

“SWINE FLU”: THE RETURN OF PANDEMIC

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Abstract

Influenza – A (H1N1) is a new influenza virus causing illness in people. First detected in Mexico in April, 2009, it has spread to many countries in the World. WHO declared the outbreak of swine flu had become a pandemic. The current WHO phase of pandemic alert is Phase 6. Influenza A virus strains caused three major global epidemics during the 20th century: the Spanish flu in 1918, Asian flu in 1957 and Hong Kong flu in 1968–69. These pandemics were caused by strains of Influenza A virus that had undergone major genetic changes and for which the population did not have significant immunity. Current strain is transmitted amongst people and not from swine. Swine flu is basically a misnomer. Present article reviews historical context, mode of transmission, symptoms, expected severity & prevention and control measures of swine flu. Because it's a new virus, no one will have immunity to it and everyone could be at risk. Public awareness about the disease & good hygiene practices are essential.

Key words: Swine flu, Pandemic, Epidemiology

Introduction

Swine influenza was first proposed to be a disease related to human influenza during the 1918 flu pandemic, when pigs became sick at the same time as humans^[1]. The 2009 flu pandemic is a global outbreak of a new strain of influenza virus, officially named the “new influenza A H1N1”, first identified in April 2009, and commonly called “Swine flu.” It is thought to be a mutation of four known strains of the influenza A virus, subtype H1N1: one endemic in (normally infecting) humans, one endemic in birds, and two endemic in pigs (swine). Swine influenza virus is common throughout pig populations worldwide. Transmission of the virus from pigs to humans is not common and does not always lead to human influenza, often resulting only in the production of antibodies in the blood. If transmission does cause human influenza, it is called zoonotic swine flu. People with regular exposure to pigs are at increased risk of swine flu infection. The

meat of an infected animal poses no risk of infection when properly cooked. The outbreak began in Mexico, with evidence that Mexico was already in the midst of an epidemic for months before the outbreak was recognized. Soon after, its government closed down most of Mexico City’s public and private offices and facilities to help contain the spread. In early June, as the virus spread globally, the World Health Organization (WHO) declared the outbreak to be a pandemic, but also noted that most illnesses were of “moderate severity.” The virus has since spread to the Southern Hemisphere which entered its winter flu season, and to many less developed countries with limited healthcare systems. Because the virus was spreading with “unprecedented speed”, and many clinics were overwhelmed testing and treating patients, WHO stopped requiring countries to report all cases, but is still monitoring unusually large outbreaks. On June 11, 2009, the WHO’s Chan declared the outbreak had become pandemic^[2]. The current WHO phase of pandemic alert is “Phase 6”. The U.S. Centers for Disease Control and Prevention (CDC) noted that most cases worldwide have been mild so far and most hospitalizations and deaths have been of persons that

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also had underlying conditions such as asthma, diabetes, obesity, heart disease, or a weakened immune system. However, Dr Anne Schuchat from CDC thinks, “this is a virus that’s capable of causing a spectrum of illness that includes severe complications and death”. “It’s very important we take this virus seriously”^[3].

Swine flu is basically a misnomer. This was originally referred to as “swine flu” because laboratory testing showed that many of the genes in this new virus were very similar to those found in pigs in North America. Further on, it has been found that this new virus has gene segments from the swine, avian and human flu virus genes. The scientists call this a ‘quadruple reassortant’ virus and hence this new (novel) virus is christened “influenza-A (H1N1) virus.”

Historical context

Swine influenza was first proposed to be a disease related to human influenza during the 1918 flu pandemic, when pigs became sick at the same time as humans. The first identification of an influenza virus as a cause of disease in pigs occurred about ten years later, in 1930. For the following 60 years, swine influenza strains were almost exclusively H1N1. Then, between 1997 and 2002, new strains of three different subtypes and five different genotypes emerged as causes of influenza among pigs in North America. In 1997-1998, H3N2 strains emerged. These strains, which include genes derived by reassortment from human, swine and avian viruses, have become a major cause of swine influenza in North America. Reassortment between H1N1 and H3N2 produced H1N2. In 1999 in Canada, a strain of H4N6 crossed the species barrier from birds to pigs, but was contained on a single farm^[4]. Influenza A virus strains caused three major global epidemics during the 20th century: the Spanish flu in 1918 (20 to 100 million deaths), Asian flu in 1957 (2 million deaths) and Hong Kong flu in 1968–69 (1 million deaths). These pandemics were caused by strains of Influenza A virus that had undergone major genetic changes and for which

the population did not possess significant immunity^[5].

Some Vital Statistics

It is causing an epidemic among humans in Mexico and it has spread to Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Costa Rica, Cuba, Denmark, Ecuador, El Salvador, Finland, France, Germany, Guatemala, India, Ireland, Israel, Italy, Japan, Republic of Korea, Malaysia, Netherlands, New Zealand, Norway, Panama, Peru, Poland, Portugal, Spain, Sweden, Switzerland, Thailand, Turkey, UK and USA.

As per August 2009 data, total laboratory Confirmed Cases Worldwide were 1,82,166 & total deaths were 1799. In India total Confirmed Cases were 3987 & total deaths 100. In Maharashtra total laboratory Confirmed Cases were 1639 & total deaths 55^[5,6].

Transmission

Transmission between pigs: The main route of transmission is through direct contact between infected and uninfected animals. These close contacts are particularly common during animal transport. Intensive farming may also increase the risk of transmission, as the pigs are raised in very close proximity to each other^[7].

Transmission to humans: Flu viruses are spread mainly from person to person through droplets created while coughing or sneezing by a person infected with the influenza-A (H1N1). Infected person may be able to infect others beginning one day before symptoms develop and up to seven or more days after becoming sick.

People who work with poultry and swine, especially people with intense exposures, are at increased risk of zoonotic infection with influenza virus endemic in these animals, and constitute a population of human hosts in which zoonosis and reassortment can co-occur^[8]. Other professions at particular risk of infection are veterinarians and meat processing workers, although the risk of infection for both of these groups is lower

than that of farm workers^[9].

Symptoms and expected severity

The signs of infection with swine flu are similar to other forms of influenza, and include a fever, coughing, headaches, pain in the muscles or joints, sore throat, chills, fatigue, and running nose. Diarrhea, vomiting and neurological problems have also been reported in some cases. People at higher risk of serious complications included people age 65 years and older, children younger than 5 years old, pregnant women, and people of any age with underlying medical conditions, such as asthma, diabetes, obesity, heart disease, or a weakened immune system (e.g., taking immunosuppressive medications or infected with HIV). Certain symptoms may require emergency medical attention. In children signs of respiratory distress, dehydration, excessive sleeping, seizures and significant irritability. In adults, shortness of breath, pain in the chest or abdomen, sudden dizziness or confusion may indicate the need for emergency care. In both children and adults, persistent vomiting or the return of flu-like symptoms that include fever and cough may require medical attention^[2]. The most common cause of death is respiratory failure; other causes of death are pneumonia (leading to sepsis), high fever (leading to neurological problems), dehydration (from excessive vomiting and diarrhea) and electrolyte imbalance. Fatalities are more likely in young children and the elderly. Confirmation of influenza A(H1N1) infection is through: Real time RT PCR or Isolation of the virus in culture or Four-fold rise in virus specific neutralizing antibodies. For confirmation of diagnosis, clinical specimens such as nasopharyngeal swab, throat swab, nasal swab, wash or aspirate and tracheal aspirate (for intubated patients) are to be obtained^[3].

Prevention & control

- It has been suggested that the personal measures to avoid seasonal flu infection applicable to the 2009 pandemic are

vaccination when available, thorough and frequent hand-washing, a balanced diet with fresh fruits and vegetables, whole grains, and lean protein, sufficient sleep, regular exercise, and avoiding crowds.

- Masks may be of benefit in “crowded settings” or for people who are in “close contact” with infected persons, defined as 1 meter or less by the World Health Organization to prevent airborne virus infection^[2]. In these cases the CDC recommended respirators classified as N95^[3]. The UK Health Protection Agency considers facial masks unnecessary for the general public; and some experts feel it may lead to a false sense of security^[10].

Vaccination

WHO does not expect the swine flu vaccine to be widely available until the end of 2009, noting that current production “yield” was only about half as much as expected and would cause timeline delays^[2]. Two injections will be required three weeks apart for the swine flu and a third will be needed for seasonal flu to provide maximum immunity. Children younger than 9 years, old will need four doses^[11].

Antiviral drugs

According to the CDC, antiviral drugs can be given to treat those who become severely ill, two of which are recommended for swine flu symptoms: oseltamivir (Tamiflu) and zanamivir (Relenza). To be most effective, they must be taken within 2 days of appearing of symptoms. They act by deactivating an enzyme which the virus needs to grow and spread^[3]. The W.H.O. is co-coordinating global response through information sharing; provision of critical supplies especially diagnostics and drugs & technical support. Understanding the virus, strengthening preparedness & reformulation of policy & strategy will help to combat this new threat^[12].

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