# Influenza Pandemic Preparedness and Response Plan

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**DRAFT**

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## 1. INTRODUCTION

Influenza A viruses undergo major antigenic shift at unpredictable intervals and causing worldwide epidemics ("pandemics") with high morbidity and mortality. The principal pandemics of the last century occurred in 1918, 1957 and 1968. The 1918 pandemic 'Spanish Flu' lasted two years and is estimated to have caused about 30 million deaths worldwide. In India case fatality among the general population was also about 30% .

Sporadic transmission of novel influenza viruses from animals to humans, occurs from time to time anywhere in the world. Scientific evidence suggests that the earlier pandemics also resulted from jumping of species and more so from avian species. In this context the present outbreak of H5N1 Avian influenza in the south-east Asian countries merits attention. As of now, it has already caused illness in 89 humans with 52 deaths in three countries namely Cambodia, Vietnam and Thailand. There is increasing evidence to suggest that these avian strains are getting more virulent capable of causing severe disease. Their reassortment with human influenza viruses in humans or any host which acts as a mixing vessel, may result in a novel strain capable of human to human transmission and beginning of a new pandemic.

Typically, new shifted strains of influenza virus emerge in the Far East and spread via Asia or the Antipodes to Europe. Public Health agencies are likely to have forewarning of the arrival of a new pandemic strain in India

If the morbidity and mortality of the past pandemics be the yardsticks to plan for the future, then it is certain that the disease would spread fast between continents, countries, states and districts facilitated by the modern day air travel and other modalities of transport. There would be simultaneous impact on all communities. High population density would further augment it. The high strike rate would overwhelm the health facilities. Limited availability of drugs and vaccines would accentuate the crisis situation. Sickness absenteeism or otherwise would have impact on all sectors. Socio-economic disruption would ensue. This apart, as all communities have the potential to be affected sooner or later, outside help, much evident in all other disasters, is not to be expected.

Given the scenario, a well co-ordinated strategy for preparedeness is required at national and international level for a robust response and to mitigate the pandemic impact.

## 2. Epidemiology of Influenza Pandemic

Influenza in humans may occur as sporadic cases or may result in small localized outbreaks, widespread epidemics or pandemics. Pandemics are caused by type A virus and usually result from the unpredictable recombination of human, swine or avian antigens. Epidemics are primarily caused by type A viruses and occasionally by type B viruses. Type C influenza virus has been associated with sporadic cases and minor localized outbreaks. In the past, the pandemics of influenza occurred in 1889 (H1NI), 1918 (H1N1) (Spanish Flu), 1957 (H2N2) (Asian Flu), and 1968 (H3N2) (Hong Kong Flu). An estimated 40-50 million persons died during the great influenza pandemic of 1918-19. An estimated 1-4 million persons died each in Asian Flu and Hong Kong Flu.

Humans are the primary reservoir for human infections. The human influenza is spread mainly from person to person by droplet nuclei created by coughing, sneezing, or talking, especially among crowded populations in enclosed spaces. Avian strains are not easily transmitted to humans unless have human genes as a result of reassortment. Limited human-to-human transmission of a highly pathogenic avian influenza has been documented to have occurred in Hong Kong in 1997 and in the Netherlands in 2003.

After a short incubation period of about 1-3 days, the disease may present with typical influenza-like symptoms (e.g., fever, coryza, cough, sore throat, headache, myalgia, prostration), eye infections, croup, bronchiolitis, viral pneumonia, acute respiratory distress or an undifferentiated acute respiratory disease. Gastrointestinal tract manifestation are uncommon, but may be present in children. During major epidemics and pandemics, severe illness and death occur, primarily among the elderly and those debilitated by chronic complications, anaemia or immuno-supression.

Diagnosis is commonly made on the basis of epidemiological characteristics during epidemics, but sporadic cases can be identified only by laboratory tests. Laboratory diagnosis depends upon the demonstration of the virus by culture, RT-PCR, or immunofluorescence using monoclonal antibody to the virus, or a rising antibody titre between acute and convalescent sera.

The present epidemics of highly pathogenic avian influenza (HPAI) caused by avian influenza virus A (H5N1) which was first detected on 12 December 2003 in the Republic of Korea have now been reported from Viet Nam, Japan, Thailand , Cambodia, China, Laos and Indonesia. Of these, Viet Nam, Thailand and China are worst affected.

Human cases of H5N1 avian influenza have occurred in the current outbreak in Viet Nam, Combodia and Thailand only. Since the end of October 2003, hospitals in Hanoi and other provinces in Viet Nam have admitted many cases with severe respiratory illness. As on 19$^{th}$ May, 2005, laboratory investigations have confirmed the presence of avian influenza virus A (H5N1) in a total of 97 human cases [ with 53 deaths] from Thailand (17 cases and 12 deaths); Combodia ( 4 cases and 4 deaths) and Vietnam (76 cases and 37 deaths). Direct transmission from poultry to humans could not be entirely ruled out on the basis of available evidence. Limited human-to-human transmission was considered a possibility but as yet there is still no evidence of efficient human-to-human transmission in Viet Nam or elsewhere.

Sporadic transmission of novel influenza viruses from animals to humans, occurs from time to time anywhere in the world. As surveillance improves, it is likely that such strains will be found with increasing frequency in mammalian or human hosts, as has occurred in the last decade (Netherlands, 1993, UK 1996, Hong Kong 1997, Hong Kong 1999). The pandemic potential of these strains, which may be adapted for transmission in animals rather than man, may not be easily or rapidly determined. Thus a constant state of alertness is required.

In this context of emergence of a novel subtype virus, influenza virus A (H5N1) which is causing the present outbreak of bird flu in Asia is of particular concern for several reasons. H5N1 virus mutates rapidly, has a documented propensity to acquire genes from viruses infecting other animal species, and is able to cause severe disease in humans as documented in outbreaks in Hong Kong in 1997 and 2003. There is another point worth mentioning in the context of emergence of a novel subtype virus. Because pigs can be infected with both human and avian influenza viruses, in addition to swine influenza viruses, they can serve as a mixing vessel for the scrambling of genetic material from human and avian viruses (like H5N1), resulting in the emergence of a novel subtype. Most experts agree that pigs played a role in the emergence of pandemic viruses in 1957 and 1968. Nevertheless, humans themselves can also serve as the mixing vessel.

Thus, even though small number of human cases have been reported to date, the situation has features of public health concern that warrant careful monitoring. Situation could change very quickly as the influenza viruses are genetically unstable and their behavior can not be predicted.

Three pre-requisites must be met to start a pandemic of avian influenza:

(i) Emergence of a virus to which the population will have no or little immunity and against which no existing vaccines is available.
(ii) The new virus is able to replicate in humans and cause disease.
(iii) The new virus is transmitted efficiently from human-to-human.

The first two pre-requisites have been met in the present episode. Although, there is no evidence of efficient human-to-human transmission at present, the chances of its happening have increased due to the occurrence of outbreaks in poultry in many countries resulting in continuous human exposure.

Typically, new shifted strains of influenza virus emerge in the Far East and spread via Asia or the Antipodes to Europe. Public Health agencies are likely to have forewarning of the arrival of a new pandemic strain in India

A pandemic exists when the new virus has been confirmed to cause clinical illness at epidemic levels involving the population of more than one country.

## 3. Goals and Objectives

**Goals:**

The Pandemic Preparedness would aim at:

- Reducing the morbidity and mortality due to influenza.
- Decrease Social disruption and economic loss.

**The objectives**:

- Develop plan with co-ordination at International, National State and District Level for preparedness and response, identifying the roles and responsibilities of all stake holders.
- Strong virological surveillance for early detection of novel virus.
- Institutionalizing mechanism for developing sufficient quantity of vaccines.
- Ensure availability of adequate quantity of anti viral drugs
- Strengthen hospital systems and planning for optimum utilization of services.
- Institute public health measures including infection control practices.
- Establish effective communication with community , health care providers and the media
- Establish synergies with other existing programmes / schemes for optimal utilization of resources.

## 4. Phasing of Pandemic Preparedeness and Response

World Health Organization in 2005 has reviewed the classification system prepared in 1999 for phasing various stages of the pandemic development/ progress. The same has been adopted in this plan for delineating the activities, roles and responsibilities.

WHO Influenza Pandemic Phases:

| Period | Phase | Description |
|---|---|---|
| **Inter-Pandemic Period** | 1 | No new influenza virus sub types have been detected in humans. An Influenza virus sub type that has caused human infection may be present in animals, the risk of human infection or disease is considered to be low. |
| | 2 | No new influenza virus have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease. |
| **Pandemic Alert Period** | 3 | Human infection/s with a new sub-type but no human to human spread or at most rare instances of spread to a close contact. |
| | 4 | Small cluster/s with limited human to human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans. |
| | 5 | Larger cluster/s but human to human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible ( Substantial Pandemic risk). |
| **Pandemic Period** | 6 | Pandemic Phase: Increased and sustained transmission in general population |
| **Post pandemic period** | | Return to inter-pandemic period |

## Action plan for Preparedness and Response

### Interpandemic Period

| **Phase 1** | No new influenza virus sub types have been detected in humans. An Influenza virus sub type that has caused human infection may be present in animals, the risk of human infection or disease is considered to be low. | | |
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| Component | objective | Actions | Lead agency |
| Institutional Framework | To establish institutionalized mechanism for Policy Development , Command and control coordination and evolving guidelines / advisories technical matters | Constitution of Crisis Management Committee under Secretary (HFW).<br><br>Constitution of National Influenza Pandemic committee<br><br>Identification of Nodal agency for deployment of RRT, outbreak investigations, laboratory support.<br><br>Identification of focal point for co-ordination with Central Ministries/ National Disaster management Authority/ states/ institutions.<br><br>Establishing networking with National and International agencies.<br><br>Evolving National Strategy and Influenza Pandemic Contingency plan<br><br>Periodically update the Contingency plan | MOHFW |
| Institutional Framework in states | To establish institutionalized mechanism for Command and control coordination , implementation of | Setting up of State and District Influenza Pandemic Committee<br><br>Developing SOPs for the States/ Districts/Local authorities<br><br>Evolving State and District | MOHFW/ SG |

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| | the action plan and monitoring | Influenza Pandemic Preparedness plans<br><br>Identifying focal points for co-ordination with Centre. | |
| Surveillance and Laboratory support | Have epidemiological data on the prevalent strains.<br><br>Able to detect new influenza viral strains. | Establishing Influenza Surveillance network. by activating WHO identified collaborating Centres and merge with ICMR Project on influenza Surveillance.<br><br>Include new institutions in the network to have representation of all zones.<br><br>Identify Laboratories and upgrade to BSL-III to undertake influenza detection and characterization.<br><br>Identify and Train of key Personnel for Surveillance and Laboratory support<br><br>IDSP to report unusual event of ARI through syndromic approach to National influenza network.<br><br>Networking with Ministry of Agriculture and Deptt of Animal Husbandry for sharing information on influenza strains among animals. | MOHFW/ DGHS/ ICMR<br><br>DGHS/ NICD/ SG.<br><br>IDSP<br><br>MOHFW/ DAH |
| Logistics | Inventory and resource assessment<br><br>Stockpile of Anti viral Drugs, Personal Protective equipments, | Conduct initial availability assessment of supplies (Critical Care equipments, Personal Protective Equipments, Laboratory diagnostics), locations, potential need and including identification of source.<br><br>Develop list of currently | MOHFW/ SG<br><br>SG |

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| | critical care equipments Vaccines, and Laboratory Diagnostics. | qualified vaccinators and sources of potential vaccinators.<br><br>Develop teaching and training aids for training of additional Vaccinators for administration of vaccines.<br><br>Collaborate on international vaccine development initiatives.<br><br>Explore potential of indigenous vaccine manufacturers s for manufacturing Influenza Pandemic Vaccines.<br><br>Explore potential of indigenous drug manufacturers s for manufacturing anti viral drugs. | <br><br>NICD<br><br>MOHFW<br><br>MOHFW/ DCG(I)<br><br>MOHFW/ DCG(I) |
| Hospital systems | Capacity building<br><br>Infrastructure upgradation | Assess availability of hospital beds for general treatment / critical care and identify gaps.<br><br>Develop infrastructure to augment critical care support<br><br>Hospitals to evolve/ strengthen hospital disaster plan for managing mass casualties/ fatalities.<br><br>Develop protocols for clinical case management.<br><br>Evolve infection control policies.<br><br>Prepare bio safety and Waste Management protocols and ensure its implementation.<br><br>Training of Laboratory Personnel for handling clinical samples.<br><br>Increase awareness and | MOHFW/ DGHS/ SG<br><br>SG<br><br>MOHFW/ DGHS/ SG<br><br>DGHS<br><br>DGHS/ SG<br><br>NICD/ SG<br><br>MOHFW/ SG |

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| | | strengthen training of Health functionaries at all levels.<br><br>Conduct simulation exercises / mock drills | <br><br>MOHFW/ SG |
| Public Health Measures | To evolve strategies on containment. | Constitute task force for framing Vaccination Policy.<br><br>Constitute task force for developing guidelines on use of Anti-Viral Drugs.<br><br>Identify institutions for conducting operational research in the field of vaccines/ anti-viral drugs<br><br>Evolve mechanism for synergising with existing National Health Programmes | MOHFW/ DGHS<br><br>MOHFW/ DGHS<br><br>MOHFW<br><br>MOHFW/ DGHS |
| Communications | Establish an effective channel of communication with key response stake holders in government, non-Govt Public and media. | Constitute a Task force for identifying gaps in communication channels and evolve strategies for effective communication including feedback. | MOHFW |
| Regulatory Frame work | To stop/ delay entry of the pandemic strain into India<br><br>To restrict the infection to the affected area with in the country | To develop appropriate legal provisions / incorporate into existing acts/ rules provisions for:<br><br>For restricting international travel from an affected country into India.<br><br>Quarantine healthy persons traveling from/ through affected area/ countries.<br><br>Isolation of cases/ quarantine of contacts of cases reported with in | MOHFW/ WHO/ Ministry of Civil Aviation/ SG |

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| | | the country.<br><br>Legal provisions for all hospitals to admit and treat cases. | |

**Interpandemic Period**

| **Phase 2** | No new influenza virus have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease. | | |
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| **A.** | **India is affected or has trade/ travel links with an affected country** | | |
| Component | objective | Actions | Lead agency |
| Institutional Framework<br><br>Planning and co-ordination | Ensure heightened capacity to address possible human cases.<br><br>Implementing measures to reduce the risk of human infection | Initiate regular Inter sectoral meetings of Health and Deptt of Animal husbandry.<br><br>Consult lead International agencies<br><br>Review contingency plan of Deptt of Animal Husbandry.<br><br>Ensure mechanism in place for culling and safe disposal of carcasses.<br><br>Ensure safe culling practices<br><br>Monitoring the health status of cullers<br><br>Establish policy for compensation of loss to farmers/ mechanism for alternate source of livelihood<br><br>Ensure ability to mobilize and rapidly deploy Rapid response teams for clinico-Epidemiological investigations<br><br>Ensure ability to stock pile anti | MOHFW/ DAH<br><br>MOHFW/ DAH<br><br>DAH<br><br>DAH/SG/District Authorities<br><br>SG/District Authorities<br><br>SG<br><br>DAH/ MHA<br><br>DGHS<br><br>MOHFW |

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| | | viral drugs from indigenous source or international source<br><br>Review the task force reports on Vaccination Policy and identify immediate action to fill gaps.<br><br>Simulation exercise/ mock drill for the health sector Contingency plan and review | MOHFW |
| Planning and co-ordination in states | Ensure heightened capacity to address possible human cases.<br><br>Implementing measures to reduce the risk of human infection | Initiate regular Inter sectoral meetings of Health and Deptt of Animal husbandry.<br><br>Consult National Govt for guidance<br><br>Activate contingency plan of Deptt of Animal husbandry on reporting mass fatalities among birds<br><br>Ensure mechanism in place for culling and safe disposal of carcasses and safe culling practices<br><br>Monitoring the health status of cullers<br><br>compensate of loss to farmers/ Provide for alternate source of livelihood<br><br>Simulation exercise/ mock drill for the health sector Contingency plan and review | SG/ District Authorities. |
| Surveillance and Laboratory support | Able to identify interspecies transmission at an early stage. | Enhance Animal and Human Influenza Surveillance.<br><br>Conduct field investigations in affected areas to assess spread of | ICMR/ DAH<br><br>DAH/ NICD/ ICMR |

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| | | disease among animals, identify reservoirs and threat to human health | |
| | | Analyze animal samples in identified / designated National laboratories for identification and characterization. | DAH |
| | | Share animal samples with international collaborating laboratories for confirmation, characterization, development of diagnostic reagents and to develop candidate vaccine for animal/ human species. | DAH/ International lead Agencies |
| | | Identify Laboratories to undertake serological Surveillance of farmers/ animal workers in poultry farms and other related settings | ICMR |
| Logistics | To minimize the risk of human infection from contact with infected animals. | Review availability of anti viral drugs and lead time for procurement. | MOHFW/ SG |
| | | Review recommendations for prophylaxis and treatment with Anti virals. | DGHS |
| | | Assess lead time for indigenous vaccine manufacturers and surge capacity. | MOHFW/ DGHS |
| | | Ensure availability of Anti Virals, and PPE in affected areas. | SG |
| | | Procure seasonal vaccine[ once available] to vaccinate high risk groups | MOHFW |
| Hospital systems | Ensure capability for early diagnosis | Review arrangements for critical care support and augment if | SG |

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| | and treatment | necessary if the disease has to happen in human population in the affected area. | |
| | | Ensure hospital disaster plan for managing mass casualties/ fatalities are in place. | SG |
| | | Reiterate protocols for clinical case management. | DGHS/ SG |
| | | Alert health functionaries to be vigilant for influenza symptoms in population with epidemiological links with affected animal species.. | SG/ district Authorities. |
| | | Ensure availability of PPE and anti virals in the affected area . | SG |
| | | Conduct simulation exercises / mock drills and reinforce immediate response capabilities. | SG |
| Public Health Measures | To minimize the risk of human infection from contact with infected animals | Ensure optimum response to the animal outbreak. | DAH/ SG |
| | | Safe guard the animal workers and the population at risk | SG |
| | To reduce th risk of co-infection and minimizing the risk of viral re-assortments. | Recommend measures to reduce human contact with infected animals. | DGHS |
| | | Stop import of poultry products from affected countries if the animal disease has not occurred in India. | DAH |
| | | Identify seasonal strain and evaluate / implement vaccination of the high risk group with seasonal vaccine once its available. | DGHS/ ICMR/ SG |

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| | | Conduct operational research in the field of vaccines/ anti-viral drugs | ICMR/ NICD |
| Communications | Sharing of information between Govt and all stake holders.<br><br>Developing appropriate IEC materials | Constant communicating with WHO/ other lead international agencies on situational updates.<br><br>Constant update of information to all stake holders in the form of status report etc .<br><br>Developing and initiating web based interactive public information system<br><br>Develop prototypes of IEC materials in Hindi, English and all regional languages<br><br>Identify institutions for large scale production of IEC materials | MOHFW<br><br>MOHFW/ DGHS<br><br>NIC<br><br>MOHFW/ NGO's<br><br>DAVP |
| **B. India is not affected** | | | |
| Surveillance | Minimize risk of disease entering the country | Heighten level of animal surveillance | DAH |
| Public Health Measures | | Establish or enhance mechanism for exchange of epidemiological data from affected countries | MOHFW |
| Regulatory Frame work | To stop/ delay entry of the pandemic strain into India<br><br>To restrict the infection to the affected area with in the country | Enforce legal provisions on import of poultry products/ other animal products/ live birds/ poultry :<br><br>Quarantine of poultry/ birds/ other animals suspected of originating from affected area | DAH/ SG |

## Pandemic Alert Period

| **Phase 3** Human infection/s with a new sub-type but no human to human spread or atmost rare instances of spread to a close contact. | | | |
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| **A. If India is affected** | | | |
| Component | objective | Actions | Lead agency |
| Institutional Framework<br><br>Planning and co-ordination | Activate and pre test mechanisms to deal with eminent human health threats.<br><br>Co-ordinate timely interventions that will reduce the risk of a pandemic | Activate Crisis Management Committee<br><br>Activate National Influenza Pandemic Committee<br><br>Sensitize National Govt, / National Disaster management Authority and States for impending pandemic threat.<br><br>Check national response, fill the gaps and provide guidance to State/ District authorities in reviewing , updating contingency plans.<br><br>Keep RRT ready for deployment<br><br>Activate networking with national and international agencies. Share and disseminate information.<br><br>Implement interventions to contain the disease . | MOHFW<br><br>MOHFW/ DGHS<br><br>NICD<br><br>MOHFW<br><br>MOHFW/ DGHS |
| Institutional Framework in states<br><br>Planning and co-ordination | Activate and pre test mechanisms to deal with eminent human health threats.<br><br>Co-ordinate timely interventions that will reduce the | Activate State and District Influenza Pandemic Committee<br><br>Review State response, fill the gaps and provide guidance to District authorities in reviewing , updating contingency plans.<br><br>Keep RRT ready for deployment | SG<br><br>SG<br><br>SG/ District |

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| | risk of a pandemic | Activate networking with national agencies. Share and disseminate information.<br><br>Implement interventions to contain the disease . | Authorities<br><br>SG<br><br>SG/ District Authorities |
| Surveillance and Laboratory support | To be able to exclude wider human to human transmission.<br><br>Identification, characterize causative agent<br><br>Have epidemiological data on the new strains,<br><br>Identify Risk to the community<br><br>. | Establish/ review standard case definition in consultation with WHO<br><br>Confirm and report cases promptly to national/ international authorities.<br><br>Conduct detailed clinico-epidemiological investigations<br><br>Active surveillance to detect secondary cases.<br><br>Ensure rapid virological characterization in collaboration with WHO/ lead international agencies.<br><br>Collaborate with international agencies to determine pathogenicity to humans.<br><br>Identify high risk groups for targeted interventions.<br><br>Conduct sero prevalence studies<br><br>Continue to collect and share virus isolates for genomic studies and to develop candidate vaccine/ Laboratory diagnostics | DGHS<br><br>MOHFW/ SG<br><br>DGHS<br><br>NICD/ IDSP<br><br>DGHS/ NICD/ SG.<br><br>ICMR<br><br>ICMR |
| Logistics | Inventory and resource | Review assessment of supplies (Critical Care equipments, | MOHFW/ SG |

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| | assessment | Personal Protective Equipments, Laboratory diagnostics) and fill gaps<br><br>Explore possibility of making available stock of anti viral drugs in the affected area. | <br><br><br>SG |
| Hospital systems | To contain and reduce human to human virus transmission.<br><br>To limit morbidity and mortality among the affected population | Review hospital disaster manuals with special attention to surge capacity for managing critically ill patients; managing fatalities and availability of requisite manpower.<br><br>Ensure provision of isolation facilities and strict infection control practices.<br><br>Assess effectiveness of clinical management protocols and review.<br><br>Conduct CME to all levels of staff for management of cases and infection control practices.<br><br>Pre test existing arrangements through simulation exercises / mock drills | MOHFW/ DGHS/ SG<br><br>SG<br><br>MOHFW/ DGHS/ SG<br><br>DGHS<br><br>DGHS/ SG/ District and Local Authorities.<br><br>DGHS/ SG |
| Public Health Measures | To contain and reduce human to human virus transmission.<br><br>To limit morbidity and mortality among the affected population | Provide health care providers at all levels with updated case definitions, protocols for early case detection, notification and treatment<br><br>Implement appropriate interventions as identified in the contingency plan.<br><br>Re-sensitize health care workers | MOHFW/ DGHS/ SG<br><br>SG<br><br>SG |

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| | To increase readiness for possible epidemic/ pandemic | to detect cluster of cases.<br><br>Ensure providing seasonal influenza vaccine to high risk groups.<br><br>Review the efficacy of anti viral therapy with known agents<br><br>Ensure implementation of infection control practices.<br><br>Promote research for prototype vaccine. | <br><br>MOHFW/ SG<br><br>ICMR<br><br>SG<br><br>ICMR |
| Communications | Provide timely and correct information to all concerned | Provide regular updates to WHO and other national partners on evolving national situation<br><br>Review, update ant test IEC materials in the affected area<br><br>Activate emergency communication plans<br><br>Circulate national contact list to all concerned. | MOHFW<br><br>MOHFW<br><br>MOHFW<br><br>DGHS |
| Regulatory Frame work | To stop/ delay entry of the pandemic strain into India<br><br>To restrict the infection to the affected area with in the country | Widely circulate legal provisions regarding all hospitals to admit and treat cases<br><br>. | MOHFW/ WHO/ Ministry of Civil Aviation/ SG |
| **B. India is not affected** | | | |
| Planning and co-ordination | Activate and pre test mechanisms to deal with eminent human health threats.<br><br>Co-ordinate timely | Review all activities enlisted under Phase-I<br><br>Monitor evolving international situation | MOHFW |

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| | interventions that will reduce the risk of a pandemic | | |
| Surveillance | To detect cases at the earliest | Enhance animal Surveillance<br><br>Surveillance of population at risk | DAH/ ICMR |
| Regulatory Frame work | To stop/ delay entry of the pandemic strain into India | Review enforcing appropriate legal provisions and the timing for such enforcement<br><br>Review the need for restricting international travel from an affected country into India.<br><br>Test Quarantine facilities | MOHFW |

| **Phase 4** Small cluster/s with limited human to human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans. | | | |
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| **A. India is affected** | | | |
| Component | objective | Actions | Lead agency |
| Institutional Framework<br><br>Planning and co-ordination | Co-ordinate implementation of procedures that would delay or contain the infection with in the limited foci. | Ensure highest level of political commitment.<br><br>Deploy rapid response teams.<br><br>Review and ensure implementation of all activities among the identified components.<br><br>Identify additional resources to be mobilized at shortest possible time in terms of manpower and materials<br><br>Identify need for International Assistance and ability to respond to request from member states. | MOHFW<br><br>NICD<br><br>MOHFW<br><br>MOHFW/ DGHS<br><br>MOHFW |
| Institutional Framework in states | Implementation of procedures that would delay or | Implement identified interventions as per contingency plan , reinforce and seek | SG |

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| Planning and co-ordination | contain the infection with in the limited foci. | guidance from the centre , if required.<br><br>Deploy RRT.<br><br>Identify additional resources to be mobilized at shortest possible notice in terms of manpower and materials. | <br><br>SG<br><br>SG/ District Authorities |
| Surveillance and Laboratory support | To assess the extent of human to human transmission. | Conduct detailed clinico-epidemiological investigations<br><br>Review and update case definition, and re-circulate if required.<br><br>Active surveillance to detect secondary cases.<br><br>Confirm and report cases promptly to national/ international authorities. | DGHS<br><br>DGHS<br><br>ICMR/ SG<br><br>DGHS/ SG |
| | Identification and , characterization of the causative agent | Ensure rapid virological characterization in collaboration with WHO/ lead international agencies. | ICMR |
| | Assess risk to the community and potential impact<br><br>. | Assess sustainability of human to human transmission<br><br>Forecast likely impact of the spread of infection<br><br>Collaborate with international agencies to determine pathogenicity to humans.<br><br>Identify high risk groups for targeted interventions.<br><br>Continue conducting sero | NICD/ IDSP<br><br>NICD/ ICMR<br><br>ICMR<br><br>DGHS/ NICD/ SG.<br><br>ICMR |

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| | | prevalence studies<br><br>Continue to collect and share virus isolates for genomic studies and to develop candidate vaccine/ Laboratory diagnostics | <br><br>ICMR |
| Logistics | Inventory and resource assessment | Review assessment of supplies (Critical Care equipments, Personal Protective Equipments, Laboratory diagnostics) and fill gaps<br><br>Ensure availability of recommended drugs in the affected area. | MOHFW/ SG<br><br>SG |
| Hospital systems | To contain and reduce human to human virus transmission.<br><br>To limit morbidity and mortality among the affected population | Ensure that the cases are reported as per surveillance protocol.<br><br>Create additional surge capacity to cope large scale morbidities and mortalities in both Govt and Private Sector.<br><br>Continue assessing effectiveness of clinical management protocols<br><br>Review infection control practices and enforce implementation as per protocol | MOHFW/ DGHS/ SG<br><br>SG<br><br>MOHFW/ DGHS/ SG<br><br>DGHS |
| Public Health Measures | To contain and reduce human to human virus transmission.<br><br>To limit morbidity and mortality among the affected population<br><br>To increase | Ensure that the case reportings conform to standard case definitions.<br><br>Ensure that the cases are notified at the earliest.<br><br>Evaluate the effectiveness of the contingency measures and modify suitably if required.<br><br>Review the efficacy of | MOHFW/ DGHS/ SG<br><br>SG<br><br>DGHS/ SG<br><br>ICMR/ SG |

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| | rediness for possible epidemic/ pandemic | recommended / available anti viral drugs for chemoprophylaxis of close contacts and case management<br><br>Ensure implementation of infection control practices.<br><br>Promote research for prototype vaccine. | <br><br><br>DGHS/SG<br><br><br>ICMR |
| Communications | Provide timely and correct information to all concerned | Update and reinforce messages to health care functionaries to consider influenza infection in all patients and notify.<br><br>Reinforce and intensify key messages on prevention of human to human spread<br><br>Continue providing regular updates to WHO and other national partners<br><br>IEC materials including do's and dont's for wider dissemination. | MOHFW/ SG<br><br>MOHFW/ DGHS<br><br>MOHFW<br><br>DGHS |
| Regulatory Frame work | To stop/ delay entry of the pandemic strain into India<br><br>To restrict the infection to the affected area with in the country | Review enforcing appropriate legal provisions and the timing for such enforcement | MOHFW/ WHO/ Ministry of Civil Aviation/ MHA/DAH/ SG |
| **B. India is not affected** | | | |
| Planning and co-ordination | To stop/ delay entry of the pandemic strain into India | Activate national pandemic contingency arrangements<br><br>Re-assess state of preparedness and fill the identified gaps. | MOHFW |

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| | | Identify ability to respond to request from affected international communities. | |
| Surveillance | Detect the infection at the earliest | Enhance active animal and human surveillance. | ICMR/ DAH |
| Logistics | To ensure availability of drugs, PPE, Laboratory reagents | Stockpile adequate requirement of drugs, PPE, Laboratory reagents | MOHFW |
| Regulatory Frame Work | To stop/ delay entry of the pandemic strain into India | Restrict international travel from an affected country into India.<br><br>Enforce trade restrictions on poultry products<br><br>Enforce Animal Quarantine | MOHFW/ M/o Civil Aviation/ DAH |

| **Phase5** Larger cluster/s but human to human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible ( Substantial Pandemic risk). | | | |
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| **A. India is affected** | | | |
| Component | objective | Actions | Lead agency |
| Institutional Framework<br><br>Planning and co-ordination | Co-ordinate maximum efforts to avert/ delay possibility of pandemic. | Continue highest level of political commitment.<br><br>Consider designating special status to affected areas for implementing interventions uninterrupted..<br><br>Finalise preparations for imminent pandemic by activating and ensuring all actions of Phase-I/ II<br><br>Mobilize additional resources in terms of manpower and materials to affected areas<br>Take support of International | MOHFW<br><br>MHA/ MOHFW<br><br>MOHFW/ DGHS<br><br>MOHFW/ MHA |

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| | | agencies as and when required<br><br>Assess impact of containment measures for modification of strategies and updating | <br><br>DGHS |
| Institutional Framework in **states**<br><br>Planning and co-ordination | Implementation of procedures that would contain the infection within the limited foci. | Implement identified interventions as per contingency plan , reinforce and seek guidance from the centre , if required.<br><br>Mobilize additional resources in terms of manpower and materials to affected areas.. | SG/ MOHFW<br><br>SG/ District Authorities |
| Surveillance and Laboratory support | To assess and contain human to human transmission.<br><br>Early detection of case and ensuring prompt management.<br><br>Identification and , characterization of the causative agent<br><br>. | Continue detailed clinico-epidemiological investigations<br><br>Active surveillance to detect secondary cases.<br><br>Confirm and report cases promptly to national/ international authorities.<br><br>Conduct enhanced surveillance for respiratory diseases<br><br>Ensure rapid virological characterization in collaboration with WHO/ lead international agencies.<br><br>Ensure monitoring of anti-viral drug resistance<br><br>Identify high risk groups for targeted interventions.<br><br>Continue conducting sero prevalence studies<br>Continue to collect and share virus isolates for genomic studies and to develop candidate vaccine/ Laboratory diagnostics | DGHS<br><br>DGHS<br><br>ICMR/ SG<br><br>IDSP<br><br>ICMR<br><br>ICMR<br><br>NICD/ ICMR<br><br>ICMR<br>DGHS/ NICD/ SG. |

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| Logistics | Inventory and resource assessment | Implement realtime monitoring of essential supplies<br><br>Ensure availability of recommended drugs for management as well as prophylaxis<br><br>Ensure availability of seasonal vaccines for health care workers and high risk groups<br><br>If pandemic vaccine is available ensure vaccination of all high risk groups. | MOHFW/ SG<br><br>SG<br><br>MOHFW/ SG<br><br>MOHFW/ SG |
| Hospital systems | To monitor public health resources for pandemic response<br><br>To ensure health system in readiness for triage and treatment<br><br>Prevent spread of infection through nosocomial route | Create surge capacity within existing hospital systems and generate additional resources by establishing day care centres and temporary hospitals<br><br>Establish triage system<br><br>Ensure availability of adequate health personnel if required mobilize from other states.<br><br>Ensure safety of health care workers by vaccination/ prophylaxis, barrier practices, use of PPEs and skill update training.<br><br>Ensure correct waste disposal practices, including terminal disinfections<br><br>Enforce implementation of recommended infection control practices<br><br>Implement guidelines for management of mass fatalities. | DGHS/SG<br><br>DGHS/SG<br><br>DGHS/SG<br><br>DGHS/SG<br><br>DGHS/SG<br><br>DGHS/SG |
| Public Health Measures | To ensure surveillance in the | Ensure chmoprophylaxis of contacts | MOHFW/ DGHS/ SG |

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| | unaffected population remain free of infection | Vaccination of affected population with pandemic vaccine( if available) as per policy | DGHS/ SG |
| Communications | Provide timely and correct information to all concerned | Update and reinforce messages for health care functionaries<br><br>Educate the public regarding the ongoing outbreak, measures taken and likely disruptions to normal civic life including large scale population shifting, prioritization of health care services, travel restrictions and shortage of commodities | MOHFW/ MHA/ DAH/ DGHS/ SG |
| Regulatory Frame work | To ensure mobilization of all resources for mounting response<br><br>To ensure conformity to travel and other restriction of civic life | Review enforcing appropriate legal provisions like District Collector's emergency powers to ensure coping with large scale morbidity and civic restrictions<br><br>Enforce administrative decisions for recalling health personnel for duty / cancellation of leave etc. | MOHFW/ WHO/ MHA/DAH/ SG |
| **B. India is not affected** | | | |
| Planning and co-ordination | To stop/ delay entry of the pandemic strain into India | Activate national pandemic contingency arrangements<br><br>Re-assess state of preparedness and fill the identified gaps.<br><br>Identify ability to respond to request from affected international communities. | MOHFW |
| Surveillance | Detect the infection at the earliest | Enhance active animal and human surveillance to maximum intensity . | ICMR/ DAH |
| Logistics | Ensure availability of drugs, PPE, Laboratory reagents | Stockpile adequate requirement of drugs, PPE, Laboratory reagents | MOHFW |

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| Regulatory Frame Work | To stop/ delay entry of the pandemic strain into India | Restrict international travel from an affected country into India.<br><br>Enforce trade restrictions on poultry products<br><br>Enforce Animal Quarantine | MOHFW/ M/o Civil Aviation/ DAH |

| **Phase 6** Pandemic Phase: Increased and sustained transmission in general population | | | |
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| **A. India is affected** | | | |
| Component | objective | Actions | Lead agency |
| Institutional Framework<br><br>Planning and co-ordination | To provide leadership and co-ordination for mobilization of multi sectoral resource that will minimise morbidity and mortality<br><br>To draw lessons from on going pandemic response to improve strategy and future planning. | Continue highest level of political commitment.<br><br>Review national situation and re assess requirements outside the health sector.<br><br>Mobilize all sectors for optimal health interventions including public health measures including private sector, public sector undertakings, NGO's .<br><br>Take support of International agencies as and when required<br><br>Assess impact of containment measures for modification of strategies and updating | MOHFW/ MHA<br><br>MHA/ MOHFW<br><br>MOHFW/ DGHS/ SG<br><br>MOHFW/ MHA<br><br>DGHS |
| Institutional Framework in **states**<br><br>Planning and co-ordination | Implementation of procedures that would contain the infection within the limited foci. | Implement identified interventions as per contingency plan , reinforce and seek guidance from the centre , if required.<br><br>Mobilize additional resources in terms of manpower and materials to affected areas from Centre/ other states. | SG/ MOHFW<br><br>MOHFW |

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| Surveillance and Laboratory support | To monitor epidemiological, virological and clinical features in order to forecast trends and optimize resources.<br><br>. | Monitor geographical spread of infection<br><br>Conduct enhanced surveillance to determine possible changes in epidemiological parameters.<br><br>As disease activity intensifies and becomes more widespread, reduce virological surveillance and update case definition to reflect true morbidity. | DGHS/ ICMR<br><br>DGHS/ SG<br><br>DGHS/ ICMR/ SG |
| Logistics | Ensure availability of drugs and vaccines<br><br>Ensuring rational use | Implement real time monitoring of essential supplies<br><br>Ensure availability of recommended drugs for management as well as prophylaxis<br><br>Ensure availability of seasonal vaccines for health care workers and high risk groups<br><br>If pandemic vaccine is available ensure vaccination for all high risk groups. | MOHFW/ SG<br><br>SG<br><br>MOHFW/ SG<br><br>MOHFW/ SG |
| Hospital systems | To optimize patient care with limited resources<br><br>Ensure equitable access to medical care<br><br>Reduce overall impact of pandemic<br><br>Manage demand | Create surge capacity within existing hospital systems and generate additional resources by establishing day care centres and temporary hospitals<br><br>Ensure that treatment is provided at all points of care and free of cost to those who cannot afford..<br><br>Implement guidelines for management of mass fatalities. | DGHS/SG<br><br>DGHS/SG<br><br>DGHS/SG |

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| | on health system | Address psychological impact | DGHS/SG |
| Public Health Measures | To ensure surveillance in the unaffected population remain free of infection | Ensure chemoprophylaxis of contacts<br><br>Vaccination of affected population with pandemic vaccine( if available) as per policy<br>Evaluate effectiveness of vaccination policy | MOHFW/ DGHS/ SG<br><br>DGHS/ SG |
| Communications | Ensure public access to credible and consistent information | Maintain capacity to meet information demand<br><br>Ensure that all elements of communication plan are active.<br><br>Address public anxiety, grief and distress. | MOHFW/ MHA/ DAH/ DGHS/ SG |
| Regulatory Frame work | To ensure mobilization of all resources for mounting response<br><br>To ensure conformity to travel and other restriction of civic life | Review enforcing appropriate legal provisions to ensure coping with large scale morbidity and mortality<br><br>Enforce administrative decisions for recalling health personnel for duty / cancellation of leave etc.<br><br>Enforce emergency regulations , if required to manage crisis. | MOHFW/ WHO/ MHA/ SG |
| **B. India is not affected** | | | |
| Planning and co-ordination | To stop/ delay entry of the pandemic strain into India | Activate national pandemic contingency arrangements<br><br>Re-assess state of preparedness and fill the identified gaps.<br><br>Identify ability to respond to request from affected international communities. | MOHFW |
| Surveillance | Detect the infection at the | Enhance active animal and human surveillance to maximum | ICMR/ DAH |

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| | earliest | intensity .<br><br>Monitor global situation and procedures followed by countries for pandemic containment.<br><br>Share/ gather information on impact of vaccination and anti-viral programmes in affected countries. | |
| Logistics | Ensure availability of drugs, PPE, Laboratory reagents | Stockpile adequate requirement of drugs, PPE, Laboratory reagents etc | MOHFW |
| Regulatory Frame Work | To stop/ delay entry of the pandemic strain into India | Restrict international travel from an affected country into India.<br><br>Enforce trade restrictions on poultry products<br><br>Enforce Animal Quarantine | MOHFW/ M/o Civil Aviation/ DAH |
| Communication | To ensure public access to information on global situation and on country preparedness | Keep print and visual media informed about the progress of pandemic in the affected countries<br><br>Redefine/ review communication strategies in the light of measures undertaken by the affected countries | |
| **Post Pandemic Period** | | | |
| **A- India affected and disease has subsided** | | | |
| Planning and Co-ordination | To prepare for subsequent pandemic wave | Review the pandemic plan, revise and change strategies ,if required.<br><br>Determine need for additional resources<br><br>Declare end of emergency period [if declared], withdraw regulatory measures<br><br>Support rebuilding of essential | MOHFW/ DGHS<br><br>MOHFW<br><br>MHA/ MOHFW<br><br>MOHFW/ SG |

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| | | services<br><br>Address Psychological impacts<br><br>Consider offering assistance to remaining countries | <br><br>DGHS<br><br>MHA/ MOHFW/ MEA |
| Surveillance | To detect early subsequent pandemic wave. | Enhanced surveillance.<br><br>Continue conducting sero prevalence studies<br>Continue to collect and share virus isolates for genomic studies | ICMR<br><br>ICMR |
| Logistics | Replenish stock of Essential items | Assess the consumption of anti viral drugs/ vaccine/ PPE and subsequent need for next wave. | MOHFW/ SG |
| Hospital systems | Strengthen hospitals for next pandemic wave | Review effectiveness of treatment and counter measures identify deficiencies and fill gaps.<br><br>Replenish stock of anti virals and other essential drugs/ consumables.<br><br>Ensure that overworked staff have opportunities for rest. | DGHS/ SG<br><br>DGHS/ SG<br><br>SG |
| Public Health measures | Review public health strategy | Assess vaccine coverage<br><br>Continue vaccination programme<br><br>Consider incorporation of pandemic strain into seasonal vaccine. | ICMR<br><br>SG<br><br>ICMR |
| Communication | To achieve public acceptance of the event | Evaluate communication response<br><br>Convey the magnitude of the pandemic. | MOHFW/ Ministry of Information & Broadcasting |

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| | | Create awareness among public and need to be vigilant about the subsequent wave. | |