

**What is H1N1 influenza 09 (human swine influenza)?**

H1N1 influenza 09 is a respiratory disease of pigs caused by type A influenza. Swine influenza viruses do not normally infect humans; however cases of human-to-human spread of H1N1 influenza 09 have recently been confirmed.

**How is H1N1 influenza 09 spread?**

H1N1 influenza 09 is thought to spread directly from person-to-person through coughing or sneezing of infected people. Indirect transmission may occur through contact with contaminated objects.

**Key Summary Points**

**Hand Hygiene**

- All staff, visiting practitioners and visitors must perform hand hygiene
- All staff, visiting practitioners and visitors must perform hand hygiene on removal of gloves
- Patients should be encouraged to perform hand hygiene frequently.

**Masks**

- Patients must wear a surgical mask prior to isolation in a single room and anytime they are within one metre of other people
- Health care workers must wear:
  - surgical mask if they are within one metre of the patient who is wearing a surgical mask
  - P2 respirator if they are within one metre of the patient who is **NOT** wearing a surgical mask
  - P2 respirator if they are in the room during procedures likely to generate aerosols.
- Where possible, stay more than a metre away from the patient at all times

	Entering patient room but no close patient contact (>1 metre from patient)	Close patient contact (< 1 metre from patient)	Aerosol generating Procedure being performed (including nose/throat swabs)
P2 respirator	No	Yes, if patient <b>NOT</b> wearing a surgical mask	Yes
Surgical mask	No	Yes, if patient wearing a surgical mask	No
Gown, non sterile, long sleeved	No	Yes	Yes
Gloves, non-sterile	Yes	Yes	Yes
Eyewear, protective	No	Yes	Yes
Apron if permeable gown is used	No	Yes	Yes

**Patient Isolation**

- Single room for inpatients.

**Cleaning Patient’s Room**

- Daily - clean with a neutral detergent
- On discharge - clean and disinfect patient’s immediate environment. Room can be used immediately following cleaning.

**Waste**

- Treat waste as usual; used tissues disposed of in general waste.

## Infection Control Precautions

These precautions provide up to date infection control advice for patients suspected or confirmed with H1N1 influenza 09 (human swine influenza).

### Hand Hygiene

All staff, visiting practitioners and visitors must perform hand hygiene:

- Before putting on personal protective equipment (PPE)
- During removal of PPE i.e.
  - After removal of gloves
  - After removal of gown
  - After removal of mask/respirator
- Immediately on removal and disposal of PPE.

### Cough Etiquette

**Patients** with suspected or confirmed H1N1 influenza 09 should be instructed to:

- Wear a surgical mask when directed by a health care worker
- Cover their mouth/nose when coughing or sneezing
- Use disposable tissues to contain respiratory secretions
- Spit into disposable tissue, if spitting is necessary
- Dispose of tissues in general waste bin after use
- Perform hand hygiene.

### Personal Protective Equipment

**Personal protective equipment (PPE)** includes:

- Non sterile gloves
- Non sterile, long sleeved gown
- Protective eyewear
- P2 respirator
- Impermeable apron (if permeable gown is used).

Put on PPE and ensure any loose hair is tied back prior to entering the patient's room.

**DO NOT touch your eyes, nose and mouth while wearing PPE - hands may become contaminated.**

Health care workers should:

- Carefully put on PPE before patient contact. Carefully remove PPE.
- Avoid touching contaminated environmental surfaces (eg, door knobs, light switches)
- Dispose of PPE as general waste in patient's room or anteroom.

Table 1: Putting on and removing PPE

↓	<b>Putting on PPE</b>	↓	<b>Removing PPE</b>
	– perform hand hygiene		– gloves, perform hand hygiene
	– gown		– protective eyewear
	– mask/respirator, undertake fit check if P2 respirator		– gown, perform hand hygiene
	– protective eyewear, recheck mask/respirator		– mask/respirator
	– gloves		– perform hand hygiene

**Table 2: Summary of personal protective equipment (PPE)**

	Entering patient room but no close patient contact (>1 metre from patient)	Close patient contact (< 1 metre from patient)	Aerosol generating Procedure being performed (including nose/throat swabs)
P2 respirator	No	Yes, if patient <b>NOT</b> wearing a surgical mask	Yes
Surgical mask	No	Yes, if patient wearing a surgical mask	No
Gown, non sterile, long sleeved	No	Yes	Yes
Gloves, non-sterile	Yes	Yes	Yes
Eyewear, protective	No	Yes	Yes
Apron if permeable gown is used	No	Yes	Yes

\* Any cleaner who has to enter the room of an infectious patient should wear a gown and a surgical mask. This is because cleaning activities are likely to bring their hands and clothes into contact with potentially contaminated surfaces. They should also be advised to maintain a distance of at least one metre from the patient if possible, but if cleaning within one metre of the patient the cleaner must wear a P2 respirator, gown, gloves and eye protection.

\*\* Aerosol generating procedures as those that stimulate coughing and promote the generation of aerosols such as aerosolised or nebulised medication administration, diagnostic sputum induction, bronchoscopy, airway suctioning, endotracheal intubation, positive pressure ventilation via face masks and high frequency oscillatory ventilation. Administration of medication via nebulisers is not recommended. Use spacers instead.

**Table 3: PPE for health care settings**

<b>Personal Protective Equipment</b>	<b>Equipment Required</b>
Gloves	<p>Single use examination gloves Must conform with <i>AS/NZS 4011: Single-Use Examination Gloves – Specifications</i></p> <p>Single use sterile surgical gloves Must conform with <i>AS/NZS 4179: Single-Use Sterile Surgical Rubber Gloves – Specifications</i></p> <p>Put on before entering patient’s room to reduce contamination of hands</p> <p>Perform hand hygiene after removal of gloves</p>
Gown	<p>Disposable fluid repellent/ resistant, non sterile impervious long sleeved gown</p> <p>If <b>no</b> impermeable gown is available, use plastic aprons</p> <p>Patient or material gowns <b>MUST NOT</b> be worn</p>

<b>Personal Protective Equipment</b>	<b>Equipment Required</b>
Mask	<p>Remove a mask/respirator when it becomes moist, touching the ties/strings/loops only.</p> <p><b>DO NOT</b> leave mask/respirator dangling around the neck.</p> <p><b>Surgical masks</b>—catch potentially infectious droplets produced by the wearer</p> <p><b>P2 respirator</b> —reduces chances of inhaling viruses. Used for close patient contact, that is, working within one metre of the patient or when any aerosolised generating procedure is being performed. If P2 respirator are in short supply, they should be prioritised for staff undertaking aerosol generating procedures</p> <p><b>P2 respirator- fit check</b> Perform fit check</p> <ul style="list-style-type: none"> <li>• before entering room</li> <li>• each time a P2 respirator is put on.</li> </ul> <p>Procedure for fit checking</p> <ul style="list-style-type: none"> <li>• Select size and style of P2 respirator to suit wearer <ul style="list-style-type: none"> <li>– place respirator on face</li> <li>– place headband or ties over the head and at base of neck</li> <li>– compress respirator to ensure a seal across the bridge of the nose</li> <li>– compress respirator to ensure a seal across the cheeks and face</li> <li>– check the positive pressure seal of the respirator by gently exhaling. If air escapes, adjust the respirator</li> <li>– check the negative pressure seal of the respirator by gently inhaling. If the respirator is not drawn in to the face, or air leaks around the face seal, readjust the respirator and repeat process or check for defects in the respirator</li> </ul> </li> <li>• Refer to manufacturer’s instructions for fit checking</li> </ul> <p>Adequate seal cannot be guaranteed if there is facial hair, including a 1 - 2 day beard growth</p> <p>Must conform with</p> <ul style="list-style-type: none"> <li>• <i>AS/NZS:1715 Selection, use and maintenance of respiratory protection devices</i>, and</li> <li>• <i>AS/NZS:1716 Respiratory protective devices</i></li> </ul>
Protective eyewear	<p>Must be optically clear, anti-fog, distortion free, close fitting and shielded at the side.</p> <p>Eyewear should be either single-use or reusable after cleaning according to manufacturer’s instructions.</p> <p>Must conform with</p> <ul style="list-style-type: none"> <li>• <i>AS/NZS 1336 (1997) Recommended practices for occupational eye protection</i>, and</li> <li>• <i>AS/NZS 1337 (1992) and Amendment 1 (1994) Eye protectors for industrial application</i>.</li> </ul>

**Table 4: Additional human swine influenza precautions**

<b>Human Swine Influenza</b>	<b>Requirements</b>
Aerosol producing procedures	<p><b>Wear P2 respirator, gown, gloves and eyewear.</b></p> <p>Procedures likely to generate aerosols should be performed in a negative pressure room where possible</p> <p><b>DO NOT</b> use nebulisers</p> <ul style="list-style-type: none"> <li>• Avoid performing procedures likely to generate aerosols except when medically essential</li> <li>• If the patient has symptoms eg wheeze <ul style="list-style-type: none"> <li>– DO NOT use a nebuliser</li> <li>– Use alternatives, e.g. spacers, for delivery of medications</li> <li>– Use alternative treatment options where possible</li> </ul> </li> <li>• For all emergency procedures leading to intubation, staff must wear PPE <b>(including P2 respirator)</b></li> </ul> <p>Limit number of clinical staff in the room during aerosol producing procedures and minimise the number of entries and exits during procedures</p>
Ambulatory settings (including outpatients, emergency departments, influenza clinics, community health settings)	<ul style="list-style-type: none"> <li>• Encourage staff, patients and visitors to practice hand hygiene and cough etiquette</li> <li>• Ensure access to surgical mask and P2 respirator, if required</li> <li>• Assess patients against the swine flu case definition. Those that meet the suspect definition should be provided with a surgical mask and wait in a single room.</li> <li>• Encourage other coughing patients and visitors to sit at least one metre from others in the waiting areas. Limit their time in common waiting areas. Provide coughing patients with a surgical mask.</li> <li>• Restrict movement of symptomatic patients in waiting areas</li> <li>• Place symptomatic patients in an assessment room/cubicle or at least one metre from other patients in the treatment area</li> <li>• Attending clinician/s to wear PPE as above</li> </ul> <p>See <i>Aerosol producing procedures</i></p> <ul style="list-style-type: none"> <li>• <b>DO NOT</b> use nebulisers</li> <li>• Avoid performing procedures likely to generate aerosols in treatment areas</li> </ul>
Cleaning – ambulatory care settings (including outpatients, emergency departments, influenza clinics, community health settings)	<ul style="list-style-type: none"> <li>• Clean all hard surfaces in patient’s immediate environment with a neutral detergent</li> <li>• Room/cubicle/patient care area <b>can be used immediately</b> following cleaning</li> </ul> <p>See also “Disinfectants”</p>
Cleaning - patient occupied room	<p>Use yellow colour-coded cleaning equipment</p> <p><b>Daily</b></p> <ul style="list-style-type: none"> <li>• Clean with neutral detergent</li> <li>• PPE as above</li> </ul> <p>For spills within the patient’s room seek advice of <i>Infection Control Professional or Infectious Diseases Physician</i> (Refer to <i>Waste Management Guidelines</i> (PD2005_132))</p>

**H1N1 INFLUENZA 09 (HUMAN SWINE INFLUENZA):  
INFECTION CONTROL PRECAUTIONS FOR HOSPITALS**

Human Swine Influenza	Requirements		
Cleaning – patient room after patient discharge	<p>Use yellow colour-coded cleaning equipment</p> <p><b>After patient discharge</b></p> <ul style="list-style-type: none"> <li>• PPE – surgical mask /P2 respirator <b>not</b> required</li> <li>• Clean all hard surfaces in patient’s immediate environment, including bathroom, with a neutral detergent then disinfect. (See also “Disinfectants”)</li> <li>• Change and launder bed curtains (as per <i>Linen</i>) if grossly contaminated</li> <li>• Room <b>can be used immediately</b> following cleaning</li> </ul>		
Disinfectants	<b>Disinfectants</b>	<b>Recommended use</b>	<b>Precautions</b>
	<p><b>Sodium hypochlorite:</b> 1000 parts per million of available chlorine, usually achieved by a 1 in 50 dilution of 5% liquid bleach</p>	Disinfection of material potentially contaminated with blood and body fluids	<ul style="list-style-type: none"> <li>• Should be used in well-ventilated areas</li> <li>• Protective clothing required while handling and using undiluted bleach</li> <li>• Do not mix with strong acids to avoid release of chlorine gas</li> <li>• Corrosive to metals</li> </ul>
	<p><b>Granular chlorine:</b> eg. Det-Sol 5000 or Diver sol, to be diluted as per manufacturer’s instructions</p>	May be used in place of liquid bleach if this is unavailable	<ul style="list-style-type: none"> <li>• Same as above</li> </ul>
	<p><b>Alcohol:</b> eg. Isopropyl 70%, ethyl alcohol 60%</p>	Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used	<ul style="list-style-type: none"> <li>• Flammable, toxic, to be used in well-ventilated area, avoid inhalation</li> <li>• Keep away from heat sources, electrical equipment, flames, hot surfaces</li> <li>• Allow it to dry completely</li> </ul>
Reference:- Australian Department of Health and Ageing, <i>Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings</i> (June 2006), page 21.			
Hand hygiene	<p>Yes, as follows</p> <ul style="list-style-type: none"> <li>• Before putting on PPE</li> <li>• During removal of PPE <ul style="list-style-type: none"> <li>– After removal of gloves</li> <li>– After removal of gown</li> </ul> </li> <li>• Immediately on removal of PPE</li> </ul>		
Kitchen Utensils	<ul style="list-style-type: none"> <li>• Use standard precautions for handling dishes and eating utensils</li> <li>• Wear non-sterile disposable gloves when handling patient trays, dishes and utensils</li> <li>• Discard disposable dishes and utensils as general waste in patient’s room</li> <li>• Wash re-usable dishes and utensils in a dishwasher with detergent and hot water as usual</li> <li>• Perform hand hygiene after removing gloves</li> </ul>		

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INFECTION CONTROL PRECAUTIONS FOR HOSPITALS**

<b>Human Swine Influenza</b>	<b>Requirements</b>
Linen	<ul style="list-style-type: none"> <li>• Use standard precautions for handling linen and laundry</li> <li>• Wear non-sterile disposable gloves when handling linen and laundry. Perform hand hygiene after removing gloves.</li> <li>• Do not shake linen during handling and making patient's bed</li> <li>• Place soiled linen directly into a laundry bag in the patient's room</li> <li>• Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area</li> <li>• Wet linen must be placed in a plastic bag within the linen bag to avoid leakage and risk to transport and laundry staff</li> </ul>
Patient equipment	<ul style="list-style-type: none"> <li>• Disposable equipment should be used wherever possible</li> <li>• Keep minimum stocks of disposable equipment in the patient's room (no more than 24 hours supply)</li> <li>• Non-disposable equipment is to remain in the patient's room until patient is discharged</li> <li>• Prior to re-use of non-disposable equipment               <ul style="list-style-type: none"> <li>– Wear appropriate PPE when processing equipment</li> <li>– Clean with a neutral detergent</li> <li>– Disinfect if required ( See also "Disinfectants")</li> </ul> </li> </ul> <p>Reference:- Australian Department of Health and Ageing, <i>Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings</i> (June 2006)</p>
Room safety	<p>Limit the number of staff, including non-clinical staff, entering the patient's room.</p> <p>Patient medical records must remain outside the room and not taken inside the patient's room.</p> <p>PPE <b>NOT TO</b> be stored in patient's room. PPE to be accessible at the entrance to the room or anteroom.</p> <p>Vital sign/observation charts and medication charts to be separated from the patient medical records and kept in the patient's room greater than one metre from the patient's immediate environment</p> <p>Signage on entry to room advising staff and visitors to see <b>Nurse or Midwife in Charge</b> before entering room.</p>
Single room – for inpatients	<p>Yes, keep door closed.</p> <p>Negative pressure room, if available</p> <p>If no single room available consult your <i>Infection Control Professional or Infectious Diseases Physician</i></p>
Specimen collection & transport	<p>Use human swine influenza precautions for specimen collection</p> <p>Use standard precautions for specimen handling and transport to the laboratory</p>

**H1N1 INFLUENZA 09 (HUMAN SWINE INFLUENZA):  
INFECTION CONTROL PRECAUTIONS FOR HOSPITALS**

<b>Human Swine Influenza</b>	<b>Requirements</b>
Transport of patients	<p>Spontaneous breathing and non-ventilated patient to wear a <b>surgical mask</b> when patients leave their room and during transport</p> <ul style="list-style-type: none"> <li>• Advise internal and external transport staff that human swine influenza precautions are required</li> <li>• Notify the area/ward/department/health facility in advance of receiving patient that human swine influenza precautions are required</li> <li>• Patients on oxygen therapy must be changed to nasal prongs and have a surgical mask over the top of the nasal prongs for transport (if medical condition allows)</li> <li>• Transporting team and patient to travel in lift by themselves</li> <li>• Not to be transported with other patients in the same vehicle (<i>consult Infection Control Professional or Infectious Diseases Physician for advice</i>)</li> </ul> <p>Staff to wear <b>PPE</b> when transporting patients, including ventilated patients.</p> <p>Clean transport equipment with a neutral detergent.</p> <p>For transport of patients by Ambulance refer to Ambulance Service of NSW <i>Clinical Factsheet – H1N1 Influenza 09- Human Swine Influenza, version #3, 04/05/09.</i></p>
Visitors	<p>Family members/visitors should be limited to those essential for patient support and should use the same infection control precautions/PPE as health care workers</p> <p>It is advisable that family members/visitors, who are pregnant or immunocompromised, should not enter the room</p>
Waste, including sharps	<ul style="list-style-type: none"> <li>• Standard precautions to be used for waste and sharps.</li> <li>• Dispose of waste in patient's room or anteroom</li> <li>• Dispose of disposable gowns, gloves and masks, and <b>used tissues</b> as general waste</li> <li>• Dispose of clinical waste as defined in the <i>Waste Management Guidelines</i></li> <li>• Dispose of sharps into a designated "sharps container"</li> </ul> <p>Refer to <i>Waste Management Guidelines</i> (PD2005_132) for spills</p>

**NSW Health Policies**

Waste Management Guidelines for Health Care Facilities – August 1998 (PD2005\_132) at [http://www.health.nsw.gov.au/policies/PD/2005/PD2005\\_132.html](http://www.health.nsw.gov.au/policies/PD/2005/PD2005_132.html)

**Further Information**

Updates on human swine influenza and resources at [http://www.health.nsw.gov.au/publichealth/swine\\_flu.asp](http://www.health.nsw.gov.au/publichealth/swine_flu.asp)

Australian Department of Health and Ageing, *Interim Infection Control Guidelines for Pandemic Influenza in Healthcare and Community Settings* (June 2006) at <http://www.flupandemic.gov.au/internet/panflu/publishing.nsf/Content/interim-infection-control-guidelines-1>

Australian Department of Health and Ageing & South Australian Department of Health, *Safe Use of Personal Protective Equipment* (DVD) <http://www.flupandemic.gov.au/internet/panflu/publishing.nsf/Content/safeuse-dvd-1>