Guidelines
for the Prevention and Control of

Influenza Outbreaks
in Residential Care Facilities
for Public Health Units in Australia

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Acknowledgements

CDNA’s Interpandemic Influenza Working Group:

Dr John Carnie (Chair)  Disease Control and Research Branch, Department of Human Services, Victoria
Dr Simon Madin  General Surveillance and Control, Communicable Diseases Section, Department of Human Services, Victoria
Dr Paul Armstrong  Communicable Diseases Branch, NSW Health Department, NSW
Dr Tony Watson  Communicable Disease Control Branch, Health Department of Western Australia
Dr Ann Koehler  Communicable Disease Control Branch, Department of Health, South Australia
Dr Geetha Isaac-Toua  Health Protection Services, ACT Health
Dr Clif van der Oest  Centre for Disease Control, Northern Territory Department of Health and Community Services,
Mr Craig Davis,  Communicable Disease Unit, Queensland Department of Health
Dr Avner Misrachi  Communicable Disease Prevention Unit, Department of Health and Human Services, Tasmania

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Disclaimer

These guidelines are provided to assist residential care services and carers in best practice information for the prevention of influenza outbreaks in residential care facilities and public health units.

These guidelines capture the knowledge of experienced professionals, build on past research efforts, and provide advice on best practice based upon the best available evidence at the time of completion.

The guidelines are necessarily general and readers should not rely solely on the information contained within these guidelines. The information contained within these guidelines is not intended to be a substitute for advice from other relevant sources including, but not limited to, the advice from a health professional. These guidelines are intended for information purposes only.

The information contained within these guidelines is based upon best available evidence at the time of completion. The membership of the Communicable Disease Network Australia (‘CDNA’) and the Commonwealth of Australia (‘the Commonwealth’), as represented by the Department of Health and Ageing, does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, or process disclosed at the time of viewing by interested parties.

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Guidelines for the Control of Influenza Outbreaks in Residential Care Facilities

Contents

Preface ................................................................................................................................................................................ 1
How to use this document............................................................................................................................................. 3
Summary Flow Chart: .................................................................................................................................................... 4
Investigation and Management of Influenza Outbreaks in Residential Settings ............................................. 4

Chapter 1: Introduction ........................................................................ 5
  1.1 Influenza.............................................................................................................................................................. 5
  1.2 Linkages with other documents and the internet .............................................................................................. 8

Chapter 2: Preventing Outbreaks.......................................................... 9
  2.1 Vaccination............................................................................................................................................................ 9
    2.1.1 Residents....................................................................................................................................................... 10
    2.1.2 Staff......................................................................................................................................................... 10
    2.1.3 Contraindications to influenza vaccination......................................................................................... 11
  2.2 Infection Control Precautions........................................................................................................................... 11

Chapter 3: Outbreak and Case Definitions........................................... 13
  3.1 Introduction ....................................................................................................................................................... 13
  3.2 Respiratory Disease Outbreak Definition........................................................................................................ 14
  3.3 Case definition.................................................................................................................................................. 14
  3.4 Outcome definitions ...................................................................................................................................... 15
    3.4.1 Pneumonia.................................................................................................................................................. 15
    3.4.2 Hospitalisation......................................................................................................................................... 16
    3.4.3 Death...................................................................................................................................................... 16

Chapter 4: Investigation and Management of Outbreaks ............... 17
  4.1 Assess the Suspected Outbreak.......................................................................................................................... 17
  4.2 Outbreak Investigation and Management Team............................................................................................ 18
    4.2.1. The team................................................................................................................................................ 18
  4.3 The Investigation .............................................................................................................................................. 18
    4.3.1 Formulate an outbreak name and working case definition ............................................................... 19
Preface

Purpose of the Guide

The purpose of this document – Guidelines for the Prevention and Control of Influenza Outbreaks in Residential Care Facilities in Australia (the Guidelines) – is to provide national best practice guidelines for staff of public health units for preventing, defining and managing outbreaks of influenza in Residential Care Facilities (RCFs) in Australia during interpandemic periods.

For the purpose of the Guidelines, RCFs are taken to mean facilities where the residents live some or all of their lives in that facility on an ongoing basis. These include aged care facilities (nursing homes and hostels), facilities for people with physical and mental disabilities, detention centres and gaols. While the Guidelines are primarily intended to apply to RCFs, many of these principles are applicable to other settings such as hospitals, cruise ships, military barracks and boarding schools.

These Guidelines have been prepared for an interpandemic influenza period recognizing that in a national influenza pandemic alert or pandemic period, outbreak control will be determined by the Australian Management Plan for Pandemic Influenza (AMPPI).

The commonest group of pathogens that cause outbreaks of respiratory illness in RCFs are viruses, and, of these, influenza is by far the most significant in terms of health impact. More proven interventions exist for preventing and controlling influenza outbreaks than for other respiratory viruses. However apart from vaccination and antiviral use the methods described for prevention and control of influenza outbreaks are also appropriate for outbreaks caused by other respiratory viruses and bacteria. In these cases, additional pathogen-specific guidance should be sought to augment the information and advice contained in the Guidelines.

Two of the key interventions for outbreak control described in the Guidelines are the use of anti-viral medications for treatment and prophylaxis for staff and residents, and influenza vaccination for prevention of disease in uninfected staff and residents. The responsibility for the provision and payment for antiviral agents and influenza vaccine will vary across jurisdictions, and this should be decided at the state and territory level.
The Guidelines have been prepared under the auspices of the Communicable Diseases Network Australia (CDNA). CDNA is a subcommittee of the Australian Health Protection Committee, which reports to the Australian Health Ministers’ Advisory Council (AHMAC). CDNA consists of public health professionals drawn from Commonwealth, State and Territory public health departments and agencies. An Interpandemic Influenza Working Group was formed by CDNA to develop these guidelines. This group consisted of public health representatives from all Australian States and Territories with support from the Australian Government Department of Health and Ageing.
How to use this document

The Guidelines and attached appendices make recommendations for:

- preventing outbreaks (chapter 2)
- defining outbreaks (chapter 3)
- assessing the outbreak situation (section 4.1)
- forming an outbreak management team (section 4.2)
- outbreak investigation and management (sections 4.3 to 4.6)
- outbreak monitoring (section 4.7)
- declaring an outbreak over (section 4.8)

The steps are summarized in the summary flowchart below (page 4).

The appendices provided include letters, information and checklists for the Public Health Unit (PHU) to utilise or forward to RCF managers and general practitioners to assist in outbreak control.
Summary Flow Chart:
Investigation and Management of Influenza Outbreaks in Residential Settings

Outbreak definition
Three or more cases of newly acquired respiratory illness in staff and/or residents in the facility within a period of 7 days.

Assessment of the situation (Sect 4.1)
- Establish/Confirm Influenza outbreak
- First case onset date
- Numbers affected (residents and staff)
- Symptoms
- Results of initial pathology tests

Form an Outbreak Investigation & Management team (OIMT) (Sect 4.2/4.3) and start investigation
- Designate roles and responsibilities
- Formulate working case definition
- Define population at risk
- Active case finding (staff and resident line listing)
- Immunisation status of staff and residents
- Discuss further specimen collection and tests
- Clarify communications between PHU and Facility
- Decide on who needs to be notified
- Discuss management strategies including vaccination, antiviral therapy and infection control measures
- Discuss need for media release

Monitoring outbreak (Sect 4.7)
- Continuing surveillance for new cases
- Update line listing
- Are control measures working?
- Are any further control measures necessary?
- Review pathology results and communicate results to facility
- Need for further lab testing
- Evaluate effectiveness of control measures
- Review communication with facility and other agencies
- Review need for media, ministerial briefing
- Have criteria to declare outbreak over been confirmed?
- Movement of staff and residents between facilities?

Outbreak Management (Sect 4.4/4.5/4.6)
- Site visit (decision of individual PHUs)
- Sample collection and transport
- Implement appropriate control measures
- Recommendations for antiviral therapy & vaccination
- Send appropriate documents to facility

If influenza
- Level of support from PHU
- Recommend general respiratory outbreak measures

Declarations outbreak over/Debrief (Sect 4.8/4.9)
- No new cases for 8 days from onset of symptoms of last resident case (one incubation period, one period of communicability)
- If staff member is the last case, time until outbreak is declared over can be shortened, as the person would be at home during period of communicability.
- Notify Facility and communicate relevant details of the outbreak
- Notify other relevant individuals/agencies
- Discuss need for on-going surveillance
- Formulate outbreak report
- Review management of outbreak

If not influenza
- Level of support from PHU
- Recommend general respiratory outbreak measures
Chapter 1: Introduction

1.1 Influenza
Influenza and other viral respiratory illnesses occur throughout the year but are more common from March to September. During epidemics of influenza, severe illness and deaths occur primarily among the elderly and those with underlying diseases. Estimates of the rates of influenza in residents in RCFs vary considerably due to different case definitions, different circulating viruses and different contexts. The majority of studies have examined influenza-like illness rather than influenza. For those studies which have examined laboratory-confirmed influenza in residents in RCFs, seasonal rates of influenza vary from 2-16% of residents.\textsuperscript{1,2} During outbreaks of influenza in RCFs, attack rates of laboratory confirmed influenza can be as high as 40\%.\textsuperscript{3,4}

Rates of influenza-like illness are even greater in this population, and considerably higher than the general community.\textsuperscript{1} In the outbreaks of influenza-like illness reported in 12 RCFs in NSW in 2004, attack rates in residents varied from 3-76%, and death rates varied from 0-20\%.\textsuperscript{5} Influenza case-fatality rates of up to 55% have been recorded in some RCFs.\textsuperscript{3} In the light of an increasing possibility of a pandemic, control of interpandemic influenza outbreaks amongst the highly susceptible becomes all the more important.

Residential care facilities (RCFs), are considered to be high-risk environments for influenza due to communal living arrangements and the continual close proximity of residents. Nursing homes and hostels catering for the elderly are especially high-risk environments due to the older age of residents and high prevalence of chronic medical conditions.\textsuperscript{6,7} It is important to maintain good surveillance in RCFs for outbreaks of respiratory infections so that appropriate interventions can be promptly instituted.\textsuperscript{8}

The main strategies emphasized in these guidelines to prevent and manage influenza outbreaks are vaccination prior to the influenza season and during an outbreak, the use of antiviral therapy for treatment and prophylaxis, infection control measures including restriction of movement between affected and unaffected areas, and minimizing contact between affected and unaffected persons during an outbreak.
Chapter 1: Introduction

Vaccination of persons at high risk of complications and of persons who are potentially capable of transmitting influenza to those at high risk is currently the most effective measure to reduce the impact of influenza.\textsuperscript{9, 10, 11, 12} Influenza vaccination can be administered to any person who wishes to reduce the likelihood of becoming ill with influenza. It is recommended annually for people who are at increased risk of influenza complications by the National Health and Medical Research Council and is funded by the Australian Government for these people. The 8\textsuperscript{th} edition of the Australian Immunisation Handbook\textsuperscript{13} recommends that persons who provide essential community services should be considered for vaccination during an outbreak, to minimize disruption of services. It is recommended for health care workers in residential care facilities.

The effectiveness of vaccination depends on the age and immunocompetence of the recipient and the similarity between the virus strain in the vaccine and those circulating in the community. The vaccine can be 70-90\% effective in preventing illness in healthy persons aged under 65. For elderly people in residential care settings the vaccine is 30-40\% effective in preventing illness, 50-60\% effective in preventing influenza-related hospitalisation or pneumonia, and 80\% effective in preventing influenza-related death.\textsuperscript{14, 15} Two studies have demonstrated that RCFs with high rates of vaccination (above 60-80\%) among residents are associated with fewer outbreaks of influenza compared with those with lower vaccination rates.\textsuperscript{16, 17} These findings are consistent with vaccination effects in other populations.\textsuperscript{18}

Few studies have examined the effect of vaccinating staff in RCF influenza outbreaks, but available evidence suggests that high rates of vaccination among staff members may reduce influenza related mortality among residents.\textsuperscript{19, 20, 21} As most staff members are relatively young and healthy, they are more likely to develop protective influenza antibody titres following vaccination than are the residents for whom they provide care.\textsuperscript{13} High rates of vaccination among staff may contribute substantially to herd immunity within the facility, protecting residents by reducing the risk of the introduction and transmission of influenza. The effectiveness of Influenza vaccination in healthy adults (including health care workers) in reducing days of work absence due to respiratory infections has been demonstrated.\textsuperscript{22, 23}

Antiviral therapy has been recommended for use in the management of influenza outbreaks in residential care facilities both for treatment and prophylaxis.\textsuperscript{7, 24, 25} The responsibility for the provision and payment for antiviral agents and influenza vaccine will vary across jurisdictions, and this should
be decided at the state and territory level. There are currently three antiviral drugs registered in Australia that are effective against influenza infection. Two are neuraminidase inhibitors\textsuperscript{26, 27} while the third is an M2 blocker (amantadine). All are active against Influenza A, while only oseltamivir and zanamivir are active against Influenza B.

In adults with influenza, antiviral drugs are effective in reducing the severity and shortening the course of illness if given within 48 hours of onset of symptoms, even in elderly adults.\textsuperscript{28, 29, 30} The effectiveness of both neuraminidase inhibitors and M2 blockers to prevent influenza ranges between 70-90\%. M2 blockers such as amantadine, however, have adverse-events profiles that may limit their use in elderly patients, as well as a greater potential to facilitate emergence of resistant viruses. Of the neuraminidase inhibitors, oseltamivir may be the drug of choice because of the difficulty elderly people have in using the inhaler device through which zanamivir is administered.\textsuperscript{31}

Only one randomised-controlled study has been undertaken on the use of oseltamivir to prevent influenza in elderly residents in nursing homes, which found that it was 90\% effective in preventing lab-confirmed influenza.\textsuperscript{32} A number of descriptive or cohort studies have examined the use of oseltamivir and infection control measures to control outbreaks of influenza in RCFs, all of which were associated with rapid control of the influenza outbreaks.\textsuperscript{7, 24, 33, 34, 35, 36, 37, 38} It was noted that earlier detection of the outbreak and intervention with antivirals resulted in better outbreak control.\textsuperscript{37}

Infection control and restriction measures to minimize contact between ill and not ill are an integral part of controlling outbreaks alongside vaccination and antiviral therapy, as these measures assist with breaking the chain of transmission of the virus.\textsuperscript{6, 21, 39}
Chapter 1: Introduction

1.2 Linkages with other documents and the internet

- Infection Control Guidelines for the Prevention of Transmission of Infectious Diseases in the Health Care Setting (Jan 2004)\(^40\)
- [http://www.influenzacentre.org/](http://www.influenzacentre.org/)Patient information on influenza, information on current vaccine strains
Chapter 2: Preventing Outbreaks

Key points

- Annual influenza vaccination is recommended for all residential care facility residents and staff and is funded for specific high-risk groups.
- The optimal time for influenza vaccination is February to April each year.
- Pneumococcal vaccination is recommended for residential care facility residents and is funded for specific high-risk groups.
- Prior to or upon admission and then annually each resident should be assessed regarding their vaccination status.
- Prior to or upon employment and then annually, each staff member should be assessed regarding their vaccination status.
- Administrative staff should keep an annually updated list of staff and resident vaccination status.

2.1 Vaccination

Influenza and pneumococcal vaccination of residential care residents is recommended to reduce the impact of these vaccine-preventable diseases.

In elderly patients, influenza vaccination has demonstrated efficacy in reducing the rate of infection with influenza virus, and the rate of severe morbidity and mortality. When a high proportion (>80%) of residents in a RCF are vaccinated, the herd immunity effect results in an additional benefit of reducing the risk of outbreaks in the facility.¹¹

Influenza vaccine is provided free for:

- All Australians aged 65 years and over,
- Aboriginals and Torres Strait Islanders aged 50 years and over, and
- Aboriginals and Torres Strait Islanders aged between 15 and 49 years with health risks.

Pneumococcal vaccine is recommended in specific age groups or who have a medical risk factor. Booster doses of pneumococcal vaccine may be required.¹³

Pneumococcal vaccine is provided free for:

- All Australians 65 years and over,
- Aboriginals and Torres Strait Islanders aged 50 years and over,
Aboriginals and Torres Strait Islanders aged between 15 and 49 years with health risks,
Children with underlying high risk medical conditions, and
All infants at 2, 4, and 6 months of age.

Refer to the current edition of The Australian Immunisation Handbook for a full list of influenza and pneumococcal vaccination recommendations.

Influenza vaccination of people capable of transmitting influenza to residential care residents is recommended on an annual basis. This includes all employees, attending physicians and both health care and non-health care contract workers. Volunteers and visitors to the facility should also be encouraged to receive annual influenza vaccination.

Each RCF should have a resident vaccination policy for influenza and pneumococcal infection and a staff vaccination policy for influenza.

2.1.1 Residents
Prior to or upon admission, each resident should be assessed regarding vaccination status.
The recommended time for influenza vaccination is February to April in anticipation of annual outbreaks of influenza in the middle of the year. If the resident is admitted after the autumn vaccination program, vaccination should be offered unless the person has already received the current season’s influenza vaccine.

The immunisation record of the resident should be retained on a separate immunisation register.
Upon transfer to another facility, the resident’s recent vaccination status should be shared with that facility.

Thereafter, each resident should be immunised between February and April with the current season’s influenza vaccine, unless medical contraindications exist.

2.1.2 Staff
Annual vaccination against influenza is recommended for all persons carrying on activities in the RCF.
If the time of hiring or placement occurs during the influenza season, the person responsible for vaccination in the facility should ask any new employee for evidence of vaccination with the current year's influenza vaccine.

Only the following should be accepted as proof of influenza vaccination:

- A personal immunisation record health card documenting receipt of the current season’s influenza vaccine;
- A signed physician’s note indicating vaccination; or
- Documented vaccination history from another facility or institution.

If this documentation is not available, the RCF should not consider the staff member immunised, and the employer should recommend influenza vaccination to the person.

Facility administrative staff should keep an updated list or register of staff and resident vaccination status throughout the year.

2.1.3 Contraindications to influenza vaccination

- Individuals with anaphylactic hypersensitivity to eggs should not be given influenza vaccine. This includes persons who, on ingestion of eggs, develop swelling of the lips or tongue or experience acute respiratory distress or collapse.
- Individuals with hypersensitivity to any of the product components should not be vaccinated.
- Individuals with an acute febrile illness (fever >38.5°C) should not be vaccinated until their symptoms have abated.
- Patients with a history of Guillain-Barre Syndrome (GBS) with an onset time related to influenza vaccination may be at increased risk of again developing GBS if given influenza vaccine.

It should also be noted that the product information on influenza vaccine refers to the possibility of the vaccine impairing the metabolism of drugs such as warfin, theophylline, phenytoin, phenobarbitone and carbamazepine. Therefore patients taking these drugs and given influenza vaccine should be monitored for possible elevated levels of medication.

2.2 Infection Control Precautions

The risk of outbreaks of influenza (and other respiratory illnesses) can be minimised by ensuring compliance with standard infection control practices amongst staff and residents of RCFs at all times.
The most important of these measures are:

- practicing good hand hygiene, especially after contact with respiratory secretions or potentially contaminated surfaces;
- encouraging respiratory hygiene / cough etiquette;
- isolation or cohorting of ill residents and the adoption of respiratory (droplet) precautions; and
- routine environmental cleaning with detergents and water, or chlorine solutions.

Hand hygiene should be performed regularly by both staff and residents, using mild soap and water, or an alcohol-based hand rub if hands are not visibly soiled.

Residents and staff should be encouraged to practice good respiratory hygiene, which involves covering the nose/mouth when coughing or sneezing, and using tissues to contain respiratory secretions. Tissues should be disposed of immediately in the general waste, and the hands thoroughly washed with soap and water. If an ill resident is coughing persistently, the use of a surgical mask may assist in preventing the dispersal of infected droplets.

Healthcare personnel should be advised to observe droplet precautions (i.e., wearing a surgical mask for close contact), in addition to standard precautions when examining or assisting a patient with a respiratory infection, particularly if a fever is present.

The influenza virus can survive for several hours on surfaces; therefore attention to cleaning, particularly of frequently touched surfaces, may assist in preventing transmission. Cleaning should be performed using neutral detergent and water followed by a disinfectant (see Appendix 1).
Chapter 3: Outbreak and Case Definitions

Key points

- The definition of a respiratory disease outbreak is:
  Three or more cases of newly-acquired respiratory illness in staff and/or residents in the facility within a period of 7 days.

- The case definition for use during an influenza outbreak is:
  Suspected case:
  A person from the population at risk (e.g., staff or residents from the RCF), with onset of a respiratory illness from a defined point in time, characterized by fever (>38°C); PLUS one or more respiratory symptoms: cough, shortness of breath, coryza (runny nose), sore throat; PLUS one or more systemic symptoms: fatigue (severe tiredness), myalgia (muscle ache), rigors (chills), headache.

  Confirmed case:
  A suspected case with a positive result from at least one diagnostic test.

3.1 Introduction

There is a clear distinction between a definition used to define an outbreak of respiratory disease and one used to define cases within an outbreak. The key objective of formulating an ‘outbreak definition’ is to assist staff at a RCF to easily decide if an outbreak of respiratory disease may be occurring and thence to alert the PHU in a timely fashion. Key criteria to be considered are how many purported cases exist and in what timeframe. The outbreak definition should be relatively simple and more emphasis should be placed on ensuring the definition is a sensitive rather than a specific one. An early role of the PHU is to decide whether the report represents a true outbreak, is not an outbreak at all, or if additional information needs to be collected to increase certainty.

The main use for the ‘case definition’ is for use by the outbreak management team once an outbreak has been declared. The main reasons for having a case definition are:

(i) to be able to identify cases early in order to institute disease control efforts to benefit that person and to limit the risk of transmission to others, and

(ii) to accurately describe the outbreak to facilitate effective overall outbreak management and for epidemiological/research purposes.

The case definition should be established early in the outbreak and modified if necessary to ensure it is both reasonably sensitive and specific. The definition given here is for guidance only.
and will vary according to the pathogen and the demographics and underlying health status of
the residents within the facility. Key criteria will include symptomatology (‘person’), timing of
symptom onset (‘time’), and possibly location within the facility (‘place’). The case definition
developed for residents may be different from that developed for staff.

3.2 Respiratory Disease Outbreak Definition
The following definitions are designed to be sensitive for identifying respiratory disease
outbreaks and the PHU will need to use its judgment as to whether a report represents a true
outbreak.

**Respiratory disease outbreak caused by unknown pathogen**
Three or more cases of newly-acquired respiratory illness in staff and/or residents of a
facility within a period of 7 days (the PHU should contact the PHU immediately after the
third case is identified).

**Respiratory Disease Outbreak caused by known pathogen**
An outbreak as defined above with at least one case demonstrating evidence of a clinically-
compatible pathogen demonstrated by an acceptable laboratory test.

3.3 Case definition
The case definition is formulated once an outbreak of respiratory disease has been declared. The
case definition should be carefully considered for each outbreak. The definition for an influenza
outbreak presented here is a guide only.

**Suspected case of influenza**
A person from the population at risk (e.g., staff or residents from the RCF), with
onset of a respiratory illness from a defined point in time, characterized by fever (>38°C);
PLUS
one or more respiratory symptoms: cough, shortness of breath, coryza (runny nose), sore
throat;
PLUS
one or more systemic symptoms: fatigue (severe tiredness), myalgia (muscle ache), rigors
(chills), headache.
Chapter 3: Outbreak and Case Definitions

From a disease control viewpoint, suspected cases should be deemed to be true cases (and therefore infectious) until proven otherwise (e.g., by demonstration of an alternative clinically-compatible pathogen), or until 7 days has elapsed since symptom onset.

(\textit{Note: Studies have shown that the best predictors of influenza are cough and fever}).

\textit{Confirmed case of influenza}

A suspected case with a positive result from at least one of the following diagnostic tests:

1) Isolation of influenza virus by culture from appropriate respiratory tract specimen
2) Detection of influenza virus by nucleic acid testing (NAT) from appropriate respiratory tract specimen
3) Detection of influenza antigen from appropriate respiratory tract specimen
4) Seroconversion or significant rise in antibody level or titre to influenza virus
5) Single high titre by complement fixation test (CFT)
6) Positive result in a rapid point of care influenza test kit.

3.4 Outcome definitions

In order to completely describe an outbreak, it is necessary to accurately record the outcomes of the cases. For influenza, these may include: recovered, pneumonia, hospitalisation and death (a case may have more than one outcome). As with the case definition, the outcome definitions may vary according to the features of the illness of that particular outbreak, and the following definitions are intended as a guide only.

3.4.1 Pneumonia

A person who:

(i) meets the case definition used during an influenza outbreak, and
(ii) develops another illness within 2 weeks of onset of influenza symptoms, characterized by:

- Chest x-ray consistent with pneumonia

\text{AND}

- At least two of the symptoms or signs below:
  - New or increased cough
  - New or increased sputum production
• Fever (e.g., “> 38°C” OR “an abnormal temperature for the resident” OR “temperature ≤ 35.5°C or ≥ 37.5°C”)
• Pleuritic chest pain
• New physical findings on chest examination (rhonchi, wheezes, bronchial breathing)
• One of the following to indicate change in status or breathing difficulty:
  - New or increased shortness of breath
  - Respiratory rate >25/minute
  - Worsening functional or mental status (deterioration in resident’s ability to perform activities of daily living or lowering of their level of consciousness)

3.4.2 Hospitalisation
Hospitalisation can be defined as transfer of a case from the RCF to a health care facility so that an additional level of care can be provided (in some hospitals this could be in a bed in an ‘emergency ward’).

If a patient is treated in the emergency department but not admitted they are not considered to have been ‘hospitalised’.

3.4.3 Death
Most mortality associated with influenza is not a direct result of the influenza illness. Rather, it is mostly due to complications resulting from influenza, such as secondary bacterial pneumonia or exacerbation of pre-existing heart disease. Traditionally, the true contribution of influenza to mortality has been under-reported due to the role of influenza in these deaths being under-recognised.

Death should be attributable to influenza if it is considered so by the treating physician or anatomical pathologist. This may be specified on a death certificate, post mortem certificate, or specifically stated by the treating physician in the medical records. If the outbreak management team has a high index of suspicion that a death of a case is attributable to influenza and there is no written record of this, it is reasonable to discuss the issue with the treating physician.
Chapter 4: Investigation and Management of Outbreaks

Key points

4.1 Assess the suspected outbreak
4.2 Form an Outbreak Investigation and Management Team (OIMT)
4.3 Steps of Investigation
4.4 Diagnostic tests
4.5 Communication with the facility
4.6 Outbreak control measures
4.7 Monitor the outbreak on an ongoing basis
4.8 Declare the outbreak is over
4.9 Debriefing

4.1 Assess the Suspected Outbreak

PHUs may receive notifications of suspected respiratory disease outbreaks from medical practitioners, hospitals, RCFs or others. As influenza-specific control measures such as vaccination and antiviral treatment are more effective if instituted early, it is important to establish early if the reported outbreak is due to influenza virus. The PHU should contact the facility concerned to gather further information. The initial assessment may be done by communicable disease control officers, depending on resources available.

Initial information gathered should include onset date of first case, total number of cases to date (staff and residents), spectrum of symptoms, and results of any pathology tests that may have been done.

The following steps can be used as a guide to assess whether the outbreak is due to influenza.

- Follow up and review any available pathology testing that may have been done.
- If the symptoms are not consistent with influenza but are more like the common cold (i.e. sore throat, runny nose) consider whether specimens need to be taken.
- If symptoms are consistent with influenza and appropriate pathology tests have not already been ordered, this should be done as soon as possible (see section 4.4).
- Develop a working case definition for the cases in the outbreak. Check against outbreak definitions (refer to chapter 3).
Chapter 4: Investigation and Management of Outbreaks

- Review information available. Request a line listing of cases.

If initial information and laboratory testing does not show influenza to be the cause of the outbreak the PHU may choose to:

- Discuss whether the facility can handle the management of the outbreak independently or requires support from the PHU.
- Recommend general respiratory infection control measures and leave further management to the RCF.

If the outbreak is proven to be due to influenza, an Outbreak Investigation and Management team (OIMT) can be established.

4.2 Outbreak Investigation and Management Team
The OIMT will direct and oversee the management of all aspects of the influenza outbreak.

4.2.1. The team
The investigation team may include:

- public health physician
- public health nurse
- epidemiologist
- infection control nurse/environmental health officer
- laboratory representative
- representative from the facility.

The team’s configuration is to be decided at the local level and will depend on available expertise. Members of the OIMT should be nominated to take on responsibility for coordination of all activities required to investigate and contain the outbreak, as well as communication with the media liaison officer, the laboratory, and other external parties.

4.3 The Investigation
The OIMT can use the following steps and the Summary Flowchart (see page 4) as a guide to investigating the outbreak. The “Respiratory Outbreak Control Measures chart” (Appendix 2) and “Checklist for Investigation and Management” (Appendix 3) may also be useful in outbreak management.
4.3.1 Formulate an outbreak name and working case definition
Formulate an outbreak name and ensure that the working case definition is appropriate and fits the criteria as defined in Chapter 3.

4.3.2 Define the population at risk
The population at risk in the facility should include the total number of residents (on site at the time of the outbreak and during the identified incubation period) and staff (including casual workers, volunteers and non-resident care staff) working at the facility. The population at risk could also be defined by obvious cohorting; for example, if the outbreak is restricted to a unit, the number of residents in that unit and staff at risk should be identified.

4.3.3 Active case finding
Line listing provides for rapid assessment of the extent and nature of the outbreak. The facility should use the "Resident line-listing worksheet" (Appendix 4) to collect data about residents with symptoms, and those who have been ill but have recovered, within the suspected time frame of the outbreak. As the investigation proceeds, data collection may be expanded to include other relevant data beyond what is recommended here. For large facilities, keeping a separate line listing for each unit affected by the outbreak may be useful. A separate "Staff line listing worksheet" (Appendix 5) should be completed for staff who have symptoms, and note made of any other facilities that staff may also work at.

Influenza and pneumococcal vaccination coverage for residents and the influenza vaccination coverage in staff collected for the line listings can be summarised and returned to the PHU (see Appendix 6 for the appropriate form).

4.3.4. Other items to be considered by the OIMT
- Confirm how and when communications will take place between the facility and the PHU.
- Inform the state/territory Communicable Disease Control Unit.
- Review control measures necessary to prevent the outbreak from spreading, and discuss with the facility management the responsibility for ensuring that agreed control measures are in place and enforced.
• Consider the need for further specimen collection. Determine the type and number of further specimens to be taken and which residents and staff should be tested.

• Notify the laboratory about the investigation. Clarify who is to receive results (both positive and negative) and by what method. Review the process for communicating laboratory results to the PHU and the facility’s designated officer.

• Identify persons/institutions requiring notification of the outbreak:
  • families of residents in the facility
  • health care providers, e.g., general practitioners (GPs), physiotherapists
  • infectious disease physicians
  • infection control practitioners
  • hospital emergency departments and medical superintendents
  • Coroner’s office
  • other RCFs.

• Discuss the necessity for vaccination of unimmunised residents and staff, and how this is to be organized.

• Discuss use of antiviral medications for treatment of cases and/or prophylaxis of well residents and unimmunised staff.

• Discuss whether a media release is appropriate.

• Consider preparing a ministerial briefing.

• Decide how frequently the OIMT will meet and set next meeting.

4.3.5 Site visit and support to the facility
Whether or not a site visit is required can be decided locally, according to the situation and capacity of the PHU. A site visit may assist in expediting specimen collection.

4.4 Diagnostic tests
Diagnostic testing available for influenza includes viral culture, serology, immunofluorescence assay (IFA) and other assays (including point-of-care tests) for antigen detection, and PCR for detection of influenza RNA. Tests performed will depend on what is available in laboratories in each state and territory. PCR and IF are generally the preferred initial diagnostic methods as they can provide results within 24 to 48 hours for PCR, and 2-4 hours for IFA (but at a lower level of sensitivity compared with PCR). PCR and IFA also provide rapid sub-typing results of influenza A strains (i.e., H1N1, H3N2), as well as distinguishing between influenza A and B. Viral culture takes several days,
and serodiagnosis requires at least 2 to 4 weeks, and therefore have less practical value in an outbreak setting than the rapid detection methods. Point-of-care influenza tests are rapid (providing a result in 15-30 minutes), but are not as sensitive as PCR or IFA, and are currently not recommended as the only tests undertaken for establishing the cause of an outbreak.

Optimal yield of viral culture/PCR/antigen detection occurs if specimens are obtained early in the course of the disease, preferably within the first 48 hours after the onset of symptoms. Positive results may be achieved up to one week after illness onset. The specimen should be stored at 4°C and transported to the laboratory immediately if possible, and definitely within 48 hours.

4.4.1 Type of specimens to be collected
In an outbreak situation, nose and throat swabs should be collected for virus culture and/or PCR (Appendix 7), and serum for serology. Other samples that should be collected include sputum and urine, so that testing may be performed for bacterial pathogens.

4.4.2 Swabs
Nose and throat swabs should be taken from residents and staff with acute symptoms (onset within the preceding 48 hours), preferably from cases with the most classical clinical presentation of the illness suspected. Ideally samples should be collected from 8 to 10 people.

4.4.3 Specimen collection and transport
The PHU may assist with specimen collection if a site visit is conducted; otherwise specimens might be collected by GPs, laboratory collection staff, or nursing staff trained in collection methods and wearing appropriate personal protective equipment (PPE) (Appendix 8). Samples should be appropriately labelled before transport to the laboratory, and notes on the request form should include ‘Outbreak investigation’. A request form must also be completed by a medical officer. The laboratory should be advised as early as possible that specimens will be arriving, and contact details for person to receive the results communicated to the laboratory. The laboratory should be asked to notify results to this person by phone and/or fax whether positive or negative.
Chapter 4: Investigation and Management of Outbreaks

4.4.4 Results of laboratory tests
Apart from viral culture, laboratory results are usually available within 2 to 48 hours of receipt at the laboratory, depending on the test requested. The laboratory should send a hard copy of all results (negative and positive) to the requesting doctor. If this doctor is not from the PHU, the PHU should liaise with him/her about the results. If initial laboratory tests fail to detect influenza, further testing of additional cohorts of recently ill residents should be performed before concluding that the current outbreak is not caused by influenza.

The PHU will verify that the facility OIMT representative has received the results. Direction will be provided at the time regarding any additional control, treatment, or prophylaxis measures to be implemented.

4.5 Documents for communication with the facility
Documents contained in the Appendices may be sent to the facility or other agencies during the outbreak. Most will require some modification before release. They include signs for posting in the facility (Appendices 10 and 11), forms to assist in data collection (Appendices 4, 5 and 6), and advice on specimen collection (Appendices 7 and 8), environmental cleaning (Appendix 1), other control measures including antiviral medication (Appendix 12) a transfer form to be used when any ill residents are transferred to another institution (Appendix 9), a letter to the RCF Manager (Appendix 13) and a letter for medical practitioners (Appendix 14).

4.6 Outbreak control measures
These measures should be discussed with the facility and, if necessary, a copy of this section can be provided. Note that these are recommendations only, and may need to be varied according to the circumstances within each facility. However, proposed changes should be discussed by the PHU and the facility representative.

4.6.1 Non-pharmacological control measures for residents
Restriction of cases to their rooms
Restrict ill residents to their rooms until 5 days after the onset of acute illness or until symptoms have completely resolved (whichever is shorter).

Restriction of residents to their unit
Chapter 4: Investigation and Management of Outbreaks

If the outbreak is confined to one unit, all residents from that unit should avoid contact with residents in the other units of the facility.

Admissions and re-admissions

New Admissions

Admissions of new residents during the outbreak are generally not recommended.

Return of cases from hospital

The return from hospital of residents who met the case definition is permitted provided appropriate care can be provided.

Return of non-cases from hospital

The return of residents who are not known cases is generally not recommended during an outbreak, unless measures can be enforced to prevent transmission. Factors to be considered include:

• are adequate staff available at the facility to care for the re-admitted resident?
• if the outbreak is due to influenza, is the resident protected by the seasonal influenza vaccination that season and antiviral therapy?

Medical appointments

Consider rescheduling of non-urgent medical appointments made before the outbreak.

Transfer to hospital

When a resident is transferred to a hospital from a facility experiencing an outbreak, the facility should advise the hospital infection control practitioner in advance and provide details of the outbreak. This will ensure respiratory outbreak control measures are in place when the resident arrives at the hospital. Before a resident is transferred out of the facility, the facility should complete an “Outbreak Transfer Notification Form” (Appendix 9) and this form should be sent with the resident’s file to the hospital.

Transfer to another long-term care facility

Resident transfers (from anywhere in the facility) to another facility are not recommended during an outbreak.

Communal meetings
Restrict all residents to their units as much as possible. The facility OIMT representative and the PHU should discuss restriction of activities, revisiting the issue as the outbreak progresses.

### 4.6.2 Non-pharmacological control measures for staff and volunteers

#### Reporting of respiratory illness

Staff/volunteers should report any respiratory illness to the facility OIMT representative.

#### Exclusion of staff and volunteers

All staff or volunteers with respiratory symptoms (even if they are vaccinated or taking antiviral medication) should be excluded from work for 5 days from the onset of symptoms or until symptoms have resolved, whichever is shorter.

#### Working at other facilities

Staff experiencing respiratory symptoms or fever should not work in any health care setting.

- **During an influenza outbreak**
  - immunised staff with no symptoms have no restrictions on working at other facilities
  - unimmunised staff should wait one incubation period (3 days) from the last day that they worked at the outbreak facility/unit prior to working in a non-outbreak facility, to ensure that they are not incubating influenza.

#### Cohort staffing

Attempts should be made to minimise movement of staff between floors/wings of the facility, especially if some units are unaffected. Discuss the possibility of one staff member (or group of staff) looking after only ill residents and others looking after only well residents. These measures should not be required during influenza outbreaks where all staff have been vaccinated and the current vaccine covers the circulating strain, or when staff are taking appropriate antiviral drug therapy.

#### Exclusion of unimmunised staff

During a confirmed influenza outbreak, it is recommended that only immunised staff should be working in the outbreak facility. Asymptomatic unimmunised staff can work at the affected
facility if they are receiving appropriate antiviral prophylaxis, but all staff should be vaccinated unless there are contraindications.

**Hand washing**

Direct contact with respiratory secretions is the main source of transmission of influenza virus, and the virus can also be transmitted by contact with contaminated fomites. Effective hand washing will interrupt transmission of the disease. Facility staff should employ good hand washing/hand disinfection before and after providing care to both ill and well residents (see section 2.2). Appropriate techniques and disinfectants can be recommended during site visit and infection control audit.

**Masks**

Masks should be worn while providing care and removed and discarded before providing care to another resident and on exiting the room. Hands should be washed or disinfected immediately after removing the mask. P2 (N95) masks, properly tested and fitted, are preferable, but if not available surgical masks can be used.

### 4.6.3 Control measures for visitors

**Notification of visitors**

The facility should post a “Visitor Restriction Sign” (Appendix 10) at all entrances to the facility, indicating there is an outbreak at the institution. Visitors should be advised of the potential risk of acquiring illness within the facility and of the visiting restrictions as indicated below. The next of kin / guardian of ill residents should be contacted and advised of the illness in their relative, and other frequent visitors could also be advised.

Total cessation of visitation is not usually justifiable. Visitation restrictions should be discussed by the OIMT.

**Visitor restrictions**

Ill visitors should not be permitted into the facility. Visitors should be advised not to enter the facility if they do not wish to become exposed to the virus. Visitors who choose to visit during an outbreak should be advised to visit only the resident they have come to see.
Visitation by groups should not be permitted. Visits to multiple residents should be restricted. If a visitor develops a respiratory illness after visiting the facility, they should notify the facility and should not be permitted in the facility. The PHU should be notified of the illness if an influenza diagnosis is made so that it can be investigated as part of the outbreak.

Visiting ill residents
A “Visitor Restriction Sign” (Appendix 11) should be placed on the door of the rooms of ill residents or in other visible locations advising all visitors to check at the nursing station before entering the room. Visitors are to be advised of the following:

- hands should be washed on arrival and just before leaving the resident’s room,
- ill residents should be visited in their rooms only,
- visit only one resident at a time and exit the facility immediately after the visit, and
- visitors should be encouraged to wear surgical masks supplied by the facility.

4.6.4 Environmental cleaning
Thorough and frequent cleaning of objects that are in high traffic areas should be reinforced during an outbreak. These objects include all washrooms, handrails, tables, doorknobs, lift buttons, etc. Ensure that the chemical concentration of disinfectants is appropriate and solutions made-up frequently (Appendix 1).

4.6.5 Influenza vaccination
During influenza outbreaks, influenza vaccine should be offered to all unvaccinated residents, staff members, and recommended for unvaccinated visitors and volunteers. It takes approximately two weeks for a protective immune response to develop.

Vaccination of staff, volunteers and visitors may occur at the facility, as long as there is a health professional present who is trained in immunisation and the activity complies with relevant state/territory legislation. Alternatively, staff, volunteers, and visitors may be directed to a local GP or their own GP for vaccination.

4.6.6 Antiviral medication
In Australia, three antivirals are registered for use against influenza: amantadine, oseltamivir, and zanamavir (Appendix 12). All may be active against influenza A, but only oseltamivir and zanamavir
are effective against influenza B. The decision to use antivirals for treatment is a matter for the patient’s doctor, who should consult an infectious diseases physician if necessary.

Antivirals have been recommended for use in the management of influenza outbreaks in residential care facilities. Prophylactic use is recommended for all RCF residents who have not had laboratory confirmed influenza until the outbreak is declared over. Antivirals are also recommended for all unvaccinated staff, or for all staff (regardless of vaccination status) if the outbreak is caused by a strain of influenza virus that is not well-matched by the current vaccine, if this is known (except staff who have had laboratory confirmed influenza). The decision to use antivirals for prophylaxis will be guided by the PHU. Antivirals are currently not included in the Schedule of Pharmaceutical Benefits for the treatment or prophylaxis of influenza, but can be obtained on prescription from a community pharmacy or, in the event of local shortages, direct from the distributors.

To minimise the risk of antiviral resistance emerging during influenza outbreaks in RCFs, measures should be taken to minimize contact between persons taking antivirals for treatment and those taking antivirals for prophylaxis. Where contact is unavoidable (e.g., patient care by staff), infection control measures must be strictly enforced.

Comparison between the three currently licensed antivirals in Australia (Appendix 12) suggests that oseltamivir may be the most suitable drug for chemoprophylaxis of residents during RCF influenza outbreaks, although amantadine (only for influenza A outbreaks) and zanamivir may be considered for staff.

The conditions under which antivirals are most likely to be effective in the control of an influenza outbreak in a RCF are:

- the antiviral is effective against the strain(s) of influenza virus,
- all other outbreak prevention and control measures, including vaccination of residents and staff, additional infection control precautions, and isolation of symptomatic patients have been implemented,
- chemoprophylaxis is administered to all asymptomatic residents, regardless of their vaccination status and unvaccinated staff
- chemoprophylaxis is maintained for at least 2 weeks in staff who are vaccinated during the outbreak and in all residents until the outbreak is declared over.
4.7 Monitoring the outbreak
Monitoring of the outbreak must include ongoing surveillance to identify new cases and update the status of ill residents and staff. The facility OIMT representative will update the line listing with new information and communicate this to a designated person. The review of the updated information should examine the issues of ongoing transmission, and the effectiveness of control measures, including prophylaxis. Changes in the outbreak control measures may be indicated from the review of the data. Additional laboratory testing may be indicated as well. If new cases continue to be identified, prophylaxis failure (virus resistance) or a new organism causing infections must be considered.

Regarding updating of the line listing, the following data should be considered:

**Residents**
- addition of new cases with all appropriate information
- identification of residents who have recovered
- updating of status of ill residents, including notation of issues such as worsening symptoms, clinical and/or x-ray diagnosis of pneumonia
- adverse reaction to any prescribed antiviral prophylactic medication, or discontinuation of antiviral prophylactic medication
- transfers to acute-care hospitals
- deaths

**Staff**
- addition of new staff cases including all appropriate information
- identification of staff who have recovered and confirmation with the PHU of return to work date

4.8 Declare that the outbreak is over

4.8.1 Definition of end of outbreak
Prior to declaring an outbreak over, the facility must not have experienced any new cases of infection (resident or staff) which meet the case definition for the period of time as defined by the OIMT. As a general rule, influenza outbreaks can be declared over if no new cases have occurred in 8 days from the onset of symptoms of the last resident case. The rationale for this definition is that if the outbreak were continuing, new cases would have been identified within 8 days, since 8 days is the outer limit of the period of communicability of influenza in adults (5 days) plus one incubation period (3 days). Note that if symptoms in the last resident case resolve sooner than 5 days, or if the last case is a staff
member who should stay at home during the period of communicability, the time until the outbreak is declared over can be shortened accordingly.

4.8.2. Ongoing surveillance
The OIMT may make decisions about ongoing surveillance needs after declaring the outbreak over. Ongoing surveillance may include:

- maintenance of basic infection control measures as outlined earlier in section 4.6.
- monitoring the status of ill residents, and updating the line listing
- notation of any deaths that occurred, including whether they had been a case.

4.8.3. Notify relevant individuals
Once the outbreak has been declared over, all individuals notified of the outbreak at the beginning of the investigation are to be notified that the outbreak is over.

4.8.4 Complete the outbreak investigation file
An outbreak file should contain the following:

- copies of laboratory and other results
- copies of all minutes of meetings and other communications
- any other documentation specific to the investigation and management of the outbreak.

Complete an outbreak report and prepare a summary for the manager of the facility.

4.9 Debriefing
Arrange a meeting with the OIMT and also a meeting with the facility staff to review the course and management of the outbreak. The purpose of these meetings is to review what was handled well and what could be improved for future outbreaks.
Chapter 5: References

1. Deguchi Y, Takasugi Y and Nishimura K. Vaccine effectiveness for influenza in the elderly in welfare nursing homes during an influenza A (H3N2) epidemic. Epidemiology and Infections 2000; 125; 393-397.


Appendices
APPENDIX 1: Environmental Cleaning

Influenza virus is inactivated by 70% alcohol and by chlorine, therefore cleaning of environmental surfaces with a neutral detergent followed by a disinfectant solution is recommended:

Table 1: Disinfectants

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Recommendation</th>
<th>Precautions</th>
</tr>
</thead>
</table>
| Sodium hypochlorite: 1% dilution, 5% solution to be diluted 1:5 in clean water | Disinfection of surfaces contaminated with blood and body fluids (for surfaces on which bleach cannot be used, see below) | • Should be used in well-ventilated areas  
• Protective clothing required while handling and using undiluted bleach  
• Do not mix with strong acids to avoid release of chlorine gas  
• Corrosive to metals |
| Bleaching powder: 7g/litre with 70% available chlorine | Toilets/bathrooms: may be used in place of liquid bleach if this is unavailable | • Same as above |
| Alcohol (70%): Isopropyl, ethyl alcohol, methylated spirit | Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used | • Flammable, toxic, to be used in well-ventilated area, avoid inhalation  
• Keep away from heat sources, electrical equipment, flames, hot surfaces  
• Allow to dry completely, particularly when using diathermy as this can cause diathermy burns |

Note: clothes and bed linen can be laundered as usual.
APPENDIX 2: Respiratory Outbreak Control Measures

Outbreak Control Measures

- **Staff**
  - Excluding all staff until 5 days after the onset of symptoms.

- **Admissions**
  - Resident sent to hospital with influenza-like illness.
  - New resident or in hospital prior to outbreak.

- **Visitors**
  - Ensure signage is in place.
  - Visitors are required to wash hands.

- **Visitors**
  - Yes: No visiting.
  - No: Only visit friend/relative in their own room AND wash hands.

- **Residents**
  - Ill: Not ill and informed of risk.
  - Not ill and informed of risk: Exclude all staff until 5 days from onset of symptoms.

- **Cases**
  - Vaccination of all unvaccinated residents & staff.
  - Use of antivirals.

- **Resident Cases**
  - Vaccination of all unvaccinated residents & staff.
  - Use of antivirals.

- **Use of Antivirals**
  - Treatment.
  - Prophylaxis.

- **Restriction of Activities**
  - No admission of new residents until outbreak is over.

- **Infection Control Precautions**
  - Hand washing, gloves, masks, environmental cleaning.

Guidelines for the Control of Influenza Outbreaks in Residential Care Facilities 35
### APPENDIX 3: Checklist for Public Health Unit for Investigation and Management of Outbreaks

<table>
<thead>
<tr>
<th>No</th>
<th>Discussion point</th>
<th>Decision/Action to be taken (Tick if completed)</th>
<th>Person responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formulate an outbreak name and working case definition</td>
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</tr>
<tr>
<td>2</td>
<td>Define population at risk</td>
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<tr>
<td>3</td>
<td>Active case finding, request linelisting of residents and staff from the RCF</td>
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<tr>
<td>4</td>
<td>Discuss whether it is a facility-wide outbreak or unit-specific outbreak</td>
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<tr>
<td>5</td>
<td>Confirm how and when communications will take place between the facility and the PHU.</td>
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</tr>
<tr>
<td>6</td>
<td>Review the control measures necessary to prevent the outbreak from spreading. Confirm that the management of the facility is responsible for ensuring that agreed control measures are in place and enforced.</td>
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<tr>
<td>7</td>
<td>Discuss what specimens have been collected. Notify the laboratory of the investigation.</td>
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<tr>
<td>8</td>
<td>Confirm the type and number of further laboratory specimens to be taken. Clarify which residents and staff should be tested.</td>
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<tr>
<td>9</td>
<td>Confirm that the laboratory will phone or fax results (both positive and negative) directly to the requesting doctor and this person will notify the PHU. Review the process for discussing laboratory results with the facility’s designated officer.</td>
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<tr>
<td>10</td>
<td>Liaise with the facility and laboratory regarding specimen collection and transport.</td>
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<tr>
<td>11</td>
<td>Identify persons/institutions requiring notification of the outbreak: • Families of ill or all residents in the facility, • Health care providers, e.g., GPs, physiotherapists • Infectious disease physicians • Infection control practitioners • Emergency departments and medical superintendents • Coroner’s office • Other RCFs</td>
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<tr>
<td>12</td>
<td>Discuss whether a media release is appropriate.</td>
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<td></td>
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<td>13</td>
<td>Consider preparing a ministerial briefing.</td>
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<tr>
<td>14</td>
<td>Discuss whether/how to organise vaccination of un-immunised residents and staff.</td>
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<tr>
<td>15</td>
<td>Discuss the use of antiviral medications for treatment of cases and/or prophylaxis of well residents and un-immunised staff.</td>
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<tr>
<td>16</td>
<td>Decide how frequently the OIMT will meet and set next meeting.</td>
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<tr>
<td>17</td>
<td>Prepare and distribute an incident report</td>
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</tbody>
</table>
APPENDIX 4: Part A – Respiratory Outbreak Line Listing Form - Residents ONLY *

Name of Facility:  
Name of Outbreak:  

* Please complete for all current and recovered cases

<table>
<thead>
<tr>
<th>DETAILS</th>
<th>SYMPTOMS</th>
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</thead>
<tbody>
<tr>
<td>ID</td>
<td>Surname, First Name</td>
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Key: (Y=Yes, N=No, U=Unknown)
### APPENDIX 4: Part B -- Residents ONLY

**Name of Facility:**

**Name of Outbreak:**

<table>
<thead>
<tr>
<th>ID</th>
<th>TEST/ RESULT</th>
<th>TREATMENT / PROPHYLAXIS</th>
<th>OUTCOMES</th>
<th>Recovered to pre-outbreak health status (yes/no) If yes - date</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pathology test done (yes/no) If yes, date</td>
<td>Type of test and result</td>
<td>Oseltamivir (date)</td>
<td>Zanamivir (date)</td>
</tr>
<tr>
<td></td>
<td>Pathology test done (yes/no) If yes, date</td>
<td>Type of test and result</td>
<td>Oseltamivir (date)</td>
<td>Zanamivir (date)</td>
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<td></td>
<td>Pathology test done (yes/no) If yes, date</td>
<td>Type of test and result</td>
<td>Oseltamivir (date)</td>
<td>Zanamivir (date)</td>
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<tr>
<td></td>
<td>Pathology test done (yes/no) If yes, date</td>
<td>Type of test and result</td>
<td>Oseltamivir (date)</td>
<td>Zanamivir (date)</td>
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**Key:** (Y=Yes, N=No, U=Unknown)
### APPENDIX 5: Part A Respiratory Outbreak Line Listing Form - Staff ONLY

Name of Facility: 
Name of Outbreak: 

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<thead>
<tr>
<th>ID</th>
<th>Surname, Firstname</th>
<th>Position</th>
<th>Location</th>
<th>Sex</th>
<th>Age</th>
<th>Flu vaccine (date)</th>
<th>Onset (date)</th>
<th>Fever = or &gt; 38°C (Y/N)</th>
<th>Cough (Y/N)</th>
<th>Fatigue (Y/N)</th>
<th>Other Symptoms (state)</th>
<th>Work at any other facility (yes/no) If yes - location</th>
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Key: (Y=Yes, N=No, U=Unknown)

* Please complete for all current and recovered cases
APPENDIX 5: Part B -- Staff ONLY *

Name of Facility:  
Name of Outbreak:  

<table>
<thead>
<tr>
<th>ID</th>
<th>TESTS/RESULTS</th>
<th>TREATMENT (T) / PROPHYLAXIS (P)</th>
<th>STATUS</th>
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<tr>
<td></td>
<td>Pathology tests done (yes/no)</td>
<td>Type of test (date and result)</td>
<td>Oseltamivir (T/P, date)</td>
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Key: (Y=Yes, N=No, U=Unknown)

* Please complete for all current and recovered cases
APPENDIX 6: Influenza & Pneumococcal Immunisation Survey

Complete this survey and return it to the Public Health Unit. (Fax Number________________ Telephone Number________________

Name of Manager/Contact Person at Facility ________________________________

<table>
<thead>
<tr>
<th>Name and Type of Residential Care Facility</th>
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<thead>
<tr>
<th>Address</th>
<th>Telephone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Residents by Unit/Section Total</th>
<th>Number of Staff by Unit/Section Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Influenza vaccination (Current season)</th>
<th>Pneumococcal vaccination (within past 5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. residents vaccinated</td>
<td></td>
</tr>
<tr>
<td>No. residents not vaccinated</td>
<td></td>
</tr>
<tr>
<td>No. residents vaccination status unknown</td>
<td></td>
</tr>
<tr>
<td>No. staff vaccinated</td>
<td></td>
</tr>
<tr>
<td>No. staff unvaccinated</td>
<td>N/A</td>
</tr>
<tr>
<td>No. staff vaccination status unknown</td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX 7: Sample Collection Guide *

<table>
<thead>
<tr>
<th>Viral Pathogens</th>
<th>Test</th>
<th>Specimen</th>
<th>Equipment required to collect Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza A and B Parainfluenza 1,2,3 RSV Adenovirus Picornavirus Metapneumovirus</td>
<td>PCR or Viral Culture</td>
<td>Throat and nose (Left and right nostril) swabs Nasopharyngeal aspirate (NPA) / Nasopharyngeal swab</td>
<td>PCR/culture collection kit • Virus transport media • Cotton-tipped swabs • Biohazard plastic bags • Wooden spatulas • Gloves • Masks • Marker pen • Esky with multiple ice bricks • Request forms • Swab collection instructions • Tissues • Plastic bag (for rubbish)</td>
</tr>
<tr>
<td>Influenza A and B Parainfluenza 1,2,3 RSV Adenovirus</td>
<td>Immunofluorescence</td>
<td>Nasopharyngeal aspirate (NPA) / Nasopharyngeal swab Throat and nose (Left and right nostril) swabs</td>
<td>• NPS collection swabs or NPA aspirate equipment • Biohazard plastic bags • Gloves • Masks • Marker pen • Esky with multiple ice bricks • Request forms • NPA collection instructions • Tissues • Plastic bag (for rubbish)</td>
</tr>
<tr>
<td>Influenza A and B Parainfluenza 1,2,3 RSV Adenovirus</td>
<td>Serology</td>
<td>Acute sera: within 1 week of onset. Convalescent sera: 2-4 weeks after onset. Influenza seroconversion may be missed if the convalescent specimen is obtained within 2 weeks of the onset of illness.</td>
<td>10 ml clotted blood</td>
</tr>
</tbody>
</table>

* Please check with laboratory in relation to any specific requirements
APPENDIX 8: Guidelines for Taking Nasal and Throat Swabs

The person taking nasal or throat swabs should be wearing appropriate PPE (gloves, gown, mask, eyewear).

Nasal Swabs - Method
- Ensure that the patient does not blow his/her nose prior to taking the nasal swabs
- Tilt patients head back gently and steady the chin
- Insert cotton bud end of dry sterile swab into right nostril and rub firmly against the turbinate (to ensure swab contains cells as well as mucus)
- Insert swab into tube of transport medium, break off shaft of swab and recap tube
- Repeat procedure for left nostril using new sterile swab and insert into same tube of transport medium.

Throat Swabs - Method
- Ask patient to open mouth and stick their tongue out
- Use tongue spatula to press the tongue downward to floor of the mouth
- Use sterile cotton swab to swab both of the tonsillar arches and the posterior nasopharynx, without touching the sides of the mouth
- Insert swab into same transport tube containing nose swabs, break off shaft and recap tube firmly.

Transport to laboratory
Label the transport tube with the patient’s initials, date of birth, case number and date of collection.
Place all transport tubes in a plastic bag and complete request form making sure to include the name of the Facility. The plastic bag containing specimens should be packaged in an esky with ice bricks and sent to the laboratory as soon as possible. If necessary arrange transport with the Public Health Unit.
APPENDIX 9: Respiratory outbreak transfer notification

Resident Transfer Advice

To:

Please be advised that __________________________ is being transferred
from a facility where there is a suspected confirmed influenza outbreak. Please ensure that appropriate infection control precautions are taken upon receipt of this resident.

At the time of transfer, this resident was confirmed with suspected of had no symptoms of influenza.

This resident has been vaccinated with the current influenza vaccine on _______________________.

This resident has NOT been vaccinated with the current influenza vaccine BECAUSE OF:

- allergy
- medication conflict
- conscientious objection
- other ___________________________

Resident is taking the antiviral medication _____________________________.

Start date ______________________ Dose of the medication _______________________

For further information, contact ____________________________ of _______________________

Name of resident Name of Medication

Date

Name of Medication

Start date

Dose of the medication

Name of contact

Name of facility

Phone number
ATTENTION ALL VISITORS

There have been a number of cases of respiratory illness/influenza at this facility recently. We are trying to prevent this illness from spreading.

Visitors are advised that there is a risk of acquiring this respiratory illness/influenza by visiting this facility at this time.

If you have recently been ill, have symptoms of any respiratory illness now (fever, sore throat, cough, muscle and joint pain, tiredness/exhaustion) or have been in contact with someone who is ill we strongly advise you not to enter this facility.

If you choose to visit at this time, please visit only the resident you have come to see, wash your hands with soap and water before and after the visit and then leave as soon as possible.

Thank you for your co-operation

Sincerely

Manager/DoN
APPENDIX 11: Visitor Restriction Sign - Room

Attention all visitors

Please check at reception before entering this room.

Thank you

Insert name of manager,
Insert date of sign
### APPENDIX 12: Antiviral medications for treatment and prophylaxis of influenza

*(this information was correct at the time of printing)*

<table>
<thead>
<tr>
<th>Antiviral agent</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amantadine</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>Not recommended</td>
</tr>
<tr>
<td>Prophylaxis*</td>
<td>5 – 9 years: 5 mg / kg / day in 2 divided doses, up to 150 mg / day</td>
</tr>
<tr>
<td></td>
<td>10 – 64 years: 100 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>≥ 65 years: 100 mg once daily</td>
</tr>
<tr>
<td><strong>Oseltamivir</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>1-13 years: ≤ 15 kg: 30 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>&gt;15 to 23 kg: 45 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>&gt;23 to 40 kg: 60 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>&gt; 40 kg: 75 mg twice daily</td>
</tr>
<tr>
<td>Prophylaxis*</td>
<td>≥ 13 years: 75 mg twice daily for 5 days</td>
</tr>
<tr>
<td></td>
<td>≥ 13 years: 75 mg once daily for 7 days</td>
</tr>
<tr>
<td><strong>Zanamivir</strong>&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>≥ 5 years: 10 mg twice daily for 5 days</td>
</tr>
<tr>
<td>Prophylaxis</td>
<td>≥ 5 years: 10 mg once daily for 10 days</td>
</tr>
<tr>
<td></td>
<td>(may continue to 28 days of necessary)</td>
</tr>
</tbody>
</table>

1. The Product Information should be consulted for dosage recommendations in renal impairment.
2. A reduction in the dose of oseltamivir is recommended for persons with creatinine clearance <30 ml / min or weight <40kg.
3. 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.

* In an outbreak situation prophylaxis should be continued till the outbreak is declared over
APPENDICES 13 and 14:

Please note the attached letters are a guide and a resource which the Public Health Unit may modify to fit local circumstances
Manager’s name and title\RCF Address

Dear

I am writing in response to recent reports of respiratory infections/influenza affecting some residents at your facility. To help determine the cause and prevent the spread of respiratory infections at your facility, the following immediate measures are recommended:

1. Implement appropriate infection control precautions (see attached “Respiratory Outbreak Control Measures” chart)

2. Arrange for nose and throat swabs to be taken from residents and staff that have developed symptoms of respiratory illness within the previous 48 hours. These swabs should be submitted for laboratory testing for common respiratory pathogens such as influenzavirus, parainfluenzavirus, rhinovirus, respiratory syncytial virus and human metapneumovirus (see attached “Guidelines for Taking Nasal and Throat Swabs”. Please contact us if you need to discuss arrangements for swab collection with you.

3. Record the status of the symptoms, influenza and pneumococcal vaccination, antiviral therapy / prophylaxis, and clinical outcomes for each resident and staff member who are or have been at the facility on the attached “Respiratory Outbreak Line Listing” Forms.

4. Notify all staff members (including attending doctors) of the outbreak, including the response measures recommended in the attached chart “Respiratory Outbreak Control Measures”. Attached is a draft letter that can be used to inform health care providers about the outbreak.

5. Notify the families of ill residents to advise them about the outbreak and visiting restrictions.

If the laboratory results indicate an outbreak of influenza, antiviral therapy or prophylaxis for residents and/or staff may be recommended. Also any residents and staff who have not received influenza vaccination this year should immediately be offered vaccination. Please note that antiviral therapy should be prescribed for each patient by their attending medical practitioner according to the recommendations in the Product Information.

For more information or advice, please contact: _____________ (b/h) or _____________ (a/h)

Yours sincerely

Director
Public Health Unit
NOTE – Please print this text onto a Public Health Unit letterhead

Dear Doctor

The (NAME OF PUBLIC HEALTH UNIT) was recently notified about a suspected cluster of respiratory infections affecting residents at (RCF NAME).

- To reduce the spread of the suspected respiratory infection, we have recommended that the facility immediately implement infection control precautions including:
  - Isolation of symptomatic residents for 5 days from onset of symptoms or until symptoms have resolved,
  - Exclusion of symptomatic staff for 5 days from onset of symptoms or until symptoms have resolved.
  - Restriction of visitors to the facility until the outbreak has resolved,
  - Promotion of thorough hand washing with soap and water (or alcohol-based hand wipes) before and after contact with residents and
  - Use of gloves, masks and eye wear when providing direct care to ill residents.

To determine the cause of respiratory infections we recommend that nose and throat swabs are collected on residents and staff that have developed symptoms within the previous 48 hours. These swabs will be tested for common respiratory viruses (your assistance may be required for this and if so the facility may contact you).

If the laboratory results indicate an outbreak of influenza, then antiviral therapy or prophylaxis for residents and staff may be recommended (regardless of vaccination status). Influenza vaccination should be recommended for all unvaccinated residents, attending health care providers, staff members and visitors.

The three antivirals currently licensed in Australia are: amantadine, which is approved for the prophylaxis of influenza A only and zanamivir and oseltamivir, which are approved for both the treatment and prophylaxis of influenza A and B.

Please note that antiviral therapy should be personalised for each patient according to the dosage recommendations and potential adverse reactions described in the Product Information. Also please note that none of these three antivirals are currently listed in the Pharmaceutical Benefits Scheme for this indication.

In regards to prophylaxis, this will need to be given until the outbreak is declared over.

For more information or advice, please contact: _____________ (b/h) or _____________ (a/h)

Yours sincerely

Director
Public Health Unit
APPENDIX 15: Glossary and List of Abbreviations

Residential Care Facility
Residential care facilities (RCFs), which include nursing homes and hostels, are considered to be especially high-risk environments for influenza, due to the older age, high prevalence of chronic medical conditions, and close proximity of the residents.

Staff
All persons who carry on activities in the RCF, including but not limited to employees, students, attending physicians, and both health care and non-health care contract workers.

Contract Worker
Contract workers from a supplying agency such as health care workers, maintenance workers (e.g., cleaner, repair, etc.) and other workers who carry on activities in resident care areas or come into contact with residents (e.g., hairdressers).

Visitors
Visitors are relatives or friends of residents who visit usually one (the same) resident occasionally or on a regular basis.

Incubation Period
The time interval between initial contact with an infectious agent and the first appearance of symptoms associated with the infection. For influenza, the incubation period is 1-3 days.

Infection Control Practitioner
A person designated to be responsible for infection control programs in the facility.

List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCF</td>
<td>residential-care facility</td>
</tr>
<tr>
<td>PHU</td>
<td>public health unit</td>
</tr>
<tr>
<td>AMPPI</td>
<td>Australian Management Plan for Pandemic Influenza</td>
</tr>
<tr>
<td>DoHA</td>
<td>Department of Health and Ageing</td>
</tr>
<tr>
<td>CDNA</td>
<td>Communicable Disease Network Australia</td>
</tr>
<tr>
<td>NPHP</td>
<td>National Public Health Partnership</td>
</tr>
</tbody>
</table>
AHMAC   Australian Health Ministers Advisory Council
GBS     Guillain-Barre Syndrome
IFA     immunofluorescence assay
NPA     nasopharyngeal aspirate
OMIT    outbreak management and investigation team
PCR     polymerase chain reaction
RSV     respiratory syncytial virus
TGA     Therapeutics Goods Administration
VIDRL   Victorian Infectious Diseases Reference Laboratory
WHO     World Health Organization