

# PANDEMIC INFLUENZA A (H1N1) 2009



**imci**



**Pan American  
Health  
Organization**

*Regional Office of the  
World Health Organization*



# PANDEMIC INFLUENZA A (H1N1) 2009

## **Family and Community Health Healthy Life Course Project**

Washington, D.C. 2010



**Pan American  
Health  
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World Health Organization*

## **PAHO HQ Library Catalog-in-Publication**

Pan American Health Organization  
"Pandemic Influenza A (H1N1) 2009"  
Washington, D.C.: PAHO, © 2010

ISBN: 978-92-75-13091-9

### I. Title

1. INFLUENZA A VIRUS, H1N1 SUBTYPE
2. INFLUENZA HUMAN – epidemiology
3. INFLUENZA HUMAN – transmission
4. PUBLIC HEALTH
5. INFLUENZA HUMAN – virology
6. RISK FACTORS

NLM QW 168.5.07

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Pan American Health Organization  
525 Twenty-third Street, N.W.  
Washington, D.C 20037

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# PANDEMIC INFLUENZA A (H1N1) 2009

**Family and Community Health  
Healthy Life Course Project**

# TECHNICAL GROUPS

## TECHNICAL GROUP THAT PREPARED THE DOCUMENT

**Dr. Yehuda Benguigui**

Senior Adviser,  
Child and Neonatal Health  
Healthy Life Course Project  
Family and Community Health Area  
PAHO/WHO  
Washington, D.C., USA

**Dr. Carlos Aguirre Castro**

Pediatrician  
Ministry of Health  
La Paz, Bolivia

**Dra. Martha Beltrán**

Pediatrician, Intensive Care Specialist  
Clínica del Country  
Bogotá, Colombia

## TECHNICAL REVIEW GROUP

**Dr. Ricardo Fescina**

Director, Latin American  
Center for Perinatology/Women's  
and Reproductive Health  
CLAP/SMR - PAHO  
Montevideo, Uruguay

**Dr. Bremen De Mucio**

Regional Adviser on Sexual  
and Reproductive Health  
CLAP/SMR-PAHO  
Montevideo, Uruguay

**Dr. Jose Luis Díaz Rossello**

Neonatology Adviser  
CLAP/SMR  
Montevideo, Uruguay

**Dr. Reynaldo Aguilar**

PAHO/WHO consultant  
Managua, Nicaragua

**Dr. Luis Codina**

PAHO/WHO consultant  
Brasilia, Brazil

**Dr. Eitan Berezin**

Infectious Disease Specialist  
Pediatrician  
Chief, Pediatric Infectious  
Disease Section  
Hospital de la Santa Casa  
de Misericordia de Sao Paulo  
São Paulo, SP, Brazil

**Dr. Gerardo Cabrera-Meza**

Pediatrician, neonatologist  
Texas Children's Hospital  
Baylor College of Medicine  
Houston, TX, USA

**Dra. María José Castro**

Pediatrician  
Ministry of Health  
Caracas, Venezuela

**Dr. Rolando Cerezo Mullet**

Pediatrician, Neonatologist  
INCAP-PAHO/WHO  
Guatemala

**Dr. Pedro Marte**

Pediatrician, Neonatologist  
Hospital de La Altagracia  
Santo Domingo, Dominican Republic

**Dra. Maritza Romero**

PAHO/WHO consultant  
Republic of Panama

**Dr. Bernardo Sánchez**

PAHO/WHO consultant  
Asunción, Paraguay

**Dr. Oscar Suriel**

Consultor OPS/OMS  
Quito, Ecuador

**Dr. Walter Torres Izquierdo**

Pediatrician  
Ministry of Health  
Quito, Ecuador

**Dr. Miguel Dávila D.**

Pediatrician  
PAHO/WHO consultant  
Lima, Peru

**Dr. Carlos Gracioso**

Pediatrician, Infectious  
Diseases Specialist  
Guatemala

**Dr. Francisco Martinez-Guillén**

Pediatrician, Neonatologist  
PAHO/WHO Regional Consultant  
Managua, Nicaragua

**Dra. Martha Mejía**

PAHO/WHO consultant

**Dra. Cleila Valverde**

Pediatrician  
Ministry of Health  
Managua, Nicaragua



## ACKNOWLEDGMENTS

**Dra. Martha Beltrán,**  
who was responsible for editing the  
entire manual.

**Dr. Carlos Aguirre Castro,**  
for his contribution to the biosafety  
aspects of the manual and the plan  
for daycare centers.

**Dr. Rolando Cerezo,**  
who was responsible for reviewing, as  
well as proofreading and final correction,  
of the document.

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## ACRONYMS

<b>ARI</b>	Acute Respiratory Infections
<b>CNS</b>	Central Nervous System
<b>IMCI</b>	Integrated Management of Childhood Illness
<b>PAHO</b>	Pan American Health Organization
<b>WHO</b>	World Health Organization



## PREFACE



**Dra. Gina Tambini**

**P**andemic influenza A (H1N1) 2009 is a highly contagious respiratory disease caused by one of the swine influenza A viruses. Transmission to humans is uncommon; it can, however, occur through contact with infected pigs or an environment contaminated with swine flu viruses. Once humans are infected, they transmit the virus from person to person just as they do seasonal influenza viruses.

Since the spring of 1977, two subtypes of the influenza A virus (H3N2 and H1N1) have been causing seasonal infection in the human population. Preliminary reports indicate that this new strain causes symptomatic disease in younger populations just as the seasonal strains of H1N1 do.

During March and early April 2009, several areas in Mexico experienced a dramatic increase in the number of patients with flu-like illness. On 23 April, the causative virus was confirmed as being influenza A (H1N1) of swine origin. Cases then began to multiply and appear elsewhere, first in the United States and, sporadically, other countries, and then on a larger scale in the rest of the world. In June, the WHO raised the pandemic alert level to phase 6, which indicates a global pandemic, as the infection was found to be very widespread in North America and as far afield as Australia, the United Kingdom, Argentina, Chile, Spain, and Japan. On 1 September, WHO reported that influenza A (H1N1) infection had been confirmed in more than 200,000 people in more than 100 countries, and that at least 2,185 deaths had been confirmed.

Since September 2009, the virus responsible for the influenza A (H1N1) 2009 epidemic has continued to be the dominant virus circulating worldwide. Although a lull has been reported in South America and part of Australia, the disease is still circulating in tropical countries, and WHO recommends that countries in the Northern Hemisphere prepare for a second wave of the pandemic—that is, increased transmission of the pandemic H1N1 virus.

To date, the virus has not mutated, nor has the severity of the illness it causes increased; however, as transmission rates increase, so too will the number of severe cases requiring hospitalization and, possibly, intensive care, which could put a great deal of pressure on health systems. Currently, the virus tends to cause high morbidity but low mortality.

The spread of pandemic influenza A (H1N1) 2009 in affected countries and to others is unstoppable, which means that we should prepare to mitigate the impact of the pandemic by means of the following interventions: a) identifying populations at greater risk of disease and death, b) reducing the number of deaths by treating cases of acute respiratory illness and pneumonia, c) reducing the spread of the disease, d) continuing to provide essential services, and e) planning and coordinating efforts with other agencies or interinstitutional groups.

Management protocols that have been actively developed and promoted by the ministries of health of some Latin American countries are currently available, but at the regional level, there is no generic instrument proposing guidelines that health teams—in healthcare facilities as well as the community—can become familiar with and apply in the management of patients under 5 years of age with pandemic influenza A (H1N1) 2009.

Thanks to its methodology and approach to health issues, the Integrated Management of Childhood Illness (IMCI) Strategy has been able to support a reduction in several illnesses that are prevalent in certain countries. Influenza A (H1N1) 2009 is a universal pandemic that is affecting most of the countries in the region to a different extent and with different case fatality rates. Using IMCI algorithms, the Pan American Health Organization has prepared the following manual, which contains protocols and procedure tables for use by medical teams in the diagnosis, management and treatment of affected patients. Special emphasis is also placed on preventive measures aimed at preventing the spread of the disease among healthcare workers, patients, and children exposed at schools or daycare centers.

**Dra Gina Tambini**

Area Manager  
Family and Community Health  
Pan American Health Organization/  
World Health Organization  
Washington, D.C.

*(IMCI) Strategy has been able to support a reduction in several illnesses that are prevalent in certain countries.*



# 1. INTRODUCTION



Photo: Photos.com

*As symptoms are nonspecific, it can be difficult to determine whether a person has seasonal or pandemic flu on the basis of symptoms alone.*

**S**easonal influenza viruses can cause disease in the fall or winter, even while outbreaks of the (H1N1) 2009 virus are occurring. Although the severity, amount, and spread of the disease that pandemic and seasonal influenza will cause in the coming years is uncertain, as in any flu season, some people will require medical care as a result of the infection or its complications.

Symptoms of the flu, including pandemic influenza A (H1N1) 2009, can include fever, cough, sore throat, nasal discharge, body aches, headache, chills, fatigue, nausea, diarrhea, and vomiting. As symptoms are nonspecific, it can be difficult to determine whether a person has seasonal or pandemic flu on the basis of symptoms alone. Nevertheless, in most cases, clinical management decisions—particularly for outpatients—can be made according to clinical and epidemiological information, or by following IMCI algorithms on the basis of sensitivity and/or specificity.

In general, the incubation period of influenza is estimated to range from 1 to 4 days, with an average of 2 days. Flu virus shedding begins on the day before the onset of illness and can persist for 5 to 7 days, although some people, such as young children and the severely immunocompromised, can shed the virus for longer periods. The amount of virus shed is greatest on the second and third day of disease, and is correlated with fever, with greater amounts of virus being shed when body temperatures are at their highest.

The pandemic influenza A (H1N1) 2009 virus appears to be transmitted from person to person through close contact, as are other flu viruses. Although the relative contribution of each mode is uncertain, the flu virus can potentially be transmitted through:

- ▶ Exposure of mucosa (in the nose, mouth, and eyes) to droplets spread in respiratory secretions from coughs or sneezes
- ▶ Contact, usually of the hands, with an infected patient or a surface contaminated with secretions, followed by self-inoculation of the virus by touching oneself or rubbing mucous surfaces (in the nose, mouth, and eyes)

- ▶ Small particles disseminated in the vicinity of the infected individual

All respiratory secretions and bodily fluids, including the diarrhea of patients with pandemic influenza A (H1N1) 2009, are considered potentially infectious.

Health facilities should use certain protocols to prevent the exposure of their personnel and patients, as well as prevent transmission within the healthcare environment, adopting the following measures (in order of importance):

**Elimination of potential exposure:** eliminating potential sources of contact. Examples of interventions in this category include: minimization of outpatient visits for patients with mild flu-like illness and no risk factors for complications; postponing elective visits for patients with presumed or confirmed influenza until they are no longer infectious; and denying entry to visitors who are sick.

**Administrative controls:** administrative controls are necessary work practices and policies that prevent exposure. Examples of these controls include: promoting and providing vaccination; enforcing sick leave for staff members who are ill; and setting up triage stations in separate areas for patients who present to the emergency department with flu-like illness; and proper management of patient flow and personnel assignments.

**Personal protective equipment:** this is the last line of individual defense against risks that cannot otherwise be eliminated or controlled. Protective equipment is effective only if worn throughout periods of potential exposure and if used properly and kept in good working order.

*All respiratory secretions and bodily fluids, including the diarrhea of patients with pandemic influenza A (H1N1) 2009, are considered potentially infectious.*

## 2. DEFINITIONS



Photo: J. Hubschmang

*As symptoms are nonspecific, it can be difficult to determine whether a person has seasonal or pandemic flu on the basis of symptoms alone.*

### 1. Suspected case of Pandemic influenza A (H1N1) 2009:

- ▶ Clinicians should consider the possibility of influenza A (H1N1) virus infection in patients who present with acute febrile respiratory illness. The criteria proposed by the Centers for Disease Control and Prevention (CDC) for suspected influenza A (H1N1) are:
  - Acute onset of febrile respiratory illness within 7 days of direct contact with a person confirmed as being infected by the influenza A (H1N1) virus
  - Acute onset of febrile respiratory illness within 7 days of travel to a community where cases of influenza A (H1N1) have been confirmed
  - Acute febrile respiratory illness in a person who resides in a community where there has been at least one confirmed case of influenza A (H1N1)

### 2. Probable case of Pandemic influenza A (H1N1) 2009:

- ▶ Suspected case with a positive laboratory result for non-subtypable influenza A

### 3. Confirmed case of Pandemic influenza A (H1N1) 2009:

- ▶ Suspected case with laboratory confirmation by one of the following tests: real-time RT-PCR or viral culture

### 3. ASSESSMENT OF PANDEMIC INFLUENZA A (H1N1) IN CHILDREN AGED 2 MONTHS TO 4 YEARS

**N**ovel (H1N1) virus infection is an infectious disease produced by a new subtype of influenza virus. Precisely because it is a novel virus, we have no immunity against it.

Person-to-person transmission is mostly airborne, through droplets of saliva and nasal secretion that are expelled on coughing, speaking, and sneezing. These respiratory droplets can remain on the hands or surfaces, or may be dispersed in the air. As a result, the virus can be transmitted on touching the eyes, nose or mouth after touching surfaces on which the respiratory secretions of an infected person have been deposited. It is not transmitted through the consumption of pork or pork products.

Influenza A (H1N1) virus infection may present in highly diverse forms, ranging from mildly symptomatic infection to complicated illness—possibly including exacerbation of coexisting diseases—to severe viral pneumonia with multiple organ failure.

Patients can present with symptoms of uncomplicated illness, such as fever, cough, sore throat, runny nose, headache, muscle pain, and malaise, without any respiratory compromise such as difficulty breathing or dyspnea. Patients may have all or only some of these symptoms. In addition, children will frequently present with gastrointestinal symptoms such as diarrhea and/or vomiting, although usually without dehydration.

Another group of patients presents with severe or complicated disease, with difficulty breathing, dyspnea, tachypnea, labored breathing or hypoxia, and/or radiological signs of lower respiratory illness such as pneumonia. Other manifestations may also be present, such as encephalopathy, severe dehydration, or secondary complications such as renal failure, multiple organ failure, and septic shock.

The course of the disease may also be complicated by exacerbation of certain preexisting illnesses, such as asthma, chronic obstructive pulmonary disease, liver or renal failure, diabetes, or cardiovascular conditions.

*All respiratory secretions and bodily fluids, including the diarrhea of patients with pandemic influenza A (H1N1) 2009, are considered potentially infectious.*



Some patients will initially present with an uncomplicated clinical syndrome that can progress to more severe disease. Progression is usually rapid, and these patients are at high risk for complications and death; hence the importance of timely detection of deterioration, which is manifested by:

- ▶ Signs and symptoms suggestive of deteriorating oxygenation and cardiopulmonary insufficiency:
  - Short, quick breaths, difficult breathing, cyanosis, bloody sputum, chest pain, and hypotension
  - Rapid, labored breathing (in children)
  - Hypoxia, as measured by pulse oximetry (<92%)
- ▶ Signs and symptoms suggestive of CNS complications:
  - Altered mental status, drowsiness, difficult arousal or unconsciousness, recurrent or persistent seizures, confusion, severe weakness or paralysis
- ▶ Evidence of sustained viral replication or secondary invasive bacterial infection:
  - Based on laboratory testing or clinical signs, such as persistent high fever and other symptoms, after 3 days of disease progression
- ▶ Severe dehydration:
  - Prostration, weakness, reduced urinary output, or lethargy

All of these clinical signs, as well as the marked differences in severity of pandemic influenza A

(H1N1) 2009, can be classified in an algorithm to guide decision-making in the outpatient health services environment.

All patients who visit the health services, whether or not they present symptoms, should be asked the following questions:

### **DOES THE CHILD HAVE SUDDEN-ONSET FEVER AND COUGH?**

All studies published so far on children with pandemic influenza A (H1N1) 2009 show that its main symptoms, found in 90 to 100% of cases, are fever and cough. Unlike other respiratory illnesses in which these same symptoms are found, pandemic flu is characterized by high fever of sudden onset with concurrent cough.

A child whose mother claims was well and suddenly developed a high fever and cough probably has pandemic influenza A (H1N1) 2009, and assessment and classification should proceed.

#### **? ASK: For how long?**

- ▶ Pandemic influenza A (H1N1) 2009 is an acute disease characterized by rapid onset of symptoms and usually resolves completely within 7 to 14 days of symptom onset, which means that the natural history of the disease is of the utmost importance for ruling out other diagnoses. Determining the time elapsed since symptom onset is most important for determining treatment, because antiviral drugs are most effective when used in the first 48 hours after onset of illness.

**? ASK: Over the past week, did the child come into contact with someone who had the flu?**

- ▶ The incubation period ranges from 1 to 7 days after infection with the virus; therefore, a history of recent contact with a flu patient helps arouse suspicion of the disease.

**? ASK: Have you noticed that the child's condition has rapidly worsened?**

- ▶ A rapid worsening of symptoms is indicative of poor prognosis, and is a valuable indicator for medical personnel. A sudden, rapid deterioration in clinical condition usually presents between the fifth and sixth day after symptom onset. It is characterized by the presence of viral pneumonia, which destroys pulmonary tissue and is unresponsive to antibiotics; multiple other organs are affected, including the heart, kidneys, and liver.

**? ASK about general warning signs**

- ▶ Early in the assessment, you determined whether the child had any general warning signs (inability to drink or nurse, inability to keep anything down, seizures, lethargy or unconsciousness). As in any other disease, the presence of a general warning sign in pandemic flu means the child is in serious condition and requires emergency care, possibly in an intensive care unit.

**🔍 OBSERVE AND DETERMINE WHETHER: the child appears seriously ill**

- ▶ The ability to distinguish a child with severe

disease from one that has only a mild infection depends largely on the training and experience of the physician or health professional. Evaluating the appearance of the child in order to determine whether it is in poor condition provides a very important possibility of detecting severe disease. A child should be considered seriously ill when it presents one or more of the following signs: feeble crying or moaning; pale, cyanotic, mottled, or ashen skin; clammy skin; dry mucous membranes; sunken eyes; masklike, expressionless face; or altered consciousness.

**🔍 OBSERVE AND DETERMINE WHETHER: the child has rapidly worsened**

- ▶ The course of the disease is an important parameter to consider as a warning sign of an unfavorable progression. When rapid deterioration of the patient's overall condition is observed or when difficulty breathing worsens, the healthcare professional should act immediately and recognize that the patient will require management in an intensive care unit. Patients who die of pandemic influenza A (H1N1) usually deteriorate rapidly.

**🔍 OBSERVE AND DETERMINE WHETHER: the child is breathing rapidly**

- ▶ In order to decide whether the child is breathing too rapidly, count how many breaths he or she takes in one minute. The child should be still and quiet in order to allow observation and auscultation. Once you have counted the number of breaths, decide whether breathing is too fast:

IF THE CHILD'S AGE IS	HE OR SHE IS BREATHING TOO QUICKLY IF YOU COUNT:
0 to 2 months	60 or more breaths/min
2 to 11 months	50 or more breaths/min
2 to 5 years	40 or more breaths/min



### **OBSERVE AND DETERMINE WHETHER: the child has subcostal retraction**

- ▶ Subcostal retraction is defined as indrawing of the lower chest wall; this is the retraction seen below the costal margin and indicates use of the abdominal muscles and diaphragm in a child with difficulty breathing. Suprasternal and xiphoid retraction occurs in children with greater obstruction of the airway or severe respiratory compromise; it is highly infrequent, and usually occurs in those who are severely ill. Observe the lower chest wall during inspiration and determine whether the child is exhibiting subcostal retraction.



### **OBSERVE AND DETERMINE WHETHER: O<sub>2</sub> saturation is < 92% (when possible)**

- ▶ Pulse oximetry has become the fifth vital sign in pediatrics. Its importance lies in that it provides a quick and reliable indicator of the patient's oxygenation. It does have some limitations: it requires good perfusion for proper operation, does not properly record when the patient's limbs are cold, is unreliable in the presence of carboxyhemoglobin or methemoglobin, and does not provide data if the child is in shock or a state of hypoperfusion. If a pulse oximeter is

available, oxygen saturation values should be determined to decide whether they are normal or low, that is, below 92%.



### **DETERMINE WHETHER RISK FACTORS ARE PRESENT**

- ▶ A certain group of children is at increased risk of experiencing a more severe form of the disease, which entails the need for additional treatment measures. Approximately 70% of people hospitalized with influenza A (H1N1) 2009 have one of the following high-risk factors:
  - Age between 0 and 24 months
  - Difficult access to health services
  - Chronic lung disease, including asthma
  - Heart disease
  - Kidney or liver disease
  - Neurological or neuromuscular disease
  - Diabetes or other metabolic diseases
  - Immunosuppression, including neoplastic disease and HIV
  - Chronic malnutrition and obesity
  - Diseases that require chronic steroid treatment
  - Minority subgroups, such as indigenous population or displaced persons

By inquiring as to previous medical history, the age of the patient, the population group to which he or she belongs, or the possibility of access to health services as determined by social, geographical, or economic status or service delivery conditions, you can determine whether any important risk factor is present that could pose an additional risk to the child.

The presence of these conditions can have a significant influence on the severity of a pandemic; thus, family and community protection measures should be maximized in this population.

Table 1 shows how to assess the child that presents with: **fever and cough of sudden onset:**

**TABLE 1.** How to assess a child that presents with fever and cough of sudden onset

<b>IF THE ANSWER IS YES, ASK:</b>	<b>OBSERVE:</b>
<ul style="list-style-type: none"> <li>● How long?</li> <li>● Over the past week, has he/she had any contact with someone who had the flu?</li> <li>● Have you noticed a sudden turn for the worse?</li> <li>● Ask about warning signs:               <ul style="list-style-type: none"> <li>– Can the child drink or nurse?</li> <li>– Is the child unable to keep anything down?</li> <li>– Has the child had seizures?</li> <li>– Is the child unusually drowsy or difficult to arouse from sleep?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>–Whether the child appears ill</li> <li>–Whether the child has worsened rapidly</li> <li>–Whether the child is breathing rapidly</li> <li>–Whether subcostal retraction is present</li> <li>–Determine if O<sub>2</sub> saturation is &lt; 92% (when possible)</li> </ul> <p><b>DETERMINE WHETHER RISK FACTORS ARE PRESENT</b></p>



## 4. CLASSIFICATION OF CHILDREN WITH SUDDEN-ONSET FEVER AND COUGH

**T**here are three possible classifications for guiding decision-making after assessing a child with sudden-onset fever and cough. These are risk classifications, not diagnostic ones:

- ▶ SEVERE PANDEMIC FLU
- ▶ PANDEMIC FLU WITH A RISK FACTOR
- ▶ PANDEMIC FLU

### 4.1 SEVERE PANDEMIC FLU

All children who present with one of the following signs:

- A general warning sign
- Appears seriously ill
- Has rapidly worsened
- Rapid breathing
- Chest indrawing
- Oxygen saturation <92%

Should be classified as **SEVERE PANDEMIC FLU**

Remember, you are classifying, not diagnosing; not all children classified under SEVERE PANDEMIC FLU will actually have the disease, however, all will have a serious, acute respiratory illness that warrants URGENT referral to a higher-complexity healthcare facility for management.

Before referring the child to the hospital, you should stabilize it, provide fluids and, if possible, start oxygen, fever management, and the following drugs: the first dose of a recommended antiviral agent and the first dose of a recommended antibiotic.

*All children who present with sudden-onset fever and cough of less than 48 hours' duration and one of the aforementioned risk factors should be classified as PANDEMIC FLU WITH A RISK FACTOR.*

## 4.2 PANDEMIC FLU WITH A RISK FACTOR

All children who present with sudden-onset fever and cough of less than 48 hours' duration and one of the aforementioned risk factors should be classified as **PANDEMIC FLU WITH A RISK FACTOR**.

These patients will be managed on an outpatient basis: parents will be educated about the course of the disease, the warning signs that should prompt immediate return to the health service, and when to return for follow-up. Fever management and administration of a recommended antiviral agent will also be instituted.

## 4.3 PANDEMIC FLU

All children who present with fever and cough of

sudden onset and do not meet the criteria for either of the previous classifications shall be classified as **PANDEMIC FLU**.

These patients can be managed on an outpatient basis, treating fever and discomfort and explaining to their parents the course of the disease, epidemiological measures to be taken, and when to return to the health services for follow-up or, on an urgent basis, because the child has worsened.

Table 2 summarizes the signs, classification, and treatment recommendations mentioned above. Remember that the classifications are placed in different-colored rows according to severity and treatment recommendations: red for the severe classification, which mandates urgent referral to a hospital; yellow for the moderate classification, which mandates outpatient treatment and monitoring; and green for the classification that requires only home care recommendations.

**Table 2.** How to assess, classify and treat a child with suspected pandemic flu

ASSESS	CLASSIFY	TREAT
One of the following: <ul style="list-style-type: none"> <li>▶ Any general warning sign or</li> <li>▶ Appears ill, or</li> <li>▶ Has worsened rapidly, or</li> <li>▶ Rapid breathing, or</li> <li>▶ Chest indrawing, or</li> <li>▶ Oxygen saturation &lt;92%</li> </ul>	<b>SEVERE PANDEMIC FLU</b>	<ul style="list-style-type: none"> <li>▶ Begin antiviral treatment (oseltamivir) as soon as possible</li> <li>▶ Administer first dose of ampicillin or amoxicillin</li> <li>▶ Treat fever with paracetamol (do not use aspirin)</li> <li>▶ Administer oxygen</li> <li>▶ Biosafety measures</li> <li>▶ URGENT hospital referral, following stabilization and transport recommendations</li> </ul>
Onset of fever and cough less than 48 hours, plus one risk factor	<b>PANDEMIC FLU WITH RISK FACTORS</b>	<ul style="list-style-type: none"> <li>▶ Begin antiviral treatment (oseltamivir) as soon as possible</li> <li>▶ Treat fever with paracetamol (do not use aspirin)</li> <li>▶ Explain to the mother warning signs that should prompt immediate return</li> <li>▶ Explain home care to the mother Follow-up appointment in 2 days</li> <li>▶ Follow national epidemiological surveillance recommendations</li> </ul>
Does not meet the criteria for classification under either of the above categories	<b>PANDEMIC FLU</b>	<ul style="list-style-type: none"> <li>▶ Treat fever with paracetamol (do not use aspirin)</li> <li>▶ Explain to the mother warning signs that should prompt immediate return</li> <li>▶ Explain home care to the mother</li> <li>▶ Follow-up appointment in 2 days if fever persists</li> <li>▶ Follow national epidemiological</li> </ul>

**Luis is a 3-year-old boy who has been taken to the health service by his mother because of fever. The healthcare professional asks the mother what is wrong with Luis and she answers that, until three days ago, he was completely healthy; that afternoon, he developed high fever, which has been very difficult to control, and a dry cough, as well as serious malaise. As there have been cases of pandemic flu in the city and the presenting complaint is consistent with pandemic flu, the physician decides to assess as follows:**

- ▶ **YOU ASK:** *When did Luis start feeling ill?*  
Three days ago, doctor, answers the mother.
- ▶ *Did Luis come into contact with anyone who had the flu over this past week?* The mother replies that she doesn't know; everyone at home is healthy, but Luis attends kindergarten and many children there have had respiratory illnesses.
- ▶ *Have you noticed a sudden turn for the worst?* The mother replies that, today, she has noticed he seems more listless, although, actually, when he has a fever he gets quite listless, but gets better when the temperature comes down.
- ▶ *You have already asked about general warning signs and Luis has received water and juice. His appetite is decreased, but he*

*is tolerating fluids well; he has vomited once due to cough, but not with each coughing fit; he has not had seizures and, although quite prostrated, is easily awakened.*

The healthcare professional asks the mother to lift up Luis's shirt so he can measure his breathing, and counts 52 breaths per minute. There are no subcostal retractions and the child's overall aspect is not worrisome; although ill, he is in fair condition. Pulse oximetry is available at this particular service, and Luis's saturations are measured as 88% on room air.

The healthcare worker decides to take a risk factor-based approach to assessment: Luis has no history of previous illnesses and has never been hospitalized, and his mother is able to return to the health service in case Luis worsens. Here are Luis's data as entered into the case history form:

DOES THE CHILD HAVE SUDDEN-ONSET FEVER AND COUGH?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	CLASSIFY AS
<ul style="list-style-type: none"> <li>● For how long? <u>3</u> days</li> <li>● Was there any contact with anyone who had the flu in the last week? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></li> <li>● Has rapid worsening been noted? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/></li> <li>● Is any risk factor present? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Which? _____</li> </ul>	<ul style="list-style-type: none"> <li>General warning signs</li> <li>Appears seriously ill</li> <li>Has worsened rapidly</li> <li>Breaths/min <u>52</u> Fast breathing</li> <li>Subcostal retractions</li> <li>Oxygen saturation <u>88</u>% Desaturation &lt;92%</li> </ul>	<p><b>SEVERE PANDEMIC FLU</b></p> <p><b>PANDEMIC FLU WITH RISK FACTORS</b></p> <p><b>PANDEMIC FLU</b></p>

The health professional found that Luis met the criteria for classification as a case of SEVERE PANDEMIC FLU, as he showed signs of difficulty breathing and required supplemental oxygen. Thus, he referred Luis to a higher-complexity health facility

for hospitalization, began managing the fever with paracetamol, administered the first dose of ampicillin and the first dose of oseltamivir. The health professional explained to the mother the risks of the disease and his reasons for referring the child.

# EXERCISES



## CASE 1:

Ricardo is 6 months old and his mother has taken him to the health services because he has a cold.

The health professional asks the mother whether Ricardo has had a fever and cough, and the mother says “yes.” He asks how the disease began, and the mother replies that yesterday afternoon, Ricardo felt very hot to the touch and began to cough; the health professional asks whether Ricardo had been ill, and the mother replies that he was perfectly fine.

The health professional inquires as to the possibility of pandemic flu. Upon questioning, the mother reports that Ricardo’s father had been sick with the flu for the past five days, and the entire family got sick two days later; the last was Ricardo, who got sick yesterday. He does not appear seriously ill, is eating properly, and has not vomited; he has not had any seizures, and is awake and active. All that concerns you is his high fever and the fact that his father was quite ill and spent four days bedridden at home.

Ricardo has been eating properly, is nursing and eating soup, and has not had any seizures. Physical examination shows that Ricardo appears well, has a rosy complexion, is active, and does not show signs of difficulty breathing or chest indrawing; the respiratory rate is 38 breaths per minute. Pulse oximetry is not available at this service.

*Classify Ricardo’s disease, using the registration form provided below:*

DOES THE CHILD HAVE SUDDEN ONSET FEVER AND COUGH?	YES <input type="checkbox"/> NO <input type="checkbox"/>	CLASSIFY AS
<ul style="list-style-type: none"> <li>For how long when? _____ days ago</li> </ul>	General warning signs	<b>GSEVERE PANDEMIC FLU</b>
<ul style="list-style-type: none"> <li>Was there any contact with anyone who had the flu in the last week?</li> </ul>	Appears seriously ill	
<ul style="list-style-type: none"> <li>Has rapid worsening been noted?</li> </ul>	Has worsened rapidly	<b>PANDEMIC FLU WITH RISK FACTORS</b>
<ul style="list-style-type: none"> <li>Is any risk factor present?</li> </ul>	Breaths/min _____ fast Breathing	
<ul style="list-style-type: none"> <li>Which? _____</li> </ul>	TSubcostal retractions	<b>PANDEMIC FLU</b>
	Oxygen saturation _____ % Desaturation <92%	

① How should Ricardo’s illness be classified?

② Which treatment plan should be followed?



## CASE 2

Gabriela is 4 years old. Her mother takes her to the health service because of a 5-day history of difficult-to-control high fever and a cough, which has persisted and worsens at night.

The health professional asks the mother how the disease began, and she explains that, all of a sudden, the patient got sick; the patient's aunt, who takes care of her, had previously become ill as well, and was hospitalized with the new flu mentioned on the TV. The mother has noted neither worsening nor improvement; cough and fever have remained unchanged since the onset of illness.

The physician asks whether Gabriela has had any diseases before, and the mother replies that she has asthma, with an attack occurring every two months. Many of these attacks have required hospitalization, and, on two occasions, management in intensive care. Gabriela has not had any other disease.

On examination, the health professional finds Gabriela active, playing in the physician's office. She has a rosy complexion, is drinking juice, and has not vomited. She appears well. Examination for signs of difficulty breathing shows a respiratory rate of 32 breaths/min, no subcostal retractions, oxygen saturation of 94% on room air and no episodes of wheezing; the only signs are frequent episodes of dry cough and mild dysphonia.

*The section of Gabriela's case history form that concerns pandemic flu is shown below:*

DOES THE CHILD HAVE SUDDEN-ONSET FEVER AND COUGH?	YES <input type="checkbox"/> NO <input type="checkbox"/>	CLASSIFY AS
<ul style="list-style-type: none"> <li>For how long when? _____ days ago</li> </ul>	General warning signs	<b>GSEVERE PANDEMIC FLU</b>
<ul style="list-style-type: none"> <li>Was there any contact with anyone who had the flu in the last week?</li> </ul>	Appears seriously ill	
<ul style="list-style-type: none"> <li>Has rapid worsening been noted?</li> </ul>	Has worsened rapidly	<b>PANDEMIC FLU WITH RISK FACTORS</b>
<ul style="list-style-type: none"> <li>Is any risk factor present?</li> </ul>	Breaths/min _____ fast Breathing	
<ul style="list-style-type: none"> <li>Has rapid worsening been noted?</li> </ul>	Subcostal retractions	<b>PANDEMIC FLU</b>
<ul style="list-style-type: none"> <li>Is any risk factor present?</li> </ul>	Oxygen saturation _____ % Desaturation <92%	
<ul style="list-style-type: none"> <li>Is any risk factor present?</li> </ul>	<ul style="list-style-type: none"> <li>YES <input type="checkbox"/> NO <input type="checkbox"/> Which?</li> </ul>	

① How should Gabriela's illness be classified?

② Which treatment plan should be followed?



## 5. TREATMENT OF CHILDREN WITH SUDDEN-ONSET FEVER AND COUGH

**T**he sections above described the possible classifications for a child with sudden-onset fever and cough according to assessment findings. Based on these procedures, a child with sudden-onset fever and cough can be classified as having:

- ▶ SEVERE PANDEMIC FLU
- ▶ PANDEMIC FLU WITH RISK FACTORS
- ▶ PANDEMIC FLU

This section presents indicated TREATMENT regimens for each classification.

### 5.1 TREATMENT OF CHILDREN CLASSIFIED AS HAVING SEVERE PANDEMIC FLU

The child classified as having SEVERE PANDEMIC FLU should be referred urgently to a higher-complexity health facility, adhering to stabilization and patient transport standards. Begin antiviral treatment with oseltamivir, administer the first dose of a recommended antibiotic, treat fever, administer oxygen, and follow biosafety measures.

- Antiviral treatment

Empirical antiviral treatment is recommended for all children with suspected or confirmed pandemic influenza A (H1N1). Treatment should start as soon as possible, because early administration of antivirals – within the first 48 hours of disease onset – has been shown to provide greater benefits and decrease the risk of acute illness and death. Nonetheless, some studies of hospitalized patients have shown benefits, including a reduction in mortality and length of hospital stay, even when treatment is started more than 48 hours after disease onset.

One should not await laboratory confirmation of influenza to begin treatment, because tests can delay timely treatment and a negative result does not rule out the disease. The sensitivity of rapid tests for the detection of influ-

enza A (H1N1) 2009 ranges from 10 to 70%. Confirmatory testing with real-time reverse-transcription polymerase chain reaction (rRT-PCR) should be prioritized for children with suspected or confirmed influenza who require hospitalization.

The influenza A (H1N1) virus that has been circulating since 2009 is sensitive to *oseltamivir* and *zanamivir*, but resistant to *amantadine* and *rimantadine*. The vast majority of healthy children with suspected or confirmed influenza A (H1N1) 2009 or who present with an uncomplicated febrile condition will not require antiviral treatment--only those classified as having SEVERE PANDEMIC FLU or PANDEMIC FLU WITH RISK FACTORS.

Table 3 shows the recommended *oseltamivir* dosage regimens for the treatment of children:

**Table 3.** Antiviral treatment with oseltamivir in children according to age and weight

ANTIVIRAL TREATMENT WITH OSELTAMIVIR		
Age	Weight (kg) or (lbs.)	Dose for 5 days
Less than 3 months		12 mg twice a day
3–5 months		20 mg twice a day
6–11 months		25 mg twice a day
	≤ 15 kg or ≤ 33 lbs.	30 mg twice a day
	> 15 to 23 kg or 33 to 51 lbs.	45 mg twice a day
	> 23 to 40 kg or 51 to 88 lbs.	60 mg twice a day
	> 40 kg or 88 lbs.	75 mg twice a day

- Antibiotic treatment

In addition to antiviral treatment, children classified as having SEVERE PANDEMIC FLU should also start to receive an antibiotic, due to the high frequency of viral and bacterial coinfection or bacterial superinfection in patients with viral disease, and also – and perhaps most importantly – due to the difficulty in distinguishing viral and bacterial etiology in children.

*Ampicillin* or are the antibiotics of choice for children with an infectious process of the lower respiratory tract, such as pneumonia. The route of administration depends on the overall status of the patient and on the availability of an intravenous route for administration of ampicillin. If the patient tolerates oral administration well, the antibiotic of choice is *amoxicillin* (Table 4).

**Table 4.** Antibiotic treatment for the child with severe pandemic flu according to weight

ANTIBIOTIC TREATMENT FOR THE CHILD WITH SEVERE PANDEMIC FLU				
Weight (kg)	AMPICILLIN 50 mg/kg/dose intravenous route	AMOXICILLIN 30 mg/kg/dose every 8 hours, oral route		
		Mg/dose	250mg/5ml	500mg/5ml
4 – 6 kg	250 mg every 6 hours	150 mg	3 ml	1.5 ml
7 – 9 kg	400 mg every 6 hours	250 mg	5 ml	2.5 ml
10 – 12 kg	550 mg every 6 hours	350 mg	7 ml	3.5 ml
13 – 15 kg	700 mg every 6 hours	450 mg	9 ml	4.5 ml
16 – 18 kg	800 mg every 6 hours	500 mg	10 ml	5 ml
19 – 21 kg	1000 mg every 6 hours	600 mg	12 ml	6 ml
22 – 24 kg	1100 mg every 6 hours	700 mg	14 ml	7 ml
25 – 27 kg	1250 mg every 6 hours	800 mg	16 ml	8 ml
28 – 30 kg	1500 mg every 6 hours	900 mg	18 ml	9 ml

- Treatment of fever

The main symptom in children with PANDEMIC INFLUENZA A (H1N1) 2009 is fever, usually high and difficult to manage, which makes it the most important concern for the parents and, usually, the reason for seeking medical care. Fever is also the symptom that most causes discomfort in children; hence the importance of its treatment, both in patients who will be referred and in those who will be managed on an outpatient basis.

*Paracetamol* is the drug of choice for the control of fever and pain caused by the disease. In addition to fever, children will often have multiple aches and pains, such as sore throat, headache, and myalgia (Table 5).

**Note:** *Speaking of antipyretics, remember that aspirin is contraindicated, and its use should be prohibited due to the risk of liver damage secondary to Reye's syndrome.*

**Table 5.** Treatment of fever and pain with paracetamol according to weight

TREAT FEVER AND PAIN WITH PARACETAMOL 12 TO 15 MG/KG/DOSE, REPEAT EVERY 6 HOURS		
Weight (kg)	DROPS 100 mg/ml	SYRUP 150 mg/ 5 ml
4 – 6 kg	20 drops	2.5 ml
7 – 9 kg	35 drops	4 ml
10 – 12 kg	45 drops	5.5 ml
13 – 15 kg	55 drops	7 ml
16 – 18 kg	70 drops	8.5 ml
19 – 21 kg	80 drops	10 ml
22 – 24 kg	95 drops	11.5 ml
25 – 27 kg	105 drops	13 ml
28 – 30 kg	120 drops	14.5 ml

- Oxygen administration

All children with severe respiratory symptoms should be started on oxygen, if it is available. Oxygen is the best drug for children with breathing difficulty, in whom achieving adequate oxygenation is a life-saving intervention. There is no ideal method for providing oxygen, nor is any method better than others. The route of administration depends on the availability of equipment, the child's tolerance of the method, and the concentration required.

The methods recommended for initial oxygen administration are the nasal cannula, the nasal catheter, and the nasopharyngeal catheter. The nasal cannula is the best method in younger infants and children, especially those with paroxysmal cough, as the other methods can induce coughing fits. The nasal cannula does not require oxygen humidification and, in infants and young children, can provide a maximum flow of 0.5 to 1.0 L/minute.

Other equally useful methods are the oxygen hood and face mask, which can provide higher

concentrations of oxygen, with the drawbacks of being uncomfortable and easy for the child to remove. However, if all of the above methods are available, the ideal one will be the one that the child best tolerates, is the quietest, and achieves adequate oxygenation.

## 5.2 TREATMENT OF CHILDREN CLASSIFIED AS HAVING PANDEMIC FLU WITH RISK FACTORS

Children classified as having PANDEMIC FLU WITH RISK FACTORS can be treated at home. Begin antiviral treatment with oseltamivir, treat fever with paracetamol, explain when to return (immediately because the child has worsened, or for a follow-up appointment), how to care for the child at home and how to follow epidemiological recommendations.

- Antiviral treatment

Begin administration of the antiviral oseltamivir, as previously explained and in the doses recommended in Table 3. The drug should be administered for 5 days in 2 daily doses.

- Treatment of fever

Treat fever as recommended in Table 5. Administer treatment every 6 hours until the symptom fully resolves.

## 5.3 TREATMENT OF CHILDREN CLASSIFIED AS HAVING PANDEMIC FLU

Children classified as having PANDEMIC FLU should be treated at home. Treat fever with paracetamol, explain to the parents or caregivers when they should return (immediately because the child has worsened, or for a follow-up appointment), how to care for the child at home and how to follow epidemiological recommendations.

- Treatment of fever

Treat fever as recommended in Table 5. The next chapter will cover home care recommendations.

### EXERCISE

- 1 You have classified Ricardo; now, describe the treatment plan to be followed according to the classification assigned.
- 2 You have classified Gabriela; now, describe the treatment plan to be followed according to the classification assigned.

Go over your answers and discuss your management choices with your facilitator.



Photo: Michael Biscoglio

## 6. ADVISING THE MOTHER OR CARETAKER

**In order to ensure that the mother better understands what is going on with her child and plays an active role in solving the problem, health workers should use any resource within reach to make the mother understand how to care for the child at home.**

Explain to the mother that pandemic influenza A (H1N1) 2009 is an infectious disease caused by a new subtype of the flu, to which we have no immunity or innate defenses, precisely because it is new. Furthermore, explain that pregnant women are at high risk of severe illness and even death when infected by the pandemic flu virus, and that they should receive the vaccine, which has proven not to cause any injury to the pregnant mother or her unborn baby.

The following home care advice should be provided to mothers of children with PANDEMIC FLU WITH RISK FACTORS or PANDEMIC FLU:

### 6.1 WARNING SIGNS THAT SHOULD PROMPT IMMEDIATE RETURN TO THE HEALTH SERVICE

This is a very important section, particularly in this disease, because, in children who are assessed at the health service and discharged home, the illness continues to progress and a child's condition can deteriorate within a matter of hours. It is important that the mother understands this and is able to return to the health service if the child's condition worsens. Remind her that it may worsen very rapidly – even within a few hours after assessment.

Explain to the mother that she should return immediately to the health service if her child:

- ▶ IS BREATHING RAPIDLY, OR
- ▶ IS BREATHING WITH DIFFICULTY, OR
- ▶ CANNOT DRINK OR NURSE, OR
- ▶ CANNOT KEEP ANYTHING DOWN, OR
- ▶ WORSENS OR LOOKS UNWELL

*This is a very important section, particularly in this disease, because, in children who are assessed at the health service and discharged home, the illness continues to progress and a child's condition can deteriorate within a matter of hours.*

## 6.2 FOLLOW-UP APPOINTMENT

Pandemic flu with or without risk factors is a disease that can worsen, causing the patient to develop complications, undergo a change in course, or develop superinfection. This creates the need for follow-up assessment, in which the child should be reexamined and reclassified to ensure that there is no compromise that would warrant referral and hospitalization.

Every child classified as having PANDEMIC FLU WITH RISK FACTORS or PANDEMIC FLU should return for follow-up within **2 days**.

## 6.3 HOME CARE

### ► Avoid transmission

The transmission period extends from 24 hours prior to the onset of symptoms up to 5 or 7 days after onset. The virus can survive on the hands for several minutes, on non-porous hard surfaces (plastic or stainless steel) for more than a day and on cloth, paper and tissues for several hours. For this reason, the customary hygiene must be intensified in places in which several people live. Transmission can occur on public transportation, in daycare centers, in overcrowded places, etc.; therefore, these places should be avoided by pregnant women and newborns.

### ► Personal hygiene measures

Sanitize the hands with an alcohol-based gel or soap and water:

- After coughing
- After sneezing
- After blowing or touching the nose or mouth
- Before and after each meal
- After entering the bathroom or changing a baby's diapers
- After playing with or touching common objects
- When they are visibly dirty

Hand hygiene procedures for children classified as having PANDEMIC FLU WITH RISK FACTORS or PANDEMIC FLU are as follows (see Figure 1):

1. Wet hands with water
2. Apply soap and rub hands together, scrubbing between the fingers and under the nails
3. Rinse with plenty of running water
4. Dry hands with a disposable paper towel
5. Turn off the faucet with the disposable paper towel
6. Discard the disposable paper towel in a container lined with a disposable plastic bag.

**Figure 1.** Hand hygiene procedure

### USE SOAP or...

Wet hands with water and put liquid soap in the palms



Rub palms together and intertwine fingers.



Rub each hand against the back of the other hand, intertwining the fingers...



Around the thumbs...



And the wrists.



Rinse hands with water and dry them with a wet disposable towel or...let the solution dry on its own.



### USE GEL...

or put a drop of solution on dry hands

let the solution dry on its own.

► Respiratory hygiene:

The flu virus is transmitted from person to person by means of droplets shed when speaking, coughing, or sneezing. These droplets can remain on the hands; hence, one should avoid touching the eyes, nose, and mouth.

Children should be taught to do as follows when they cough or sneeze:

- Cover their mouth and nose with a disposable paper tissue or toilet paper when they cough or sneeze and then discard the tissue and wash their hands.
- When a disposable tissue or toilet paper is not available, sneeze or cough into the crook of the elbow. (Figure 2)

**Figure 2.** Hygiene procedure for coughing or sneezing



► Home care for the sick child

- The child should be cared for at home: it should not leave the house or come into contact with other children and should rest at home until 24 hours after the fever abates, which usually occurs 5 to 7 days after the onset of symptoms.
- The child should receive plenty of fluids: tell the mother to constantly offer the child fluids, and, if the child is breastfed, tell

the mother to nurse it longer and more frequently.

- The child should still be fed: children will often experience a significant loss of appetite. Tell the mother to offer food in small amounts, more frequently, and to respect the child's appetite – that is, while the child is ill, the mother should let it eat whatever it wants to.
- The child should rest: Pandemic flu is a debilitating illness that produces significant

pain and discomfort in children. Rest should therefore be a part of home care interventions.

► Other measures:

- Keep the house and the child's room well-ventilated every day, and, if possible, isolate the child— keeping it at least one meter away – from the rest of the family.
- The siblings of children with pandemic flu should stay home until they are definitely not capable of transmitting the virus.
- Do not give the sick child any drugs not formulated specifically for the treatment of flu, and never give drugs containing aspirin.
- Make sure that the child has received all of its vaccines, and not only the one against seasonal influenza. The pneumococcal vaccine is especially important.
- Assign care of the sick child to a single person in the household.

## 6.4 PREVENTION AND CASE-FINDING PLAN FOR DAYCARE CENTERS

Daycare centers that accept children under 5 are, for a fundamental reason, a key component in the epidemiological chain, as they are the points where one of the highest-risk age groups is concentrated. Thus, every effort to decrease the morbidity of this pandemic should include these institutions. A series of measures designed to accomplish this is shown below.

### 6.4.1 Screening

The proper use of screening techniques has been shown to provide a good alternative for case-finding, and, thus, facilitates a reduction in the transmission of the pandemic within the community. This strategy must also be applied in all educational institutions.

Acute Respiratory Insufficiency (ARI) is defined as a disease, frequently viral in origin, that occurs with clinical manifestations such as fever, cough, nasal discharge, sore throat, and malaise. There may also be wheezing, tachypnea, difficulty breathing, myalgia, and other less common symptoms.

As a result, screening should be done at home and at the daycare center, as follows:

- **First screening:** should be done in the affected child's home. Any child that develops a temperature of 38°C or higher accompanied by one or more of the signs listed below should be kept home, resting, until at least 24 hours after the fever abates:
  - Cough
  - Sore throat
  - Nasal discharge
  - Headache
  - Bone pain
  - Body aches
  - Diarrhea
  - Vomiting
  - Refusing food and/or drink
  - Refusing to nurse
  - Agitation

In all cases, the child should receive immediate medical attention

- **Second screening:** shall be done at the door of the daycare center by a trained individual in order to detect any signs of suspected flu infection:
  - Flushed cheeks
  - Cough
  - Nasal discharge
  - Difficult or painful swallowing (odynophagia)
  - Difficulty breathing or increased respiration rate

Every child that presents with one or more of the above signs shall be taken immediately to the daycare center's office, where a trained individual will complete the following assessment stages:

- Wash hands
- Don disposable face mask
- Don disposable gloves
- Measure axillary temperature of the pre-symptotically affected child
- Record temperature reading
- If possible, provide child with a face mask
- Remove and discard gloves
- Remove face mask
- Wash hands

In the event that the daycare center operates in a private residence and some member of the family develops respiratory symptoms consistent with influenza A, that person should go immediately to a medical facility, where s/he should be informed of his/her of health status and told whether or not to shut down the daycare center, in coordination with the health and education authorities.

- **Third screening:** shall be done in the daycare center, following the procedures described below, also by a person trained to detect suspicious signs.

Every child presenting one or more signs shall be taken immediately to the daycare center's office,

where a trained person will perform the assessment as above.

#### ► Notification

Detection of a suspected or probable case based on the aforementioned criteria mandates immediate notification on two levels:

**Family members:** it is important to notify the family as quickly as possible of the situation detected. To this end, it is recommended that every child have a file containing at least three phone numbers of parents, siblings, relatives, neighbors, or godparents.

**The health services:** care of every suspected case mandates that the health services be available and adequately prepared. Thus, these services should identify the daycare centers in their catchment area (consequently, each daycare center should know which health services it should recur to) and provide these centers with the telephone numbers of the health service, its director, or the head nurse to permit immediate notification.

#### ► Transport

Transport should be provided as quickly as possible to every suspected patient. To this end, the following options should be considered:

- The health services provide an ambulance with adequately protected personnel (goggles, gloves, N95 respirator)
- The family transfers the child in a vehicle of their own or on non-mass public transit (the use of minibuses, vans, or buses is forbidden)
- Daycare center personnel, wearing disposable face masks for protection, provide transport.
- The child shall be transferred with a referral slip (Annex 1)

### ► Patient reception at the health service

As the health services will be on alert for the arrival of suspected patients, the health facility shall apply whichever treatment protocol is in effect.

### ► Referral and counter-referral

“Referral” consists of the action taken at the day-care center and reported to the health service, in writing, by means of a special form (Annex 2); “counter-referral” consists of the recommendations provided by the health services to the daycare center for:

- Active surveillance
- Preventive action
- Information activities
- Coordination activities

The daycare center, in turn, has a responsibility to keep a notebook-type record of referred cases. This record, which must follow a special format (Annex 3), will be reviewed periodically by the health services.

Furthermore, should a case of influenza A (H1N1) 2009 be confirmed, the health services should have measures in place for the detection of any new cases in the daycare center and the patient’s family.

### ► Measures to be instituted in daycare centers

#### **Hand washing**

Proper hand washing with soap and water must follow defined steps and be performed by:

- Daycare center personnel
- Children
- Parents or people who pick up the children

**Note:** : *hand washing technique is described in section 6.3*

Some general recommendations:

- Keep nails short (no more than 3 mm long) and, preferably, free of nail polish.
- Do not leave bar soap in a dish or container that lacks drainage. In order to prevent subsequent contamination, soap should be kept dry.
- Counting is recommended to ensure that hands are lathered for the appropriate amount of time; sing a children’s song or speak a sentence that corresponds to the recommended time.
- Applying a splash of water with one hand and then turning off the faucet with a paper towel immediately after drying the hands, or with two fingers of the non-dominant hand, is recommended
- Neither liquid soap nor bar soap are associated with greater risk, provided that contamination is prevented

Hands should be washed in the following situations:

- At the beginning and end of the work day
- After handling contaminated materials
- On contact with mucous membranes, blood, bodily fluids, secretions, and excretions
- Before and after using single-use gloves
- Before and after handling and preparing food
- Before eating
- After using the bathroom

#### **Preparation of Alcohol/Glycerin Solution**

Use of this solution or sanitizing gels is indicated when the hands are not visibly dirty. When they are visibly soiled, soap and water should be used instead. The alcohol/glycerin solution is prepared as follows:

- a. Add 20 ml of liquid glycerin (one 20-ml syringe or 5 teaspoons) to one liter of alcohol at 70 to 90% concentration

- b. Mix thoroughly and pour 3 to 5 ml onto the hand.
- c. Wash hands using the same technique described for use with water and soap
- d. If alcohol at 96% is available, remove 50 ml and add enough distilled or drinking water to make one liter

In all cases, we recommend washing the hands with soap and water after approximately 10 washings with this solution.

Application of this solution is recommended: when children are received at the daycare center; after playtime (if the hands are not visibly dirty); and before going home.

#### **Use of face masks**

- All daycare center personnel who develop clinical manifestations of respiratory infection shall wear disposable face masks. It is recommended that symptomatic personnel stay at home at least until 24 hours post-abatement of symptoms, mainly fever, as long as the daycare center remains open.
- Children who have respiratory symptoms and must unavoidably remain in the daycare center should also wear face masks.
- Because of the discomfort produced, children should not wear face masks unless they tolerate them well.
- In children over 2 years, staff should encourage learning the correct way to cough and sneeze.
- If the face mask becomes moist (after approximately 2 to 3 hours), replace it with a new and dry one.
- Never reuse, store, or wash face masks for later use.
- Do not leave face masks hanging from the neck.
- DO NOT leave face masks on tables, desks, or other surfaces that may be contaminated and that are in contact with personnel and children.

#### **6.4.2 General measures**

- Encourage the performance of most activities in open spaces, avoiding sudden drops in temperature.
- Notify the health services if there is an increase in the number of children who miss daycare due to health issues.
- Confirm that the daycare center has enough water, basically for hand washing, the use of restrooms, washing tableware and kitchen utensils, other hygiene, and cleaning.
- Put up posters showing proper hand washing technique.
- Put up posters and teach the proper way of coughing and sneezing.
- If running water is not available, ensure that a quantity sufficient for one day's use is available in clean, covered containers. Storing water for several days is not recommended due to the risk of contamination.
- Confirm that enough water and soap for hand washing, personal or disposable towels, alcohol/glycerin solution, and hypochlorite solution for cleaning the premises are available.
- Keep rooms and closed spaces aired out, let sunlight in, and try to ensure good natural or artificial lighting.
- Wash toys daily with soap and water, removing any dirt.
- Wash hands after contact with children's nasal and oral secretions, particularly when the child has some nasal discharge or is sneezing.
- Do not share plates, glasses, flatware, or materials for personal hygiene, such as toothbrushes or towels.
- Eliminate toys made out of plush and similar materials, which are impossible to wash routinely.

### 6.4.3 General criteria for cleaning and hygiene

#### Criteria for cleaning the premises

- Specify a cleaning route, always starting from less-contaminated areas (for example, leaving bathrooms as the last location to be cleaned).
- In order to prevent cross-contamination, use different-colored cleaning cloths for: the kitchen, classrooms or learning environments, bathrooms, and administrative areas.
- Use moist cloths to clean surfaces and floors.
- To avoid particle suspension, do not use brushes or brooms.
- Personnel in charge of cleaning should wear proper apparel: disposable face masks, multipurpose gloves, apron, cap, and rubber boots.
- Periodically train the personnel in charge of cleaning tasks.

#### *Cleaning and disinfection of premises:*

Chlorine solutions are the solutions most widely used for this purpose, due to their high disinfectant power. At a concentration of 0.5%, chlorine solution is active against HIV, hepatitis viruses, bacteria, spores, fungi, and parasitic cysts.

To ensure disinfectant activity, the following formula should be used in preparing the solution:

$$(\text{Free chlorine concentration } \% \times 2) - 1$$

Example: a hypochlorite solution is available at a concentration of 80 grams of free chlorine per liter:

$$(8 \times 2) - 1 = 15$$

That is, 15 parts of water should be added to each part of hypochlorite solution.

#### Precautions for the preparation of disinfectant solution

- Store preferably at less than 25° C, in opaque, well-covered plastic bottles

- Never use concentrated disinfectant; it is ineffective.
- Use in adequate dilution; increasing the concentration does not increase effectiveness, only the cost
- Confirm the concentration of active chlorine in the container purchased in order to correct it as needed
- Dilutions should be prepared daily, in order to reduce significant loss of active chlorine.
- Use cold running water to prepare the solution. Do not use hot or lukewarm water.
- Increasing exposure times beyond those established is useless.
- Prepare the solution daily

#### Use of the hypochlorite solution

- Use hypochlorite solution to clean toys, door handles, bathrooms and bathroom accessories, educational materials made of plastic or wood, plastic toys, etc., and all furniture that is handled by children, as well as all surfaces with which they have contact.
- Before washing with soap and water, use hypochlorite solution to disinfect all spaces in which food is consumed, as well as all utensils used in its preparation and consumption.
- Check whether personnel who prepare food always wear disposable gloves while working, wash their hands and keep their fingernails short

#### Cleaning activities

- While cleaning, personnel should wear disposable or multipurpose gloves at all times.
- Materials made of cloth should be washed with soap and water twice a week and left in the sun.
- Thoroughly wash ceilings, walls, floors, windows, and doors with soap and chlorine solution once a week.
- Line all trash bins with plastic bags. All trash bins should have a lid, preferably a pedal-operated one.

- Confirm proper operation and cleanliness of garbage dumps, plumbing and water intakes
- Disinfect backpacks, lunch boxes, or other containers brought by children before they leave the daycare center

In order to ensure control of the aforementioned activities, it is important that each daycare center use a checklist (Table 6), which can be applied weekly by a committee made up of daycare center personnel and parents.

**Table 6.** Activity checklist

ACTIVIDAD A VERIFICAR	SI	NO	OBSERVACIONES
Clean ceilings, floors and walls			
Clean doors and windows			
Clean patios, gardens, and open environments			
Toys and educational materials washed with soap and water and disinfected with hypochlorite solution			
Door handles, tables, chairs, and all furniture are washed and disinfected with soap, water, and hypochlorite solution.			
Garbage cans, with lids and liners, are available for the disposal of waste material (tissues, toilet paper, etc.)			
The person in charge of the daycare center knows the closest health center and has emergency telephone numbers			
Personnel know and use proper hand washing technique			
Personnel wash their hands before starting work			
Posters showing proper hand washing technique are present			
Soap, water, and towels for hand washing are available			
Children wash their hands several times according to their activities			
Parents wash their hands together with their children when picking them up			
Digital thermometers and a record book are available			
Alcohol/glycerin solution is always available			
Disposable face masks are available			
Disposable gloves are available			
Children follow the rules for coughing and/or sneezing			
Personnel follow the rules for coughing and/or sneezing			
Personnel are familiar with cleaning measures			

#### 6.4.4 Training plan

Based on the experience garnered thus far, the following stages are proposed to ensure that plan activities are carried out:

- a. Know the number of daycare centers by health network.
- b. Identify the health services in those educational districts.
- c. Pre-agreement between health and education sectors to provide training in hand washing, preparation of alcohol/glycerin solution, measuring and recording temperature, case-finding and referral, and preparation of hypochlorite solution, to:
  - Persons in charge of the daycare centers in the jurisdiction of each health network and/or school district
  - Health workers (physician, nurse, or social worker)
  - Director and/or owner of each daycare center
  - Parent representative of each daycare center
- d. This trained team will perform the same activities in each daycare center. At a second stage, these activities will be geared to:
  - All daycare center staff
  - All children
  - All parents
- e. Each health service will make a weekly supervision visit, which will basically consist of:
  - Assessment of temperature records and the suspected case referral registry
  - Assessment of checklist compliance
  - Confirmation of adequate hand washing by the children of each daycare center
- f. Assess the entire training and detection process every two months

### 6.5 NATIONAL RECOMMENDATIONS FOR EPIDEMIOLOGICAL SURVEILLANCE.

In each country, the epidemiological surveillance committee has some key indications that must be followed, including:

- Which group of people should be vaccinated against seasonal influenza and influenza A (H1N1);
- Who should undergo laboratory confirmation of influenza A (H1N1) infection;
- And other recommendations that are issued depending on the stage of the pandemic.
- Note: epidemiological surveillance must be a permanent fixture to protect against all the other respiratory viruses, especially the respiratory syncytial virus, that affect the vulnerable population (infants). Information campaigns should clearly mention the benefit of vaccinating the population and practicing the indicated hygienic measures at all times.



## 7. FOLLOW-UP VISIT

### 7.1 FOLLOW-UP APPOINTMENT FOR PANDEMIC FLU WITH RISK FACTORS:

When a child classified as having PANDEMIC FLU WITH RISK FACTORS returns to the health service after two days for a follow-up visit, follow these instructions:

FOLLOW-UP VISIT FOR THE CHILD WITH PANDEMIC FLU WITH RISK FACTORS		
<p><b>After 2 days, ask:</b></p> <ul style="list-style-type: none"> <li>▶ Has the fever gone down?</li> <li>▶ Is the child better?</li> <li>▶ Examine the child to determine whether general warning signs are present</li> <li>▶ Assess the child to determine whether it appears seriously ill or has rapidly worsened</li> <li>▶ Assess the child to determine whether it has rapid breathing, chest indrawing or O<sub>2</sub> saturation of &lt;92%</li> </ul>		<p>Consult the <b>ASSESS AND CLASSIFY</b> table</p>
DECIDE WHETHER THE CHILD:		
IS WORSE	IS THE SAME	IS BETTER
<p>Has general warning signs or appears seriously ill or has worsened rapidly or has rapid breathing, chest indrawing, or O<sub>2</sub> saturation of &lt;92%</p> <ul style="list-style-type: none"> <li>▶ Give first dose of antibiotic</li> <li>▶ Continue antiviral treatment; if the child has not received antivirals yet, start them</li> <li>▶ Place on oxygen</li> <li>▶ REFER TO HOSPITAL URGENTLY</li> </ul>	<p>Fever and cough persist, but without any sign of worsening</p> <ul style="list-style-type: none"> <li>▶ Complete 5-day course of oseltamivir</li> <li>▶ Continue paracetamol</li> <li>▶ Stress warning signs</li> <li>▶ Explain course of the disease once more</li> </ul>	<p>Fever is under control and the child is better</p> <ul style="list-style-type: none"> <li>▶ Complete 5-day course of oseltamivir</li> <li>▶ Continue paracetamol</li> <li>▶ Stress warning signs</li> <li>▶ Explain course of the disease once more</li> </ul>

## 7.2 FOLLOW-UP VISIT FOR PANDEMIC FLU

When a child classified as having PANDEMIC FLU returns to the health service after two days for a follow-up visit, follow these instructions:

### FOLLOW-UP VISIT FOR THE CHILD WITH PANDEMIC FLU

#### After two days, ask:

- ▶ Has the fever gone down?
- ▶ Is the child better?
- ▶ Examine the child in order to determine whether general warning signs are present
- ▶ Assess the child to determine whether it appears seriously ill or has rapidly worsened
- ▶ Assess the child to determine whether it has rapid breathing, chest indrawing or O<sub>2</sub> saturation of <92%

### DECIDE

#### IS WORSE

Has general warning signs or appears seriously ill or has worsened rapidly or has rapid breathing, chest indrawing, or O<sub>2</sub> saturation of <92%

- ▶ Give first dose of antibiotic
- ▶ Continue antiviral treatment; if the child has not received antivirals yet, start them
- ▶ Place on oxygen
- ▶ REFER TO HOSPITAL URGENTLY

#### IS THE SAME OR BETTER

Fever persists or improved, but there are no signs that would require referral to hospital

- ▶ Continue paracetamol
- ▶ Stress warning signs
- ▶ Explain course of the disease once more

## 8. GLOSSARY

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<b>WORD</b>	<b>DESCRIPTION</b>
Dyspnea	Subjective feeling of difficulty breathing or breathlessness
Encephalopathy	General term used to describe any disease of the brain
Face Mask	Cloth mask that covers the mouth and nose
Hypoxia	Reduction of partial oxygen pressure (PaO <sub>2</sub> ) in the lung space
Myalgia	Muscle aches
Odynophagia	Painful swallowing
Rhinorrhea	Nasal discharge
Tachypnea	Excessive increase in respiration rate
Wheezing	Soft, high-pitched sound produced by the passage of air through a narrowed airway

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**ANNEX 2 : SAMPLE REFERRAL SLIP**

**Name of the Institution:** \_\_\_\_\_

**Name of the child:** \_\_\_\_\_ M  F

**Age:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Symptoms:** Fever \_\_\_\_\_ °C      Cough: YES  NO       nasal discharge: YES  NO

**Difficulty breathing:** YES  NO  **Others:** \_\_\_\_\_

—

**Child seen by:** \_\_\_\_\_

**Name of health service notified:** \_\_\_\_\_

**Person notified at the health services:** \_\_\_\_\_

—

**Child's transport provided by:** \_\_\_\_\_

—

**Means of transportation:** \_\_\_\_\_

**Family member notified:** \_\_\_\_\_

**Remarks:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**ANNEX 3: REGISTRY OF REFERRED CASES**

**Name of the health service:** \_\_\_\_\_

**Name of the child:** \_\_\_\_\_ **M**  **F**

**Age:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Recommendations:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Name, signature, and stamp of attending physician**

## ANNEX 4: BIOSAFETY MEASURES FOR LEVEL 1 AND LEVEL 2 HEALTH SERVICES

Biosafety measures are defined as a set of activities designed to prevent and/or control the presence and spread of an infectious disease, which may affect health workers, patients, and family members at all levels of the health services.

In order to adapt these measures to the transmission characteristics of influenza A (H1N1) 2009, we propose that the following measures be applied at level 1 and level 2 health facilities.

### 1. HAND WASHING

Pursuant to internationally accepted standards, hand washing in the health services should be performed as follows (**see the instructional video and/or presentation available on the PAHO website, “Bolivia” section, H1N1 blog**), except for surgical scrubbing, which has precise indications and is not necessarily applicable to the current pandemic.

#### 1.1 *Scrubbing with soap and water.*

- ▶ For proper hand washing, the following steps should be followed thoroughly and in order:
  - a. Roll up sleeves and remove rings, watches, and jewelry
  - b. Wet hands thoroughly under a stream of water
  - c. Take soap, whether bar or liquid (in case of bar soap, quickly rinse it under the stream of water) and lather abundantly. When hands are soiled, it is often impossible to lather quickly,

in which case they should be rinsed until it is possible to lather them. Before putting bar soap back in its dish or container, wash it quickly under a stream of water.

- d. Rub the back and palms of both hands; intertwine them and rub them together thoroughly. Ideally, this step should take 10 to 20 seconds.
- e. Under the stream of water, rinse thoroughly until all the soap is gone (when soap is no longer present, the hands will stop slipping).
- f. Dry hands with one of the following: paper towels, a personal cloth towel, or simply let hands air-dry

General recommendations:

- ▶ Keep nails short (no more than 3 mm long) and, preferably, free of nail polish.
- ▶ Do not leave bar soap in a dish or container that lacks drainage. In order to prevent subsequent contamination, soap should be kept dry.
- ▶ Counting is recommended to ensure that hands are lathered for the appropriate amount of time; sing a children’s song or say a sentence that lasts the recommended time.
- ▶ Using a hand to turn on the faucet and then turning it off with a paper towel immediately after drying the hands, or with two fingers of the non-dominant hand, is recommended
- ▶ There is no evidence for or against the use of electric dryers. In warm, humid climates, their use should be avoided altogether in health services; if used, they should be cleaned regularly.
- ▶ Neither liquid soap nor bar soap is associated with greater risk, provided that contamination is prevented

Hands should be washed in the following situations:

- ▶ At the beginning and end of the work shift.
- ▶ Between procedures that involve contact with the patient's clothing or textiles (linens, sheets, etc.).
- ▶ Before and after contact with each patient.
- ▶ After handling contaminated materials.
- ▶ Upon contact with mucous membranes, blood, bodily fluids, secretions, and excretions.
- ▶ After handling any object that may be contaminated with microorganisms (such as urine measuring containers or other materials)
- ▶ Before and after wearing single-use gloves.
- ▶ Before eating.
- ▶ After using the bathroom.
- ▶ Before donning a face mask.

### **1.2 Washing with alcohol/glycerin solution or gel sanitizer**

Follow the same steps described above for scrubbing with soap and water. This solution should be used in the following cases, bearing in mind that visibly dirty hands or suspected contamination with an object or secretion mandates the use of soap and water.

- ▶ At the beginning and end of the work shift
- ▶ Before and after contact with a patient who does not have symptoms consistent with respiratory infection
- ▶ Before eating
- ▶ After using the bathroom
- ▶ Before donning a face mask

The alcohol/glycerin solution is prepared as follows:

- a. Add 20 ml of liquid glycerin (one 20-ml syringe or 5 teaspoons) to one liter of alcohol at 70 to 90% concentration
- b. Mix thoroughly and pour 3 to 5 ml onto the hand.
- c. Wash hands using the same technique described for use with soap and water
- d. If alcohol at 96% is available, remove 50 ml and add enough distilled or drinking water to complete one liter

In all cases, we recommend washing the hands with soap and water after approximately 10 washings with this solution.

### **1.3 Washing with water and antiseptic foam**

Should be done in the following situations:

- ▶ Before performing invasive procedures, such as urinary catheterization, venous cutdown, and other procedures;
- ▶ Before contact with patients at high risk of contracting infections, such as newborns, the immunocompromised, people with diabetes or asthma, etc.

## **2. USE OF GLOVES**

### **1.3 Single-use gloves should be used, AFTER HAND WASHING, in the following situations:**

- ▶ Clinical examination of clinically suspicious patient
- ▶ Examination of the oral cavity and pharynx
- ▶ Nebulization (or whenever there is a risk of generating aerosols)
- ▶ Aspiration of respiratory secretions

After the procedure, the gloves should be washed with 0.5% hypochlorite solution and only then discarded in accordance with standards. Hands should subsequently be washed with soap and water.

**2.2. Surgical gloves should only be used in the case of venous cutdown or other invasive procedures.**

### 3. USE OF FACE PROTECTION

In all cases of contact with a patient with suspected or confirmed influenza (regardless of type), the following personal protective equipment **MUST BE** used

**3.1. Face mask (disposable respirator): the following should be taken into account:**

- ▶ Wash your hands before donning the face mask.
- ▶ Place it carefully, so that it covers the mouth and nose, and fit it snugly in order to minimize the presence of spaces between the face and mask.
- ▶ Avoid touching the face mask while you are wearing it.
- ▶ As soon as it becomes moist, replace it with a new one.
- ▶ Do not reuse disposable face masks; discard them after each use.
- ▶ When touching a used face mask--for instance, on removing it-- wash your hands with soap and water or alcohol/glycerin solution.
- ▶ Discard the mask if it is torn, worn, or has any holes in it.
- ▶ Do not leave it hanging from your neck.
- ▶ Do not leave it on a table, desk, or any other surface that may be contaminated
- ▶ We recommend providing face masks to family members who will ride with the patient in an ambulance or other type of transportation, or when they are caring for the sick child.

**3.2. N95 respirator: the same recommendations for proper use of the disposable face mask apply, emphasizing use of both elastic straps and proper fit of the metal nosepiece against the nose. Its use is exclusively indicated for:**

- ▶ Contact with contaminated secretions, droplets, and tiny aerosols
- ▶ Resuscitation, intubation, and aspiration activities
- ▶ Patient transport on board ambulances or other vehicles (drivers and health workers)
- ▶ These respirators should be used for no more than 7 days

**3.3. Protective goggles and/or facemask:**

Should be used during the same activities in which use of the N95 respirator is indicated.

### 4. GOWN

Use of a clean but NON-STERILE gown should be considered for the same indications as N95 respirators. As it is not known how long viruses are able to survive on fabric, we recommend:

- ▶ Use one gown for every patient to be examined.
- ▶ After removing the gown, wash your hands.
- ▶ Wash the gown with water and detergent.

### 5. RESPIRATORY HYGIENE AND COUGHING PRECAUTIONS

Among mandatory health service precautions, those concerning saliva particles and respiratory secretions are paramount. To this end, strict compliance with the following activities must be considered:

- ▶ All personnel that perform any activity in the health services and develop symptoms of respiratory infection – cough, sneezing, or runny nose – should wear a disposable face mask and replace it approximately every 2 to 3 hours, depending on the degree of moisture.

- ▶ As a last resort, cough or sneeze onto the forearm
- ▶ Do not spit
- ▶ Wash hands on a continuous basis
- ▶ Personnel who develop respiratory symptoms and fever are advised to remain at home until 24 hours after fever has abated.

## 6. CLEANING AND DISINFECTION OF PREMISES

Chlorine solutions are the most widely used, due to their high disinfectant power. At a concentration of 0.5%, chlorine solution is active against HIV, hepatitis viruses, bacteria spores, fungi, and parasitic cysts.

To ensure disinfectant activity, the following formula should be applied in preparing the solution:

### **(Free chlorine concentration % x 2) - 1**

Example: a hypochlorite solution is available at a concentration of 80 grams of free chlorine per liter:

$$(8 \times 2) - 1 = 15$$

That is, 15 parts of water should be added to each part of hypochlorite solution.

### **6.1 Precautions in the preparation of disinfectant solution**

- ▶ Store preferably at less than 25° C, in opaque, well-covered plastic bottles
- ▶ Never use concentrated disinfectant; it is ineffective.
- ▶ Use in adequate dilution; increasing the concentration does not increase effectiveness, only the cost
- ▶ Confirm the concentration of active chlorine in the container purchased, in order to correct it as needed
- ▶ Dilutions should be prepared daily to reduce significant loss of active chlorine.

- ▶ Use cold running water to prepare the solution. Do not use hot or lukewarm water.
- ▶ Increasing exposure times beyond those established is useless.
- ▶ Prepare the solution daily

### **6.2 Criteria for cleaning the premises**

- ▶ Specify a critical cleaning route, always starting from less-contaminated areas
- ▶ To prevent cross-contamination, use different-colored cleaning cloths for each area of the facility
- ▶ Use moist cloths to clean surfaces and floors
- ▶ To avoid particle suspension, do not use brushes or brooms
- ▶ The following should be cleaned frequently: admission or observation beds, gurneys, bedside tables, door handles, rails, or other objects at risk of contamination due to contact with patients with respiratory infection.
- ▶ Change the disinfectant solution every 6 at 8 hours in areas where temperatures are higher than 25° C. At lower temperatures, change it every 12 hours.
- ▶ Personnel in charge of cleaning should wear adequate apparel: disposable face masks, multipurpose gloves, apron, cap, and rubber boots.
- ▶ Train personnel in charge of cleaning tasks periodically.

## 7. LINEN MANAGEMENT

Due to the potential time frame of influenza A (H1N1) 2009 virus survival on cloth, which may range from 6 to 12 hours, nursing personnel should take the following precautions:

- ▶ Wear gloves when handling bedclothes, patients' clothing, aprons, gowns, towels, and all material to be laundered
- ▶ All linens should be placed in disposable

(preferably red) or properly labeled hazardous material bags.

- ▶ Wash hands after removing gloves.

Laundry personnel should take the following precautions:

- ▶ Wear proper clothing: disposable face mask, multipurpose gloves, protective goggles, plastic apron, cap and rubber boots
- ▶ Wash linens with water and detergent
- ▶ We recommend that all linens be ironed prior to storage and distribution.

## 8. PROPER WASTE DISPOSAL

Proper waste disposal is fundamental to avoiding the spread of infections in a health services environment. Therefore, national standards should be strictly followed, using the color code. Accordingly, the following precautions are recommended:

- ▶ All properly identified waste containers should have pedal-operated lids.
- ▶ Disposal of their contents should be supervised often in accordance with standards.
- ▶ Personnel in all services and areas should be kept up to speed on proper waste disposal practices.
- ▶ Personnel in charge should wear the following

attire, which should be changed daily: cap, disposable face mask, multipurpose gloves, and overalls or gown.

- ▶ Perform frequent hand washing.

## 9. PATIENT CARE UTENSILS

Utensils such as plates, tableware, glasses, etc., handled by patients with suspected or confirmed influenza A (H1N1) 2009 may become a risk factor; it is therefore recommended that:

- ▶ They be handled only by the patient.
- ▶ They be removed while wearing gloves and then returned to the kitchen.
- ▶ Should any family member or health worker come into contact with these utensils, they should wash their hands immediately with soap and water or alcohol/glycerin solution.
- ▶ Washing with water and detergent suffices to avoid the risk of transmission.

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**ANNEX 5: ASSESSMENT AND CLASSIFICATION OF PANDEMIC INFLUENZA (H1N1) 2009 IN CHILDREN AGED 2 MONTHS TO 4 YEARS**

**Does the child have sudden-onset fever and cough?**

<b>TRATAR</b>	
<b>IF YES</b>	→
<p><b>ASK:</b></p> <ul style="list-style-type: none"> <li>● For how long?</li> <li>● Over the past week, has he/she had any contact with someone who had the flu?</li> <li>● Have you noticed a quick turn for the worse?</li> </ul> <p>Ask about warning signs</p> <ul style="list-style-type: none"> <li>● Can the child drink or nurse?</li> <li>● Is the child unable to keep anything down?</li> <li>● Has the child had seizures?</li> <li>● Is the child unusually drowsy or difficult to arouse?</li> </ul> <p><b>RISK FACTORS:</b></p> <ul style="list-style-type: none"> <li>● Age between 2 and 24 months.</li> <li>● Difficult access to health services.</li> <li>● Chronic lung disease, including asthma.</li> <li>● Heart disease.</li> <li>● Kidney or liver disease.</li> <li>● Neurological or neuromuscular disease.</li> <li>● Diabetes or other metabolic disease.</li> <li>● Immunosuppression, including neoplastic disease and HIV.</li> <li>● Chronic malnutrition and obesity.</li> <li>● Diseases that demand chronic treatment with steroids.</li> <li>● Minority subgroups as indigenous population.</li> </ul>	<p><b>OBSERVE:</b></p> <ul style="list-style-type: none"> <li>● Whether the child looks ill</li> <li>● Whether the child has rapidly worsened</li> <li>● Whether the child is breathing quickly</li> <li>● Whether subcostal retractions are present</li> <li>● Determine if O2 saturations are &lt; 92% (when possible)</li> </ul> <p><b>DETERMINE WHETHER RISK FACTORS ARE PRESENT</b></p>

EASSESS	CLASSIFY	TREAT
One of the following: -Cualquier signo general warning sign or -Appears ill, or -Has rapidly worsened, or -Rapid breathing, or -Chest indrawing, or -Oxygen saturation <92%	<b>SEVERE PANDEMIC FLU</b>	<ul style="list-style-type: none"> <li>▲ Begin antiviral treatment (oseltamivir) as soon as possible</li> <li>▲ Administer first dose of ampicillin or amoxicillin</li> <li>▲ Treat fever with paracetamol (do not use aspirin)</li> <li>▲ Administer oxygen</li> <li>▲ Biosafety measures</li> <li>▲ URGENT hospital referral, following stabilization and transport recommendations</li> </ul>
Onset of fever and cough less than 48 hours, plus one risk factor	<b>GPANDEMIC FLU WITH RISK FACTOR</b>	<ul style="list-style-type: none"> <li>▲ Begin antiviral treatment (oseltamivir) as soon as possible</li> <li>▲ Treat fever with paracetamol (do not use aspirin)</li> <li>▲ Explain to the mother warning signs that should prompt immediate return</li> <li>▲ Explain home care to the mother</li> <li>▲ Follow-up visit in two days</li> <li>▲ Follow national epidemiological surveillance recommendations</li> </ul>
Does not meet criteria for classification under either of the above categories	<b>PANDEMIC FLU</b>	<ul style="list-style-type: none"> <li>▲ Treat fever with paracetamol (do not use aspirin)</li> <li>▲ Explain to the mother warning signs that should prompt immediate return</li> <li>▲ Explain home care to the mother</li> <li>▲ Follow-up visit in two days if fever persists</li> <li>▲ Follow national epidemiological surveillance recommendations</li> </ul>



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For additional information contact  
INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)  
Healthy Life Course Project  
Family and Community Health

## **Pan American Health Organization**

525 Twenty-third Street, N.W.  
Washington DC 20037  
202.974.3000

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