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**Management Protocol for Seasonal Influenza A/H1N1  
pdm 2009 and associated Pneumonia**

Version (02)

(As of 9-8-2017)

## Specialist Hospital Waibargi

### Clinical Management Protocol for Seasonal Influenza A (H1N1 pdm 2009) and associated Pneumonia

Management of severe pneumonia associated with H1N1 will be according to the following protocol.

#### Case definition for confirmed H1N1 cases

##### Category A

Mild fever plus cough/sore throat with or without body aches, headache, diarrhea and vomiting

##### Category B

- i Category A plus high grade fever and severe sore throat
- ii Any mild ILI in people with comorbidities like
  - a. Pregnant women
  - b. Lung/heart/liver/kidney/neurological disease/blood disorder/diabetes/cancer/HIV-AIDS
  - c. On long term steroids or those with immunosuppression due to drugs radiation or HIV, etc.

##### Category C

Cat A plus any 3 or more of the following

Breathlessness

Chest pain

Drowsiness

Fall in blood pressure

Cyanosis

Tachypnoea (RR>30/min)

Decreased oxygen saturation (SPO2 <90 on air)

CXR (PA) –patchy opacities

## Required investigations\*

	Baseline	Day 3	Day 7	Day 14
CBC	√	√	√	√
ESR	√	0	0	0
U&E, Creatinine	√	√	√	√
LFT with enzymes	√	0	√	0
RBS	√	0	0	0
ECG	√	0	0	0
Sputum C&S	√	0	0	0
Sputum AFB & geneXpert ( if indicated)	√	0	0	0
Blood C&S	√	0	0	0
CXR (PA)	√	0	0	0

\*Baseline investigations do not need to repeat if recent tests are already available.

\*According to clinical condition, routine investigations and additional investigations will be performed as necessary.

*Clinical vital signs assessed 2-4 times/day for isolated patients*

*For ICU patients, continuous monitoring*

## Clinical Management

In addition to other supportive care, antibiotics will be given as following depending on the category (severity) of the patient.

### *Antibiotics*

If there is no immediate hypersensitivity to the following antibiotics,

#### *Mild case (Cat A & B i)*

PO Amoxil 500 mg tds + PO Azithromycin 500 mg OD for 7-14 days

#### *Moderately severe case (Cat B ii)*

IV Ceftriazone 2 G 12H (ATD) + PO Azithromycin 500 mg OD for 7-14 days

#### *Severe pneumonia cases (Cat C)*

IV Augmentin 1.2 G 8H (ATD) for 7-14 days + IV Azithromycin 500 mg OD (ATD) for 3 days

followed by PO Azithromycin 500 mg OD for 7-14 days

For patients with history of receiving antibiotics that are included in severe pneumonia protocol > 48 hours and without clinical response,

IV Meropenem 1G in N/S 100 cc 12 H (ATD) + IV Moxifloxacin 400 mg OD ( ATD) + IV Sulperazone ( Cefoperazone + Sulbactam) 2 G 12H ( ATD) or IV Cefepime 1G 12 H ( ATD).

\*Antibiotics will be modified according to C & S results.

### *Antivirals*

Oseltamivir (Tamiflu) PO 75 mg BD for 5 Days if onset of illness is within 48 hours at the discretion of the attending physician.

## ICU care

### Management of hypoxia

1. Oxygen supplement via nasal prong, face mask and face mask with reservoir bag ( 100% Oxygen, 2-4 L/min for nasal prong, 5-10 L/min for face mask and 10-15L/min for face mask with reservoir bag)
2. Sedate the patient (avoid over sedation)
3. Keep the patient in 30 degree head up position

## Indications of for Mechanical Ventilatory Support

### *Non-invasive ventilatory support*

1. Failure to re-saturate with 100% Oxygen 10-15 L with facemask and reservoir bag

*Invasive mechanical ventilation* is indicated in any of the following circumstances:

1. Apnea or impending respiratory arrest
2. Acute exacerbation of chronic obstructive pulmonary disease (COPD)\* with at least one of the following:
  - Acute cardiovascular instability
  - Altered mental status or persistent uncooperativeness
  - Inability to protect the lower airway
  - Copious or unusually viscous secretions
  - Abnormalities of the face or upper airway that would prevent effective noninvasive positive pressure ventilation
3. Acute ventilatory insufficiency in cases of neuromuscular disease accompanied by any of the following:
  - Progressive decline in vital capacity to below 10 to 15 mL/kg
  - Progressive decline in maximum inspiratory pressure to below -20 to -30 cm H<sub>2</sub>O
4. Acute hypoxemic respiratory failure with tachypnea, respiratory distress, and persistent hypoxemia despite administration of a high fraction of inspired oxygen (FiO<sub>2</sub>) with high-flow oxygen devices or in the presence of any of the following:
  - Acute cardiovascular instability

Altered mental status or persistent uncooperativeness

Inability to protect the lower airway

\*Weaning from Mechanical Ventilation in ICU will be followed according to the Washington manual of critical care second edition

### Indications of Acute Respiratory Failure and the Need for Mechanical Ventilatory Support

Criteria	Critical Value
<b>Ventilation</b>	
pH	<7.25
Arterial partial pressure of carbon dioxide (PaCO <sub>2</sub> )(mm Hg)	>55 and rising
<b>Oxygenation</b>	
Arterial partial pressure of oxygen (PaO <sub>2</sub> )(mm Hg)	<70 (on O <sub>2</sub> >0.6)
Alveolar-to-arterial oxygen difference P(A-a)O <sub>2</sub> (mm Hg)	>450 (on O <sub>2</sub> )
PaO <sub>2</sub> /FIO <sub>2</sub>	<200

**Invasive mechanical ventilation is indicated in any of the following circumstances:**

1. Apnea or impending respiratory arrest
2. Acute exacerbation of chronic obstructive pulmonary disease (COPD)\* with dyspnea, tachypnea, and acute respiratory acidosis (hypercapnia and decreased arterial pH) plus at least one of the following:
  - Acute cardiovascular instability
  - Altered mental status or persistent uncooperativeness
  - Inability to protect the lower airway
  - Copious or unusually viscous secretions
  - Abnormalities of the face or upper airway that would prevent effective noninvasive positive pressure ventilation
3. Acute ventilatory insufficiency in cases of neuromuscular disease accompanied by any of the following:
  - Acute respiratory acidosis (hypercapnia and decreased arterial pH)
  - Progressive decline in vital capacity to below 10 to 15 mL/kg

Progressive decline in maximum inspiratory pressure to below  $-20$  to  $-30$  cm H<sub>2</sub>O

4. Acute hypoxemic respiratory failure with tachypnea ( $>35$ /min), respiratory distress, and persistent hypoxemia ( $SpO_2 < 90$ ) despite administration of a high fraction of inspired oxygen ( $FiO_2 > 0.6$ ) with high-flow oxygen devices or in the presence of any of the following:

- Acute cardiovascular instability
- Altered mental status or persistent uncooperativeness
- Inability to protect the lower airway



### **If central oxygen supply run out,**

1. Alert to oxygen storage department
2. Ventilator will take the oxygen supply from the oxygen cylinder

### **If the electricity supply is out,**

1. Patient will be manually ventilated via T-piece with the oxygen supply from the oxygen cylinder

### **Discharge from ICU**

1. Patient who will stable with non invasive oxygen supplement (nasal prong, face mask, face mask with reservoir bag)
2. Patient with cardiovascular stability

### **Discharge from Isolation Ward**

Patient will be discharged if the following criteria were fulfilled.

1. >10 days after onset of illness
2. Free of fever 48 hours of illness
3. Free from respiratory symptoms, such as cough, dyspnea and respiratory failure

### **Infection control measures**

1. All healthcare workers (including general workers) must practice hand washing everytime before and after examining the patient.
2. All health care workers will use facial masks and gloves while examining patients at OPD.
3. Health care workers attending H1N1 confirmed cases in ICU and isolation ward will use PPE including disposable gloves, goggles, aprons, caps, gowns and N-95 masks.
4. Waste disposal including sharp waste, hazardous waste and PPE should be disposed according to hospital infection control instructions (Specialist Hospital Waibargi)
5. To monitor temperature and respiratory symptoms of healthcare workers daily.

### **Discharge parole**

1. Health education to patients and family members.
2. Advise for respiratory etiquette, usage of masks and hand washing.

### **References**

1. Therapeutic Manual, Internal Medicine society ( Myanmar Medical Association) First edition 2016
2. Seasonal Influenza A (H1N1) pdm 09 manual ( Ministry of Health and Sports, Myanmar), Version 1, 28 Aug 2017
3. The Washington manual of critical care second edition, Weaning of Mechanical Ventilation

2. Seasonal Influenza A (H1N1) pdm 09 manual ( Ministry of Health and Sports, Myanmar),  
Version 1, 28 Aug 2017
3. The Washington manual of critical care second edition, Weaning of Mechanical Ventilation