic influenza in your community, watch the television or listen to the radio for more up to date information, or access the Australian Government Department of Health and Ageing website at <http://www.health.gov.au>. You can also call the Department of Health and Ageing Public Information Hotline: 1800 004 599.

If you have questions about somebody in your household that may have the flu, call your General Practitioner. If you have specific enquiries about whether your local area has set up dedicated influenza clinics or pandemic vaccination centres call your state/territory information line (see Part III. *Useful numbers* at the end of this document).

A.1.2 Protect yourself against influenza

There are a number of measures that individuals can take to protect themselves and others from influenza:

a) Hygiene

Practising good hygiene is always important, regardless of whether an influenza pandemic is occurring. Getting into good habits now is worthwhile.

Handwashing is one of the most important measures to prevent the spread of infection. Wash your hands often, especially after being in contact with someone who has a respiratory infection, particularly children. In the event of a pandemic, it is recommended that you avoid shaking hands. It is good for everyone to get into the habit of washing their hands before meals, after using the toilet, and after they cough, sneeze or blow their nose. Tissues should be disposed of in the waste immediately after use.

The sooner children are taught this the better. It is best to wash your hands with soap and warm water, scrubbing your wrists, palms, fingers and nails for ten to fifteen seconds. Rinse and dry with a clean, dry towel.

Be aware of the times you rub your eyes or touch your nose or mouth, and try to avoid these habits as it can bring the virus into your airways or eyes.

Cough hygiene is important. This means turning away from other people and covering the mouth with tissues when coughing or sneezing, disposing of the tissues afterwards and washing hands after disposal of the tissues.

Don't visit people who have the flu unless it is absolutely necessary. If a member of your family has the flu, keep their personal items, such as towels, separate from the rest of the family. Clean surfaces (such as bathroom sinks and taps, kitchen sinks and counters) after the ill person has handled them. Remember not to share eating utensils, food or drinks.

Maintain good health and look after yourself. Taking good care of yourself physically and mentally may strengthen your overall well-being and the ability of your body to fight off infections and to stay healthy. Not smoking is particularly important for the health of the lungs and airways. Maintain hydration by drinking plenty of water. Stay up to date with recommended vaccinations such as all of the childhood vaccinations and the pneumococcal vaccination for those in high risk groups.

You should also try to stay one metre or more from sick people to reduce the spread of illnesses.

For more information about preventing spread to others see the *Interim Pandemic Influenza Infection Control Annex* in the *Australian Health Management Plan for Pandemic Influenza* and the Department of Health and Ageing's website.

b) Immunisation

The pandemic vaccine will be different from the seasonal flu vaccine that you can obtain every year. The seasonal flu vaccine will not protect you against the pandemic virus. Vaccination with the pandemic influenza vaccine is advised once it is available. Australia has contracts with two influenza vaccine manufacturers who will supply sufficient pandemic vaccine to vaccinate all Australians. As the pandemic strain cannot be predicted in advance, there will be a time delay of about three months before production can commence, and a further delay before there is sufficient vaccine for all Australians (probably about another two months).

i. Who should get the flu vaccine?

Supply of a pandemic influenza vaccine may be limited during the early stages of the pandemic, therefore priority groups need to be defined and will be confirmed at the time of the pandemic.

During the pandemic, to find out about vaccine availability and where the vaccine will be administered, call your state/territory information line (see Part III. *Useful numbers*). Some areas may be holding special pandemic flu vaccine clinics and others may be administering the vaccine through local General Practitioners.

ii. Who should not get the flu vaccine

People who have a severe (anaphylactic) allergy to eggs should not be given the flu vaccine. This includes persons who, soon after ingesting eggs, develop swelling of the lips or tongue, or experience acute respiratory distress or collapse. Individuals with severe (anaphylactic) allergy to any of the product

components should also not be vaccinated with the flu vaccine. Ask your doctor if you may be allergic to the product components.

People with minor illnesses can still get the flu vaccine. However, those with a fever (temperature greater than or equal to 38.5 degrees Celsius) should wait until their symptoms have abated.

The risk and benefits of vaccination should be discussed with your doctor, especially if you have had significant reactions to other vaccines in the past.

iii. What reactions do people have to the flu shot?

The most common reaction to the flu shot is some redness, swelling and pain at the site of the injection. Some people may develop fever, tiredness and muscle aches within a few hours of the vaccination and may last for one to two days. More serious reactions are rare. You cannot get influenza from the vaccine.

c) Influenza antiviral medications

Antiviral medications are effective in preventing and treating acute influenza infection, and during a pandemic there will be a great demand for these medications. The Australian Government has purchased a large stockpile of the antivirals, and they will be used to minimise the overall illness and death in the population. In the early phases of a pandemic, you may be given the medication (a short course of capsules) if you are sick with pandemic influenza or if a member of your family or work/school place develops influenza to prevent you from contracting the infection. People whose work places them at high risk of contracting influenza (e.g., HCWs) may be given the antivirals for longer periods of time. When the pandemic vaccine is available, preventative antivirals will not be necessary, except to cover the period until the vaccine produces immunity, or for people who are unable to receive the vaccine because of the allergies mentioned above.

If you or a member of your household are prescribed these drugs, **it is very important to take them exactly as indicated**. This will ensure you receive maximal benefit from your treatment and reduce the chances of the virus becoming resistant. Antiviral resistance will limit the future effectiveness of these important medications.

A.1.3 Plan ahead

Spend a little time thinking about what you will need if you got the flu.

Do you know how to use or read a thermometer correctly? If not, ask someone to show you. Your local pharmacist or the nurse at your general practice should be able to give you instructions.

Have a plan

- Have a plan for if you and your family have to stay at home for a week or so during a pandemic
- Talk to your family and friends about this
- If you live alone, or are a single parent of young children, or are the only person caring for a frail or disabled adult, the plan is an especially good idea

- Think of someone you could call upon for help if you became very ill with the flu or were unable to leave the home and discuss the possibility with him or her
- Think of someone you could call upon to care for your children if their school or day-care was closed because of the pandemic, and you were required to work, and discuss the possibility with them
- Your plan needs to include who could help you with food and supplies if you and your family are ill
- Having a telephone network for you and the people who live close by is a good idea
- Have the phone number of your family doctor and state/territory information line in a prominent place
- Think about supplies you might need in a pandemic.

Supplies you might need in a pandemic

It is a good idea to:

- Have enough fluids (e.g., juices, soups etc) and food on hand to last you and your family a week
- Have enough basic household items (e.g., tissues) to last a week
- Have some plastic bags—used supermarket bags are good—to put the used tissues in
- Have paracetamol and a thermometer in your medicine cabinet.

A.2 WHEN UNWELL

A.2.1 *Is it the flu?*

The most prominent characteristics of the flu are sudden appearance of a high fever (38 degrees Celsius or more), a dry cough, and body aches, especially in the head and lower back and legs. Usually the person feels extremely weak and tired and doesn't want to get out of bed. Other symptoms can be chills, aching behind the eyes, loss of appetite, a sore throat and a runny, stuffy nose. The flu is even more likely if you have been in contact with someone with the flu, or have had some other type of exposure such as overseas travel to areas where flu outbreaks are occurring.

A.2.2 *What can you do for yourself?*

- **Influenza antiviral medications**—As there is a limited supply of influenza antiviral medications, during a pandemic they may not be available to treat every person who has contracted influenza. Information about the availability of the medications will be communicated widely by the Australian Government. **When they are available for treatment, because they are only effective if commenced within the first 24–48 hours of illness, it will be important to seek medical attention early so that the antivirals can be commenced immediately.** Therefore, you should contact your doctor immediately
- **Rest**—Probably you will feel very weak and tired until your temperature returns to normal (about three days), and resting will provide comfort and allow your body to use its energy to fight the infection
- **Stay at home**—You should stay away from work/school and avoid contact with others as much as possible while the infection is contagious. The contagious or infectious period for people over 12 years of age is seven days from when the first symptom appears
- **Drink plenty of fluids**—Extra fluids are needed to replace those lost because of the fever (through sweating). If your urine is dark, you need to drink more. Try to drink a glass of water or juice or an equal amount of some other fluid every hour while you are awake

- **Take simple analgesics such as paracetamol or ibuprofen** as recommended on the package to ease your muscle pain and bring down your fever (unless your doctor says otherwise). Children under 18 years of age should not take any aspirin containing medications. This combination of influenza and aspirin in children has been known to cause Reye syndrome, a very serious condition affecting the nervous system and liver
- Antibiotics are not effective against influenza because influenza is a virus and antibiotics fight bacteria. However, your doctor may prescribe them if you develop secondary bacterial infections
- **Gargle** with a glass of warm water to ease a sore throat. Sugarless lollies or lozenges also help. Some medications, such as benzocaine, work by numbing the throat. They usually come in the form of a lozenge or throat spray. Others, containing substances like honey or herbs, work by coating the throat
- A hot water bottle or heating pad may also relieve muscle pain. A warm bath may be soothing
- **Use saline nose drops or spray** to help soothe or clear a stuffed nose. Decongestants help shrink swollen blood vessels in the nose. There are two kinds—pills and nose drops/sprays. Nose drops/sprays act in minutes. They work better and have fewer side effects than pills. However, they only work for two to three days and then they may make matters worse. If your nose is still stuffy after three days, you may want to switch to the pills. The pills take half an hour to work. They may cause dry mouth, sleep disturbances and other side effects. Pseudoephedrine is a decongestant in pill form, but you should talk to your doctor or pharmacist about whether it is OK to take this medication
- Wipe your nose with disposable tissues and put them in the waste immediately. Cover your nose and mouth with tissues when you cough or sneeze and throw them in the waste as well. Wash your hands often
- **Do not smoke** as it is very irritating to your damaged airways
- **Ask for help:** If you live alone, are a single parent, or are responsible for the care of someone who is frail or disabled, you may need to call someone to help you until you are feeling better
- **A cough** can be helpful if it gets rid of mucous. If a dry cough is keeping you awake, a cough suppressant (antitussive) may be helpful. If you need help loosening mucous, an expectorant may be helpful. It is not helpful to take a suppressant and an expectorant together
- If you buy medicine at the pharmacy to treat your symptoms (**'over-the-counter' medications**), check with the pharmacist to see if it is the best one for you. Mention if you have a chronic illness or are taking any other medicine. Take into consideration that:
 - It is better to buy a remedy that treats only one symptom. This way you are not taking in substances that you do not need, or that may trigger an adverse reaction
 - Read the label to be sure that the ingredient treats the symptom you have
 - Long acting medications tend to have more side effects than short acting medications
 - Read the label and note any possible side effects or interactions with other drugs or health conditions
 - If you have a chronic condition and are taking prescription medications, it is a good idea to ask the pharmacist to suggest a medication that would be safe for you to take, if you have not already discussed this with your doctor.

Older persons are much more sensitive to medications in general and may experience more side-effects, especially to the nervous system (e.g., confusion).

If you have any questions at all about medications, don't hesitate to talk to your pharmacist.

A.2.3 What to expect

Day 1–3: Sudden appearance of fever, headache, muscle pain and weakness, dry cough, sore throat and stuffed nose (but overshadowed by previous symptoms)

Day 4: Fever and muscle aches decrease. Hoarse, dry or sore throat, cough and possible mild chest discomfort become more noticeable

Day 8: Symptoms decrease. Cough and tiredness may last 1–2 weeks or more.

A.2.4 When to seek medical attention

Early phases

In the early phases of the pandemic, before it is widespread in the community, it will be important to **seek medical attention as soon as you suspect you may be experiencing symptoms of pandemic influenza**. This will allow health authorities to take measures to try to contain the spread of the pandemic.

If appropriate, you may be treated with influenza antiviral medications and your family members and work colleagues may be given preventative antivirals. The influenza antiviral medications are only effective for treatment if started in the first 48 hours of illness (the earlier the better). If you have specific enquiries about where to access medical care in your local area, you should phone your state/territory information line (see III. *Useful numbers*).

If you are experiencing the flu, **avoid public places** and contact with other people, especially those 'at risk' of severe influenza. When you seek medical care, if possible, ring the practice before-hand in case there are special arrangements for pandemic influenza patients (e.g., assessment in the home). When you attend the practice, alert the receptionist to your symptoms so that you can be seated away from others. You may be asked to wait in a separate area and you may be given a surgical mask to wear. Before you are given a surgical mask, or if they are not available, remember to turn away from other people and cover your mouth and nose with tissues when you cough or sneeze. Wash your hands after disposal of the tissues in the rubbish.

If the decision is made for you to be cared for in the home, you should seek medical attention again in the situations outlined below.

Later phases

In the later phases when it is not possible to contain the spread of the pandemic, antiviral medications may not be available for treatment, and public health units may not have the capacity for contact tracing. Provided you are a normal healthy person, you may only need to seek medical attention if your symptoms worsen or are not improving.

If you are a normally healthy person and have developed the flu, you should seek medical care if:

- You become short of breath while resting or doing very little
- Breathing is difficult or painful
- You are coughing up increased or bloody sputum
- You are wheezing
- You have had a fever for three to four days and you are not getting better or you may be getting worse
- You have started to feel better, and suddenly you get a high fever and start to feel sick again
- It is noted by yourself and others that you are extremely drowsy and difficult to wake up or that you are disorientated or confused
- You have extreme pain in your ear.

Seek medical care as soon as possible, in order to prevent your condition from worsening. Bacteria may have invaded your damaged tissues. At this point your doctor may consider giving you antibiotics.

If you have heart or lung disease, or any other chronic condition that requires regular medical attention, if you are frail, or if you have an illness or are on treatments or medications that affect your immune system, or you are pregnant and you get the flu, call your doctor. If you are living with a long-term illness, your doctor may suggest changes to your usual management routine and/or provide you with extra help in treating the flu and preventing complications.

A.2.5 When a child is unwell

Older children and teens have the same symptoms of the flu as adults. Very young children and infants probably have similar symptoms, but may not know how to tell people they have sore muscles or a headache. These children may be irritable and eat poorly. They sometimes develop a hoarse cry and barking cough (like croup). Younger children, especially those under six months of age may also have diarrhoea, vomiting and stomach pain.

Some of the things you can do for your child are:

- Give paracetamol or ibuprofen every four to six hours for the fever in the dose recommended on the package (unless your doctor says otherwise). Do not give aspirin containing medications. Your pharmacist can provide advice on appropriate 'over-the-counter' medications for treating fever
- Do not expect to be prescribed antibiotics for uncomplicated influenza, as they will have no benefit. Antibiotics may be prescribed for complications of influenza such as pneumonia or ear infection
- Dress the child in lightweight clothing and keep the room temperature at about 20 degrees Celsius if possible
- Offer cool fluids frequently when the child is awake
- Avoid cold baths
- Allow the child to rest and stay at home until no longer infectious, so the virus isn't spread to other children (currently the infectious period for primary school aged children is about 14 days and for pre-school aged children is about 21 days)

- Use salt-water nose drops to treat a stuffy nose. Throw away tissues as soon as you have wiped your child's nose. Teach the child to cover their mouth when they cough or sneeze and then throw the tissue away. Wash your hands often and teach your child to do so after wiping their nose.

In the early phases, you should seek medical attention as soon as symptoms develop, as influenza antiviral medications may be available for treatment. If you have specific enquiries about where to access medical care in your local area, you should phone your state/territory information line (see Part III. *Useful numbers* at the end of this document).

When you seek medical care, if possible, ring the practice before-hand in case there are special arrangements for pandemic influenza patients (e.g., assessment in the home). When you attend the practice, alert the receptionist to your child's symptoms so that you can be seated away from others. You may be asked to wait in a separate area and your child may be given a surgical mask to wear. Before you are given a surgical mask, or if they are not available, remember to encourage your child to turn away from other people and cover his/her mouth and nose with tissues when he/she coughs or sneezes. Handwashing after disposal of the tissues in the rubbish is important.

In the later phases, antiviral medications may not be available. You should take your child to a doctor if your child:

- Has heart or lung disease or any chronic illness requiring regular medical care; has a disease or is taking drugs or treatment that affect the immune system or takes aspirin regularly for a medical condition
- Has trouble breathing
- Is less than six months old and has a temperature greater than 38.5 degrees Celsius
- Is constantly irritable and will not calm down
- Is listless and not interested in playing with toys
- Has a fever that lasts more than five days
- Drinks so little fluid that they are not urinating at least every six hours when awake
- Has vomiting for more than four hours, or has severe diarrhoea.

Note: green or yellow nasal discharge does not necessarily mean a child has a bacterial infection and needs antibiotics.

Take your child to the hospital emergency department or call 000 if your child:

- Has severe trouble breathing not caused by a stuffy nose
- Has blue lips
- Is limp or unable to move
- Is hard to wake up, unusually quiet or unresponsive
- Has a stiff neck
- Seems confused
- Has a seizure (convulsion/fit)
- Has not had a wet nappy in 12 hours.

A.3 USEFUL NUMBERS FOR THE GENERAL PUBLIC

1. Department of Health and Ageing Public Information Hotline: 1800 004 599
2. State and territory information lines (for the general public):

State/territory	Public information line
Australian Capital Territory	02 6207 7777
New South Wales	See below
Northern Territory	08 8922 8044 a/h Royal Darwin Hospital: 08 8922 8888
Queensland	131304
South Australia	1800 353 282
Tasmania	1800 671 738.
Victoria	1300 365 677
Western Australia	1800 022 222

In New South Wales, you should contact the public health unit in your area:

Metropolitan areas			Rural areas		
Northern Sydney/ Central Coast	Hornsby	02 9477 9400	Greater Southern	Goulburn	02 4824 1837
	Gosford	02 4349 4845		Albury	02 6021 4799
South Eastern Sydney/Illawarra	Randwick	02 9382 8333	Greater Western	Broken Hill	08 8080 1499
	Wollongong	02 4255 2200		Dubbo	02 6841 5569
Sydney South West	Camperdown	02 9515 9420		Bathurst	02 6339 5601
	Liverpool	02 9828 5944	Hunter/ New England	Newcastle	02 4924 6477
Sydney West	Penrith	02 4734 2022		Tamworth	02 6767 8630
	Parramatta	02 9840 3603	North Coast	Port Macquarie	02 6588 2750
Justice Health Service	Matraville	02 9289 2993		Lismore	02 6620 7500
NSW Department of Health—02 9391 9000 (North Sydney)					

