



A Practical Guide to assist in the
Prevention and Management of Influenza Outbreaks
in
Residential Care Facilities in Australia

May 2009

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CDNA is a subcommittee of the Australian Health Protection Committee, which reports to the Australian Health Ministers' Advisory Council.

This practical guide was developed in January 2009.

Disclaimer

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

These guidelines capture the knowledge of experienced professionals, build on past research efforts, and provide advice on best evidence-based practice 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.

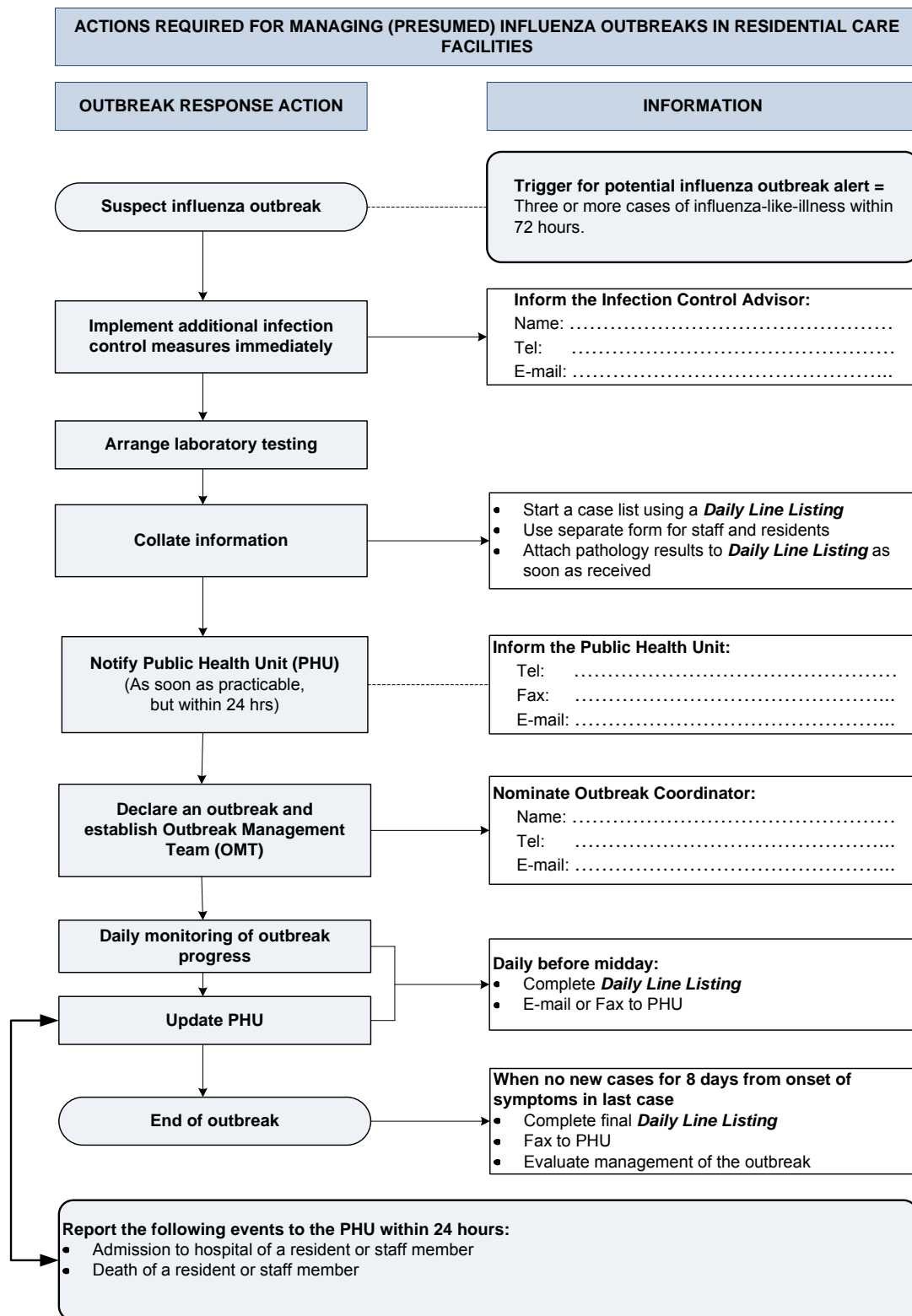
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Outbreak management flowchart



Notes: For further clarification of the actions in the flow chart, refer to relevant section of the guidelines (Chapter 5).

Several actions may be proceeding simultaneously, especially early in the outbreak.

Introduction

The purpose of this document is to provide national best practice guidelines for preventing, preparing for, defining and managing outbreaks of influenza in Residential Care Facilities (RCFs) in Australia during interpandemic periods. The primary responsibility of managing the outbreak lies with the RCF involved, given their responsibilities for resident care and infection control. Local Public Health Units should provide advice as required and input to assist these facilities in confirming, investigating and managing the outbreak.

For the purpose of this document, 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 this document is primarily intended to apply to RCFs, many of the principles are applicable to other settings such as hospitals, cruise ships, military barracks and boarding schools.

This document has been prepared for the interpandemic period recognising that in a national influenza pandemic alert or pandemic period, outbreak control will be determined by the Australian Health Management Plan for Pandemic Influenza (AHMPPI).

Chapter 1 General information about influenza

Why is influenza important for residential care facilities?

What is influenza, what are the symptoms, how is it transmitted, and who is at increased risk from complications?

What legislation is relevant to management of influenza in residential care facilities?

Influenza in residential care facilities

- Residential care facilities 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.
- In outbreaks of influenza-like illness reported in 12 RCFs in NSW in 2004, attack rates in residents varied from 3% to 76% and death rates varied from 0% to 20%.¹

Laboratory confirmed influenza is a notifiable disease in all Australian states and territories.

Influenza

Influenza is an acute, highly infectious respiratory viral infection characterised by the following: ¹

- Symptoms develop rapidly, 1–3 days after exposure.
- Initial symptoms may be similar to those of other respiratory infections.
- Uncomplicated influenza illness typically resolves after 3–7 days for the majority of people, although cough and malaise can persist for >2 weeks.
- Influenza virus infections can cause primary viral pneumonia; exacerbate underlying medical conditions (e.g. pulmonary or cardiac disease); lead to secondary bacterial pneumonia, sinusitis, or otitis media; or contribute to coinfections with other viral or bacterial pathogens.²
- Two major types (A and B) affect humans.³ Both influenza A and B viruses undergo frequent changes in their surface antigens, giving rise to new circulating strains of influenza.
- Vaccine targeting influenza A and B strains is available annually (from February). The vaccine formulation is reviewed annually in an attempt to keep abreast of new circulating strains.
- Influenza occurs in seasonal epidemics. Across most of Australia, influenza occurs seasonally, from winter to early spring. In northern Australia, there is a second peak in late summer/autumn.

¹ Infection Control Guidelines for the prevention of transmission of infectious diseases in the health care setting, A2-2. Available from: www.icg.health.gov.au

² Prevention and Control of Influenza. *MMWR Rep Recommen* 13 July 2007;56(RR06):1–54. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5606a1.htm>

³ Infection Control Guidelines for the prevention of transmission of infectious diseases in the health care setting, p28–17. Available from: www.icg.health.gov.au

Symptoms

The classic features of influenza are:

sudden onset of fever ($\geq 38^{\circ}\text{C}$) PLUS
cough and/or other respiratory symptoms (e.g. shortness of breath) PLUS
one or more systemic symptom/s (fatigue, muscle soreness, headache).

Other symptoms may include

sore throat
stuffy/runny nose.

Symptoms in the elderly may also include:

onset of or increase in confusion
exacerbation of chronic obstructive pulmonary disease
loss of appetite.

The group of symptoms of fever/chills, cough and fatigue with or without muscle pain are often called “influenza-like illness”, or “ILI”.

Transmission

- Influenza is spread by droplets from coughs or sneezes of an infected person and through contaminated surfaces.
- Individuals are usually infectious for 3–5 days after symptoms develop and may be infectious 1 day before symptoms appear.

People at increased risk of complications from influenza include:⁴

- those aged 65 years of age and over
- all Aboriginal and Torres Strait Islander people ≥ 15 years of age
- individuals with conditions predisposing to severe influenza (e.g. cardiac disease, chronic respiratory conditions)
- those with chronic illnesses such as diabetes melitis, chronic renal failure and impaired immunity including immune suppressing treatments such as long-term steroid treatment
- pregnant women
- residents of long-term care facilities
- homeless people.

Legislation

It is the responsibility of facility management to identify relevant state/territory legislation and regulations and ensure ongoing compliance with these. The relevant State and Territory guidelines

⁴ National Health and Medical Research Council. *The Australian Immunisation Handbook*, 9th edition. Canberra: 2007.

set out the responsibilities for reporting and managing outbreaks of infectious diseases, and these should be used. This document is an additional resource for Public Health Units and residential care facilities.

Specifically, all health care establishments including residential care should fulfil their legal responsibilities in relation to infection control by adopting standard and additional precautions for infections as directed in *Infection Control Guidelines for the Prevention of Transmission of Infectious Diseases in the Health Care Setting*.

In addition, aged care facilities operate under the *Aged Care Act 1997* and are required to be accredited to be eligible for funding. An effective infection control program is one of the 44 expected outcomes relating to quality of care and quality of life that facilities are required to implement.

Chapter 2 Outline of interventions and roles

What are the key interventions for the prevention and management of influenza outbreaks in residential care facilities?

What are the roles of residential care facilities in preventing and managing influenza outbreaks?

How can Public Health Units assist and support residential care facilities to manage influenza outbreaks?

The four key interventions for the prevention and management of influenza outbreaks in residential care facilities described in this document are:

1. Vaccination of residents and staff
2. Application of appropriate infection control practices
3. Outbreak recognition and management (including laboratory confirmation, and use of antiviral medication for treatment and prophylaxis of staff and residents, where practicable and appropriate)
4. Policy development and planning to support and enable steps 1 to 3.

Role of the Residential Care Facility

Vaccination

- Ensure annual influenza vaccination for residents (target vaccination rate 100%)
- Achieve high rate of annual influenza vaccination for staff (target 90%)
- Keep an up-to-date line listing of all vaccinated residents and staff
- Provide accessible influenza vaccination clinics for staff if necessary
- Ensure eligible residents are appropriately vaccinated with pneumococcal vaccine (23vPPV)⁵
- Develop a staffing contingency plan if vaccination uptake among staff is below 85%
- Advise outside agencies that provide staff to the RCF of the vaccination policies.

Infection control

- Ensure that infection control programs are in place
- Provide annual in-service education for staff on infectious diseases including respiratory viral infections
- Develop infection control policies, including an outbreak contingency plan

⁵ Refer to the current edition of *The Australian Immunisation Handbook*

- Develop policies and protocols to support influenza outbreak preparedness and response.

Outbreak recognition and management

- In consultation with relevant health care providers/organisations associated with the RCF, develop an outbreak management plan that includes:
 - the role of visiting health professionals especially general practitioners (GPs)
 - how to access medical care on weekends and public holidays during outbreaks
 - plans for transfer and communication with receiving facilities, should infectious patients require hospitalisation or other care
 - relevant contact details including the local Public Health Unit.
- Implement processes to maintain currency of the plan including review at least annually and when major staff changes occur.
- Develop surveillance systems to:
 - monitor symptoms of influenza-like illness (ILI) in residents particularly during the influenza season, to enable early identification of outbreaks
 - monitor ILI in staff and visitors.
- Have procedures in place for timely collection of appropriate specimens.
- Have policy and procedures in place, endorsed by visiting GPs, for antiviral use. This may include either standing orders or arrangements to obtain prescriptions urgently.
- Consult with local Public Health Unit promptly when there is suspicion of an outbreak.
- In an outbreak, activate an Outbreak Management Team (OMT) and ensure OMT members understand their roles and responsibilities.

Role of the Public Health Unit

- Advocate for and, where appropriate, facilitate influenza vaccination of residents and staff
- Provide information and advice to support the development of an influenza outbreak management plan
- Assist in the investigation and confirmation of a suspected outbreak, and the management of a confirmed outbreak
- Be accessible to the RCF so as to establish good two-way communication between the Public Health Unit and the RCF about all aspects of the RCFs infection control program.

Chapter 3 Vaccination⁶

Why is influenza vaccination recommended for residents and staff of RCFs?

Who else should have influenza vaccination?

Vaccination policy

Annual influenza vaccination is recommended for all residents and staff of resident care facilities, unless contraindicated. Annual influenza vaccination is also recommended for regular visitors.

Pneumococcal vaccination is recommended for those who are eligible according to the current edition of *The Australian Immunisation Handbook*.

During an influenza outbreak, vaccination should be offered to unvaccinated staff and residents, and should be recommended for any necessary visitors to the facility.

Residents

Annual influenza vaccine is recommended for residents of RCFs because:

- many (including all aged 65 years and over) are at increased risk of complications from influenza; and
- there are high rates of transmission causing outbreaks when influenza occurs in RCFs.

Residents may also be recommended to have pneumococcal vaccine: refer to the current edition of *The Australian Immunisation Handbook*.

(<http://www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook-home>)

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

Staff and visitors

Annual influenza vaccine is recommended for all staff of RCFs because:

- introduction of influenza to the facility by a member of staff may lead to an outbreak;
- staff can transmit influenza to high risk residents;
- vaccination of staff provides extra protection to residents at high risk; and
- staff working in multiple RCFs may transmit influenza between facilities.

For the same reasons, annual influenza vaccination is recommended for any other people capable of transmitting influenza to residents of RCFs. This may include students, attending doctors, both health

⁶ Refer to the current edition of *The Australian Immunisation Handbook* and Product Information for full information on administering influenza and pneumococcal vaccines.

care and non-health care contract workers, volunteers and visiting family members. The RCF should inform visitors of the recommendation that they receive annual influenza vaccination for the protection of residents and the prevention of outbreaks.

Policies

RCFs need to have an influenza and pneumococcal vaccination policy. RCFs should ensure their vaccination policies are updated and implemented each year.

Documented evidence of vaccination status for new staff and residents is necessary. If documented evidence is not available, and it is during the influenza season, the RCF should promote staff vaccination or even provide a subsidised program to ensure all staff who consent to vaccination have access.

Vaccination during an outbreak

During influenza outbreaks, influenza vaccine should be offered to all unvaccinated residents and staff, and recommended for unvaccinated visitors. It takes about two weeks to develop a protective immune response.

Chapter 4 Infection control

What are the key infection control measures relevant to prevention and management of influenza outbreaks in RCFs?

Successful infection control is based on good hygiene around a range of practices that arise from identifying and implementing risk management of the hazards.¹

An effective infection control program for influenza should address the following:

Under usual operating conditions:

- hand hygiene and personal hygiene; additional precautions (droplet transmission)
- education of staff, residents and volunteers; and opportunistic education of visitors

During an outbreak:

- increased personal protective measures
- isolation of residents
- restrict opportunities for transmission, including exclusion of infectious staff
- environmental measures
- control of movements

Infection control measures to prevent spread of influenza include:

1. Hand hygiene, sneeze and cough etiquette, and additional precautions (droplet transmission)

Influenza virus is primarily transmitted by large respiratory droplets. Encourage residents with respiratory symptoms to cover their cough or sneeze, use tissues and dispose of them appropriately. When staff are providing direct patient care, residents with a potentially infectious cough should be assisted to use a surgical mask if tolerated. Staff with influenza or influenza-like illness should take sick leave.

As with many respiratory viruses, the influenza virus can be spread by hands, underlining the importance of frequent and thorough hand washing with soap and/or alcohol hand gel and thorough hand drying using a single-use towel. Some organisms can remain viable for up to 24 hours after landing on hard surfaces. Increased environmental cleaning will help interrupt disease transmission.

2. Education

The facility should provide ongoing education to staff, residents and volunteers, and opportunistic education to residents' families and visitors about infection control and outbreak prevention and related policies.

Topics to include in education programs for all staff and residents are:

- personal hygiene, particularly handwashing, sneeze and cough etiquette
- appropriate Personal Protective Equipment (PPE) such as gloves, gowns, eye protection and masks

- persons experiencing symptoms of infection should not be working/visiting the RCF
- appropriate handling and disposal of sharps and clinical waste
- appropriate processing of reusable equipment
- appropriate environmental cleaning
- appropriate laundry and food handling processes.

And, in the event of a suspected or confirmed outbreak, further infection control measures to prevent spread of influenza include:

3. Increased personal protective measures

- maintain hand hygiene before and after contact with each resident
- wear gloves if contact with respiratory secretions or potentially contaminated surfaces is likely. Change gloves and wash hands after contact with each resident
- wear a surgical mask on entering the room of a resident with influenza. Remove mask when leaving each room and dispose of correctly. Do not reuse masks
- place a surgical mask on the ill resident, if tolerated
- wear gowns if soiling of clothes with respiratory secretions is likely. Do not reuse gowns
- eye protection should be worn where there is a potential for splattering or spraying of blood, body fluids, secretions or excretions, including coughing; undertaking aerosol-generating procedures including nasopharyngeal aspiration; and while staff are within one metre and are providing direct care to the resident. Eye protection includes the use of safety glasses, goggles and face shields. It does not include personal eye glasses.

4. Isolation of residents

- place ill residents in individual rooms (preferred), or cohort in multi-bed rooms*
- isolation should extend until 5 days after the onset of acute illness or until symptoms have completely resolved (whichever is shorter)
- use dedicated staffing and equipment where possible/practicable
- employ appropriate signage to reinforce isolation practice
- if practicable, have the ill resident wear a surgical mask during transfer and when staff are within one metre and are providing direct care to the resident.

* If a single room is not available, room sharing by residents with the same infection is acceptable

5. Restrict opportunities for transmission

- infected staff should be excluded from work for the period during which they are infectious (generally 5 days after onset of acute illness)
- limit staff movement into restricted area/s

- keep visitors to a minimum. If visits are necessary, educate the visitor about handwashing and hygiene, encourage short visits and warn the visitor of risk factors
- curtail social contacts/group activities for all residents
- during a confirmed influenza outbreak, unvaccinated staff may only return to work if they are asymptomatic and taking appropriate antiviral prophylaxis. This should be clearly stated in the RCFs influenza outbreak management policy. Antiviral use by staff should be documented. If issues arise regarding compliance with work exclusions, options should be reviewed by the Outbreak Management Team (refer to Chapter 5).

6. Environmental measures

During a suspected or confirmed influenza outbreak:

- increase cleaning measures, especially of frequently touched surfaces, with neutral detergent.
- ensure there are appropriate numbers and placement of disposal units for tissues, masks, etc
- ensure there are appropriate cleaning processes for reusable items.

6. Control of movements

Non-infected residents

In some circumstances, it may be feasible to transfer residents who are definitely not infected, to be cared for in other settings (e.g. family care, or partnering with other local RCFs). *(NB: In residential aged care settings security of tenure provisions of the Aged Care Act 1997 will need to be considered.)*

New admissions

Admissions of new residents to the affected unit during the outbreak are generally not permitted. If required, this measure may be altered as the outbreak comes under control. Changes to this outbreak measure should be made in consultation with the Public Health Unit.

Re-admission of cases

The re-admission of residents who met the case definition is permitted provided appropriate accommodation, care and infection control can be provided.

Re-admission of non-cases

The re-admission of residents who have not been line listed in the outbreak (i.e. are not known cases) is generally not permitted during an outbreak. If required, this measure may be altered as the outbreak comes under control, in consultation with the Public Health Unit. Factors to take into account if re-admission of non-cases is being considered include:

- ability to protect the readmitted resident from infection, through infection control measures, vaccination (at least 14 days previously) and antiviral medications
- adequate staff are available at the RCF to care for the re-admitted resident
- appropriate accommodation is available for the returning resident.

Transfers

- If transfer to hospital is required, notify the ambulance service and receiving hospital of the outbreak and suspected or confirmed diagnosis. A template Resident Transfer Advice form is attached as Appendix 1.

Chapter 5 Influenza outbreak recognition and management

What definitions do we use?

How can a facility respond to single or multiple cases of ILI?

What actions should be followed to manage an influenza outbreak?

Definitions

Case of influenza-like illness (ILI):

Sudden onset of fever ($\geq 38^{\circ}\text{C}$) PLUS
Cough and/or other respiratory symptoms (e.g. shortness of breath) PLUS
One or more systemic symptom/s (fatigue, muscle soreness, headache).

Note: fever is usually a dominant symptom of influenza even in the elderly, but occasionally, fever may be lower than 38°C or absent. Residents with respiratory and systemic symptoms should be tested for influenza if there are clinical suspicions.

Confirmed case of influenza:

Case of ILI with a positive laboratory test result for influenza.

Potential influenza outbreak alert:

Three or more cases of ILI in residents or staff of the facility within a period of 72 hours.

Influenza outbreak:

Three or more epidemiologically linked* cases of ILI in residents or staff of the facility within a period of 72 hours PLUS
at least one case having a positive laboratory test OR
at least two having a positive point of care test.

** Further discussed in this section*

Response to a single case of ILI in a resident of the facility

Residents with an acute illness will usually be reviewed by their usual primary care provider or delegate. Special issues to consider in medical management of ILI cases in an RCF may include:

- a low threshold for ordering laboratory tests for influenza or other pathogens as appropriate. Testing residents with ILI for influenza is critical to establish the diagnosis and enable prompt and appropriate management to reduce further spread of infection.
- antiviral medication: see Chapter 6 for details
- transfer to hospital if condition warrants. The hospital must be advised that the resident is being transferred from a facility where there is a potential or confirmed influenza outbreak. Refer to Appendix 1 for sample transfer advice letter.

The facility should also consider this an opportunity to:

- review vaccination status of residents and staff
- review infection control measures
- heighten surveillance for further cases.

Note that false negative point-of-care tests may occur. Negative point-of-care tests should be followed-up by formal laboratory testing.

Response to a single case of ILI or influenza in a member of staff

This should lead to exclusion of the staff member whilst infectious and heightened surveillance for ILI within the facility.

Response to a potential outbreak alert or outbreak⁷

When there are three or more cases of ILI in residents in a RCF within a period of 72 hours, facility management, supported by infection control or other appropriate staff, should implement the outbreak response. Proceed through Actions 1 to 4 while laboratory confirmation is sought.

There are no controlled studies defining the minimum number of cases of laboratory confirmed influenza that constitute an outbreak or the conditions that amplify spread from a single case. Three or more epidemiologically linked cases is recommended as a working definition of an influenza outbreak.

An epidemiological link is where cases occur in a physically or geographically meaningful context, indicating contact between people enabling opportunities for spread of infection. In some RCFs there may be widespread mixing of residents and staff, and the context may be the entire RCF. Three cases in the entire RCF may meet the definition of an outbreak. In other RCFs, some parts of the facility (e.g. a high dependency unit) may have little or no resident or staff contact with other parts of the facility. In that situation, three cases of influenza in completely separate sections of the facility may not indicate an outbreak. The PHU will assist the RCF to consider whether to declare an outbreak.

Actions in response to a potential outbreak alert or outbreak

1. Implement general infection control measures
2. Arrange testing of cases, if not already done
3. Collate information
4. Notify the Public Health Unit
5. Declare an influenza outbreak
6. Establish an Outbreak Management Team (OMT)
7. Call an OMT meeting
8. Monitor the outbreak
9. Declare the outbreak over
10. Complete documentation
11. Review the outbreak and debrief

⁷ Hota and McGeer. *Clin Infect Dis* 2007;45:1362–1368.

These outbreak response actions should be done in a logical progression. Several actions may be proceeding simultaneously, especially early in the outbreak.

Action 1. Implement general infection control measures

As soon as an outbreak is suspected, isolation and additional control measures should be implemented, in addition to the usual standard infection control measures.

- Notify all staff of the outbreak
- Notify all visiting Medical Officers/GPs of residents with ILI
- Warn visitors of risk
- Isolate ill residents in individual rooms, or cohort in multi-bed* rooms
- Use dedicated staffing and equipment where possible/practicable
- Ensure compliance with additional precautions (droplet transmission)
- Increase availability of PPE (gloves, masks etc)
- Use appropriate signage to support these measures
- Review group activities and cancel where considered appropriate.
- If transfer to hospital is required, notify the ambulance service and receiving hospital of the outbreak and suspected or confirmed diagnosis.

*If a single room is not available, room sharing by residents with the same infection is acceptable – this is called cohorting

Refer to Appendix 2 for advice on use of PPE.

Action 2. Arrange testing of cases, if not already done

Testing cases for influenza is critical to establish the diagnosis. In an outbreak, several people meeting the case definition should be tested (4 to 6 cases). Nose and throat swabs should be collected for virus culture/polymerase chain reaction (PCR) testing. Serology for influenza and tests for other respiratory infections (e.g. sputum for bacterial culture and urine for *Legionella* PCR) may be appropriate, as guided by the clinical picture.

Refer to Appendix 6 for a summary of laboratory diagnostic methods for confirming influenza virus infection and Appendix 5 for swab collection procedures.

Point-of-care tests (POCTs) are available for rapid, 'bedside' diagnosis of influenza (refer to Appendix 6). Although not as sensitive as other laboratory tests, POCTs have a valuable role in influenza diagnosis, as onsite testing may provide rapid information during outbreaks in RCFs. As the specificity of POCTs is high, a single positive POCT result is highly suggestive of influenza and may be adequate to trigger to an outbreak response. At the point of outbreak recognition, laboratory confirmation is recommended for both positive and negative point-of-care tests.

Step 3. Collate information

Determine the population at risk in the RCF. This will include:

- the total number of residents and the number of all staff, including casual workers and non-resident care staff, employed at the facility

- if the outbreak is restricted to a unit, the number of staff associated with that unit.

Begin a line listing (refer to Appendices 3 and 4) of residents and staff who are ill with respiratory symptoms. The line listing allows rapid assessment of the extent and nature of the outbreak. It may be expanded to include other relevant data as the investigation proceeds.

For large RCFs, keeping a separate line listing for each unit affected by the outbreak may be useful. As well, a separate line listing should be completed for staff with ILI.

Include on the line listing the following information for all residents/staff who meet the case definition.

Resident line listing:

- name of resident
- age
- location in RCF such as unit, room etc
- date of onset
- case-defining symptoms and signs
- date when isolation of resident was started
- samples taken including date and results if known (e.g. nasopharyngeal swab)
- date of laboratory confirmation
- treatment given (antibiotics or antiviral medications)
- vaccination history for influenza and pneumococcal vaccine
- status including hospitalisation/death/recovery with date.

Staff line listing:

- name of staff member
- work assignments in the RCF including notation of assigned wards/units etc
- date of onset
- case-defining symptoms and signs
- last day of work of ill staff member
- whether they work at another facility
- results of diagnostic tests if available
- treatment given (antibiotics or antiviral medications) if available
- influenza vaccination history.

Action 4. Notify the Public Health Unit

Contact the relevant state/territory Public Health Unit (refer to Chapter 8) and provide the following:

- The best available line listing (do not wait until the line listing is completed to notify the Public Health Unit). Thereafter a complete line listing should be provided to the Public Health Unit daily.

- The name and contact number of the designated person at the facility who will be the point of contact for the Public Health Unit (including after hours and weekends), and, if not the same person, the name and contact number of the primary Infection Control Practitioner or delegate at the RCF
- Description of the initial control measures that have been instituted.

Discuss with the Public Health Unit how specimens will be collected, stored and submitted to the laboratory/s. Confirm the number of laboratory specimens taken/to be taken during the initial outbreak investigation.

The Public Health Unit will:

- assist the RCF to confirm the presence of an outbreak, or identify steps to provide confirmation
- assist the RCF to identify further measures to put into place
- provide information on how specimens will be collected, stored and submitted to the laboratory/s and confirm the number of laboratory specimens to be taken during the initial outbreak investigation
- advise laboratory/s of the investigation and particulars of the suspected outbreak.

If an outbreak is confirmed, proceed to Action 5.

Action 5. Declare an influenza outbreak

The RCF declares an outbreak. The RCF should:

- arrange for an OMT meeting with designated individuals from the RCF and, where feasible or necessary, the Public Health Unit
- identify who will advise the relevant state/territory/national agencies, including the Commonwealth Department of Health and Ageing state/territory office for outbreaks in Aged Care Facilities.

Action 6. Establish an Outbreak Management

Even a relatively small respiratory outbreak in an institution is disruptive because of the risks of complications in vulnerable residents and the risk of transmission to staff. Early recognition of suspected outbreaks and swift action are essential for effective management. An OMT should be formed by the RCF to oversee and coordinate the outbreak response. The OMT directs and oversees the management of all aspects of an outbreak. Usually, the OMT will meet daily during the heat of the outbreak. Several functions are necessary within the OMT; some roles may be performed by the same person.

Chairperson

The Chairperson is responsible for co-ordinating outbreak control meetings, setting the meeting time, agenda and delegating tasks.

Outbreak Coordinator

The Coordinator ensures that all decisions of the OMT are carried out, and coordinates all activities required to investigate and contain the outbreak. This role is often given to the Infection Control Practitioner or delegate.

Secretary

The Secretary organises OMT meetings, notifies committee members of any changes, and records and distributes minutes of meetings.

Media spokesperson/s

There can be significant media interest in outbreaks in RCFs, especially if there are adverse outcomes. A media spokesperson should be designated. The individual/s assigned this responsibility are the only representatives of the OMT who should give any information to the media. The media spokesperson can be a representative from the RCF or the Public Health Unit (once it is involved) or alternatively, a spokesperson from each organisation can be selected.

Visiting General Practitioners

The role of visiting GPs on the OMT should be identified during the planning process. GPs may be available to participate in the OMT.

Timely specimen collection, communication and the implementation of appropriate control measures will minimise the impact of the outbreak and ultimately benefit both the residents and the staff. The RCF is responsible for ensuring that the following steps are carried out. Assistance from the Public Health Unit and role/responsibility clarification should be confirmed at the initial OMT meeting.

Action 7. Arrange an OMT meeting with the following agenda:

Outbreak response:

- review the line listing information to confirm an outbreak exists and ensure that all members of the team have a common understanding of the situation
- review and confirm the role of visiting GPs
- develop a working case definition
- confirm who is responsible for the ongoing monitoring of the outbreak in both residents and staff members
- confirm the arrangements for the collection and submission of specimens for laboratory analysis
- identify where specimens will be tested (private or public health laboratory). Where the public health laboratory is used, the Public Health Unit will be responsible for informing the RCF Infection Control Professional (ICP) or delegate of the results. If a public health laboratory is involved in testing, that laboratory will notify the Public Health Unit by phone, fax or email, of test results, both positive and negative. In turn, the Public Health Unit will inform the RCFs ICP or delegate. If the RCF uses its usual provider to conduct tests, test results will be conveyed to the Public Health Unit within the daily line listing sent by the RCF to the Public Health Unit.
- review the process for discussing laboratory results and control measures with Public Health Unit staff and RCF ICP or delegate
- confirm how and when daily communications will take place between the RCF and Public Health Unit. Ensure that telephone contact numbers are available for both the Public Health Unit and RCF at all times
- decide how frequently the OMT will meet and set the next meeting
- review and implement the staffing contingency plan.

Vaccination:

- review the seasonal influenza vaccination status of staff and residents
- determine if additional influenza vaccination clinics are required for unvaccinated residents or unvaccinated staff and if so, how they will be run.

Communication:

- prepare and implement a communication plan, including media release as necessary
- review and confirm local GPs, hospitals and community health workers who should receive information about the outbreak
- review and confirm any additional persons/institutions that require notification of the outbreak
- prepare internal communications for resident, family and staff groups. Determine if education sessions are required for staff members and confirm who will conduct them
- confirm the wording and placement of signs.

Infection control:

- review the control measures necessary to prevent the outbreak from spreading
- confirm the implementation of the exclusion policy for staff who refuse vaccination or antiviral medications
- develop a process for resolving conflicts about use of PPE.

Antiviral use:

- Make a decision about the use of antiviral medications for treatment of cases and/or prophylaxis of well residents and unvaccinated staff and implement that decision
- Refer to Chapter 6 for more detail.

Action 8. Monitor the outbreak

The RCF ICP or delegate will update the line listing with new information on a daily basis or if major changes occur, and communicate this to the Public Health Unit each day – this may be through daily meetings of the OMT. The updated information should be reviewed for evidence of ongoing transmission and the effectiveness of control measures and prophylaxis. Changes in the outbreak control measure may be indicated from the review of the data. Some control measures may be lifted as the outbreak comes under control or alternatively other measures may be added if the outbreak is not being controlled successfully. If new cases continue to be identified, adequacy of control measures, antiviral failure or a new organism causing infections must be considered.

Ongoing resident surveillance should include all of the following:

- addition of all new cases
- updated status of ill residents: hospitalised, recovered, deceased
- adverse reaction to any prescribed antiviral prophylactic or treatment medication, or discontinuation of antiviral prophylactic medication.

Ongoing staff surveillance should include all of the following:

- addition of all new staff cases
- identification of staff who have recovered, and confirmation with the Public Health Unit of return to work date.

The OMT should review all control measures and consider seeking specialised advice if:

- control measures are not decreasing the rate of new cases
- there are more than 10 cases
- there have been more than 3 hospitalisations
- there has been an influenza-related death.

Specialised advice is available from the following sources:

- Infection Control Practitioners may be available for advice from local hospitals or state and territory health departments
- Geriatricians or Infectious Disease Physicians for specialist management of complex infections.

Action 9. Declare that the outbreak is over

The RCF has the responsibility for declaring the outbreak is over.

The length of time from the onset of symptoms of the last case until the outbreak is declared over can vary and depends on whether the last case was a resident or staff member. 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 (8 days being maximum duration of infectiousness [5 days] plus maximum incubation period [3 days]).

The OMT may take decisions about ongoing surveillance needs after declaring the outbreak over including the following:

- maintenance of general infection control measures
- monitoring the status of ill residents, communicating with the Public Health Unit if the status changes
- noting any late, influenza-related deaths that occurred and informing the Public Health Unit
- notifying the Public Health Unit if any new cases occur, signalling either re-introduction of infection or ongoing transmission
- advise the relevant state/territory/national agencies including the Commonwealth Department of Health and Ageing state/territory office for outbreaks in Aged Care Facilities.

Action 10. Complete documentation

The outbreak file will be reviewed to ensure that it contains the following:

- copies of all laboratory and other results
- copies of death certificates and hospital discharge summaries
- copies of all minutes and other communications

- any other documentation specific to the investigation and management of the outbreak.

Action 11. Review the outbreak and debrief

Arrange a meeting between key RCF staff, Public Health Unit staff and/or other relevant agencies to review the course and management of the outbreak. The purpose of this meeting is to review what was handled well and what could be improved for future outbreaks. This meeting should occur within two weeks of the outbreak being declared over.

Chapter 6 Antiviral medication

What are antiviral drugs?

What is their potential role in the management of influenza outbreaks?

How should they be used?

There is a potential role for antiviral medications in the management of influenza outbreaks in residential care facilities, as an adjunct to all other control measures.

Use of antivirals requires forward planning, and consultation with, and participation of, visiting GPs. The decision to use antivirals in any particular outbreak will be made by the OMT in consultation with the local Public Health Unit noting that antiviral medication is generally costly and may not be readily available from community pharmacies.

When used for prophylaxis, antivirals are recommended for use for ALL asymptomatic residents and unvaccinated staff as directed. Incomplete or patchy use is likely to reduce the effectiveness of the intervention and increase the risk of the influenza virus developing resistance to the antiviral drug.

Antiviral medication for prophylaxis

Two classes of antiviral medications that are active against influenza are available: neuraminidase inhibitors and M2 ion channel inhibitors (e.g. amantadine). Amantadine should not be used for treatment or prevention of influenza in outbreaks due to high rates of resistance and adverse effects,⁸ and will not be considered further.

Neuraminidase inhibitors act by reducing the replication of viruses within the body. Two neuraminidase inhibitors are available in Australia:

- oseltamivir (Tamiflu) – a capsule or powder for oral solution
- zanamavir (Relenza) – inhaled via a diskhaler.⁹

Oseltamivir is the recommended prophylaxis option based on effectiveness, side effect profile and ease of administration, and it is approved in Australia for this use. Zanamavir may be used if oseltamivir is contraindicated, or clinical isolates suggest oseltamivir resistance is likely, or oseltamivir not available and the person is capable of using its delivery device (a diskhaler) effectively. Refer to Appendix 7 for a summary of these two antivirals and recommended doses.

In North America, expert bodies have recommended mass antiviral prophylaxis as a control measure for nursing home outbreaks for more than a decade. Observational and cohort studies have found that mass prophylaxis with neuraminidase inhibitors has been associated with prompt termination of outbreaks, which could be evaluated.¹⁰

⁸ Fiore A et al: Prevention and Control of Influenza – Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortality Wkly Rep* 2007;56 (RR06):1–54.

⁹ NPS Position Statement. Role of the neuraminidase inhibitors in seasonal influenza. September 2006.

¹⁰ Hota S and McGeer A. Antivirals and the control of influenza outbreaks. *Clin Infect Dis* 2007;45:1362–1368.

Nausea and vomiting are the most common adverse effects of oseltamivir; these symptoms can be limited by taking the medication with food. Zanamavir can cause bronchospasm. Skin hypersensitivity reactions have been reported rarely with both drugs.

Consideration of use of antivirals during an outbreak should be made by the RCF during the planning period, in consultation with the visiting GPs. An effective strategy would be for advance standing orders made by the resident's GP and reviewed annually or when the resident's medical condition (especially renal function) changes (see Appendix 8).

At the time of publication, resistance to neuraminidase inhibitors by various strains of influenza is an emerging issue. The decision to use these antivirals should be influenced by current knowledge of influenza virus sensitivity/resistance patterns.

Guidelines for antiviral use

*Residents*¹¹

- Residents who are not yet ill should receive their first dose of antiviral drugs as soon as is practicable after an outbreak is declared and preferably within 24 hours.
- In general, all uninfected residents across the entire facility should receive antiviral drugs regardless of vaccination status. Exceptions may be considered by the OMT when there are a small number of cases (<5) in a confined area of the facility and there is no mixing of staff or residents with other areas of the facility.
- Residents with documented impaired renal function should have their dosage of oseltamivir adjusted (see Appendix 8).
- Residents whose renal function is not known or who have known normal serum creatinine levels may safely be started on usual doses of oseltamivir.
- Measurement of serum creatinine at the time of the outbreak is not indicated unless there is reason to suspect a recent change in renal function. If a recent change in renal function is suspected, it is safe to start usual doses of oseltamivir whilst awaiting serum creatinine results. Dose/frequency adjustment can be made one to two days into treatment.
- Antiviral prophylaxis should be continued for 10 days or until the outbreak is declared over (as determined by the OMT), whichever is longer.
- Antiviral prophylaxis can be prescribed by the resident's GP either through a standing order, developed on admission and reviewed on an annual or semi-annual basis (sample given in Appendix 9); or by prescription at the time of the outbreak. Logistically, the latter option is more difficult and may incur significant and unacceptable time delays.
- As a result of reported gastrointestinal upset, it is recommended that oseltamivir be given with a snack or at mealtime. Gastrointestinal upset, if it occurs, is usually associated with the first dose. If this occurs, try persisting with subsequent doses.
- If respiratory symptoms develop in a resident on prophylaxis, the dose should be changed to the treatment dose whilst tests are being performed. These changes should be made in consultation with the resident's GP. If the resident is shown to have influenza, a full 5 day course of the treatment dose should be completed and antivirals then ceased.

¹¹ Hota S and McGeer A. Antivirals and the control of influenza outbreaks. *Clin Infect Dis* 2007;45:1362–1368.

- To limit the potential transmission of drug-resistant virus during outbreaks in institutions, measures should be taken to reduce contact between persons taking antiviral drugs for treatment and those taking them for prophylaxis.

Staff

- All unvaccinated staff should receive antiviral prophylaxis as soon as is practicable after the outbreak is declared, and preferably within 24 hours of residents commencing antiviral prophylaxis. At the same time, unvaccinated staff should be vaccinated.
- In planning, the RCF should consider options for provision of antivirals for staff:
 - referral to their own GPs to obtain a prescription
 - provision by the RCF through a visiting GP.
- Staff should be educated about their choice of neuraminidase inhibitor.
- For previously unvaccinated staff who are vaccinated at the start of the outbreak, antiviral prophylaxis should be continued for 14 days (as it takes this long for the vaccine to take effect). If the outbreak is declared over before the 14 days are up, the person can cease antivirals then.
- For previously unvaccinated staff who decline vaccination at the start of the outbreak, antiviral prophylaxis should be continued for 10 days or until the outbreak is declared over (as determined by the OMT), whichever is later.
- RCF management should develop an exclusion policy for staff who decline vaccination or antiviral drugs.
- Vaccinated staff do not require antiviral prophylaxis unless the outbreak is considered by the OMT to be caused by an influenza strain that is not well matched to the vaccine. In this case, prophylaxis should be extended to all staff, regardless of vaccination status. The match between strain and vaccine is unlikely to be known until some time into the outbreak, but there may be evidence of a non-vaccine-susceptible strain circulating in the community.
- Staff who are immunocompromised (e.g. those with HIV infection or taking immunosuppressive therapy) may benefit from antiviral prophylaxis, even if they are vaccinated.
- All staff must be alert for the symptoms and signs of influenza, particularly within the first 48 hours after starting antiviral prophylaxis, and should be excluded from patient care if symptoms develop.
- Oseltamivir should be used during pregnancy and lactation only if the potential benefit justifies the potential risk to the foetus or breast-fed infant. Pregnant or lactating women should discuss these issues with their GP.

Antiviral medication for treatment

Treatment decisions are the responsibility of the attending GP. Antiviral medications used as treatment of influenza must be started within 48 hours of onset of symptoms to be effective and may decrease the rate of complications. The earlier treatment is started, the more effective it is.

Chapter 7 Policy preparation

What policies can support the prevention and management of influenza outbreaks in RCFs?

Each RCF needs to have a policy to address respiratory disease surveillance, prevention (including annual vaccination) and outbreak control.

Policies should address the following topics:¹²

- procedures for surveillance, early recognition of potential transmission of infectious conditions, and management of an outbreak including the composition and mandate of the OMT
- staffing contingency plan addressing varying levels of available staff during outbreaks due to illness, failure to immunise, unwillingness or contraindication to antiviral agents
- a staffing plan to address adequate nurse to patient ratios. As workload increases during an outbreak, staffing plans need to address continued provision of care and full implementation of infection control measures
- a policy on the use of the antivirals, oseltamir (Tamiflu™), and zanamavir (Relenza™), for treatment and prophylaxis
- for those RCFs where residents may have significant renal impairment, a policy to annually assess appropriate oseltamivir dosage for each resident (serum creatinine levels for this assessment should be performed in the previous 12 months), to enable rapid prescription and administration
- obtaining consent for prophylaxis with antivirals from residents or substitute decision-makers
- standing orders signed by GPs for antiviral prophylaxis
- processes to rapidly access specimen kits, testing facilities, and results of laboratory test in the event of a potential outbreak alert
- ensuring that staff are available who are competent in the appropriate technique for the collection of nasopharyngeal specimens
- establishing lines of communication between the RCF, Public Health Unit and laboratories
- ongoing effective communication with residents, families of residents and staff
- annual review of policies related to outbreak prevention and control.

A preparedness checklist is attached at Appendix 10.

¹² Public Health Division and Long-Term Care Branch, Ministry of Health and Long-Term Care, Ontario. A Guide to the Control of Respiratory Disease Outbreaks in Long-Term Care Homes, October 2004, p12

Chapter 8 Who to call to notify a suspected outbreak of influenza

Contact details for State and Territory Public Health and Communicable Disease Units

The following numbers should be contacted by medical practitioners for the reporting of communicable disease cases and for assistance in the management of disease outbreaks:

State and Territory Health Department Communicable Disease Contacts

Australian Capital Territory	(02) 6205 2155
South Australia	(08) 8226 7177
Tasmania	1800 671 738
Victoria	1300 651 160

Queensland

The reporting of communicable disease cases in Queensland is facilitated by the individual Public Health Units listed below:

Public Health Unit	Phone	Fax
Brisbane Southside	(07) 3000 9148	(07) 3000 9130
Gold Coast	(07) 5509 7222	(07) 5561 1851
Darling Downs	(07) 4631 9888	(07) 4632 8563
Brisbane Northside	(07) 3624 1111	(07) 3624 1199
Sunshine Coast	(07) 5409 6600	(07) 5409 6635
Wide Bay	(07) 4120 6000	(07) 4120 6009
Rockhampton	(07) 4920 6989	(07) 4920 6865
Bundaberg	(07) 4150 2780	(07) 4150 2729
Mackay	(07) 4968 6611	(07) 4968 6610
Townsville	(07) 4753 9000	(07) 4753 9001
Mt Isa	(07) 4744 4846	(07) 4745 4573
Cairns	(07) 4050 3600	(07) 4031 1440

Western Australia

The reporting of communicable disease cases in Western Australia is facilitated by the individual Public Health Units listed below:

Public Health Unit	Phone	Fax
North Metropolitan (Perth)	08 9380 7700	(08) 9380 7719
South Metropolitan (Perth)	(08) 9431 0200	(08) 9431 0223

Great Southern (Albany)	(08) 9842 7500	(08) 9842 2643
Southwest (Bunbury)	(08) 9781 2350	(08) 9781 2382
Midwest (Carnarvon)	(08) 9941 0570	(08) 9941 0563
Kimberley (Broome)	(08) 9194 1630	(08) 9194 1633
Midwest (Geraldton)	(08) 9956 1985	(08) 9956 1991
Goldfields (Kalgoorlie)	(08) 9080 8200	(08) 9080 8201
Wheatbelt (Northam)	(08) 9622 4320	(08) 9622 5752
Pilbara (Port Hedland)	(08) 9172 8333	(08) 9172 8370

Northern Territory

The reporting of communicable disease cases in the Northern Territory is facilitated by the individual Public Health Units listed below:

Public Health Unit	Phone	Fax
Darwin Communicable Disease Centre	(08) 8922 8044	(08) 8922 8310.
Katherine Communicable Disease Centre	(08) 8973 9049	(08) 8973 9048
Barkly Communicable Disease Centre	(08) 8962 4259	
Alice Spring Communicable Disease Centre	(08) 8951 6907	(08) 8951 7900
East Arnhem Communicable Disease Centre	(08) 8987 0357	(08) 8987 0355

New South Wales

The reporting of communicable disease cases in New South Wales is facilitated by the individual Public Health Units listed below:

Public Health Unit	Phone	Fax
Northern Sydney/Central Coast PHU	(02) 9477 9400	(02) 9482 1650
Sydney South West PHU	(02) 9515 9420	(02) 9515 9440
Justice Health Service PHU	(02) 8372 3006	(02) 9289 2494
Greater Western Broken Hill PHU	(08) 8080 1499	(08) 8080 1683
Hunter/New England PHU	(02) 4924 6477	(02) 4924 6490
Greater Western Dubbo PHU	(02) 6841 5569	(02) 6884 5571
North Coast Pt Macquarie PHU	(02) 6588 2750	(02) 6588 2837
Greater Western Bathurst PHU	(02) 6339 5601	(02) 6339 5173
Hunter/Tamworth PHU	(02) 6767 8630	(02) 6766 3003
North Coast Lismore PHU	(02) 6620 7500	(02) 6622 2151
Northern Sydney/Gosford PHU	(02) 4349 4845	(02) 4349 4850
South Eastern Sydney /Illawarra PHU	(02) 9382 8333	(02) 9382 8334
South Eastern Sydney/Woolongong PHU	(02) 4221 6700	(02) 4221 6722
Greater Southern PHU Albury	(02) 6080 8900	(02) 6080 8999
Greater Southern/Goulburn PHU	(02) 4824 1837	(02) 4824 1831
Sydney West PHU Nepean	(02) 4734 2022	(02) 4734 3300
Sydney West PHU Parramatta	(02) 9840 3603	(02) 9840 3608

These Public Health Unit Contact Details were correct at the time of printing.

For NSW Public Health Units www.health.nsw.gov.au/public-health/phus

Appendix 1. Resident transfer advice

To: _____

Name of resident

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 influenza
suspected of influenza
had no symptoms of influenza

Date

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

Name of medication

Resident is taking the antiviral medication _____

Start date _____ Dose of the medication _____

Name of contact person

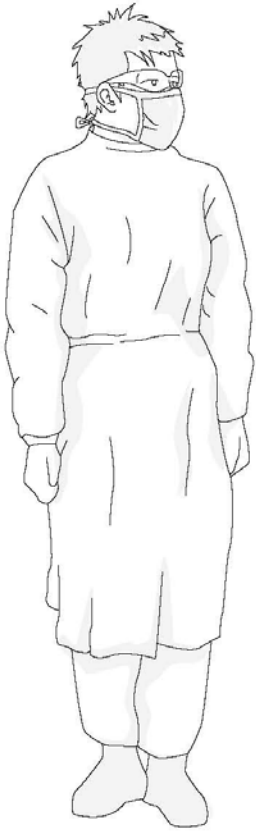
For further information, contact _____ of

Name of facility

Phone number

_____ on _____

How to fit and remove personal protective equipment in the correct order



Fit in this order

- Wash hands or use alcohol-based rub
- Respirator
- Goggles
- Gown
- Gloves

Remove in this order

- Gloves
- Wash hands or use alcohol-based rub
- Goggles
- Gown
- Respirator
- Wash hands or use alcohol-based rub

During removal of personal protective equipment, hands should be washed immediately after removing any item which is visibly soiled.



Australian Government
Department of Health and Ageing

Appendix 3 Influenza outbreak line listing form (resident only)

Name of Facility _____

Resident details				Symptoms							Status				Specimen/diagnosis				Prophylaxis/treatment							
No	Name	M/F	Unit	Onset date	Date of Isolation	Temperature (°C)	Cough (D= dry; M = moist)	Sore throat	Coryza (Runny nose/sneezing)	Fatigue	Myalgia	Rigors	Headache	Stable	Recovered	Hospitalised (date d/m), name of hospital	Death (date d/m)	Nasopharyngeal (date d/m)	Result (date d/m)	Other – specify (date d/m)	Result (date d/m)	Amantadine (date d/m)	Flu vaccine (date d/m/y)	Pneumo vaccine (date d/m/y)	Antibiotics (date d/m)	
1																										
2																										
3																										
4																										
5																										
6																										
7																										

Appendix 4 Influenza outbreak line listing form (staff only)

Name of Facility _____

Resident details				Symptoms									Work duties			Specimen/ diagnosis		Prophylaxis/ treatment			
No	Name	M/F	Unit	Onset date	Temperature (°C)	Cough (D= dry; M = moist)	Sore throat	Coryza (runny nose/sneezing)	Fatigue	Myalgia	Rigors	Headache	Assigned Ward/Unit etc	Last working date	Work at another Facility? (Y/N) If Y, name of facility	Nasopharyngeal (date d/m)	Result (date d/m)	Amantadine (date d/m)	Flu vaccine (date d/m)/y	Pneumo vaccine (date d/m/y)	Antibiotics (date d/m)
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					

Appendix 5. Swab collection procedure

Gloves, respiratory protection and eye protection should be worn when collecting nose and throat swabs. Masks should NOT be touched during wear and should NOT be worn around the neck at any time. When the masks are removed they should be handled by the ties of the mask only. Both gloves and masks should be disposed of in an infectious waste bag.

WASH AND DRY HANDS before and after the procedure!

Swabs and transport medium

- Ensure viral transport medium is available and at hand.
- Three dry sterile swabs will be used. After specimen collection, the three swabs will be placed in the same tube of viral transport medium.

Nose

- Tilt the patient's head back gently with one hand and steady the patient's chin. With the other hand, insert the cotton bud end of the dry sterile swab into the patient's right nostril. The swab should be rubbed vigorously against the turbinate in the nostril to ensure the swab contains cells as well as mucus from the nostril. Withdraw the swab from the nostril.
- Remove the cap from the tube of transport medium. Break off (or cut with scissors) the end of the swab's shaft, ensuring that the entire swab can be sealed within the tube. Loosely recap the tube. Discard the remaining end of the swab.
- Repeat the procedure with a new dry sterile swab in the patient's left nostril. Place the swab in the same tube of viral transport medium with the other swab.

Throat

- To perform the throat swab, remove another swab from the packaging and ask the patient to open his/her mouth and stick out their tongue. Use a wooden spatula to press the tongue downward to the floor of the mouth. This will avoid contamination of the swab with saliva. Firmly swab both of the tonsillar arches and the posterior naso-oro-pharynx, without touching the sides of the mouth.

Guidelines for taking nasal and throat swabs

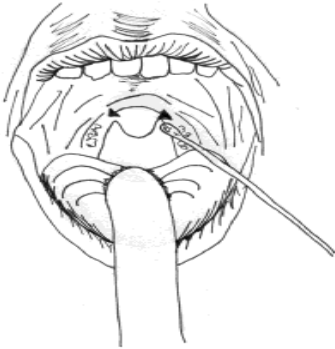
The person taking nasal or throat swabs should be wearing appropriate PPE (gloves, gown, mask, eyewear).

Nasal swabs - method

- Tilt the patient's head back gently, with one hand, and steady the patient's chin. With the other hand, insert the cotton bud end of the dry sterile swab into the patient's right nostril. The swab should be rubbed vigorously against the turbinate in the nostril to ensure the swab contains cells as well as mucous from the nostril. Withdraw the swab from the nostril.
- Remove the cap from the tube of transport medium. Break off (or cut with scissors) the end of the swab's plastic shaft, ensuring that the entire swab can be sealed within the tube. Loosely recap the tube. Discard the remaining end of the swab.
- Repeat the procedure with a new dry sterile swab in the patient's left nostril. Place the swab in the same tube of viral transport medium with the other swab.



Throat swabs - method



- To perform the throat swab, remove another swab from the packaging and ask the patient to open his/her mouth and stick out their tongue. Use a wooden spatula to press the tongue downward to the floor of the mouth. This will avoid contamination of the swab with saliva. Firmly swab both of the tonsillar arches and the posterior naso-oropharynx, without touching the sides of the mouth.
- Remove the swab, which should be thoroughly wet with throat secretions. Remove the cap from the same tube as contains the two nose swabs and break off the shaft as before. Now firmly screw the cap back on the tube. Discard the end of the swab.

Specimen handling procedures

- Nose (left and right nostrils) and throat swabs for respiratory outbreaks should only be taken from residents with acute symptoms (onset within the preceding 72 hours) and preferably from residents with the most classical clinical presentation of the illness suspected. Samples from 8 to 10 people should ideally be collected. See collection instructions above.
- Label the transport media with the patient's full name, date of birth, specimen type and date of collection. The specimen container and/or the accompanying request form should include the name of the facility.
- Refrigerate the specimen until it is sent to the laboratory. Do not freeze the specimen.
- The specimens should be packaged in a small insulated bag/box (with ice bricks) for transport to the pathology laboratory.
- Specimens can be handled through the facility's usual pathology provider, or once Public Health is involved, and with the Public Health Unit's approval, through the relevant public health laboratory. In the latter case, the specimen box should be labelled "Urgent. Public Health Specimen."
- Specimens should preferably be sent on the day of collection or the following day.

Appendix 6. Laboratory diagnostic methods

Sample collection guide*

Viral pathogens	Test	Specimen	Equipment required to collect specimens
Influenza A and B Parainfluenza 1,2,3 RSV Adenovirus Picornavirus Metapneumovirus	PCR or viral culture	Throat and nose (left and right nostril) swabs Nasopharyngeal aspirate (NPA)/nasopharyngeal swab	PCR/culture collection kit <ul style="list-style-type: none"> • 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)
Influenza A and B Parainfluenza 1,2,3 RSV Adenovirus	Immuno-fluorescence	Nasopharyngeal aspirate/nasopharyngeal swab Throat and nose (left and right nostril) swabs	<ul style="list-style-type: none"> • 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)
Influenza A and B Parainfluenza 1,2,3 RSV Adenovirus	Serology	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.	10 ml clotted blood

* Please check with laboratory in relation to any specific requirements

Influenza tests

Test	Sensitivity	Turnaround time	Advantages	Disadvantages
Conventional cell culture	~100% (though less than RT-PCR)	At least 4–5 days	<ul style="list-style-type: none"> • Highly sensitive/specific • Yields isolate for antigenic characterisation • Recovers novel/divergent strains • Recovers other respiratory viruses 	<ul style="list-style-type: none"> • Dependent on specimen quality/transport • Slow turnaround time • Labour intensive • Requires technical expertise • Requires specialised equipment
Rapid cell culture (shell vial with immunofluorescence)	56%–100% (generally 70%–90%)	1–4 days	<ul style="list-style-type: none"> • Quicker turnaround time than conventional cell culture • Relatively inexpensive 	<ul style="list-style-type: none"> • Dependent on specimen quality/transport • Less sensitive than conventional cell culture • May miss divergent strains
Immunofluorescence (direct antigen detection)	60%–100% (generally 70%–90%)	2–4 hours	<ul style="list-style-type: none"> • Rapid turnaround time • Provides assessment of specimen quality 	<ul style="list-style-type: none"> • Labour intensive • Requires interpretive skill (subjective) • Requires fluorescence microscopy • No isolate for antigenic characterisation

Nucleic acid testing	~100% (greater than cell culture)	<1–2 days	<ul style="list-style-type: none"> • Highly sensitive/specific • Less dependent on specimen quality/transport • Typing/subtyping possible • Enables molecular analysis (sequencing) • Detects other respiratory viruses (multiple assays) • More rapid turnaround time with real time PCR assays 	<ul style="list-style-type: none"> • Labour intensive (depending upon assay) • Requires technical skill and specialised equipment • Potential for cross-contamination/false-positives • No isolate for antigenic characterisation • May miss divergent strains
Rapid antigen (point-of-care) tests	50%–93% (generally ~70%)	15–30 minutes	<ul style="list-style-type: none"> • Rapid turnaround time • No technical skill required • Specimen transportation not required 	<ul style="list-style-type: none"> • \$12–\$20 per test • Lower sensitivity • False-positive results(misinterpreting faint bands) • No isolate for antigenic characterisation
Serology (CFT, HAI, IF, neutralisation, EIA)	Up to 100%	1–3 weeks	Useful where specimens are unobtainable or laboratory facilities limited	<ul style="list-style-type: none"> • Delayed diagnosis • Requires paired serum specimens • Variable sensitivity and specificity • Labour intensive and requires technical skill • No isolate for antigenic characterisation

Summary of characteristics from selected rapid influenza test kits currently available in Australia

Test name	Detect both influenza A & B?	Differentiate between A & B?	Storage reqs: storage life	Suggested specimen types	Assay time	Technician attendance time	Ease of use	Ease of interpretation	Overall sensitivity	Overall specificity
Binax Now Influenza A & B	Yes	Yes	15–30°C: 1 year	NW, NA, NPS	15 min	1 min	Easy	Easy	A: 75%<i>f</i> B: 50%<i>f</i>	A: 100% B: 100%
Becton Dickinson Directigen Flu A+B	Yes	Yes	2–25°C: 1 year	NPS, NPA, NS, TS, BW	15 min	12 min	Moderate	Easy	A: 86% B: 81% <i>A: 86%</i> <i>B: 81%</i>	A: 91% B: 96% <i>A: 99–100%</i> <i>B: 99–100%</i>
Biostar Flu OIA	Yes	Yes	2–8°C: 1 year	TS, NPS, NA, SP	20 min	15 min	Difficult	Moderate	A & B: 62–88% <i>A & B: 48–100%</i>	A & B: 62–88% <i>A & B: 48–100%</i>
Quide Quick Vue Influenza A+B	Yes	Yes	15–30°C: 2 years	NW, NA, NS	12 min	2 min	Easy	Easy	A: 83–94% B: 67–74%	A: 89–90% B: 97–98%
Remel Xpect Flu A & B	Yes	Yes	2–25°C: 1 year	NW, NPS, TS, TA, SP, BW	15 min	2 min	Easy	Easy	A: 92% B: 98% <i>A: 92%</i> <i>B: 98%</i>	A: 100% B: 100% <i>A: 100%</i> <i>B: 100%</i>

Figures expressed in bold type indicate manufacturers' figures taken from kit insets, figures in italics indicate data reported from selected independent studies.

NW = nasal wash

NA = nasal aspirate

NS = nasal swab

NPS = nasopharyngeal swabs

NPA = nasopharyngeal aspirate

TS = throat swab

TA = tracheal swabs

SP = sputum

BW = bronchioalveolar wash

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Appendix 7. Summary of neuraminidase inhibitors

Two neuraminidase inhibitors are recommended for use as prophylaxis against influenza outbreaks in RCFS – **Oseltamivir (Tamiflu)**, an oral preparation, and **Zanamavir (Relenza)**, an inhalant.

	Oseltamivir (Tamiflu)	Zanamavir (Relenza)
Recommended dosage (adults and adolescents 13 years and older)		
Dosage form	Administered as an oral capsule of 75 mg, or as an oral suspension of 12 mg/ml	Administered via oral inhaler using diskhaler device (5 mg/blister) (patients on bronchodilators should administer their bronchodilator before the administration of zanamavir)
Prophylaxis	75 mg once daily for 10 days but can be taken longer. Safety and effectiveness have been shown in patients for up to 6 weeks	Two inhalations (2 x 5 mg) once daily for 10 days and up to 28 days if period of exposure extends beyond 10 days
Treatment	75 mg twice daily for 5 days but can be taken longer depending upon the clinical progress of patient	Two inhalations (2 x 5mg) twice daily for 5 days and possibly longer depending upon the clinical progress of patient
Recommended dosage (children 1 to 13 years of age)	2 mg/kg (up to 75 mg) once daily for prophylaxis and 2 mg/kg (up to 75 mg) twice daily for treatment	Zanamavir may be difficult to administer to children. During a pandemic, oseltamivir suspension will be the preferred antiviral for children.
Precautions	Influenza with complications (e.g. pneumonia); renal impairment; Fructose intolerance (oral suspension); Pregnancy, lactation, children < 1 year	Underlying respiratory disease especially severe asthma, chronic obstructive pulmonary disease; pregnancy, lactation
Adverse reactions	Gastrointestinal upset; insomnia; Headache; fatigue; others – see Full product information	Gastrointestinal upset; dizziness; bronchospasm, respiratory function decline; headache; others – see Full product information

Appendix 8. Adjusting oseltamivir dosage

Adjusting oseltamivir dosage in the setting of renal failure¹³

Renal function	Dosing regime for oseltamivir
No known renal disease, or known renal disease and serum creatinine < 150 µmol/l	75 mg once daily for 10 days or until outbreak is declared over
Known renal disease and serum creatinine ≥ 150 µmol/l OR if on dialysis	75 mg once daily for 5 days on and 5 days off until outbreak is declared over

¹³ A Guide to the Control of Respiratory Disease Outbreaks in Long-Term Care Homes October 2004.

Appendix 10. Preparedness checklist: for use to assist planning

Planning

- Does the Residential Care Facility have an influenza/respiratory infection outbreak plan?
- Is the influenza plan reviewed and updated annually?
- Have the relevant health care providers/organisations in the community (e.g. associated GPs, local public health unit, acute care hospitals) been involved in the planning process?
- Does the plan contain an agreement between the Residential Care Facility and associated GPs and medical services to provide medical care during weekends and public holidays during outbreaks?
- Are all staff aware of the plan and their roles and responsibilities?

Vaccination

- Does the Residential Care Facility achieve a high rate of annual vaccination of staff and residents?
- Does the Residential Care Facility have an up-to-date (at mid-April) consolidated line listing of all residents' influenza and pneumococcal vaccination status?
- Does the Residential Care Facility have an up-to-date (at mid-April) consolidated line listing of all staff members' influenza vaccination status?

Outbreak recognition

- Does the Residential Care Facility routinely assess residents for influenza-like illness from April to October?
- Does the Residential Care Facility encourage staff to report influenza-like illness symptoms from April to October?
- Does a process exist to notify the infection control practitioner as soon as practicable and within 24 hours when an outbreak is suspected?

Infection Control

- Does the Residential Care Facility have a designated Infection Control Professional who is known to staff and available 24/7?
- Does the Residential Care Facility have plans for internal traffic and restricting access in affected areas of the facility?
- Has the Residential Care Facility made arrangements for appropriate signage?
- Does the facility routinely provide training on the proper donning and removal of personal protective equipment?

Antivirals

- Has the Residential Care Facility consulted with visiting GPs to develop the antiviral component of the plan?
- Are mechanisms for prescribing antivirals in a timely manner identified?
- Has a standing order for use of antiviral medications during an influenza outbreak been considered and prepared, in consultation with visiting GPs?

- Does the Residential Care Facility have an up-to-date (at mid-April) consolidated line listing of all residents with details of precautions (e.g. impaired renal function) for using antivirals and relevant doses to be used for them?

Staffing

- Does the Residential Care Facility have a staffing contingency plan in case 20% to 30% of staff fall ill?
- Has the Residential Care Facility developed plans to support staff during an outbreak?
- Has the Residential Care Facility developed a plan for cohorting staff?

Communication

- Does the Residential Care Facility have a contact list for the local public health unit and other partners?
- Does the Residential Care Facility have a plan for communicating with staff, residents, volunteers and family members during an outbreak?
- Have key personnel been designated to manage the needs of the media?

Resident Management

- Has the Residential Care Facility identified residents who could be cared for in other settings if necessary (e.g. family care, transfers between hospitals and Residential Care Facilities, local Residential Care Facilities partnering to support each other by delegating certain resident care activities to one organisation while the other focuses on the care of influenza-like illness/influenza residents)?

Visitors

- Have personnel been designated to control and take care of issues that arise due to visitors?
- Does the facility have a plan to reduce the risk of visitors entering the facility during an outbreak (e.g. security, signage, restricted access)?

Training

- Does the plan specify who is responsible for the training program?
- Does the plan include methods for ramp up and quick training for new and altered roles (e.g. have policies and procedures been made, have job action sheets been developed)?
- Does the Residential Care Facility have ongoing, outbreak training programs?
- Does the Residential Care Facility provide outbreak education material at staff orientation to raise staff awareness?

Cleaning

- Does the plan identify who is responsible for overseeing increased frequency of cleaning and arranging liaison with contractors or hiring extra cleaners if necessary?
- Does the plan include arrangements for increased frequency of emptying bins?

Adapted from [http://www.regional.niagara.on.ca/living/health_wellness/pandemic-planning/pdf/Guide to Influenza Pandemic Preparedness and Response-Long Term Care Homes.pdf](http://www.regional.niagara.on.ca/living/health_wellness/pandemic-planning/pdf/Guide%20to%20Influenza%20Pandemic%20Preparedness%20and%20Response-Long%20Term%20Care%20Homes.pdf)