INTERIM GUIDELINE FOR
THE INFECTION PREVENTION & CONTROL
MANAGEMENT OF A PATIENT WITH
SUSPECT / PROBABLE / CONFIRMED
Pandemic Influenza A (H1N1) SWINE FLU VIRUS

MID-WESTERN REGIONAL HOSPITALS

May 1st 2009
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1. INTRODUCTION

Swine influenza (swine flu or Pandemic Influenza A H1N1) is a respiratory disease of pigs caused by type A influenza viruses which were, until recently, species specific. Outbreaks of swine influenza happen regularly in pigs. Most infections are of the H1N1 subtype. People do not normally get swine flu but human infections can and do occur. Cases of swine influenza have most commonly happened in people who have had contact with pigs but it is possible for swine influenza viruses to spread from person to person. Since mid-March 2009, an outbreak of swine flu, first recognised in Mexico, has resulted in human to human transmission on a global scale. On April 30th, the World Health Organisation has raised the Pandemic Influenza Alert Level to 5. There are effective anti-virals to treat this virus. Infection control measures must be adopted to ensure that cross-transmission does not occur within the acute hospital setting. A national pandemic task force has formulated preparedness guidelines to ensure appropriate measures are taken both to contain the virus and control its spread\(^1\) (see [www.hpsc.ie](http://www.hpsc.ie) for details). This guideline is for use in the Mid-Western Regional Hospital, Limerick. Cases presenting to the Mid-Western Regional Maternity and Orthopaedic Hospitals should be redirected to the Mid-Western Regional Hospital\(^2\).
2. PLANNED ADMISSION PATHWAY

MANAGEMENT OF SUSPECT / PROBABLE SWINE FLU CASE

- A contact who develops symptoms of swine flu within seven days of travelling to an area affected by swine flu should phone their GP and seek medical advice (Geographical area affected will be updated daily by HPSC). The GP should inform Director of Public Health (MoH).
- If patients are to be hospitalised the GP should make prior arrangements by contacting the Admissions Department (8am to 8pm: 061-482463) or Night Superintendent (061-48301111, 8pm to 8am, bleeps 026 or 027).
- The admissions office or the Night Superintendent should liaise with the designated wards for admission (for adults 3D, for children: Paediatric Unit).
- The Admissions Department or Night Superintendent will liaise with Ambulance Control (061-482215 / 2297) when the isolation room is available.
- The Admissions Department /Night Superintendent should contact the Medical or Paediatric Registrar on-call as appropriate.
- The suspect case will enter the hospital directly via the Main Entrance to the Outpatients Department.
- The Night Superintendent should inform the Security Staff re. opening of O.P.D. Entrance door (out of hours).
• The Ambulance staff will escort the patient directly to the ward, **where staff are ready to receive the patient.**

• The Staff escorting the patient must wear protective clothing, e.g. a surgical face mask, gloves, plastic apron (within 3 ft/1 metre of patient)

• The patient under investigation should wear a surgical mask if tolerated.

• Security should be informed by the Admissions office or Night Superintendent to clear the patient’s admission route.

• Admit the adult patient to Ward 3D for isolation via Ward 3A lifts, (no. 3 & 4 medical lifts).

• Children should be admitted to the Paediatric Unit.

• Suspect / probable case must be isolated.

• The X-ray department should be contacted re. **portable** x-ray.

• Contact pharmacy (061-482337 during working hours) or Assistant Director of Nursing (through switchboard, out-of-hours) regarding antiviral medication

• Medical staff to notify the Public Health Department (061-483338, 24 hours) that a suspect patient has been admitted.

• If an ambulance is required contact 061-482215 / 061-482297, Day/Night and request special ambulance for suspect case.
• A member of the Infection Control Team should be contacted (during working hours) following admission of a suspected / probable swine flu case.
3. WALK-IN EMERGENCY ADMISSION PATHWAY

MANAGEMENT OF SUSPECT / PROBABLE SWINE FLU CASE

- The Public should be advised to identify themselves immediately to the Emergency Staff.
- The Triage Nurse must be contacted immediately.
- The Patient should don a surgical facemask.
- Escort the patient to the triage room / portacabin and isolate.
- The patient should be assessed by the Emergency Medicine Registrar on duty, using the management algorithm (Appendix A).
- Appropriate Personal Protective Equipment (PPE) should be worn; see Appendix B.
- All infection control precautions should be followed as outlined in Section 5.
- The CNM II or Nurse in Charge should turn off the ventilation system by the emergency button located in Sister’s office.
- Restrict staff dealing with patient.
- Contact pharmacy (061-482337 9:30am – 5pm Mon-Fri) during working hours or out of hours contact the Assistant Director of Nursing / Night Superintendent (through switchboard, 5pm – 9:30am) regarding antiviral medication.
- If admission is indicated follow admission procedure according to planned admission route (see section 2).
• Medical staff to notify the Public Health Department (061-483338, 24 hours) that a suspect patient has been admitted.

• In A & E, inform Cleaning Attendants *re.* cleaning and disinfection of assessment area (see section 5).

• Cleaning Attendants should wear appropriate PPE as per *Appendix B.*
4. A&E COLLAPSED ADMISSION PATHWAY

MANAGEMENT OF SUSPECT / PROBABLE SWINE FLU CASES

- Inform Security to clear patient’s admission route.
- Transport the patient to the resuscitation room.
- Follow management protocol Appendix A and wear appropriate PPE as outlined in Appendix B.
- Follow admission procedure according to planned admission. Patients requiring Intensive Care must be admitted to HDU via A&E lifts (No. 1 & 2 surgical lifts).
- Use appropriate filters on portable ventilator / C circuit (Hepa-filtration on exhalation valve port)
- Don surgical mask on patient as appropriate.
- Follow precautions re. cleaning and disinfection (see section 5).
5. INFECTION PREVENTION & CONTROL PRECAUTIONS:

All patients with suspected / probable swine flu should be cared for using precautions as outlined. However, the essential element in preventing the spread of this infection is good professional practice and routine infection prevention measures, (HPSC: 2006).

SPECIFIC PRECAUTIONS

1. HAND HYGIENE

- Hand Hygiene is the single most important element of infection control.
- **Perform hand hygiene following all contact with suspect swine flu patients and their environment.**
- Disinfect hands before entering and leaving the patients isolation facilities.
- Method as per hospital policy.

2. RESPIRATORY PROTECTION (See Appendix B)

- **Removing a respirator (mask):** Remove gloves and perform hand hygiene prior to removal of mask
- Remove by either:
  o Breaking mask straps at side of face.
  o Lifting straps over head, from back to front.
- Do not touch front of respirator with ungloved hands.
- Hand hygiene again after removing mask.
- Dispose according to hospital policy.

3. EYE PROTECTION (See Appendix B)
4. GOWNS AND GLOVES (See Appendix B)

5. DONNING AND REMOVAL OF PROTECTIVE CLOTHING AND EQUIPMENT

- Don PPE before entering patient room
- Remove PPE before leaving patients room
- Remove PPE which minimises risk of contaminating skin or clothing
- Avoid touching face with gloved, or contaminated hands
Summary on the order of removal of PPE

1. Remove gloves and gown
2. Wash/decontaminate hands
3. Remove eye protection
4. Remove respirator (mask)
5. Wash / decontaminate hands again
6. HEALTH CARE WASTE

- All used PPE should be considered as health care risk waste
- Dispose in appropriately labelled health care risk waste bags
- Dispose in patient’s room,
- Bags sealed **before** removal from room.
- Double bagging not required
- Dispose according to hospital policy

7. LAUNDRY

Transport linen from patient’s room in closed, leak-resistant alginate laundry bags and place in red laundry bag. Standard laundry decontamination practices are sufficient

8. AEROSOL-GENERATING PROCEDURES

Use Special Particulate mask FFP2 Respirator

**Transmission during Aerosol-Generating Procedures**
Transmission of Swine Flu to health care personnel during aerosol-generating procedures may be particularly significant. Intubation, suctioning and nebulisation specifically implicated. Bronchoscopy, diagnostic sputum induction also possibilities (See attached document).

**Until Risks Better Defined**
Limit aerosol generating procedures
Avoid use of non-invasive positive pressure ventilation (e.g., CPAP, BiPAP)
Protect the environment
Use closed suctioning devices
HEPA filtration on exhalation valve port
Precautions during aerosol generating procedures

- Procedures **must** be carried out in a negative pressure isolation room preferably with an anteroom.
- If no anteroom, remove eye protection and respirator immediately after leaving patient’s room.
- Reassess respirator fit among personnel who may be involved in such procedures.
- Limit personnel to those essential for performing procedure.
- Ensure appropriate decontamination of surfaces and equipment after procedure.
- No evidence to support need for enhanced PPE, such as powered air purified respirator system (PAPRS)
- Increased complexity may increase risk of inappropriate use or self-contamination

9. ENVIRONMENTAL CONTROLS

Follow Cleaning and Disinfection guideline

**Patient accommodation Recommended**

- Private room ensuite facilities with engineered negative pressure and filtered air exhaust to outside.
- Preferably with anteroom
- Door closed except when needed for patient access.
- Place notice on door (Please report to nurse in charge).
- The number of hospital staff entering the patients’ rooms should be kept to an absolute minimum i.e. essential personnel only and staff must be given instruction on the required isolation precautions prior to entering the room.
- Limit access to persons essential for providing care.
If negative pressure room not available

- Use single rooms with ensuite facilities.
- Maximise natural ventilation. Open windows, if possible away from public areas.
- Control direction of air flow. Use fans to exhaust to outside.
- Designate wards for Swine Flu patients where increased capacity is needed
- Segregate suspect Swine Flu cases from patients being evaluated for Swine Flu until diagnosis is established.

Limit patient contact

- All visitors should report to nursing staff prior to entering the room, visitors should be kept to an absolute minimum and must be given instruction on the required isolation precautions prior to entering the room.
- Limit all hospital visits to all but essential family members.
- Visitors attending patients should wear surgical masks and ensure good hand hygiene
- Dedicate staff to care for these patients.

10 CLEANING AND DECONTAMINATION OF THE ENVIRONMENT

- Assume environment in which Swine Flu patients are housed is heavily contaminated
- Facilitate daily cleaning by limiting clutter in patient care area
- Clean with detergent and water all surfaces daily.
- Clean / disinfect frequently touched surfaces daily in-patient areas. Bed rails, over-bed table, door knobs, lavatory surfaces, taps, lids of bins, lockers.
- **To Disinfect** clean all surfaces with detergent and water followed by chlorine releasing agent (Presept 2.5gr tabs to one litre of water =1tab =1250ppm)
Terminal Disinfection
Following discharge of the patient, isolation facilities must be thoroughly cleaned with warm water and disinfected, 1200ppm av.chlorine (Presept 1 tab). Discard all disposable supplies remaining in the room. Curtains should be sent to the laundry for decontamination (standard).
6. PATIENT TRANSFER

Within the hospital

- Movement of affected patients to other wards/departments should be avoided as much as possible. In the event of a transfer please discuss with Infection Control
- Limit movement out of room
- Plan route to avoid well-populated areas
- Notify personnel in receiving area.
- Accompanying persons must wear appropriate PPE.

Between institutions

1. Transfer only if medically necessary
2. Plan exit route from institution
3. Accompanying persons must wear appropriate PPE
4. Ambulance driver/front seat passengers do not need to wear PPE, if front cab closed off from patient area.
7. LABORATORY TESTING AND PHONE NUMBERS

Tel Day:  
Serology Department  2254  
Microbiology Department  2255  

Tel Night:  
Microbiology Department  2502  
Serology Department  2502  

Taking specimens for influenza virus testing from patients with suspected swine influenza

As with all respiratory viruses, diagnosis of influenza virus depends on the collection of high-quality specimens, their rapid transport to the virology laboratory and appropriate storage before laboratory testing. Virus is best detected in specimens containing infected cells and secretions. Specimens should ideally be taken preferably during the first five days after onset of clinical symptoms.

Respiratory specimens to take

Nose and Throat Swab

A. Upper respiratory tract:  or
   Nasopharyngeal Aspirate

B. Lower respiratory tract

Where clinically indicated, invasive procedures can be performed for the diagnosis of viral lower respiratory tract infections:

- transtracheal aspirate
- bronchoalveolar lavage
- post-mortem lung or tracheal tissue.
Swabs to use

Specific viral swab (contains viral transport medium in the container of the swab)

or

Regular swab – after taking the specimen swab should be broken off into a bottle containing virus transport medium.

Nasopharyngeal secretions should be aspirated into a sterile plastic mucous extractor. Transport the mucous extractor with the secretions.

A transtracheal aspirate/broncho-alveolar lavage should be transported in a sterile container.

Transport to the virology laboratory and delays

Respiratory Viruses are extremely thermolabile and therefore should be transported to the laboratory at 4°C without delay. The quality of the sample is a major determinant in identifying the causative agent. Respiratory specimens should reach the virology laboratory as soon as possible and preferably within 24 hours after collection. Where unavoidable delays are envisaged, specimens should be refrigerated at 4°C (but not frozen) and sent to the laboratory as soon as possible.

As with all clinical specimens, respiratory specimens should be packaged and transported to the virology laboratory in accordance with national and international guidelines. Contact the virology laboratory for advice if concerned.
REFERENCES

2. The Infection Control Management of a Patient with Suspect /Probable /Confirmed Severe Acute Respiratory Syndrome (SARS), Mid-Western Regional Hospital 2003.

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Appendix A: Management Algorithm

Algorithm for the management of persons with acute febrile respiratory illness who may have swine influenza A (H1N1)

1. Screening
   As soon as the patient mentions a febrile respiratory illness and travel in the last 7 days to an area of the world affected by A(H1N1), the precautions (as indicated on right panel) should be implemented for at least 7 days or until clinician deems otherwise.

2. Assessment
   **Clinical**
   - Acute onset of fever (temperature ≥38°C) OR history of fever
   - AND flu-like illness (two or more of the following symptoms: cough, sore throat, myalgia, headache, rhinorrhea or vomiting/diarrhoea)
   - OR other severe/life-threatening illness suggestive of an infective process
   **Epidemiological**
   - At least one of the following exposures (A or B or C) within 7 days prior to onset of symptoms:
     A. A person who has travelled to an area where sustained human-to-human transmission of swine influenza A(H1N1) is occurring.
     B. A person who was a close contact to a confirmed case of swine influenza A (H1N1) virus infection while the case was ill.
     C. A person working in a laboratory where samples of the swine influenza A(H1N1) virus are tested.

3. Results
   - Flu A Negative
     Treat as appropriate AND remove from contact & droplet precautions if appropriate
   - Flu A Positive
     Inform local DPH immediately. Local DPH to inform HSE-HPSC immediately on result and discuss prophylaxis.

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1. Mexico, US (San Antonio, Texas; San Diego, Imperial County; California). Other countries are under active review. Check daily for updates. Use clinical judgment.
2. E.g. nasopharyngeal aspiration, use of nebulisers. Intubation, resuscitation (See Aerosol Generating Procedures Document)
3. See National Virus Reference Laboratory (NVRL) website (www.nvrl.ie) for contact details.
## Appendix B: PPE

Personal Protective Equipment for care of patients with pandemic influenza

<table>
<thead>
<tr>
<th></th>
<th>Entry to cohorted area but no patient contact a</th>
<th>Close patient contact (&lt;3 feet/1 meter)</th>
<th>Aerosol generating procedures b, c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand hygiene</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Gloves</td>
<td>☒&lt;sub&gt;d&lt;/sub&gt;</td>
<td>☒&lt;sub&gt;e&lt;/sub&gt;</td>
<td>☒</td>
</tr>
<tr>
<td>Plastic apron</td>
<td>☒&lt;sub&gt;d&lt;/sub&gt;</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Gown</td>
<td>✗</td>
<td>☒&lt;sub&gt;f, g&lt;/sub&gt;</td>
<td>☒&lt;sub&gt;g&lt;/sub&gt;</td>
</tr>
<tr>
<td>Surgical mask</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>FFP2 respirator (minimum specification)</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Eye Protection</td>
<td>✗</td>
<td>Risk assessment</td>
<td>✓</td>
</tr>
</tbody>
</table>

a. Standard Infection Control Precautions apply at all times.
b. Examples of aerosol-generating procedures include intubation, nasopharyngeal aspiration, tracheotomy 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, and a mask should be worn if working within 3 ft/ 1 meter of a suspect patient.
e. Gloves should be worn in accordance with Standard Infection Control Precautions. If glove supplies become limited or pressurized, 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.