

Mitigation strategies for management of Pandemic influenza A H1N1

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Influenza virus has a propensity to cause pandemics (an epidemic of infectious disease that spreads through human population across continents or even worldwide) every 10 to 40 years. Influenza A H1N1 is a circulating seasonal influenza virus that caused pandemic in 1918-1919 killing an estimated 50 million people globally and an estimated seven million in India at that time. Anecdotal data suggest that in the absence of proven drug or vaccine, the mainstay was mitigation strategies that reduced the impact of pandemic then.

The present pandemic is being caused by a new sub type of Influenza A H1N1 which has re-assorted with antigenic segments from American swine, Eurasian Swine, avian and human influenza virus. It was first reported from Mexico on 18th March, 2009 and subsequently the disease spread to all the continents affecting over 182 countries. The international agencies, individual countries, the non-governmental organizations and civic society are better placed to mitigate the impact of present pandemic. Focused planning for public health interventions are in place, an effective drug is available and availability of vaccine is being ensured in the shortest possible time.

Pandemic effect health and a number of sectors beyond health. Highest political will and robust co-ordination mechanisms are essential elements for mitigating the impact of the pandemic. Involvement of National authorities and crisis management mechanisms, institutional mechanisms, identified nodal authorities for quick decision making, technical support mechanisms, plans, guidelines and clearly spelt out operating procedures would facilitate all such strategic interventions.

Entry screening of incoming passengers from affected countries is an intervention to delay entry of the disease into the country. Though substantial evidence base does not exist for this intervention, historical data from past pandemics and mapping of the current spread suggest that such interventions do provide some lead time to put preparedness in place. Best examples could be the island nations which escaped the 1918 Spanish flu pandemic.

Community surveillance to detect clusters of influenza like illness is another important intervention for early detection to limit / contain this spread of the disease. Surveillance system can have innovative approaches like media scanning, call centres and helplines for information gathering and dissemination. Adequate laboratory support needs to be ensured to determine spread of the virus into new geographic areas and virological surveillance to detect change in character of the virus.

Among all, early case detection and management is the most important strategic intervention to mitigate the health impact of the pandemic. For better accessibility and to detect cases early, a number of screening centres / respiratory clinics need to be in place in the affected areas. These respiratory clinics were to ensure early reporting of the cases and categorize patients by triage for home care and hospitalization. The health workers including those in private sector have to be sensitized to look for early warning signs and referral to identified facilities for treatment. The health infrastructure identified to manage Influenza cases need to have isolation and critical care facility.

Successful interventions to break the transmission cycle include chemoprophylaxis and vaccination. The availability of an effective drug Oseltamivir has helped in limiting the spread. Ensuring availability of vaccine, prioritizing the high risk group and vaccinating them would ensure continuity of business in health and sectors other than health. A stockpile of Oseltamivir, vaccine (subject to availability) and personal protective equipments need to be built up for ensuring logistic support.

Another core intervention is human resource development. Training needs are to be assessed. Various categories of health personal including clinicians, public health teams, health volunteers and workers at grass root level need to be trained. For mitigating the pandemic, emphasis need to be placed on training volunteers and grass root level workers for home. In the non health sector agencies providing security and essential services need to be sensitized.

Risk communication is corner stone of mitigating the impact; the messages need to be conveyed to the community in clear and consistent terms. The communication need to be targeted towards the individual and society as a whole. The media need to be sensitized for responsible reporting. Simple public health measures such as frequent hand wash, covering mouth while coughing, sneezing, use of mask (if advised), staying at arm's length away those coughing,

sneezing etc., avoiding crowded places are non pharmaceutical interventions that need to be practiced to mitigate the impact of pandemic.

Apart from the simple public health measures as cited above, community based non pharmaceutical interventions do help in mitigating the overall impact, this include social distancing measures such as closure of schools, markets, work places, limitation of public movement, banning / limiting social / religious gathering etc. But these interventions would be effective only if implemented with other pharmaceutical and individual level non-pharmaceutical interventions as mentioned above. However there are number of limitations for implementing such interventions. Hence decision needs to be taken at the local level depending upon the situation and availability of human resource, administrative capacity and ensuring essential services.

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Thematic session on “Pandemics” in India Disaster Management Congress – Public private participation in pandemic H1N1 Influenza

Disasters & Calamities

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When they occur atleast have this advantage they make us think.

A developing nation like ours has for decades spent heavily after every disaster – which could have been far less if only we had disaster management policies and protocols in place.

Thanks to the concerns & efforts of authorities, we in India are better placed than ever before to handle disasters since the birth of NDMA. We are now being geared up to combat calamities being ready to act instantly.

Disaster Management is a challenge no matter how well prepared we are. We can only mitigate the impact. In our country, factors such as population density, illiteracy and poverty are additional challenging factors. This is because even when warned by authorities about any impending disaster, people have a tendency to ignore the warning.

This necessitates the need to swing all agencies into action in a well co-ordinated manner and simultaneously we need to address the issue of training the civil society appropriately.

Natural disasters cannot be averted. But, by training the community in disaster management we will be able to achieve better results in mitigation and damage control.

The major challenge in disaster management is co-ordination. As of now, the various agencies providing relief have poor co-ordination. We need to bring in efficiency to deliver our best without our resources available at times of crisis. Plugging systemic loop-holes is the need of the hour.

The clear message is that the Govt. alone cannot handle calamities. The Government and its agencies should lead in the co-ordination.

The private sector has over decades filled the void which successive governments have still been unable to cover by themselves. As on today, over 70% of health care delivery and over 60% of medical education is provided by the private sector.

The Government need not ignore or look beyond this huge facility established by the private sector. The need is to establish a co-ordinated system with the private sector through collaborative partnerships.

Collaborative partnership can be successful if they are conceived and implemented without reservations or pre-conceived limitations. There should be mutual trust, understanding and a frank sharing of responsibilities.

Despite Public Private Partnership being spoken of at various forums, as of now the practice adopted by the Government is very sketchy, periodic and temporary in utilizing the private sector. It starts with Government wanting support in crisis (post disaster) and then conveniently forgetting the partner. Even when support is mobilized, the Private sector is left to deal with too many agencies / authorities. No clear guidelines are established. There is a lack of trust.

Private partners are blamed for all problems – inspite of hospitals responding adequately offering facilities like ventilators which are not available with the Government. Political statements are made and warnings are issued and the private sector are not given their due. Recently, payments were announced as upto now no payment is made to private sector for H1N1 testing for isolation services. None in private sector are given due responsibility or recognition, but their ideas are collected. System of re-imburement should be established.

Govt. needs to realize and recognize that private players too have concerns.

The strength of private sector should be utilized in a well meaning way – educating the public, capacity development and their huge skilled human resource given due recognition.

The role of private sector in disaster management is multi-faceted and multi-disciplinary.

We need an effective framework for unleashing the full potential of private sector.

The lines between the public and private sectors appear to be disappearing, blurring or even artificial.

Role of Laboratory in Pandemic Influenza A H1N1

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Background

Globally seasonal influenza claims 250,000 to 500,000 deaths per year and pandemic influenza is an ever present threat. The 2009 Influenza A H1N1 pandemic is caused by a new influenza A(H1N1) virus that has never before circulated among humans. This virus is not related to previous or current human seasonal influenza viruses and is known as Novel Influenza A H1N1 virus.

Global Scenario

Over 343298 cases and at least 4108 deaths have been reported by WHO (as on 6th .10.09) from various regions of the world.

Indian Scenario

11068 laboratory confirmed cases and 351 deaths have been reported from 29 states of India.

Role of laboratory in Pandemic Influenza A H1N1

During pandemic phase laboratories are required for:

- Case diagnosis
- Maximize ILI /SARI surveillance to detect maximum number of cases
- Maintain adequate surveillance to ensure the monitoring of
 1. Antigenic Drift
 2. Antiviral Susceptibility
 3. Virulence

During the **PANDEMIC ALERT PERIOD** laboratories should be able to detect new subtype influenza infection in humans as early as possible, and assist national authorities in the development, amendment and implementation of the national preparedness plan. Laboratories should also take responsibility for assisting in public health activities, including prototype pandemic vaccine strain selection, review and update; pandemic risk assessment; diagnostic reagents and protocols development, validation and update; and antiviral susceptibility monitoring. The labs should also build in surge capacity to meet challenges such as inputting large numbers of specimens for diagnosis under time pressure during this period.

During Pandemic Phase Laboratories should maintain adequately stocked specimen collection kits and store them properly when they are not in use. Collect multiple specimens (respiratory and blood) on multiple days.

During the presentation lab data will be presented.

Thus, laboratory plays an integral part during a pandemic with the following objectives planning and coordination; situation monitoring and assessment; prevention and containment; health system response; and communications

Abstract

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Managing Flu Pandemic at Animal-Human Interface.

Scientific understanding of natural evolution and interspecies transmission of pathogens between animals-humans interface is critical for prevention of emerging zoonotic diseases including current flu pandemic. Wild waterfowl, shore birds and gulls are the natural hosts of influenza A, but humans, swine, chickens, turkeys, mink and horses have also developed influenza strains of their own over time. Swine and Poultry are the key to interspecies influenza transmission as they are susceptible to influenzas from other species and can therefore act as a mixing vessel. Since the first Flu Pandemic in 1918, the food animal production system has gone through sea changes. More specifically, Poultry and Swine production have grown from small scale backyard production methods to large scale industrial-scale operations. This intensive farming has created a favourable environment and for the Influenza 'A' virus to hop species and enhance its virulence by frequent reassortment. The current H1N1 influenza is the first 'triple re-assortment' influenza which has acquired human-to-human transmissibility. To manage the emerging pandemic threat, it is crucial to strengthen influenza surveillance in humans, swine, and Poultry. Specific Biosecurity and bio-containment measures have to be adopted for intensive production practices. Equally important is sustained monitoring of the circulating influenza viruses to identify future mutation and reassortment events, including reassortment with human seasonal viruses. Besides, there is a need to adopt more holistic and collaborative approach to manage both human and animal health consequences of flu pandemic.

Key Words: Biosecurity, Bio-containment, Natural evolution, Interspecies Transmission, Mutation, Flu Pandemic, Reassortment, Surveillance.

Progression of H1N1 Flu in Indian Subcontinent: A follow up study

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Pandemic is generally referred to as a widespread epidemic of contagious disease affecting throughout the whole of a country or one or more continents at the same time. Influenza A, single stranded RNA viruses, family Orthomyxoviridae possess haemagglutinin (HA) and neuraminidase (NA) proteins as envelope glycoproteins. Among these influenza viruses, H1N1 virus is a triple reassortant influenza virus with eight segments, two from North American Avian; three from classic swine while two from Eurasian Swine and; one from human. Throat or nose swabs are suitable for detection; infection is confirmed by specific RT-PCR Assay based on fourfold rise of neutralization or HA1 antibodies to H1N1. The symptoms generally appear in 2-7 days. Genetic and phenotypic analyses indicate H1N1 is susceptible to antiviral medications like oseltamivir and zanamivir but resistant to the category of antiviral drugs i.e., adamantanes. Zanamivir (Relenza) and oseltamivir (Tamiflu), if taken within 48 hours, halve the rate of excretion of the virus and reduce the duration of infection by just over a day. It indicates the possibility of patients to infect other will be reduced, despite the fact that they are infected and required complete antiviral treatment. However, the indiscriminate use of antiviral drugs may lead to such drug resistance. Thus, the prophylaxis should be discouraged. At present there are no vaccines against H1N1 virus. H1N1 Flu has achieved level VI pandemic proportions. However, the disease conditions appear to be mild in most of the cases and can be effectively treated by antiviral drugs. In India, as per the update on 4th Oct 2009, 10913 cases have been reported with 344 deaths. Out of these 10913 cases, maximal number of cases have been successfully treated and discharged. Among these total cases, 519 cases are new. The flu cases have been reported from 28 states of the country. It has been observed that in maximal number of deaths, the pre-existing respiratory or related diseases complicated the cases. In New Delhi region, 14 cumulative deaths have been reported against 2796 cases as per the last official update no. 112. The travellers from H1N1 affected regions should be monitored for two weeks. Any suspected case should be immediately taken to the designated specialised isolated facility. Necessary personal protection equipment like facemasks, plastic aprons and gloves should be used. Dispose waste properly by placing it in sealed impermeable bags labelled as Bio- Hazard. Frequent hand washing (more than 10 times a day) is important. Good general health needs to be maintained with plenty of sleep, physically active, stress management, drink plenty of fluids, and eat nutritious food. India is facing severe impact of pandemic in various regions of the country and possible evolution of resistant mutant strain is a major worry. Necessary strategies adopted to mitigate its impact are required to be studied and deliberated upon.

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MANAGEMENT OF H1N1 INFLUENZA — A HOSPITAL ADMINISTRATOR'S PERSPECTIVE

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H1N1 Flu Virus (Human Swine Flu) is a strain of the influenza virus that usually affects pigs, but may also affect human population. H1N1 flu virus is a respiratory illness that causes symptoms similar to those of the regular human flu. The World Health Organization declared a global H1N1 flu pandemic. A Phase Six pandemic declaration is based on the sustained worldwide spread of H1N1, not the severity of illness caused by the virus.

The pace with which an initial outbreak in Mexico reached pandemic proportions has left all healthcare planners soul searching. The key areas for health officials to allocate resources effectively and efficiently are Surveillance, monitoring and tracking disease outbreaks. It is important to know where disease outbreaks not only begin in the world, but also how and where they might spread. A primary goal of flu monitoring is to identify any outbreak of human-to-human transmission quickly so health officials can attempt to contain and control the outbreak. Governments around the world and the World Health Organization are engaged to investigate and address this situation.

The hospital administrator today faces challenges of global significance. The administrator must develop an action plan to combat occurrence of any such disaster. The plan should contain:

- 1. Written and widely circulated pandemic influenza plan for the institution**
 - Plan must be in collaborating with local and regional plan
 - Communication channels with other healthcare facilities in order to coordinate response efforts

- 2. Mechanism and framework for decision making during disaster**
 - A multidisciplinary planning committee to specifically address pandemic influenza preparedness. This committee must have representation from Hospital administration, Infection control, Public relations, clinicians, Nursing administration, sanitation & hospital attendants, Engineering and maintenance, Central (sterile) services, Security, Dietary services, stores ,laboratory service etc
 - Allocation of responsibilities for coordination.

- 3. Component specific influenza pandemic micro plan.**
 - A suitable location, separate from other clinical triage and evaluation areas to be identified for the triage of patients with possible pandemic influenza.

- Emergency Medical Response preparedness including plan for initial patient evaluation and admission of patients, isolation & treatment
- Creation of Quick response medical teams.
- Issuance of latest applicable Clinical Guidelines pertaining to case definitions, treatment protocols, prophylaxis etc
- Infection Control strategies for preventing pandemic influenza: vaccination (if available), early detection and treatment with antiviral medications and the use of infection control measures to prevent transmission during patient care.
- Printing of Informational materials (e.g., brochures, posters) on pandemic influenza and relevant hospital policies
- Human resource plan: Vaccine Distribution and Use by hospital personnel
- Identification & stocking of likely medicines/vaccines and other laboratory assay requirements ((RT-PCR), virus isolation, and immuno fluorescence antibody (IFA) assays etc)
- Stores rate contracts with suppliers for inventory maintenance of drugs based on recommendation (oseltamivir and drugs with activity against influenza viruses)
- Identify extramural facilities such as laboratories which can be used for analysis.

4. Plan for control of transmission in healthcare facilities

The hospital administrator should specifically devise operational strategies to prevent spread of infection. These include

- Early detection of influenza cases in a facility; use of antivirals to treat ill persons and, if recommended, as prophylaxis
- Seek vaccination of patients and healthcare personnel
- Isolation of infectious patients in separate isolation facility
- Use of appropriate barrier precautions during patient care
- Restricting visitors
- Educating patients and staff
- Avoid crowding, promote distance between patients (≥ 1 m)
- Environmental/engineering infection controls measures like adequate ventilation, proper patient placement, and adequate environmental cleaning
- Use of available personal protective equipment (PPE)/ barrier precautions and frequent hand hygiene.

CONCLUSION:

There are important lessons, not only governments for all health administrators to learn.

- Devise mechanisms to anticipate emergence of such infectious diseases in future
- Respond fast regarding how to manage infectious diseases in this modern age where disease travels rapidly with people in transcontinental movements. We have seen how such diseases emerge in one country or region and rapidly impact on other countries and parts of the world.
- Ensure that well equipped and networked diagnostic laboratories be available– they must be at the appropriate bio-safety level
- One must learn to control or eliminate the threat of the disease spreading from animals to humans & human to human
- Also, one must develop set of diagnostic tools for the earliest recognition of H1N1 or any mutant there of, if and when they should reappear.
- Vaccine development is clearly a priority.

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Work Continuity Plan for H1N1 Pandemic
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A genetically reassorted strain of human, avian flu and swine flu, with an inherent ability to mutate continuously, has developed a subtype [Influenza A (H1N1) virus] and is causing present flu in humans. The symptoms include fever, cough, sore throat, body ache, headache, chills and fatigue. Influenza viruses bind through hem agglutinin onto sialic acid sugars on the surfaces of epithelial cells; typically in the nose, throat and lungs of mammals and intestines of birds. The above mentioned symptoms are not specific only to Influenza A (H1N1) infection and therefore it is essential to do confirmation by laboratory testing of nasopharyngeal samples. Pandemic Alert 6 has been issued by WHO. From the experience of past flu pandemic in 1918-19, it could be anticipated that at any time, the situation may become alarming. As the severity enhances, the number of affected personnel will increase leading to decrease in working strength thus causing adverse impact on economy. No doubt for prevention and management of Influenza pandemic, preparedness sector is health activities are important equally important is business continuity plan in non health sectors as well. Lesson learned from 1918 avian flu pandemic is that 20 million death were there and 1/3 population were infected and activities were paralyzed. Therefore it is very important to prepare business continuity plan in non health sectors. The decrease in work functionaries is proportional to loss of essential functions which leads to a vicious cycle of social disruption. It includes both health and non health emergency functionaries. In view of this, necessary business continuity planning of essential service providers needs to be undertaken on priority. To develop Business Continuity Plan for Non-Health Sectors, NDMA has issued guidelines on influenza A H1N.

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Psychosocial Impact of Pandemic Influenza (H1N1)

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The influenza A (H1N1) commonly referred as Swine Flu is rapidly spreading across the country with number of cases testing positive and deaths are increasing every day. Although the health authorities have taken preventive and response measures at national, state and district level the increasing number of mortalities has created enormous amount of fear and panic among the population resulting in confusion, fear, anxiety and restricting peoples mobility. Everyday there is news of people approaching hospitals to seek medical advice or to rule out possibilities of H1N1. The strict measures implemented by the health authorities like implementation of quarantine of suspected persons and positive tested persons evoked more panic among the individuals, family and the community. The health care workers are also not immune to anxiety and stress and would be having same vulnerability as that of community. This paper summarizes the psychosocial consequences of pandemic H1N1 on the general public as well as care givers and outlines recommendations for normalizing the psychosocial impact at individual, familial and community level.

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Pharmacotherapy of 2009 H1N1: Challenges and Issues

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The 2009 H1N1 influenza pandemic presently sweeping the globe threatens to become a public health nightmare if preventive healthcare measures are not undertaken on a war footing. The pharmacological arsenal against 2009 H1N1 virus infection is currently limited to the neuraminidase (NA) inhibitors oseltamivir and zanamivir. The guidelines for use of these agents although differing from country to country mostly focus on reserving them for treatment of severe cases or for prophylaxis in high risk groups. Another limitation in using these drugs includes the reports of high incidence of neuropsychiatric symptoms in teenagers administered oseltamivir, and bronchospasm in those administered zanamivir. Further, drug-resistant 2009 H1N1 viruses have been isolated from oseltamivir-treated patients. However, there is no evidence of the emergence of drug-resistant viruses in patients treated with zanamivir, which is presumably a reflection of its low usage. In India the retail sale of NA inhibitors has been regulated through selected outlets and the government is also stockpiling the NA inhibitors for distribution at designated treatment centers. However, procuring and distributing the drugs for the huge population poses a challenge for the government. Development of vaccines against H1N1 is currently ongoing in several countries. Until sufficient quantities of a suitable vaccine against H1N1 are developed, the NA inhibitors will remain first line of defense against the H1N1 pandemic.

Role of International Agencies in Pandemic Influenza

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Pandemic influenza has wide-ranging consequences for human health, economic and social issues and threatens to undermine the achievements of Millennium Development Goals (MDGs). International agencies viz. the multilateral / UN agencies and bilateral development partners (USAID, CDC, DFID, etc) have the responsibility to synergize their Avian and Pandemic Influenza (API) preparedness and response support strategies with the national API preparedness and response plans.

International Agencies have supported countries to prepare robust plans that are multi-sectoral, operational and extend from national level to the district level. Coordinated support has ensured sustained and critical synergies of multiple actors. The UN system Consolidated Action Plan for Avian and Human Influenza (UNCAPHI) contributed to work on API through support for seven specific objectives: animal health and biosecurity; sustaining livelihoods; human health; coordination of national, regional and international stakeholders; public information and communication; continuity under pandemic conditions; and humanitarian common services provided. The UN also recommended a six-step approach to establishing an API coordination framework: analyze existing coordination environment; identify coordination needs; strategize possible coordination structures; consult with all partners; establish and manage coordination mechanisms; and review. These principles guided the coordination of activities of the 12 UN agencies: WHO, FAO, UNICEF, OIE, OCHA, UNDP, ILO, WFP, IOM, UNWTO, UNHCR and ICAO.

At the national level in India, WHO is an active member of the Joint Monitoring Group and also guides the national Inter-ministerial task force on API preparedness and response and functions as the lead UN agency. The WHO has provided technical support in preparation of national preparedness plans, testing of these plans through table top exercises (national and regional levels), capacity building especially in terms of training of Rapid Response Teams (RRTs) and physicians, support for stockpiling of anti-virals, facilitation of laboratory diagnostic capacity, capacity building for pandemic vaccine production and other preparedness and response activities. UNICEF and WHO support the government on developing risk communication strategies. FAO/OIE also provided inputs for tackling AI on the animal health front. The UNDP and other UN agencies play a major role in provision of business continuity planning in the public and private sector for the pandemic in collaboration with the National Disaster Management Authority.

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EPIDEMIOLOGY OF H1N1 INFECTION

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Introduction

Influenza is a viral infection, characterized by sudden onset of high fever, muscle pain, headache and severe malaise, non-productive cough, sore throat and rhinitis. The illness tends to occur in the form of seasonal epidemics. During the 20th century there have been well defined influenza pandemics caused by the influenza A virus at intervals of 15 – 35 years. Over the past decade evidence had been mounting of a possible influenza pandemic. This evidence was accompanied by great concern that the pandemic would stem from a novel, highly virulent, strain to which the population has no immunity and which, therefore, may be associated with high mortality.

Agent

There are three types of influenza viruses – A, B and C. Type A influenza viruses are further typed into subtypes according to different kinds and combinations of virus surface proteins. Subtypes of influenza A viruses are various combinations of the H and N proteins. (H1 – 16, N1 – 9). All the influenza A pandemics so far have been due to the Influenza A virus. The 2009 H1N1 influenza virus is a reassortment with gene products from pigs, avian influenza, and human influenza strains. This virus is antigenically unrelated to H1N1 influenza viruses in circulation since 1957.

Evolution of the Current Pandemic

On 18 Mar this year, officials from Mexico, reported several cases of severe, influenza like illness. Within a month similar cases had been reported from the United States and on 25 and 26 Apr 2009, the World Health Organization (WHO) and Centres for Disease Control (CDC) declared a public health emergency of international concern. On June 11, 2009, the World Health Organization (WHO) declared that a global pandemic of novel influenza A (H1N1) was underway by raising the worldwide pandemic alert level to Phase 6. This reflected the spread of the new H1N1 virus and not the severity of illness caused by the virus.

Current State

The present epidemic has been characterised by rapid person-person transmission. It is apparent that international travel has facilitated geographical spread. There are more cases in urban centers before wider geographical spread within the countries.

The infection has spread to all the continents. As of 4 October 2009, more than 375,000 laboratory confirmed cases and over 4500 deaths have been reported to WHO from across the globe. WHO acknowledges that this case count is significantly lower than the actual number of cases that have occurred. Widespread influenza is being reported throughout North America. In Europe and Central and Western Asia, early transmission of influenza virus continues to increase, with more intense focal activity being reported in a few in many countries. In the tropical regions of the Americas and Asia, influenza activity remains variable with persistence of the influenza virus transmission. In the temperate regions of the southern hemisphere, influenza transmission has largely subsided or continues to decline substantially.

In India, the first confirmed case of influenza was detected on May 16 in a 23 year old male who had travelled from USA to Hyderabad. Like the rest of the world, the virus has travelled rapidly across India. Cases have been reported from 30 States and Union Territories including the Andaman and Nicobar islands. As of 14 Oct 09 over 65000 persons have been tested for Influenza. Of these, 12334 have been found positive. There have been 399 confirmed deaths due to H1N1 infection in India.

Person Characteristics

Analysis of the infected cases reveals that in the current pandemic young individuals are more likely to be infected. Hospitalization and case fatality in young adults has been found to be higher than that of seasonal influenza. There is epidemiologic and serologic evidence for low susceptibility in older adults. Pregnant women, people with chronic diseases and underlying health conditions, young children, and people with immunosuppression constitute the group who are at high risk for suffering more severe disease.

Conclusion

Most health authorities expect a second wave of infection, particularly in tropical Asia as winter approaches. There may be a significant increase in the number of clinical cases with an obvious impact on morbidity and mortality rates. In order to minimize the public health impact we need to fine tune our plans to face the epidemic appropriately.

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