

# Clinical management of human infection with pandemic (H1N1) 2009 virus



World Health  
Organization

# Introduction

- April 2009: WHO received reports of sustained person to person transmission with a new influenza A (H1N1) virus in Mexico and USA
- Virus currently spread in all regions
- Current alert level: Phase 6
- Group of experts developed advice based on available information on influenza A (H1N1), seasonal and avian H5N1 influenza virus

# H1N1 infection – findings

- Most cases in children and young adults
- Spectrum of disease range from non-febrile, mild upper respiratory tract illness to severe or fatal pneumonia
- Most frequent symptoms: cough, fever, sore throat, malaise and headache
- Lower respiratory tract disease in hospitalized patients
- Other complications: secondary bacterial infections, rhabdomyolysis with renal failure, myocarditis and worsening of underlying conditions

# Infection control

- Appropriate Infection Control measures should be adhered at all times
  - Standard Precaution + Droplet precaution**
- When performing high-risk aerosol-generating procedures:
  - Particulate Respirators (N95 or FFP2 equivalent), eye protection, gown, gloves
  - Carry out procedures in an airborne precaution room; naturally or mechanically ventilated



# Diagnosis

- Laboratory confirmation of influenza A ( H1N1) has important implications for:
  - Case management
  - Antiviral treatment
  - Avoid inappropriate use of antibiotics
- RT-PCR: provides the most timely and sensitive evidence of infection
- Clinical diagnosis (based on fever and cough) can be increasingly predictive as the prevalence increase
- Commercially available "Point-of-care" rapid tests for seasonal influenza: uncertain sensitivity and lack specificity. Interpret with caution
- Samples for lab testing: nasal swab, naso-pharyngeal swab, throat or bronchial aspirate.
- Specimen collection should be done with appropriate infection precautions

# General treatment considerations

- Hospitalization or antiviral therapy is not likely to be required for most patients
- Supportive care: antipyretics and rehydration – No aspirin for children and adolescents (<18years): risk of Reye's syndrome
- Specific risk factors that predict increased risk of progressive disease are incompletely understood (young, previously healthy)
- Clinicians/care-givers should take into account:
  - Signs of clinical deterioration
  - Refer such patients to hospital
  - Underlying conditions( pregnancy, chronic cardiovascular, pulmonary, diabetes, immuno-deficiency
- Pregnant women are at risk from seasonal, H5N1 and previous pandemic influenza infection. Warrant close observation and early antiviral treatment.

# Oxygen therapy

- Monitor oxygen saturation by pulse oximetry at presentation or triage and routinely during subsequent care
- Provide supplemental oxygen to correct hypoxaemia
- Maintain oxygen saturation > 90%
- Patients with severe hypoxaemia need high-flow oxygen delivered by mask
- Difficulties in compliance may require involvement of nursing staff and family members



# Antibiotic therapy

- Antibiotic chemoprophylaxis should not be used
- Pneumonia: follow recommendations from guidelines for community-acquired pneumonia
- Seasonal and past pandemics have been associated with and increase in *Staphylococcus aureus* infections
- Ventilator-associated pneumonia or hospital acquired pneumonia caused by typical nosocomial pathogens have been reported

# Antiviral therapy (1)

- The new H1N1 virus is currently
  - susceptible to NAIs (oseltamivir and zanamivir)
  - Resistant to M2-inhibitors (amantadine and rimantadine)
- Clinical efficacy data not yet available
- NAIs might reduce severity and duration and might contribute to prevent progression of severe disease and death (based on seasonal influenza, H5N1 influenza studies and *in vitro observation*)

# Antiviral therapy (2)

- **May be beneficial especially in:**
  - Pregnant women
  - Patients with progressing disease or pneumonia
  - Patients with underlying conditions
- **Can be used:** ideally early, and at any stage of active disease when ongoing viral replication is observed
- **Important pharmacological differences of oseltamivir and zanamivir**
  - Oseltamivir: administered orally, higher systemic level. Recommended treatment for lower respiratory tract complications
  - Zanamivir: oral inhalation , low systemic absorption



# Corticosteroids

- Should **NOT** be used routinely to treat patients with influenza A(H1N1) virus infection
- Low doses may be considered for patients with septic shock who require vasopressors and have suspected adrenal insufficiency.
- Prolonged use can result in serious adverse events including opportunistic infections and possible prolonged viral replication

# Advance respiratory support

- Treatment of ARDS should be based upon evidence-based guidance
- Lung protective mechanical ventilation strategies should be used

# Summary of clinical management of the Pandemic (H1N1) 2009 virus infection

Modalities	Strategies
Antibiotics	In case of pneumonia, empiric treatment for community acquired pneumonia (CAP)
Antiviral therapy	oseltamivir or zanamivir
Corticosteroids	Moderate to high dose steroids are <u>NOT</u> recommended.
Infection control	Standard plus Droplet Precautions. For aerosol generating procedure, use particulate respirator, eye protection, gown, gloves, and an airborne precaution room.
NSAIDS, antipyretics	Paracetamol or acetaminophen given orally or by suppository. Avoid aspirin.
Oxygen therapy	Monitor oxygen saturation and maintain SaO <sub>2</sub> over 90%