



Republic of the Philippines
Department of Health
OFFICE OF THE SECRETARY

Interim Guidelines No. 22
Clinical Management of Suspected and Confirmed
Human Pandemic (H1N1) 2009 Infection

This document is intended for use by health care practitioners who manage suspected or confirmed cases of pandemic (H1N1) 2009 infection. It contains clinical management guidelines for the following:

- 1. Outpatient treatment**
- 2. Management of hospitalized cases**

It highlights areas of care critical in the management of pandemic (H1N1) 2009 infection and is not intended to replace routine care. Appropriate infection control measures should be adhered to at all times.

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MANAGEMENT IN THE OUTPATIENT SETTING

Most cases have had uncomplicated illness of limited duration. Hospitalization is therefore not required for a great majority of patients who fulfil the case definition below.

I. CASE DEFINITIONS

Case Under Observation (CUO) or suspected case of pandemic (H1N1) 2009:

A person presenting with fever (temp 37.8⁰C or higher) AND typical acute respiratory influenza-like illness (e.g., cough, sore throat, rhinorrhea; others - body aches, headache, fatigue, vomiting and diarrhea) in the absence of a KNOWN cause other than influenza

Confirmed pandemic (H1N1) 2009 case:

A symptomatic patient whose respiratory specimen was reported as positive for pandemic (H1N1) 2009 virus by the Research Institute for Tropical Medicine (RITM) or other accredited government or private laboratories

Close contact:

Defined as having cared for or lived with a suspected or confirmed case, or having been in a setting where there is high likelihood of exposure to respiratory droplets from infected persons within a distance of 3 to 6 feet (1 to 2 meters).

II. WHEN TO PERFORM SWABBING

In general, the swabbing of outpatient cases is not recommended.

As part of DOH surveillance, a nasopharyngeal or oropharyngeal swab may be obtained for the following (based on DOH Interim Guidelines No. 16: “Major Policy Changes from Containment to Mitigation Response to the Influenza A (H1N1) Virus Threat”):

- CUOs identified at various ports of entry in the country
- Investigation of first suspected cases of influenza-like illness (ILI) in a specific community or institution experiencing an initial cluster of ILI cases:
 - A purposive sampling for nasopharyngeal or oropharyngeal swabbing to determine whether that cluster is infected with pandemic (H1N1) 2009 can be conducted among:
 1. The first 5 to 10 cases that were reported during an outbreak among Philippine Integrated Disease Surveillance and Response (PIDSR) surveillance sites and sentinel sites doing lab-based surveillance (refer to DOH Interim Guidelines No. 21: “On the Shift of Reporting from Influenza A (H1N1) Enhanced Surveillance to ILI Surveillance”); or,
 2. The first 5 to 10 cases that consulted for ILI at a health facility

- Random sampling of persons in clusters (at least 2 cases) of ILI with unusual symptoms or severity (i.e. severe acute respiratory infection or SARI)
- Investigation of ILI in persons at high risk of developing complications because of other medical conditions or problems

Refer to **Annex 1**. Guidelines on Collection and Handling of Specimens

III. CLINICAL MANAGEMENT IN THE OUTPATIENT SETTING

Table 1. Management of Suspected or Confirmed Cases in the Outpatient Setting

	Suspected case	Confirmed case
Definition	Stable patient with NO pulmonary complications nor additional chronic illness; not high risk**	Stable patient with NO pulmonary complications nor additional chronic illness; not high risk**
Outpatient management	Symptomatic and supportive treatment	Symptomatic and supportive treatment
Antiviral	No	No
ICC measure	Surgical mask by patient	Surgical mask by patient
Home isolation (see Annex 2. Guidelines for Home Care)	Until at least 24 hrs free of fever (T 37.8 ⁰ C)* without fever medications OR when swab turns out to be negative (for those who were tested)	Until at least 24 hrs free of fever (T 37.8 ⁰ C)* without fever medications
Advice	Refer to hospital if condition deteriorates	Refer to hospital if condition deteriorates

NOTE:

*EXCEPT if patient works in a health care setting. In this case, patient should remain at home for 7 days from symptom onset or until the resolution of symptoms, whichever is longer. "Resolution of symptoms" refers to the acute symptoms that were not present as part of the patient's baseline status (note: chronic cough in patients with COPD may not be resolved upon recovery from ILI)

** Refer to page 5 for definition of high-risk groups

IV. CRITERIA FOR ADMISSION

The following are indications for hospitalization among patients presenting with ILI:

1. Unstable condition – dyspnea, hypoxemia, hemodynamic instability (e.g.,hypotension, tachycardia), altered level of consciousness and confusion, syncope, severe dizziness, etc
2. Signs of sepsis and/or pneumonia (see **Annex 3**. Management of Community-Acquired Pneumonia or CAP, **Annex 4**. Management of Pediatric CAP and **Annex 5**. Management of Sepsis in Adults and Children)
3. Inability to eat and/or take oral fluids
4. Urgent need for work-up for alternative/additional diagnoses
5. Presence of unstable/uncontrolled co-morbidities which increase the risk of severe illness - chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematologic, neurologic or metabolic disorders (including diabetes mellitus), immunosuppression, cancer, malnutrition

The following **high-risk groups** need not be admitted but will require close monitoring for possible complications. They may be given oseltamivir based on clinician's evaluation:

1. Patients age < 5 yrs and > 60 yrs, without co-morbidities
2. Pregnant women (see **Annex 6**. Management of Pregnant Women with Confirmed or Suspected Pandemic (H1N1) 2009 Infection)
3. Those with stable co-morbidities
4. Obese patients – defined as body mass index [BMI] more than 30

MANAGEMENT OF HOSPITALIZED PATIENTS

Refer to **Annex 7**. Algorithm for Management of Hospitalized Patients

I. WHEN TO SUSPECT PANDEMIC (H1N1) 2009 INFECTION AMONG HOSPITALIZED PATIENTS

Consider pandemic (H1N1) 2009 infection in hospitalized patients admitted for other reasons who:

- have history of acute influenza-like illness [manifesting as fever (temp 37.8⁰C or higher) plus cough, sore throat, stuffy or runny nose, muscle aches, GI symptoms] OR
- have moderate/severe or non-resolving or unusual manifestations* of pneumonia (see **Annex 3** and **Annex 4**) or sepsis (see **Annex 5**) OR
- have contact or exposure in the past 10 days to a confirmed or suspect case of pandemic (H1N1) 2009 OR
- history of travel abroad or to an affected area in the Philippines

*unusual manifestations = negative radiologic evidence of pneumonia but with clinical signs such as inspiratory rales, rhonchi, and wheezes; interstitial pattern of infiltrates; non-resolving or progressing pneumonia even after 72 hours of CAP management; pneumonia with extrapulmonary manifestations; ILI or pneumonia with unexplained seizures or mental status changes (especially in children)

II. DIAGNOSTIC WORK-UP

1. Nasopharyngeal and oropharyngeal swabs for H1N1 Real Time - Polymerase Chain Reaction (RT-PCR) (**Annex 1**. Guidelines on Collection and Handling of Specimens)
2. For intubated patients, at least 1-2 ml of endotracheal aspirate (ETA) for H1N1 RT-PCR should be obtained in addition to a nasopharyngeal swab and placed in the same virus transport medium (VTM) as the nasopharyngeal swab
3. Chest x-ray
4. Pulse oximetry and/or ABGs
5. Complete blood count with platelet count
6. Other recommended laboratory tests/procedures, as indicated, include:
 - a. Blood culture/sensitivity
 - b. Gram stain and culture/sensitivity of sputum (for older children and adults)

7. Additional tests may be done, taking into account underlying co-morbidities and alternative diagnoses (e.g. creatinine and electrolytes for those with diarrhea; and BUN and creatinine for those with renal problems)

III. **GENERAL TREATMENT CONSIDERATIONS** (Refer to **Annex 8** Patient Care Checklist)

1. Supportive care in the form of antipyretics (paracetamol for fever or pain) and fluids for rehydration should be provided.
2. Salicylates should not be given.
3. Signs of possible clinical deterioration such as difficulty in breathing, chest pain, altered level of consciousness and confusion should be watched for.
4. Oxygen therapy should be given to correct hypoxemia.
5. If pneumonia is considered, antimicrobial therapy and other measures should be started in accordance with guidelines for empiric treatment of community-acquired pneumonia (Refer to **Annex 3** and **Annex 4**).
6. Seasonal influenza and past pandemics have been associated with an increased risk of staphylococcal pneumonia, so this association should be considered in the choice of antimicrobials (Refer to **Annex 3** and **Annex 4**). Wherever possible, results of microbiologic studies should be used to guide continued therapy for suspected bacterial co-infection.
7. If signs of sepsis are noted, the guidelines for management of sepsis should be followed (**Annex 5**).
8. Pregnant women constitute a high risk group requiring special care (Refer to **Annex 6**).
9. Co-morbid and other underlying conditions should be managed individually.

IV. ANTIVIRAL THERAPY

1. Treatment

Persons with suspected or confirmed pandemic (H1N1) 2009 infection who present with uncomplicated febrile illness do not need antiviral treatment with oseltamivir (Tamiflu).

Antiviral treatment is recommended for the following:

- a. All hospitalized patients suspected/confirmed to have pandemic (H1N1) 2009 infection. This will include patients without history of ILI but have pneumonia which is moderate/ severe, non-resolving or with unusual manifestations.
- b. All hospitalized patients with ILI and clinical and/or radiologic signs of pneumonia (i.e. adults with Low, Moderate, and High Risk CAP, see **Annex 3**. CAP; or, for children with severe pneumonia, see **Annex 4**. PCAP).
- c. All hospitalized patients with ILI and are at high risk for complications of influenza (i.e., < 5 and > 60 yr of age, pregnant, with co-morbidities or obese) even if illness is mild

Oseltamivir may be discontinued if NP/throat swab test result is negative for both pandemic (H1N1) 2009 virus and seasonal influenza A.

2. Chemoprophylaxis

Post-exposure prophylaxis may be considered for:

- a. Close contacts (i.e. 3-6 feet or 1-2 meters), who are at high risk for complications (pregnant, co-morbidities, or <5 or >60 yrs), of confirmed cases
- b. HCWs with **unprotected** (no PPE) close contact exposure (within 3 to 6 feet) to a confirmed case, within 10 days after the last known unprotected exposure.

Pre-exposure prophylaxis is NOT recommended.

Table 2A. Dosing Recommendations for Oseltamivir in the Treatment or Chemoprophylaxis of Pandemic (H1N1) 2009 Infection

AGE GROUP		TREATMENT*	CHEMOPROPHYLAXIS
ADULTS		75 mg capsule BID x 5 days	75 mg capsule OD x 5-7 days after last known exposure
Children 12 months and older	< 15 kg	30 mg BID x 5 days	30 mg OD x 5-7 days after last known exposure
	15-23 kg	45 mg BID x 5 days	45 mg OD x 5-7 days after last known exposure
	24-40 kg	60 mg BID x 5 days	60 mg OD x 5-7 days after last known exposure
	> 40 kg	75 mg BID x 5 days	75 mg OD x 5-7 days after last known exposure
6-11 months		25 mg BID x 5 days	25 mg OD x 5-7 days after last known exposure
3-5 months		20 mg BID x 5 days	20 mg OD x 5-7 days after last known exposure
< 3 months		12 mg BID x 5 days	NOT recommended

*For patients with severe or progressive illness, consideration may be given to the use of higher doses of oseltamivir up to 150 mg bid, and longer duration of treatment depending on clinical response.

Refer to the following table for Renal Dosing:

Table 2B: Dosing Schedule of Oseltamivir in Renal Insufficiency

Creatinine clearance (ml/min)	Treatment	Prevention
90 – 60	75 mg twice a day	75 mg once a day
60 -30	75 mg twice a day	75 mg once a day
30 -15	75 mg once a day	75 mg every other day
< 15 and dialysis	Not defined	Not defined

Note: For hemodialysis, 30 mg on non-dialysis days; for CAPD, 30 mg 1-2x/wk

V. CRITERIA FOR DISCHARGE

The patient may be discharged:

- Once afebrile and stable for at least 24 hours
- Chronic or underlying conditions are controlled

THERE IS NO NEED TO REPEAT NASOPHARYNGEAL/THROAT SWAB COLLECTION.

Refer to **Annexes 3, 4** and **5** for other criteria for discharge.

Discharge Instructions

- Home isolation should continue up to 24 hrs after resolution of fever (T 37.8°C) without fever medications. **For workers in a health care setting, home isolation should be maintained 7 days from onset of symptoms or until resolution of the acute symptoms** (i.e. in patients with chronic pulmonary diseases, such as uncontrolled asthma, COPD, etc, the resolution of cough is not a criterion for discontinuation of home isolation), **whichever is longer**.
- Infection control measures (cough etiquette, hand hygiene, use of mask when in the company of others, social distancing) should continue until all symptoms are resolved.
- Emphasize the importance of hand hygiene as a routine practice even when well.
- Advise consultation if any household member develops similar symptoms, especially if he/she belongs to a high risk group.

VI. INFECTION CONTROL MEASURES

Based on DOH Interim Guidelines No. 2: “Infection Control and use of Personal Protective Equipment in Influenza A (H1N1) Virus Infection”, “it is critical that health care workers use appropriate infection control precautions when caring for patients with influenza like symptoms, particularly in areas affected by outbreaks of pandemic (H1N1) 2009 virus infection, in order to minimize the possibility of transmission among themselves, to other health care workers, patients and visitors”:

1. **The Use of Masks:** This enables an individual with influenza-like symptoms to cover their mouth and nose to help contain respiratory droplets. For specific work activities that involve contact with people who have ILI, such as escorting a person with ILI, interviewing a person with ILI, providing assistance to an individual with ILI, the following are recommended:

- Health workers should try to maintain a distance of 2 meters or 6 feet or more from the person with ILI;
- Health workers should keep their interactions with ill persons as brief as possible;
- The ill person should be asked to follow good cough etiquette and hand hygiene and to wear a facemask, if able, and if one is available;
- Health workers at increased risk of severe illness from influenza infection (*i.e.* those > 60 yrs without co-morbidities; pregnant women; those with stable co-morbidities and the obese) should avoid people with ILI (possibly by temporary reassignment); and,
- Where health workers cannot avoid close contact with persons with ILI, some may choose to wear a facemask or N95 respirator on a voluntary basis.

2. **Personal Hygiene:** Health workers should practice frequent and proper hand washing with soap and water for at least 15-20 seconds and may use alcohol-based sanitizers. In addition, proper cough etiquette should be observed by covering the mouth when sneezing or coughing with a handkerchief, tissue paper or sleeves. Used tissue papers should be disposed of properly.

3. **Considerations in the Health Care Setting:**

- Isolate the patient in a single room. If a single room is not available, cohort patients separately in designated multi-bedrooms or wards; beds should be placed 1-2 meters apart and preferably separated by a physical barrier (e.g. curtain, partition).
- Reinforce standard precautions with droplet and contact precautions.
- Use appropriate Personal Protective Equipment (PPE) for all those entering patients’ rooms.
- Limit the number of Health Care Workers (HCW) who have direct contact with the patient(s); HCWs with direct contact with H1N1

patients should not look after other patients. The number of other hospital employees (e.g. cleaners, laboratory personnel) with access to the patient's room should also be limited. Designated HCWs should all be properly trained in infection control precautions.

- Restrict the number of visitors and provide them with appropriate PPE and instruct them on its use.
- Ask HCWs with direct patient contact to monitor their own temperature twice daily and report any febrile event to hospital authorities. Any HCW who develops a fever ($>37.8^{\circ}\text{C}$) and, upon investigation, has had direct patient contact should undergo naso-/oropharyngeal swab for pandemic Influenza A (H1N1) 2009 and should not report back to work while ill. If confirmed positive, isolation at home is maintained until 7 days from onset of symptoms or until acute symptoms are resolved. The affected HCW should be treated with oseltamivir if he/she has significant risk factors for the development of complications.
- Provide post-exposure prophylaxis (i.e. oseltamivir 75 mg daily orally for 5-7 days from last known exposure) to any HCW who has had potential patient contact within the last 7 days with droplets from a patient without having had adequate PPE. HCWs who are unwell should not be involved in direct patient care since they are more vulnerable and may be more likely to develop severe illness.
- Dispose waste properly by placing it in sealed, impermeable bags which should be clearly labelled "Biohazard" and disposed of according to existing laws. Linen and reusable materials that have been in contact with patients should be handled separately and disinfected.

For more information on Infection Control, refer to DOH Interim Guidelines No. 2: Infection Control and Use of Personal Protective Equipment and also to Annex 8. Patient Care Checklist.

VII. POST MORTEM CARE

Refer to Annex 9. Post-mortem Care

VIII. LIST OF ANNEXES

Annex 1. Guidelines on Collection and Handling of Specimens

Annex 2. Guidelines for Home Care

Annex 3. Guidelines on the Management of Community Acquired Pneumonia in Adults (CAP)

Annex 4. Guidelines on the Management of Children Hospitalized for Pediatric Community Acquired Pneumonia (PCAP)

Annex 5. Guidelines on the Management of Sepsis in Adults and Children

Annex 6. Guidelines on the Management of Pregnant Women with Confirmed or Suspected Pandemic (H1N1) 2009 Infection

Annex 7. Algorithm for the Clinical Management of Hospitalized Patients Suspected and Confirmed Cases of Influenza A (H1N1) 2009 Infection

Annex 8. Patient Care Checklist for Pandemic (H1N1)

Annex 9. Post-mortem care

Annex 10. Task Force on the Clinical Management of Pandemic (H1N1) 2009 Infection

Annex 11. References

ANNEX 1. GUIDELINES ON COLLECTION AND HANDLING OF SPECIMENS

GENERAL GUIDELINES

1. Only personnel who have been properly trained on specimen collection should be allowed to obtain specimens.
2. Prior to any collection, appropriate personnel protective equipment must be worn (gloves, N95 respirator, gown, goggles).
3. Fill out the NEC Case Report Form (CRF) and the Molecular Biology Lab (MBL) request form completely and legibly.
4. Coordinate with the DOH - Centers for Health Development and/or the National Epidemiology Center (7438301 local 1903).

COLLECTION OF SPECIMENS

All specimen collecting materials (VTM, Dacron Swabs) are available upon request from the Virology Department of RITM, San Lazaro Hospital and Lung Center of the Philippines.

1. Allow VTM to thaw at room temperature before specimen collection is performed. Prepare one (1) VTM per patient.
2. Nasopharyngeal swabs: Insert swab into nostril parallel to the palate (approximately 4-6cm) and leave in place for a few seconds to absorb secretions. Swab both nostrils using one nasopharyngeal swab. Place swab in a tube of VTM. Break the ends of the swabs which stick out of the tube.

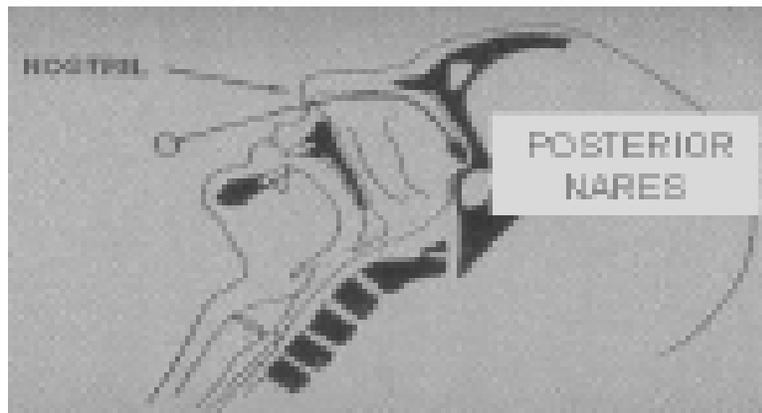


Figure 1: Collection of nasopharyngeal swab specimen

3. Collect one (1) oropharyngeal swab. Scrape the inflammatory areas deep inside the throat (tonsillar crypts, inner walls, sides, etc.). Apply a little force, taking large quantities of mucus.

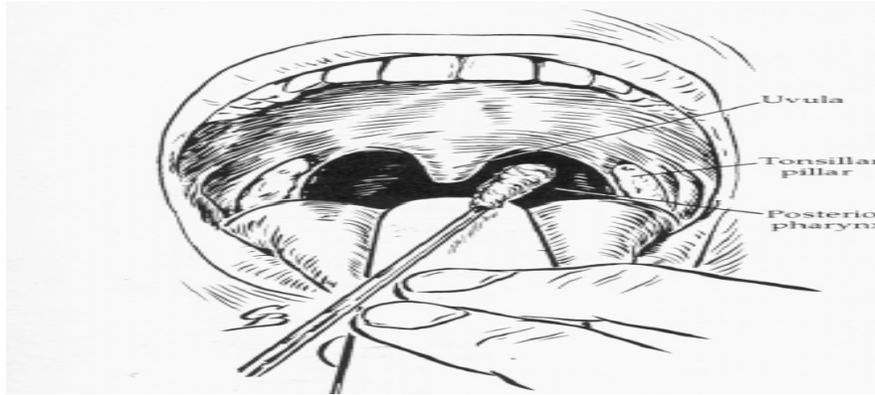


Figure 2: Collection of oropharyngeal swab specimen

4. Place the oropharyngeal swab in the **same** VTM tube containing the nasopharyngeal swab. Use only Dacron or cotton-tip swabs with plastic shaft. Close tightly to prevent leakage during transport. Secure the cap with parafilm.
5. Label the tubes with the Patient's Name, Age, Sex and Date of Collection using a permanent marker. The information on the labels must be legible and should match the information on the Laboratory Form. The labels must remain attached under all conditions of storage and transport.
6. For intubated patients, at least 1-2 ml of endotracheal aspirate (ETA) for H1N1 RT-PCR should be obtained in addition to a nasopharyngeal swab and placed in the same virus transport medium (VTM) as the nasopharyngeal swab.

TRANSPORT OF SPECIMENS

1. Wrap VTM tubes with specimens in tissue paper or any absorbent material and place upright in a separate 50 ml centrifuge tube or plastic container. Place the 50 ml tube or plastic container in a ziplock plastic bag.
2. Place in a transport box containing 4 frozen ice packs wrapped in plastic bag (to prevent the specimen from being contaminated). Keep containers upright at all times.
3. Send the completed NEC CRF and MBL request form together with the specimen. Place these in a separate ziplock plastic bag if being transported inside the transport box.
4. Send to the laboratory as soon as possible
5. If H1N1 confirmatory test is not available at the hospital where the patient was seen/is admitted, please send the specimen to any of the following centers:

Research Institute for Tropical Medicine (RITM)

DR. CATALINO DEMETRIA

c/o Clinical Laboratory

Research Institute for Tropical Medicine

FCC, Alabang, Muntinlupa City 1781

Tel. #: 8072628 local 410

Lung Center of the Philippines (LCP)
MS. SUSAN CASTRO
MS. SIMONETTE LAXINA
MS. MONIQUE BARILE
Lung Center of the Philippines
Tel. No.: 9246101 local 286 or 386

San Lazaro Hospital (SLH)
MS. SUSAN LEAÑO
STD AIDS Central Collaborating Laboratory (SACCL)
San Lazaro Hospital, Manila
Tel. No.: 7114117

The Medical City (TMC)
DR. RAUL DESTURA
Section of Molecular Diagnostics and Clinical Laboratories
The Medical City
Tel No: 6356789 local 6415

Vicente Sotto Memorial Medical Center (VSMMC)
DR. MARILYN ZARRAGA
Head
Laboratory Department
Tel. No.: 032-2539891 (trunkline)

6. Specimens must be transported to accredited testing facilities under cold transport (Ice box). If unable to submit samples on the day of collection, samples may be stored in the freezer and must be removed only on the day of transport under cold environment. Avoid repeated freeze-thawing. These samples are ONLY applicable for PCR testing and not for viral culture.

ANNEX 2. GUIDELINES FOR HOME CARE

1. Ensure that there are conditions for isolation at home.
2. Separate the patient from others at home, in a separate room, if possible, until 24 hours after fever resolves without any fever medications. Keep the door of the room closed. If this is not possible, the patient must use a surgical mask whenever he or she is in the presence of others.
3. Patient and caregivers should be trained to wear and dispose of masks properly during the infectious period. Where supplies of mask are limited, the patient must be given priority in the use of a surgical mask.
4. Patient and caregivers must wash their hands frequently.
5. The patient must follow cough and sneeze etiquette and personal hygiene practices.
6. Drinking glasses and other utensils used for eating by the patient must be thoroughly washed with soap and water before they are subsequently used by someone else.
7. Household surfaces should be cleaned regularly with soap and water or disinfectant.
8. Keep windows open and allow ventilation of the room.
9. All household members should be educated on hand hygiene and cough/sneeze etiquette.
10. **Patient should Seek Emergency Medical Care if:**

A child experiences any of the following:

- Fast breathing or troubled breathing
- Bluish or gray skin color
- Not drinking enough fluids
- Severe or persistent vomiting
- Not waking up or not interacting
- Being so irritable that the child does not want to be held
- Flu-like symptoms improve but then return with fever and worsened cough

An adult experiences any of the following:

- Difficulty breathing or shortness of breath
- Pain or pressure in the chest or abdomen
- Sudden dizziness
- Confusion
- Severe or persistent vomiting
- Flu-like symptoms improve but then return with fever and worsened cough

ANNEX 3. GUIDELINES FOR MANAGEMENT OF COMMUNITY ACQUIRED PNEUMONIA (CAP) IN ADULTS

These guidelines should always be applied in conjunction with the physician’s clinical judgment and supplemented by objective findings. The initial decision may be altered depending on the clinical course.

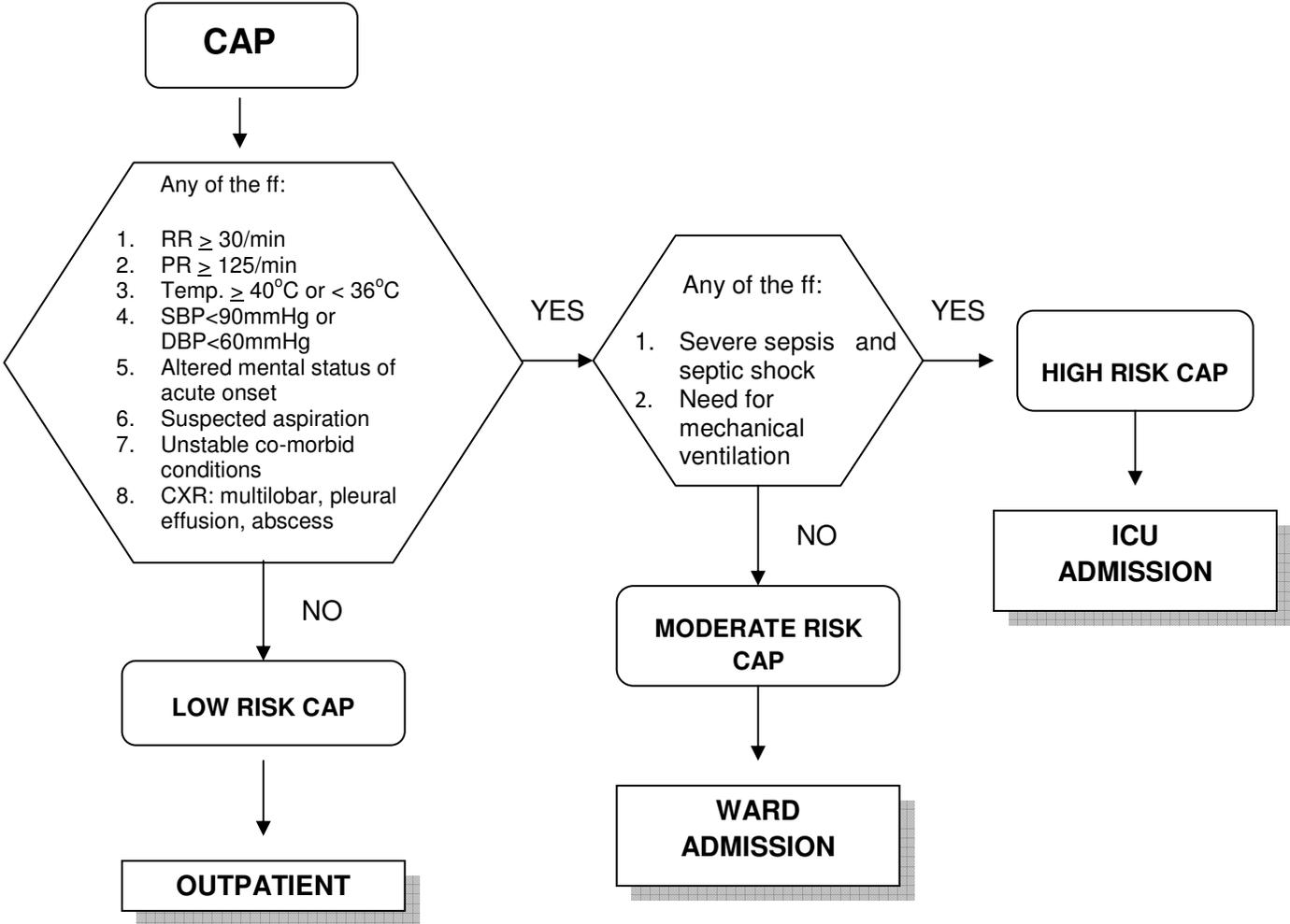
DETERMINE PRESENCE AND SEVERITY OF PNEUMONIA

A management-oriented risk stratification of CAP based on the patient’s clinical presentation/condition, status of any co-morbid condition and chest x-ray findings should be utilized in the decision to determine the site of care for patients. Objective criteria should always be supplemented with physicians’ clinical judgment regarding the need for out-patient or in-patient management, including the ability to safely and reliably take oral (versus parenteral) medications. Patients with CAP can be classified into three risk categories to help determine the need for hospitalization.

Table 3: Classification of Community-Acquired Pneumonia by Risk Stratification

Low Risk CAP	Moderate Risk CAP	High Risk CAP
Presence of: Stable vital signs; <ul style="list-style-type: none"> • RR < 30 breaths/min • PR < 125 beats/min • Temp > 36°C or < 40°C • SBP ≥ 90 mmHg • DBP > 60 mmHg No altered mental state of acute onset No suspected aspiration No or presence of stable co-morbid conditions Chest X-ray: localized infiltrates; no evidence of pleural effusion, abscess	Any of the following: Unstable vital signs: <ul style="list-style-type: none"> • RR ≥ 30 breaths/min • PR ≥ 125 beats/min • Temp ≥ 40°C or ≤ 36°C • SBP < 90 mmHg • DBP ≤ 60 mmHg Presence of altered mental state of acute onset Suspected aspiration Decompensated co-morbid condition Chest X-ray: multilobar infiltrates; pleural effusion or abscess	Any of the criteria under Moderate Risk CAP category PLUS Septic shock with need for vasopressors or Need for mechanical ventilation

Figure 3: Algorithm for the Management-Oriented Risk Stratification of CAP in Immunocompetent Adults



DIAGNOSTICS

1. For Low Risk CAP, microbiologic studies (example: sputum GS/CS) are OPTIONAL.
2. In moderate and high risk CAP, blood culture and gram stain/culture of respiratory specimens should be done.
3. When possible, tests to document the presence of Legionella sp. are recommended in hospitalized patients.
4. Invasive procedures to obtain specimens for gram stain and culture such as transtracheal, transthoracic biopsy, bronchoalveolar lavage and protected brush specimens are options for non-resolving pneumonia, immunocompromised patients and when no adequate respiratory specimen can be sent despite sputum induction and routine diagnostic test.
5. Emerging etiologies: the existence of new and emerging causes of pneumonia (e.g. pandemic (H1N1) 2009, SARS) should be sought during outbreaks or when there are epidemiologic clues that point to their existence. Rapid influenza diagnostic tests (RIDTs) in respiratory clinical specimens have low over-all sensitivity to detect pandemic (H1N1) 2009 (40-69%). If the presence of pandemic (H1N1) 2009 is suspected in patients with high risk pneumonia, a definitive determination with RT-PCR should be conducted.

MANAGEMENT

I. START ANTIBIOTICS

For patients requiring hospitalization, empiric therapy should be initiated as soon as possible after a diagnosis of CAP is made. Antimicrobial management of a patient with CAP is based on: 1) an assessment of pneumonia severity; 2) the ability of the patient to comply with oral therapy; and, 3) the social circumstances and available care for an individual.

Table 4. Risk Stratification and Empiric Antibiotic Therapy for CAP

Risk Stratification	Potential Pathogen	Empiric Therapy
Low Risk CAP	<i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> <i>Chlamydophila pneumoniae</i> <i>Mycoplasma pneumoniae</i> <i>Moraxella catarrhalis</i> Enteric Gram-negative bacilli (among those with co-morbid illness)	Previously healthy: Amoxicillin OR Extended macrolides ^a (suspected atypical pathogen)
		With stable comorbid illness: β-lactam/β-lactamase inhibitor combination (BLIC) ^b OR 2 nd generation oral cephalosporins ^c +/- Extended macrolides Alternative: 3 rd generation oral cephalosporin ^d +/- Extended macrolide
Moderate Risk CAP	<i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> <i>Chlamydophila pneumoniae</i> <i>Mycoplasma pneumoniae</i> <i>Moraxella catarrhalis</i> Enteric Gram-negative bacilli <i>Legionella pneumophila</i> Anaerobes (among those with risk of aspiration)	IV non-anti-pseudomonal β-lactam (BLIC, cephalosporin or carbapenem) ^e + Extended macrolide OR Respiratory fluoroquinolones ^f (FQ)
High Risk CAP	<i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> <i>Chlamydophila pneumoniae</i> <i>Mycoplasma pneumoniae</i> <i>Moraxella catarrhalis</i> Enteric Gram-negative bacilli <i>Legionella pneumophila</i> Anaerobes (among those with risk of aspiration) <i>Staphylococcus aureus</i> <i>Pseudomonas aeruginosa</i>	<u>No risk for <i>P. aeruginosa</i>:</u> IV non-anti-pseudomonal β-lactam (BLIC, cephalosporin or carbapenem) ^e + IV Extended macrolide or IV Respiratory FQ
		<u>With risk for <i>P. aeruginosa</i>:</u> IV antipneumococcal antipseudomonal β-lactam (BLIC, cephalosporin or carbapenem) ^g + IV Extended macrolide + aminoglycoside ^h OR IV antipneumococcal antipseudomonal β-lactam (BLIC, cephalosporin or carbapenem) ^g + IV Ciprofloxacin / Levofloxacin (high dose)

^a Extended Macrolides – Azithromycin dihydrate, Clarithromycin

^b Amoxicillin-clavulanic acid, Amoxicillin-sulbactam, Sultamicillin

^c Oral Second generation cephalosporin – Cefaclor, Cefuroxime axetil

^d Oral Third generation cephalosporin – Cefdinir, Cefixime, Cefpodoxime proxetil

^e Amoxicillin-clavulanic acid, Amoxicillin-sulbactam, Ampicillin-sulbactam, Cefotiam, Cefoxitin, Cefuroxime Na, Cefotaxime, Cefprozime, Ceftriaxone, Ertapenem

^f Levofloxacin, Moxifloxacin

^g Cefoperazone-sulbactam, Piperacillin-tazobactam, Ticarcillin-clavulanic acid, Cefipime, Cefpirome, Imipenem-cilastatin, Meropenem

^h Gentamicin, Tobramycin, Netilmicin, Amikacin

Table 5: Usual Recommended Dosages of Antibiotics in 50-60 KBW Adults with Normal Liver and Renal Functions

Antibiotic	Dosage	Antibiotic	Dosage
Low Risk CAP (All taken orally)			
<i>β-lactams:</i> Amoxicillin <i>Macrolides</i> Azithromycin dihydrate Clarithromycin <i>β-lactam with β-lactamase inhibitor combination (BLIC)</i> Amoxicillin-Clavulanic acid Amoxicillin-sulbactam Sultamicillin	500 mg TID 500 mg OD 500 mg BID 625 mg TID or 1 gm BID 1 gm TID 750 mg BID	<i>2nd Generation Cephalosporin</i> Cefaclor Cefuroxime axetil <i>3rd Generation Cephalosporin</i> Cefdinir Cefixime Cefpodoxime proxetil	500 mg TID or 750 mg BID 500 mg BID 300 mg BID 200 mg BID 200 mg BID
Moderate Risk CAP			
<i>Macrolides</i> Azithromycin dihydrate, PO/IV Clarithromycin, PO/IV Erythromycin, PO/ IV <i>Antipneumococcal Fluoroquinolones</i> Levofloxacin PO/IV Moxifloxacin PO/IV <i>β-lactam with β-lactamase inhibitor combination (BLIC)</i> Amoxicillin-clavulanic acid, IV Amoxicillin-sulbactam, IV Ampicillin-sulbactam, IV	500 mg q24h 500 mg q12h 0.5-1 gm q6h 500-750 mg q24h 400 mg q24h 1.2 gm q8h 1.5 gm q8h 1.5 gm q8h	<i>2nd Generation Cephalosporin</i> Cefotiam, IV Cefoxitin, IV (with anaerobic activity) Cefuroxime Na, IV <i>3rd Generation Cephalosporin</i> Cefotaxime, IV Ceftizoxime, IV (with anaerobic activity) Ceftriaxone, IV <i>Carbapenem</i> Ertapenem, IV	1 gm q8h 1-2 gm q8h 1.5 gm q8h 1-2 gm q8h 1-2 gm q8h 1-2 gm q24h 1 gm q24h
High Risk CAP (All routes are intravenous IV)			
<i>Macrolides</i> Azithromycin dihydrate Clarithromycin Erythromycin <i>Antipneumococcal Fluoroquinolones</i> Levofloxacin Moxifloxacin <i>Aminoglycosides</i> Amikacin Gentamicin Netilmicin Tobramycin <i>Non-antipseudomonal BLIC</i> Amoxicillin-clavulanic acid Amoxicillin-sulbactam Ampicillin-sulbactam <i>Non-antipseudomonal 3rd Generation Cephalosporin</i> Cefotaxime IV Ceftizoxime IV (with anaerobic activity) Ceftriaxone IV	500 mg q24h 500 mg q12h 0.5-1 gm q6h 750 mg q24h 400 mg q24h 15 mg/kg q24h 3 mg/kg q24h 7 mg/kg q24h 3 mg/kg q24h 1.2 gm q6-8h 1.5 gm q6-8h 1.5 gm q6-8h 1-2 gm q8h 1-2 gm q8h 1-2 gm q24h	<i>Non-anti-pseudomonal Carbapenem</i> Ertapenem <i>Anti-pseudomonal Anti-pneumococcal β-lactams (BLIC, Cephalosporin, Carbapenem)</i> Cefoperazone-sulbactam Piperacillin-Tazobactam Ticarcillin-clavulanic acid Cefepime Cefpirome Imipenem-cilastatin Meropenem <i>Anti-pseudomonal Fluoroquinolones</i> Ciprofloxacin Levofloxacin <i>Others:</i> Oxacillin (<i>Staphylococcus</i>) Clindamycin (<i>Staphylococcus</i> and Anaerobes) Metronidazole (Anaerobes) Linezolid (MRSA) Vancomycin (MRSA)	1 gm q24h 1.5-3 gm q8-12h 2.25-4.5 gm q6-8h 3.2 gm q6h 2 gm q8-12h 2 gm q12h 0.5-1 gm q6-8h 1-2 gm q8h 400 mg q12h 750 mg q24h 1-2 gm q4-6h 600 mg q6-8h 500 mg q6-8h 600 mg q12h 1 gm q12h

II. PROVIDE SUPPORTIVE CARE

1. Oxygen
2. Hydration
3. Bronchodilator/nebulization, if wheezing is present

III. MONITORING RESPONSE TO ANTIBIOTIC THERAPY

Most patients with uncomplicated bacterial pneumonia will respond to treatment within 24-72 hours; re-evaluation of patients, therefore, should be done after 72 hours of initiating therapy. A patient is considered to have responded to treatment if fever decreases within 72 hours, temperature normalizes within 5 days and respiratory signs, particularly tachypnea, return to normal. In patients with low risk CAP who are clinically improving, a follow-up chest x-ray is not necessary. Follow-up cultures of blood and sputum are not also indicated for patients who respond to therapy.

In hospitalized patients, de-escalating initial empiric broad spectrum or combination IV therapy to a single narrow spectrum IV or oral agent based on available laboratory data is recommended as early as 72 hours following initiation of empirical treatment. Switch therapy to an oral agent will allow early discharge from the hospital and will lead to cost-savings.

Indications for de-escalation of antibiotic therapy

1. Resolution of fever for > 24 hours (temperature <37.8°C)
2. Resolution of respiratory distress (normalization of RR < 24 breaths/min)
3. Resolution of hypotension (systolic BP >90 mmHg) and tachycardia
4. Absence of hypoxemia
5. Etiologic agent is not a high risk (virulent/resistant) pathogen (e.g. *Legionella*, *Staphylococcus aureus* or gram negative enteric bacilli)
6. No unstable co-morbid condition or life-threatening complication such as MI, CHF, complete heart block, new atrial fibrillation, supraventricular tachycardia, etc
7. No signs of organ dysfunction
8. Improving white cell count
9. No bacteremia
10. Patient is clinically hydrated, taking oral fluids and able to take oral medications
11. Normal mental status

IV. CRITERIA FOR DISCHARGE

During the 24 hours before discharge, the patient should be clinically stable with the following characteristics (unless this represents the baseline status):

1. Resolution of fever (temperature of $<37.8^{\circ}\text{C}$) without fever medications
2. Heart rate < 100 beats/min
3. Resolution of hypotension
4. Resolution of tachypnea
5. Oxygen saturation >90
6. Clinically hydrated and taking oral fluids
7. With a functioning gastrointestinal tract

ANNEX 4. GUIDELINES ON THE MANAGEMENT OF CHILDREN HOSPITALIZED FOR PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA (PCAP)

These guidelines should always be applied in conjunction with the physician's clinical judgment, supplemented by objective findings; the initial decision may be altered depending on the clinical course.

All children with influenza-like illness (ILI) complicated by severe pneumonia should be admitted.

I. DETERMINE PRESENCE AND SEVERITY OF PNEUMONIA (WHO, 2005)

In a child with fever (temperature $> 37.8^{\circ}\text{C}$) AND

- cough or difficult breathing (in children 2 months to 5 yrs)
- cough or sore throat (in children > 5 yrs)

Consider pneumonia if:

1) Pneumonia, non severe

- a. Definite crackles on auscultation OR
- b. Fast breathing - counted for a full minute in a calm child; repeat if abnormal
 - < 2 months - RR ≥ 60 breaths/minute or more
 - 2 - 11 months – RR ≥ 50 breaths/minute or more
 - 12 months up to 5 years - RR ≥ 40 breaths/minute or more
 - $> 5 - 12$ years - RR ≥ 30 breaths/minute or more
 - ≥ 12 years - RR ≥ 20 breaths/minute or more

2) Severe Pneumonia

- a. Sudden onset of fever over 38°C
- b. Cough or sore throat
- c. Shortness of breath or difficulty breathing
- d. Chest indrawing / stridor at rest
- e. Any of the following general danger signs (severe illness) that may require hospitalization:
 - Inability to drink or nurse
 - Constant vomiting
 - Convulsions
 - Lethargy or unconsciousness

- Low body temperature, especially for infants < 2 months old

II. WHO TO ADMIT

1. Children with severe pneumonia
2. Children with non-severe pneumonia may be managed on an outpatient basis provided that:
 - a. Close monitoring of the patient can be done to watch for development of complications or worsening of illness
 - b. Caregiver is reliable and compliant
 - c. Patient can be brought to a hospital as soon as condition worsens or does not improve

If any one of the three is not possible, the patient should be admitted.

III. DIAGNOSTICS FOR HOSPITALIZED PATIENTS

The following tests should be performed:

1. Chest x-ray (PA-L views)
2. Complete blood count and platelet count
3. Pulse oximetry and/or arterial blood gas, if available
4. Other recommended laboratory tests/procedures, as indicated, include:
 - a. Blood culture and sensitivity
 - b. May also do culture and sensitivity of sputum (for older children who can expectorate), endotracheal aspirate ideally within the 1st hour of intubation (for those who are intubated), pleural fluid (if thoracentesis is done)
 - c. Serum electrolytes (for those with diarrhea)
5. Additional tests may be done taking into account underlying co-morbidities and alternative diagnoses

IV. MANAGEMENT

a. ANTIBIOTIC THERAPY

Table 6. Suggested Initial Antibiotic Regimens for Pneumonia in Children

Diagnosis	Initial Antibiotic	Duration of Tx
Pneumonia	Oral Amoxicillin, if tolerated	5-7 days
	ALTERNATIVE: IV Penicillin G or ampicillin if oral meds not tolerated	5-7 days
Severe pneumonia < 5 yrs old	IV Penicillin G or Ampicillin plus Aminoglycoside ALTERNATIVE: Chloramphenicol	7-10 days
Severe pneumonia ≥ 5 yrs old	Penicillin G ALTERNATIVE: Chloramphenicol	7-10 days
Severe pneumonia in the presence of skin/soft tissue infections, rapid deterioration, pneumatocele, effusion, bullae, lung abscess Admit to ICU; Referral to specialist recommended	Oxacillin OR	Depending on patient's clinical condition and response
	Clindamycin OR	
	Vancomycin, if warranted	

Table 7. Dosage of Antibiotics for Pneumonia in Children

Antibiotic	Dose	Antibiotic	Dose
Amoxicillin	40-50 mg/kg/day	Gentamicin	3-7.5 mg/kg/day
Ampicillin	100-150 mg/kg/day	Oxacillin	100-150 mg/kg/day
Amikacin	15-22.5 mg/kg/day	Penicillin G	100,000 u/kg/day
Clindamycin	25-40 mg/kg/day	Vancomycin	40 mg/kg/day
Chloramphenicol	75-100 mg/kg/day		

b. PROVIDE SUPPORTIVE CARE

1. Oxygen if needed
2. Hydration if needed
3. Nebulization if with wheezing
4. Paracetamol for fever. Salicylates should not be given.

c. MONITORING RESPONSE TO THERAPY

1. Signs of response within 72 hrs of start of treatment
 - a. Decrease in RR, chest indrawing and other respiratory signs
 - b. Defervescence of fever
 - c. Ability to feed
 - d. Increase in oxygen saturation
2. If with good response, may step down and complete treatment using oral antibiotics
 - a. Ampicillin + aminoglycoside → co amoxiclav or sultamicillin
 - b. Parenteral Ampicillin → oral Amoxicillin
 - c. Parenteral Penicillin G → oral phenoxymethyl penicillin
3. If not responding to treatment within 72 hrs:
 - a. Non-severe pneumonia– Admit (if being treated on an outpatient basis), look for other diagnosis/complications
 - b. Severe pneumonia – consider development of complications, other etiologic agents or other diagnosis AND refer to specialist

V. CRITERIA FOR DISCHARGE

1. No signs of respiratory distress
2. Afebrile for at least 24 hrs
3. Able to tolerate feeding and oral medications
4. Improvement in general well being

ANNEX 5. GUIDELINES ON THE MANAGEMENT OF SEPSIS IN ADULTS AND CHILDREN

These guidelines should always be applied in conjunction with the physician's clinical judgment supplemented by objective findings. The initial decision may be altered depending on the clinical course. Ideally, the patient should be managed in the ICU.

I. DETERMINE PRESENCE OF AND SEVERITY OF SEPSIS:

Table 8. Systemic Inflammatory Response Syndrome (SIRS) Criteria

Parameter	Adult	Pediatrics (age < 19 years old)
The presence of at least 2 of the following 4 criteria, one of which must be abnormal temperature or abnormal leucocyte count		
RR	RR > 20 breaths/min	<ul style="list-style-type: none"> • < 2 months: RR \geq 60 breaths/ min • 2 - 11 months: RR \geq 50 breaths/ min • 12 months to 5 years: RR \geq 40 breaths/ min • 5 – 12 years: RR > 30 breaths/ min • > 12 years: RR > 20 breaths/min
HR	HR > 90/min	<p>< 12 months: HR > 160/min</p> <p>12 mos – 5 yrs: HR > 120/min</p>
Temp	< 36 ⁰ C or > 38 ⁰ C	
WBC	<p>WBC count < 4000/cu.mm or >12000/cu.mm, or presence of >10% immature or band forms</p> <p><u>For newborns up to age 28 days:</u> WBC count < 5000/cu mm or >30,000/cu mm OR presence of >20% immature or band forms</p>	

1. **Sepsis** is defined as 2 or more SIRS criteria in the presence of a confirmed or suspected infection.
2. **Severe sepsis** is defined as sepsis and hypotension and/or organ dysfunction requiring intervention (respiratory failure requiring mechanical ventilation, acute renal failure requiring dialysis).
3. **Septic shock** is defined as severe sepsis + fluid-refractory (in adults: at least 20 ml/kg of crystalloid; in children up to 60 ml/kg; in neonates up to 30ml/kg) hypotension, that requires vasopressor agents.

II. DIAGNOSTICS

- 1) Complete blood count (with platelet count)
- 2) Culture and sensitivity – blood x 2, sputum; urine and other body fluids as needed
- 3) Serum Na, K, Cl, ionized calcium (iCa), BUN, creatinine, lactic acid (lactate)
- 4) Arterial blood gas
- 5) Chest x-ray and ECG
- 6) Other tests (as needed): creatinine kinase, lactate dehydrogenase (LDH), Magnesium (Mg), prothrombin time (PT), activated partial thromboplastin time (aPTT), SGOT (AST), SGPT (ALT), albumin/globulin
- 7) For pediatric patients: include HGT monitoring

III. MANAGEMENT OF SEPTIC SHOCK IN PEDIATRICS

1. If available, admit to intensive care unit and refer to a specialist for co-management.
2. Maintain airway and establish vascular access according to Neonatal Resuscitation Program (NRP) or Pediatric Advanced Life Support (PALS) guidelines.
3. Fluid resuscitation:
 - a. For neonates up to 28 days old: Push 10 cc/kg isotonic crystalloid or colloid boluses to maximum of 60 cc/kg
 - b. For infants (beyond 28 days old) and older children: Push 20 cc/kg isotonic saline or colloid boluses up to and over 60 cc/kg
4. Correct hypoglycemia and hypocalcemia.
5. For fluid-refractory shock
 - a. establish central venous access
 - b. begin inotropic support
 - Dopamine/Dobutamine – 5 mcg/kg/min up to 20 mcg/kg/min
 - Epinephrine – 0.1 mcg to 1.5 mcg/kg/min
 - Norepinephrine – 0.01 to 1.0 mcg/kg/min
 - c. establish arterial monitoring
6. Start appropriate antibiotics within the first hour based on local sensitivity patterns. Consider the possibility of staphylococcal infection in a seriously ill patient.

IV. MANAGEMENT OF SEPTIC SHOCK IN ADULTS

1. RESUSCITATE SEVERE SEPSIS AND SEPTIC SHOCK

(all items should be performed *within 6 hours* of presentation unless specified):

1. Measure serum lactate, if available.
2. Obtain blood cultures prior to antibiotic administration (but do not **unnecessarily delay antibiotics**).
3. Administer broad-spectrum antibiotics within 3 hours of presentation at ER, or within 1 hour of presentation when not in ER (Refer to **Annex 3**. CAP Guidelines for Severe Pneumonia).
4. If with hypotension (SBP <90 or MAP <65) and/or lactate > 4 mmol/L (36 mg/dl):
 - a. Deliver an initial minimum of 20 ml/kg of crystalloid (or colloid equivalent).
 - b. Administer vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure (MAP) > 65 mm Hg.
5. If with hypotension despite initial fluid resuscitation (septic shock) and/or lactate > 4 mmol/L (36 mg/dl):
 - a. Central venous access is indicated, preferably through subclavian or internal jugular routes.
 - b. Central venous pressure (CVP) target is >8 mm Hg in non-intubated patients, >12 mmHg in intubated patients
 - c. Central venous oxygen saturation (ScvO₂, central venous blood gas required) target > 70%
6. Support failing organ systems (oxygen and mechanical ventilation, renal replacement therapy, inotropes when necessary).
7. Identification and source control of infection is mandatory.

2. CONTINUING MANAGEMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

1. Administer low-dose corticosteroids when sepsis-induced adrenal dysfunction is suspected, preferably in accordance with a standardized ICU policy.
2. Maintain glucose below 180 mg/dl.
3. Maintain inspiratory plateau pressures < 30 cm H₂O for mechanically ventilated patients.
4. Administer enteral nutrition whenever possible, as early as the first day of sepsis.
5. Maintain euvolemia once hemodynamically stable.
6. Provide stress ulcer prophylaxis.
7. Institute deep venous thrombosis prophylaxis.

V. CRITERIA FOR DISCHARGE from the Intensive Care Unit (ICU) - for Adult and Pediatric patients:

1. Hemodynamically stable, off vasopressors for at least 24 hours
2. Off mechanical or non-invasive ventilation or ET CPAP (in pediatric patients)
3. O₂ saturation > 90% (> 95% in pediatric patients) on room air or with a face mask/nasal cannula
4. No new potentially serious conditions

ANNEX 6. GUIDELINES ON THE MANAGEMENT OF PREGNANT WOMEN WITH CONFIRMED OR SUSPECTED PANDEMIC (H1N1) 2009 INFECTION

These guidelines should always be applied in conjunction with the physician's clinical judgment, supplemented by objective findings; the initial decision may be altered depending on the clinical course.

BASIC PRINCIPLES

Pregnant women with influenza are at higher risk of serious illness, including death, as well as adverse pregnancy outcomes.

Newborns of women with influenza are expected to be at increased risk of severe illness.

I. GENERAL CONSIDERATIONS

1. A key concept for obstetric settings is to keep healthy pregnant women, in both inpatient and outpatient settings, separated from persons who are ill or potentially ill. Facilities should have a mechanism to identify and segregate ill patients, visitors and staff.
2. Prenatal care, labor and delivery services should be provided to healthy pregnant women in settings where the risk of exposure to pandemic (H1N1) 2009 flu has been minimized.
3. Healthy pregnant women and infants who have not been in close contact with persons with suspected, probable, or confirmed pandemic (H1N1) 2009 can be managed in the usual way in compliance with established infection control guidance.

II. SUSPECT INFLUENZA IN THE PRESENCE OF THE FOLLOWING:

1. Fever (temperature of 100° F {37.8°C} or greater) and typical acute respiratory influenza-like illness (e.g., cough, sore throat, rhinorrhea) in the absence of a KNOWN cause other than influenza
2. Other symptoms - body aches, headache, fatigue, vomiting and diarrhea

III. CRITERIA FOR ADMISSION

Generally, pregnant patients with fever require close monitoring for possible complications. They may be given oseltamivir based on clinician's evaluation.

Pregnant women with ILI should be admitted to the hospital for management if any of the following are present:

1. Unstable condition – dyspnea, hypoxemia, hemodynamic instability (e.g.,hypotension, tachycardia), altered level of consciousness and confusion, syncope, severe dizziness, etc
2. Signs of sepsis and/or pneumonia (see **Annex 3**. Management of Community Acquired Pneumonia or CAP, **Annex 4**. Management of Pediatric CAP and **Annex 5**. Management of Sepsis in Adults and Children)
3. Inability to eat and/or take oral fluids
4. Urgent need for work-up for alternative/additional diagnoses or need for close monitoring of fetal status and well-being using appropriate tests (e.g., biophysical profile, fetal heart rate, fetal movement, etc.) as well as monitoring for and control of preterm labor
5. Presence of unstable/uncontrolled co-morbidities which increase the risk of severe illness - chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematologic, neurologic, or metabolic disorders (including diabetes mellitus), immunosuppression, cancer, malnutrition

IV. DIAGNOSTICS

1. Nasopharyngeal and oropharyngeal swabs for RT-PCR for pandemic (H1N1) 2009 virus
2. Maternal and fetal well-being studies, as indicated: biophysical profile, pelvic ultrasound, electronic tocomonitor
3. Additional tests may be done taking into account underlying co-morbidities and alternative diagnoses

V. MANAGEMENT

A. ANTIVIRAL

1. Treatment

- a. Pregnancy should not be considered a contraindication to oseltamivir use.
- b. Early treatment with influenza antiviral medications (preferably within 48 hours of onset) is recommended for pregnant women with suspected pandemic (H1N1) 2009 virus infection. However, antiviral medications are recommended for high risk persons, including pregnant women, presenting for care more than 48 hours after illness onset, particularly for those who require hospitalization.
- c. Clinicians should not wait for test results to initiate treatment since these medications work best if started as early as possible after illness onset.

- d. Oseltamivir is the drug of choice for treatment of pregnant women because of its systemic activity.
- e. Recommended duration of treatment is 5 days.

2. Prophylaxis

- a. Pregnant women appear to be at higher risk for severe complications from pandemic (H1N1) 2009 virus infection and the benefits of treatment or chemoprophylaxis with oseltamivir or zanamivir outweigh the theoretical risks of antiviral use.
- b. Post exposure antiviral chemoprophylaxis can be considered for pregnant women who are close contacts of persons with laboratory confirmed pandemic (H1N1) 2009 virus infection.
- c. Recommended duration of chemoprophylaxis is 5-7 days after the last known exposure to person with suspected or laboratory confirmed pandemic (H1N1) 2009
- d. Close monitoring for influenza like illness in exposed pregnant women is recommended.

B. ANTIBIOTIC THERAPY

1. Antibiotics are given for patients with confirmed or clinically-suspected bacterial complication like pneumonia or sepsis
2. In general, the following classes of antibiotics are considered safe in pregnancy: amino-penicillins, cephalosporins, carbapenems, macrolides and extended-spectrum penicillins.

C. PROVIDE SUPPORTIVE CARE

1. Oxygen if needed
2. Hydration if needed
3. Nebulization if with wheezing
4. Fever in pregnant women should be treated because of the risk that hyperthermia appears to pose to the fetus. Paracetamol appears to be the best option for treatment of fever during pregnancy.
5. Bed rest on left lateral decubitus position

D. MONITORING RESPONSE TO THERAPY

The following are considered signs of good response:

1. Lysis of fever
2. Resolution of cough
3. Improvement in the sense of well-being

VI. CRITERIA FOR DISCHARGE

1. Afebrile for at least 24 hours
2. Good fetal status
3. No preterm labor

VII. CARE OF NEWBORNS OF INFECTED MOTHERS

1. The newborn should be considered to be potentially infected if delivery occurs during the 2 days before through 7 days after illness onset in the mother
2. The newborn should be closely monitored for signs and symptoms of influenza.
3. If signs or symptoms develop, testing should be performed, infection control measures should be continued, and treatment with anti-influenza medications should be considered.

VIII. BREASTFEEDING

1. Women who are not ill with influenza should be encouraged to initiate breastfeeding early and feed frequently. Ideally, babies should receive most of their nutrition from breast milk. Eliminate unnecessary formula supplementation, so the infant can receive as much maternal antibodies as possible
2. If possible, only adults who are not sick should care for infants, including providing feedings.
3. Sick women who are able to express their milk for bottle feedings by a healthy family member should be encouraged to do so. Antiviral medication treatment or prophylaxis is not a contraindication for breastfeeding.
4. Careful adherence to hand hygiene and cough etiquette is critical, especially for sick women who do not have anyone to help with infant care while they are ill.
5. Women with influenza-like illness should use facemasks when providing infant care and feedings
6. Instruct parent and caretakers on how to protect their infant from the spread of microorganisms, like pandemic (H1N1) 2009 virus, that cause respiratory illnesses:
 - a. Practice hand hygiene and cough etiquette at all times
 - b. Keep the infant away from persons who are ill and out of crowded areas.
 - c. Limit sharing of toys and other items that have been in infants' mouths. Wash thoroughly with soap and water any items that have been in infants' mouths.
7. Infants who are ill may still breastfeed providing their condition allows it.

IX. INFECTION CONTROL MEASURES

1. Isolate the ill mother from healthy pregnant women.
2. Place a surgical mask on the ill mother during labor and delivery, if tolerable, in order to decrease exposure of the newborn, healthcare personnel, and other labor and delivery patients to potentially infectious respiratory secretions.
3. The mother who has ILI at delivery should consider avoiding close contact with her infant until the following conditions have been met: she has received antiviral

medications for 48 hours, her fever has fully resolved, and she can control coughs and secretions.

4. Before these conditions are met, the newborn should be cared for in a separate room by another person who is well, and the mother should be encouraged and assisted to express her milk.
5. As soon as all conditions are met, the mother should be encouraged to wear a facemask, change to a clean gown or clothing, adhere to strict hand hygiene and cough etiquette when in contact with her infant, and begin breastfeeding (or if not able to breastfeed, bottle feeding)
6. Protective measures should be continued, both in the hospital setting and at home, for at least 7 days after the onset of influenza symptoms

X. OTHER WAYS TO REDUCE RISK FOR PREGNANT WOMEN

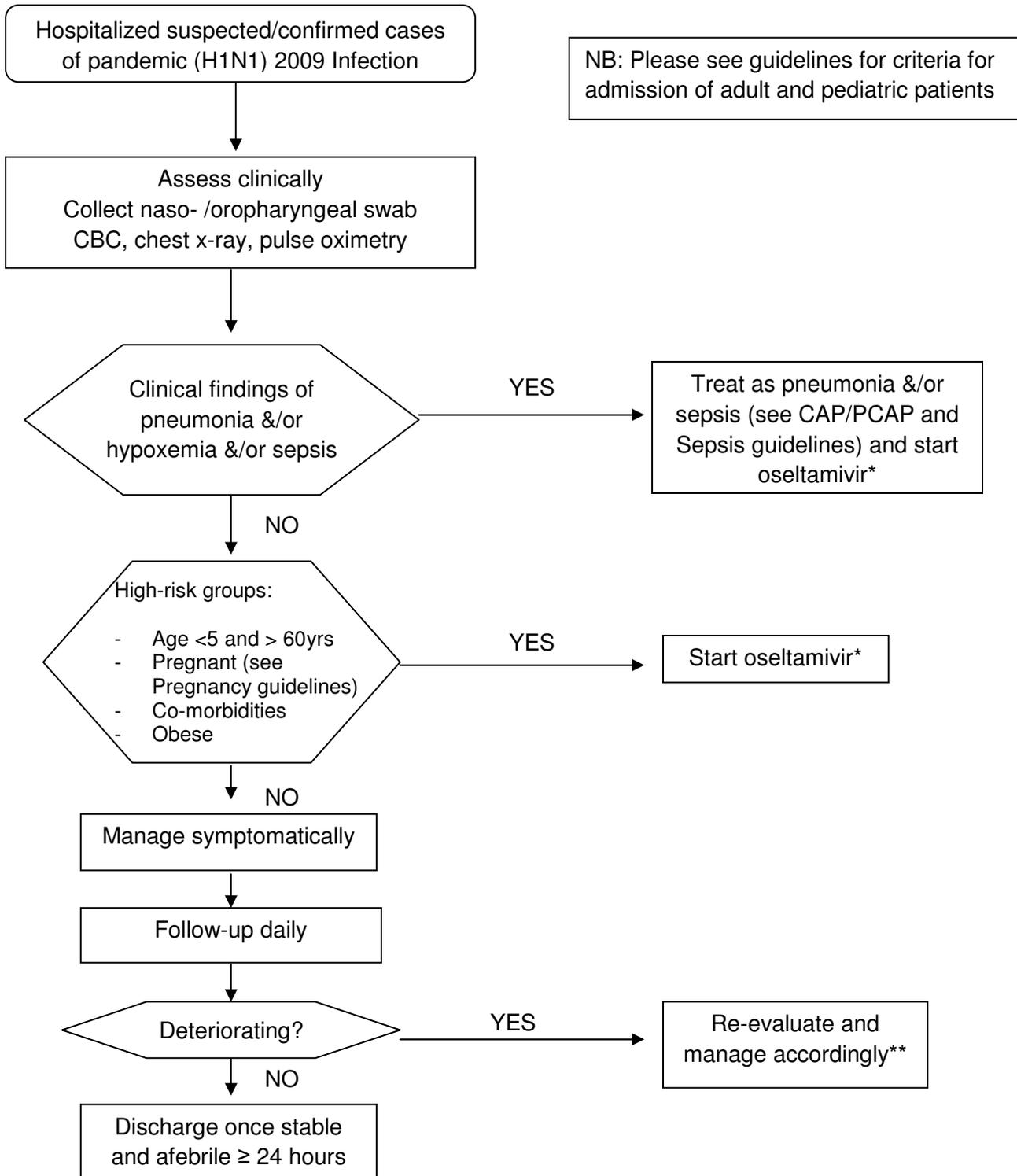
There is no vaccine available yet to prevent pandemic (H1N1) 2009 virus infection; however, the risk might be reduced by taking steps to reduce the chance of being exposed to respiratory infections. These steps include:

1. Frequent hand washing.
2. Minimizing contact with sick individuals.
3. Having ill persons stay home (except to seek medical care).
4. Having ill persons cover coughs.
5. Avoiding, whenever possible, crowded settings in communities having outbreaks of pandemic (H1N1) 2009 virus.
6. Using facemasks and respirators correctly if they are used

XI. PREGNANT HEALTH CARE WORKERS

1. All health care workers with direct patient care, including pregnant women, should follow standard precautions with all patients, regardless of infection status.
2. Pregnant health workers who will likely be in direct contact with patients with confirmed, probable, or suspected pandemic (H1N1) 2009 (e.g., nurse, physician, or respiratory therapist caring for hospitalized patients), should consider reassignment to lower-risk activities.
3. If reassignment is not possible, pregnant women should avoid participating in procedures that may generate increased small-particle aerosols of respiratory secretions in patients with known or suspected influenza, including the following procedures:
 - a. Endotracheal intubation
 - b. Bronchoscopy
 - c. Open airway suctioning
 - d. Cardiopulmonary resuscitation (CPR)
 - e. Diagnostic sputum induction

ANNEX 7. ALGORITHM FOR THE CLINICAL MANAGEMENT OF HOSPITALIZED SUSPECTED AND CONFIRMED CASES OF INFLUENZA A (H1N1) 2009 INFECTION



* May discontinue oseltamivir if swab is negative; if swab is positive, complete 5 days treatment

** May repeat chest x-ray and pulse oximetry and assess for presence of pneumonia/hypoxemia and signs of sepsis and other focus of infection

ANNEX 8. PATIENT CARE CHECKLIST FOR PANDEMIC (H1N1) 2009 INFECTION

This checklist highlights areas of care critical for the management of suspected (CUO) or confirmed pandemic (H1N1) 2009 seen at any health facility. **It is not intended to replace routine care.** Refer to clinical management algorithm for additional guidance.

UPON ARRIVAL TO CLINICAL SETTING/TRIAGE

- Direct patient with flu-like symptoms to designated waiting area
- Provide instruction on respiratory hygiene/cough etiquette
- Put face mask on patient

UPON INITIAL ASSESSMENT

- Record respiratory rate over one full minute and oxygen saturation if possible
- If respiratory rate is high (>20/min. for adults) or oxygen saturation is below 90%, give oxygen and assess for presence of pneumonia (see CAP/PCAP annexes) or sepsis (see Sepsis annex)
- Record history, including flu-like symptoms, date of onset, travel, contact with people who have flu-like symptoms, co-morbidities
- Collect nasopharyngeal (NP) and oropharyngeal (OP) swab specimens
- Use N95 mask, eye protection, gown, and gloves when taking NP/OP swab
- Label specimen correctly and send as per protocol
- Order chest x-ray, CBC
- Obtain pulse oximetry reading
- Consider alternative or additional diagnoses
- Report suspected case as per protocol

INITIAL AND ONGOING PATIENT MANAGEMENT

- Supportive therapy including:
- Give oxygen to maintain oxygen saturation above 90% or if respiratory rate is elevated
 - Give paracetamol/acetaminophen as needed
 - Give appropriate antibiotic if with evidence of secondary bacterial infection (see CAP/PCAP/sepsis annexes)
 - Consider alternative or additional diagnoses

- Decide on need for antiviral (oseltamivir) based on guidelines considering contraindications and drug interactions

BEFORE PATIENT TRANSPORT/TRANSFER

- Put face mask on patient

BEFORE EVERY PATIENT CONTACT

- Put face mask
- Clean hands
- Eye protection, gown and gloves if there is risk of exposure to body fluids/splashes
- Clean and disinfect personal/dedicated patient equipment between patients
- Change gloves and clean hands between patients

IF PERFORMING AEROSOL-GENERATING PROCEDURES ALSO (e.g. intubation, bronchoscopy, CPR, suctioning)

- Allow entry of essential staff only
- Put on gown
- Put on N95
- Put on eye protection, and then put on gloves
- Perform planned procedure in an adequately ventilated room

BEFORE PATIENT ENTRY TO ISOLATION ROOM

- Post infection control signs
- Provide dedicated patients equipment, if possible
- Ensure at least 1-2 meters (3.3- 6.6 feet) between patients in cohort area

BEFORE ENTERING PATIENT'S ROOM

(Applies to health care staff and visitors as well)

- Put face mask
- Clean hands

ON LEAVING PATIENT'S ROOM

(Applies to health care staff and visitors as well)

- Remove any personal protective equipment (gloves, gown, mask, eye protection)
- Dispose of disposable items as per SOP
- Clean hands

- Clean and disinfect dedicated patient equipment and personal equipment in contact with patient
- Dispose of viral-contaminated waste as clinical waste

BEFORE DISCHARGE OF CONFIRMED OR SUSPECTED CASE

- Provide instruction and materials to patient/caregiver on respiratory hygiene/cough etiquette
- Provide advice on home isolation, infection control and limiting social contact

AFTER DISCHARGE

- Dispose of or clean and disinfect dedicated patient equipment as per SOP
- Change and launder linen without shaking
- Clean surfaces as per SOP
- Dispose of viral-contaminated waste as clinical waste

***Criteria for admission of CUO/confirmed H1N1:**
The following are indications for hospitalization among patients presenting with ILI:

1. unstable condition – dyspnea, hypoxemia, hemodynamic instability (e.g. hypotension, tachycardia), altered level of consciousness and confusion, syncope, severe dizziness etc
2. signs of sepsis and/or pneumonia (see [Annex 3](#). Management of Community Acquired Pneumonia or CAP, [Annex 4](#). Management of Pediatric CAP and [Annex 5](#). Management of Sepsis in adults and children)
3. inability to eat and/or take oral fluids
4. urgent need for work-up for alternative/additional diagnoses
5. presence of unstable/uncontrolled co-morbidities which increase the risk of severe illness - chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematologic, neurologic, or metabolic disorders (including diabetes mellitus), immunosuppression, cancer, malnutrition

ANNEX 9. POST-MORTEM CARE

Objective: Safely handle human remains during autopsy procedures to prevent transmission of pandemic (H1N1) 2009 virus.

I. Transport of Deceased Persons

1. Transport of deceased persons does not require any additional precautions when bodies have been secured in a transport bag. Hand hygiene should be performed after completing transport.
2. Standard precautions should be practiced when handling deceased persons and preparing bodies for autopsy or transfer to mortuary services.
3. Appropriate use of PPE (e.g., gowns, gloves, masks, and/or eye protection) is recommended. Hand hygiene should be performed after PPE is removed.

II. Family Contact with the Deceased

1. Direct contact with the body is discouraged; however, necessary contact may be allowed as long as hands are cleaned immediately with soap and water or alcohol-based handrub.
2. Consider limiting contact (i.e. touching, no kissing) to close family members only.

III. Autopsy Procedures

1. In general, standard precautions and safety measures consistent with any autopsy procedure should be observed when handling human remains infected with pandemic (H1N1) 2009 virus.
2. Additional respiratory protection is needed during an autopsy procedure that generates aerosols (e.g. use of oscillating saws).
3. The number of personnel participating in post mortem examinations should be limited to the minimum required.

IV. Personal protective equipment (PPE)

1. Wear standard autopsy PPE including a scrub suit worn under an impervious gown or apron, eye protection (e.g. goggles, face shield), double surgical gloves with an interposed layer of cut-proof synthetic mesh gloves, surgical mask or respirator, and shoe covers.
2. Add respiratory protection if aerosols might be generated. This includes N-95 or N-100 disposable particulate respirators or powered air purifying respirator (PAPR).
3. Remove PPE before leaving the autopsy suite and dispose in accordance with facility policies and procedures. Observe hand hygiene after removal of PPE.

V. Engineering controls

1. Whenever possible, perform autopsies on human remains infected with pandemic (H1N1) 2009 virus in autopsy settings that have an adequate air-handling system. This includes a minimum of six (old construction) to twelve

(new construction) air changes per hour (ACH), negative pressure relative to adjacent areas as per recommendations for airborne infection isolation rooms (AIIRs) and direct exhaust of air to the outside or passed through a HEPA filter if air is recirculated. Exhaust systems around the autopsy table should direct air (and aerosols) away from health care workers performing the procedure (e.g., exhaust downward). For autopsies, local airflow control (e.g. laminar flow systems) can be used to direct aerosols away from personnel; however, this safety feature does not eliminate the need for appropriate PPE.

2. Use containment devices whenever possible. Use biosafety cabinets for the handling and examination of smaller specimens. When available, use vacuum shrouds for oscillating saws to contain aerosols and reduce the volume released into the ambient air environment.
3. Protective outer garments should be removed when leaving the immediate autopsy area and discarded in appropriate laundry or waste receptacles, either in an antechamber to the autopsy suite or immediately inside the entrance if an antechamber is unavailable.
4. Hand hygiene is recommended immediately after PPE removal.

VI. Prevention of percutaneous injuries

- Follow standard safety procedures for preventing percutaneous injuries during autopsy.

ANNEX 10. TASK FORCE ON THE CLINICAL MANAGEMENT OF PANDEMIC (H1N1) 2009 INFECTION

Chair: Dr. Remigio M. Olveda

Vice-chair: Dr. Mediadora C. Saniel

Members:

PPS/PIDSP

Dr. Cynthia Aguirre
Dr. Fatima Gimenez
Dr. May Montellano
Dr. Anna Ong-Lim
Dr. Beatriz Quiambao
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Dr. Abundio Balgos
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Dr. Jodor Lim
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Dr. Yolanda Oliveros

Dr. Eric Tayag

Dr. Lyndon Lee Suy

Dr. Vito Roque

Others

Dr. Jose Emmanuel Palo

Dr. Aguedo Troy Gepte IV

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