Experience from Influenza A (H1N1) Pandemic 2009 – Is Prevention better than Cure?

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On August 10, 2010 the World Health Organization (WHO) Director-General Dr. Margaret Chan announced that the H1N1 Influenza event has moved into the post pandemic period.

Data compiled by the Ministry of Health and family welfare, India reveals that from May 2009 to October 10 2010, there were 30042 cases of H1N1 influenza recorded and 2247 deaths from the same. Of 515 deaths from H1N1 in the current year, 280 were from rural areas, 235 from urban areas and maximum in the age group of 21-30 years.

Though virus activity has significantly subsided since June 2010, the H1N1 2009 virus is expected to circulate as a seasonal virus for some years. However, its behaviour cannot be predicted at the present time. WHO strongly recommends surveillance during the post pandemic period as high risk groups identified during the pandemic will continue to be affected though in smaller numbers. Local outbreaks need to be watched for at all times.

This issue of the journal has 3 articles on H1N1 infection reported from India.

The original article by Puvanalingam et al focuses on the clinical profile of H1N1 Influenza – it is a retrospective study from 2 government hospitals in South India. Like in the West, the groups at increased risk identified include young people, pregnant women and people with underlying respiratory conditions including asthma and pulmonary tuberculosis.

Recipients of solid organ transplants are thought to be at greater risk for complications from seasonal influenza, as compared to general population. A multicentre cohort study done from April to December, 2009 in patients who had received organ transplants and had Influenza A H1N1, identified 237 patients who were hospitalized.1 Pandemic influenza A H1N1 resulted in a variety of illnesses ranging from mild and self-limiting to severe disease in recipients of solid organ transplants. 71% required hospital admission of which 16% were transferred to ICU.

Starting the treatment within 48 hours was associated with decreased admission and mortality. Antiviral treatment was used in 94% patients. It was concluded that there was substantial morbidity and 4% mortality in these patients. Early therapy was associated with clinical benefit. Vaccination of both transplant patient and their household contact has been stressed as an important preventive measure. Post exposure chemoprophylaxis can be an option in these patients. There is attack rate of 18.24% from hospitalized patients with influenza who in turn can potentially infect other patients at risk.

Resistance to antiviral drugs is widespread amongst seasonal influenza A viruses. There is an urgent need for new drug targets. Scientists have used forward chemical genetics approach to identify influenza nucleoprotein as a potential antiviral target. A rapid increase of resistance to neuraminidase inhibitor oseltamivir in non pandemic H1N1 has been a cause for concern. With few exceptions in the present pandemic the virus strains have remained sensitive to oseltamavir.2,3

It is important to identify the high risk groups so that vaccination as a preventive strategy can be offered. The experience from 2009 pandemic emphasized the importance of yearly influenza vaccine in high risk groups. Pregnant women have protective levels of anti-influenza antibodies after vaccination.4 Passive transfer of these antibodies that might provide protection from vaccinated women to neonates has been reported.

From January, 2010, vaccine trials were initiated. India launched the first indigenously manufactured vaccine against H1N1 in March, 2010.

In July 2010, intranasal vaccine with live attenuated virus was made available, though there were vaccine related side effects reported increasingly. The vaccine was novel in that it was cheap and used nasal route of administration which can be more comfortable route for mass immunizations.

Vaccination of healthcare workers is another issue that has been a cause of debate in scientific circles.5,6 Influenza can cause absenteeism, loss of work hours and also can be transmitted to the patients by them which can be dangerous.

Intranasal vaccine with live attenuated virus which was used in present pandemic had few takers even amongst healthcare workers as flu-like symptoms were increasingly reported post vaccination. There has been concern about side effects. Clinical research is needed for more safe and effective vaccine formulations and alternatives to conventional vaccination.

Advisory committee on immunization practices (ACIP) for Center for disease control (CDC) has provided updated recommendations for influenza vaccination based on analysis of available data from present pandemic.7 These were published in August 2010. According to these influenza vaccine has been recommended for use in all persons aged 6 months or more who have no contraindications for the vaccine. This is taking into account the present pandemic data where in there was higher risk of influenza complications in adults aged 14-49 years. The 2010- 2011 vaccine is an inactivated vaccine containing 3 strains of influenza of which the influenza A (H1N1) vaccine virus is derived from 2009 pandemic influenza A (H1N1) virus. High risk individuals should be vaccinated with trivalent inactivated influenza vaccine. Live attenuated vaccine is indicated for vaccination of healthy non pregnant adults without risk factors aged 2-49 years. Persons who received a 2009 H1N1 monovalent vaccine should still be vaccinated with the 2010-11 formulation of live or inactivated vaccine to provide protection against influenza A (H3N2) and influenza B strains that are expected to circulate during the 2010-11 influenza season. In addition, the duration of
protection after receipt of the 2009 H1N1 monovalent influenza vaccines is unknown and likely to decline over time.

Emergency threats from seasonal infectious diseases arise from time to time. In our country, overcrowding, suboptimal hygiene practices and inadequate healthcare availability often make it difficult to contain an epidemic. In general there is a mindset targeted towards therapy rather than prevention (?) expense) causing low vaccine acceptability. It is indeed important to rely on prevention practices. Whether availability of indigenously prepared cheaper vaccines would prove to be a cost effective option for prevention needs to be evaluated.

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Dr. J.C. Patel and Dr. B.C. Mehta Best Papers Awards

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