

# NHS Greater Glasgow and Clyde Pandemic Influenza

## Infection Control Guidance: Partnerships

### Document Control Summary

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Pandemic Flu Preparedness Plan:  
Infection Control Aspects in partnerships

Contents

|    |   | Page |
|----|---|------|
| 1. | Introduction  | 3    |
| 2. | Influenza the agent   | 4    |
| 3. | Aerosol generating procedures   | 5    |
| 4. | Infectivity and Communicability   | 6    |
| 5. | Pandemic Infection Control Measures <ol style="list-style-type: none"><li>a. Patient Placement</li><li>b. Hand Hygiene</li><li>c. Personal Protective Equipment (PPE)</li><li>d. Decontamination of Patient Equipment</li><li>e. Decontamination of the environment</li><li>f. Disposal of waste</li><li>g. Laundry</li><li>h. Management of a coughing and sneezing patient</li><li>i. Staff Education</li></ol> | 6-11 |
| 6. | Appendices <ol style="list-style-type: none"><li>1. Infection Control Supplies Checklist</li><li>2. Putting on and removing PPE.</li></ol>  | 12   |

## 1. Introduction

In April of 2009 a new strain of influenza (H1N1 or swine flu) was identified for the first time in the UK, probably by travellers from Mexico and the USA. Since then H1N1 has spread to over 100 countries throughout the world. Pandemic Status was confirmed in June 2009.

Primary strategies for preventing pandemic influenza (flu) are the same as those for seasonal influenza:

- Vaccination
- Early detection and treatment
- Standard Infection control measures to prevent transmission during patient care

When a pandemic begins, a vaccine may not be widely available, and the supply of antiviral drugs limited. Halting the spread of virus in healthcare settings will rely heavily on a strict adherence to basic infection control measures.

The infection control guidance within this document is based on current knowledge of influenza, i.e. routes of influenza transmission, the pathogenesis of influenza and the effects of influenza control measures during past pandemics and inter-pandemic periods.

Any plan to prepare for a pandemic must have a degree of flexibility and real-time decision making to allow for varying characteristics of a novel strain of virus. Specific knowledge such as virulence, transmissibility, clinical manifestations, at risk groups and drug sensitivity remain unknown until the pandemic gets underway. This document will be updated as new information becomes available.

It is important to recognise that NHS Greater Glasgow & Clyde has only a few weeks to prepare once a new pandemic strain is identified. The only method of effectively slowing down the progress of the pandemic will be basic infection control measures effectively carried out by all those involved in delivering healthcare.

It is equally important to understand that standards and precautions recommended in this document may only be achievable in the early phases of a pandemic while resources (staff and equipment) are available. Good communication with the local Pandemic Influenza Control Team is vital at all stages.

## 2. Influenza – the agent

Infections with a strain of influenza (type A or B) occur every year. Pandemic influenza occurs when a new subtype of influenza appears that is different to previous subtypes and can:

- Infect humans
- Spread effectively from human to human
- Causes significant clinical illness in a high proportion of those who acquire the virus.

Studies based on previous pandemics would suggest that from the time of recognition of a pandemic strain of influenza to its introduction in the UK would take from two to four weeks. It would then only take a few weeks to spread across the entire country.

### Clinical Features of H1N1

Influenza illness can include any or all of these symptoms: fever, muscle aches, headache, dry cough, diarrhoea, sore throat, runny or stuffy nose and extreme tiredness. The fever and body aches can last 3-5 days and the cough and lack of energy may last for 2 or more weeks. Most people who have influenza will have mild symptoms and recover within 7 days, however, a small number of people may develop more serious illness, e.g. people with underlying heart and respiratory conditions.

### Routes of transmission

Infection principally takes place within the respiratory tract. Virus is shed as large aerosol droplets (more than 5µm diameter) during coughing or sneezing by an infected person. Once expelled, virus particles are transmitted via the droplet or contact route to a susceptible person. How infectious an individual is depends on how severe their symptoms are; people will be most infectious just after their symptoms have stopped.

#### A. Droplet transmission

Large droplets, generated from a person with clinical disease, may land directly on the conjunctiva, or mucous membranes of the nose and mouth of a susceptible person. Large droplets are heavy and do not remain suspended in the air, only travelling up to 1 metre.

#### B. Contact transmission

Influenza virus is known to survive well in the environment:

- Up to 48 hours on hard non-porous surfaces
- 8-12 hours on cloth, tissue and paper
- 5 minutes on the hands

Once on the hands, virus is easily transferred on to the conjunctiva or mucous membranes of the nose or mouth.

#### C. Small-particle aerosols

Transmission may occur at short distances through inhalation of small particle aerosols which may be produced during aerosol generating procedures, e.g. during intubations.

**NB** –Small particle Aerosols may remain in the atmosphere for up to one hour after generation. This will be less in negative pressure rooms or where air changes are frequent.

## Case Definitions H1N1

### Confirmed case:

Any person with laboratory confirmation of influenza A(H1N1)v

### Suspected case:

Clinicians are now encouraged to diagnose influenza A(H1N1)v cases on the basis of symptoms. The clinical diagnostic criteria are:

Fever [pyrexia  $\geq 38^{\circ}\text{C}$ ] or a history of fever,

**and**

Influenza-like illness (**two or more** of the following symptoms: cough, sore throat, rhinorrhoea, limb or joint pain, headache)\*

**or**

Severe and/or life-threatening illness suggestive of an infective process.

*\*vomiting and diarrhoea has been a feature of some of the confirmed US cases*

***NB -Please check the current NHSGGC algorithm for the most up to date information regarding geographical areas within NHSGGC please click on the following link:***

[http://www.nhsggc.org.uk/content/default.asp?page=s1309\\_2](http://www.nhsggc.org.uk/content/default.asp?page=s1309_2)

## 3. Aerosol Generating Procedures

Healthcare staff who perform such procedures on patients with pandemic influenza, or are within 1 metre of such procedures, warrant additional precautions (see personal protective equipment). It must be noted that there is no evidence that influenza transmission can occur across long distances or through prolonged suspension in air.(CDC28) Staff present when an aerosol generating procedure is being carried out, should wear an FFP3 mask only if they are assisting or are within 1 metre of the patient.

Where possible, aerosol generating procedures should be avoided or alternative methods considered e.g. nebulisers replaced with inhalers. Although the preferred option would be to perform any potential aerosol generating procedures in a side room with the door closed; it is acknowledged that owing to urgency and limitation of such areas this will generally not be achievable during a pandemic. If deemed necessary only essential staff should be present.

During certain healthcare procedures, small particle aerosols may be generated which could increase the risks to healthcare workers in the immediate vicinity. These aerosol generating procedures include:

- Endotracheal intubation and related procedures, for example, manual ventilation and airway suctioning
- Cardiopulmonary resuscitation
- Diagnostic sputum induction
- Bronchoscopy

- Non Invasive Ventilation (NIV) e.g. Bilevel Positive Airway Pressure Ventilation (BiPAP), Continuous Positive Airway Pressure Ventilation (CPAP) and High Frequency Oscillatory Ventilation (HFOV)
- Procedures involving the use of high-speed devices such as power saws e.g. those used in post mortem.
- Dental procedures

In the paediatric setting the use of FFP3 respirators for staff working in close proximity to a patient who is considered to be a probable or confirmed case with an uncuffed endotracheal tube is strongly recommended.

Aerosols may remain in the atmosphere for up to one hour after generation. This will be less in negative pressure rooms or where air changes are frequent.

#### 4. Infectivity and Communicability

Table 1 indicates periods of communicability for Influenza A

Table 1. Periods of communicability

| Host                        | Incubation period | Period of communicability  |
|-----------------------------|-------------------|--|
| Adults                      | 1-4 days          | 1 day before until 5 days or more after onset of symptoms  |
| Children                    | 1-4 days          | Young children can shed virus several days before onset of symptoms. Infectious for 7 or more days after onset of symptoms |
| Severely immuno-compromised | 1-4 days          | May shed virus for weeks to months   |

#### 5. Pandemic Infection Control Measures

Standard infection control precautions should be used by HCW with all patients in all health care settings. These include:

- Patient placement
- Hand hygiene
- Appropriate use of personal protective equipment by healthcare workers (HCW)
- Decontamination of patient equipment
- Environmental cleanliness
- Safe segregation and disposal of waste
- Management of a coughing and sneezing patient

### A. Patient placement: patients with flu-like illness

- Where possible, patients with flu-like illness should be encouraged to telephone NHS 24 or the GP surgery for advice rather than come to the surgery or accident and emergency departments.
- Cancellation of all non-essential clinics, including baby clinics should be considered at the height of the pandemic
- Babies needing care or childhood immunisations should be seen in a separate area of the clinic allocated for non-flu patients

### **Waiting areas in surgeries**

A number of strategies **should be considered** to minimise the transmission of influenza in the waiting area, including:

- Provide separate entry and waiting areas
- Minimise the time spent in the waiting area
- Place patients with flu-like symptoms straight into a single room, with a hand wash sink
- Patients with flu-like symptoms should be encouraged to use a single use tissue to wipe their nose or for covering their nose and mouth when coughing or sneezing.
- Patients should be encouraged to perform hand hygiene after coughing and sneezing
- Remove toys, magazines, soft furnishings and leaflets from the waiting areas
- Provide single use tissues, clinical waste bins and alcohol hand rub for waiting patients
- If possible, designate an area of the surgery for flu patients, limiting access by all non-essential staff to this area. This area should have adequate supply of hand wash sinks.

### B. Hand Hygiene

- Hand hygiene is the single most effect precaution to reduce the transmission of infectious agents in health care settings.
- Strict adherence to hand hygiene is imperative and may be the only preventative measure in a pandemic situation.
- HCW should remember not to touch their face (especially eyes and nose) while attending a patient with flu, before performing hand hygiene

- Where water is not available, an alcohol based hand rub may be used if hands are visibly clean. It is important to cover all surfaces of the hands with the alcohol solution and allow it to evaporate.
- Where water is not available and hands are visibly soiled, they should be wiped with paper towel/tissues first, then alcohol hand rub used.
- HCW should carry with them, a personal bottle of alcohol hand rub for home visits
- Alcohol rub can also be employed again after finally leaving the premises, e.g. on returning to the car.

### C. Use of personal protective equipment (PPE) by HCW

A risk assessment must be carried out on all procedures to be carried out during the delivery of health care to all patients, based on blood and body fluid exposure and the need for PPE. In general PPE for influenza in general practice is recommended as shown in table 2.

Table 2

| PPE                              | Entry to isolation room/cohort area but no patient contact | Close patient contact (< 1 metre) | Aerosol generating procedures |
|----------------------------------|--|-----------------------------------|-------------------------------|
| Hand hygiene                     | ✓  | ✓                                 | ✓                             |
| Gloves                           | X  | ✓                                 | ✓                             |
| Plastic aprons                   | X  | ✓                                 | X                             |
| Water repellent disposable gowns | X  | X                                 | ✓                             |
| Surgical mask                    | ✓  | ✓                                 | X                             |
| FFP3 respirator                  | X  | X                                 | ✓                             |
| Eye protection                   | X  | Risk Assessment                   | ✓                             |

### **Masks**

Surgical masks may be of benefit in the early stages of the pandemic. Surgical masks should be worn by health care workers for close contact (< 1 metre) with patients suspected or known to have influenza. The mask provides a physical barrier which becomes ineffective once wet. As masks themselves may become a reservoir for the virus, great care should be taken during their removal and disposal.

#### *When to remove the mask*

If visiting a number of patients within a cohort area, or in rapid succession within a clinic or A&E department, it is acceptable to wear the same mask and change it at the end of the session and if it gets wet. Great care must be taken not to contaminate the hands during this time by touching the mask. Hand hygiene must be performed after removal of all PPE. All contaminated PPE must be removed before leaving a patient care area. Surgical masks or FFP3 respirators should be removed last.

*Surgical masks should:*

- cover both the nose and mouth
- not be allowed to dangle around the neck
- not be touched during use
- be changed when they become wet
- be worn once and discarded in an appropriate receptacle as clinical waste

*When to wear an FFP3 mask*

FFP3 masks should be worn only by those staff carrying out aerosol generating procedures. To be effective, individual users must be trained to fit the mask properly to their face.

The mask must seal tightly to the face to prevent air entering from the sides. A good fit is only achievable where there is good mask-to-skin contact. Beards, long moustaches and stubble may cause leaks around the mask. Staff who may be required to wear an FFP3 mask will be trained how to fit the mask to their face for maximum benefit. FFP3 masks should be replaced after each use and changed if breathing becomes difficult, or if the mask becomes damaged, or obviously contaminated, or if a proper face fit cannot be maintained.

### **Gloves**

- Gloves are necessary for the routine care of patients suspected or known to have influenza.
- Please refer to the NHS Greater Glasgow & Clyde Prevention and Control of Infection Policy on Personal protective equipment – this policy can be viewed by clicking on the following link,  
<http://library.nhsggc.org.uk/mediaAssets/Infection%20Control/Microsoft%20Word%20-%20PPE%202008.doc.pdf>

### **Aprons**

- A plastic apron should be used to prevent contamination of staff uniform or clothing.
- The apron should be removed immediately after care is given, and discarded into a clinical waste bag.
- Aprons should not be reused.

### **Gowns**

- Single use fluid repellent gowns must be worn when performing/assisting in aerosol generating procedures.

### **Eye protection**

- Eye protection should be considered when there is a risk of contamination of the eyes with blood, body fluids, secretions or excretions.
- There should be a individual risk assessment at the time of providing care.
- There should be a individual risk assessment at the time of providing care.

A diagram of how to put on and remove PPE is contained in Appendix 2.

#### D. Decontamination of patient equipment (including toys)

- Where possible, equipment should not be shared between patients with influenza.
- Where equipment must be shared, detergent, water and disposable wipes (or detergent wipes) can be used to clean equipment before being used on the next patient. Please refer to/ click on the link to view the NHS Greater Glasgow & Clyde Prevention and Control of Infection Policy on Decontamination.  
<http://library.nhsggc.org.uk/mediaAssets/Infection%20Control/Microsoft%20Word%20-%202009.01.09-SOP-Cleaning%20Spec%2008-with%20PICT-Times%20New%20Roman.doc.pdf>

#### E. Decontamination of the environment

All environmental surfaces potentially contaminated with respiratory secretions from a patient with or suspected of having influenza should be cleaned with detergent, water and disposable wipes.

#### F. Disposal of waste

No special handling procedures beyond those required to conform with Standard Infection Control Precautions are recommended for clinical and non clinical waste that may be contaminated with influenza virus. HCW must follow the NHSGGC Waste Policy. In the home setting, clinical waste other than sharps, can go via the household waste route.

#### G. Laundry

No special handling procedures beyond those required to conform with Standard Infection Control Precautions. Please refer to the NHS Greater Glasgow & Clyde Prevention and Control of Infection Policy on Laundry for contaminated linen.

#### H. Management of a Coughing & Sneezing Patient

Patients, staff and visitors should be encouraged to minimise potential influenza transmission through good hand hygiene measures:

- cover nose and mouth with disposable single use tissues when sneezing, coughing, wiping and blowing noses.
- Dispose of used tissues in nearest waste bin, wash hands after coughing, sneezing using tissues.
- Keep hands away from eyes, mouth and nose.

Some patients may need assistance with containment of respiratory secretions, e.g. older people and children. Those who are immobile may need a container readily at hand for immediate disposal of tissues and a supply of hand wipes and tissues. Where possible in common waiting areas or during transport, coughing and sneezing patients should wear surgical masks to minimise the spread of respiratory secretions and to reduce environmental contamination.

## I. Staff Education

Basic training on standard infection control precautions will be available for all healthcare workers. In addition, staff must be aware of the need to use additional measures during a pandemic of influenza. This will include information on influenza and how to reduce the transmission such as segregation of flu and non-flu patient, decontamination of patient equipment and use of standard PPE. HCW who need training on how to fit and wear an FFP3 mask must be identified and receive training on how to fit a mask.

## Appendix 1 Infection control supplies checklist

### Supplies for infection control

Planning for a pandemic of influenza must include a checklist of all supplies required to reduce the risk of transmission of influenza virus. Table 1 gives an example of such a list.

| Item  |
|---|
| Plain liquid soap   |
| Paper towels  |
| Alcohol (antiseptic) hand rub   |
| Personal dispensers of hand rub   |
| Detergent wipes   |
| Detergent   |
| Disposable tissues  |
| Paper towel roll  |
| Alcohol impregnated wipes   |
| Gloves – vinyl  |
| Gloves – medical examination  |
| Surgical masks  |
| FFP3 masks  |
| Plastic aprons /gowns   |
| Goggles / visors <ul style="list-style-type: none"><li>- Mask with integral visor</li><li>- Full face visor</li><li>- Polycarbonate safety spectacles</li></ul> |
| Clinical waste bags   |

## Appendix 2

### Putting On And Removing Personal Protective Equipment

The level of PPE used will vary based on the procedures being carried out and not all items of PPE will always be required. Standard infection control precautions apply at all times. The order given here for putting on PPE is practical but the order for putting on is less critical than the order of removal:

#### a) Gown (or apron *[illustrated]* if not aerosol-generating procedure)

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten at back of neck and waist



#### b) FFP3 respirator<sup>1</sup> (or surgical mask if not aerosol generating procedure)

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



#### c) Goggles or face shield (aerosol-generating procedure and as appropriate after risk assessment)

- Place over face and eyes and adjust to fit



#### d) Disposable gloves

- Extend to cover wrist of gown if worn.



The order for removing PPE is important to reduce cross contamination so the order outlined below always applies even if not all items of PPE have been used:

**a) Gloves**

Assume the outside of the glove is contaminated:

- Grasp the outside of the glove with the opposite gloved hand; peel off
- Hold the removed glove in gloved hand
- Slide fingers of the ungloved hand under the remaining glove at wrist
- Peel second glove off over first glove
- Discard appropriately



**b) Gown or apron**

Assume the gown/apron front and sleeves are contaminated:

- Unfasten or break ties
- Pull gown/apron away from the neck and shoulders, touching the inside of gown only
- Turn the gown inside out
- Fold or roll into a bundle and discard appropriately



**c) Goggles or face shield**

Assume the outside of goggles or face shield is contaminated:

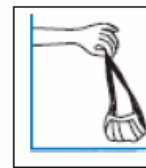
- To remove, handle by head band or ear pieces
- Discard appropriately



**d) Respirator or surgical mask**

Assume the front of respirator/surgical mask is contaminated:

- Untie or break bottom ties, followed by top ties or elastic and remove by handling ties only
- Discard disposable ones appropriately



**Perform hand hygiene immediately after removing all PPE.**

To minimise cross-contamination, the order outlined above should be applied even if not all items of PPE have been used. **Clean hands thoroughly immediately after removing all PPE.**