

**SWINE FLU
EMERGING THREAT****VIEW POINT**

Swine Flu (H1N1) and Pediatric Population

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A new pandemic of novel influenza virus called as H1N1 influenza A (also called as swine flu) has been reported worldwide in 2009. Cases of influenza-like illness were first reported in Mexico on March 18, subsequently the epidemic has progressed to America, Europe and now India. As of 13th September 2009, 6,139 patients have been infected with H1N1 in India and 176 of them have died (1). Transmission of this new virus is thought to occur in the same way as seasonal flu and in most patients, symptoms are mild. However this virus is known to cause severe disease in certain high risk groups such as children less than 5 years of age; elderly more than 65 years of age; pregnant women; patients with chronic diseases such as diabetes, hypertension, liver, lung or cardiac disease; immunocompromised patients and patients in old age homes (2). The pandemic in India seems to affect children more severely as compared to other seasonal influenza epidemics. Data from first 82 fatal cases in India showed that 44% of fatal cases had a known underlying condition (diabetes, lung disease, heart disease, AIDS) (1).

The common clinical symptoms include fever, cough, cold, sore throat and even vomiting and diarrhea. In patients with severe infection, acute respiratory distress syndrome (ARDS) and even multi organ dysfunction has been detected. Thus one should suspect H1N1 infection in a person with fever in following situations:

-Within 7 days of close contact with a person who is a confirmed case of (H1N1) virus infection.

-Within 7 days of travel to community where there are one or more confirmed novel influenza A(H1N1) cases, Resides in a community where there is one or more confirmed novel influenza cases.

H1N1 influenza is detected by PCR on the throat or nasal swab currently in India. There are designated laboratories and centres where these tests can be done. One should routinely refer to the Ministry of health and family welfare website for regular updates on these centres (2). Though it is preferable that all patients with flu like symptoms should be tested for H1N1 influenza, it may not be practically possible due to limited testing facilities. Besides, the infection is mild in most of the

patients and is self limiting. Thus, one may have to test only those patients who are at a high risk group. Patients are divided into 3 categories depending on their symptoms and further management is based on the category in which they belong (2).

Currently 2 antiviral drugs are recommended viz. oseltamivir and Zanamivir for the treatment and prophylaxis against H1N1 flu. Oseltamivir is given orally while Zanamivir is given by the inhaled route. Currently oseltamivir is available in designated hospitals and dose depends on the age of the child (Table 1,2 3). These drugs act by blocking the release of new virus particles from the cells that the virus has infected. This prevents the spread of the virus to other cells in the lungs. Treatment should be started within 48 hours of onset of symptoms for adequate response. Oseltamivir should be used with caution in children. A new study carried out by Dr Aileen Kitching from the European Programme for Intervention Epidemiology Training and colleagues from the Health Protection Agency (HPA) in London claims that more than half of children taking Oseltamivir to combat swine flu suffer side effects such as nausea, insomnia and nightmares. The study suggests that one in five children who took part reported having a neuropsychiatric side effect, such as poor concentration, inability to think clearly, problems sleeping, and feeling dazed or confused. This online survey looked at schoolchildren's adherence to Oseltamivir and any side effects they experienced. However this study had a low response rate, and no control group against which to compare the symptoms. Thus in children with category B or C symptoms, oseltamivir should be used.

Prophylaxis with specific antivirals for contacts is controversial as its efficacy is not proven. Also there may be unwanted adverse reactions, higher risk of leading to drug resistance. Already oseltamivir resistant H1N1 has been reported and thus one should avoid misuse of this drug. As with many medicines, oseltamivir and zanamivir have not been specifically tested in pregnancy and breastfeeding and, therefore, are not licensed for this use. However, use in several hundred

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	Category-A	Category-B	Category-C
Symptoms	mild fever + cough /sore throat + body ache, headache, diarrhoea and vomiting	high grade fever and severe sore throat + other category A symptoms Or Patients in High risk group	Breathlessness, chest pain, drowsiness, fall in blood pressure, sputum mixed with blood, bluish discoloration of nails; Irritability among small children, refusal to accept feed; Worsening of underlying chronic conditions in addition to other symptoms in category A and B
H1N1 testing	No	No	Yes
Treatment	Symptomatic. Reassess after 24-48 hours.	-	-
Isolation	Home isolation	Home isolation	Immediate hospitalization
Oseltamivir	No	Yes	Yes

Table 1. Antiviral Recommendations for Treatment or Chemoprophylaxis H1N1 infection. IDSA Guidelines (3).

Agent group	Treatment	Chemoprophylaxis
Oseltamivir		
Adults	75-mg capsule twice per day for 5 days	75-mg capsule once per day
	15 kg or less 60 mg per day divided into 2 doses	30 mg once per day
Children > 12 months	16-23 kg 90 mg per day divided into 2 doses	45 mg once per day
	24-40 kg 120 mg per day divided into 2 doses	60 mg once per day
	>40 kg 150 mg per day divided into 2 doses	75 mg once per day
Zanamivir		
Adults	Two 5-mg inhalations (10 mg total) twice per day	Two 5-mg inhalations (10 mg total) once per day
Children	Two 5-mg inhalations (10 mg total) twice per day (age, 7 years or older)	Two 5-mg inhalations (10 mg total) once per day (age, 5 years or older)

Table 2. Dosing Recommendations for Treatment of Children Younger than 1 year using Oseltamivir (3)

Age	Recommended treatment dose for 5 days
<3 months	12 mg twice daily
3-5 months	20 mg twice daily
6-11 months	25 mg twice daily

Table 3. Dosing Recommendations- Chemoprophylaxis (3)

Age	Recommended prophylaxis dose for 10 days
<3 months	Not recommended unless situation judged critical due to limited data on use in this age group
3-5 months	20 mg once daily
6-11 months	25 mg once daily

women during pregnancy has not provided any evidence of harm to the fetus, and no harm has been shown in pregnant animals treated with oseltamivir. In normal circumstances, these drugs are not recommended for use in pregnancy unless the benefit to the mother justifies the theoretical risk to the fetus. In the current circumstances the balance of benefit to risk supports their use and they should be provided for pregnant women. Indeed appropriate treatment of pregnant women with oseltamivir or zanamivir will help to reduce symptoms such as fever and this may benefit the developing fetus (5). Vaccination

with H1N1 vaccine seems to be the way further to control this pandemic else it continues for years. The seasonal flu vaccine does not protect against the 2009 H1N1 flu. CDC's Advisory Committee on Immunization Practices (ACIP) has recommended that certain groups of the population receive the 2009 H1N1 vaccine when it first becomes available. These target groups include pregnant women, people who live with or care for children younger than 6 months of age, healthcare and emergency medical services personnel, persons between the ages of 6 months and 24 years old, and people ages of 25 through 64 years of age who are at higher risk for 2009 H1N1 because of chronic health disorders or compromised immune systems (6). Vaccine trials are underway and the vaccine is expected by the end of this year.

Thus to conclude, novel H1N1 influenza epidemic is underway. Children tend to be more severely affected. Use of antivirals should be cautious to prevent adverse effects and resistance.

References

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