



INFLUENZA PANDEMIC PLAN

MAY 2009

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1. Introduction

Whilst medical practitioners may be heavily involved in curative measures in the event of pandemic flu in New Zealand, there are also other preventative measures and implications of the disease with which Medical Centres need to make themselves familiar. The purpose of this plan is to provide Ropata Medical Centre GPs, nurses and staff with an understanding of pandemic flu, how to protect against it, and how it is planned that the Medical Centre will operate its medical and nursing services in the event of an influenza pandemic being declared.

2. Background

Influenza A viruses naturally occur among birds, in particularly water birds. Influenza A infections are usually asymptomatic in wild birds that can carry the virus in their intestine. They may spread the infection to domestic fowl in which the morbidity and mortality may be much higher. Some influenza viruses can occur in other animal species, in particular pigs, and of course including humans. If the simultaneous infection with more than one influenza virus occurs in a single host, re-assortment of genes may occur resulting in a novel virus. If humans are naïve to the resultant virus and it has both the capacity to cause disease and spread readily from human to human, pandemic influenza will result.

Since the reappearance, in 1977, of the subtype, H1N1, which caused the 1918-19 pandemic, two influenza A viruses have been circulating in humans, H1N1 and H3N2. These two viruses have caused the annual epidemics of influenza A. Vaccination against viruses of these two subtypes, and influenza B, is offered annually in New Zealand.

Influenza pandemics occur at irregular intervals, but have averaged 3 pandemics per century. Three occurred in the twentieth century: 1918, "Spanish flu" caused by H1N1, 1957-8, "Asian Flu" caused by H2N2 and 1968-9, "Hong Kong flu" caused by H3N2. They occur when a novel influenza virus appears usually containing a combination of human and avian influenza genes. The re-emergence of H1N1 in 1977 did not cause a true pandemic because illness was largely confined to those aged less than 20 years.

Since 1997 there has been an outbreak of a particularly virulent H5N1 influenza occurring in birds. H5N1 is now endemic in birds across Asia, and has spread to Europe. What is of particular concern is that some individuals in Asian countries, who have had close contact with birds, have been diagnosed with H5N1 influenza, demonstrating that this virus has the capacity to jump the species barrier. About half of those diagnosed with this infection have died. There have been very occasional reports suggestive of human-to-human transmission, showing the current virus is not (yet) adapted to human spread. If this virus

mutates further so that it can readily spread from human to human an influenza pandemic will occur. At present, as the pandemic virus does not yet exist, it is not known how infectious or how virulent it will be. While H5N1 is currently of significant concern, there are other avian influenza viruses that have sporadically infected humans, in particular H7 and H9.

Other pandemic viruses can emerge from other sources as has been seen in 2009 with an H1N1 virus which occurred in pigs in Mexico, spread to humans and has caused disease with some deaths in many countries world wide.

3. Likely scenario

It is most likely that a pandemic virus will be introduced to New Zealand by a human, rather than a migrating bird. It is most likely that it will be introduced by an infected individual arriving on an international flight, as was seen with the 2009 H1N1 virus. Based on the frequency of arrival this is most likely to occur in Auckland, but any international airport could be the port of entry. Arrival by sea is much less likely and quarantine of a ship with infected individuals is much more practical.

4. Procedures

Comment [HSM/RMC1]:
Procedures should probably reflect the different threat levels used by MoH.

a. Routine Vaccination

All staff are urged to be vaccinated with the human influenza vaccine which becomes available in March each year. We should also encourage increased influenza vaccine coverage amongst patients, particularly those aged over 65 and those with chronic conditions. It is important to remember to include human influenza vaccine as a potential travel vaccine for those travelling to the northern hemisphere in winter.

b. Travel Associated Respiratory Disease

An individual with an influenza like illness who has recently (within 21 days) returned from overseas, from a country where a novel influenza virus is occurring in humans, should be treated as possible pandemic influenza. The patient and family should be confined to home and treated as appropriate, viral cultures should be obtained and the MOH should be notified. If hospital admission is considered necessary it should be discussed with Dr Tim Blackmore, ID physician at Capital and Coast District Health Board, or if he is unavailable with the medical **consultant** on call.

c. Provision of Tamiflu prescriptions to patients

This is already occurring. The following instructions are issued to patients.

“You have purchased a treatment course of Tamiflu to be used in the event that you develop an influenza-like illness during an influenza pandemic. It is important that you understand how and when to use it and this document provides instructions for you.

The next influenza pandemic may be caused by an H5N1 strain, which has been causing avian influenza and has been transmitted from birds to humans in some Asian countries. If this influenza strain develops the ability to spread readily from human to human, pandemic influenza will occur and it is likely that most humans will be highly susceptible to it. However other novel influenza strains could be the cause of a pandemic, such as the H1N1 swine flu which occurred in 2009

Tamiflu is an antiviral agent which reduces the severity of the illness caused by influenza infections. It is not known at present whether it will be as effective in reducing the severity of illness caused by any pandemic influenza strain.

- **For treatment** it is taken as a five day course, 75mg twice daily, starting as soon as possible (but within 48 hours) after the onset of symptoms.
- **For prevention/prophylaxis** it is taken as one dose daily for 10 days.

It is important that Tamiflu is taken for Influenza and not used unnecessarily for ordinary colds and “flu”.

The following criteria should be met prior to taking a course:

1. Pandemic Influenza should be present where you are currently residing/visiting.
2. You have an illness of sudden onset with at least 4 of the following symptoms:
 - Temperature $>38^{\circ}\text{C}$,
 - cough,
 - malaise, (feeling unwell)
 - headaches,
 - myalgia, (muscle aches and pains)
 - loss of appetite,
 - sore throat,
 - rhinitis. (runny nose)

If someone in your household needs to take a treatment course of Tamiflu then others in the household should take a prevention/prophylactic course - 1 daily for 10 days starting at the same time as the treatment course.”

d. Purchase of Tamiflu for all staff

The Practice has purchased a treatment course of Tamiflu for all staff. It is possible, though unlikely, that this may be supplemented by having access to the stockpile of Tamiflu purchased by the Government. The exact manner in which the Government's stockpile of Tamiflu is to be used has not yet been decided.

Each staff member has been issued with a treatment course of Tamiflu for personal use to be taken according to the criteria on the previous page.

e. Coping with patients with possible pandemic influenza

We expect a significantly increased patient demand for medical assessment when pandemic influenza is present in the Wellington area. The worst-case scenario will be that large numbers of patients with possible influenza attend the Practice with infection spreading to staff and other patients. Therefore the following steps are proposed.

- When pandemic influenza is declared by WHO, Ropata Medical Centre will communicate with all patients by letter and/or by advert in the Hutt News advising them of:
 - The symptoms of influenza,
 - The immediate treatment – fluids and paracetamol
 - The use of Tamiflu
 - The fact that they should **not** come to the surgery but should phone for advice
 - Plans that house visits will be available where appropriate, and our High street annex may be used as an influenza assessment centre.

NB Clear communication by the public health authorities may make this step unnecessary.

- With pandemic influenza is present in the Hutt Valley, the Practice will reduce consulting sessions enabling 1 doctor to undertake house visits, using personal protective equipment as outlined below. Patients will be charged the standard consultation rates for these visits.
- When more than 15 house visits per day for influenza related illness occur, the High Street annex will become our influenza assessment centre staffed by two doctors and one nurse. Only patients with possible Influenza will be seen there and any supplies of Tamiflu provided by the Government will be distributed at the annex and not at Ropata Medical Centre itself. Supplies of personal protective

equipment will be provided for staff and the patients attending the annex. Demand for influenza assessment may require routine matters being dealt with at the annex and influenza assessment being carried out at the main clinic in High Street.

- There will remain the necessity for house visits to individuals too sick to attend the surgery.
- Routine consultations will reduce and there will be an increase in the provision of repeat prescriptions provided for chronic illness without face-to-face consultations.
- In the event that a patient with possible influenza attends the practice they will be given a mask, asked to cleanse their hands in alcohol gel and go to the annex.
- All patients at the annex and anyone with them will be asked to wear a mask and to cleanse their hands in alcohol gel (see below). All staff at the annex will have PPE.
- The plastic “shield” at main reception will be fitted.
- Practice Nurses will be used to “telephone triage” patients with possible influenza with a consequent reduction in nurse consulting time. The protocol for this is detailed at Appendix 1.
- It may be necessary that some visits are carried out by practice nurses.
- A clinical protocol for the management of pandemic influenza will be developed in consultation with the local DHB. This will include prescription and supply of Tamiflu and criteria for use of antibiotics and admission to hospital. Further detail is at Appendix 1 and 2.
- Consideration should be given to Doctors dispensing Tamiflu and, if appropriate, antibiotics to patients rather than having a family member or patient going to a community pharmacy or distribution centre.
- Households in which cases occur should minimise trips outside the house for all members of the household and minimise visitors to the household.
- It is likely that household members of affected individuals will receive a prophylactic course of Tamiflu as outlined previously.
- Posters will be displayed in both medical centres – see Appendix 3.

f. Personal protection

This will be used to reduce the possibility of person to person transmission.

All symptomatic people should:

- 1) Avoid close contact (less than 1 metre) with others
- 2) Cover their nose and mouth when coughing or sneezing
- 3) Use disposable tissues to contain respiratory secretions
- 4) Immediately dispose of used tissues in the nearest waste receptacle
- 5) Immediately wash and **dry** hands or use alcohol gel.
- 6) If arriving at the practice, or during a consultation at home, the patient(s) should be provided with a surgical mask and cleanse their hands with alcohol gel

Front line receptionists, and doctors and nurses seeing patients with possible pandemic influenza, should use personal protective equipment:

- 1) A surgical mask that is to be replaced when it gets wet
- 2) Disposable gloves to be used when handling objects possibly contaminated with respiratory secretions.
- 3) Careful hand washing or cleansing with alcohol hand gel after each patient contact
- 4) Disposal of contaminated material promptly in a **waste bin**

g. Illness in staff or family member of staff

The primary concern of the Practice is staff safety. Any staff member who has influenza like illness should not come to work until they have completely recovered. If a family member has influenza like illness the related staff member should not attend work till one week after the last ill person in the household has recovered unless they themselves have been affected. Medical help should be requested as outlined above and Tamiflu taken according to the above instructions. ***It is the Practice's intention to treat such absence as sick leave.***

h. Vaccination

In the event that a vaccine becomes available for pandemic influenza there is likely to be a huge demand. Under these circumstances, RMC and its annex would become vaccination centres with minimum routine consultations occurring and maximum numbers of vaccinators operating. However, supply of vaccine will be a major concern though we have a substantial storage capacity of vaccine refrigeration.

i. Communication

Clear lines of communication will be established between all staff. The management team will meet each morning at 8.30 am to review the situation. All staff will contact their manager before 8.30 am to indicate their availability for work. There will be a brief update to all staff present on each day at 1 pm to advise staff of the current situation. A clear channel of communication will be established with the DHB and other providers to provide information on our influenza consulting rates and to be advised of the regional situation. It is presumed that daily briefings will be provided by the DHB. Practice Nurse Manager and Deputy Executive Partner will be our point of contact. The back up for each of them will be the most senior nurse and most senior doctor available each day. Business Manager, Office Manager and Administrative Officer will provide further back up.

j. Continuation of routine services

To enable this to occur, the following key steps should be undertaken.

- Use of the annex as our influenza assessment centre.
- Doubling our current stock of routine supplies of masks gloves and antimicrobial hand gel.
- A reserve supply of the above, (quantities to be calculated) to be stored at Maungaraki.
- Each doctor to be issued a supply of masks gloves and alcohol gel to store in their car.

Staff should be trained to be able to cover each other's tasks. In particular:

- Reception staff should be able to do all jobs relating to reception and accounts.
- Nurses should be able to cover for receptionists.
- Doctors should be able to cover for nurses.
- Several individuals should be able to undertake key management functions.
- All areas – management, reception, nursing and medical - should plan for how the area will operate with <2, 3-5 and > 5 staff absent.

k. Security

A nationwide pandemic with high infection rates and high morbidity and mortality may cause panic and an environment of "every one for him (her) self". If there is a breakdown of law and order, and Hutt Hospital is overloaded and locked down, GP practices may be the next port of call. Ropata is the nearest. We may have crowds of potential patients or the worried well trying to access the practice premises. We need to plan on how we may cope with this situation. Furthermore, and perhaps more likely, Doctors, particularly on their rounds of house calls, need to be mindful of the potential threats to them and, particularly, the stocks of Tamiflu they may be carrying. Similarly, the practice stocks may need special security. RMC will make provisional arrangements for coverage by security services in the event of a pandemic.

It will be prudent for the Medical Centre to have adequate stocks of food, water and other consumables in place before any outbreak. We may have to operate over extended hours with little chance of doctors and staff going elsewhere during this period.

When WHO declares a pandemic, we will ensure that our supply of stock is as planned. Our vehicles will be kept as full as possible of fuel. The practice will hold stocks of non perishable food supplies for 10 people for one week and provision of mattresses pillows and blankets for 10 people to sleep over at the practice. The use of examination couches will be appropriate.

I. Pandemic Supplies These are detailed at Appendix 4.

Appendixes:

1. Management of Pandemic Influenza
2. Clinical Guidelines – Dr T Blackmore CCDHB
3. Posters
4. Pandemic Supplies

MANAGEMENT OF PANDEMIC INFLUENZA

This is detailed in three parts:

1. Receptionists- triage process
2. Nurses – triage process
3. General Practitioners – clinical assessment processes

1. RECEPTIONISTS – TRIAGE PROCESS

If a patient **phones** stating that they may have pandemic influenza then they should be referred to the nurse for triage. If a phone call is received when a nurse is not available - Friday evening, Saturday afternoon and Sunday - then the doctor should be asked to triage the patient. A decision will be made, depending on the status of the pandemic and the availability of nursing staff, on what point nurses will be rostered to conduct the triage at these times.

In the event that a patient with possible influenza **attends** the Practice, they will either be asked to go home, and await a house call, or go to the Maungaraki surgery. If this is not possible, they and anyone accompanying them will be given a mask, asked to cleanse their hands in alcohol gel and be moved to a quarantine area, ideally as near as possible to the practice entrance, e.g. Gill's consulting room.

MANAGEMENT OF PANDEMIC INFLUENZA

2. NURSES – TRIAGE PROCESS

Clinical Case Definition When influenza is circulating in the community, the presence of fever and cough of acute onset are good predictors of influenza. The positive predictive value increases when fever is higher than 38°C and when the onset of the clinical illness is acute (less than 48 hours after the prodromes). Other symptoms - sore throat, rhinorrhoea, malaise, rigors or chills, myalgia and headache - although non-specific, may also be present. The case definition may change when a new pandemic virus emerges.

Suggested Approach

- Identify patient, family/home circumstances and severity of illness in patient and family members.
- Is the description of the illness consistent with the case definition for pandemic influenza?
- If no advise accordingly.
- If yes, when was disease onset?
- If within 48 hours, arrange consultation/visit depending on current situation.
- If co-morbidity – see below - organise consultation/visit
- If greater than 48 hours and no co-morbidity, advise self care - rest, fluids, paracetamol - with telephone review in 48 hours.
 - Discuss care of family members and how to reduce the likelihood of transmission of infection.
 - Avoid close contact (less than 1 metre) with others
 - Cover their nose and mouth when coughing or sneezing
 - Use disposable tissues to contain respiratory secretions
 - Immediately dispose of used tissues in a waste receptacle
 - Immediately wash and **dry** hands.

Co-morbidities >65 yr, pregnancy, chronic lung disease, congestive heart failure, renal failure, immunocompromised, haematological abnormalities, diabetes, neoplastic disease, hepatic diseases, socially unable to cope (i.e., non supportive household)

MANAGEMENT OF PANDEMIC INFLUENZA

3. GENERAL PRACTITIONERS - CLINICAL ASSESSMENT PROCESS

- **Indication for antivirals** Criteria for suspecting that a patient does **NOT** have influenza include:
 1. large, tender lymph nodes in the neck,
 2. white spots on the tonsils,
 3. non-respiratory symptoms e.g. urinary tract symptoms.
- **Antivirals** Individuals should only be considered for treatment with neuraminidase inhibitors if they have all* of the following:
 1. an acute influenza-like illness
 2. fever (>38 C) and
 3. been symptomatic for 2 days or less
- **Treatment Schedule** Adults: Oseltamivir 75mg every 12 hours for 5 days. Dose to be reduced by 50% if creatinine clearance is less than 30ml/minute.

EXCEPTIONS Patients who are unable to mount an adequate febrile response, e.g. the immunocompromised or very elderly may still be eligible despite lack of documented fever.

MANAGEMENT OF PANDEMIC INFLUENZA

3. GENERAL PRACTITIONERS CLINICAL ASSESSMENT PROCESS (continued)

- **Indication for antibiotics**

Antibiotics should cover the likely bacterial pathogens including: *S pneumoniae*, *H influenzae*, *M catarrhalis* and *Staph aureus*.

- **Community**

1. Previously well adults with uncomplicated influenza, or acute bronchitis complicating influenza, in the absence of pneumonia, do not routinely require antibiotics.
2. Antibiotics should be considered in those previously well adults who develop significant worsening of symptoms (particularly recrudescence fever or increasing breathlessness).
3. A prescription for prophylactic antibiotics should be considered for patients at high risk of complications to be used if the illness is not starting to improve after 24 hours or there is worsening of symptoms (as above).
4. Most patients can be adequately treated with a week's course of oral antibiotics
5. The preferred antibiotic is co-amoxiclav, doxycycline or cotrimoxazole.
6. A macrolide such as erythromycin (or roxithromycin) is an alternative choice

MANAGEMENT OF PANDEMIC INFLUENZA

3. GENERAL PRACTITIONERS CLINICAL ASSESSMENT PROCESS (continued)

- **Indication for hospital admission**

Background

1. Patients with clinically defined uncomplicated influenza infection would be expected to make a full recovery. They require good symptomatic management, access to antiviral treatment, information about the natural history, and advice as to when to re-consult.
2. Patients with new or worsening symptoms - particularly shortness or breath or recrudescence fever not responding to treatment - should be examined to assess the presence and severity of influenza-related pneumonia.
3. Patients with worsening of pre-existing co-morbid medical conditions should be managed according to best practice for that condition with reference to published disease-specific guidelines, if available.
4. In-patients with influenza-related pneumonia clinically, hospital referral and assessment should be considered for patients with a CRB-65 score of 1 or 2 (particularly score 2) and urgent admission for those with CRB-65 score of 3 or more.
5. Patients with bilateral chest signs of pneumonia should be referred to hospital for further assessment regardless of CRB-65 score.

Severity assessment used to determine the management of influenza-related pneumonia in patients in the community (CRB-65 score). Score 1 point for each feature present:

- Confusion (Mental Test Score of ≤ 8 , or new disorientation in person, place or time.)
- Respiratory rate ≥ 30 /min
- Blood pressure (SBP < 90 mmHg or DBP ≤ 60 mmHg)
- Age ≥ 65 years

CRB-65 score	Recommended action
0	Likely suitable for home treatment
1 or 2	Consider hospital referral, particularly with score 2
3 or 4	Urgent hospital referral

CLINICAL GUIDELINES: Dr T Blackmore CCDHB

Clinical Case Definition: When influenza is circulating in the community, the presence of fever and cough of acute onset are good predictors of influenza. The positive predictive value increases when fever is higher than 38°C and when the onset of the clinical illness is acute (less than 48 hours after the prodromes). Other symptoms, such as sore throat, rhinorrhoea, malaise, rigors or chills, myalgia and headache, although non-specific, may also be present. The case definition may change when a new pandemic virus emerges.

Confirmed cases of influenza are cases with laboratory confirmation (i.e., RT-PCR from respiratory tract secretions, or clinical cases with an epidemiological link to a laboratory confirmed case.

For the 2001-2002 season, the Centers for Disease Control and Prevention (CDC) used the following case definition for **surveillance** in the USA (as of November 29, 2001):

Temperature of >37.8°C and either cough or sore throat in the absence of a known cause.

Children Children have the highest rates attack rates of influenza, and are the major disseminators of the virus. In a regular "influenza season", influenza infections are the most important causes of consultation in outpatient clinics and account for one half of lower respiratory tract infections that result in hospitalizations of children. During most influenza epidemics, influenza viruses supplant all other major respiratory viruses as causes for consultation for respiratory infection in children. The highest rate of influenza-related serious illness in children occurs in the 6-12 months old age group, after the waning of maternal antibodies. There are some age related differences in toddlers and infants:

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

In children over 5 years and adolescents the most frequent symptoms are:

- fever, usually in the 38-40°C range and a second peak, without bacterial super infection, may occur around the fourth day of illness
- cough,
- non-localized throbbing headache,
- chills,
- myalgia
- sneezing

Backache, sore throat, conjunctival burning with watery eyes and epistaxis may be present, but gastrointestinal symptoms are infrequent. Chest auscultation is usually normal, but occasionally coarse breath sounds and crackles may be heard.

Respiratory illness caused by influenza is non-specific and difficult to distinguish from illness caused by other respiratory pathogens on the basis of symptoms alone.

Special Populations: High-risk Conditions The following groups are considered to be at “increased risk for complications from influenza”:

1. **Adults and children with chronic cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma) severe enough to require regular medical follow-up or hospital care.** Chronic cardiac and pulmonary disorders are by far the most important risk factors for influenza-related death.
2. **People of any age who are residents of nursing homes and other chronic care facilities.** Such residents often have one or more of the medical conditions outlined in the first group. In addition, their institutional environment may promote spread of the disease.
3. **People > 65 years of age.** The risk of severe illness and death related to influenza is moderately increased in healthy people in this age group, but is not as great as in people with chronic underlying disease.
4. **Adults and children with chronic conditions, such as diabetes mellitus and other metabolic diseases, cancer, immunodeficiency, immunosuppression (due to underlying disease and/or therapy), renal disease, anaemia, and hemoglobinopathy.** Immunosuppressed patients are at increased risk for influenza infection, morbidity and mortality. Influenza may result in significant morbidity and mortality among HIV-infected individuals.
5. **Children and adolescents (6 months to 18 years of age) with conditions treated for long periods with acetylsalicylic acid (e.g., Kawasaki disease, juvenile rheumatoid arthritis, acute rheumatic fever, and others.** This therapy might increase the risk of Reye’s syndrome after influenza.
6. **Women who will be in the second or third trimester of pregnancy during the influenza season (autumn or winter).**
7. **Children younger than 2 years of age.**

Complications of Influenza

- Influenza can exacerbate underlying medical conditions (e.g., pulmonary or cardiac disease)
- Influenza-related deaths during influenza epidemics can result from pneumonia as well as from exacerbations of cardiopulmonary conditions and other chronic diseases.
- Older adults account for > 90% of deaths attributed to pneumonia and influenza. Sudden deaths have also been observed during influenza epidemics.

Complications of Influenza	Major Clinical Category
Respiratory	Upper respiratory: Otitis media, sinusitis, conjunctivitis Acute laryngo-tracheo-bronchitis (croup) Bronchitis Bronchiolitis Pneumonia: Primary viral, secondary bacterial combined Complication of pre-existing disease
Cardiovascular	Pericarditis Myocarditis Complication of pre-existing disease
Muscular	Rhabdomyositis Rhabdomyolysis with myoglobinuria and renal failure
Neurological	Encephalitis Reye's syndrome Guillain-Barre Transverse myelitis
Systemic	Toxic shock syndrome Sudden death

Assessment

Initial influenza illness assessment (> 18 years)

Primary Assessment Results	Requiring Secondary Assessment
Temperature	<35°C or >39°C
Pulse	New arrhythmia (irregular pulse) >100 beats/min (if > 16 years)
Blood pressure	<100 systolic Dizziness on standing
Respiratory rate	> 24/minute (tachypnoea)
Skin colour (lips, hands)	Cyanosis
Chest signs or symptoms	Any abnormality on auscultation or chest pain
Mental status	New confusion
Function	New inability to function independently. Persistent vomiting - 2-3 times/24 hr)
Oxygen saturation	<90% room air

- High fever (39°C) in adults or in adolescents needs further assessment.
- Chest pain should always be investigated because it may be a sign of pneumonia (chest pain on inspiration), or may be a sign of cardiac failure. It may also appear as retrosternal pain (tracheal/bronchial pain) or as a pleuritic pain. When positive, it is an indication for secondary evaluation.
- A deterioration in level of consciousness or inability to function independently compared with previous
- Functional status should be further investigated, particularly in elderly patients.
- Vomiting (2-3 times/24 hr.), particularly in elderly patients, requires further assessment.
- Determination of blood gases by pulse oximetry as sign of respiratory failure.

Complementary laboratory studies	Results requiring supervision or admission
FBC	Hgb <80 g/l WBC <2,500 or >12, 000 Platelets <50
Electrolytes	Na <125 mmol/L or >148 mmol/L K <3 mmol /L or >5.5 mmol /L creatinine >150 mol/L Glucose <3mmol/L or >13.9 mmol/L
CPK (only in patients with severe muscle pain)	Total CK >1,000

Blood gases	pO ₂ <60 mmHg room air
O ₂ saturation	< 90% room air
Chest x-ray (CXR) ^a	Abnormal, consistent with pneumonia or with congestive heart failure
ECG (clinical criteria)	Evidence of ischemia, new arrhythmia

Under optimal circumstances, blood work and CXR should be obtained before admission. If resources are limited, priority should be given to patients with co-morbidity or suspected complications (i.e., pneumonia, etc.). Patients with normal gases and normal chest auscultation do not need CXR. Likewise, when the clinical diagnosis of pneumonia is unquestionable and the resources are scarce, no CXR need to be taken unless there is suspicion of a complication of the pneumonia (i.e., empyema). If antibiotics are limited, however, CXR may be indicated to confirm pneumonia before prescribing any drug. Conversely, if pneumonia is suspected but the radiology resources are limited, antibiotics may be prescribed without radiological confirmation.

Microbiological Diagnostic tests

Microbiological diagnostic tests (bacteriological and/or virological) may be appropriate for secondary assessment. They will be performed depending on the clinical presentation and availability of resources. Once the pandemic strain is confirmed in a community, virological tests will be needed only to confirm diagnosis in atypical cases and for surveillance purposes. RT-PCR will be the main diagnostic modality used to diagnose influenza.

Ideally, only purulent sputum will be analysed by Gram staining and culture to identify infecting bacteria and their susceptibility. In a pandemic, these studies should be reserved for patients admitted to hospitals, especially those in intensive care or those failing initial antibiotic therapy.

Ideally, blood cultures should be obtained prior to antibiotic therapy in patients with pneumonia. If resources are scarce, blood cultures will be reserved for patients who are very ill, with toxic signs and low blood pressure; for patients who fail to recover after 48 hours of treatment with antibiotics; or for patients admitted to intensive care units.

Sample	Test
Sputum (purulent)	Bacteriological: Gram and culture
Blood (only for very ill patients or for patients who do not respond to 48h of treatment with antibiotics)	Culture
Nasopharyngeal swab (only for atypical cases or for surveillance)	RT-PCR,

Triage

Practices may make a number of arrangements to deal with a significantly increased demand for advice and consultation, including:

- Telephone triage and advice, which may be nurse-led
- Triage and advice immediately after reception at the practice
- Nurse-led prescribing of antiviral medication or antibiotics, according to patient group directives (PGDs)
- Making arrangements to provide domiciliary services for some patients who are unwell at home, but who may be able to avoid hospital admission
- Possibly making arrangements for patient care in intermediate-level community facilities, again to avoid hospital admission
-

Criteria for suspecting that a patient does NOT have influenza features include:

- large, tender lymph nodes in the neck,
- white spots on the tonsils,
- Non-respiratory symptoms e.g. urinary tract symptoms.

Triage Plan - Community or Outpatients

- If no abnormality and no co-morbidities are found: send home with instructions for self-care.
- If no abnormality, but co-morbidity: send home with instructions for self-care and with reassessment after 48 hr; or send to non-hospital domicile.
- Follow-up those with co-morbidities:
 - >65 yr, pregnancy,
 - chronic lung disease,
 - congestive heart failure,
 - renal failure,
 - immunocompromised, haematological abnormalities, diabetes, neoplastic disease, hepatic diseases,
 - socially unable to cope (i.e., non supportive household)

Recommendations for hospital referral

Background

- patients with clinically defined uncomplicated influenza infection would be expected to make a full recovery. They require good symptomatic management, access to antiviral treatment, information about the natural history, and advice as to when to re-consult.
- patients with new or worsening symptoms - particularly shortness or breath or recrudescent fever not responding to treatment - should be examined to assess

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- the presence and severity of influenza-related pneumonia.
 - patients with worsening of pre-existing co-morbid medical conditions should be managed according to best practice for that condition with reference to published disease-specific guidelines, if available.
 - in-patients with influenza-related pneumonia clinically, hospital referral and assessment should be considered for patients with a CRB-65 score of 1 or 2 (particularly score 2) and urgent admission for those with CRB-65 score of 3 or more.
 - patients with bilateral chest signs of pneumonia should be referred to hospital for further assessment regardless of CRB-65 score.

Severity assessment used to determine the management of influenza-related pneumonia in patients in the community (CRB-65 score)

Score 1 point for each feature present:

- Confusion (Mental Test Score of ≤ 8 , or new disorientation in person, place or time.)
- Respiratory rate ≥ 30 /min
- Blood pressure (SBP < 90 mmHg or DBP ≤ 60 mmHg)
- Age ≥ 65 years

CRB-65 score	Recommended action
0	Likely suitable for home treatment
1 or 2	Consider hospital referral, particularly with score 2
3 or 4	Urgent hospital referral

Assessment of Patients Referred to Hospital

Patients with bilateral lung infiltrates on chest radiography consistent with primary viral pneumonia should be managed as having severe pneumonia regardless of CURB-65 score.

- In hospital, patients with influenza-related pneumonia and who have a CURB-65 score of 3 or more are at high risk of death and should be managed as having severe pneumonia.
- Patients who have a CURB-65 score of 2 are at increased risk of death. They should be considered for short stay inpatient treatment or hospital supervised outpatient treatment. This decision is a matter of clinical judgement.

- Patients who have a CURB-65 score of 0 or 1 are at low risk of death. They can be treated as having non-severe pneumonia and may be suitable for home treatment.

Severity assessment used to determine the management of influenza-related pneumonia in patients admitted to hospital (CURB-65 score). **Score 1 point for each feature present:**

- Confusion (Mental Test Score of ≤ 8 , or new disorientation in person, place or time)
- Urea > 7 mmol/l Respiratory rate ≥ 30 /min
- Blood pressure (SBP < 90 mmHg or DBP ≤ 60 mmHg)
- Age ≥ 65 years

CURB-65 score*	Recommended action
0 or 1	Likely suitable for home treatment
2	Consider short in-patient stay or hospital supervised outpatient treatment
3 or more	Manage in hospital as severe pneumonia

**NOTE: New bilateral lung shadowing on CXR consistent with primary viral pneumonia should be taken as a feature of severe pneumonia regardless of CURB-65 score.*

Treatment - Antivirals

Individuals should only be considered for treatment with neuraminidase inhibitors if they have **all** of the following:

1. an acute influenza-like illness
2. fever ($>38^{\circ}$ C) and
3. been symptomatic for 2 days or less

Treatment Schedule Adults: Oseltamivir 75mg every 12 hours for 5 days. Dose to be reduced by 50% if creatinine clearance is less than 30ml / minute.

EXCEPTIONS

- a) Patients who are unable to mount an adequate febrile response e.g. the immunocompromised or very elderly may still be eligible despite lack of documented fever.
- b) Hospitalised patients who are severely ill, particularly if also immunocompromised, may benefit from antiviral treatment started more than 48 hours from disease onset. (This advice reflects the lack of robust evidence to guide the use of antivirals in such patients and places a high value on the potential benefits of antiviral therapy).

Antibiotics

Antibiotics should cover the likely bacterial pathogens including: *S pneumoniae*, *H influenzae*, *M catarrhalis* and *Staph aureus*.

Community

- Previously well adults with uncomplicated influenza, or acute bronchitis complicating influenza, in the absence of pneumonia, do **not** routinely require antibiotics.
- Antibiotics should be considered in those previously well adults who develop significant worsening of symptoms (particularly recrudescence fever or increasing breathlessness).
- A prescription for prophylactic antibiotics should be considered for patients at high risk of complications to be used if the illness is not starting to improve after 24 hours or there is worsening of symptoms (as above).
- Most patients can be adequately treated with a week's course of oral antibiotics
- The preferred antibiotic is co-amoxiclav, doxycycline or cotrimoxazole.
- A macrolide such as erythromycin (or roxithromycin) is an alternative choice

Hospital

- The same recommendations as above hold, in particular most patients can be treated with oral antibiotics.
- Parenteral choices of antibiotic include cefazolin, co-amoxiclav and cefuroxime.
- Ceftriaxone does not have good anti-staph cover, and is therefore not recommended.

POSTERS

See attached posters

PANDEMIC SUPPLIES

1. Clinical Supplies

The aim is to hold sufficient stocks to maintain normal operations for one month if a pandemic occurs. Standard stock holdings are one month's supply. There will always be 2 months' supply of equipment available in the practice. All stock will be rotated to ensure correct turnover.

Item	Quantity/day	Quantity/week	Quantity/month	Approx boxes	Comments
Face Masks N95	60	420	1680		For staff having contact within 1 meter of patients. 15 front line staff
Surgical masks	60	420	1680		For staff not in direct contact. 15 staff
Masks for patients	660	4620	18480		Short term only when in practice
Gloves - single	1320	9240	36960		Pair/patient
Home visit gloves -single	20	140	560		10 home visits per day
Gowns	44	308	1232		Average 4 Gowns/day
Spacers	60	420	1680		
Nebulisers	40	280	1120		½ adult ½ child
Ventolin/Atrovent	10/50	70/350	280/1400		Inhalers/neb
Panadol	540	3780	15120		½ patients receive Panadol bottles
Alcohol hand gel	2	14	56		
Soap	2	14	56		
Hand towels	22	154	616		packets
Tissues	9	63	252		Packet
Tongue depressors	1320	9240	16960		

Averages 60 patient appointments per day in 9 consulting rooms at Ropata, and 2 at Maungaraki, over 7 days

Item		Current stock 1 month	Pandemic stock	comments
Triangular Bandage	single	10		
Collar n cuff	4m	1		
Sterile dressing packs	single	100	200	

sticking plaster	box	20	200	Vaccine requirements
cotton tips 15cm	packet	10	30	
jumbo swabs	packet	10	30	
micro pore tape 12mm	box	1	3	
25mm	box	1		
strapping tape 5 cm	packet	1		
2.5cm	packet	1		
Needles Pink	18x1.5	1		
yellow	20x1	1		
Black	22x1.5	1	4	Pain relief
orange	25x5/8	6	20	Vaccine
orange	25x1	4	10	Vaccine
orange	25x1.5	4		
Green	21x1	1		
syringe non leur lock	20	1		
catheter tip	60	20		
nebuliser masks	adult	60	600	
	child	60	600	
Nebulisers bowels		120	1200	
O2 tubing		150	1400	
bag wet strength small		20	100	
yellow bag	large	10	50	
	small	20	100	
bag stick on		50	500	
under sheet incontinent		2	4	
H2O for injection	5ml	1	4	
sodium chloride for injection	5ml	1	4	
chlorhexidine/cetrimide	30ml vial	1		
viodine5%	100ml	1		
viodine 7.5% surgical scrub		1	2	
microshield hand gel	125	12	20	
microshield hand gel	500ml	12	70	
microshield moisturizing lotion	500ml	6	12	
chlorhexidine hand wash	pink 1.5L	1	3	
de-solve it	trigger pack	1		
microshield skin care	white 1.5L	1	3	
vomit bowels (white plastic)	50	50	500	
Masks - duck bill			20000	
- Particulate			2000	
Butterfly needles	23x 3/4	6		
	25 x 3/4	6		

Lignocaine 2% gel with chlorhexidine		6		
Catheter leg bags		10		
Catheter leg bag straps		10		
Catheters	12 Fr	2		
	14 Fr	2		
	16 Fr	2		
	18 Fr	2		
Bacterial Filter				
Combine dressing	20cm x 20cm	20	60	
Combine dressing	20cm x 9	20	60	
Oral airways	OO	2	6	
	0	2	6	
	1	2	6	
	2	2	6	
	3	2	6	
	4	2	6	
IV cannula	16g x 1.77	2	6	
	18g x1.16	2	6	
	20g x1	2	6	
	22g x 1	2	6	
	24g x 3/4	2	6	
lever lock cannula		6	20	
injection site		6	20	
solution infusion set		6	20	
blunt plastic cannula		6	20	
n/saline	100ml	4	10	
	500ml	4	10	
	1000ml	2	10	
para gauze	10x10	3		
	5x5	3		
steri strips	3mmx75mm	2		
	6mmx 38mm	2		
softban	3mx100mm	4		
yankauer suction		2	10	
Resuscitation masks		1	10	
razors	1pkt	1		
O2 Medium concentration mask	adult	10	50	
	child	10	50	
medicine measure	box of 20	20	60	
crepe bandage 5cm x 1.5m		24		
crepe bandage 7.5cm x 1.5m		24		

crepe bandage 10cm x 1.5m	24		
crepe bandage 15cm x 1.5m	24		
2.5cm - elastic cohesive bandage	20		
6cm - elastic cohesive bandage	20		
8cm - elastic cohesive bandage	20		
fixomull 2.5cm x 10cm s/cloth	6		
fixomull 5cmx10m s/cloth	6		
fixomull 15cmx10m s/cloth	6		
tubigrip 'a'	2		
tubigrip 'b'	2		
tubigrip 'c'	2		
tubigrip 'd'	2		
tubigrip 'e'	2		
tubigrip 'f'	2		
tubigrip 'g'	1		
tubINETTE size 12	2		
tubINETTE size 01	1		
cotton wool balls 500's small	3	6	
eye pads sterile 50's	1	2	
telfa non adhesive dressing 7.5 x 10 100's	3		
telfa non adhesive dressing 5 x 7.5 cm 100's	3		
telfa non adhesive dressing 10 x10 cm 100's	1		
roll opsite flexifix 5 cm x 10 m	4		
opsite flexifix 10cm x 10m roll	4		
adaptic dressing 3x3" 50's	6	12	
surgical blades #11 (100's)	1		
surgical blades #15 100's	3		
stitch cutters 100's	3		
covered 4cm x 5m	6		
covered 8cm x 5m	6		
thermoscan thermometer covers pc200's	20	80	
wooden spats 500's	4	10	
vomit bowls 50's emesis bag 1500ml	1	2	
lubricant lubrigel 500g pump pot	8		

sodium chloride sachets 30ml 50's		4	8
Suture dafilon 4.0 ds19 12's		6	
suture dafilon 3.0 ds19 12's		1	
suture dafilon 5.0 ds19 12's		1	
suture vicryl 2.0 length 135cm		2	
suture dafilon 6.0 ds19 12's		1	
gut 2.0		1	
gut 3.0		1	
needle terumo dental needle 27 x7/8 100's		1	
vaginal speculum		1	
self-seal pouches		2	6
self-seal pouches		2	6
self-seal pouches		2	6
xylocaine with adrenaline - cartridges		2	
xylocaine with adrenaline - amps		1	2
xylocaine 1% - amps		1	2
xylocaine 2% - amps		1	2
proctoscope - small		10	
alcohol swabs		2	15
plain sticks		1	
gauze squares 7.5x7.5		10	30
gauze squares 5 x 5		6	20
panty liners			
dental needles		2	
syringe		1	
syringe - leur lock 3ml		6	
5ml		1	
10ml		1	
gloves lightly powered (green) sm		6	15
Med		6	20
L		6	10
powder free (pink) Sm		6	15
Med		6	20
L		6	10
sterile gloves 6		1	3
6.5		1	3
7		1	3
7.5		1	3
8		1	3

