

**SWINE FLU
EMERGING THREAT****EDITORIAL****Swine Flu (H1N1) - Pandemic or Bioterrorism****Vishal R. Tandon, Annil Mahajan, Sudhaa Sharma, S.K. Gupta, Dinesh Kumar, Yashpal Sharma**

Current H1N1 virus has been found to contain a unique combination of genes from pig, bird and human flu viruses. This peculiar recombinant influenza virus is entirely new and has not been seen before (1). This creates an almost universal vulnerability to infection in nearly all people. Therefore, the emergence of H1N1 infection among humans presents the greatest pandemic threat since the 1968 pandemic caused by H3N2 (2). However, it raises one very important question—Is it an automutated or genetically engineered virus for some good/bad cause?.

Beginning in March 2009, an outbreak of influenza in North America was found to be caused by a new strain of influenza virus, designated Influenza H1N1 2009. On April 9, 2009 it became apparent to public health officials in Mexico City that an outbreak of influenza was in progress late in the influenza season (3). On April 17, two cases in children were also reported in California near the Mexican border (4). The current outbreak of swine influenza A (H1N1) evolved so rapidly that as on 29 April 2009, nine countries officially reported with confirmed cases of swine influenza A/H1N1 infection. Of these, Mexico, United State, Austria, Canada, Germany, Israel, New Zealand, Spain and the United Kingdom have reported laboratory confirmed human cases and deaths due to rapidly progressive pneumonia, respiratory failure and acute respiratory distress syndrome (ARDS). World Health Organization (WHO) declared ever high stages on its "pandemic" scale-alert 6, designating the Influenza H1N1 2009 a potential threat to worldwide health (5) and declared the outbreak as Public Health Emergency of International Concern. In India with increasing number of total confirmed cases deaths the threat of a full blown epidemic in India is very real. If we look at the countries being first and most affected, Probably they are otherwise

in the hit list and are being continuously targeted by the world terrorist organizations. This remains the question/matter of investigation for the world security agencies.

There are other reasons also to have high level of suspicion for the current pandemic to be investigated on the line of bioterrorism attempt. H1N1 Virus is highly infectious and highly effective in producing pathology, efficiently dispersible, readily grown and produced in large quantities, can be spread to others within 6 feet of an ill person who is a confirmed, probable or suspected case of swine influenza A (H1N1) virus infection during the infectious period. Resistant enough to environmental conditions and detrimental in particular season. It can cause high mortality to high-risk group i.e. elderly people, very young children and pregnant ladies and people with certain chronic health conditions (chronic heart or lung, metabolic or renal diseases or immunodeficiencies). Patients remain infectious for 1 day prior to the onset of illness to 7 days after onset. Human-to-human transmission of swine flu can also occur in the same way as seasonal flu through coughing or sneezing by infected people. Disease spreads very quickly among the population especially in crowded places. Cold and dry weather enables the virus to survive longer outside the body than in other conditions and as a consequence, seasonal epidemics in temperate areas appear in winter. People may become infected by touching/handling things contaminated with flu viruses on it and then touching their mouth or nose (6).

Clinical presentation mimics the normal flu. The symptoms of swine flu are expected to be similar to the symptoms of regular human seasonal influenza like fever, lethargy, lack of appetite and cough. Though some people have also reported runing of nose, sore throat, nausea,

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vomiting and diarrhea. This can pose diagnosis difficulty unless high level of suspicion is adopted by the treating doctor, at the same time if high level of suspicion is adopted, it is going to create panic and increase work load at laboratories and in hospitals and indirectly going to affect economy of the nation/state (6).

Currently, there is limited capability to detect this agent ie no simple and fast methods for an early detection are available. Real Time PCR, Viral culture, Four-fold rise in swine influenza A (H1N1) virus specific neutralizing antibodies are the recommended laboratory investigation, which remain inaccessible to all. Only few centers are available in our country having the infrastructure to carry these test. Moreover, the cost of these test is high (Rs10,000 to 15,000) and is a economic threat for the poor population (6).

The licensed anti-influenza drugs (the M2 ion channel blockers, amantadine, rimantadine and the neuraminidase inhibitors, oseltamivir and zanamivir) are beneficial for uncomplicated seasonal influenza. Ribavirin has also been used to a limited extent to treat influenza. Parenterally administered neuraminidase inhibitors, peramivir and zanamivir; dimeric forms of zanamivir; the RNA polymerase inhibitor T-705; a ribavirin prodrug, viramidine; polyvalent and monoclonal antibodies; and combination therapies are under trials (7, 8).

Thus, very few treatment options available. Moreover, treatment options may be limited by the rapid emergence of drug-resistant viruses. Oseltamivir is only available recommended for H1N1 virus and appear effective (8) but have a great threat for resistance to treatment. Oseltamivir-resistant influenza viruses A (H1N1) (ORVs) with H275Y mutation in the neuraminidase emerged independently of drug use ranging from 0% to 68%, with the highest proportion in Norway (9-10).

There is currently no vaccine available against H1N1 influenza. However, is are under trial. Not much of bio-safety guidelines are available across the world for effective prevention and control of the virus and antiviral prophylaxis accept guidelines of Australia and Newzland and WHO (5, 8).

Terrorism is psychological warfare. "Kill one, Frighten Ten Thousand". Bio-chemical terrorism is not a new phenomenon (11). Thus, possibility of non-conventional attack by terrorists must not be ruled out straightway

without investigating it thoroughly by the security agencies across the world. As H1N1 appears to be audacious, potent and dramatic to have achieved "Unthinkable". The present episode of outbreak has created widespread sense of fear, anxiety and panic as well as has been able to generate an individual sense of helplessness, vulnerability and hopelessness and able to demonstrate the incompetence and/or inability of the authorities to afford complete protection against such an outbreak. It has also led to provoke the authorities and general public to commit errors or overreactions in their daily deeds.

Thus, current Swine Flu H1N1 outbreak a natural Pandemic or attack of Bioterrorism is a matter of debate. The assumption need investivation in the interest of human security.

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