

# PANDEMIC FLU

A summary of guidance for  
infection control in healthcare settings



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# 1 Summary

This document is the summary of an updated version of *Guidance for pandemic influenza: Infection control in hospitals and primary care settings*,<sup>1</sup> which is currently in press and will be re-published as *Pandemic influenza: Guidance for infection control in hospitals and primary care settings*.<sup>2</sup> The full guidance was developed to help NHS trusts plan in advance of the emergence of the next influenza pandemic. The full guidance document includes detailed sections on infection control precautions, environmental infection control, preparedness planning and occupational health in both hospital and primary care settings. However, this **summary document** focuses on infection control. It should be noted that this summary document does **not replace the detailed document which should be read in full** before applying the recommendations within this summary.

For planning purposes, it is assumed that a pandemic strain of influenza will have similar transmission, communicability and inactivation properties to 'routine' seasonal influenza.

The full guidance document will be updated if epidemiological and virological information on the eventual pandemic virus indicates that it is necessary to change our approach to infection control. **Readers are strongly urged to refer to the most up-to-date version of the full guidance document via the Department of Health website at [www.dh.gov.uk/pandemicflu](http://www.dh.gov.uk/pandemicflu)**

Prior to the World Health Organization's (WHO's) declaration that a pandemic has started, hospitals and healthcare staff 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.<sup>3</sup> The number of such cases is expected to be small and most likely to occur in travellers returning from affected parts of the world. The infection control guidance in this document does not apply to the management of these cases and healthcare staff should follow current guidance as issued by the Health Protection Agency (HPA) at [www.hpa.org.uk/infections/topics\\_az/influenza/avian/guidelines.htm](http://www.hpa.org.uk/infections/topics_az/influenza/avian/guidelines.htm)

# 2 Overview of pandemic influenza

## 2.1 Emergence of a pandemic

- Seasonal influenza is a familiar infection in the UK, especially during winter.
- Pandemics arise when new viruses or other infectious agents emerge that are capable of spreading throughout the world. Pandemic influenza will be caused by a virus that has become fully adapted to humans and will be easily transmitted from one person to another.
- Predictions based on previous pandemics indicate that clinical attack rates may be high (up to 50%) and almost all the population will potentially be at risk.
- As the pandemic virus is likely to spread throughout the country, healthcare staff are equally as likely to encounter pandemic influenza in normal daily living, for example in the family home, as in the workplace.

## 2.2 Influenza: clinical features and transmission

- Influenza is a respiratory illness with a wide range of symptoms characterised by rapid onset of illness, fever, cough, headache, sore throat, and aching muscles and joints.
- The typical incubation period for non-pandemic influenza (the time between catching influenza and showing symptoms) is one to four days, with an average of two to three days.
- People are most infectious soon after they develop symptoms though they can continue to shed virus, for example in coughs and sneezes, for typically up to five days (seven days in children).

# 3 Principles of containment and infection control

## 3.1 Infection control assumptions

The principles of infection control for pandemic influenza are based on the assumption that pandemic influenza has similar properties to seasonal influenza:

- 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 most likely routes of spread.
- For some pathogens, aerosols generated under specific circumstances may be associated with an increased risk of pathogen transmission.<sup>4,5</sup> While this may be possible for influenza, the general consensus is that droplet and contact transmission are of far greater importance.
- How infectious an individual is depends on how severe their symptoms are; people will be most infectious just after their symptoms start.
- Adults will usually be infectious for up to five days after symptoms begin and children for up to seven days, although longer periods of virus shedding have been found in a small proportion of children.
- Virus excretion may be considerably longer in immunocompromised patients.
- Virus may be recovered from infected people before they show symptoms, but there is little published evidence to support person-to-person transmission of influenza from a pre-symptomatic individual to a person who does not already have the infection.
- Seasonal influenza viruses can survive on environmental surfaces, especially on hard, non-porous materials such as stainless steel.
- Influenza viruses are easily deactivated by washing with soap and water, alcohol-based handrub and household detergents and cleaners.

### 3.2 Principles of containment and infection control

Limiting transmission of pandemic influenza in the healthcare setting requires:

- timely recognition of influenza cases
- instructing staff members with respiratory symptoms to stay at home and not come in to work
- segregation of staff into those who are dealing with influenza patients and those who are not
- consistent and correct use of appropriate infection control precautions to limit transmission (standard infection control principles and droplet precautions)
- the use of personal protective equipment (PPE) according to risk of exposure to the virus
- maintaining separation in space and/or time between influenza and non-influenza patients
- restricting ill visitors to the facility
- environmental cleaning and disinfection
- education of staff, patients and visitors about transmission and prevention of influenza
- treatment of patients and staff with antiviral drugs which can reduce infectiousness and the duration of illness
- vaccination of patients and staff.

The UK has a stockpile of antiviral drugs sufficient for the treatment of all symptomatic patients up to clinical attack rates of 25%. Higher clinical attack rates would require prioritisation of use. During the first wave of a pandemic, a specific pandemic vaccine will be largely unavailable. Prioritisation would take place in accordance with Department of Health policy. Therefore, attention to non-pharmaceutical methods of control as outlined in this document will be particularly important in reducing exposure.

# 4 Infection control precautions

## 4.1 Key points

- Standard infection control principles and droplet precautions must be used for patients with or suspected of having pandemic influenza.
- Good staff and patient hand hygiene is vital for the protection of both parties.
- Good respiratory hygiene is essential.
- The use of PPE should be proportional to the risk of contact with respiratory secretions and other body fluids, and should depend on the type of work/ procedure being undertaken.

## 4.2 Infection control precautions for pandemic influenza

Standard infection control principles and droplet precautions must be used for patients with or suspected of having pandemic influenza. Standard infection control principles are a set of broad statements of good practice to minimise exposure to and transmission of a wide variety of micro-organisms. Standard principles should be applied by **all** healthcare practitioners to the care of **all** patients **all** of the time. Standard infection control principles are published<sup>6</sup> and detailed in the full guidance document.

## 4.3 Hand hygiene

Hand hygiene is the single most important practice needed to reduce the transmission of infection in healthcare settings and is an essential element of standard infection control principles.

Hand hygiene includes hand washing with soap and water and thorough drying, and the use of alcohol-based products that do not require the use of water. If hands are visibly soiled or contaminated (for example, contaminated with respiratory secretions), they should be washed with soap and water and dried. When using an alcohol handrub, hands should be free of visible dirt and organic material.

Hands should be decontaminated, even if gloves have been worn, before and after all contact with an infected patient or their bed area (including inanimate objects), removal of protective clothing and cleaning of equipment.

All staff, patients and visitors should clean their hands when entering and leaving areas where care is delivered.

## 4.4 Applying droplet precautions for pandemic influenza

In addition to standard infection control principles, droplet precautions should be used for a patient known or suspected to be infected with influenza, which is transmitted by droplets that can be generated by the patient during coughing, sneezing or talking and during some procedures.<sup>4</sup>

### 4.4.1 Patient placement

- Ideally, patients with influenza should be placed in single rooms; however, during a pandemic this will not be possible. Therefore, patients should be cohorted (grouped together with other patients who have influenza and no other infection), in a segregated area.
- Patients should be kept at least one metre apart.
- Special ventilation is not required.

### 4.4.2 Surgical masks

- Surgical masks must be worn when working in close contact (within one metre) with a patient with symptoms.
- In an area where influenza patients have been cohorted together, for practical reasons, this is likely to mean wearing a surgical mask at all times.

### 4.4.3 Patient transport

- The movement and transport of patients from their rooms or the cohorted area should be limited to essential purposes only.
- If transport or movement is necessary, minimise patient dispersal of droplets by masking the patient, if possible. The surgical mask should be worn during transport until the patient returns to the segregated area.
- If a surgical mask cannot be tolerated then good respiratory hygiene must be encouraged.

## 4.5 Management of a coughing and sneezing patient

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

- Cover nose and mouth with disposable, single-use tissues when sneezing, coughing, wiping and blowing noses.
- Dispose of used tissues in nearest waste bin.
- Wash hands after coughing, sneezing, using tissues or contact with respiratory secretions and contaminated objects.
- Keep hands away from the eyes, mouth and nose.
- Some patients (for example older people, children) may need assistance with containment of respiratory secretions; those who are immobile will need a container (for example a plastic bag) readily at hand for immediate disposal of tissues and a supply of hand wipes and tissues.
- Where possible, in common waiting areas or during transport, coughing and sneezing patients should wear surgical masks to minimise the spread of respiratory secretions and reduce environmental contamination.

## 4.6 Aerosol-generating procedures

Several medical procedures have been reported to generate aerosols and some have been suggested to be associated with increased risk of pathogen transmission.<sup>4,5</sup> However, the risk associated with many of the aerosol-generating procedures is not yet well defined, and may change with further studies in the area. In a recent revised WHO document, *Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care*, the following are considered to be aerosol-generating procedures associated with a documented increase in risk of pathogen transmission:<sup>5</sup>

- intubation and related procedures, for example manual ventilation and suctioning
- cardiopulmonary resuscitation
- bronchoscopy
- surgery
- post-mortem.

The performance of aerosol-generating procedures should be minimised as far as possible without compromising patient care and carried out in a single room with the door closed. To avoid unnecessary exposures, only those healthcare workers needed to perform the procedure should be present.

## 4.7 Personal protective equipment

### 4.7.1 Overview

PPE should be worn to protect staff from contamination with body fluids to reduce the risk of transmission of pandemic influenza between patients and staff and from one patient to another. Appropriate PPE for care of patients with pandemic influenza is summarised in Table 1. Standard infection control principles apply at all times.

All surgical masks should be fluid repellent. PPE should comply with the relevant BS EN standards (European technical standards as adopted in the UK) where these apply.

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

	ENTRY TO COHORTED AREA BUT NO PATIENT CONTACT	CLOSE PATIENT CONTACT (WITHIN ONE METRE)	AEROSOL-GENERATING PROCEDURES <sup>a</sup>
Hand hygiene	✓	✓	✓
Gloves	✗ <sup>b</sup>	✓ <sup>c</sup>	✓
Plastic apron	✗ <sup>b</sup>	✓	✗
Gown	✗	✗ <sup>d, e</sup>	✓ <sup>e</sup>
Surgical mask	✓ <sup>f</sup>	✓	✗
FFP3 respirator	✗	✗	✓
Eye protection	✗	Risk assessment	✓

- a Wherever possible, aerosol-generating procedures should be performed in side rooms or other closed single-patient areas with minimal staff present.
- b Gloves and an apron should be worn during environmental cleaning procedures (see Section 5).
- c Gloves should be worn in accordance with standard infection control principles. If glove supplies become limited or pressurised, this recommendation may need to be relaxed. Glove use should be prioritised for contact with blood and body fluids, invasive procedures and contact with sterile sites.
- d Consider in place of apron if extensive soiling of clothing or contact of skin with blood and other body fluids is anticipated (for example during intubation or caring for babies).
- e If non-fluid-repellent gowns are used, a plastic apron should be worn underneath.
- f Surgical masks are recommended for use at all times in cohorted areas for practical purposes. If surgical mask supplies become limited or pressurised, then use in cohorted areas should be limited to close contact with a symptomatic patient (within one metre).

Care must be taken to ensure that PPE is worn and removed correctly, in order to avoid inadvertent contamination – see Section 4.7.5 for instructions on putting on and removing PPE.

#### 4.7.2 Eye protection

- Eye protection should be considered when there is a risk of contamination of the eyes by splashes and droplets, for example by blood, body fluids, secretions or excretions.
- There should be an individual risk assessment at the time of providing care.
- Eye protection should always be worn during aerosol-generating procedures.
- Disposable, single-use eye protection is recommended.

#### 4.7.3 Surgical masks

- A surgical mask should be worn by healthcare workers for close patient contact (within one metre) to provide a physical barrier and minimise contamination of the nose and mouth by droplets.
- When pandemic influenza patients are cohorted in one area and multiple patients must be visited over a short time or in rapid sequence, it may be more practical to wear a single surgical mask upon entry to the area and keep it on for the duration of the activity or until the surgical mask requires replacement.
- All contaminated PPE must be removed before leaving a patient care area.
- Surgical masks or FFP3 respirators should be removed last.

#### 4.7.4 Respirators

A disposable respirator providing the highest possible protection factor available (ie an EN149:2001 FFP3 disposable respirator) should be worn by healthcare workers when performing procedures that have the potential to generate aerosols (see Section 4.6). If an FFP3 disposable respirator is not immediately available, the next highest category of respirator available should be worn (for example FFP2).<sup>7</sup>

Fitting the respirator correctly is critically important for it to provide proper protection. Every user should be fit tested and trained in the use of the respirator. In addition to the initial fit test carried out by a trained fitter, a fit check should be carried out each time a respirator is worn. 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. Other types of respiratory protective equipment (for example powered hoods/helmets) are available and should be considered if a good fit cannot be achieved with disposable respirators. A powered respirator might be the only type suitable

for some, for example someone who, perhaps for cultural reasons, prefers not to remove their beard.

FFP3 respirators should be replaced after each use and changed if breathing becomes difficult, the respirator becomes damaged or distorted or obviously contaminated by respiratory secretions or other body fluids, or if a proper face fit cannot be maintained. Respirators should be disposed of as clinical (also known as infectious) waste.

#### 4.7.5 Putting on and removing personal protective equipment

The level of PPE used will vary based on the procedures being carried out and not all items of PPE will always be required. If full PPE is required, for example for an aerosol-generating procedure, all staff in the room should wear the following PPE. The order given here is practical but the order for putting on is less critical than the order of removal:

1. Gown (or apron if not aerosol-generating procedure)
2. FFP3 respirator (or surgical mask if not aerosol-generating procedure)
3. Goggles or face shield (for an aerosol-generating procedure and as appropriate after risk assessment)
4. Disposable gloves

PPE should be removed in an order that minimises the potential for cross-contamination. Before leaving the area, gloves, gown and eye goggles should be removed (in that order, where worn) and disposed of as clinical (also known as infectious) waste. After leaving the area, the respirator (or surgical mask) can be removed and disposed of as clinical waste. Guidance on the order of removal of PPE is as follows:

##### 1. **Gloves**

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

##### 2. **Gown or apron**

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

### 3. Goggles or face shield

- To remove, handle by headband or earpieces and discard appropriately.

### 4. Respirator or surgical mask

- Untie or break bottom ties, followed by top ties or elastic and remove by handling ties only and discard appropriately.

To minimise cross-contamination, the order outlined above should be applied even if not all items of PPE have been used.

**Clean hands thoroughly immediately after removing all PPE.**

## 4.8 Segregation and cohorting

- Cohorting of patients in segregated areas of the hospital should be carried out from the outset of the pandemic to help contain influenza infection within one part of the hospital and reduce the risk to other patients.
- A designated self-contained area/wing of the hospital should be used for the treatment and care of patients with pandemic influenza whenever possible. This area should:
  - include a reception area separate from the rest of the hospital and, 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, including patient transfers, staff going for meal breaks, and staff and visitors entering and exiting the building
  - be separated from other non-segregated areas by closed doors.
- To control entry, signs should be displayed warning of the segregated pandemic influenza area.

## 4.9 Visitors

- During a pandemic, visitors to all areas of the hospital should be kept to a minimum.
- Visitors with influenza symptoms should not enter the clinical area and should be encouraged to return home.
- It is particularly important that every effort is made to ensure that people with influenza symptoms do not enter wards or units where there are immunocompromised patients, such as haematology and transplant units.
- All visitors entering a cohorted area must be instructed on hand hygiene practice and the wearing of protective clothing as appropriate.

# 5 Environmental infection control

## 5.1 Clinical and non-clinical waste

- No special handling procedures beyond those required to conform with standard infection control principles are recommended for clinical (also known as infectious) and non-clinical 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 (for example paper tissues and surgical masks) in addition to other routine and domestic waste management.
- The Department of Health has published guidance on the safe disposal of healthcare waste: *HTM 07-01: Safe Management of Healthcare Waste*.<sup>8</sup>

## 5.2 Linen and laundry

- Linen should be categorised as ‘used’ or ‘infected’ as per NHS Executive guidance on *Hospital laundry arrangements for used and infected linen*.<sup>9</sup>
- Both ‘used’ and ‘infected’ linen must be handled, transported and processed in a manner that prevents skin and mucous membrane exposures to staff, contamination of their clothing and the environment, and infection of other patients.

## 5.3 Staff uniforms

- During a pandemic, healthcare workers should not travel to and from work or between remote hospital residences and places of duty in uniform.
- Hospitals and other healthcare facilities should provide changing rooms/areas where staff can change into uniforms upon arrival at work.
- Ideally, hospital/facility laundry services should be used to launder uniforms.
- If there are no laundry facilities available then uniforms should be transported home in a tied plastic bag and laundered separately from other linen in a domestic washing machine, washed at the optimum temperature recommended by the detergent manufacturers that is appropriate to the maximum temperature the fabric can tolerate, then ironed or tumble-dried.
- Trusts should consider the use of theatre-type greens for staff who do not usually wear a uniform, but who are likely to come into close contact with patients, for example medical staff.

## 5.4 Crockery and utensils

No special precautions, beyond those required to conform with standard infection control principles, 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.

## 5.5 Environmental cleaning and disinfection

- Freshly prepared detergent and warm water should be used for cleaning the hospital or other healthcare environment.
- As a minimum, patient cohorted areas should be cleaned daily.
- Clinical rooms should be cleaned at least daily and between clinical sessions for patients with influenza and clinical sessions for patients not infected with influenza if the same clinical room is used.
- Frequently touched surfaces such as medical equipment and door handles should be cleaned at least twice daily and when known to be contaminated with secretions, excretions or body fluids.
- Domestic staff should be allocated to specific areas and not moved between influenza and non-influenza areas.
- Domestic staff must be trained in correct methods of wearing PPE and precautions to take when cleaning cohorted areas.

## 5.6 Furnishings

- All non-essential furniture, especially soft furnishings, should be removed from reception and waiting areas in hospitals, GP consulting and treatment rooms, accident and emergency departments 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.

# 6 Occupational health and staff deployment


- Prompt recognition of healthcare workers with influenza is essential to limit the spread of the pandemic.
- Healthcare workers with pandemic influenza should not come to work.
- Healthcare workers who provide care in pandemic influenza patient areas should not care for other patients; exceptions may be necessary.
- Healthcare workers at high risk of complications from pandemic influenza should not provide direct patient care.
- Bank and agency staff should follow the same deployment advice as permanent staff.
- Occupational health should lead on the implementation of systems to monitor for illness and absence.
- Occupational health should facilitate staff access to antiviral treatment where necessary and implement vaccination for the healthcare workforce when required.
- As part of their employer's duty of care occupational health have a role to play in ensuring that fit-testing programmes for those who may need to wear FFP3 respirators are in place. It is also possible that some suppliers will be able to assist with fit-testing training.

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A grayscale, semi-transparent globe of the Earth is positioned in the lower half of the page. It shows the continents of North and South America, with a white grid of latitude and longitude lines overlaid on it. The globe is set against a light blue gradient background that transitions from white at the top to a pale blue at the bottom.

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