

Supplement 10

Guidance for Pandemic Influenza: Infection Control in Hospitals, Community and Primary Care Settings

Produced by the Pandemic Influenza Expert Group, adapted with kind permission from Guidance produced by the Department of Health, England Health Protection Agency. October 2005 and November 2007

Prior to WHO's declaration that a pandemic has started hospitals and practitioners should be alert for cases of influenza caused by a novel virus that has not yet fully adapted to humans to become a pandemic virus. The number of such cases is expected to be small and most likely to occur in travellers returning from affected parts of South East Asia. The infection control guidance in this document does not apply to the management of these cases and practitioners should follow current guidance as issued by the Health Protection Surveillance Centre.

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Executive Summary

Guidance for Pandemic Influenza: Infection Control in Hospitals, Community and Primary Care Settings has been developed to facilitate planning by the Health Service Executive in advance of the emergence of the next influenza pandemic. Acute hospitals and primary care settings will form the vanguard of the health service response to pandemic influenza. However, an influenza pandemic will not be “business as usual” and the way the health service functions will need to be altered to accommodate exceptional infection control arrangements. This Guidance provides specific recommendations, planning strategies, and tools for local public health and healthcare officials who are the front line for managing and containing an influenza pandemic. The principles in this guidance also apply to non-HSE healthcare settings. Planning now will minimize the need to make unplanned decisions and improve those made at the time of the pandemic.

The Guidance includes detailed sections on preparedness planning, occupational health, infection control precautions, and environmental infection control. Additional sections focus on hospital, community and primary care specific-issues separately.

For planning purposes it is assumed that a pandemic strain of influenza will have similar transmission, communicability, and inactivation properties as “routine” seasonal influenza. Influenza is well established to be transmitted from person-to-person through close contact. **The balance of evidence points to large droplet and direct and indirect contact as the most important routes of transmission.** Airborne, or fine droplet transmission, may also occur. In view of this, **Standard Infection Control Precautions and Droplet Precautions** are the principal infection control strategies, which should be rigorously followed. In certain circumstances these control measures may need to be augmented with higher levels of respiratory protection. Scrupulous attention to **handwashing** and **containment of respiratory secretions** produced by coughing and sneezing are the

cornerstones of effective infection control. Other key recommendations include **separation or cohorting of patients** with pandemic influenza from those who have other medical conditions; prompt identification of health care workers with pandemic influenza; **restriction of ill workers and visitors** from healthcare settings; and **education of staff, visitors, and patients** about the transmission and prevention of influenza that is understandable and applicable to their particular situation.

During the initial stages of a pandemic, there may be limited supplies of antiviral drugs and an effective vaccine. Thus, attention to non-pharmaceutical methods of control as outlined in this Guidance will be particularly important.

This Guidance will be updated if epidemiologic and virological information on the eventual pandemic virus indicates that adjustments in approach to infection control are necessary. Users are strongly urged to refer to the most up-to-date version of this Guidance from web-based access points.

1 Overview of the guidance document

1.1 Scope and purpose

This document provides guidance and information on infection control procedures to inform and advise local HSE area planning for pandemic influenza. It is issued by the Pandemic Influenza Expert Group as guidance.

It is intended for use in Ireland in the event that the World Health Organisation (WHO) declares that an influenza pandemic has started, and cases of pandemic influenza have been identified in Ireland.

This Guidance should be read in conjunction with the Department of Health and Children and HSE National Pandemic Influenza Plan⁽¹⁾. Relevant Health and Safety legislation and guidance, including the Safety, Health and Welfare at Work (biological Agents) regulations, SI No 146 of 1994 as amended by SI No 248 of 1998 should also be consulted.^(2,3)

To facilitate preparedness planning this document has been written in advance of the emergence of the next influenza pandemic, at a time when the identity of the causative virus remains unknown. It is based on the best evidence available from previous pandemic and inter-pandemic periods. Thus the Guidance may evolve as information on the eventual pandemic virus emerges. **Users are strongly urged to refer to the most up-to-date version of this Guidance from web-based access points.**

1.2 Organisation of the guidance document

The document is divided into levels of increasingly detailed information:

- An executive summary
- An overview to pandemic influenza and core principles of containment and infection control (section 2)
- Detailed guidance applicable to hospital, community and primary care settings on preparedness planning (section 3) occupational health (section 4), infection control precautions (section 5) and environmental infection control (section 6)

- Sections on hospital (section 7) and primary care (sections 8) specific issues including key infection control issues for specialised settings within these domains
- References and tools to aid local level preparedness

Using this Guidance, Acute hospitals and Primary Care settings and other community healthcare settings can develop operational pandemic influenza response plans that utilize consistent infection control principles and practices.

1.3 Key Terms Used

Healthcare worker: Refers to all workers employed in healthcare settings. It is used in an inclusive context and is not restricted to those professions traditionally regarded as healthcare workers (e.g., doctors, nurses, and the allied health professionals (AHP)).

Influenza: Refers to cases of pandemic influenza either confirmed by laboratory test(s) or based on clinical signs and symptoms. A laboratory-confirmed diagnosis of influenza is most likely to be obtained during the early stages of a pandemic. As the number of patients rapidly increases and health professionals become more proficient at making a clinical diagnosis, confirmatory laboratory testing is likely to diminish significantly and almost all patients will be diagnosed on clinical grounds alone.

Note: *Prior to WHO's declaration that a pandemic has started hospitals and practitioners should be alert for cases of influenza caused by a novel virus, which has not yet fully adapted to humans to become a pandemic virus. The number of such cases is expected to be small and most likely to occur in travellers returning from affected parts of SE Asia. **The infection control guidance in this document does not apply to the management of cases such as these and practitioners should follow current guidance as issued by the Health Protection Surveillance Centre.***

**[http://www.ndsc.ie/A-Z/Respiratory/AvianInfluenza/Guidance/
File,1203,en.pdf](http://www.ndsc.ie/A-Z/Respiratory/AvianInfluenza/Guidance/File,1203,en.pdf)**

Useful reference documents

1. Safety, Health and Welfare at Work (Biological Agents) Regulations, 1994. available at:
<http://www.irishstatutebook.ie/ZZSI146Y1994.html>
2. Safety, Health and Welfare at Work (Biological Agents) (Amendment) Regulations, 1998 available at:
<http://www.irishstatutebook.ie/ZZSI248Y1998.html>
3. Segregation Packaging and Storage Guidelines for Healthcare Risk Waste available at:
http://www.dohc.ie/publications/pdf/segregation_packaging.pdf?direct=1
4. Guidelines for Hand Hygiene in Irish Health Care Settings available at
<http://www.hpsc.ie>

2 Overview of pandemic influenza and infection control

Key Points

Health impacts of a pandemic in Ireland

- The elderly, young adults, and children may be particularly affected
- Clinical and serological attack rates may be 25% and 50%, respectively
- 3000-5000 or more deaths are possible
- Substantial demand for health care services in both primary care and hospital settings is likely

Clinical features of influenza

- Fever, dry cough, and abrupt onset
- Headache, sore throat, runny or stuffy nose, aching muscles and joints, and extreme tiredness also possible
- Adults can be infectious from a day before symptoms begin through about 5 days after illness onset. Children can be infectious for about 7 days; young children can shed virus for several days before becoming ill

How influenza is spread

- Transmitted from person-to-person through close contact. Balance of evidence points to droplet and direct and indirect contact transmission as the most important routes
- Airborne transmission may also occur, especially during aerosol generating procedures

Prevention of influenza transmission

- Strict adherence to infection control practices especially hand hygiene, containment of respiratory secretions and the use of personal protective equipment (PPE)
- Adherence to Standard Infection Control Precautions and Droplet Precautions
- Administrative controls e.g., separation or cohorting of patients with pandemic influenza.
- Restriction of symptomatic workers and visitors
- Education of staff, patients and visitors

2.1 Emergence of a pandemic

Seasonal influenza is a familiar infection in Ireland, especially during winter. Every year strains of influenza (type A or B) circulate, giving rise to clinical consultations in primary care (age-specific impact varies by season), episodes of hospital treatment (mainly in older persons and young children, but occasionally in working age adults), and deaths (mainly in the elderly).

Pandemic influenza occurs when a new influenza A virus subtype emerges which is markedly different from recently circulating subtypes and strains, and is able to:

- Infect humans
- Spread efficiently from person to person
- Cause significant clinical illness in a high proportion of those infected.

Since late 2003 a massive and unprecedented outbreak of highly pathogenic influenza (A/H5N1) affecting poultry has spread throughout much of East and South East Asia. This outbreak has so far been associated with a small number of human cases but a high proportion of deaths.. Although the emergence of an A/H5N1 strain with capacity to spread efficiently between humans is neither inevitable nor imminent, international concern has increased regarding the possibility that avian influenza A/H5N1 may evolve to produce the next pandemic.

Modelling studies based on the 1968/69 pandemic and more recent international air-traffic data indicate that the approximate delay between a first case in Hong Kong and the initial introduction into the UK might be in the order of 2-4 weeks. Once the virus is in the UK, it's likely to reach Ireland rapidly. Past experience of pandemics in the UK suggests that it would take only a few weeks from the initial introduction(s) to widespread influenza activity across the country. It is also possible that more than one wave of influenza will occur within a few months of the emergence of a pandemic virus and a subsequent wave could be worse than the first. The health impacts of a

pandemic are likely to be significant including excess morbidity and mortality, especially among the elderly, young adults, and children. Depending on its severity, a pandemic may generate unprecedented demands for healthcare, which may saturate or overwhelm normal HSE acute hospital and primary care settings for several weeks or months.

2.2 Influenza: clinical features and transmission

Influenza is a respiratory illness characterized by sudden onset of fever, cough, headache, sore throat, aching muscles and joints. There is a wide spectrum of illness ranging from minor symptoms to pneumonia and death. The most common complications of influenza are bronchitis and secondary bacterial pneumonia.

The typical incubation period for non-pandemic influenza is 1–4 days, with an average of 2-3 days. Adults can be infectious from the day before symptoms begin through approximately 5 days after illness onset. Children can be infectious for 7 or more days, and young children can shed virus for several days before their illness onset. Severely immunocompromised persons can shed virus for weeks or months.

Influenza is well established to be transmitted from person-to-person through close contact with a coughing sneezing infected person. Transmission almost certainly occurs through multiple routes including droplets and direct and indirect contact. Airborne transmission may also occur in certain situations. There is no evidence that establishes a clear hierarchy for modes of transmission. However, the patterns of transmission observed during nosocomial outbreaks frequently point to large droplet and contact transmission as the most important and the most likely routes. Appendix A.

Experimental studies of influenza virus survival suggest that the virus can survive for limited periods of time in the environment, be transferred from contaminated surfaces onto hands, and is easily inactivated by commercially available alcohol hand disinfectant. Thus, contact spread is likely to be

important unless controlled by careful and frequent handwashing and environmental cleaning.

Assumptions concerning infection control in a pandemic

The principles of containment and infection control for pandemic influenza are based on the premise that pandemic influenza has similar properties to seasonal influenza, as follows:

- Person to person spread of human influenza viruses is well established
- The patterns of transmission observed during outbreaks of influenza in healthcare settings suggest that droplet and contact (direct and indirect) are the most important and likely routes of spread
- For some pathogens, aerosols generated under specific circumstances may be associated with an increased risk of transmission. While this may be possible for influenza, the general consensus is that droplet and contact transmission are of far greater importance
- The incubation period of human influenza ranges from one to four days (typically two or three)
- How infectious an individual is depends on how severe their symptoms are; people will be most infectious just after symptoms start
- Adults will usually be infectious for up to 5 days after symptoms begin, although longer periods of virus shedding have been found. Children will usually be infectious for up to seven days, although longer periods of virus shedding have been found in a smaller proportion of children
- Virus excretion may be considerably longer in immunocompromised patients
- Although virus may be recovered from infected people before they show symptoms, there is little published evidence to support person to person transmission of influenza from a pre-symptomatic person to a person who does not already have the infection
- Seasonal influenza viruses can survive on surfaces in the environment, especially hard, non-porous materials such as stainless steel

- Influenza viruses are easily deactivated by washing with soap and water or alcohol handrub and by cleaning surfaces with normal household detergents and cleaners

2.3 Core principles of containment and infection control

During a pandemic healthcare workers can be exposed to persons with influenza both through their normal daily lives (outside of work) and in healthcare settings. Limiting transmission of pandemic influenza in the healthcare setting requires application of tried and tested principles including:

- **Timely recognition** of cases of influenza. In the current pre-pandemic period, having a high index of suspicion for possible rare cases of influenza caused by a novel strain of virus such as avian H5N1 is particularly critical
- Consistent and correct **implementation of appropriate infection control** precautions to limit nosocomial transmission. Standard Infection Control Precautions and Droplet Precautions are applicable in most circumstances. In certain situations these control measures may need to be augmented with higher levels of respiratory protection
- Administrative controls, such as the **segregation or cohorting** of patients with pandemic influenza from those who have other medical conditions
- Use of auxiliary measures such as **restricting ill workers and visitors** from the facility and posting of pertinent signage in clear and unambiguous language
- **Education of staff, patients, and visitors** about transmission and prevention of influenza in a manner that is understandable and applicable
- **Treatment of patients and staff with antivirals** which can reduce infectiousness and the duration of illness
- **Vaccination of patients and staff** once a vaccine becomes available.

During the initial stages of a pandemic there may be limited supplies of antiviral drugs and a specific pandemic vaccine will be largely unavailable. Both interventions will therefore be prioritised, in accordance with Department of Health and Children policy. Thus, attention to non-pharmaceutical methods of control as outlined in this Guidance will be particularly important to reduce exposure.

3 Preparedness planning for pandemic infection control

Key Points

- **An influenza pandemic will not be ‘business as usual’ for the HSE**
- **The way in which HSE functions will have to be altered to accommodate exceptional infection control arrangements**
- **Staff will be required to work flexibly to meet high demand**
- **Planning in advance and stockpiling of personal protective equipment (PPE) will be necessary**
- **Local risk assessment will be needed to determine available control measures.**

Acute hospitals, General Practices and other Primary Care settings will form the cornerstone of the HSE response to pandemic influenza. Acute hospitals in the HSE will face pressures to deal with large numbers of patients with pandemic influenza in addition to “routine” medical emergencies and, where capacity exists, the continuation of non-emergency care.

The HSE must plan for the implementation of infection control measures that can accommodate the exceptional circumstances of a pandemic. For example:

- Healthcare workers who may be unfamiliar with Droplet Precautions may be asked to manage patients with influenza.
- Hospitals do not normally operate in a manner where large areas of the facility are segregated from others.
- Similarly, General Practice surgeries and other community care premises are not usually designed or configured to permit patient segregation in waiting rooms
- PPE may quickly become in short supply; therefore, advance planning will be required to build up and manage adequate stock.

In addition, because every hospital and primary care setting is configured differently in terms of size and layout, the generic guidance provided in this document will need to be tailored and operationalised to the particular setting or facility. Planning during the inter-pandemic period will decrease the need to make unplanned decisions and improve those made at the time of the pandemic.

Immediate action points

- Provide general training for all staff on the implications of pandemic influenza for infection control
- Plan for and carry out training in the use of FFP2 respirators and fit testing on staff who are likely to use them
- Test local response capabilities: a tabletop exercise is strongly recommended
- Estimate and prepare for the expected increase in demand for supplies

Most acute hospitals already have a number of policies and plans in existence including Major Incident Plans, and outbreak control plans. Some of these are designed to deal with “big bang” (sudden impact) incidents whereas a pandemic will be a “rising tide” (gradual escalation) scenario in which pressure builds more slowly, but sustainability of response becomes a key issue. Most existing emergency plans assume that routine infection control measures will be in place, but do not address the likelihood of implementing augmented infection control measures and sustaining these for a period of 3-4 months. Finally, most acute hospitals and GP surgeries function independently, but mutual assistance between settings will become important.

Under Health and Safety Legislation, all employers, are required to undertake local risk assessments, which includes identifying and assessing hazards (including biological hazards) and risks, and identifying control measures to be put in place. A written safety statement is required. In the context of influenza pandemic, employers need to take into consideration the following

- Potential for a large number of patients

- Greater number of healthcare workers potentially exposed to the pandemic virus
- The availability of control measures may vary.

The local risk assessment should identify any local circumstances that should also be taken into account. Employers in all healthcare settings should ensure that these risk assessments are completed. The checklists for infection control related issues in different settings provided in this document might assist in carrying out the risk assessments.

4 Occupational health and staff deployment

Key Points

- **Prompt recognition of healthcare workers with influenza is essential to limit the spread of the pandemic**
- **Healthcare workers with pandemic influenza should be excluded from work;**
- **As a general principle, healthcare workers who care for pandemic influenza patient areas should not care for other patients; exceptions may be necessary**
- **Healthcare workers at high-risk for complications from pandemic influenza should not provide direct patient care**
- **Bank and agency staff should follow the same deployment advice as permanent staff.**
- **Surge capacity will be needed to implement Occupational Health recommendations – relevant arrangements must be planned in advance by senior HSE management**
- **Occupational health departments or providers have a role to play in ensuring that fit testing programmes are in place for those staff who may need to wear FFP2 respirators**

In the acute hospital setting the General Manager is responsible for implementation of systems to monitor for illness and absence and may delegate this task to line managers. During a pandemic the General Manager

should ensure that this information is collated daily and conveyed to the Occupational Health Department. Occupational health will take lead responsibility for vaccination and antiviral therapy programmes for the healthcare workforce, and will liaise with the Infection control team to give general advice on the management of staff with pandemic influenza. In institutions where there is no occupational health physician, the General Manager will consult with the Chair of the Medical Executive to assign this role to a suitable doctor.

In community settings the General Manager is responsible for implementation of systems to monitor for illness and absence. During a pandemic the General Manager should ensure that this information is collated daily and conveyed to the Occupational Health Department. The Regional Occupational Health Physician will work in conjunction with the Director of Public Health, the regional Infection Control Committees and others as appropriate.

The Pandemic Influenza Implementation Steering Group is developing detailed operational plans for surveillance, vaccination and provision of antivirals and these should be consulted.

4.1 Who should work?

Healthcare workers will be at risk of acquiring pandemic influenza through both community and healthcare-related exposures and staff should be aware of the symptoms of pandemic influenza. Before commencing duty all staff must report any symptoms of pandemic influenza to their line manager who will then advise accordingly. Similarly, if a member of staff develops such symptoms whilst on duty he/she must report to their line manager immediately.

As a general principle, all healthcare workers who have symptoms of pandemic influenza should be excluded from work to avoid infecting patients, colleagues, and others.

All healthcare workers who have recovered from pandemic influenza should report to their line manager before resuming clinical duties because their illness needs to be recorded and it may also affect future deployment. This group of healthcare workers can care for people with influenza. Line managers, in turn, should ensure that sickness/absence is recorded and this information is sent to the local Occupational Health Department/Provider.

4.2 Staff deployment

Healthcare workers assigned to care for patients with pandemic influenza or who work in areas of a facility segregated for patients with pandemic influenza should not be assigned to care for non-influenza patients or work in non-influenza areas. Exceptions to this include:

- In hospitals, occupations with a limited number of staff; e.g., medical staff, Allied Health Professionals (AHP), although segregation of staff should be maintained as much as practically possible
- Situations when the care and management of the patient would be compromised
- Staff who have fully recovered from pandemic influenza.

In some primary care work settings this may not be feasible. Nevertheless, consideration should be given to developing approaches comparable to hospital settings; for example, one General Practitioner (GP) or Practice Nurse can be designated to see all the patients with symptoms of influenza on the morning list.

In hospitals, a healthcare worker from a non-influenza area can be redeployed to an area segregated for the care of influenza patients. Once deployed to the segregated area a worker can then return to their original non-influenza area if free from symptoms for 10 days following last exposure to the influenza segregation area

Healthcare workers who have recovered from pandemic influenza or have received a full course of vaccination against the pandemic strain and therefore considered unlikely to develop or transmit influenza should be prioritised for the care of patients with pandemic influenza. In exceptional circumstances these workers can be moved within a period of duty, but this is not desirable. These workers may also be placed in units where the introduction of influenza would have serious consequences for patients (e.g., transplant units, special care baby units, renal units in community hospitals). These workers should not be moved within a period of duty.

4.3 *Bank and agency staff*

Bank and agency staff are traditionally employed by hospitals to complement staffing levels on a day-to-day basis. Agency staff are very mobile, and for example, over five consecutive working days they may work in five different clinical environments. During a pandemic, this form of work allocation must be avoided. **Bank and agency staff should follow the same deployment advice as permanent staff.**

4.4 *Workers at risk for complications from pandemic influenza*

Healthcare workers who are at high risk for complications of pandemic influenza (e.g. pregnant women, immunocompromised workers), should be considered for alternate work assignment, away from direct patient care for the duration of the pandemic or until vaccinated. At the very least they should not provide care to patients known to have influenza nor enter parts of the hospital segregated for the treatment of patients with influenza.

5 Infection control precautions

Key Points

- **Standard infection control precautions and Droplet precautions must be used where patients have or are suspected of having influenza**
- **Hand hygiene and containment of respiratory secretions are essential**
- **Signage and posters should be displayed prominently to raise awareness of these basic and critical infection control measures**

The use of PPE should be informed by the available evidence, proportional to the risk of contact with respiratory secretions and other body fluids, and type of work/procedure being undertaken.

5.1 Hand hygiene

Hand hygiene is the single most important practice to reduce the transmission of infectious agents in healthcare settings and is an essential element of Standard Infection Control Precautions. During outbreaks of pandemic influenza strict adherence to hand hygiene recommendations should be enforced for all staff and visitors.

Patients' hands will be heavily contaminated, because of frequent contact with their nose, mouth and the tissues that they have used in respiratory hygiene. Their hands will also make frequent contact with their immediate environment. Therefore good hand hygiene among staff before and after contact with patients or their close environment is vital to protect both themselves and other patients. Good hand hygiene among patients should also be encouraged.

The term "hand hygiene" includes hand washing with liquid soap or antiseptic hand wash agents and water followed by thorough drying or the use of alcohol-based products (i.e., gels, rubs or foams, containing at least 60% alcohol) containing an emollient that do not require the use of water.

The term alcohol hand rub will be used throughout this chapter to describe gels, rubs or foams. ⁽⁴⁾

There are three recommended levels of hand hygiene to ensure that the method used is suitable for the task undertaken.

Social hand hygiene (using liquid soap and warm running water and disposable paper towel or an alcohol hand rub product on visibly clean hands) will remove dirt and organic material, dead skin and most transient organisms.

Antiseptic hand hygiene with an antiseptic hand wash agent, or alcohol hand rub product on **visibly clean** hands, will remove all transient organisms and achieves a higher level of cleanliness than social hand washing.

It should be undertaken by all staff and visitors before entering, and again before leaving, areas where care is delivered. If hands are visibly clean, use an alcohol hand rub. If hands are not visibly clean, wash hands with an antiseptic hand wash agent and water, followed by thorough drying. The hand rub solution must come into contact with all surfaces of the hand.

The third level is **surgical hand hygiene** and should be performed before all surgical procedures. This method aims to remove all transient flora and substantially reduce resident flora.

Hands should be decontaminated before and after all patient contact with an infected patient or their bed area, removal of protective clothing, and cleaning of equipment. Following hand washing, hands should be dried thoroughly using paper towels that are then discarded in the nearest waste receptacle. Waste bins with foot-operated lids should be used whenever possible.

In addition to the placement of alcohol hand rub at the point of use (e.g., patient's beds/exam rooms and lockers), consideration should also be given to distributing personal carried alcohol hand rub to certain groups of transient/migratory staff (e.g., medical staff in hospitals and community staff performing home visits).

5.2 Management of the coughing and sneezing patient

Patients, as well as staff, and visitors, should be encouraged to minimise potential influenza transmission through good hygienic measures as follows:

- Cover nose and mouth with disposable single-use tissues when sneezing, coughing, wiping and blowing noses
- Dispose of used tissues promptly in nearest yellow bag
- Wash hands after coughing, sneezing, using tissues, or contact with respiratory secretions and contaminated objects
- Keep hands away from the mucous membranes of the eyes and nose
- Certain patients (e.g., the elderly, children) may need assistance with containment of respiratory secretions; those who are immobile will need a receptacle (e.g., a plastic bag) readily at hand for immediate disposal of tissues and a supply of hand wipes and tissues.

Patient masking: Where possible, in common waiting areas or during transport (e.g., from the community to an acute hospital or from one area of the hospital to another), coughing/sneezing patients should wear surgical masks to assist in the containment of respiratory secretions and to reduce environmental contamination.

5.3 Personal protective equipment (PPE)

5.3.1 Overview

PPE should be worn to protect staff from contamination with body fluids and thus reduce the risk of transmission of pandemic influenza between patients and staff and from one patient to another. PPE consists of the following items: gloves, gowns, plastic aprons, surgical masks, FFP2 respirators and eye protection. Staff should adhere to Standard Infection Control Precautions at all times irrespective of the use of PPE. Appropriate PPE for care of patients with pandemic influenza is summarised in Table 1. Care should be exercised when putting on and removing PPE to avoid inadvertent contamination. Masks and eye protection should be put on **before** gloving and taken off **after** removal of

contaminated gloves. All contaminated clothing must be removed before leaving a patient care area, surgical masks being removed last.

PPE should comply with the relevant EN standards.

Table 1 details locations and activities where the use of various items of PPE is required.

5.3.2 *Surgical masks*

The main purpose of a surgical mask is to prevent particles being expelled into the environment by the wearer. They also provide some protection (depending on the type of mask worn) against splashes of blood and body fluids. Surgical masks are also recommended for protection against droplet borne illness such as influenza. A surgical mask should be worn by health care workers for close patient contact (e.g., within 3 feet /1 metre). This will provide a physical barrier and minimise contamination of facial mucosa by large particle droplets, one of the principal ways influenza is transmitted. If pandemic influenza patients are cohorted in one area and multiple patients must be visited over a short time or in rapid sequence (e.g., cohorted areas of a hospital or nursing home, an “influenza clinic,” or GP surgery session for influenza patients), it may be practical to wear a single surgical mask upon entry to the area and to keep it on for the duration of the activity or until the surgical mask requires replacement. There are no limitations to the wearing time according to EU Standards Surgical Masks requirements and test methods.⁽⁵⁾

However, other PPE (e.g. gloves, gown) must be removed between patients and hand hygiene performed.

All contaminated PPE must be removed before leaving a patient care area. Surgical masks or FFP2 respirators should be removed last, followed by thorough hand hygiene.

Surgical masks should:

- Worn correctly and close fitting

- Cover both the nose and the mouth and not be allowed to dangle around the neck after usage
- Handled as little as possible
- Be changed when wet
- Be worn once and discarded in an appropriate receptacle as health care waste;
- Never re-used once removed
- Hand hygiene must be performed after disposal is complete.

Appendix C lists the various categories of healthcare waste.

5.3.3 Respirators

- Respirators are designed to help reduce workplace exposures to airborne hazards.
- Health care workers should wear FFP2 respirators when performing procedures, which have the potential to generate aerosols (see below).
- The term FFP refers to **Filtering Face Piece** respirators of which there are three classes: FFP1, FFP2 and FFP3.
- Respirators are rated according to their level of protection.
- FFP2 respirators provide 95% particle filtration efficiency.
- The EU has defined standards for respirators in the European Directive for PPE –9/686/EEC.
- EN149 is the standard specifying the product performance of FFP respirators.
- The term Assigned Protection Factor is the factor by which the respirator reduces exposure. The FFP2 has an APF of 10 assuming it is correctly fitted and worn.
- The EN 149 FFP2 is the EU equivalent to the US NIOSH N95

5.3.3.1 Fit testing

As per Health and Safety requirements, every user should be fit tested and trained in the use of the respirator. Fit is critically important and a fit check should be carried out each time a respirator is worn. The respirator must seal tightly to the face or air will enter from the sides. A good fit can only be

achieved if the area where the respirator seals against the skin is clean-shaven. Beards, long moustaches, and stubble may cause leaks around the respirator. In these situations other types of respiratory protective equipment (e.g. Positive Pressure/ powered respirators hoods/helmets) may be considered.

This is particularly important if the wearer is not suitable for a half-mask respirator because of fit issues and also when the respiratory protective equipment must be compatible with other PPE (e.g., safety glasses) required for a procedure/process.

Occupational health departments or providers have a role to play in ensuring that fit testing programmes are in place for staff who may need to use FFP2 respirators. These should be organised well in advance of any influenza pandemic as part of the initial planning. Not all makes of respirators fit all faces, so a range of models may be required. Also, implementation of a fit testing programme will take a significant amount of time – possibly months for an average sized hospital.

5.3.3.2 Changing and disposal

If breathing becomes difficult, the respirator becomes damaged or distorted or contaminated by body fluids, or if a proper face fit cannot be maintained, the wearer should go to a safe area and change the respirator immediately.

FFP2 respirators should be discarded after each use. If, during the process of providing care, respirators become contaminated with a patient's respiratory secretions they should be disposed of immediately. Respirators should be disposed of as clinical waste according to local infection control policy.

5.3.3.3 Aerosol-generating procedures

The risk associated with many aerosol-generating procedures is not yet well defined. WHO has advised, based on epidemiological studies on TB and/or SARs that the following procedures have been associated with a documented increase in the risk of pathogen transmission:

- Intubation and related procedures, e.g. manual ventilation and suctioning
- Cardiopulmonary resuscitation
- Bronchoscopy
- Surgery and post mortem procedures in which high speed devices are used.

Other procedures which may be associated with an increased risk, but the evidence is insufficient, are termed procedures with a controversial/possible increase in risk of respiratory pathogen transmission. These are:

- Non-invasive positive pressure ventilation,
- Bi-level positive airway pressure,
- High frequency oscillating ventilation
- Nebulisation.

The performance of aerosol-generating procedures should be minimised as is feasible without compromising patient care. **To avoid unnecessary exposures, only those health care workers needed to perform the procedure should be present.** In addition to respirators, eye protection must be worn to prevent eye contact with infectious material during such procedures.

5.3.4 *Gloves*

Gloves are not required for the routine care of patients with pandemic influenza per se. Standard Infection Control Precautions require that gloves be worn for invasive procedures, contact with sterile sites, non-intact skin, and mucous membranes, during all activities that carry a risk of exposure to blood, body fluids, secretions (including respiratory secretions) and excretions, and when handling sharp or contaminated instruments.

Gloves should be removed immediately after use, disposed of as clinical waste, and hand hygiene performed. No attempt should be made to wash gloves for subsequent reuse.

If glove supplies become limited during a pandemic priorities for glove use may need to be established. In this circumstance, gloves should always be

prioritised for contact with blood and bloody fluids, invasive procedures, and contact with sterile sites.

5.3.5 Aprons

Disposable plastic aprons should be worn whenever there is a risk of personal clothes or uniform coming into contact with a patient's blood, body fluids, secretions (including respiratory secretions) and excretions or during activities that involve close contact with the patient (e.g., examining the patient). Aprons are not required on entry to a cohorted area where patient contact is not anticipated.

Plastic aprons should be worn as single use items for one procedure or episode of patient care and then discarded and disposed as clinical waste. In cohorted areas, aprons need to be changed between patients.

5.3.6 Gowns

Gowns are not required for the routine care of patients with influenza. Most patient interactions do not necessitate the use of gowns. However gowns should be worn in place of an apron if extensive soiling of personal clothing or uniform with respiratory secretions is anticipated, or there is risk of extensive splashing of blood, body fluids, secretions, and excretions onto the skin of the healthcare worker (e.g. during intubation or caring for babies).

Fluid-repellent gowns are recommended, but if unavailable due to shortage of supplies then "splash proof gowns" may be worn with a plastic apron beneath. Gowns should:

- Fully cover the area to be protected
- Be worn only once and then placed in a health care risk waste receptacle as appropriate, and hand hygiene performed immediately after removal. Some fluid repellent gowns may be reusable so laundry may be appropriate. Check with manufacturer as to what is available.

5.3.7 Eye protection

The use of eye protection should be considered when there is a risk of contamination of the eyes by splashes and droplets e.g., blood, body fluids, secretions, and excretions generated through patient care. This should be an

individual risk-assessment at the time of providing care. **Eye protection should always be worn during aerosol-generating procedures.**

Eye protection can be achieved by the use of any one of the following:

- Surgical mask with integrated visor
- Full face visors
- Polycarbonate safety spectacles or equivalent.

Of note, non-disposable eye protective equipment (e.g., polycarbonate safety spectacles issued as personal equipment to staff on a long-term basis) pose a potential cross-infection risk. It is important that any such items are decontaminated after soiling using agents recommended by the manufacturer, and when leaving an influenza patient segregated area prior to performing final hand hygiene.

	Entry to cohorted area but no patient contact ^a	Close patient contact (<3 feet/1 metre)	Aerosol generating procedures ^{b, c}
Hand hygiene	✓	✓	✓
Gloves	✗ ^d	✓ ^e	✓
Plastic apron	✗ ^d	✓	✗
Gown	✗	✗ ^{f, g}	✓ ^g
Surgical mask	✓	✓	✗
FFP2 respirator (minimum specification)	✗	✗	✓
Eye Protection	✗	Risk assessment	✓

Table 1 Personal protective equipment for care of patients with pandemic influenza ^a

- a.** Standard Infection Control Precautions apply at all times
- b.** Examples of aerosol-generating procedures include intubation, nasopharyngeal aspiration, tracheostomy care, chest physiotherapy, bronchoscopy, nebulizer therapy, and autopsy of lung tissue
- c.** Wherever possible, aerosol-generating procedures should be performed in side rooms or other closed single-patient areas with minimal staff present
- d.** Gloves and apron should be worn during certain cleaning procedures; consult section 6
- e.** Gloves should be worn in accordance with Standard Infection Control Precautions. If glove supplies become limited or pressurised, this recommendation may need to be relaxed. Glove use should be prioritized always for contact with blood and body fluids, invasive procedures, and contact with sterile sites
- f.** Consider in place of apron if extensive soiling of clothing or contact of skin with blood and other body fluids is anticipated (e.g., during intubation or caring for babies)
- g.** If non-fluid repellent gowns are used a plastic apron should be worn underneath.

6 Environmental Infection Control

6.1 *Health Care Risk and non-risk waste*

The terms health care risk and non-risk waste as described in the Department of Health and Children's waste management guidance document are detailed in Appendix C.

No special handling procedures beyond those for Standard Infection Control Precautions are recommended for risk and non-risk health care waste that may be contaminated with influenza virus. Waste generated within the clinical setting should be managed safely and effectively, with attention paid to disposal of items that have been contaminated with secretions/sputum (e.g., paper tissues) in addition to other routine and domestic waste management. The Department of Health guidelines on the management of waste should be referred to as needed. ⁽⁶⁾

Liquid waste such as urine and faeces can be safely disposed of into the sewerage system.

All waste collection bags should be tied and sealed before removal from the patient area. Gloves should be worn when handling ALL waste and hand hygiene performed after removal of gloves.

6.2 *Linen and laundry*

Linen used during the patient's care is considered to be contaminated and should be managed safely as per Standard Infection Control precautions.

- Linen should be placed in an alginate bag or water soluble bag and then into a red laundry bag immediately after use and bagged at the point of use.
- Linen bags must be tied and sealed before removal from the influenza patient care area
- Gloves and aprons should be worn for handling all contaminated linen
- Hand hygiene should be performed after removing gloves that have been in contact with soiled linen and laundry.

6.2.1 Hospitals

Where practicable, bed curtains should be changed following patient discharge from a single room. In a cohort situation the curtains should be changed on closure of the cohort area or if contaminated with blood or body fluids.

6.2.2 Primary care

Paper sheeting is a good alternative for use on patient examination couches and should be changed after each patient.

6.3 Staff uniforms

The appropriate use of PPE will protect uniforms from contamination in most circumstances. During a pandemic, healthcare workers should not travel to and from work or between hospital residences and place of duty in uniform. Hospitals and other healthcare facilities should provide changing rooms/areas where staff can change into uniforms upon arrival at work. More detailed guidance on uniforms is available from the RCN ⁽⁷⁾.

Hospital/facility laundry services should be used to launder uniforms if they are available. If there are no laundry facilities available then uniforms should be laundered in a domestic washing machine in water as hot as the fabric will tolerate, then ironed or tumbled-dried. Uniforms should be transported home in a sealed plastic bag, washed separately from other linen, in a load not more than half the machine capacity, in order to ensure adequate rinsing and dilution.

The use of theatre type greens should be considered for staff who do not usually wear a uniform.

6.4 Crockery and utensils

No special precautions, beyond those for Standard Infection Control Precautions, are recommended for dishes and eating utensils used by a patient with pandemic influenza. Dishes and eating utensils should be washed in a dishwasher with a hot rinse. Do not hand wash these items. There is no need to use disposable plates and cutlery.

6.5 Environmental cleaning and disinfection

Patient cohorted areas (including acute hospitals, nursing homes, and prison medical units) and clinical rooms (including GP consulting and treatment rooms) should be cleaned daily at a minimum with detergent and water, and terminally disinfected with chlorine releasing disinfectant on closure of the cohort area. Single rooms should be cleaned daily with water and detergent and terminally disinfected with chlorine releasing disinfectant (1000 parts per million or 0.1%) on discharge of the patient.

Cleaning schedules may vary by setting. The HSE National Hospitals Office has issued a Cleaning Manual for Acute Hospitals.⁽⁸⁾ This provides guidance for staff with responsibility for cleaning services and will assist hospital management in planning resources in advance of an influenza pandemic.

6.5.1 Hospitals

As a minimum, daily and after patient discharge.

6.5.2 Clinical rooms (including GP consulting and treatment rooms)

Equipment in the room should be kept to a minimum and consumables brought in as required. Consulting rooms should be cleaned daily with detergent and water and disinfected with chlorine releasing disinfectant (1000 parts per million) in-between influenza and non-influenza patients if the room is used for both.

6.5.3 Frequently touched surfaces (e.g., medical equipment, door knobs)

At least twice daily and when known to be contaminated with secretions, excretions or body fluids.

Freshly prepared neutral detergent and hot water should be used.

Damp rather than dry dusting should be performed to avoid generating dust particles. During wet cleaning a routine should be adopted that does not redistribute micro-organisms. This may be accomplished by cleaning less heavily contaminated areas first and by changing cleaning solutions and

cloths frequently. The use of vacuum cleaners should be avoided wherever possible. When necessary a well-maintained HEPA filtered vacuum cleaner must be used. Filters must be changed in accordance with manufacturer's advice.

Dedicated or single-use/disposable equipment should be used. Non-disposable equipment, including mop heads, should be laundered after use. Any spillage or contamination of the environment with secretions, excretions or body fluids should be treated in line with the local spillage policy.

Domestic staff should be allocated to specific areas and not moved between influenza and non-influenza areas. They must be trained in the correct methods of wearing PPE and the precautions to be taken when cleaning cohorted areas. Domestic staff should wear gloves and aprons; when they are working within 3-ft/1 metre of a patient a mask should be worn. If working at a further distance masks are not required. In addition a surgical mask should be worn when cleaning in the immediate patient environment in cohorted areas.

6.6 Patient care equipment

Effective cleaning of patient care equipment is an essential prerequisite to both disinfection and sterilisation. Reusable equipment remaining in the cohort area should be cleaned using water and detergent between each patient use. It must be disinfected with chlorine releasing disinfectant (1000 parts per million) on closure of the cohort area or if removed from the cohort area. Standard practices for handling and reprocessing used and soiled patient-care equipment, including re-usable medical devices, should be followed for both influenza and non-influenza areas of hospital and primary care settings:

- Prevent exposure of the skin and mucous membranes and contamination of clothing and the environment. Gloves should be worn when handling and transporting used patient-care equipment
- Clean heavily soiled equipment with neutral detergent and hot water before removing from the patient's room or consulting room

- Reusable equipment (e.g., stethoscopes, patient couch in treatment and consulting rooms) must be scrupulously decontaminated between each patient; equipment that is visibly soiled should be cleaned promptly. If applicable, follow local and manufacturers recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment
- Disinfect external surfaces of portable equipment for performing x-rays and other procedures in the patient's room upon removal from the patient's room or consulting room.

Whenever possible, non-critical patient equipment should be dedicated for use by pandemic influenza patients only.

Use of equipment that recirculates air (e.g. fans,) should be avoided.

6.7 Furnishings

Remove all non-essential furniture, especially soft furnishings from reception and waiting areas in hospitals and GP consulting and treatment rooms including A&E and day rooms/lounges. The remaining furniture should be easy to clean and should not conceal or retain dirt and moisture. Toys, books, newspapers, and magazines should be removed from the waiting area.

7 Supplemental Guidance for Hospitals

This supplement contains specialized information related to the development of operational policies and implementation of infection control guidance in acute hospital settings.

7.1 *Preparedness checklist for pandemic infection control*

Acute hospitals need to consider a number of key issues related to hospital infection control during a pandemic and find the best way of integrating/embedding these into their organisational processes.

7.1.1 *Overall coordination*

- Identify a lead member of hospital staff who will take responsibility for coordinating infection control during a pandemic
- Ensure that the Medical Board and Senior Managers are fully informed of the critical infection control issues in relation to pandemic influenza
- Identify if there are existing forums within the hospital that can address the issues and actions required towards preparation for a pandemic (including performing local risk assessments).
- If not, form a local Hospital Pandemic Action Group/Sub-Groups.

Minimum Membership to include the following:

- Deputy C.E.O./Management
- Director of Nursing
- Bed Manager
- Chair of the Hospital Infection Control Committee
- Consultant in Emergency Medicine
- Respiratory Physician
- Microbiologist

- Director of I.C.U.
- Occupational Health
- Emergency Planning
- Medical Board representative
- Consultant Surgeon
- Specialist in Public Health Medicine
- Infection Control Nursing representative

7.1.2 *Infection control issues*

- ❖ Identify suitable staff (e.g., Infection Control Link Nurses/Persons) who can supplement the existing team if needed
- ❖ Prepare strategy to communicate infection control information to staff

7.1.3 *Triage and patient placement*

- ❖ Establish procedures and test a plan for pandemic triage and rapid separation of patients with influenza from other patients
- ❖ Identify areas for segregating/cohorting large numbers of patients with pandemic influenza with engineering staff
- ❖ Identify a designated room in the radiology department that can be used for influenza patients only

7.1.4 *Occupational health*

Develop plans and procedures to:

- ❖ Implement surge capacity arrangements
- ❖ Assess staff with respiratory symptoms
- ❖ Track and document staff sickness/absence (via General Manager reports)
- ❖ Provide psychological and social support to staff
- ❖ Administer antiviral therapy as may be specified by HSE
- ❖ Vaccinate staff as may be specified by HSE

7.1.5 Staffing

Ensure that plans are in place to address:

- ❖ Supervision and monitoring of staff deployment, including bank and agency staff
- ❖ Staff allocations to pandemic/non-pandemic areas, considering skill-mix and the likelihood of sickness and absence
- ❖ Tracking and coordination of staff movements (including agency staff)
- ❖ When an emergency staffing crisis would be declared
- ❖ Possible use of family members and lay volunteers in an ancillary capacity
- ❖ Staff working outside their usual area of practice (e.g., medical and nursing students working as health care assistants)

7.1.6 Bed management

Is the following addressed in the existing bed management policy?

- ❖ Procedures for reviewing and revising admission criteria
- ❖ Policies for expediting discharge of patients in conjunction with Community Care and primary care services locally
- ❖ Adequate transportation arrangements for discharged patients
- ❖ Plans for tracking bed occupancy during a pandemic
- ❖ Cancellation of elective admissions at short notice
- ❖ Plans to convert surgical wards into medical wards

7.1.7 Supplies of consumables

Evaluate current stock of essential equipment

- ❖ Assess anticipated demand for consumables and determine trigger point for ordering extra supplies
- ❖ Determine feasibility of ordering and storing extra PPE
- ❖ Direct supplies managers to establish contingency plans in the event that primary sources of supplies become limited or exhausted

7.1.8 Mortuary issues

- ❖ Plan for mass fatalities.
- ❖ Assess capacity for refrigeration
- ❖ Define overflow arrangements

7.1.9 Education and training

- ❖ Brief senior medical and nursing staff on pandemic infection control procedures (from Management Board to Consultant/Ward Manager level)
- ❖ Brief managers of other departments (including Estates, Porters, Radiology, Physiotherapy, Occupational Health)
- ❖ Test local response capabilities; a tabletop exercise is strongly recommended
- ❖ Plan for additional training and fit-testing for staff likely to use minimum specification FFP2 respirators
- ❖ Provide general training for all staff on the infection control implications of pandemic influenza
- ❖ Consider how the hospital intranet could be utilised for training, education and communication on infection control issues during a pandemic to minimise face-to-face meetings during a pandemic
- ❖ Consider use of Environmental Health Officers for training, educating communicating and monitoring of infection control issues

7.2 Patient placement, segregation and cohorting

Key Points

- **In all health care settings, patients with symptoms of pandemic influenza should be segregated from non-influenza patients as rapidly as possible**
- **Whenever possible, different teams of staff should care for influenza and non-influenza patients. The segregation of symptomatic patients is important in the containment of pandemic influenza.**
- **This requires careful consideration of flexible accommodation and staffing arrangements**
- **Patients with pandemic influenza should be managed separately until discharged.**

7.2.1 Selection of segregated areas for cohorting patients

To achieve the desired goal of separating patients with pandemic influenza from those without, a designated self-contained area/wing of the hospital should be used for the treatment and care of patients with pandemic influenza whenever possible. Ideally, this area should:

- ❖ Include a reception area separate from the rest of the hospital.
- ❖ If feasible, have a separate entrance/exit from the rest of the hospital.
- ❖ Not be used as a thoroughfare by other patients, visitors or staff. This includes patient transfers, staff going for meal breaks, and staff and visitors entering and exiting the building.

Tertiary hospitals will have to consider the logistics and feasibility of managing patients with conditions requiring specialised care, in a situation where some of them may also have pandemic influenza.

To control entry, signage should be displayed warning of the segregated pandemic influenza area.

Whilst there is no specific concern for long-range airborne transmission of pandemic influenza, when selecting possible areas to segregate patients the local hospital engineering department should be consulted regarding design considerations and to also ensure that mechanical ventilation systems do not dilute from cohorted to non-cohorted areas. At a minimum, doors should be closed between the two areas.

7.2.2 Ward level

Cohorting of patients in segregated areas of the hospital should be carried out from the outset of the pandemic to help contain influenza within one part of the hospital and reduce the risk to other patients. Side rooms in non-influenza areas should be reserved for patients requiring isolation for other (non-influenza) reasons; side rooms in influenza segregated areas should be reserved for performing aerosol-generating procedures whenever possible.

Consideration should be given to cohorting separately patients infected with pandemic influenza and another pathogen (e.g., MRSA) to minimise hospital transmission of other infectious pathogens. This will be dependent on availability of rooms and staff and the number of patients who are infected with both influenza and another pathogen requiring isolation.

Patients should remain in the designated segregated area until discharged to the community and not allowed to be transferred to other areas purely for bed management purposes. However, if there is extreme pressure for beds in the segregated area of the hospital, convalescing patients with residual, non-respiratory problems (i.e., who are unlikely to be secreting virus in large quantities), but who require hospitalisation for other reasons (e.g., poor mobility, non-respiratory complications) may need to be moved to another area of the hospital, an intermediate care facility, or a nursing/residential home. Such convalescing patients should, where possible, be accommodated together and away from other patients (see Community Guidance).

7.2.3 Infection control measures for segregation and cohorted care

7.2.3.1 Entry procedures

Place a recording sheet at the entrance of the cohorted area. All healthcare workers and visitors should sign in so that if follow up/contact tracing is required details are readily available. The number of personnel should be limited to those necessary for patient care and support.

Place a sign at the entrance alerting all to the precautions to be adopted.

7.2.3.2 Infection control precautions

Standard Infection Control Precautions must be strictly applied in conjunction with Droplet Precautions. Droplet Precautions for all patients should be maintained in the segregated area.

7.2.3.3 Ward furnishings

For 4 – 6 bedded bays, set up an equipment station outside the entrance to hold PPE. For large open wards, identify strategic points for equipment stations to facilitate access and encourage use. Remove all non-essential

furniture, especially soft furnishings. Remaining furniture should be easy to clean and should not conceal or retain dirt and moisture.

7.2.3.4 Patient area

In accordance with Droplet Precautions, there should be a minimum distance of 3-feet/1 metre between beds. Beds should be separated, preferably by a physical barrier (e.g., curtain). Keep the patients' personal belongings to a minimum. Provide water jug and glass, tissue wipes and suitable disposable containers (e.g., plastic bags), and all other items necessary for personal hygiene within the patients reach.

7.2.3.5 Patient equipment

Where feasible allocate each patient their own non-critical items of patient equipment (e.g., stethoscope, thermometer) or use disposable items. Clean re-usable equipment between patients.

7.2.3.6 Day rooms/lounges

Consider closing day rooms/lounges if there is a risk that these might be used by both influenza and non-influenza patients or if the location of these rooms presents a problem for limiting patient movements.

7.2.3.7 Cleaning

Areas should be scrupulously cleaned as a minimum at least once a day, and with a focus on frequently touched surfaces such as bed rails, lockers, door handles and bathroom fixtures. Close liaison with housekeeping/domestic services will be required.

7.3 *Patient transfer/transport/hospital day care procedures*

7.3.1 Hospital transfers

Patients must not be automatically admitted to hospital if they have pandemic influenza. However, it can be anticipated that some patients who are initially managed in the community will require hospital admission. Patients must not be transferred from one hospital to another for routine care related to

pandemic influenza, including mechanical ventilation. However, some patients may require transfer for specialist care arising out of complications or concurrent medical events (e.g., cardiac angioplasty, renal dialysis). If transfer is essential, the Infection Control Team and Bed Manager at the receiving hospital and the ambulance staff must be advised in advance. Patients with influenza should not be admitted or transferred to specialist units for vulnerable patients (e.g., transplant units) where if influenza is introduced, mortality is likely to be very high.

7.3.2 *Intra-hospital transfers*

Where possible allocate dedicated equipment such as X-ray equipment and ECG recorders to the segregated area so that all procedures and investigations can be carried out in the area.

Patients with pandemic influenza should leave the segregated care area for only urgent and essential procedures. If a patient requires transfer to another department the following procedures must be followed:

- The department must be informed in advance
- The patient must be taken straight to and return from the department and must not wait in a communal area
- Patients should be placed at the end of a list to allow appropriate decontamination after any procedure.
- In some settings (e.g., radiology departments) a separate room should be set aside for patients with influenza segregated areas of the hospital and this room should be cleaned regularly
- Influenza patients should wear a surgical mask while in transit to help prevent large droplets being expelled in to the environment. If a surgical mask cannot be tolerated (e.g., due to the patient's age or deteriorating respiratory status) apply the most practical measures (e.g., tissues) to contain respiratory secretions. Where possible the patient should also perform hand hygiene before leaving their room or cohorted area.

7.3.3 Hospital day care procedures

For patients who develop influenza and have chronic conditions that require attendance at hospital regularly for day care procedures, options may include:

- Deferring the procedure and re-scheduling the next appointment
- Transfer to a designated hospital with isolation or cohorted facilities
- Introduction of barriers in special units to separate patients with symptoms of pandemic influenza.

7.4 Special settings: Emergency Departments

During the peak of a pandemic, hospital emergency departments (ED) departments and outpatient departments may be overwhelmed with patients seeking care. Alternative approaches to triage and initial assessment will be required to:

- Rapidly screen and identify persons who have symptoms of pandemic influenza upon their arrival
- Separate symptomatic patients from others to reduce the risk of disease transmission
- Determine as early as possible the type of care patients will require (i.e., “see and discharge” or admit for treatment).

7.4.1 Screening and triage

Signage should be displayed prior to and on entry to the ED instructing patients with respiratory symptoms to inform the reception immediately on their arrival.

A triage practitioner should be based in the reception for managing patient flow, including deferral of patients who do not require emergency care.

Patients calling for medical appointments for pandemic influenza should be discouraged from making unnecessary visits to clinical facilities.

Screening for signs and symptoms of pandemic influenza in all persons entering the hospital may escalate from passive (e.g., signs at the entrance)

to active (e.g., direct questioning) on the advice of the Health Service Executive and the Health Protection Surveillance Centre.

7.4.2 Reception area / layout

Patients with symptoms of pandemic influenza should be triaged to a segregated waiting and assessment area immediately. Patients should be instructed to stay in this waiting area and not wander around the department, hospital, or go to the public cafeteria. Signage and physical barriers should be used as appropriate.

If separate areas for patients with symptoms of pandemic influenza cannot be established, at a minimum, an alternate site should be set up for those at highest risk of complications from influenza infection (e.g., outpatients presenting for dialysis, patients with a history of organ transplantation, chemotherapy, or who are immunocompromised for other reasons).

Patients who do not have symptoms of pandemic influenza but require acute care assessment promptly should be triaged to a specific waiting and examining area, physically separate from the influenza waiting and assessment area.

Attention to respiratory hygiene should be reinforced by displays of posters and provision of hand washing facilities, tissues, and waste bins.

All non-essential soft furnishings and items such as books and magazines and toys should be removed.

7.4.3 Infection control measures for waiting rooms

Patients, staff, and visitors should be encouraged to minimise potential transmission of influenza through good hygienic measures as follows:

- Cover nose and mouth disposable one-use tissues when sneezing, coughing, wiping and blowing noses
- Dispose of used tissues in nearest yellow bag
- Wash hands after coughing, sneezing, or using tissues or after contact with respiratory secretions and contaminated objects

- Keep hands away from the mucous membranes of the eyes, mouth and nose
- Certain patients (e.g., the elderly, children) may need assistance with containment of respiratory secretions; those who are immobile will need a receptacle (e.g., a plastic bag) readily at hand for immediate disposal of tissues and a supply of hand wipes and tissues

7.4.3.1 Patient masking

As waiting rooms can become crowded, it is preferable that symptomatic persons wear surgical masks. This will assist with the containment of respiratory secretions and minimise environmental contamination.

7.4.4 *Infection control procedures in rooms/cubicles*

7.4.4.1 Room layout

All non-essential equipment from the examination room/cubicle should be removed. Stocks of consumables should be stored near to the examination rooms and not inside them.

7.4.4.2 Patient masking

Coughing and sneezing patients should wear surgical masks to minimize environmental contamination of the cubicle. Patients should be confined to their rooms/cubicles and only moved outside for essential procedures.

7.4.4.3 Cleaning

Hand contact surfaces must be cleaned regularly while room is in use.

7.5 *Special settings: children*

Children's wards present special challenges due to the difficulties experienced with younger children adhering to respiratory hygiene. In addition, children usually shed virus longer than most adults and in some settings shedding may be prolonged for weeks.

7.5.1 Patient placement

The following points need to be taken into consideration when cohorting children:

- Different age groups (e.g., infants, toddlers, adolescents)
- Routine childhood vaccination status of children.
- Presence of immunocompromising conditions
- Co-infection with another pathogen (e.g. RSV); such children may be cohorted separately. However, this will be dependent upon the availability of rooms, staff and the number of patients who are infected with both influenza and another pathogen requiring isolation.

7.5.2 Respiratory hygiene

It is important to educate and encourage children and their families to adopt good hygiene measures to minimise potential transmission including use of disposable tissues for wiping noses; covering nose and mouth when sneezing and coughing; washing hands after coughing, sneezing or using tissues; and keeping hands away from the mucous membranes of the eyes and mouth.

7.5.3 Personal protective equipment

Gowns may be required when caring for babies and neonates due to the close contact required. An overview of the type of what circumstances PPE should be worn can be found at Table 1.

7.5.4 Environmental issues

Communal areas such as play rooms and schoolrooms should be closed. Toys should not be shared. All toys must be cleanable and should be cleaned regularly (preferably when the environment is cleaned). Toys that come in contact with mucous membranes should be cleaned and disinfected after use on different children. Toys that become contaminated and cannot be decontaminated should be destroyed.

Cleaning of the environment should be increased.

7.6 Special settings: intensive care units

7.6.1 Unit layout/patient placement

If the unit does not have side rooms, the main unit should be divided into two separate areas for care of patients with and without pandemic influenza.

Whenever possible, staff teams should be dedicated to one area.

7.6.2 Respiratory care issues

7.6.2.1 Respiratory equipment

- Disposable patient respiratory equipment must be used wherever possible. Reusable equipment must be disinfected in accordance with local policy and manufacturers guidelines
 - Closed systems should be used wherever possible (e.g., suction, closed nebuliser delivery)
 - All respiratory equipment used on patients must be protected with a filter
 - The ventilatory circuit should not be broken unless absolutely necessary
- Water humidification should be avoided wherever possible.

7.6.2.2 Respiratory procedures

- The use of cough-inducing procedures should be minimised
- Only essential staff should be in a patient's room when airway management, cough inducing activities or nebulisation of drugs is being carried out
- PPE must be worn when giving care, especially during procedures involving airway management (See Table 1).

7.7 *Special settings: the dying/deceased patient*

7.7.1 *Chaplains*

Chaplains should be instructed to wear PPE as per Standard Infection Control Precautions and Droplet Precautions as appropriate. They should take the advice of the clinical nurse manager as to what is required.

7.7.2 *Last offices*

When performing last offices for deceased patients, healthcare workers must follow Standard Infection Control Precautions; surgical masks should be considered if there is a risk of splashes of blood and body fluids, secretions (including respiratory secretions), and excretions onto the facial mucosa. The body should be fully wrapped in a sheet. Transfer to the mortuary should occur as soon as possible after death. If the family wishes to view the body, they may be allowed to do so and instructed to wear PPE as per Standard Infection Control Precautions.

7.7.3 *Post mortem examinations*

During a pandemic, questions may arise about the need for post-mortem examinations. Where clinically indicated, such exams will yield vital clinico-pathological information, which may be of vital importance in refining recommendations related to prevention and treatment of infection. The post-mortem should be conducted in a high-risk post-mortem room and a powered /positive pressure respirator and full PPE should be worn.

7.7.4 *Mortuary and funeral staff*

The mortuary staff or funeral director should be informed that the deceased had pandemic influenza. Standard Infection Control Precautions should be followed; there is no further risk of droplet spread. Funeral directors should be informed of the level of infection risk (that is, a low infection risk)

7.8 Special settings: visitors

7.8.1 Family visitors

During a pandemic, visitors to all areas of the hospital should be kept to a minimum. On arrival to influenza segregated wards all visitors should report to the ward reception. Signage should be displayed informing visitors of the ward's current segregated status and procedures that need to be undertaken prior to entering the ward.

Visitors entering a cohorted area must be instructed on hand hygiene practice and the wearing of protective clothing as appropriate.

The use of family members and volunteers to assist in patient care during a pandemic may be considered if staff shortages are extreme. When visitors become carers they will need to be instructed on the use of PPE.

7.8.2 Others

Works department technicians should not be allowed entry into influenza segregated areas unless undertaking essential maintenance work. If this is necessary, PPE must be worn as detailed for healthcare workers.

Medical sales representatives should not be allowed entry into influenza segregated areas including patient waiting or reception areas designated for patients with symptoms of pandemic influenza.

8 Supplemental guidance for primary care settings

As there is a wide spectrum of healthcare delivery in the community, planning is essential. Primary, continuing and community care is managed differently in terms of staff and population and the generic guidance provided in this document will need to be operationalised slightly differently in each primary care setting, after a local risk assessment has been performed. This supplement covers the following main care settings:

- General Practice premises
- Primary Care staff making home visits
- Primary Care Clinics
- Community Hospitals
- Ambulance services
- Nursing Homes
- Prison Medical Units
- Residential Units

8.1 Preparedness checklist for pandemic infection control

Primary continuing and community care (PCCC) needs to consider a number of key issues related to infection control in primary care settings during a pandemic and find the best way of integrating/embedding these into their organisational processes.

8.1.1 Overall coordination

- ❖ Identify a lead member of staff in each HSE area who will take responsibility for coordinating infection control during a pandemic.
- ❖ Ensure that the PCCC General Managers are fully informed of the critical infection control issues in relation to pandemic influenza.

- ❖ Identify if there are existing forums within PCCC that can address the issues and actions required towards preparation for a pandemic (including performing local risk assessments). If not, form a local Pandemic Action Group/Sub-Groups consisting of membership from the following:
 - LHO manager(s)
 - Practice nurses representative
 - Medical Staff (GP and Community Health Doctor)
 - Senior representative from each clinical team (e.g., Public Health Nurse, Senior Physiotherapist, Occupational Therapist, Podiatrist)
 - Occupational Health representative
 - Infection Control Team
 - Health and Safety Team
 - Public Relations/Communications Manager
 - Technical services Dept
 - Domestic Services/Housekeeping
 - Supplies
 - Specialist in Public Health Medicine
 - Community pharmacist
 - Human Resources
 - Others as appropriate

8.1.2 *Infection control issues*

- ❖ Identify suitable staff (e.g., Infection Control Link Nurses/Persons) who can supplement the existing team if needed
- ❖ Prepare strategy to communicate infection control information to staff

8.1.3 *Triage and patient placement*

- ❖ Establish procedures and test a plan for “pandemic configuration” of healthcare settings and premises, including where possible the rapid separation of patients with influenza from other patients
- ❖ Identify areas for segregating/cohorting large numbers of waiting patients with pandemic influenza

8.1.4 Occupational health

Develop plans and procedures to:

- ❖ Ensure managers know how to assess staff with respiratory symptoms
- ❖ Supervise and monitor staff deployment, including bank and agency staff
- ❖ Track and document staff sickness/absence using General Manager reports
- ❖ Provide psychological and social support to staff.
- ❖ Administer antiviral therapy as may be specified by HSE
- ❖ Vaccinate staff as may be specified by HSE

8.1.5 Staffing

Ensure that plans are in place to address:

- ❖ Staff allocation considering skill-mix and the likelihood of sickness/absence
- ❖ Tracking and coordination of staff movements (including agency staff)
- ❖ When an emergency staffing crisis would be declared
- ❖ Possible use of family members and lay volunteers in an ancillary capacity
- ❖ Staff working outside their usual area of practice (e.g., medical and nursing students working as health care assistants)

8.1.6 Bed management

Is the following addressed in the existing Bed Management policy?

- ❖ Policies for expediting discharge of patients in conjunction with Community Care and local primary care services
- ❖ Adequate transportation arrangements for discharged patients
- ❖ Establishment of an intermediate care facility to free-up hospital beds
- ❖ Plan for frequent liaison with Bed Managers in acute hospitals.

8.1.7 Supplies of consumables

- ❖ Evaluate current stock of essential equipment
- ❖ Assess anticipated demand for consumables and determine trigger point for ordering extra supplies

- ❖ Determine feasibility of ordering and storing extra PPE
- ❖ Direct Supplies Managers to establish contingency plans in the event that primary sources of supplies become limited or exhausted

8.1.8 *Mortuary issues*

In conjunction with the pandemic influenza implementation steering committee and mortuary subgroup:

- ❖ Plan for mass fatalities.
- ❖ Assess capacity for refrigeration
- ❖ Define overflow arrangements

8.1.9 *Education and training*

- ❖ Brief senior PCCC (including Practice Managers, Directors of Public Health Nursing, GPs, Ambulance managers) on pandemic infection control procedures
- ❖ Brief managers of other departments (including Estates, Practice Nurses, Physiotherapy, Occupational Health)
- ❖ Test local response capabilities; a tabletop exercise is strongly recommended
- ❖ Plan for additional training and fit-testing for the small number of staff likely to use FFP2 respirators. Consider carefully whether there is a need to use nebulisers or to undertake other aerosolising procedures in the community setting, and whether alternative therapies could be used. It is likely that situations requiring the use of FFP2 respirators will not be frequent
- ❖ Provide general training for all staff on the infection control implications of pandemic influenza
- ❖ Liaise with others who may require training on infection control precautions as appropriate to their respective roles (e.g., chaplains and funeral directors)
- ❖ Consider how the HSE area intranet could be utilised for training, education and communication on infection control issues during a pandemic to minimise face-to-face meetings during a pandemic

8.2 Patient placement, segregation and cohorting

Key Points

- In all community healthcare settings, patients with pandemic influenza should be kept separate from non-influenza patients
- This requires careful consideration and flexibility in accommodation and staffing arrangements.

To achieve the desired goal of separating patients with influenza from those without, a designated self-contained area within each premises should be used for the treatment and care of patients with pandemic influenza whenever possible. Ideally this area should:

- Be fully self-contained
- Include reception and waiting areas separated from non-influenza patients
- Have a separate entrance/exit door
- Not be used as a thoroughfare by other patients, visitors or staff. This includes patient transfers, and staff and visitors entering and exiting the building.

To control entry, signage should be displayed warning of the segregated pandemic area.

While such arrangements may not be possible in some premises within PCCC innovative solutions should be sought which incorporate the above precautions, e.g., no “mixed” (influenza and non-influenza patients) surgeries to be carried out.

8.2.1 Configuration of community care premises

Once a pandemic is established, segregation precautions should be applied to address the dual aims of handling a large number of patients with influenza whilst minimising transmission to others.

8.2.1.1 GP surgeries/ community outpatient settings

Where possible, part of the surgery (at a minimum a consulting room) should be designated for the duration of the pandemic.

8.2.1.2 Community in-patient settings

(Including community hospitals, nursing homes, and prison hospitals): See section 7.2.

8.2.1.3 Temporary care settings

Pandemic influenza arrangements should plan for high numbers of patients being discharged from hospital into the community. Plans should be in place to provide accommodation for segregated intermediate care (e.g., in a designated nursing home). As the incidence of pandemic influenza increases locally, there may be a need to establish temporary care facilities. These are likely to be situated in establishments which are not designed or optimised for the delivery of clinical care (e.g. sports halls, schools, town halls);

8.2.2 *Key points for infection control practice in community inpatient areas*

See section 7.2.

8.2.3 *Key points for infection control practice for general practices*

8.2.3.1 Telephone triage

Patients with symptoms of pandemic influenza who are not seriously ill should be encouraged to telephone the HSE medical helpline(preferably) or the GP surgery for advice and consultation to minimize crowding in reception areas. GPs may wish to consider home visits in lieu of surgery visits in such instances.

8.2.3.2 Entry procedures

If it is possible to designate a segregated area of the GP premises for influenza patients, practice staff should be limited to those necessary for patient care and support. Records should be kept of staff working in the designated area. Place a sign (not breaching patient confidentiality) at the entrance alerting staff to the precautions to be adopted.

8.2.3.3 Infection control precautions

Standard Infection Control Precautions and Droplet Precautions should be maintained both in the surgery and during home visits.

8.2.3.4 Patient equipment

Clean re-usable equipment (e.g. ECG machine, stethoscope) between patients. If it is not possible to identify a segregated area in the GP surgery ensure that all staff are aware of Standard Infection Control Precautions and Droplet Precautions, paying particular attention to hand hygiene and the additional cleaning of consulting and treatment rooms required after being used for seeing patients with influenza. (See section 6.5.)

8.2.3.5 Cleaning

Cleaning of the consulting, treatment and waiting areas should be done as a minimum, daily and after being used for an influenza session.

8.2.4 *Key points for infection control practice in temporary care settings*

8.2.4.1 Preparation and planning

Advice must be sought from the Community Infection Control team/committee for the PCCC region. For example, access to hand washing facilities should be made available; if there is a shortage of sinks, temporary sinks should be installed (liaise with local council). Supplies of PPE, hand hygiene products and cleaning materials must be secured before the facility begins accepting patients.

8.2.4.2 Hand hygiene

Alcohol hand rub should be available at all points of patient care and entrance and exit points of the building. Personal carried alcohol rub may be issued to staff if hand hygiene facilities may be suboptimal.

8.2.4.3 Layout and configuration

The distance between the beds should be at least 1 metre. Beds should be separated by a physical barrier (e.g. curtains or screens).

8.3 Patient transfer/transport/hospital day care procedures

See section 7.3

8.4 Special settings: ambulance services

Key Points

- **Where practical designate an ambulance(s) for influenza patients**
- **Standard Infection Control Precautions and Droplet Precautions are applicable in most circumstances**
- **Crew members should wear FFP2 respirators only if critically ill patients require aerosol-generating procedures (e.g., intubation, nasopharyngeal aspiration).**
- **Equipment carried should be kept to a minimum**

Where practical and possible designate an ambulance(s) for transfer of patients with pandemic influenza for the duration of each shift.

The immediate environment i.e., trolley and patient equipment must be decontaminated between patients. Upon completion of transfer of patients with influenza (e.g., at the end of a shift) the vehicle must be thoroughly cleaned and decontaminated using detergent and hot water before further use. All disposable materials must be disposed of as health care waste. Waste bags must be sealed, labelled and sent for disposal ⁽¹²⁾ .

Coughing and sneezing patients should be transported on their own whenever possible. However, if pressure upon the service occurs, two patients with symptoms of pandemic influenza may be transferred together. Symptomatic patients should be encouraged to wear a surgical mask to assist in the containment of respiratory secretions and reduce environmental contamination of the ambulance (see section 5.2).

8.5 Special settings: general practices

8.5.1 Organisation of work flow and appointments

The principal GP, together with the Practice Manager, are responsible for clinical and administrative infection control issues to prevent the spread of influenza in the practice. Procedures should be established to test the practice's plan, including a "dummy run" of converting the premises to a pandemic configuration.

Procedures for making appointments should be reviewed. All non-essential clinics should be cancelled, including routine baby clinics. Babies needing treatment and essential childhood immunisations should be seen singly in the part of the Health Centre or surgery designated for non-influenza patients.

Where practical a work flow should be developed so that GPs and Practice Nurses are designated to care for either influenza or non-influenza patients and "mixed care" is avoided. For example, one GP would be designated for the morning surgery to see all patients with influenza in a designated area; at the end of surgery the same GP would make house calls to patients with influenza. Other GPs within the practice would see non-influenza patients in separate areas of the surgery. Environmental cleaning should be carried out, prior to using the same facilities for non-influenza patients. (Refer to section 6.5)

8.5.2 Checklist for pandemic infection control

8.5.2.1 Layout/configuration of the practice

- ❖ Create separate waiting areas for influenza and non-influenza patients
- ❖ Designate clinical rooms/doctors' offices for influenza and non-influenza patients
- ❖ Remove extraneous items (e.g., toys, soft furnishings, magazines) from waiting areas
- ❖ Display clear signage at surgery entrances and clinical rooms indicating influenza/non-influenza areas

8.5.2.2 Staff assignments

- ❖ Assign GPs, Practice Nurses, and other Primary Care staff to see either influenza patients or non-influenza patients on a daily basis

8.5.2.3 Infection control issues

- ❖ Ensure that hand hygiene facilities (e.g., sinks, liquid soap, alcohol hand gel, paper towels) are available for staff and patient use
- ❖ Consider use of hand carried alcohol rub for GPs and practice staff when making community/home visits
- ❖ Ensure that tissues and waste bins are available for patients and staff
- ❖ Monitor adherence to hand hygiene and other infection control measures
- ❖ Paper sheeting is a good alternative for use on patient examination couches and should be changed after each patient.
- ❖ No special handling procedures beyond those for Standard Infection Control Precautions / Precautions are recommended for risk and non-risk health care waste that may be contaminated with influenza virus. Waste generated within the clinical setting should be managed safely and effectively, with attention paid to disposal of items that have been contaminated with secretions/sputum (e.g., paper tissues) in addition to other routine and domestic waste management. The Department of Health guidelines on the management of waste should be referred to as needed. ⁽¹¹⁾

8.5.2.4 Personal protective equipment

- ❖ Ensure that supplies of gloves, surgical masks, aprons and any other items that may be needed
- ❖ Ensure that eye protection is available if needed
- ❖ Perform local risk-assessment to review potential for performing aerosol-generating procedures; order FFP2 disposable respirators and fluid repellent gowns if this is likely. Consider carefully whether there is a need to use nebulisers or to undertake other aerosolising procedures in the general practice setting, and whether alternative therapies could

be used. It is likely that situations requiring the use of FFP2 respirators will not be frequent.

8.5.2.5 Environmental cleaning

- ❖ Ensure that an environmental cleaning rota is in place and domestic staff have been trained in cleaning and decontamination procedures
- ❖ Ensure that there are adequate supplies of cleaning materials

Guidance documents on environmental hygiene in General Practice have been developed and are available in some HSE areas (e.g. HSE East Department of Public Health)

8.5.2.6 Education and training

- ❖ Provide all staff with training in pandemic influenza infection control procedures
- ❖ Ensure that any potential users of FFP2 disposable respirators have been fit tested and trained in their proper use and care

8.5.2.7 Record keeping

- ❖ Track and document staff sickness and absence
- ❖ Track and document staff assignments

8.5.2.8 Patient information

- ❖ Provide information sheets, pamphlets etc. for patients

8.6 *Special settings: single-handed GPs*

Single-handed GPs may encounter a number of difficulties related to implementation of pandemic influenza infection control measures:

- ❖ Creation of separate waiting areas for influenza and non-influenza patients
- ❖ Designation of clinical rooms for influenza and non-influenza patients
- ❖ Segregation of influenza and non-influenza patient care activities due to small team size
- ❖ Limited resilience due to staff sickness and absence.

Single-handed GPs should seek help and advice from PCCC/LHO to help ensure that they can function effectively during a pandemic without increasing the potential for spread of influenza in their practice. Primary Care Services may need to consider how local services provided by single-handed GPs can be amalgamated with those provided by larger team practices for the duration of the pandemic.

8.7 Special settings: public health nursing teams

Team Leaders should carefully manage nursing team workflow and consider flexible and innovative approaches such as “cross working.”

Public health nurses should be designated to care for either influenza or non-influenza patients whenever possible. All non-influenza visits/appointments should continue as long as possible. However, it may be necessary to cancel routine appointments and clinics.

8.8 Special settings: allied health professionals (AHP)

Close liaison with PCCC is essential. AHPs may be requested to work outside their normal duties and managers should ensure that training is provided to facilitate this need.

It may be necessary to cancel non-essential clinics/appointments. AHPs performing non-deferrable essential visits to households with influenza should follow the infection control precautions detailed in this Guidance.

See Section 4 for further information regarding staff deployment and occupational health issues.

8.9 Special settings: dentists

8.9.1 Patient visits

It may be prudent to cancel routine dental visits during the pandemic period. At a minimum, dental practices should put in place active screening of all patients for symptoms of influenza prior to entering the clinical area. Patients

9 Appendices

9.1 *Appendix A Categories of transmission patterns for infectious agents*

Transmission of infection within a hospital requires three elements: a source of infecting microorganisms, a susceptible host and a means of transmission for the microorganism. Microorganisms are transmitted in hospitals by several routes and the same microorganism may be transmitted by more than one route. There are five main routes of transmission: droplet, contact, airborne, common vehicle and vectorborne. The last two routes do not usually play a significant role in typical nosocomial infections.

9.1.1 *Droplet transmission*

Droplets are generated from the source person primarily during coughing, sneezing, or talking and during the performance of certain procedures such as suctioning and bronchoscopy. Transmission occurs when droplets (larger than 5 µm in size) containing microorganisms generated from the infected person are propelled a short distance (usually 3 feet /1 metre or less), through the air and deposited on the host's conjunctivae, nasal mucosa or mouth.

Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission: that is, droplet transmission must not be confused with airborne transmission.

9.1.2 *Airborne transmission*

Airborne transmission occurs by dissemination of either airborne droplet nuclei (small particle residue [5 µm or smaller in size] of evaporated droplets that may remain suspended in the air for long periods of time) or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and be inhaled and may become inhaled by or deposited on a susceptible host within the same room or over a longer distance from the source patient, depending on environmental factors; therefore, special air handling and ventilation are required to prevent airborne transmission.

9.1.3 *Contact transmission*

The most important and frequent mode of transmission of nosocomial infections is divided into two groups: direct contact and indirect contact transmission.

9.1.3.1 Direct contact transmission

Direct contact transmission involves skin-to-skin contact and physical transfer of microorganisms to a susceptible host from an infected or colonized person, such as occurs when personnel turn patients, bathe patients, or perform other patient-care activities that require physical contact. Direct-contact transmission also can occur between two patients (e.g., by hand contact), with one serving as the source of infectious microorganisms and the other as a susceptible host.

9.1.3.2 Indirect contact transmission

Indirect-contact transmission involves a susceptible host with a contaminated intermediate object, usually inanimate, in the patient's environment.

Isolation precautions are designed to prevent transmission of microorganisms by these routes in hospitals. Because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission.

Appendix B will detail the two elements of isolation precautions:

- Standard Precautions, which should be applied by all health care practitioners to the care of all patients all of the time and
- Transmission-Based Precautions, which are required to interrupt transmission in hospitals from patients documented or suspected to be infected with highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are required.

Adapted from Garner, J.S. and The Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. *Am J Infect Control* 1996;24:24-52.

Available at http://www.cdc.gov/ncidod/dhqp/gl_isolation.html

9.2 *Appendix B. Infection control measures: Standard and Transmission-based Precautions*

A variety of infection control measures are used for decreasing the risk of transmission of microorganisms in hospitals.

Regardless of their diagnosis or presumed infection status, Standard Precautions should be applied by all health care practitioners to the care of all patients all of the time.

These are a set of broad statements of good practice to minimise exposure to and transmission of a wide variety of microorganisms. They apply to

- Blood
- All body fluids, secretions and excretions except sweat, regardless of whether or not they contain visible blood
- Non-intact skin and
- Mucous membranes

Transmission Based Precautions are used **in addition to** standard precautions when providing care for patients who are suspected or confirmed to be infected with highly transmissible or epidemiologically important pathogens spread by airborne or droplet transmission or by contact with dry skin or contaminated surfaces.

There are three types of Transmission Based Precautions: Airborne, Droplet and Contact Precautions. They may be combined for diseases that have multiple routes of transmission and should be always be used in addition to Standard Precautions.

9.2.1 *Standard Precautions*

Standard Precautions address the importance of and include:

9.2.1.1 Hospital environmental hygiene

- The hospital environment must be visibly clean, free from dust and soilage, and acceptable to patients, their visitors and staff.

- Where a piece of equipment is used for more than one patient, e.g., commode, bath hoist, it must be cleaned following each and every episode of use.
- Statutory requirements must be met in relation to the safe disposal of clinical waste, laundry arrangements for used and infected linen, food hygiene and pest control.
- All staff involved in hospital hygiene activities must be included in education and training related to the prevention of hospital-acquired infection.

9.2.1.2 Hand hygiene

- Hands must be decontaminated immediately before each and every episode of direct patient contact/care and after any activity or contact that potentially results in hands becoming contaminated.
- Hands that are visibly soiled or potentially grossly contaminated with dirt or organic material must be washed with liquid soap and water.
- Apply an alcohol-based hand rub or wash hands with liquid soap and water to decontaminate hands between caring for different patients, or between different caring activities for the same patient.
- Remove all wrist and ideally hand jewellery at the beginning of each clinical shift before regular hand decontamination begins. Cuts and abrasions must be covered with waterproof dressings.
- Effective handwashing technique involves three stages: preparation, washing and rinsing, and drying. Preparation requires wetting hands under tepid running water before applying liquid soap or an antimicrobial preparation. The handwash solution must come into contact with all the surfaces of the hand. The hands must be rubbed together vigorously for a

minimum of 10–15 seconds paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly prior to drying with good quality paper towels.

- When decontaminating hands using an alcohol hand rub, hands should be free of dirt and organic material. The hand rub solution must come into contact with all surfaces of the hand. The hands must be rubbed together vigorously, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers, and until the solution has evaporated and the hands are dry.
- Apply an emollient hand cream regularly to protect skin from the drying effects of regular hand decontamination. If a particular liquid soap, antimicrobial handwash or alcohol product causes skin irritation, seek occupational health advice.

9.2.1.3 The use of personal protective equipment

- Select protective equipment on the basis of an assessment of the risk of transmission of microorganisms to the patient, and the risk of contamination of health care practitioners clothing and skin by patients' blood, body fluids, secretions, and excretions.
- Gloves must be worn for invasive procedures, contact with sterile sites, and non-intact skin, mucous membranes, and all activities that have been assessed as carrying a risk of exposure to blood, body fluids, secretions and excretions; and when handling sharp or contaminated instruments.
- Gloves should be worn as single use items. Put gloves on immediately before an episode of patient contact or treatment and remove them as soon as the activity is completed. Change gloves between caring for different patients, or between different care/treatment activities for the same patient.

- Gloves must be disposed of as health care risk waste and hands should be decontaminated following the removal of gloves.
- Gloves conforming to European Community (CE) standards and of an acceptable quality must be available in all clinical areas.
- Alternatives to natural rubber latex (NRL) gloves must be available for use by practitioners and patients with NRL sensitivity.
- Powdered and polythene gloves should not be used in health care activities.
- Disposable plastic aprons should be worn when there is a risk that clothing or uniform may become exposed to blood, body fluids, secretions and excretions, with the exception of sweat.
- Full body, fluid repellent gowns should be worn where there is a risk of extensive splashing of blood, body fluids, secretions and excretions, with the exception of sweat, onto the skin of health care practitioners.
- Plastic aprons should be worn as single use items for one procedure or episode of patient care and then discarded and disposed of as clinical waste.
- Facemasks and eye protection should be worn where there is a risk of blood, body fluids, secretions and excretions splashing into the face and eyes.
- Respiratory protective equipment should be used when clinically indicated.

9.2.1.4 The safe use and disposal of sharps

- Sharps must not be passed directly from hand to hand and handling should be kept to a minimum.
- Needles must not be bent or broken prior to use or disposal.
- Needles and syringes must not be disassembled by hand prior to disposal.
- Needles should not be recapped.
- Used sharps must be discarded into a sharps container (conforming to UN3291 and BS 7320 standards) at the point of use. These must not be filled above the mark indicating that they are full. Containers in public areas must not be placed on the floor and should be located in a safe position.
- Consider the use of needlestick-prevention devices where there are clear indications that they will provide safe systems of working for healthcare practitioners.
- Conduct a rigorous evaluation of needlestick-prevention devices to determine their effectiveness, acceptability to practitioners, impact on patient care and cost benefit prior to widespread introduction.

9.2.1.5 Transmission-based precautions

Transmission-based precautions (Droplet, Airborne and Contact) are used in addition to standard precautions when providing care for patients who are suspected or confirmed to be infected with highly transmissible or epidemiologically important pathogens for which additional precautions, beyond standard precautions, are needed to interrupt transmission in health care facilities.

Both droplet and airborne precautions include specific advice on patient placement, respiratory protection and patient transport; contact precautions also include additional advice on the use of gloves, gowns and hand hygiene.

9.2.1.6 Droplet precautions*

These are designed to reduce the risk of droplet transmission of infectious agents (larger than 5 µm in size) that can be generated by the patient during coughing, sneezing, talking, or the performance of procedures).

- Patient placement: single room, if possible; if not available, use cohorting, keeping at least 1 metre/ 3 ft between patients' beds.
- Use surgical or procedure mask when entering the patient room; masking is mandatory if working within 1 metre/3ft of the patient.
- Patient transport: limit patient movement, use of medical mask by the patient.

9.2.1.7 Airborne precautions

- When entering the isolation room/area or when providing care to a patient with an airborne infectious disease in other settings, use a particulate respirator that is at least as protective as a EU FFP2.
- Appropriate procedures should be used to select a particulate respirator that fits well and a user seal check should be performed each time a particulate respirator is worn.
- Airborne precautions also include environmental controls, such as placing the patient in an airborne infection isolation room or area.

9.2.1.8 Contact precautions

These are designed to reduce the risk of transmission of epidemiologically important microorganisms from patients with known infection, suspected to be infected with or colonised with epidemiologically important microorganisms that can be transmitted by direct or indirect contact. They should be used for all contact with the patients or the patient's environment.

- Gloves
 - Clean non-sterile, ambidextrous gloves are adequate.
 - Gloves should cover the cuff of the gown.
 - Gloves should be worn only once and then placed in a waste receptacle.

- Gown
 - A disposable gown made of synthetic fibre or a washable cloth gown may be used.
 - Ensure that gowns are of the appropriate size to fully cover the area to be protected.
 - Gowns should preferably be worn once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed.
- Use either disposable equipment or dedicate equipment such as stethoscopes, blood pressure cuffs, thermometers, etc. to specific patients. If equipment needs to be shared among patients, it must be cleaned and disinfected between uses.
- It is critical that HCWs refrain from touching their eyes, nose, or mouth with potentially contaminated gloved or ungloved hands.
- Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles, light switches).

Based on

Pratt RJ, Pellowe C, Loveday HP et al. The EPIC project developing national evidence-based guidelines for preventing healthcare associated infections. Phase 1 guidelines for preventing hospital-acquired infections. J Hosp Infect 2001; 47: S3-82

NICE (2003) Infection control: Prevention of healthcare associated infection in primary and community care.

***Adapted from**

Garner, J.S. and The Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. Am J Infect Control 1996;24:24-52. Available at www.cdc.gov/ncidod/hip/ISOLAT/ISOLAT.HTM

Resources for transmission-based precautions

"Practical Guidelines for Infection Control in Health Care Facilities" at:

http://www.wpro.who.int/publications/PUB_9290222387.htm

"Prevention of hospital-acquired infections: A practical guide" at:

http://www.who.int/csr/resources/publications/drugresist/WHO_CDS_CSR_EP_H_2002_12/en/

Resource for airborne infection isolation rooms

"Guideline for environmental infection control in health-care facilities, 2003" at:

http://www.cdc.gov/ncidod/dhqp/gl_environinfection.html

9.3 Appendix C. Categories of Healthcare Waste

Healthcare Risk Waste	
Potentially Infectious Waste 1. General	<p>a) Blood and items visibly soiled with blood b) Contaminated waste from patients with transmissible infectious diseases</p> <p>c) Incontinence wear/nappies from patients with known or suspected enteric pathogens</p> <p>d) Items contaminated with body fluids other than faeces, urine or breast milk</p> <p>e) Other healthcare infectious waste</p>
2. Laboratory Waste	<p>f) Specimens and potentially infectious waste from pathology departments</p> <p>g) Microbiological cultures (liquid or solid media in which organisms have been artificially cultivated)</p> <p>h) Other laboratory waste</p>
3. Biological	i) Anatomical waste and identifiable body parts
4. Sharps	j) Any object which has been used in the diagnosis, treatment or prevention of disease that is likely to cause a puncture wound or cut to the skin
5. Radioactive Waste	Includes materials in excess of authorised clearance levels, classified as radioactive under the General control of Radioactive Substances Order, 1993 (S.I. No. 151 of 1993)
6. Toxic Waste	Discarded hazardous chemicals, reagents and medicines
Non-risk waste	
7. Domestic waste	Includes normal household and catering waste, all non-infectious waste, non-toxic, non-radioactive waste and non-chemical waste
8. Confidential material	Includes shredded waste documents of a confidential nature
9. Medical equipment	Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. plastic bottles, plastic packaging, etc.
10. Potentially offensive material	Assessed as non-infectious, i.e. not contaminated with blood or hazardous body fluids, e.g. nappies/incontinence wear, stoma bags, etc.

9.4 References

- (1) HSE, DOHC. National Pandemic Influenza Plan, 2007. 2007.
- (2) Safety, Health and Welfare at Work (Biological Agents) (Amendment) Regulations, 1998. 1998.
- (3) Safety, Health and Welfare at Work (Biological Agents) Regulations, 1994. 1994.
- (4) SARI Infection Control Subcommittee. Guidelines for Hand Hygiene in Irish Health Care Settings. 2005.
- (5) CEN EN 14683:2005 Surgical Masks - Requirements and Test Methods. 2005.
- (6) Department of Health and Children. Segregation , Packaging and Storage Guidelines for Healthcare Risk Waste. 3rd Edition.
- (7) Royal College of Nursing U. Guidance on uniforms and clothing worn in the delivery of patient care. 1-14. 1-4-2005.
- (8) National Hospitals Office. Cleaning Manual - Acute Hospitals. 2007.
- (9) SARI Infection Control Committee. The Control and Prevention of MRSA in hospitals and in the community. 2005. Dublin, Health Protection Surveillance Centre.
- (10) Safety, Health and Welfare at Work (Biological Agents) (Amendment) Regulations, 1998. 1998.
- (11) Department of Health and Children. Segregation , Packaging and Storage Guidelines for Healthcare Risk Waste. 3rd Edition.