Experience at the Hospital Infantil de México Federico Gómez from the epidemic caused by Influenza A/SW H1N1 virus: Preliminary report

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Abstract
This document has as its objective to present a preliminary report of cases of influenza evaluated at the Hospital Infantil de México Federico Gómez, their results, confirmation of results, and actions implemented during the contingency in this Institute.

Introduction
A cause for alarm worldwide was the emergence of a new virus with reports of human cases of infection by the influenza virus A/SW H1N1. This virus has not previously been reported and is comprised of a combination of gene segments of avian, swine and human influenza.

On April 21, 2009 the Centers for Disease Control and Infection (CDC) in Atlanta, GA identified and confirmed the presence of the virus in two patients in the state of California, and 48 h later Mexico reported their first case with the outbreak of La Gloria, Veracruz, which focused the world’s attention on our country.1

Its mode of transmission is the same as the seasonal influenza virus, principally through respiratory secretions (>5 µg) expelled through talking, coughing or sneezing originating from an infected person.

Until June 1, 2009, the World Health Organization (WHO) announced that 62 countries had reported 17,410 confirmed cases of the new virus strain of influenza A known as H1N1 and there were 115 deaths. Mexico accounted for 5,029 of the confirmed cases and 97 deaths.2

Currently, the clinical spectrum is unknown along with virulence, attack rate, severity and mortality in pediatric patients infected with influenza virus A/SW H1N1, whereas laboratory tests indicate that the virus is susceptible to antiviral medications oseltamivir and zanamivir.3 Clinical practice guidelines have been

Glossary

• Suspected case of influenza A/SW H1N1: any person who presents a fever >38° along with rhinorrhea, cough, headache, myalgia, or respiratory distress

• Probable case of influenza A/SW H1N1: positive laboratory test for Influenza A

• Confirmed case of influenza A/SW H1N1: confirmed case by RT-PCR or viral culture

• A/SW H1N1 flu: Influenza A virus of swine origin (H1N1)
established for the use of these medications in the treatment and prevention of infection by this virus.

As of April 18, 2009, the Hospital Infantil de México Federico Gómez reinforced actions in the intensification of epidemiological surveillance in the face of increasing cases of seasonal influenza with atypical behavior and increase in cases of sudden onset of severe pneumonia.

Case Descriptions
From April 16 to May 31, 2009 at the Hospital Infantil de México Federico Gómez there were 1,746 consultations for respiratory problems, of which 367 were within the operational definition of a suspected case of influenza (see Glossary). Rapid indirect immunofluorescence (IFI) test was performed from samples collected from pharyngeal or nasopharyngeal swabs. Thirty eight cases had positive results and included 29 pediatric patients and 9 healthcare workers.

Of the pediatric patients, 16 were confirmed by evidence of real-time polymerase chain reaction (RT-PCR) test for influenza A/SW H1N1 by the Instituto Nacional de Diagnóstico y Referencia Epidemiológica (INDRE) of the Secretary of Health (SS). Gender distribution of patients was 6 females and 10 males with ages ranging from 11 months to 13 years (median age: 6 years).

Eight cases originated from Mexico City, six from the State of Mexico and two from Michoacán.

Two patients were treated in the respiratory isolation area and 13 (81%) received outpatient treatment. No deaths were documented (Figure 1, Table 1).

Symptoms and Signs in Confirmed Cases
The most common symptoms presented were fever (100%), rhinorrhea (runny nose) (93%), cough (87%), and headache (80%) (Table 2).

Epidemiological Calendar
Figure 2 describes the epidemiological calendar, which outlines the distribution of occurrence of cases and strategies that were undertaken to contain the epidemic.

Pharmacological Treatment (oseltamivir)
At the outset of the contingency, oseltamivir, an antiviral, was administered at a dose according to body weight, in accordance with the recommendations of the SS and the CDC5,6 to all patients with clinical suspicion of influenza (fever >38°C along with headache, myalgia, rhinorrhea, and cough) and a positive IFI test. As of April 26, all suspected cases received treatment with or without evidence of IFI-positive test.

Prophylaxis
Oseltamivir was administered in 17 cases, four had family contacts and 13 were at-risk medical and paramedical personnel according to the guidelines of the SS and the CDC.5,6

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**Figure 1. Cases of influenza at the Hospital Infantil de México Federico Gómez (April 16-May 31, 2009)**

- **1,746 consultations for respiratory symptoms and/or fever**
- **367 (21%) suspicious cases**
- **IFI**
  - **Patients (n = 261) (71%)**
    - IFI(+) 29 (11%) (1)
  - **Healthcare workers (n = 106) (29%)**
    - IFI(+) 10 (9.4%) 9 Influenza A (1)
      - 1 Influenza B)
    - 16 RT-PCR(+) Influenza A/SW H1N1 (2)
    - 2 RT-PCR(+) Influenza A/SW H1N1 (2)
    - 4 Influenza A
Measures to Contain the Transmission of Influenza A/SW H1N1

Specific Objectives
• Strengthen epidemiological and public health surveillance
• Promote healthy habits
• Ensure the protection of personnel
• Guarantee supplies and specific medications
• Establish early diagnosis
• Provide timely medical care
• Rational use of antivirals

Precautionary Measures
As a priority matter and since the beginning of the contingency, there were precautionary measures for healthcare personnel and family members consisting of the following:

1) Hand washing with soap and water or use of alcohol gel before and after contact with a patient as effective medical evidence to prevent transmission of the influenza virus, as well as the recommended use of conventional facemasks
2) Use of specific facemask (N 95), disposable gloves and gowns was established for the medical and nursing staff who have direct and close contact with patients diagnosed with influenza and in the areas of the hospital where these patients are confined, such as the pediatric ICU and the respiratory isolation area (which was adapted for the care of these infected patients, originally intended as an outpatient surgery room), as well as the triage area (classification of patients with and without respiratory disease at the entrance of the hospital)
3) Hospital personnel who had no direct and close contact with patients diagnosed with influenza did not need protection (N 95 mask, disposable gloves and gown)

As a result of the experience of the Hospital Infantil de México Federico Gómez, we can issue the following conclusions:
1) One in five patients (21%) evaluated with fever and respiratory distress was classified as suspected influenza.
2) Five percent of suspected cases were confirmed as influenza A/SW H1N1 virus with the RT-PCR test.
3) Nearly 60% of cases with a positive IFI test were confirmed with the RT-PCR as influenza A/SW H1N1 virus.
4) The clinical panorama for confirmed patients consisted predominantly of fever, rhinorrhea, cough and headache.
5) Although some patients showed highly complex conditions typical of third level care, in those patients who had a confirmed case of influenza A/SW H1N1 virus, no deaths were reported.
6) Cases of seasonal influenza only were only seen in healthcare workers and coincided temporarily with the outbreak of the influenza A/SW H1N1 virus.
7) The majority of patients (81%) with influenza A/SW H1N1 virus who were diagnosed early were treated on an

Table 1. Probable and confirmed cases of influenza and areas of medical care (April 16-May 31, 2009) (n = 29)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Emergencies</th>
<th>Hospital respiratory isolation</th>
<th>Pediatric ICU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probable</td>
<td>Confirmed</td>
<td>Probable</td>
<td>Confirmed</td>
</tr>
<tr>
<td>1</td>
<td>13</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

Probables (indirect immunofluorescence): 13
Confirmed (RT-PCR): 16

Table 2. Clinical table of cases of influenza A/SW H1N1 April 16–May 31, 2009 (n = 16)

<table>
<thead>
<tr>
<th>Signs and symptoms</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>Runny nose</td>
<td>14</td>
<td>87</td>
</tr>
<tr>
<td>Cough</td>
<td>13</td>
<td>81</td>
</tr>
<tr>
<td>Headache</td>
<td>12</td>
<td>75</td>
</tr>
<tr>
<td>Myalgias</td>
<td>9</td>
<td>56</td>
</tr>
<tr>
<td>Arthralgias</td>
<td>6</td>
<td>37</td>
</tr>
<tr>
<td>Odynophagia</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Difficulty breathing</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>
outpatient basis with oseltamivir.

Corollary
It is feasible that, in the future, new cases will present considering the epidemiological chain of transmission and seasonal climatic conditions. Healthcare institutions must maintain continuous and active strategies to promote integral health care consisting of epidemiological, clinical, educational and research activities to help reduce the impact and to mitigate the epidemic of influenza A/SW H1N1 virus in Mexico.

This document should be treated as a preliminary report. Data reported here should be interpreted cautiously and will undergo rigorous analysis for confirmation. Monitoring of cases and their contacts for future publication will also be undertaken.

References