Vaccines for Pandemic Influenza A H1N1 (2009): Where Do We Stand?

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Vaccination is the best preventive measure that can be taken in an event of influenza pandemic. In the wake of increase in oseltamivir resistant cases of pandemic influenza A H1N1 (2009) virus, vaccination is the last weapon left in our armamentarium for protection against the lethal virus. The vaccine development and deployment is a critical part of pandemic influenza preparedness [1]. CDC's advisory committee on immunization practices (ACIP) recommended that people at highest risk for complications from this virus, or those caring for high risk individuals who cannot afford vaccination, should receive the vaccine first. These target groups include: pregnant women, people who live with or care for children younger than 6 months of age, health care and emergency medical services personnel, anyone 6 months through 24 years of age, and people aged 25 through 64 years who are at higher risk for pandemic H1N1 (2009) virus because of certain chronic health conditions or compromised immune systems.

Two different types of vaccines have been produced an inactivated vaccine (containing killed virus) that is given with a needle, usually in the arm; and nasal spray flu vaccine—a vaccine made with live, weakened viruses that do not cause the flu. The relative contraindications for the pandemic H1N1 (2009) vaccines are: (a) persons who have a severe allergy to chicken egg protein (b) persons who have had a severe allergic reaction to an influenza vaccination, (c) people who developed Guillain–Barre syndrome (GBS) within 6 weeks of getting an influenza vaccine previously, (d) children younger than 6 months of age, and persons who have a moderate-to-severe illness with a fever.

The pandemic and seasonal influenza are co-circulating in the community. It is essential that seasonal influenza and pandemic influenza vaccines be administered together, and there is a public health value in doing so, according to a global panel of immunization experts. Clinical studies on this area of vaccine administration are continuing (www.who.int). The initiatives to manufacture vaccines against pandemic H1N1 have begun in India. The much awaited H1N1 vaccines are finally expected to be launched in India in the year 2010 by conducting a 2-month trial of the vaccine on 100 people hailing from different climatic conditions, before making it available to the general public [2]. The Ahmedabad-based pharmaceutical company, Zydus Cadila, could be the first Indian company to develop an egg-based, inactivated vaccine for pandemic influenza A H1N1 (2009) (www.dnaindia.com). In addition to these efforts, New Jersey based VaxInnat has granted license to Indian biopharmaceutical company Biological E (Hyderabad) for its recombinant pandemic H1N1 vaccine and is collaborating to facilitate the manufacture, clinical development and commercialization of the vaccine in India (www.biospectrumasia.com). Bharat Biotech, one of India's leading vaccine makers, has launched first-in-man studies for cell culture vaccine HN-Vac against pandemic H1N1 in India (www.medicalnewstoday.com). The Pune-based Serum Institute of India (SII) has already done its clinical trial involving 330 people of which 110 were 18–49 years, 110 were above 50 years and the rest children aged 3–17 years [3]. The indigenous vaccine is undergoing clinical trials and expected to be available by May/June 2010 and meanwhile the Government of India has also imported 1.5 million doses of a split virus inactivated, non-adjuvanted monovalent vaccine named Panenza, manufactured by Sanofi-Pasteur (France), which is to be administered intramuscularly [3]. A total of ten lakh doses

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of vaccine have been provided to all Central government hospitals for administering on all frontline health workers and those at highest risk of getting infected. The rest have been provided to the armed forces while some doses will be retained by the ministry.

The influenza pandemic strain has a propensity to infect a naive, susceptible population. The studies conducted in relation to pandemic H1N1 (2009) have shown that high prevalence of its cross-reactive antibodies are visible only in the older population, indicating that prior infection with 1918-like viruses are likely to provide protection against the pandemic H1N1 (2009) virus [4].

Adverse events following immunization (AEFI) may reported within 7 days by the district AEFI committee to the state as well as central government along with the immunization division of ministry of health and family welfare for detailed investigation about the vaccine. The current pandemic H1N1 (2009) virus remains transmissible among humans worldwide with cases of reverse zoonosis, providing opportunities to produce more pathogenic variants which could pose greater human health concerns in future. There is an utmost need to develop strain-specific vaccines that could yield the optimal protection desired for humans and/or animals [5].

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