NATIONAL INFLUENZA PANDEMIC PREPAREDNESS PLAN

January 2006
FOREWORD

Asia has been the epicentre of some recent emerging infectious diseases. It was less than six months after the World Health Organisation declared that the last chain of transmission of severe acute respiratory syndrome (SARS) had been interrupted and the global outbreak contained that the unprecedented outbreak of highly pathogenic Avian Influenza (HPAI; H5N1) occurred in the region. Since this time, the world has moved closer to a pandemic Influenza than at any time since the last episode in 1968. All prerequisites for a start of a pandemic have now been met save one: the establishment of an efficient human-to-human transmission. During 2005, ominous changes have been observed in the epidemiology of the disease in animals. Human cases are continuing to occur and the virus has expanded its geographical range to include new countries, thus increasing the population at risk. Each new human infection gives the virus an opportunity to evolve towards a fully transmissible pandemic strain. The SARS events revealed how much the world has changed in terms of the impact that outbreaks can have in a highly mobile and closely interconnected world. Malaysia has had our share of major viral outbreaks. Since our experience with the Nipah outbreak in 1999, we have put in place processes to be better prepared to meet these challenges. As a consequence, we were better prepared during the SARS outbreak and the recent episode of HPAI outbreak in 2004. Malaysia was not a SARS affected country and is currently free from HPAI.

Certainly swift, coordinated action among government and non-government agencies, and first responders guided by a detailed plan that everybody can work from is one of the prerequisites in mitigating any outbreak. The challenge that we face is extraordinary and the importance of national, regional and global partnerships cannot be overstated if we hope to minimize the impact on health and economic development as well as prevent the international spread of infectious diseases.

We have intensified our collaboration between our health and the agricultural sectors. The formation of an Inter-Ministerial Committee chaired by me and the Minister of Agriculture is testimony to our commitment and political support at the highest level. It is in line with the agreement achieved during the recent International meeting of Health Ministers on Global Pandemic Influenza Readiness in Ottawa, Canada in October 2005.

This interim document on the National Preparedness Plans for Pandemic Influenza is indeed timely and it is my hope that it will serve as a resource for pandemic preparedness stake-holders engagement and intensification of pre-existing core capacities to enable a quick response to pre-empt the pandemic or minimize its adverse impact.

THE HONOURABLE MINISTER OF HEALTH
DATO’ DR CHUA SOI LEK
MESSAGE

There is a growing concern regarding the potential and the imminent threat of an influenza pandemic which could have the most devastating consequences. The Ministry of Health, the largest healthcare provider in Malaysia has taken the lead in developing a workable preparedness plan which is comprehensive yet multi-sectoral in nature. This plan called the National Influenza Pandemic Preparedness Plan (NIPPP) is a document which serves as a time bound guide for preparedness and response plan for influenza pandemic. It provides a policy and strategic framework for a multisectoral response and contains specific advice and actions to be undertaken by the Ministry of Health at the different levels, other governmental departments and agencies and non governmental organizations to ensure that resources are mobilized and used most efficiently before, during and after an Influenza pandemic episode.

It is also a roadmap whereby our core capacities can be strengthened for effective preparedness planning, prevention, prompt detection, characterization containment and control of emerging infectious diseases in general which threatens not only our national but also regional and international security.

This document will facilitate coordination among various sectors, particularly in this case, those dealing with human and animal health. In its preparation, we have looked at several steps including the following:

- Situational analysis, current capacities, risk assessment and risk communication
- Strategies, activities and multi sectoral cooperation mechanisms as well as allocation of responsibilities
- Time frame for emergency response and budget requirements
- Agreements on policies and priorities
- Challenges and opportunities
- Ways of monitoring and evaluating progress.

This Interim document has been prepared by the National Pandemic Influenza Preparedness Planning Committee (NIPPPC) and represents a broad consensus among the committee which is chaired by the Director General of Health and comprise of core multidisciplinary and inter-agencies/departmental representatives and experts, with respect to the action plans to be undertaken to ensure multisectorial response in the event an Influenza pandemic occurrence.

This document is intended to be working manuscript which will be tested on the ground and will be continually reviewed and updated as more information and new consensus are unveiled. It is also an advocacy tool for encouraging greater political commitment and promotes public reassurance that the Ministry of Health is fully dedicated and committed to protecting the Malaysian population from the threat of infectious diseases.

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<td>Assistant Environment Health Officer</td>
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<tr>
<td>ARDS</td>
<td>Acute Respiratory Distress Syndrome</td>
</tr>
<tr>
<td>ARI</td>
<td>Acute respiratory infection</td>
</tr>
<tr>
<td>CD</td>
<td>Communicable Disease</td>
</tr>
<tr>
<td>CSF</td>
<td>Cerebro-spinal fluid</td>
</tr>
<tr>
<td>DCD</td>
<td>Disease Control Division</td>
</tr>
<tr>
<td>DDGH</td>
<td>Deputy Director-General of Health</td>
</tr>
<tr>
<td>DMOH</td>
<td>District Medical Officer of Health</td>
</tr>
<tr>
<td>DPH</td>
<td>Department of Public Health</td>
</tr>
<tr>
<td>FMS</td>
<td>Family Medicine Specialist</td>
</tr>
<tr>
<td>GP</td>
<td>General practitioner</td>
</tr>
<tr>
<td>HC</td>
<td>Health Clinic</td>
</tr>
<tr>
<td>HCD</td>
<td>Health care workers</td>
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<tr>
<td>HECC</td>
<td>Health Education and Communication Centre</td>
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<tr>
<td>HKL</td>
<td>Hospital Kuala Lumpur</td>
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<tr>
<td>HMIS</td>
<td>Health Management and Information System</td>
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<td>HUSM</td>
<td>Hospital Universiti Sains Malaysia</td>
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<tr>
<td>HUKM</td>
<td>Hospital Universiti Kebangsaan Malaysia</td>
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<tr>
<td>ID</td>
<td>Infectious Disease</td>
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<td>IDRC</td>
<td>Infectious Disease Research Centre</td>
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<tr>
<td>IHM</td>
<td>Institute of Health Management</td>
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<td>ILI</td>
<td>Influenza-like illness</td>
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<tr>
<td>IMR</td>
<td>Institute for Medical Research</td>
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<td>MISS</td>
<td>Malaysia Influenza Surveillance System</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<td>NIC</td>
<td>National Influenza Centre</td>
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<td>NSC</td>
<td>National Security Councill</td>
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<tr>
<td>OPD</td>
<td>Outpatient Department</td>
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<tr>
<td>OR</td>
<td>Operations Room</td>
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<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<td>PH</td>
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<td>Prevention And Control of Infectious Diseases Act</td>
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<td>Public Health Laboratory</td>
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<td>PPE</td>
<td>Personnel Protective Equipment</td>
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<tr>
<td>UMCC</td>
<td>University Malaya Medical Centre</td>
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<tr>
<td>VTM</td>
<td>Viral transport media</td>
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<td>VRI</td>
<td>Veterinary Research Institute</td>
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<td>World Health Organisation</td>
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1. BACKGROUND

1.1 GLOBAL OVERVIEW OF INFLUENZA

Overview of the Global Status of Influenza

The epidemic of influenza that occurred every year were the results of the mutations in the genome of influenza A H1 and H3 viruses which primarily human pathogens. These epidemics killed almost 0.5 million people annually in the developed world alone. Though the figures from developing countries were not available because of inadequate surveillance and diagnostic facilities, these are believed to be substantial.

In temperate or colder climatic countries, seasonal influenza epidemics especially during the winter months are common occurrences in all age groups. In most individuals, influenza is a self-limited illness with the majority requiring only ambulatory medical care and those with complications needing hospitalization. The risk of developing serious complications resulting even in fatality is elevated in the very young and the elderly population and in those with underlying medical conditions.

Typical primary influenza illness lasts about a week and is characterized by abrupt onset of fever, muscle aches, sore throat, and non productive cough. In some persons, severe malaise and cough can persist for several days or weeks. Influenza infection not only causes primary illness but also can lead to severe secondary medical complications, including influenza viral pneumonia, secondary bacterial pneumonia, worsening of underlying medical conditions, such as congestive heart failure, asthma, or diabetes or other complications such as otitis media in children.

Few other infectious diseases have adversely affected the health and economics of global populations like influenza did during the three pandemics in the 20th century as well as during the seasonal epidemics. Malaysia being in the tropics has been spared the catastrophe of severe influenza epidemics. But the next global pandemic of a very virulent influenza novel virus combined with the speed of communication and travel may reach our shores faster than we can anticipate causing an epidemic in our country; unless we are prepared to be vigilant in dealing with the disease.

There are three main types of influenza viruses; viz. A, B and C. Influenza C causes only mild disease and has not been associated with widespread outbreaks. Influenza types A and B, however, cause epidemics nearly every year. Influenza A viruses are divided into subtypes, based on differences in two surface proteins: haemagglutinin (H) and neuraminidase (N). Influenza B viruses are not divided into subtypes.
One of the most important features about influenza viruses is that their structure changes slightly but frequently over time - a process known as “drift”, and that this process results in the appearance of different strains that circulate each year. During influenza flu season especially in the winters in both the northern and southern hemispheres, usually one or more known influenza A subtype or B viruses circulate at the same time. The severity of the seasonal epidemic in any locality may be related to a drift in the previously circulating viruses.

**Antigenic Drift vs. Antigenic Shift**

Influenza viruses continuously undergo small genetic changes (referred to as antigenic drift) that require development of new influenza vaccines from year to year. Partial immunologic cross-reactivity between new strains and those they are replacing (i.e. homosubtypic immunity) limits morbidity, mortality, and spread in the population. Relatively few lineages of influenza A are circulating among humans at any one time, which reduces the likelihood of significant genetic re-assortments.

By contrast to the more gradual process of drift, in some years, the influenza virus changes dramatically and unexpectedly through a process known as “shift”. This is when an influenza A (not B) virus makes a dramatic change and acquires a new H or H+N surface proteins. This shift results in the appearance of a new or “novel” influenza virus that has never previously infected human or has not infected humans for a long time for which the general population is unlikely to have any immunity or antibodies to protect them against the novel virus. Influenza pandemics result when strains undergo a more dramatic genetic change caused by genetic re-assortment, generally between human and animal strains (referred to as antigenic shift). The appearance of a novel virus is the first step toward a pandemic. However, the novel influenza A virus also must spread easily from person to person (and cause serious disease) for a pandemic to occur and have potentially devastating impact. Influenza B viruses do not undergo shift and do not cause influenza epidemics. Therefore, an influenza pandemic may be defined by the emergence of a novel influenza virus, to which much or all of the population is susceptible, that is efficiently transmitted person-to-person, and causes disease outbreaks in multiple countries.

Antigenic shift in the influenza virus could create a novel subtype with virulence of in this case, H5N1 virus. Event of the past two years indicated the possibility of such a pandemic. It was estimated that should such pandemic strike, 6 – 28 million people will require hospitalization and 2 – 7 million would die. The pandemic would spread across the globe, within a few weeks, and could manifest in several ways.
The reservoir for Type A influenza viruses is wild birds but influenza A viruses also infect animals such as pigs, horses, poultry as well as people. The last two pandemic viruses were combinations of bird and human influenza viruses. Many persons believe that these new viruses emerged when an intermediate host, such a pig, was infected by both human and bird influenza A viruses at the same time.

Events in Hong Kong in 1997, however, showed that this is not the only way that humans can become infected with a novel virus. Sometimes, an avian influenza virus can “jump the species barrier” and move directly from chickens to humans and cause disease.
1.2 INFLUENZA IN MALAYSIA

In tropical countries like Malaysia influenza occurs all the year round with peak viral activity during the dry season from April to June, and the wet season from October to January. Seasonal outbreaks of influenza occur against a background of almost year-round transmission. The dry-season peak in infection is the most pronounced and corresponds with the warmest period of the year when the temperature ranges from 26.4°C to 28.4°C and humidity reaches 79% to 89%. The second peak, in the wet season, occurs during the coolest period when temperatures drops to between 24.8°C and 26.6°C and humidity ranges from 83% to 91%.

Prior to 1997, three major influenza outbreaks were recorded. These involved the influenza A virus H2N2 strain (May 1957), the H3N2 strain (August 1968), and the H1N1 strain (1980). The outbreak in 1980 was the first time the influenza A H1N1 strain was documented as the causative agent in a case of influenza like illness

Between 2003 until 2005, 6 influenza outbreaks have been documented from West Malaysia involving mainly residential schools. Four of the outbreaks were caused by Influenza A (H3 N2) virus and one by Influenza B virus

Influenza Virus Surveillance

Influenza virus surveillance first began in Malaysia in 1954. Participants include Government outpatient clinics and private clinics, as well as student clinics. A study conducted from September 1997 to April 1998 found that even though the influenza virus circulated throughout the year, a higher incidence of influenza A and influenza B infection occurred from October to December and March to April respectively (Figure 1). Most positive specimens were obtained from children less than 10 years of age.
Figure 1: Influenza viruses isolated; monthly distribution from September 1997 to April 1998.

Source: Virology Unit, Infectious Diseases Research Centre Institute for Medical Research, Malaysia.

The Tables 1 illustrates Malaysian influenza virus surveillance data collected between 1997 until 2005.
Table 1: Influenza Surveillance in Malaysia, 1997-2001

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Samples</th>
<th>Influenza Virus Isolated</th>
<th>Total Number of Influenza Virus-Positive Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Type A</td>
<td>Type B</td>
</tr>
<tr>
<td>1997</td>
<td>165</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₃N₁ (A/Sydney/5/97)</td>
<td>(B/Beijing/184/93)</td>
</tr>
<tr>
<td>1998</td>
<td>180</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₃N₁ (A/Sydney/5/97)</td>
<td>(B/Beijing/184/93)</td>
</tr>
<tr>
<td>1999</td>
<td>210</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₃N₁ (A/Sydney/5/97)</td>
<td>(B/Beijing/184/93)</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₃N₁ (A/Moscow/10/99)</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>690</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
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<td></td>
<td>H₁N₁ (A/New Caledonia/20/99)</td>
<td>(B/Sichuan/379/99)</td>
</tr>
<tr>
<td>2002</td>
<td>414</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₃N₂ (A/Moscow/10/99)</td>
<td>(B/Hong Kong/361/2002)</td>
</tr>
<tr>
<td>2003</td>
<td>999</td>
<td>7</td>
<td>12</td>
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<td>H₃N₂ (A/Moscow/10/99)</td>
<td>(B/Sichuan/379)</td>
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<td>29</td>
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<td>H₃N₂ (A/Fujian/411/2002)</td>
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<td></td>
<td></td>
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<td></td>
<td>H₁N₁ (A/New Caledonia/20/99)</td>
<td></td>
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<tr>
<td>2004</td>
<td>2639</td>
<td>15</td>
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<tr>
<td></td>
<td></td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₃N₂ (A/Wellington/1/2004)</td>
<td>(B/Hong Kong/330/2001)</td>
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<td></td>
<td></td>
<td>5</td>
<td>4 not recovered</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H₁N₁ (A/New Caledonia/20/99)</td>
<td>34 pending</td>
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<td></td>
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<td></td>
<td></td>
<td>H₃N₂ (A/California/7/2004)</td>
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<td>Year</td>
<td>Number of Samples</td>
<td>Influenza Virus Isolated</td>
<td>Total Number of Influenza Virus-Positive Specimens</td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>2005</td>
<td>844</td>
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<td>140</td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>H3N2 (A/Wellington/1/2004)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
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<td>H3N2 (A/California/7/2004)</td>
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<td></td>
<td>4 not recovered, 49 pending</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Type B</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(B/Shanghai/361/2002)</td>
<td></td>
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<tr>
<td></td>
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<td>(B/Hong Kong/330/2001)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14 not recovered, 24 pending</td>
<td></td>
</tr>
</tbody>
</table>

Source: Virology Unit, Infectious Diseases Research Centre Institute of Medical Research, Malaysia.
Malaysian influenza surveillance from 1997 to 2005 showed that more influenza viruses are isolated from March to April, June to July and October to November than other periods of the year (Figure 2). The incidence of influenza virus infection is typically higher during March and July than during other months of the year. In 2001, however, an atypical increase in the number of influenza cases occurred during November.

![Figure 2: Pattern of influenza virus infections: monthly distribution, 1997 - 2005](image)

*Source: Virology Unit, Infectious Diseases Research Centre, Institute for Medical Research, Malaysia.*

The pattern of respiratory infection caused by other respiratory viruses followed a similar monthly distribution with a higher incidence from March to May and July to October (Figure 3).
The seasonal occurrence of influenza cases for 1997 until 2005 mirrored the pattern seen in the southern hemisphere as a whole. Hence, it will be prudent to initiate a programme to increase the use of inter-pandemic influenza vaccine from the months of March/April utilising the southern formulation.
1.3 CURRENT SITUATION OF AVIAN INFLUENZA OUTBREAKS

Of the avian influenza subtypes, currently the H5N1 subtype is of greatest pandemic concern for the following reasons:

i. The virus has spread rapidly throughout poultry flocks in Asia over the past 2 years and now appears to be endemic in eastern Asia. In October 2005, H5N1 was identified in Turkey, Romania, and Croatia.

ii. The subtype mutates rapidly. It has shown a propensity to acquire genes from viruses infecting other animal species. It causes severe disease in humans, with a high case-fatality rate (reportedly at about 70%, although adequate surveillance data are lacking to accurately define the rate). The potential of exposure and infection of humans is likely to be ongoing in rural Asia, where many households keep free-ranging poultry flocks for income and food.

iii. Since January 2002, the predominant avian H5N1 strain in southern China has been genotype Z. Since its emergence, this strain has replaced other genotypes and has become the predominant genotype circulating in aquatic and terrestrial poultry in the region. This strain circulating in Asia appears to be highly pathogenic for humans, and immunity in the human population is generally lacking. However, the strain has not yet been shown to be easily transmitted between humans, and sustained person-to-person transmission has not occurred. Re-assortment with human strain(s) would be necessary for the current virus to acquire this attribute.

iv. If H5N1 continues to circulate widely among poultry, the potential for emergence of a pandemic strain remains high. For example, H5N1 viruses have been found in pigs in southern China, and human H3N2 influenza viruses are endemic in pigs in that area. H5N1 has recently been reported in pigs in Indonesia as well. Thus, the conditions exist for exchange of genetic material between the different viruses in the pig host. Some scientists believe that re-assortment between an avian and a human strain could occur in the human population without an intermediary host; if this proves true, as more humans become exposed and infected, the potential for re-assortment with a human strain may also increase. It is also possible that a pandemic strain could emerge following a more gradual process of adaptive mutation.

The world is already in a phase of “pandemic alert” in which limited or no human transmission is recorded. Human cases of H5N1 have been reported in Vietnam, Thailand, Cambodia, Indonesia, and China. WHO has officially recognized 131 cases, 68 of them fatal, as of 24 November 2005. One case of encephalitis in Vietnam was confirmed retrospectively
as H5N1. To date, sustained person-to-person transmission has not been recognized, although probable person-to-person spread was identified in Thailand involving transmission from an ill child to her mother and aunt. Public health officials are closely monitoring the ongoing occurrence of H5N1 avian influenza in humans in Southeast Asia and watching for the emergence of a strain capable of causing sustained human-to-human transmission. In June 2005, however, an international team sent to Vietnam found no laboratory evidence that the H5N1 strain is infecting humans with greater frequency or that human-to-human transmission is occurring; as of June 30, WHO has officially declared the pandemic potential as unchanged. The possibility of a pandemic was growing everyday. The entrenchment of the virus in poultry and occasional transmission to human beings has occurred in Asia. In all likelihood, Asia would be the epicenter of the pandemic.

The Malaysian Experience

Before 17 August 2004 Malaysia was free of Highly Pathogenic Avian Influenza (HPAI). The first outbreak of HPAI among poultry occurred on 17 August 2004 coincided with the beginning of the second wave of the outbreaks in the region. Following that, 8 more outbreaks occurred, the last outbreak being on 22 September 2004. In addition to these outbreaks, active surveillance on poultry conducted surrounding the infected area also detected HPAI virus from apparently healthy birds in 3 locations. All the outbreaks were due to HPAI virus sub-typed H5N1. Similarly, all the viruses detected from healthy birds were also HPAI virus sub-typed H5N1.

All outbreaks and HPAI virus detection were confined only in the state of Kelantan, involving 5 districts (from total districts of 10); namely, Tumpat, Pasir Mas, Kota Bharu, Bachok and Tanah Merah. The state is situated in the North East of the Peninsular Malaysia and bordering Thailand. Other states in Peninsular Malaysia as well as Sabah and Sarawak are, to date, free of HPAI outbreaks or HPAI infection.

In contrast to the situation in Thailand, Vietnam and Indonesia, the cases and mortality due to HPAI in poultry in Malaysia were considered significantly low. Total number of cases involved in the outbreaks was 106 with 101 deaths. The avian species affected in the outbreaks were village chickens, quails, and ducks. Both village chickens and ducks were raised in free range type of husbandry, while quails were caged on raised floors. All together there were 12 separate premises that were affected.

There have been no human HPAI cases reported in Malaysia. House to house surveillance was conducted by medical officers in the infected areas. Thorough medical examination was done to all suspect cases and those living in affected premises. Although the virus involved in outbreaks in Malaysia was similar to the virus causing outbreaks in Thailand and Vietnam, there was no spread to humans.
The outbreaks as well as the detection of the HPAI virus sub-typed 1 were duly reported to OIE. The first report was sent on 18 August 2004 while the final report was sent on 3rd January 2005.

The outbreaks and infection were successfully eradicated by implementing stamping out strategy. The last culling and disinfection were completed on 22 November 2004. Since then no new infections or clinical cases were detected. Malaysia has been declared as a HPAI Free Country on 22 February 2005, in accordance with Article 2.7.12.2 of the Terrestrial Animal Health Code.
1.4 THE PANDEMIC THREAT

A pandemic is a global disease outbreak. An influenza pandemic occurs when a new influenza A virus emerges for which there is little or no immunity in the human population, begins to cause serious illness and then spreads easily person-to-person worldwide. Three such pandemics have occurred in the last century; in 1918, 1957, and 1968 each causing millions of deaths. Each of these pandemics was preceded by development of a new virus through re-assortment of the human and animal influenza virus genes.

1918: Spanish Flu
The Spanish Influenza (H1N1) pandemic is the catastrophe against which all modern pandemics are measured. It is estimated that approximately 20 to 40 percent of the worldwide population became ill and that over 40 million people died. One of the most unusual aspects of the Spanish flu was its ability to kill young adults. The reasons for this remain uncertain. With the Spanish flu, mortality rates were high among healthy adults as well as the usual high-risk groups. The attack rate and mortality was highest among adults 20 to 50 years old. The severity of that virus has not been seen again.

1957: Asian Flu
In February 1957, the Asian influenza (H2N2) pandemic was first identified in the Far East. Immunity to this strain was rare in people less than 65 years of age, and a pandemic was predicted. In preparation, vaccine production began in late May 1957, and health officials increased surveillance for influenza outbreaks. Unlike the virus that caused the 1918 pandemic, the 1957 pandemic virus was quickly identified, due to advances in scientific technology. Vaccine was available in limited supply by August 1957. Although the Asian influenza pandemic was not as devastating as the Spanish one, there were at least 70,000 U.S. deaths and 1-2 million deaths worldwide.

1968: Hong Kong Flu
In early 1968, the Hong Kong influenza (H3N2) pandemic was first detected in Hong Kong. The number of death for this pandemic was 34,000 in the U.S. and 700,000 deaths worldwide which was less than half of the deaths in USA during the Asian flu pandemic, making it the mildest pandemic in the 20th century.

There could be several reasons why fewer people died due to this virus. First, the Hong Kong flu virus was similar in some ways to the Asian flu virus that circulated between 1957 and 1968. Earlier infections by the Asian flu virus might have provided some immunity against the Hong Kong flu virus that may have helped to reduce the severity of illness during the Hong Kong pandemic. Also, improved medical care and antibiotics that are more effective for secondary bacterial infections were available for those who became ill thus reducing the fatality.
1.5 WHY ARE WE CONCERNED NOW?

Each century has witnessed an average of three pandemics of influenza occurring at intervals ranging from 10 to 50 years, starting without warning and spreading rapidly worldwide causing illness in more than 25% of the total population, with an estimated 40-50 million deaths within a year. Most deaths occurred in young and healthy persons in the age range of 15 to 35 years. Pandemic of 1957 and 1968 respectively were caused by the milder viruses, each killed 1-4 million people.

There is concern now because:

- Of the three pre-requisites to start an influenza pandemic viz. (i) emergence of a novel virus to which all are susceptible, (ii) new virus is able to replicate and cause diseases in humans, (iii) new virus is transmitted efficiently from human-to-human, the first two have already been met by the current H5N1 outbreaks in Asia.
- H5N1 virus, the potential candidate for the next pandemic, has not yet acquired the ability for efficient human-to-human transmission. If this happens, all conditions for a pandemic will be fulfilled.
- H5N1 virus is gradually expanding the host range (e.g. domestic, wild and migratory birds) and spreading geographically in the affected countries as well as to other countries.
- Although no one can predict with certainty when the pandemic will occur, experts warn that it is imminent; there is a great possibility that it would begin from Asia.
- During the current H5N1 outbreaks more than 150 million birds have been destroyed or died and the direct economic costs to affected countries were to the tune of $ 8-12 billion.
- The next pandemic may cause very high morbidity and mortality in a few weeks. It is estimated that the pandemic may cause more than 1 billion cases and 2-7 million deaths. It may severely strain the health services and other essential services and cause massive social, political and economic disruption.
- A modest pandemic lasting over one year might cause losses as high at 3% of Asia’s GDP and 0.5% of world GDP. This is presently equivalent to about a loss of $ 150 -200 billion in GDP.

Countries with pandemic preparedness and pre-existing core capacities will be able to respond quickly to pre-empt the pandemic or minimize its adverse impact.
1.6 THE IMPACT OF PANDEMIC INFLUENZA

- Pandemics are unpredictable and highly variable in terms of severity mortality and patterns of spread
- Most pandemics have originated in Asia. An exponential increase in the number and geographic spread can occur in a matter of weeks
- Virological surveillance for changes in the virus and surveillance among humans for respiratory illness are crucial as early warning systems
- Some public health interventions (quarantine, travel restrictions) have delayed the spread but could not stop it; nevertheless delay of spread is important to allow for medical services to develop a vaccine
- Vaccines have a significant impact but global manufacturing capacity is limited and takes too long (at least 4-6 months after the pandemic starts)

The severity of the next pandemic cannot be predicted, but modelling studies suggest that the impact of a pandemic on the United States could be substantial. In the absence of any control measures (vaccination or drugs), it has been estimated that in the United States a “medium-level” pandemic could cause 89,000 to 207,000 deaths, 314,000 and 734,000 hospitalizations, 18 to 42 million outpatient visits, and another 20 to 47 million people being sick. Between 15% and 35% of the U.S. population could be affected by an influenza pandemic, and the economic impact could range between $71.3 and $166.5 billion.

Influenza pandemics are different from many of the threats for which public health and health-care systems are currently planning:

- A pandemic will last much longer than most public health emergencies and may include “waves” of influenza activity separated by months (in 20th century pandemics, a second wave of influenza activity occurred 3 to 12 months after the first wave).
- The numbers of health-care workers and first responders available to work can be expected to be reduced. They will be at high risk of illness through exposure in the community and in health-care settings, and some may have to miss work to care for ill family members.
- Resources in many locations could be limited, depending on the severity and spread of an influenza pandemic.

Because of these differences and the expected size of an influenza pandemic, it is important to plan preparedness activities that will permit a prompt and effective public health response.
1.7 CHARACTERISTICS AND CHALLENGES OF A PANDEMIC

1. Rapid Worldwide Spread

- When a pandemic influenza virus emerges, its global spread is considered inevitable.
- Preparedness activities should assume that the entire world population would be susceptible.
- Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but cannot stop it.

2. Health Care Systems Overloaded

- Most people have little or no immunity to a pandemic virus. Infection and illness rates soar. A substantial percentage of the world’s population will require some form of medical care.
- Nations unlikely to have the staff, facilities, equipment and hospital beds needed to cope with large numbers of people who suddenly fall ill.
- Inadequate supplies antivirals drugs, the two most important medical interventions for reducing illness and deaths, are of particular concern.
- Death rates are high, largely determined by four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations and the effectiveness of preventive measures.
- Past pandemics have spread globally in two and sometimes three waves.

3. Medical Supplies Inadequate

- The need for vaccine is likely to outstrip supply.
- The need for antiviral drugs is also likely to be inadequate early in a pandemic.
- A pandemic can create a shortage of hospital beds, ventilators and other supplies. Surge capacity at non-traditional sites such as schools may be created to cope with demand.
- Difficult decisions will need to be made regarding who gets antiviral drugs and vaccines.
4. Economic and Social Disruption

- Travel bans, closings of schools and businesses and cancellations of events could have major impact on communities and citizens.
- Care for sick family members and fear of exposure can result in significant worker absenteeism.

1.8 COMMUNICATIONS AND INFORMATION ARE CRITICAL COMPONENTS OF PANDEMIC RESPONSE

Education and outreach are critical to preparing for a pandemic. Understanding what a pandemic is, what needs to be done at all levels to prepare for pandemic influenza, and what could happen during a pandemic helps us make informed decisions both as individuals and as a nation. Should a pandemic occur the public must be able to depend on its government to provide scientifically sound public health information quickly, openly and dependably.

1.9. STEPS IN PREPARATION OF PANDEMIC PREPAREDNESS PLANS

- Situation analysis, risk assessment
- Current capacity of various sectors, especially health and veterinary services, to respond
- Agreement on policy and priorities
- Selecting strategies, activities and multisectorial cooperation mechanism
- Setting time frame for emergency response and allocating responsibilities
- Estimating budget requirements
- Identifying ways of monitoring and evaluating progress
2. THE NATIONAL INFLUENZA PANDEMIC PREPAREDNESS PLAN (NIPPP)

2.1 PURPOSE:

The purpose of NIPPP is to facilitate an organised, coordinated and effective national preparedness and response in the event of an influenza pandemic. The plan provides a framework for preparedness and response by the health sector. It also provides specific advice and actions to be undertaken by the Ministry of Health at the different levels, other governmental departments and agencies and non governmental organizations.

2.2 GENERAL OBJECTIVES:

A guidelines to provide a preparedness and response plan for influenza pandemic to ensure rapid, timely and coordinated intersectorial and interagencies actions in reducing the morbidity, mortality, social and economic disruption.

2.3 SPECIFIC OBJECTIVES:

1. to develop country specific public and professional awareness and educational programmes on influenza
2. to strengthen influenza surveillance mechanisms in the country in order to provide an early warning and on-going monitoring during a pandemic
3. to detect novel influenza strains through clinical and virological surveillance of human and animal influenza disease
4. to facilitate the timely access to and supply of influenza vaccines and antiviral drugs during an outbreak
5. to made specific recommendations and strategies for influenza immunization for the high risk groups and those in the essential services
6. to provide recommendation for antiviral drug therapy and prophylaxis and to avoid inappropriate use of them
7. to implement measures to reduce the spread of the disease guided by the epidemiology of the pandemics
8. to provide guidance for state and district health levels in the development of state and district pandemic influenza preparedness and response plans
9. to provide optimal medical care and support mainatainence of essential services
10. to communicate effectively with the public, health care providers, health professionals, stackholders, community leaders and the media
11. to regularly evaluate and update the contents of the plan to reflect new knowledge and advances gained from experiences from other countries.
2.4 ORGANISATIONAL RESPONSE TO INFLUENZA PANDEMIC

The organisational response during an influenza pandemic in Malaysia will be similar to those undertaken during the Nipah crisis and also the recent SARS outbreak worldwide (see appendix 1). The organisational response to the pandemic will comprise the following;

2.4.1 THE NATIONAL INTER-MINISTERIAL INFLUENZA PANDEMIC COMMITTEE (NIIPC)

This will provide policy directions and co-ordination of ministries and departments, governmental and non-governmental agencies relevant for controlling the pandemic in the country. It is answerable to the Cabinet on all matters related to the pandemic.

Composition of NIIPC

1. Minister of Health — Chairman
2. Secretary-General Ministry of Health — Secretary
3. Secretary-General Ministry of Home Affairs
4. Secretary-General Ministry of Internal Security
5. Secretary-General Ministry of Foreign Affairs
6. Secretary-General Ministry of Transport
7. Secretary-General Ministry of Information
8. Secretary-General Ministry of Tourism
9. Secretary-General Ministry of Education
10. Secretary-General Ministry of Higher Education
11. Secretary-General Ministry of Women, Family and Community Affairs
12. Secretary-General Ministry of Rural Development
13. Secretary-General of Defence
14. Secretary-General of Ministry of Trade and Import
15. Director-General of Health
16. Director-General Department of Immigration
17. Director-General Department of Occupational Safety and Health
18. Director-General of Veterinary Services
19. Inspector-General of Police
20. President Malaysian Medical Association
21. President Association of Private Hospital, Malaysia

In the event that the Cabinet appoints the Deputy Prime Minister as the Chairman of NIIPC, Ministers of the respective ministries represented in the NIIPC will be members. The roles
and functions of each ministry, departments, agency and non-govermental organisations (NGOs) are shown in appendix 2.

**Term of Reference of NIIPC**

1. Be responsible for the formulation, approval and implementation of all decisions of the Cabinet related to the prevention and control of the influenza pandemic.
2. Make decisions on all actions needed to ensure effective surveillance, prevention and control of the pandemic and associated research activities pertaining to it.
3. Coordinate all activities of the various ministries and agencies relevant to the prevention and control of the pandemic.
4. Be responsible for decision making on all influenza pandemic related issues.
5. Determine the role and scope of activities of the various ministries and agencies in the pandemic.
6. Be responsible for reporting to Cabinet on the status of the pandemic and the overall implementation of the recommendations made by the committee.

**2.4.2 THE NATIONAL INFLUENZA PANDEMIC PLANNING COMMITTEE (NIPPC)**

The NIPPC is the technical and advisory committee for the MOH and the National Inter-ministerial Influenza Pandemic Committee and will overseer the development and implementation of the NIPPP. It is responsible for developing strategies appropriate to the country’s needs and situations drawing expertise from WHO, international and local multidisciplinary experts. In the event of a pandemic MOH will be the lead agency for the country with technical inputs from NIPPC.

**Composition of NIPPC**

NIPPC comprises of core multidisciplinary and inter-agencies/departmental representatives and experts, with additional invited and co-opted members based on their particular expertise as and when required.

**The members of NIPPC are as follows**

1. Director-General of Health - Chairman
2. Deputy Director-General of Health (Public Health)
3. Deputy Director-General of Health (Medical)
4. Deputy Director-General of Health (Research and Technical Support)
5. Director Disease Control, Ministry of Health - Secretary
6. Chief Infectious Disease Physician, Hospital Kuala Lumpur (HKL)
7. Director and Senior Consultant Virologist, National Institute for Natural Products, Vaccines and Biologicals
8. Head of Virology, National Influenza Centre
9. Director of National Public Laboratory, Sg. Buloh
10. Director-General, Department of Veterinary Services
11. Director of Veterinary Research Institute (VRI), Ipoh
12. Director of Pharmaceutical Services, Ministry of Health
13. Director-General of Health Services, Ministry of Defence
14. Director General of Higher Education (representative)
15. Director of National Security Division, Prime Minister’s Department
16. President of Malaysian Medical Association (MMA)
17. President of Association of Private Hospitals Malaysia

**Term of reference of NIPPC**

1. to draft a document called the National Pandemic Influenza Preparedness Plan (NIPPP) which outlines an overall contingency plans for preparedness and response to an influenza pandemic.
2. to oversee the further development and implementation of the NIPPP;
   a. to provide guidance for state and district health levels in the development of state and district pandemic influenza preparedness and response plan.
   b. to provide optimal medical care and support maintenance of essential services.
3. to develop country specific public and professional awareness and educational programmes on influenza.
4. to ensure strengthening of influenza surveillance mechanisms in the country in order to provide an early warning and on-going monitoring during a pandemic.
5. to facilitate the timely access to supply and delivery of influenza vaccines and antiviral drugs during a pandemic.
6. to make specific recommendations and strategies for influenza immunization for the high risk groups and those in the essential services.
7. to provide recommendation for antiviral drug therapy and prophylaxis and to avoid inappropriate use of them.
8. to communicate effectively with the public, health care providers, health professional, stakeholders, community leaders and media.
9. to regularly evaluate and update the contents of the plan to reflect new knowledge and advances gained from experiences from other countries.
10. to assess the potential impact from a pandemic virus and benefits from different approaches to disease prevention and control and case management.
11. to review and recommended legislation needed to handle a pandemic before and during its occurrence
12. to put in place process for risk communication.

2.4.3 THE INFLUENZA PANDEMIC COMMITTEES

In the event of influenza pandemic being declared by WHO, the influenza pandemic committees at all levels are activated and will respond by putting into action the influenza pandemic action plans for their respective levels, taking directions from the National Inter-ministerial Committee Influenza Pandemic Committee and the NIPPC. These influenza pandemic committees are mainly responsible for the overall management of the influenza pandemic and are responsible for implementing the influenza pandemic action plans.

Role and functions of the Influenza Pandemic Committees

1. to coordinate and implement the influenza pandemic action plans
2. to reduce morbidity, mortality and hospital admissions from influenza
3. to cope if necessary with large numbers of people who are ill and dying, both in the community and in hospitals
4. to ensure that essential health services and other services are maintained and to reduce the disruption of normal daily life
5. to provide appropriate, timely, authoritative and up to date information for all those who require it, including health care and other professionals, military, police, businesses, the public and the media during all stages of the pandemic.

The member of NIPC are as follows:

National Influenza Pandemic Committee (NIPC)

1. Deputy Director-General of Health (Public Health) - Chairman
2. Director of Disease Control – alternate Chairman
3. Director of Medical Development Division
4. Director of IMR
5. Director of IDRC, IMR
6. Director of Engineering Services
7. Director of Pharmaceutical Services
8. Director of Public Health Laboratory, Sg Buloh
9. Director of Veterinary Services
10. Chief Consultant Physician HKL
11. Chief Consultant Paediatrician, Paediatric Institute HKL
12. Head Department of Pathology, HKL
13. Head of Virology Unit, IMR
14. Director Health Education and Communication Centre (HECC)
15. Deputy Director Communicable Disease (CD)
16. Deputy Director CD Surveillance - Secretary

State Influenza Pandemic Committee

1. SUK - Chairman
2. State Director of Health - Secretary
3. Royal Malaysian Police
4. State Education Department
5. State Director of Veterinary Services
6. State Representative of Association of Private Hospitals Malaysia
7. State Representative of MMA branch
8. Deputy Director of Health (Public Health)
9. Deputy Director of Health (Medical)
10. Deputy Director of Health (Pharmacy)
11. Deputy Director of Administration
12. State Epidemiologist
13. State Consultant Physician
14. State Consultant Paediatrician
15. State Health Education Officer
16. State ID Physician
17. State Chief Pathologist
18. State Matron
19. Chief Assistant Environmental Health Officer (APHI)

District Influenza Pandemic Committee

1. District Officer - Chairman
2. District Medical Officer of Health - Secretary
3. District Epidemiologist
4. Director of District Hospital
5. District Senior Assistant Environmental Health Officer (APHI)
6. Chief Physician, District Hospital
7. Chief Paediatrician, District Hospital
8. Chief Pathologist District Hospital
## LEVEL OF INFLUENZA PANDEMIC ALERT - adapted from WHO

<table>
<thead>
<tr>
<th>Phases</th>
<th>Transmission</th>
<th>Public Health Goals</th>
</tr>
</thead>
</table>
| Inter-pandemic period (planning and preparedness). | 1  Interpandemic Period  
No new Influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low. | Strengthen pandemic preparedness at all levels.                                       |
|                                             | 2  No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease | Minimise the risk of transmission to humans;                                          |
|                                             |                                                   | Detect and report rapidly, if it occurs.                                              |
| Pandemic Alert (emergency and pre-emptive response). | 3  Pandemic Alert period  
Human infection(s) with a new subtype, but no human to human spread, or at most rare instances of spread to a close contact | Ensure rapid characterisation of new virus.                                          |
<p>|                                             |                                                   | Detect, notify and respond to additional cases.                                      |
|                                             | 4  Small cluster(s) with limited human to human transmission but spread is highly localised, suggesting that the virus is not well adapted to humans. | Contain the virus or delay its spread.                                                |
|                                             | 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 | Maximum efforts to contain or delay the spread.                                     |</p>
<table>
<thead>
<tr>
<th>Pandemic (minimising impact)</th>
<th>6</th>
<th>Pandemic period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pandemic phase: increased and sustained transmission in general population.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimise the impact of the pandemic.</td>
</tr>
</tbody>
</table>

| Postpandemic period. | Return to interpandemic period. | Return to interpandemic period. |

Explanation of the phases are as in Appendix 3.
3. CURRENT CAPACITY FOR PANDEMIC INFLUENZA PREPAREDNESS

3.1 SURVEILLANCE

An effective national surveillance system is an essential component of an influenza pandemic preparedness and response. It aims to provide timely information to public health departments, health care providers and the general public about levels of influenza activity and circulating influenza virus strains. During times of an alert or an occurring pandemic, it is essential for detecting the introduction and spread of new strains to allow for planning and implementing control measures and for the allocation of resources. The objectives of the national influenza surveillance system must be able to:

- detect increased influenza activities, either epidemic or pandemic through:
  - detection of influenza-like illness (ILI) in the community using sentinel general/primary medical practices;
  - the use of laboratory confirmation of influenza infection to estimate the proportion of these cases that are due to influenza;
  - viral isolation to confirm the diagnosis and to provide strains for antigenic analysis in WHO Influenza Reference Laboratory for vaccine formulation and to detect new strains.

- rapidly detect and confirm any cases due to potential or actual pandemic strains known to be present overseas, as identified by WHO or other suitable sources including strains found in animal populations that may pose a threat to humans.

- detect and identify in a timely manner new strains that arise in Malaysia.

- enhance the level of surveillance if a pandemic strain is identified outside and inside Malaysia.

All components of the surveillance systems need to be operational during the inter-pandemic period, albeit at a lower level but will be incremental or enhanced during each of the pandemic phases. Malaysia has several surveillance systems for monitoring influenza which have linkages to WHO FluNet and other agencies like the Veterinary Services Department. Currently the systems comprise the following:
3.1.1 International surveillance – WHO FluNet

A worldwide surveillance system for influenza is coordinated by WHO. This system makes it possible for changes in circulating influenza viruses and the emergence of novel influenza A viruses to be detected as early as possible. The task of identifying circulating strains of influenza whether known or novel is done by a worldwide network of 110 National Influenza Centres (NIC) and many other WHO laboratories in 83 countries. The 4 international WHO Collaborating Reference Centres for Influenza in London, Atlanta, Melbourne and Tokyo coordinate the system and actively analyse samples of virus isolated and collected by the 180 or so laboratories in the network worldwide.

IMR and the Department of Microbiology, Faculty of Medicine, University of Malaya, Kuala Lumpur are designated by WHO as NICs and are part of the worldwide network of laboratories doing international surveillance for influenza viruses. The National Public Health Laboratory (NPHL) at Sg. Buloh may be considered as an additional NIC for the country in the near future.

3.1.2 Sentinel surveillance

Sentinel surveillance (clinical) of influenza like illness (ILI) was started in September 2003 to record the daily number of consultations that fit the case definition of an ILI from selected GP clinics and all MOH outpatient clinics in the country and to report the number weekly from district to State and monthly from State to the National level. The details of the sentinel surveillance for influenza-like illnesses are as per document A – Clinical and Laboratory Surveillance of Influenza in Malaysia (MISS).

3.1.3 Laboratory based surveillance

Laboratory based surveillance (virological) of the influenza virus has been in existence since 1954, involving localized studies by IMR and in the seventies, by the Department of Microbiology, Faculty of Medicine, University of Malaya.

A more systematic laboratory based surveillance system for the influenza virus was piloted by IMR in the states of Kelantan, Penang, Selangor and Johore (from sentinel sites) in 2003. Based on the feedback received, the system was reviewed and extended to cover the whole country. Clinical specimens are collected from patients with ILI from selected sentinel sites across the country. These specimens are sent by the sentinel sites to the respective regional laboratories for influenza testing. The report of viruses’ isolation and surveillance data is sent regularly to the Surveillance Section MOH for analysis and epidemiological
linkages to the clinical surveillance data. The guidelines on the laboratory based surveillance system for influenza is now incorporated into a new guideline entitled “Clinical and Laboratory Surveillance of Influenza in Malaysia (Document A).

3.1.4 Serological surveillance for influenza.

This is done when indicated through surveys of stratified population groups.

3.1.5 Surveillance of mortality due to influenza and related respiratory conditions (Pneumonia) - hospital based surveillance

Surveillance of deaths from influenza and related respiratory conditions (pneumonia) from hospital medical records in MOH hospitals could be developed into a hospital based surveillance system for influenza as well. The data from the Health Management Information System (HMIS) Medical Subsystem can be collated and sent from hospitals weekly to health departments for analysis and a report is sent monthly to MOH (see Appendix 4).

3.1.6 Animal influenza surveillance

This is being carried out by the Veterinary Research Institute and the Veterinary Services Department and the information so derived from the surveillance is shared with MOH.
### 3.1.7 Case Definitions of ILI for Surveillance

**Suspected case:**

Acute onset of respiratory illness with fever of $>38$ °C or more and dry cough and with one or more of the following:

- sore throat
- nasal congestion/blockage
- myalgia
- headache
- fits (infant)
- vomiting (infant)

AND in the absence of any other disease.

**Confirmed case:**

When results from virus isolation by cell culture, PCR, serology or any combination of these tests are positive for Influenza virus.

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This definition will be revised if pandemic influenza occurs in the world and WHO would have issued the Alert and new case definition which will also be applicable to us in Malaysia. The new case definition will then be revised by NIPPC and issued to all concerned.
3.2. RISK COMMUNICATIONS

Effective health communication including risk communication during outbreaks is vital and a communication strategy has to be developed specifically for responding to an influenza pandemic. An influenza pandemic will affect very large numbers of people and not only those normally considered to be in a high-risk group. There will be concern and confusion amongst the general public regardless of whatever plans made by MOH. In order to minimise panic and alarm, the public must be kept well informed with factual and up-to-date information. Likewise, for the health professionals there is a need for an intensive information campaign to enable them to play an effective role in responding to the pandemic. Features of effective communication should include the following:

i. Obtaining regular and up-to-date information from the respective NIPC so as to be able to inform the public about the current situation of the pandemic.

ii. Implementing communications strategy and rapid dissemination of information to the public at all levels. The health messages should be packaged in such a way (including use of vernacular languages) to reach different target groups of the population in a timely manner according to the phases of the pandemic in order to be effective.

iii. Preparing fact sheets and health education materials before pandemic occurs for the general public.

iv. Utilizing existing health channels such as website of the MOH to disseminate information more widely to health professional and the general public.

v. Providing avenues for public to submit inquiries and receive personalized and customised answer such telephone, hotlines and emails.

vi. Provide timely surveillance update and advice to health professional and the public through MOH, DPH website; http://dph.gov.my/surveilans/

vii. Disseminating health messages through mass media intensively and extensively to ensure all segments are informed and empowered to take priority actions.

viii. Appointing appropriate spokespersons at national level to conduct regular press conference / release to inform about the latest situation of the pandemic.
3.3. PUBLIC HEALTH RESPONSE

3.3.1 Prevention

Prevention begins with early detection of changes in influenza viruses and rapid development of effective vaccines to defend against influenza each year and responding to the possibility of a pandemic strain if warranted. The circle of surveillance and vaccines formulation is a never ending process to prevent a pandemic. Antiviral drugs are now available for the circulating strains of influenza in the world and are also being researched to ensure that we have antiviral drugs capable of preventing or curing the infection.

3.3.2 Control Measures to prevent spread of pandemic

It is unlikely that the spread of influenza pandemic can be halted easily but options to prevent its entry into the country firstly or when transmission first occurs in the country, slowing down transmission should be the aim to reduce and distribute the demand on the health services over a longer time period during a pandemic and to increase the opportunity of protecting people through immunization when vaccines are made available. Control measures that could be undertaken are the following:

3.3.2.1 Travel Advisories

Sick people with influenza symptoms should not travel out of any country having a pandemic. Contacts should be advised to defer traveling. The public should be advised against any unnecessary travel during pandemic, more especially so, to pandemic countries.

3.3.2.2 Entry points screening of travellers

Entry points screening of travellers from pandemic countries into the country may be considered to prevent entry of the pandemic virus into the country. This has been done during the SARS outbreak and the guidelines are modified for influenza pandemic (see Appendix 5).

However, the recent WHO consultation on priority public health interventions held in Geneva 16-18 March 2004 stated such entry screening lacked proven health benefits and the practice should be permitted (for political reasons, to promote public confidence) but not encouraged. Travellers should receive health alert notices instead (see Appendix 5A).
All travelers from affected areas are required to fill-up Health Declaration Form (Appendix 5B).

3.3.2.3 Exit Screening for all travellers from affected areas

Exit screening for all travellers from areas with human infection through either use of health declaration or thermal scanning may be more feasible than entry screening for detecting early cases to prevent spread. Health declaration form may also be used for those developing signs and symptoms while on board planes/ships before their entry into Malaysia.

3.3.2.4 Management of ill passengers on-board aircraft

It has been noted that the spread of influenza cases from the countries with local transmission to other parts of the world involved air travel (see Appendix 6).

3.3.2.5 Isolation and Quarantine

All suspected cases will be isolated and their contacts placed under home surveillance for a period of double the incubation period (10 days). All probable cases should also be isolated and their contacts placed under quarantine at home. Voluntary home confinement of symptomatic persons may also be carried out (see Appendix 7).

This control measure may be necessary to prevent the importation of pandemic influenza into the country by travellers coming into Malaysia from PI affected countries or areas, i.e. during Phase 2 onwards; but when the influenza pandemic becomes widespread in the country, this strict control measures of isolation and quarantine of contacts may not be efficient or effective. NIPCC will review and decide accordingly.

3.3.2.6 Self-health monitoring and reporting if ill

Self-health monitoring at home or in workplace and reporting if ill are control measures that can be implemented by the population if guidelines on how to do it are given. This will become important especially to those returning or coming in from affected countries. When the pandemic becomes established in the country and the numbers of cases and contacts are large, self-monitoring at home and contacting the call centre for advice if ill or on whether there is a need for care in a health facility may be feasible to limit transmission (Appendix 8 and Appendix 8A).
3.3.2.7 Hand hygiene and disinfection

Strict hand hygiene or washing should be the norm of the day and should be widely emphasized to healthcare professionals and members of the public. Household and health facilities disinfection of potentially contaminated surfaces are other useful control measures (Appendix 9).

3.3.2.8 Use of face masks

Guidelines on use of appropriate face masks and types of face masks should also be widely disseminated and observed for occupational risk groups and the general public. Generally, surgical masks will suffice to prevent transmission. Patients may need to use face masks when moved from one place to another within a health facility (Appendix 10).

3.3.2.9 Closures and Cancellations

Temporary closures of schools, swimming pools, public places etc may be instituted as the needs arise. Cancellation of public gatherings or events may become necessary to reduce risks of transmission when pandemic influenza has spreaded to the country to prevent widespread transmission. Administrative closures or cancellations may need to be backup by necessary legislation under the current law or modifications be made if needed (Appendix 11).

3.3.3 Case investigations and contact tracing

Case investigations are important to determine the mode or changes in the mode of transmission of the disease as well as to monitor the risk factors and spread of the disease. Contact tracing and follow-up of contacts in the early alert pandemic/early pandemic phases may help to prevent transmission. It will be not be feasible once pandemic is widespread. For the management of contact of PI; please refer to appendix 12.

3.3.4 Information Dissemination

All public health control measures to prevent spread of the pandemic have to be widely disseminated in order to get the full cooperation of the general public and also health care providers and professionals.
3.4 MEDICAL RESPONSE

Access to and provision of quality medical care are among the most important strategies to decrease morbidity and mortality during a pandemic, particularly the period before vaccine becomes available. The demand of the medical or clinical services will be overwhelming during a pandemic. Higher disease rates are likely to stress outpatient and inpatient care further, and this situation is likely to be exacerbated by high rates of absenteeism among health care workers who are likely to be at increased risk of exposure and illness or who have to care for ill family members during a pandemic. In addition to managing infections in the community, it will be important to control the spread of infection among vulnerable populations in hospitals and long-term care facilities such as nursing homes.

Due to expected high rates of infection during pandemic influenza, all, except the seriously ill will need to be cared for at home or institutions outside of hospitals or health facilities. At the same time during the early introduction of the infection into the country, all probable or suspected cases will need to be isolated in designated hospitals to prevent spread. The clinical or medical response has to be flexible enough to accommodate the ever changing situations from the alert of the novel virus and the resultant pandemic outside of Malaysia, the entry of the virus into the country (see the Phases for influenza pandemic in Malaysia) and the progression of disease during the pandemic if not completely controlled. The clinical response as in Document B includes the following:

3.4.1 Clinical Case Definitions of Pandemic Influenza

The clinical case definition should be used by medical practitioners to diagnose influenza as well as for by isolation and laboratory testing for confirmation. The clinical case definitions are given in Appendix 13.

3.4.2 Notification or Prompt Reporting of Cases

Cases diagnosed should be notified promptly according to the guidelines given by the Ministry of Health to the relevant health authority using the notification form (see appendix 14). Real time reporting of cases may become necessary when the pandemic occurs.

3.4.3 Triaging and Initial Assessment of Cases for Influenza

Triaging guidelines to help health care workers identify influenza patients who present to the health clinics, doctors’ clinics, emergency rooms or any other triaging centres in hospitals should be used for the initial assessment of such patients for influenza. Flow charts for this triage may be used to help staff made decision (see appendix 15).
3.4.4 Clinical Management of Cases

A guideline of clinical management of cases by doctors in outpatient and hospital settings will contribute towards effective management of patients and help identify early pandemic cases and prevent spread. Treatment of cases should follow the guidelines laid down including the use of antiviral drugs (see Document B).

3.4.5 Hospital Admission Policies

Depending on the phases of the pandemic, the admission policies for cases may vary from one of admitting all probable or suspected cases to one of only the very ill or with complications. In the early phases of the pandemic to prevent importation into or to reduce transmission of the virus in the country, all suspect or probable influenza cases will be admitted in designated hospitals and kept in isolation as done during the SARS crisis.

When the number cases have gone beyond the capacity of health facilities to cope with, with a full blown outbreak in the country a policy of surveillance and treatment at home or the use of non-traditional health facilities may be instituted. Hospital admissions will only be for those with respiratory distress or with associated complications of influenza or those in the high risk group (ie. those with co-morbidities) coming down with influenza. Such admission policies should be clearly defined and will need to be updated as the pandemic evolves. See relevant sections of Document B: Guidelines for hospital management of Pandemic Influenza designated and district hospitals.

3.4.6 Triage and infection control in health facilities

Triage and strict infection control guidelines similar to those during the SARS outbreak are to be implemented in all health facilities and are especially important in hospitals where patients are treated. Isolation of patients and their subsequent management should adhere strictly to level of infection control needed to handle such cases. Adherence to the guidelines outlined in relevant sections of Document A adapted from MOH’s Policy and Procedure of Infection and Disinfection and Sterilization, 4th Edition 2002 (droplet transmission) should be followed by individuals in all health facilities both in the private and public sectors to prevent transmission of influenza infection.

The use of recommended personal protective equipments (PPE) by health care workers and the importance of hand hygiene should be strictly enforced to prevent staff from being infected. Health care workers should be educated regarding such appropriate infection control practices, to prevent spread of influenza and guidelines should be strictly enforced. Prioritization of critical staff for preventive interventions when vaccine is made available or
prophylactic use of antivirals should be considered to assure continued operations of the health facilities.

3.4.7 Intensive Care Preparedness

The indications for intensive care referral are no different in patients with influenza infection compared to other patients. Most patients who might require intensive care will have influenza-related pneumonia or severe exacerbation of underlying co-morbid illness e.g exacerbation of COAD. In a pandemic situation when intensive care beds may not be readily available, prioritization of patients on an individual basis matched against available resources will be expected (see appendix 16)

3.4.8 Resource Management for Health Care Facilities

During an influenza pandemic, the demand on health care services provided at health care facilities can be expected to increase, peak and decline during the weeks in which any one location is affected. There is a need for resource management in terms of increased bed capacity, patient prioritization of usage of health care facilities, provision of care outside of traditional hospitals, critical equipments and supplies, drugs and allocations and use of volunteers and voluntary organizations like Red Cross, St. Johns Ambulance etc., to help meet the demands of the pandemic. There is also the issue of human resource management in terms of optimal use of health care workers, designated staff for influenza case management, deployment of health care workers (HCWs), provision of training, immunization and care and support for HCWs.

3.4.9 Staff welfare

Adequate provision for staff welfare and wellbeing during the pandemic is important to ensure there is enough staff looking after patients. Guidelines on prophylactic treatment of staff having symptoms or the like and the prioritization of staff for vaccination when vaccines are made available need to be planned for and made available for implementation when indicated. A surveillance system to detect early staff coming down with influenza should be followed (Document B).

3.3.10 Antiviral drugs

The objectives in the planning of the uses of antiviral drugs are:

i. to recommend a strategy for the use of antivirals during a pandemic;
ii. to address issues around the availability, procurement and supply of these antivirals;
iii. to monitor drug resistance during the pandemic; and
iv. to facilitate and ensure the distribution of available antiviral drugs to appropriate groups of people during the pandemic.

Antiviral drugs are available for both prevention and treatment of influenza. Currently there are two classes of drugs; amantadines and neuraminidase inhibitors. To prevent influenza illness, antiviral drug must be taken consistently before infections occur. As treatment to reduce the impact of influenza for someone who is already infected, the drugs must be taken within two days after flu symptoms start. It is important to know that antiviral drugs can have some potentially serious side effects too. The guideline for the use of antiviral drugs during a pandemic is as per Document B.

3.3.11 Vaccines

Malaysia does not have the capacity to manufacture vaccines yet. As vaccines production is subject to several rate-limiting steps; the first, supplies of vaccines against a novel strain of influenza are unlikely to be available for at least six months. Global demand will be high and supplies will be limited during a pandemic. Identification of priority groups for immunization is to be done before vaccines are made available. The logistics of supply and distribution of vaccines must be planned before hand.

The recommendation of priority groups of populations for vaccination during influenza pandemic is as per Appendix 17. This recommendation may be revised by NIPPC when new epidemiological data is available in the event of the occurrence of an influenza pandemic.
3.5. LABORATORY RESPONSE

WHO coordinates a program of international surveillance for influenza in humans, with assistance of four WHO Collaborating Centres (CCs) during the inter-pandemic period. The Centres are based in Atlanta, USA; London UK; Melbourne Australia; and Tokyo Japan. These Centres maintain repositories of different virus strains develop reagents and technologies for strain comparisons and train workers from National Laboratories. These Centres have biocontainment facilities which enable them to conduct studies with possible pandemic strains under conditions that do not pose safety risks or jeopardize the analyses.

The National Influenza Laboratories designated by WHO are the “front lines” of surveillance activities. The role and functions of laboratories in the global surveillance of influenza and also in our country are vital to prevent an influenza pandemic. As such, the strengthening of laboratory capability and capacity for infectious diseases cannot be over emphasized. The Virology Unit in the Infectious Diseases Research Centre of the Institute for Medical Research and the Medical Microbiology Department of the University Malaya are National Influenza laboratories and are part of WHO global network of laboratories for influenza surveillance.

Currently the Virology Unit in the Infectious Diseases Research Centre of the Institute for Medical Research has been designated as the National Influenza Centre by the Ministry of Health. National Influenza Centres (NICs) are the backbone of the WHO Global Influenza Surveillance Network. During inter-pandemic period, every year NICs collect specimens, conduct preliminary analysis and ship representative isolates to WHO Collaborating Centres for Reference and Research on Influenza (WHOCCs) for advanced antigenic and genetic analysis, results of which form the basis of WHO annual vaccine composition recommendation for northern and southern hemispheres respectively (Document B).

Terms of Reference of NIC:

National Influenza Centres (NICs) are national institutions designated by national Ministries of Health and recognized by the World Health Organization (WHO) for the purpose of participating in the work of the WHO Global Influenza Programme. Upon such recognition by WHO, NICs become members of the WHO Global Influenza Surveillance Network.

In this capacity NICs will; in general

i. Serve as the key point of contact between the World Health Organization and the country of origin in all questions relating to virological and epidemiological surveillance of influenza and provision of influenza virus isolates to the WHO Global Influenza Surveillance Network.
ii. Maintain active communication with the members of the WHO Global Influenza Surveillance Network through e.g. the timely submission of viruses, immediate information on isolation of unusual viruses or disease outbreaks, weekly reports on influenza activity during the influenza season and the provision of any other relevant information on influenza surveillance and control.

The objectives of the laboratories are:

1. To provide laboratory diagnostic services for respiratory viruses especially influenza viruses.
2. To carry out laboratory based surveillance of influenza virus activity in the country.
3. To provide an early warning system for emergence of new sub-type and/or re-emergence of previously known subtypes of influenza viruses.

The laboratory based influenza surveillance

This is as shown in relevant sections in Document A. The laboratory influenza surveillance guideline has been reviewed in 2004 and incorporated in the overall document entitled the Malaysian Influenza Surveillance System (MISS).

The laboratory experts working group

This group comprising of laboratory experts including medical microbiologist and scientists is formed to review and update the existing laboratory action plan for influenza preparedness and response and will be also responsible to provide and review guidelines issued by it.

Laboratory Guidelines and Flow Charts

The laboratory guidelines and flow charts for clinical collection of specimens for influenza virology tests, the handling and transport of the specimens, receipt, processing and handling of specimens in the laboratory, reporting of result and laboratory biosafety etc. are listed below for guidance of clinicians, laboratory personnel as follows:

Appendix 18 National Influenza Surveillance Diagnostic Request Form.

Appendix 19 Guidelines for the clinical collection of samples for diagnosis of influenza pandemic (PI).
<table>
<thead>
<tr>
<th>Appendix 20</th>
<th>Guidelines of clinical sample collection, handling and transportation from field/sentinel sites to the laboratories.</th>
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</thead>
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<tr>
<td>Appendix 21</td>
<td>Flow Chart for collection and transportation of clinical samples to laboratory testing.</td>
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<tr>
<td>Appendix 22</td>
<td>Flow Chart for Influenza Pandemic specimen receipt at IMR specimen receipt counter.</td>
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<td>Appendix 23</td>
<td>Guidelines for laboratory biosafety for laboratory staff handling and processing specimen associated with influenza pandemic.</td>
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<td>Appendix 24</td>
<td>Guidelines for infection control and standard operating procedure for biological spillage and exposure.</td>
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<tr>
<td>Appendix 25</td>
<td>Flow Chart of work process in processing specimen samples.</td>
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<tr>
<td>Appendix 26</td>
<td>Guidelines for clinical sample processing for influenza surveillance.</td>
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<td>Appendix 27</td>
<td>Guidelines for reporting to sentinel centres and Surveillance Section, Ministry of Health.</td>
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<tr>
<td>Appendix 28</td>
<td>Guidelines on nature and quantity of stockpile.</td>
</tr>
</tbody>
</table>
3.6. OTHERS ESSENTIAL SERVICES RESPONSE

Essential services such as police, fire, transportation, communications and emergency management services need to be maintained during influenza pandemic. Other services and supplies including food, water, gas, and electricity supplies, educational facilities, postal and sanitation are also likely to be affected. Services need to be assessed regularly and support measures implemented promptly in response to most urgent need. Community support of NGOs, community leaders and public in general, is also needed to ensure their participation in the overall pandemic plan.

MOH is to initiate responses with other relevant governmental/non governmental departments/agencies in order to maintain these other essential services by having plans on how to protect the health of these services providers. This can be done by the NIIPC where other essential services ministries are represented in the control of the pandemic.

3.7 NATIONAL SECURITY COUNCIL (NSC) RESPONSE

The National Security Council at all levels should be alerted for co-ordination of all government and non-governmental agencies in dealing with the pandemic when it reaches a proportion outside the capability and capacity of the existing mechanisms to handle the pandemic. The Council at all levels will then be responsible for coordinating the overall incident management as well as nonmedical support and response actions across all federal departments and agencies at all levels.

The invoking of NSC Arahan 20 should be made on the recommendation by NIIPC to the Cabinet and the take over control of the emergency situation as a threat to the country’s security resulting from an infectious disease will then be undertaken by the Security Councils at the national, state and district level.

The Ministry of Health will continue to play the role of the lead agency under the Security Council for the control of the influenza pandemic and will coordinate the overall public health and medical emergency responses across all federal departments and agencies at all levels (Appendix 29).
3.8 PHARMACEUTICAL SERVICES RESPONSE

4- Vaccines and antiviral drugs supply

As Malaysia does not have the capacity to manufacture vaccine yet, a plan defining the logistics of how to obtain the newly manufactured available vaccines during the pandemic must be worked out with manufacturing companies in the world prior to the pandemic or with the help of WHO.

Antiviral drugs must be adequately stocked and a plan for distribution made available when the need arises. Logistics of purchase of such drugs must be worked out with suppliers for MOH use as well as for the private health providers.
4. THE ACTION PLAN – FOR THE PHASES OF THE PANDEMIC

5- Action taken by WHO during pandemic

1. WHO announces onset of the influenza pandemic
2. WHO makes recommendation for vaccines composition and organizes production and distribution
3. WHO issues guidance on best use of anti-viral drugs
4. WHO will further enhance its monitoring and reporting of the global spread and impact of the virus.
5. WHO will seek help in mobilization of resources for countries with limited capacities
6. WHO will work with regional offices as appropriate to encourage common activities among nations facing similar challenges from the pandemic.

WHO in 1999, defined six pandemic phases under which preparation and response can be organized. In 2005, WHO updates and significantly revises the Influenza Pandemic Plan. The new plan addresses the possibility of a pandemic potential due to prolonged existence of an influenza virus H5N1 in poultry flocks in Asia since 2003.

Most of the activities defined as preparedness would be done during the inter-pandemic period, Phase 1 and 2. Phase 3, 4 and 5 are for activities when an outbreak of the novel influenza virus is confirmed in human; and leading to outbreaks. WHO will declare a pandemic alert of influenza when there is a person-to-person spread in the general population with at least one outbreak lasting for more than 2 weeks in that one country.

Before declaring a pandemic alert, WHO will convene an international task force to ensure that the assessment of the new virus’s pandemic potential includes an assessment to determine whether the situation could represent either an unusual ecological situation of an animal vector spreading the virus to persons in different locations or whether it could represent bioterrorism.

6- Action plan for different components of the NIPPP

The Action plan uses the broad WHO definitions for pandemic preparedness adapted to ensure relevance to Malaysia. These adapted phases of the WHO preparedness plan provide only a framework for planning. However, specific Action may not be needed at every phase or level for each component of preparedness and response. The key Action that need to be taken in the Malaysian context during each level of global alert of an influenza pandemic and by whom are as given in the chart below:
### 4.2.1 Action Plan – Public Health Response

#### Table 1: Action Plan – Public Health Response

**Phase 1 and 2: INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS**

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>Formation of NIIPC (National Inter-ministerial Influenza Pandemic Committee) National</td>
<td>Minister of Health</td>
</tr>
<tr>
<td></td>
<td>NIPPC (National Influenza Pandemic Planning Committee) National</td>
<td>Director General of Health (Chairman)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td>State</td>
<td>NIPC (National Influenza Pandemic Committee) National</td>
<td>Deputy Director General of Health (PH) (Chairman)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td>District</td>
<td></td>
<td>State Secretary (Chairman), State Health Director (Secretary)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>District Officer (Chairman) District Medical Officer of Health (Secretary)</td>
</tr>
</tbody>
</table>
**Phase 1 and 2: INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS**

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysian Influenza Surveillance System (MISS)</td>
<td>ILI Surveillance System refer to <a href="#">National ILI Surveillance Guidelines</a> Select sentinel sites in a district. 1 HC / OPD 1 GP / Private Paediatric Clinic Lab-based Influenza Surveillance System Surveillance mechanism Hospital-based Surveillance System Syndromic notification for ARDS (Refer to Syndromic Notification and Laboratory Investigation Manual) Atypical pneumonia (Refer to Enhanced SARS Surveillance in Malaysia) Mortality related to Acute Respiratory Illness/Pneumonia (Refer to HMIS Medical Subsystem) Rumour Surveillance – Registers the rumours of outbreaks of ARI of unknown etiology at local, national, regional, international levels. HPAI (Highly Pathogenic Avian Influenza) Surveillance</td>
<td>District Medical Officer of Health State Epid/Surveillance Unit Surveillance Section, MOH Surveillance Section, MOH NPHL, IMR, UMMC Hospital Director/Medical Dev.Div. District Medical Officer of Health State Epid/Surveillance Unit Surveillance Section, MOH District Medical Officer of Health/ Hospital Director State Epid/Surveillance Unit Surveillance Section, MOH Director, VRI Director, Epidemiology and Veterinary Medicine Department of Veterinary Services (DVS)</td>
</tr>
</tbody>
</table>
Phase 1 and 2:  **INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS**

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication for influenza pandemic</td>
<td>Formulation of Risk communication plan:</td>
<td>HECC</td>
</tr>
<tr>
<td>Toll free number</td>
<td>To apply for toll free number from Telekom</td>
<td>03 – 8883 4100</td>
</tr>
<tr>
<td>Vaccination</td>
<td>Inter-Pandemic flu vaccination</td>
<td>National Institute Natural Product, Vaccinology and Biological (NINPVB)</td>
</tr>
<tr>
<td>Anti-viral</td>
<td>Formulation of anti-viral chemoprophylaxis and treatment guidelines</td>
<td>Medical Development Division</td>
</tr>
<tr>
<td>Training</td>
<td>Training for all level of staff involved in implementation of influenza pandemic action plan</td>
<td>Medical Development Division, Disease Control Division, Research and Technical Support,</td>
</tr>
<tr>
<td>Control measures</td>
<td>Legislation: To include influenza as a life-threatening notifiable disease in the event of a pandemic alert by WHO.</td>
<td>Disease Control Division</td>
</tr>
<tr>
<td></td>
<td>Reinforce the understanding and usage of guidelines on “Alert, Enhanced Surveillance and Management of Avian Influenza in Human”.</td>
<td>Disease Control Division</td>
</tr>
<tr>
<td>Interagency collaboration</td>
<td>Gather information from Department of Veterinary Services on status of outbreaks in animal.</td>
<td>Disease Control Division</td>
</tr>
</tbody>
</table>
**Phase 3: PANDEMIC ALERT (Emergency And Pre-Emptive Response)**

Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>Activation of NIPPC (National Influenza Pandemic Planning Committee)</td>
<td>Director General of Health (Chairman)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td>Malaysian Influenza Surveillance System (MISS)</td>
<td>Alerting all the above surveillance sites regarding the emergence of novel virus and to be more vigilant in identification and reporting of cases.</td>
<td>District Medical Officer of Health Hospital Director</td>
</tr>
<tr>
<td></td>
<td></td>
<td>State Epid/Surveillance Unit Surveillance Section, MOH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPHL, IMR, UMMC</td>
</tr>
<tr>
<td>Communication for influenza pandemic</td>
<td>Risk communication plan activated</td>
<td>District Medical Officer of Health State Health Dept</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disease Control Div. MOH</td>
</tr>
<tr>
<td>Vaccination</td>
<td>Activation of awareness regarding vaccination guidelines</td>
<td>NINPVB</td>
</tr>
<tr>
<td>Anti-viral</td>
<td>Awareness of anti-viral treatment and prophylaxis guidelines</td>
<td>Medical Development Division</td>
</tr>
<tr>
<td>Control measures</td>
<td>To prepare quarantine/patients self-monitoring influenza kits which consist of:</td>
<td>Disease Control Divison</td>
</tr>
<tr>
<td></td>
<td>- Assessment form for signs and symptoms of ILI and premorbid status</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Oral thermometer with instruction for its use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Surgical masks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Information pamphlets and Self-monitoring management guidelines for influenza</td>
<td></td>
</tr>
<tr>
<td>Interagency collaboration</td>
<td>Gather information from Department of Veterinary Services on status of outbreaks in animal.</td>
<td>Disease Control Division</td>
</tr>
<tr>
<td>Control measures</td>
<td>Reinforce the understanding and usage of guidelines on “Alert, Enhanced Surveillance and Management of Avian Influenza in Human”.</td>
<td>Disease Control Division</td>
</tr>
</tbody>
</table>
Phase 4 and 5:  **PANDEMIC ALERT (Emergency And Pre-Emptive Response)**

Limited human-to-human spread, but spread is highly ravelers, suggesting that the virus is not well adapted to humans.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>Activation of: NIIPC (National Inter-ministerial Influenza Pandemic Committee) to meet as situation demands</td>
<td>YB Minister of Health Director General of Health Director of Disease Control Div. (Secretary)</td>
</tr>
<tr>
<td></td>
<td>NIPPC (National Influenza Pandemic Planning Committee) to meet as situation demands and to review preparedness and response Plan in the light of any new epidemiological information regarding outbreak</td>
<td>Director General of Health (Chairman) Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td></td>
<td>NIPC (National Influenza Pandemic Committee) National – to meet and review world situation and activate preparedness and response Plan</td>
<td>Deputy Director General of Health (PH) (Chairman) Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td></td>
<td>State (with international entry points) – as above</td>
<td>Director, State Health Office</td>
</tr>
<tr>
<td></td>
<td>District (with international entry points)- as above</td>
<td>District Medical Officer of Health</td>
</tr>
<tr>
<td>Malaysian Influenza Surveillance System (MISS)</td>
<td>1. Alerting all the above surveillance sites regarding the emergence of novel virus and world’s outbreak situation and to be extra vigilant in identification and reporting of cases seen at sentinel sites.</td>
<td>District Medical Officer of Health Hospital Director State Epid/Surveillance Unit Surveillance Section, MOH NPHL, IMR, UMMC</td>
</tr>
<tr>
<td></td>
<td>7- Review case definition if needed</td>
<td>Surveillance Section, MOH NIPPC and NIPC</td>
</tr>
</tbody>
</table>
Phase 4 and 5: **PANDEMIC ALERT (Emergency And Pre-Emptive Response)**

Limited human-to-human spread, but spread is highly ravelers, suggesting that the virus is not well adapted to humans.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication for influenza pandemic</td>
<td>Risk communication plan: Daily report on disease situation and dissemination to the stakeholders and public.</td>
<td>National Operations Room (NOR)</td>
</tr>
<tr>
<td>Vaccination</td>
<td>Disseminate any available information regarding vaccines development</td>
<td>NINPVB</td>
</tr>
<tr>
<td>Anti-viral</td>
<td>Medical response; refer to appendix 18 Review anti-viral treatment and prophylaxis guidelines if needed</td>
<td>Medical Development Division</td>
</tr>
<tr>
<td>Control Measures</td>
<td>1. Open Operation rooms (selected functions) – refer SOP operations room National State (with international entry points) District (with international entry points)</td>
<td>Director, Disease Control Division, MOH State Health Director District Medical Officer of Health</td>
</tr>
<tr>
<td></td>
<td>2. Health alert card – ravelers from affected countries.</td>
<td>District Medical Officer of Health (with entry points)</td>
</tr>
<tr>
<td></td>
<td>3. Health declaration form – ravelers from affected countries. 8- advised not to visit affected countries.</td>
<td>Airport / port MOH International Health Unit / Surveillance Section</td>
</tr>
</tbody>
</table>
**Phase 6: PANDEMIC (Minimising impact)**

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Measures</td>
<td>1. Open Operation rooms – refer SOP operation room</td>
<td>Director, Disease Control Division, MOH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director, State Health Office</td>
</tr>
<tr>
<td></td>
<td></td>
<td>District Medical Officer of Health</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td></td>
</tr>
<tr>
<td></td>
<td>State</td>
<td></td>
</tr>
<tr>
<td></td>
<td>District</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-</td>
<td>Health alert card</td>
</tr>
<tr>
<td></td>
<td>Travellers from affected countries advised to stay at home and do self-monitoring. If develop symptoms, contact nearest operation room at district health office.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To include the following info inside Heath alert card:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advised to stay at home</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sign and symptoms of the disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toll free number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-mail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Health declaration form – travelers from affected countries.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-</td>
<td>Travel advisory – Malay sians are advised not to visit affected countries.</td>
</tr>
</tbody>
</table>
### Phase 6: PANDEMIC (Minimising impact)

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>Activation of:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIIPC (National Inter-ministerial Influenza Pandemic Committee) to meet and</td>
<td>YB Minister of Health</td>
</tr>
<tr>
<td></td>
<td>review situation and implication for Malaysia; to alert National Security</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Council</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIPPC (National Influenza Pandemic Planning Committee) to meet, review</td>
<td>Director General of Health (Chairman)</td>
</tr>
<tr>
<td></td>
<td>world’s situation and implication for Malaysia and make recommendations</td>
<td>Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td></td>
<td>to NIIPC for handling the pandemic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIPC (National Influenza Pandemic Committee)-to monitor implementation of</td>
<td>Deputy Director General of Health (PH) (Chairman)</td>
</tr>
<tr>
<td></td>
<td>NIPP in the country</td>
<td>Director, Disease Control Division, MOH (Secretary)</td>
</tr>
<tr>
<td></td>
<td>State IPP – implement NIPP for state and monitor district’s implementation</td>
<td>Director, State Health Office</td>
</tr>
<tr>
<td></td>
<td>District IPP implement NIPP at district level especially at entry points</td>
<td>District Medical Officer of Health</td>
</tr>
</tbody>
</table>
## Phase 6: PANDEMIC (Minimising impact)

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysian Influenza Surveillance System (MISS)</td>
<td>Alerting all the clinics and hospitals, government and private, regarding the pandemic of novel virus outside Malaysia and to ensure the reporting of all cases (daily): ILI (daily) (format A, B, C) Syndromic notification for ARDS (cases basis) Atypical pneumonia (case basis) Mortality related to Acute Respiratory Illness/Pneumonia (daily) Review case definition if needed Notification of all suspected and confirmed cases immediately via phone/fax/e-mail (Using Influenza Notification Form) To monitor absenteeism data among health care workers. To encourage reporting of unusual absenteeism from work places, institutions and schools. To report to WHO as required using WHO format.</td>
<td>All medical practitioners private/govt. District Medical Officer of Health Hospital Director State Epid/Surveillance Unit Surveillance Section, MOH NPHL, IMR, UUMC</td>
</tr>
</tbody>
</table>

NIPPC

All concerned to NOR and relevant State and district operation room

Hospitals and clinics

Employers, heads of institutions and schools

District Medical Officer of Health

State Epid/Surveillance Surveillance Section, MOH National Operation Room
Phase 6: PANDEMIC (Minimising impact)

Increased and sustained transmission in general population.

<table>
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<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Measures</td>
<td>Optimal functioning of the Operation rooms – refer SOP operation room</td>
<td>Director, Disease Control Division, MOH</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>Director, State Health Office</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>District Medical Officer of Health</td>
</tr>
<tr>
<td></td>
<td>District</td>
<td>District Medical Officer of Health / port MOH</td>
</tr>
<tr>
<td></td>
<td>Health alert card</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travellers from affected countries advised to stay at home and do self-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>monitoring. If develop symptoms, contact nearest operation room at district</td>
<td></td>
</tr>
<tr>
<td></td>
<td>health office.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To include the following information inside Heath alert card:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advised to stay at home</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sign and symptoms of the disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toll free number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-mail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health declaration form – travellers from affected countries.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exit screening for travellers leaving Malaysia, if warranted by WHO. (To</td>
<td></td>
</tr>
<tr>
<td></td>
<td>follow exit screening guidelines)</td>
<td></td>
</tr>
</tbody>
</table>
Phase 6: PANDEMIC (Minimising impact)

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
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</tr>
</thead>
</table>
|        | • Isolation of suspects according to medical plan  
• Investigation of cases  
• Tracing of contacts  
• Surveillance of contacts (quarantine) of probable cases and home surveillance of suspected cases  
• Active case detection (Refer ILI Assessment Form – to modify from appendix II, Annex G, page 266, Canadian Plan)  
Enhance control and prevention activities  
PPE usage by relevant HCWs  
Barrier nursing and infection control measures in hospitals and clinics  
General infection control measures for general public and those under surveillance at home  
Implementation of Immunisation plan when vaccine is made available  
Chemoprophylaxis to be given to identified groups (refer guidelines)  
Practice Universal Precautions while handling dead body. (Refer to Universal Precaution Guidelines)  
Consider and recommend other public health control measure where appropriate such as closure of schools, swimming pools, event cancellation and banning of public gatherings etc. (Refer to Guidelines for closure of premises/events). | Designated hospitals/clinicians  
District Medical Officer of Health  
State Epid/Surv. Unit  
Surveillance Section, MOH  
District Medical Officer of Health  
Hospital Director  
State Epid/Surveillance  
Surveillance Sect, MOH  |
| Communication for influenza pandemic | Implement fully risk communication plan | HECC |
| Vaccination | Get ready to implement vaccination guidelines when vaccine made available | NINPVB |
| Anti-viral | Implement prophylaxis and treatment guidelines to those identified (see appendix 18) | Medical Development Division |
## POSTPANDEMIC PERIOD

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations Room</td>
<td>Close down operations room. Phase out national information hot line etc.</td>
<td>Pandemic Influenza Committees; all levels</td>
</tr>
<tr>
<td>PH control</td>
<td>Phase out public health control measures</td>
<td>Surveillance Section/CD Division, NIPPC</td>
</tr>
<tr>
<td>PH control</td>
<td>Analyses of impact of pandemic, collate data and update/review the effectiveness of national influenza pandemic plans.</td>
<td>PI Report Committee</td>
</tr>
<tr>
<td>PH control</td>
<td>Prepare report for relevant agencies.</td>
<td></td>
</tr>
<tr>
<td>NIPP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stockpiles</td>
<td>Restock resources used during the pandemic</td>
<td>Pharmaceutical Service Division</td>
</tr>
</tbody>
</table>
### Table 2: Action Plan – Medical Response

#### Phase 1 and 2: INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>ACTIVITY</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>Formation of the Clinical Expert Group</td>
<td>DDGH(Medical)</td>
</tr>
<tr>
<td></td>
<td>Formation of Expert Group at:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Hospital level</td>
<td>Director Hospital</td>
</tr>
<tr>
<td>Surveillance</td>
<td>Strengthening the surveillance at hospital level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Atypical pneumonia</td>
<td>General Physician and FMS</td>
</tr>
<tr>
<td></td>
<td>2. Influenza-like illness among HCWs and patients</td>
<td>together with Hospital Director</td>
</tr>
<tr>
<td>Antiviral Policy</td>
<td>To develop policy for antiviral usage</td>
<td>Medical Development Division</td>
</tr>
<tr>
<td></td>
<td>To develop policy for use of antiviral as treatment and prophylaxis</td>
<td>Clinical Expert Group</td>
</tr>
<tr>
<td></td>
<td>The prioritize group for the use of antiviral drugs in times of short supply are:</td>
<td>Medical Development Division</td>
</tr>
<tr>
<td></td>
<td>1. persons hospitalized for influenza (within 48hrs)</td>
<td>Clinical Expert Group</td>
</tr>
<tr>
<td></td>
<td>2. ill HCWs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. high risk persons with influenza eg COPD, cardiac</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. prophylaxis of identified HCWs</td>
<td></td>
</tr>
</tbody>
</table>
Phase 1 and 2: **INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS**

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Vaccination Policy And Guidelines</td>
<td>Annual vaccination is strongly (MOH policy agreement) recommended for adult and children with any of the following: 1. chronic illness requiring regular followup; DM, cystic fibrosis, CHD 2. immunosuppression 3. person &gt; 65 years of age 4. children on long term aspirin due to Reye's Syndrome 5. residents in nursing /old folks homes and other longstay facilities</td>
<td>Public Health Division  (together with Hospital Division and Clinical Expert Group)</td>
</tr>
<tr>
<td></td>
<td>To consider vaccination of other key personnel in maintaining essential services; 1. fire personnel 2. police 3. others</td>
<td>PH Division</td>
</tr>
<tr>
<td></td>
<td>Guidelines for vaccination during pandemic influenza; refer appendix 19</td>
<td>Medical Development Division</td>
</tr>
</tbody>
</table>
Phase 1 and 2: INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| Control Measure | To ensure that HCWs are familiar and are trained according to infection control guidelines as recommended in the Infection Control Policy and Sterilization and Disinfection Policy (MOH) | Quality Unit, Hospital Division  
Infection Control Committee in hospitals |
|        | Guideline on the use of PPE | Hospital Director together with Infectious Disease Physician  
Surveillance Section, KKM |
|        | Plan for triage facilities at clinics and hospitals  
Prepare admission policies for cases  
Prepare guidelines for isolation and clinical management of cases  
Prepare system of notification of cases  
Guideline Notification of cases  
Guideline for transportation / decontaminated patient / mobile team (RRT/RAT)  
Standard Precaution Pocket Book | |
| Information Education And Communication (Iec) | Dissemination of information to create awareness among HCWs and patients | HECC  
Hospital Director |
| Stockpiling | Develop guideline on estimation of antivirals and other critical drugs  
Initial stock of Oseltamivir at HKL  
Critical materials: Antibiotics, bronchodilators, cardiac drugs, antipyretics, analgesic and oral dehydration fluids  
PPE, consumables | Infectious Disease Physicians / Pharmacist  
Pharmaceutical Service Division  
Pharmaceutical Service Division |
Phase 1 and 2: **INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS**

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>ACTIVITY</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>Develop <strong>standard</strong> training module to train 1. doctors: FMS, OPD and AandE 2. support services 3. Paramedics at national, state and district levels</td>
<td>Public Health Division with Medical Development Division</td>
</tr>
<tr>
<td>Budget</td>
<td>Oseltamivir -RM 120/person/course  Amantadine -RM 6/person/course  Cost of anti-viral based on ring-model for exposure Based on 100 index cases with 20 contacts each 100 X20 X RM120 = RM240,000 17 hospitals X 30 staff = 50 staff PH : 3 staff X 100 cases = 300 staff for HCWs 800 staff (hosp -300 /PH -200)  Total cost for prophylaxis: RM 800,000 (1000X800)  Total cost for stock piling (Phase 1-3) =RM1,040,000 Cost of PPE / transit home/food/family members to include lab staff Contigency Plan - from stockpile</td>
<td>Medical Development Division</td>
</tr>
</tbody>
</table>
Phase 3: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMERGENCE OUTSIDE MALAYSIA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveillance</td>
<td>Monitor adverse reaction from vaccination</td>
<td>ID Physician</td>
</tr>
<tr>
<td></td>
<td>Increase awareness for reporting ILI and related conditions and deaths like atypical pneumonia, ARDS</td>
<td>Doctors / Health Department / Surveillance Section MOH</td>
</tr>
<tr>
<td>Vaccination</td>
<td>To monitor vaccine development and to acquire supplies of vaccines (if available) against pandemic strain</td>
<td>Pharmaceutical Service Division Public Health Division</td>
</tr>
<tr>
<td></td>
<td>To review vaccination guidelines if needed and prepare to vaccinate high risk groups</td>
<td>NINPVB</td>
</tr>
</tbody>
</table>
Phase 4 and 5: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Limited human-to-human spread, but spread is highly localised, suggesting that the virus is not well adapted to humans.

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTSIDE MALAYSIA AND NEIGHBOURING COUNTRIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveillance and control</td>
<td>Activate Clinical response Plan-Phase 3</td>
<td>Medical Development Division</td>
</tr>
<tr>
<td>Vaccination</td>
<td>To consider vaccination other key personnel in maintaining essential services; 1. fire personnel 2. police 3. others</td>
<td>Physician/Hosp. Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NINPVB</td>
</tr>
<tr>
<td>Clinical Management</td>
<td>Review case definition for influenza</td>
<td>Clinical Expert Group</td>
</tr>
<tr>
<td></td>
<td>Reprioritise admission policies and services if necessary</td>
<td>Disease Control Division</td>
</tr>
<tr>
<td></td>
<td>Develop clinical management guideline</td>
<td>Clinical Expert Group</td>
</tr>
<tr>
<td></td>
<td>Rapid Test Kit</td>
<td>Clinical Expert Group</td>
</tr>
<tr>
<td>Stockpiling</td>
<td>Antiviral</td>
<td>Pharmaceutical Service Division</td>
</tr>
</tbody>
</table>
**Phase 6: PANDEMIC (Minimising impact)**

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>ACTIVITY</th>
<th>RESPONSIBILTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance and Control</td>
<td>To consider alternate treatment centers in the event of hospital beds shortage; 1. hostels 2. schools 3. other community facilities To reallocate staff and duties if situation warrants To collate data on cases and effectiveness of vaccines and antiviral drugs treatment including prophylaxis</td>
<td>Hospital Division State Health Director Public Health Division Infection Control Nurse ID physicians</td>
</tr>
<tr>
<td>Clinical Management</td>
<td>Develop case definition for Pandemic Influenza 1. for adult 2. for children Monitor HCWs handling cases</td>
<td>Expert Group Infection Control Nurse</td>
</tr>
</tbody>
</table>

**POSTPANDEMIC PERIOD**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stockpiling</td>
<td>To restock resources used during pandemic</td>
<td>Hospital Division Pharmacy Division</td>
</tr>
<tr>
<td>Surveillance and control</td>
<td>Review guidelines and plan of action for clinical response</td>
<td>Infectious Disease Physician</td>
</tr>
</tbody>
</table>
4.2.3 Action Plan – Laboratory Response

Table 3: Action Plan - Laboratory Response

Phase 1 and 2: INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITY</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
</table>
| Sentinel Sites For Laboratory Based Surveillance | Stage 1  
All state hospitals  
All university hospitals  
Health Centres: 2 or more per state  
Private General Practitioner(GP): 1 or 2 per state  
Stage 2  
All state hospitals  
All university hospitals  
All Health Centres  
5 % of GPs per state. | Stage 1  
National Influenza Centres  
UMMC  
IMR  
Others  
HUKM  
NPHL  
HUSM  
Stage 2  
To include  
MKA Sabah  
Serdang Hospital  
Sungai Buloh Infectious Disease Hospital |
| Case Definition Of Influenza-Like-Illness (Ili) | ABRupt Onset of high grade fever (axilla > 38 °C or oral > 38.5 °C) with dry cough within 48 hours  
AND  
Any one of the following symptoms  
Nasal congestion / blockage  
Sore throat / irritation  
Myalgia  
Convulsion (infants)  
Vomiting (infants) |
Phase 1 and 2:  INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

<table>
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<tr>
<th>ISSUES</th>
<th>ACTIVITY</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines</td>
<td>▪ Supply / storage of viral transport medium (VTM), swabs, sterile containers, packaging materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Guidelines for clinical samples collection</td>
<td>Surveillance Section and review by laboratory working group</td>
</tr>
<tr>
<td></td>
<td>▪ Guidelines for storage and transportation of clinical samples from respective sentinel sites to respective laboratories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Guidelines for clinical samples reception from respective sentinel sites to respective laboratories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Guidelines for clinical samples handling and processing based on WHO guidelines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Guidelines for reporting to sentinel centres and Surveillance Section, MOH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Guidelines for infection control and biosafety for laboratory staff,</td>
<td>IMR</td>
</tr>
<tr>
<td></td>
<td>▪ Videos for clinical samples collection</td>
<td>Health Education and Communication Centre (HECC), MOH</td>
</tr>
<tr>
<td>Stockpiling Of Consumables /</td>
<td>Guidelines on nature and quantity of stockpile</td>
<td>Laboratory Working Group (LWG)</td>
</tr>
<tr>
<td>Diagnostic Reagents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manpower</td>
<td>Recruitment and provision of cross training of various categories of laboratory staff</td>
<td>Medical Development Division IMR</td>
</tr>
</tbody>
</table>
Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

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<tr>
<th>ISSUES</th>
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<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Assurance</td>
<td>In house training of all participating laboratories</td>
<td>All influenza diagnostic testing laboratories</td>
</tr>
<tr>
<td></td>
<td>Participation in inter-laboratory comparison of diagnostic tests for influenza.</td>
<td></td>
</tr>
<tr>
<td>Rapid Test</td>
<td>To evaluate the existing commercially available bedside rapid diagnostic kits for influenza virus.</td>
<td>IMR</td>
</tr>
<tr>
<td>Meeting Of The Working Group</td>
<td>Annual and ad hoc meeting will be held to review and update the existing laboratory action plan for influenza pandemic preparedness</td>
<td>Laboratory Working Group</td>
</tr>
<tr>
<td>Budget</td>
<td>The cost is calculated based on performing 15,000 clinical samples nationwide annually.</td>
<td>Disease Control Division, MOH</td>
</tr>
<tr>
<td>Networking</td>
<td>Link with veterinary services department</td>
<td>Disease Control Division</td>
</tr>
</tbody>
</table>
Phase 3: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

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</thead>
</table>
| Maintain and heighten Phase 1 and 2 activities. | Continue activities as in Phase 1 and 2.  
Laboratory Working Group (LWG) and representative of influenza testing laboratories to convene an emergency meeting upon announcement by WHO of the pandemic alert.  
Expand and enhance laboratory based sentinel surveillance sites (involvement of more GPs and Private Paediatric Clinics).  
Re-examine the status of stockpile of consumables and reagents available  
Review to increase amount needed to cope with expanded surveillance | LWG and all influenza testing laboratories |
| **Budget**                    | The cost is calculated on a contingency estimate of 20% of Phase 1 budget. | Disease Control Division, MOH              |
Phase 4 and 5: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Limited human-to-human spread, but spread is highly localised, suggesting that the virus is not well adapted to humans.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITY</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory based surveillance</td>
<td>Continue activities stated in Phase 2</td>
<td>LWG and influenza testing laboratories</td>
</tr>
<tr>
<td>Case definition</td>
<td>Redefine the case definition based on the clinical presentations of illness due to new sub-type of influenza A virus in affected areas (if indicated).</td>
<td>LWG and influenza testing laboratories</td>
</tr>
<tr>
<td>Expansion of Laboratory based surveillance activities</td>
<td>Expand and enhance laboratory based surveillance on travelers returning from affected areas Virological surveillance on people returning from affected areas upon arrival and when develop any respiratory illness within one week of arrival.</td>
<td>LWG and influenza testing laboratories</td>
</tr>
<tr>
<td>Strengthen laboratory diagnostic capabilities</td>
<td>Expand diagnostic capabilities to include novel virus.</td>
<td>LWG and influenza testing laboratories</td>
</tr>
<tr>
<td>Laboratory based surveillance</td>
<td>Increase laboratory stockpile of consumables and reagents to meet the expanded scope of surveillance</td>
<td>LWG and influenza testing laboratories</td>
</tr>
<tr>
<td>Manpower/Facilities</td>
<td>Cross-trained staff are alerted for possible mobilisation. Ensure that all BSL3 laboratories are functioning.</td>
<td>LWG and influenza testing laboratories</td>
</tr>
</tbody>
</table>
Phase 4 and 5: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Limited human-to-human spread, but spread is highly localised, suggesting that the virus is not well adapted to humans.

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<th>ACTIVITY</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biosafety measures</td>
<td>If vaccines are available, laboratory staff should be immunised. Sufficient antiviral drugs to be made available to laboratory staff if needed. Ensure proper PPE available</td>
<td>NIPPC</td>
</tr>
<tr>
<td>Networking</td>
<td>Maintain close collaboration with veterinary laboratory surveillance for the presence of any similar/novel virus in the local animal population.</td>
<td>Disease Control Division IMR</td>
</tr>
<tr>
<td>Notification</td>
<td>Issue an administrative order to make reporting of any influenza virus isolated mandatory. This is to be reported to Surveillance Section, MOH.</td>
<td>Disease Control Division</td>
</tr>
<tr>
<td>Budget</td>
<td>The cost is calculated based on contingency estimate of 50% of phase 1 activities.</td>
<td>Disease Control Division, MOH</td>
</tr>
</tbody>
</table>
Phase 6: PANDEMIC (Minimising impact)

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>ACTIVITY</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory based surveillance activities</td>
<td>Enhance surveillance to monitor the extent of spread of the virus and its effect on different sub-groups of population.</td>
<td>NIPPC</td>
</tr>
<tr>
<td>Diagnostic capabilities</td>
<td>Ensure laboratories have adequate supplies of diagnostic reagents capable of identification of novel influenza virus (e.g. primers, antibodies and antigens)</td>
<td>NICs and NILs</td>
</tr>
<tr>
<td>Manpower</td>
<td>Mobilise cross-trained staff to meet the increased workload of the laboratories</td>
<td>NICs</td>
</tr>
<tr>
<td>Virus characteristic</td>
<td>Monitor the emergence of drug resistant virus isolates in collaboration with WHO Influenza Collaborative Centre (Melbourne).</td>
<td>NICs</td>
</tr>
<tr>
<td>Strengthen networking</td>
<td>Enhance collaboration with Veterinary Research Institute (VRI) for presence of novel / similar virus in local animal population.</td>
<td>Surveillance Section, MOH and VRI</td>
</tr>
<tr>
<td>Research and Development (R and D)</td>
<td>Undertaking research and development in various sectors pertaining to the novel influenza virus.</td>
<td>LWG and influenza testing laboratories</td>
</tr>
<tr>
<td>Budget</td>
<td>Calculated the cost based on contingency estimate of 100% of Phase 1 budget.</td>
<td>Disease Control Division, MOH</td>
</tr>
<tr>
<td>ISSUES</td>
<td>ACTIVITY</td>
<td>RESPONSIBILITIES</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Documentation</td>
<td>Preparation and submission of final official report to relevant national health authorities.</td>
<td>All influenza diagnostic laboratories</td>
</tr>
<tr>
<td>Laboratory base surveillance</td>
<td>Return to Phase 1 activities. Undertake serological surveillance to assess the extent of human infection and immunity Restocking of laboratory supplies Review the existing guidelines and strengthen capabilities based on lessons learnt.</td>
<td>All influenza diagnostic laboratories</td>
</tr>
<tr>
<td>Research and Development (R and D)</td>
<td>Undertake R and D activities pertaining to the novel influenza virus.</td>
<td>All influenza diagnostic laboratories</td>
</tr>
<tr>
<td>Budget</td>
<td>Calculated based on activities as in phase 1.</td>
<td>Disease Control Division, MOH</td>
</tr>
</tbody>
</table>
4.2.4. Action Plan – Risk Communication

**Table 4: Action Plan - Risk Communication**

**Phase 1 and 2: INTER PANDEMIC PERIOD – PLANNING AND PREPAREDNESS**

Influenza virus subtype in animals only (risk to humans is low (phase 1) or substantial (phase 2)).

**SCENARIO:** It is the current situation during which influenza has been endemic in this country with sporadic cases throughout the year with occasional outbreaks.

Population regards influenza as not serious. Even medical community too has the same perception because of unavailability of epidemiological data.

<table>
<thead>
<tr>
<th>STRATEGY/ ACTIVITY</th>
<th>TARGET GROUP</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviour surveillance</td>
<td>General Public Healthcare workers (HCWs)</td>
<td>PHI MOH</td>
</tr>
<tr>
<td>Develop and produce health education materials</td>
<td>General Public HCWs</td>
<td>Disease Control Division, Medical Development Division, Health Promotion Division (HPD)</td>
</tr>
<tr>
<td>Training program for risk communication:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Handling public.</td>
<td>Program Managers</td>
<td>Institute Health Management HPD</td>
</tr>
<tr>
<td>▪ Operation room</td>
<td>Staff manning hotlines</td>
<td></td>
</tr>
<tr>
<td>▪ SOP for handling hotline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissemination of information to create awareness:</td>
<td>General Public HCWs</td>
<td>HPD DPH</td>
</tr>
</tbody>
</table>
Phase 3: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

<table>
<thead>
<tr>
<th>STRATEGY/ACTIVITY</th>
<th>TARGET GROUP</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cautioning and advising potential travellers going to and returning from affected areas</td>
<td>Tourists / Businessmen / Students/ Foreign and local workers</td>
<td>NIIPC NIPPC</td>
</tr>
<tr>
<td>Producing Health Alert Card and Health Declaration Form</td>
<td>All travellers coming into the country from the affected areas by sea, land and air</td>
<td>NIPC</td>
</tr>
<tr>
<td>Continue training program for specific group manning hotline</td>
<td>Environmental Health Officer, Health Education Officer, Public Health Specialist</td>
<td>HPD</td>
</tr>
<tr>
<td>Intensify the dissemination of information through the mass media</td>
<td>General Public HCWs</td>
<td>HPD</td>
</tr>
<tr>
<td>Development of Health Advisories</td>
<td>Travel industries Hotel industries Manufacturing industries Entertainment industries School and kindergartens Shopping complexes</td>
<td>NIPC</td>
</tr>
</tbody>
</table>
Phase 3: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

<table>
<thead>
<tr>
<th>STRATEGY/ACTIVITY</th>
<th>TARGET GROUP</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public informed of the latest development (through media) and also cautioned on</td>
<td>General Public</td>
<td>NIIPC, NIPPC</td>
</tr>
<tr>
<td>protective measures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open National Crisis Communication Center (NCCC) (including IP hotlines)</td>
<td>Public</td>
<td>NIPC</td>
</tr>
<tr>
<td>Distribution of Health Alert Card / Health declaration Form</td>
<td>All travellers coming into the country from affected areas by sea, land and</td>
<td>NIPC, SIPC</td>
</tr>
<tr>
<td>Press Conference / release</td>
<td>Media, General Public</td>
<td>NIIPC, NIPPC</td>
</tr>
<tr>
<td>Continue dissemination of information through mass media and distribution of</td>
<td>General public, Travellers</td>
<td>NIPC, SIPC, HPD</td>
</tr>
<tr>
<td>health education materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution of Health Advisories</td>
<td>Travel industries, Hotel industries, Manufacturing industries, Entertainment</td>
<td>NIPC, SIPC, HPD</td>
</tr>
</tbody>
</table>
Phase 4 and 5: PANDEMIC ALERT (Emergency And Pre-Emptive Response)

Limited human-to-human spread, but spread is highly localised, suggesting that the virus is not well adapted to humans.

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<tr>
<th>STRATEGY/ACTIVITY</th>
<th>TARGET GROUP</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis Communication Center should be established in all states</td>
<td>General public and HCWs</td>
<td>NIPC, SIPC</td>
</tr>
<tr>
<td>Intensify communication to public of the latest developments and also cautioned on protective measures</td>
<td>General public</td>
<td>NIIPC, NIPPC, SIPC, NIPC</td>
</tr>
<tr>
<td>Intensify distribution of all health education materials, including Health Alert card, Health Declaration form and Health Advisories</td>
<td>Travellers, General public, All relevant sectrs</td>
<td>NIIPC, NIPPC, SIPC</td>
</tr>
<tr>
<td>Daily press conference / release</td>
<td>Media General public</td>
<td>NIPPC, SIPC</td>
</tr>
<tr>
<td>Monitoring and analyzing information needs of the public through queries received via hotline, email, etc. Develop new strategies / modify existing strategies to meet these need</td>
<td>General public</td>
<td>NCCC, SCCC</td>
</tr>
</tbody>
</table>
Phase 6: PANDEMIC (Minimising impact)

Increased and sustained transmission in general population.

<table>
<thead>
<tr>
<th>STRATEGY/ ACTIVITY</th>
<th>TARGET GROUP</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis Communication Center at National and State level to continue operation and extended hours if necessary</td>
<td>General public</td>
<td>NIPC, SIPC</td>
</tr>
<tr>
<td>To revise existing health education materials / Health Advisories and incorporate new preventive measures</td>
<td>Travellers, General public, All relevant sectors</td>
<td>NIPPC, NIPC, HPD</td>
</tr>
<tr>
<td>To produce new health education materials / advisors and distribute quickly to target groups</td>
<td>Travellers, General public, All relevant sectors</td>
<td>NIPC, HPD</td>
</tr>
<tr>
<td>Intensify communication to public of the latest developments and also caution on protective measures</td>
<td>General public</td>
<td>NIIPC, NIPPC, SIPC, NIPC</td>
</tr>
<tr>
<td>Daily press conference / release</td>
<td>Media, General public</td>
<td>NIPPC, SIPC</td>
</tr>
</tbody>
</table>
## POSTPANDEMIC PERIOD

<table>
<thead>
<tr>
<th>STRATEGY/ACTIVITY</th>
<th>TARGET GROUP</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation and assessment of risk communication activities:</td>
<td>NIIPC</td>
<td>NCCC</td>
</tr>
<tr>
<td></td>
<td>NIPPC</td>
<td>SCCC</td>
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<tr>
<td>• All health education materials</td>
<td></td>
<td></td>
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<tr>
<td>• Media activities (electronic and print media)</td>
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<td>• Hotline services</td>
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<td>• Press conference</td>
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</tbody>
</table>
DEVELOPMENT EDUCATIONAL MATERIALS

- Health Alert Card
- Advisory to public, health care worker, high risk groups (travellers, tourists, students, businessmen, workers)
- Pamphlets
- Posters
- Media Kits
- Website information
- Television trailer
- Spot announcement

Information dissemination network

- Information Department
- BERNAMA
- RTM
- ASTRO
- All vernacular papers
- MOH distribution channels
- Cinemas
- Video/CDs rental
- Bus panel
- Billboards / electrical billboards
- website, meetings, hotlines

Health Alert Card

Message – based on WHO recommendation
5.0 CONCLUSION

This NIPPP provides guidance for the preparedness and response needed in facing the threat of an influenza pandemic. This plan is dynamic and there is an on-going process of updating the contents of the plan as and when required to reflect new knowledge and experiences gained and advances made by experts the world over. The State and District should have their own detailed plan of action using this document as guidance.
REFERENCES

Alert, enhanced surveillance and management of avian influenza in human.  
Communicable Diseases Surveillance Section, Disease Control Division, Ministry of Health Malaysia. September 2004.


CDC USA: Pandemic Influenza Preparedness and Response Plan (Draft) August 2004

CDC USA: Pandemic Influenza A Planning Guide for State and Local October,(Draft 2.1) 16/12/2003

Centers for Disease Control and Prevention, Avian influenza,  
http://www.cdc.gov/flu/avian/index.htm

Clinical Guidelines for Patients with an Influenza like illness during an influenza  
Pandemic. British Thoracic society. Version 5.0.15 October 2005  
http://www.dh.gov.uk/asset Root/04/12/17/55/04121755.pdf


Dept. of Health and Human Services USA: Influenza: Familiar, but Not Friendly.

Grantan JT, lapinsky SE. Critial care management of severe acute respiratory syndrome.

Health Canada: National Influenza Pandemic Preparedness and Response, 2004

Influenza A (HN):WHO Interim guidelines on clinical management of humans infected  


Lapinsky Se, Hawryluck L. ICU management of severe acute respiratory syndrome.  
MJPHM Guest Editorial – Influenza Surveillance in Malaysia 1997-2001
MOH New Zealand: Influenza Pandemic Action Plan 22 October 2002

Murman C et Plans against influenza pandemics in Europe - history and principles Eurosurrence Vol.6 N’9 September

Paget W. John et Influenza Pandemic Planning in Europe – Eurosurrence Vol.6 N’9 September

PHLS: The PHLS Plan for Pandemic Influenza 1 July 2001

Stephenson I. Avian influenza. Up-to-date online 13.3.2005

WHO: Influenza Pandemic Preparedness Plan: Responding to influenza pandemic or its threat – role of WHO and guidelines for national or regional planning. WHO Geneva 1999


THE ORGANISATIONAL RESPONSE STRUCTURE TO INFLUENZA PANDEMIC IN MALAYSIA

National Inter-Ministerial Influenza Pandemic Committee
NIPPC

National Influenza Pandemic Planning (Technical) Committee
NIPPC

National Security

National Security Council (NSC)  National Influenza Pandemic Committee (NIPC)  Pandemic Operations Room

State Security Council (SSC)  State Influenza Pandemic Committee (SIPC)  State Influenza Pandemic Operations Room

District Security Council (DSC)  District Influenza Pandemic Committee (DIPC)  District Influenza Pandemic Operations Room
Appendix 2

ROLES AND FUNCTIONS OF OTHER MINISTRIES, DEPARTMENTS
AND NON-GOVERNMENTAL ORGANISATIONS DURING
INFLUENZA PANDEMIC

i. Ministry of Home Affairs
   a. To ensure co-ordination in issues related to security and public order on the influenza pandemic.
   b. To give advice on security issues related to the influenza pandemic.
   c. To provide security cover, if needed during enforcement of PCIDA 1998.
   d. To facilitate all matters pertaining to security and public order e.g. spreading of rumours, related to the influenza pandemic.

ii. Ministry of Foreign Affairs
   a. To help in all matters on international relations pertaining to the influenza pandemic.
   b. To obtain information on the latest situation and updated development on the influenza pandemic in the affected countries.
   c. To facilitate all matters pertaining to conduct of foreign relations related to the control of the influenza pandemic.

iii. Ministry of Transport
   a. To ensure compliance of all control measures on the influenza pandemic agreed upon regarding public transportation in and out of entry points in the country.
   b. To co-ordinate issues in the control of the influenza pandemic, related to the movement of public transportation and people.
   c. To facilitate all transportation issues related to the influenza pandemic.
   d. To ensure all passengers boarding airplanes from countries affected by the influenza pandemic to Malaysia have medical screening prior to departure, completed health declaration forms on board the planes before disembarking and isolation on board if the passenger is a suspected case of influenza.
iv. Ministry of Information.

a. To disseminate relevant information to the community regarding the status of outbreak, and educational materials and public information on the influenza pandemic.

b. To coordinate press conferences and all mass media activities on the influenza pandemic.

c. To facilitate all matters as regards the print and electronic media related to SARS.

v. Ministry of National Unity and Community Development

a. To help in the influenza pandemic control measures by printing and disseminating information on the influenza pandemic.

b. To implement and enforce preventive and control measures in all childcare centres under its jurisdiction.

c. To coordinate all activities for the families related to influenza.

d. To facilitate all matters concerning families and community related to Influenza

vi. Ministry of Education

a. To disseminate updated information on the control measures of the influenza pandemic to all teachers and students.

b. To remind all students, their parents or guardians that students who are ill with symptoms and signs similar to Influenza to be examined and treated by doctors and not to allow them to attend school during the period of illness.

c. To request parents or guardians to monitor the health status of their children and to refer to doctors if they are ill.

d. To facilitate all measures on the prevention and control of Influenza at the school level and especially College and University levels where many foreign students come to study in the country.

e. To help implement the screening of foreign students returning to Colleges and universities after their holidays from affected Influenza pandemic countries.
vii. Ministry of Rural Development

a. To help disseminate information of the influenza pandemic to the rural communities.
b. To facilitate all matters related to the influenza pandemic in the rural areas.
c. To implement and enforce preventive and control measures in all child care centres under their charge.

viii. Ministry of Culture, Arts and Tourism

a. To help print and disseminate all official information issued by the Ministry of Health to all those related to the tourism industries.
b. To help give feedbacks to the National Inter-ministerial Committee on Influenza pandemic on matters concerning tourism.
c. To facilitate all matters on the influenza pandemic related to the tourism sector.

ix. Department of Immigration

a. To facilitate in the screening processes of people/travelers at entry points into the country.
b. To help coordinate all health influenza issues related to the movements of all aliens especially foreign workers into the country.
c. To help identify ill individuals/travelers coming through immigration check points.
d. To facilitate all matters on the influenza pandemic related to immigration.
e. To be stringent in the issue of visa/temporary visa of travelers from the influenza pandemic affected countries.

x. Department of Occupational Safety and Health

a. To monitor the health of workers and to take remedial action to rectify if needed.
b. To help print and distribute education materials on influenza pandemic and to advice on the risk factors in the work place and surroundings.
c. To facilitate all matters concerning dangers of the work surroundings related to the spread of Influenza.
xi.  **Royal Malaysian Police**

a. To ensure coordination of security and public order in the control of the influenza pandemic.

b. To give advice on security matters pertaining to the influenza pandemic if any.

c. To provide security cover, if needed, in the enforcement of PCIDA 1998.

c. To facilitate all matters concerning security and public order if any pertaining to the influenza pandemic e.g. rumours mongering

xii.  **Association of Private Hospitals, Malaysia**

a. To disseminate all information regarding Influenza including the hospital management of Influenza to all members of the association.

b. To coordinate all activities and measures on hospital infection control in private hospitals in dealing with infectious diseases.

c. To quickly refer all suspected/probable influenza patients to the nearest Influenza pandemic designated hospitals when indicated in the guidelines of MOH.

xiii.  **Primary Care Doctors Organization**

a. To help disseminate all information regarding Influenza and the pandemic

b. To its members.

c. To help teach the community who are ill to come for early treatment.

d. To help detect early any person who may present with symptoms of Influenza for referral to designated hospitals when indicated by MOH guidelines

e. To facilitate all matters pertaining to primary care on influenza

xiv.  **Malaysian Medical Association**

a. To help disseminate all information regarding influenza pandemic to its members

b. To help teach the community who are ill to come early for treatment.

c. To help detect early any person who present with symptoms of influenza for referral to hospitals if needed.

d. To facilitate all matters pertaining to the primary care Influenza.
Appendix 3

EXPLANATION OF THE PANDEMIC INFLUENZA PHASES

Interpandemic period

Phase 1
No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection or disease may or may not be present in animals. If present in animals, the risk of human infection or disease is considered to be low.

It is likely that influenza subtypes that have caused human infection and/or disease will always be present in wild birds or other animal species. Lack of recognized animal or human infections does not mean that no action is needed. Preparedness requires planning and action in advance.

Phase 2
No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease. The presence of animal infection caused by a virus of known human pathogenicity may pose a substantial risk to human health and justify public health measures to protect persons at risk.

Pandemic alert period

Phase 3
Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact. The occurrence of cases of human disease increases the chance that the virus may adapt or reassort to become transmissible from human to human, especially if coinciding with a seasonal outbreak of influenza. Measures are needed to detect and prevent spread of disease. Rare instances of transmission to a close contact may occur i.e. in a household or health-care setting, but do not alter the main attribute of this phase, i.e. that the virus is essentially not transmissible from human to human.

For examples;
- one or more unlinked human cases with a clear history of exposure to an animal source/ non-human source (with laboratory confirmation in a WHO-designated reference laboratory).
- Rare instances of spread from a case to close household or unprotected health-care contacts without evidence of sustained human-to-human transmission.
- One or more small independent clusters of human cases (such as family members) who may have acquired infection from a common source or the environment, but for whom human-to-human transmission cannot be excluded.
- Persons whose source of exposure cannot be determined, but are not associated with clusters or outbreaks of human cases.
Phase 4.
Small cluster(s) with limited human-to-human transmission but spread is highly localised, suggesting that the virus is not well adapted to humans. Virus has increased human-to-human transmissibility but is not well adapted to humans and remains highly localised, so that its spread may possibly be delayed or contained.

For examples;
- one or more clusters involving a small number of human cases, e.g. a cluster of <25 cases lasting <2 weeks.
- Appearance of a small number of human cases in one or several geographically linked areas without a clear history of a non-human source of exposure, for which the most likely explanation is considered to be human-to-human transmission.

Phase 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). Virus is more adapted to humans, and therefore more easily transmissible among humans. It spreads in larger clusters, but spread is localized. This is likely to be the last chance for massive coordinated global intervention, targeted to one or more foci, to delay or contain spread. In view of possible delays in documenting spread of infection during pandemic phase 4, it is anticipated that there would be a low threshold for progressing to phase 5.

For examples;
- ongoing cluster-related transmission, but total number of cases is not rapidly increasing, e.g. a cluster of 25–50 cases and lasting from 2 to 4 weeks.
- Ongoing transmission, but cases appear to be localised (remote village, university, military base, island).
- In a community known to have a cluster, appearance of a small number of cases whose source of exposure is not readily apparent (e.g. beginning of more extensive spread).
- Appearance of clusters caused by same or closely related virus strains in one or more geographical areas without rapidly increasing numbers of cases.

Pandemic period

Phase 6.
Increased and sustained transmission in the general population. Major change in global surveillance and response strategy, since pandemic risk is imminent for all countries. The national response is determined primarily by the disease impact within the country.

Postpandemic period
A return to the interpandemic period (the expected levels of disease with a seasonal strain) follows, with continued need to maintain surveillance and regularly update planning. An intensive phase of recovery and evaluation may be required.
Glossary

New influenza virus subtype

- a subtype that has not circulated in humans for at least several decades and to which the great majority of the human population therefore lacks immunity.

The distinction between

- *phase 1* and *phase 2* is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localised or widespread, and/or other scientific parameters.

- *phase 3*, *phase 4* and *phase 5* is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains (if derived from an animal strain), and/or other scientific parameters.
GUIDELINES ON SURVEILLANCE OF INFLUENZA AND RELATED RESPIRATORY CONDITIONS OR PNEUMONIA DEATHS

1. The Health Management Information System (HMIS) Medical Sub-system collects data on all admission, discharges and deaths in MOH hospitals according to diagnosis given and classified under ICD-10. The data is sent from individual hospitals to the State Health and the Information and Documentation Unit (IDS) of the Ministry of Health.

   The surveillance on mortality due to influenza or related respiratory conditions or pneumonia can be extracted from HMIS data to provide for information concerning influenza surveillance activities in the country.

2. All deaths due to influenza or related respiratory conditions or pneumonia will be reported to the District Medical Officer who will compile a weekly return of such deaths (see format in appendix 3A). The weekly return will be sent to the State Health Department with a copy to the Surveillance Section MOH. The Surveillance Section will collate and analyse these deaths and disseminate the information for action of relevant individuals and/or organization within MOH and outside of MOH.

   The flow of data and surveillance information is as shown below.
THE FLOW OF DATA AND SURVEILLANCE INFORMATION OF INFLUENZA AND RELATED RESPIRATORY CONDITIONS OR PNEUMONIA DEATHS

Deaths due to influenza or respiratory related

Hospital’s Wards

Patients admitted to ward

District Health Department

Hospital’s Record Office

State Health Department

Information Documentation System

Retrieve data from MOH folder

Surveillance Section

Analyse and interpret information

Disseminate

Investigate PRN
GUIDELINES FOR ENTRY POINT SCREENING OF TRAVELLERS FROM / EXITING INFLUENZA PANDEMIC AFFECTED COUNTRIES OR AREAS

WHO has not recommended entry or exit point screening for travellers exiting or coming from any influenza pandemic countries or areas. As such entry point screening of travellers from influenza pandemic countries or areas will be carried when deemed warranted by the National Influenza Pandemic Planning Committee and approved by the National Inter-Ministerial Influenza Pandemic Committee and would not be carried out as a routine preventive measure. The guidelines for such entry/exit point screening will be very much the same as those implemented during the last SARS epidemic and comprises the following:

Health Alert Card

Health alert card (see Appendix 4A) is issued to all travellers including Malaysians coming into Malaysia from influenza pandemic countries/areas. This is a general alert to travellers to self monitor for any signs or symptoms for pandemic influenza and to seek medical advice if signs or symptoms develop. Similar alert card is also issued to those exiting influenza affected areas for signs or symptoms of influenza while on board planes/ships or on arrival at their destination of travel.

Health Declaration Form

This health declaration form is to be filled by all travellers exiting influenza pandemic countries/areas at their country exit points, while on board transportation carriers or on arrival in their destination. Those who are having signs and symptoms of influenza exiting influenza pandemic countries/areas are not allowed to travel. Those on board or arriving from influenza pandemic countries/areas are to sign the declaration forms which will be screened by health personnel before being allowed into the country. Those already having declared signs or symptoms will be examined by the medical personnel and appropriately managed. This health declaration form may be mandated by law if needed.

Thermal screening for temperature

This was done during the SARS outbreak. All travellers leaving influenza pandemic countries/areas are screened for fever at the exit points and those with fever are not allowed to travel unless for a very good reason. All travellers arriving at the entry points are also similarly screened for fever and those with fever are medically examined for influenza and isolated if necessary. If needed though not recommended will entry points thermal screening be done for all travellers coming from influenza pandemic countries/areas. The use of such thermal screening of travellers is very time consuming and labour intensive and has very questionable cost-effectiveness in an influenza pandemic where the patient is already transmitting the virus one day before onset of signs and symptoms. This recommendation if carried out by MOH will have to be decided by NIIPC on the recommendation of the NIPPC.
HEALTH ALERT CARD (NOTICE)
FOR TRAVELLERS COMING FROM / EXITING
INFLUENZA PANDEMIC AFFECTED COUNTRIES OR AREAS

For Malaysians and Visitors:

World Health Organisation has issued an alert on Influenza Pandemic. If you have flu-like symptoms such as fever, cough and any one of these e.g. muscle ache, headache and sore throat you should see a doctor. If you have high fever and difficulty in breathing, you should immediately go to hospital for necessary treatment and present this card.

*As of ………………… the influenza pandemic affected areas are
as follows: ……………………………………………………………

Disease Control Division
Ministry of Health Malaysia
Level 3, Block E10, Parcel E,
Pusat Pentadbiran Kerajaan Putrajaya
62590 Putrajaya, Malaysia

(Back page)

To the Doctor

The person presenting this Health Alert Card may have been exposed to the Influenza Pandemic strain while he/she was in an affected area. Influenza is a notifiable illness under the Prevention and Control of Infectious Diseases Act 1988.

Please notify the nearest Health Office or Disease Control Division, Ministry of Health

Level 3, Block E10, Parcel E,
Pusat Pentadbiran Kerajaan Putrajaya
62590 Putrajaya, Malaysia

Tel: 03-8883 4327 ; fax: 03-8888 6271
Ladies and Gentlemen,

Welcome to Malaysia.

Malaysia is taking all the necessary precautionary measures against the spread of Influenza Pandemic (PI) into our country.

If you have traveled to any of the PI affected areas, namely ___________________________________________ and other affected countries, you are kindly requested to declare your health status on the overleaf of this card as required under Section 15 of Prevention and Control of Infectious Diseases Act 1988. Any person who does not declare truthfully will be committing an offence under this Act and if found guilty shall be liable on conviction to imprisonment for a term not exceeding 2 years or to a fine or to both.

The Ministry of Health Malaysia values your sincere cooperation in this matter.

Thank You.

Director General of Health
Ministry of Health Malaysia

Disease Control Division, Ministry of Health Malaysia,
Level 3, Block E10, Federal Government Administration Centre, Parcel E, 62590 Putrajaya
Tel: 03-8888 4370  Fax no: 03-8888 0643
HEALTH DECLARATION FORM

All persons entering Malaysia shall furnish all the information required in this Form

PART A
(General)

1. Full name:..................................................................................................................

(Use block letters)

2. Gender:  Male □  Female □

3. Age (year/month):..................................................................................................

4. Passport Number:..................................................................................................

5. Nationality:............................................................................................................

6. Identity Card No:..................................................................................................

7. Mode of Transport:  Air □  Sea □  Land □

8. Flight No./Vehicle Registration No./Name of Ship/Name of Train:
.................................................................................................................................

9. Seat No. (by air only):............................................................................................

10. Last Place of Embarkation:..................................................................................

11. Address in Malaysia:............................................................................................

.................................................................................................................................

12. Telephone No.  House:..............................................

Office:..............................

Mobile:..............................
PART B

INFLUENZA PANDEMIC (PI)

1. Have you been to any area or country with local transmission of PI as indicated by World Health Organization over the past 10 days?
   Yes ☐  No ☐

2. If yes, please specify the said areas/countries: ..............................................

3. Date of departure from the said countries: ..................................................

4. Have you had any of the following symptoms over the past 10 days?

   Yes ☐  No ☐
   - High fever (more than 38°C or more than 100.4°F)
   - Cough/Difficulties in breathing or shortness of breath
   - Others (please specify): ..............................................

5. Have you been in contact with person suspected to have PI?
   Yes ☐  No ☐

6. If the answer is yes to either of the question above, please report to the Health Quarantine Station.

Signature: ..............................

Date  : ..............................

..............................................

Minister of Health
GUIDELINES ON SCREENING ON-BOARD OF AIRCRAFT PASSENGERS FOR INFLUENZA PANDEMIC (PI)

1. MEASURES BEFORE BOARDING A FLIGHT
   *(for flights from countries with local transmission only)*

1.1. Measures at the airlines check-in counter

   All airlines must ensure that all departing passengers including transit passengers boarding its flights have undergone a pre-departure screening. Only passengers screened and found to be free from influenza are allowed to board the flights. This pre-departure screening may be done in cooperation of the national health officials and airport health authorities.

   **Pre-departure Screening shall include the following:**

   i. The Airline staff at the check-in counter shall ask the passengers the following questions:

      a) Have you currently have or had experienced in the past 48 hours any symptoms of influenza
      b) Have you had any contact with suspect or probable influenza cases
      c) Has a fever (body temperature may be checked if appropriate)

   ii. The Airline staff at the check-in counter shall perform a visual assessment to determine whether the passenger looks sick.

   iii. Should the passenger answer ‘yes’ to questions (a) and (b) or (b) and (c) or is found to look sick but replies no to all the above questions, then the Airline staff at the check-in counter shall refer the said passenger to the airport health authorities/ national health authorities for further assessment.

   iv. If the passenger is found to have symptoms of influenza on assessment by the airport health authorities/ national health authorities, the passenger should then be referred to a Hospital with a dedicated ambulance for further management.
v. If the passenger is found to be free from influenza on assessment, the airlines staff who perform the pre departure screening shall STAMP ON THE BOARDING PASS THE WORDS – PRE DEPARTURE INFLUENZA SCREENING PERFORMED to indicate that the passenger has been screened for influenza.

vi. Passengers certified free from influenza by the airport health authorities/ national health authorities should only then be allowed to board the flight.

1.2. Measures before boarding the aircraft

i. The Airline crew at the entrance of the aircraft shall perform a visual assessment to determine whether the passenger looks sick.

ii. Should the passenger look sick, the Airline crew at the entrance shall deny the passenger entry into the aircraft and refer the said passenger to the airport health authorities/ national health authorities.

2. MEASURES ON BOARD THE FLIGHT (for all flights)

2.1. Announcements

i. The flight commander of the aircraft shall make in flight announcements. This announcement shall be made, during the flight and just before landing.

ii. The announcements should include the following message:

(A) During flights

‘The need for passengers with symptoms of PROBABLE INFLUENZA i.e. fever, cough and etc. to identify themselves to the crew’.
(B) Before landing

‘ALL Passengers should have to fill up a health declaration card and upon arrival they will be subjected to health screening. Any person who does not declare truthfully will be committing an offence under the Prevention and Control of Infectious Disease Act 1988’.

2.2. In-Flight INFLUENZA Trailer

The Airlines must ensure that (where possible) the in-flight trailer on INFLUENZA, be shown during the flight. The airlines shall contact the Ministry of Transport Malaysia for the supply of this trailer. The Ministry of Health shall give input for this trailer.

2.3. Visual Assessment

Crew members are also to be on the lookout for passengers who may have the symptoms and do not identify themselves.

2.4. Management of passengers with symptoms of INFLUENZA

(a) The commander of the aircraft is to inform the authorities of the destination airport with regards the number of passengers with INFLUENZA symptoms as soon as possible.

(b) The passengers identified are to be given appropriate protective masks (N95) and if possible these passengers are to be shifted to the rear of the aircraft. Otherwise vacate two rows in front and two rows at the back of the passenger with symptoms.

(c) A separate toilet is to be identified for use of such passengers only.

(d) The crew is to wear protective masks and disposable gloves if they have to handle any of the passengers/ utensils used by the passengers. The utensils used by these passengers are to be packed separately.
(e) The commander of the aircraft is to identify the contacts of the passengers. These contacts are passengers sitting in the same row or within two rows in front or behind the ill passenger, all flight attendants on board, anyone having contact with respiratory secretions of the ill passenger, anyone on the flight living in the same household as the ill passenger and if it is a flight attendant who is a suspect or probable INFLUENZA case, all the passengers are considered as contacts.

(f) Contacts should provide, to the health authorities, identification and details of contact/address for the next 10 days.

(g) If the passenger with symptoms becomes classified as a probable case of INFLUENZA, the health authority where the case is being cared for should inform other health authorities in those areas in which the contacts reside that active surveillance of each contact (daily temperature check and interview by health care worker) should be undertaken until 10 days after the flight.

3. MEASURES UPON ARRIVAL (for all flights)

3.1. Passengers with symptoms of INFLUENZA

The airlines staff and the airport authorities with the cooperation of the health authorities are to send the passengers in a dedicated ambulance without delay to the nearest hospital designated for the management of these cases.

3.2. Passengers free of symptoms

i. All passengers must hand over the health declaration card to the health officials at the airport and be subjected to health screening.

ii. The airlines should make available details of the other passengers for follow up should the need arise. The details required are the address while in Malaysia and the telephone contact numbers.

3.3. Report of Measures taken on board the flight

The authorized airline representative will have to ensure that a report of measures taken on board (as Appendix 7A) is sent to the airport health authorities.
3.4. **Disinfection of the aircraft**

i. The airline should make the necessary arrangements for the disinfection of the aircraft cabin.

ii. The personnel who are involved in the disinfection of the aircraft are to wear disposable waterproof gloves and facemask.

iii. Compressed air should not be used for cleaning as this may re-aerosolize infectious material.

iv. All materials used including personal protective equipment are to be disposed off appropriately as recommended by WHO.

v. Hygienic practices like washing of hands with water and soap or alcohol based hand sanitizers after removal of the gloves should be made mandatory.

vi. The disinfectant that can be used are as follows;
   (a) ECO TRU 1453
   (b) ECO TRU FMD
   (c) EEE941A
   (d) Hospital grade disinfectant as approved by health authorities.

vii. Other measures as outlined in the WHO Disinfection of Aircraft Guidance.
REPORT OF
MEASURES TAKEN ON BOARD THE FLIGHT

Name of Flight Commander:.................................................................

Name of Airline:........................Flight Number:.....................

Port of embarkation :..............Date of Arrival:.......................

No. of passengers with symptoms of
INFLUENZA.................................................................

Seat numbers of passengers with symptoms...........................................

Name of authorized airline representative:................................................

Signature.................................................................

Date .................................
Appendix 6B

Advisory to Airlines on

INFLUENZA

The Ministry of Health, Malaysia seeks the cooperation of all airlines having travel links with the affected countries of pandemic influenza in a carrying out the following;

Measures before boarding a flight

- The airlines must ensure all departing passengers boarding the flight have undergone pre-departure screening
- Only passengers screened and found to be free from INFLUENZA are allowed to board the flights
- Pre-departure screening is to be done in cooperation of national health officials and port authorities

Measures on board the flight

- For flight Commander of the aircraft to make announcements on board for passengers with the symptoms to identify themselves to the crew
- Passengers should also be informed that upon arrival they will be subjected to health screening.
- Crew members are also to be on the lookout for passengers who may have the symptoms but do not identify themselves
- The commander of the aircraft is to inform the authorities of the destination airport with regards the number of passengers with INFLUENZA symptoms.
- The passengers identified are to be given appropriate protective masks (N95) and if possible these passengers are to be shifted to the rear of the aircraft.
- If possible a separate toilet should be identified for use of such passengers only.
- The crew are to wear protective masks and disposable gloves if they have to handle any of the passengers/utensils used by the passengers. The utensils used by these passengers are to be packed separately.
Measures Upon Arrival (for the Passenger)

- On arrival at the airport, the airlines staff, the airport authorities with the cooperation of the health authorities are to send the passengers without delay to the nearest hospital designated for the management of these cases.
- The airlines should make available details of the other passengers for follow up should the need arise. The details required are the address while in Malaysia and the telephone contact number.
- The airline should make the necessary arrangements for disinfection of aircraft cabin.

Measures Upon Arrival (Disinfection for the Aircraft)

- The personnel who are involved in the disinfection of the aircraft are to wear disposable waterproof gloves and facemask.
- Compressed air should not be used for cleaning as this may re-aerosolize infectious material.
- All materials used including personal protective equipment are to be disposed off separately and labelled as ‘hazardous material’. This waste material should not be carried on the aircraft.
- Hygienic practices like washing of hands with water and soap or alcohol based hand sanitizers after removal of the gloves should be made mandatory.
- The disinfectant that can be used are as follows;

  i) ECO TRU 1453
  ii) ECO TRU FMD
  iii) EEE941A
  iv) Hospital grade disinfectant as approved by health authorities.
Appendix 7

GUIDELINES FOR
HOME QUARANTINE / HOME SURVEILLANCE ORDER FOR CONTACTS
OF PATIENTS WITH PANDEMIC INFLUENZA AS PROVIDED FOR UNDER
SECTION 15(1) OF DISEASE PREVENTION AND CONTROL ACT 1988 (ACT 342)

1 Introduction

1.1. The WHO has issued an Alert on the Pandemic Influenza which has been reported in many parts of the world and which is capable of being transmitted via close contact. In this case close contact would mean anyone who has lived with or been exposed to nasal secretions of a suspected or probable case of Pandemic Influenza.

1.2. As provided for under Section 15 (1) of the Prevention and Control of Infectious Act 1988 any authorized officer can order the close contact as a suspect case of PI to be put under quarantine/isolation in a hospital.

1.3. The authorized officer may also subject to the same regulations place contacts under observation or surveillance in any other suitable such as their own home and allowing regular visits/checks by the authorized officer for the said period to ensure compliance with the isolation order.

2. Objective

The objective of this guideline is to streamline the procedures in relation to observation and surveillance to be carried out at state and district levels and comes into force with immediate effect.

3. Definition of Contacts

Contacts means any person who has been or may have been exposed to the risk of contracting PI or any person who has been exposed to respiratory secretions or any body fluids of as suspected or probable case of PI.

4. Procedure for the enforcement or observation or surveillance order.

4.1. On receiving notification of a probable or suspected case of PI the authorized officer has to identify all the contacts in relation to the case.

4.2. All relevant information including address, IC number, telephone number or the contacts have to be obtained.

4.3. All documents in relation to the Order (appendix 7A) and the associated conditions as stipulated in Annex A have to be completed.

4.4. The signed original copy of the order has to be given to the contact while the document itself has to be filed.

4.5. The observation period is 10 days starting from the date of last exposure to the suspected or probable case.
4.6. The authorized officer who signed the order has to make regular visits to ensure compliance to the stipulated conditions.

4.7. Record all activities in relation to the observation/surveillance in the record book as shown below.

Example:

Record Book for the Observation and Surveillance on Contacts of PI
District:
State:

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Suspected or probable case.</th>
<th>Name of Contact</th>
<th>Relationship with the Case</th>
<th>Observation or surveillance. Date.</th>
<th>Note (outcome of contact)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Conclusion

The authorized officer has to seek the cooperation of the Police if he encounters any difficulty in enforcing the order, any queries can be directed to the PI Operations Room at the MOH at ……………(7am-7pm)
To: __________________________

Name: _________________________

Identification Card Number: ________________

Address: ____________________________

____________________________________

____________________________________

HOME OBSERVATION AND SURVEILLANCE ORDER FOR CONTACTS OF PANDEMIC INFUENZA (PI) UNDER SECTION 15 (1) THE PREVENTION AND CONTROL OF INFECTIOUS DISEASES ACT 1988

The World Health Organization (WHO) has described in its case alert that pandemic influenza (PI) may spread through close contacts. Close contact is defined as having lived with or having had direct contacts with respiratory secretions or body fluids of persons with PI.

2. You have been identified as a close contact of a person who is suspected to have PI and there is a possibility that you have been exposed to PI. Under section 15(1) of the Prevention and Control of Infectious Disease Act 1988, allows the authorised officer to order your isolation in any hospitals.
3. In view of the circumstances, the authorised officer has in his opinion you can be attended to in your home and permit you to be put under surveillance and observation at home mentioned above subject to conditions as in Appendix 7B.

4. During the period of surveillance and observation you are required to observe the conditions stipulated in the list. Under section 24 of the Act, any person who disobeys any lawful order issued by an authorised officer shall be liable on conviction in respect of the first offence, to imprisonment for a term not exceeding two years or to fine or to both, in respect of second or subsequent offence, to imprisonment not exceeding five years or to fine or to both, in respect of a continuing offence, to a further fine not exceeding two hundred ringgit for every day during which such offence continues.

Name of authorised officer: __________________________

Designation: __________________________

Date: ______________

Time: ______________

ACKNOWLEDGEMENT OF RECEIVE A COPY OF HOME OBSERVATION AND SURVEILLANCE ORDER BY CONTACTS

Signature: ______________

Name: __________________

Identification Card Number: __________________

Date: ______________

Time: ______________
HOME OBSERVATION AND SURVEILLANCE ORDER FOR CONTACTS OF PANDEMIC INFLUENZA (PI) UNDER SECTION 15 (1) THE PREVENTION AND CONTROL OF INFECTIOUS DISEASES ACT 1988

WHAT HAS TO BE DONE DURING THE HOME OBSERVATION AND SURVEILLANCE PERIOD?

A. STAY AT HOME DURING THE SPECIFIED PERIOD

1. Stay at home at all times from __________ to __________
2. If you have school going children or have siblings who attend school, kindergarten or child care centers, they are also to stay at home at all times for the same period.
3. Arrange for relatives / friends to purchase groceries, or your daily needs.
4. If you urgently need to go out for matters needing personal attention, you need to consult the District Health Officer at: ______________
5. If you need any assistance in your daily needs, call: ______________
6. Minimise contact with friends as far as possible. If friends and relatives do enter your home, please keep a list of of their names, contact numbers and the date of their visit.
7. If your spouse or any other adults in your home have not been issued the home observation and surveillance order, they are free to leave the house and carry on with their daily routine.

B. CHECK FOR SIGN OF FEVER

1. Check for fever daily and this to be monitored for 10 days beginning on __________
2. Wear the face mask at all times if you have fever or cough, until arrangement can be made for medical attention.
3. If you are unwell or have fever, please call the District Health Officer at __________ and arrangement will be made for you to seek medical attention.

C. OBSERVE GOOD PERSONAL HYGIENE

1. Maintain good personal hygiene.
2. Cover your mouth when coughing and sneezing
3. Wash your hands every time you touch your nose, mouth or eyes
4. Maintain good indoor ventilation.
5. Surfaces soiled with sputum, phlegm, nose discharge or vomit can be washed household bleach i.e. chlorox and the recommended dilution: Adding 1 part of bleach to 50 part of water.
D. WHAT IS NOT TO BE DONE DURING THE HOME OBSERVATION AND SURVEILLANCE PERIOD?

1. Leaving home for any reason including buying groceries, going for a walk, to the playground or public places.
2. Children and their siblings playing with other children outside or inside the home.

REMINDER

Spot checks will be carried out to ensure the above mentioned instruction strictly adhered and if found to be non-compliant, a legal proceeding shall be taken against you under this Act.
GUIDELINES FOR SELF-MONITORED AND REPORTING IF ILL
OF INFLUENZA DURING INFLUENZA PANDEMIC

Colds and the Flu: What to Do If You Get Sick

Be Aware of Common Flu Symptoms; the flu usually comes on suddenly and may include these symptoms:

- High fever
- Headache
- Tiredness/weakness (can be extreme)
- Dry cough
- Sore throat
- Runny nose
- Body or muscle aches
- Diarrhea and vomiting also can occur, but are more common in children.

These symptoms are usually referred to as "flu-like symptoms." A lot of different illnesses, including the common cold, can have similar symptoms.

Cold Versus the Flu

The flu and the common cold are both respiratory illnesses caused by different viruses. Because these two types of illnesses have similar symptoms, it can be difficult to tell the difference between them. In general, the flu is worse than the common cold, and symptoms such as fever, body aches, extreme tiredness, and dry cough are more common and intense. Colds are usually milder than the flu. People with colds are more likely to have a runny or stuffy nose. Colds generally do not result in serious health problems, such as pneumonia, bacterial infections, or hospitalizations.

General Steps to Take If You Get Sick

If you develop flu-like symptoms, and you are not at high risk for complications from the flu:

- Get plenty of rest
- Drink a lot of liquids
- Avoid using alcohol and tobacco
- Consider taking over-the-counter medications to relieve the symptoms of flu (but never give aspirin to children or teenagers who have flu-like symptoms)
- Stay home and avoid contact with other people to protect them from catching your illness
- Cover your nose and mouth with a tissue when you cough or sneeze to protect others from your germs.
Most healthy people recover from the flu without complications.

**Look Out for Emergency Warning Signs;** here are some “emergency warning signs” that require urgent medical attention.

In children, some emergency warning signs that need urgent medical attention include:
- High or prolonged fever
- Fast breathing or trouble breathing
- Bluish skin color
- Not drinking enough fluids
- Changes in mental status, such as not waking up or not interacting; being so irritable that the child does not want to be held; or seizures
- Flu-like symptoms improve but then return with fever and worse cough
- Worsening of underlying chronic medical conditions (for example, heart or lung disease, diabetes)

In adults, some emergency warning signs that need urgent medical attention include:
- High or prolonged fever
- Difficulty breathing or shortness of breath
- Pain or pressure in the chest
- Near-fainting or fainting
- Confusion
- Severe or persistent vomiting

Seek medical care immediately, either by calling your doctor or going to an emergency room, if you or someone you know is experiencing any of the signs described above or other unusually severe symptoms. When you arrive, tell the receptionist or nurse about your symptoms. You may be asked to wear a mask and/or sit in a separate area to protect others from getting sick.

**Special Concerns for People at High Risk for Complications from the Flu** Some people are at increased risk to develop complications of flu. This group includes:
- People 65 years of age and older
- Children 6-23 months of age*
- People of any age with chronic medical conditions (for example, heart or lung disease, asthma, diabetes, or HIV infection)
- Pregnant women

If you are in a group that is considered to be at high risk for complications from the flu and you get flu-like symptoms, you should consult your health-care provider when your symptoms begin. Some of the complications caused by flu include bacterial pneumonia, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes. Children also may get sinus and ear infections. *Children 6-23 months of age are at increased risk for influenza-related hospitalization.
What is a normal temperature?

The normal temperature range varies, depending on the method you use:

**Rectum**: 36.6 °C to 38 °C (97.9 °F to 100.4 °F)
**Armpit**: 34.7 °C to 37.3 °C (94.5 °F to 99.1 °F)
**Mouth**: 35.5 °C to 37.5 °C (95.9 °F to 99.5 °F)
**Ear**: 35.8 °C to 38 °C (96.4 °F to 100.4 °F)

**TAKE YOUR CHILD TO THE HOSPITAL EMERGENCY DEPARTMENT OR ALL 991 IF YOUR CHILD:**

- Has severe trouble breathing not caused by a stuffy nose
- Has blue lips
- Is limp or unable to move
- Is hard to wake up, unusually quiet or unresponsive
- Has a stiff neck
- Seems confused
- Has a seizure (convulsion/fit)
- Has not had a wet diaper in 12 hours.

**If any of the following happen to you (adults) during the flu, SEEK MEDICAL ATTENTION (Call your doctor, or go to the Emergency Room):**

- You are short of breath even while resting.
- You have pain in your chest when you breathe.
- If you have heart disease and develop chest pain.
- You are coughing up bloody sputum.
- You are wheezing.
- You still have a fever and are not feeling better after 5 days.
- You are feeling better and suddenly you develop a fever.
- You or others note that you are extremely drowsy or are confused / disoriented.
INFLUENZA ASSESSMENT FORM

Health Office:
Patient’s data

<table>
<thead>
<tr>
<th>Name :</th>
<th>I/C :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth :</td>
<td>Age :</td>
</tr>
<tr>
<td>Address :</td>
<td></td>
</tr>
<tr>
<td>Tel. No.</td>
<td></td>
</tr>
</tbody>
</table>

Risk Assessment For Complications of Influenza
Please tick ( / ) if condition exist

<table>
<thead>
<tr>
<th>High Risk Groups (18 years and above)</th>
<th>Tick all relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women in the second or third trimester of pregnancy</td>
<td></td>
</tr>
<tr>
<td>Chronic cardiac disease (Hypertension is not enough)</td>
<td></td>
</tr>
<tr>
<td>Child with cyanotic congenital heart disease</td>
<td></td>
</tr>
<tr>
<td>Chronic pulmonary disease – asthma</td>
<td></td>
</tr>
<tr>
<td>Chronic pulmonary disease – COAD or emphysema</td>
<td></td>
</tr>
<tr>
<td>Chronic pulmonary disease – other than asthma, COAD or emphysema</td>
<td></td>
</tr>
<tr>
<td>Chronic renal disease</td>
<td></td>
</tr>
<tr>
<td>Non insulin dependent diabetes mellitus</td>
<td></td>
</tr>
<tr>
<td>Insulin requiring diabetes mellitus</td>
<td></td>
</tr>
<tr>
<td>Receiving immunosuppresssive therapy, AIDS patients</td>
<td></td>
</tr>
<tr>
<td>Neoplastic disease</td>
<td></td>
</tr>
<tr>
<td>Hepatic disease</td>
<td></td>
</tr>
<tr>
<td>Resident of nursing home</td>
<td></td>
</tr>
<tr>
<td>Resident of other chronic care facility</td>
<td></td>
</tr>
<tr>
<td>65 year old</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Risk Groups (less than 18 years old)</th>
<th>Tick all relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic cardiac disease</td>
<td></td>
</tr>
<tr>
<td>Child with cyanotic congenital heart disease</td>
<td></td>
</tr>
<tr>
<td>Chronic pulmonary disease – asthma</td>
<td></td>
</tr>
<tr>
<td>Chronic pulmonary disease – other than asthma</td>
<td></td>
</tr>
<tr>
<td>Chronic renal disease</td>
<td></td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td></td>
</tr>
<tr>
<td>Receiving immunosuppressive therapy, AIDS patients</td>
<td></td>
</tr>
<tr>
<td>Neoplastic disease</td>
<td></td>
</tr>
<tr>
<td>Hepatic disease</td>
<td></td>
</tr>
<tr>
<td>Resident of long term care facility</td>
<td></td>
</tr>
<tr>
<td>Less than 2 years old</td>
<td></td>
</tr>
</tbody>
</table>
## Symptoms (for all ages)

### Date and time of onset of first symptoms
Please tick ( / ) if symptom/s present.

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>In contact with someone with influenza in the last 3 days</td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td></td>
</tr>
<tr>
<td>Sore throat</td>
<td></td>
</tr>
<tr>
<td>Myalgia (Aching muscles and joints)</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td></td>
</tr>
<tr>
<td>Chills</td>
<td></td>
</tr>
<tr>
<td>Stiffness</td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td></td>
</tr>
<tr>
<td>Running or stuffy nose</td>
<td></td>
</tr>
<tr>
<td>Purulent sputum</td>
<td></td>
</tr>
<tr>
<td>Chest pain when taking a deep breath</td>
<td></td>
</tr>
<tr>
<td>Breathlessness</td>
<td></td>
</tr>
<tr>
<td>Anorexia (Loss of appetite)</td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td></td>
</tr>
<tr>
<td>Diarrhoea</td>
<td></td>
</tr>
<tr>
<td>Confusion, drowsiness</td>
<td></td>
</tr>
<tr>
<td>Rash</td>
<td></td>
</tr>
</tbody>
</table>

### Note:

**Please seek treatment at clinic if:**

1. In high risk groups with symptoms of influenza – sudden onset of fever 38°C or more and cough with/or sore throat.
2. Not in high risk groups but having symptoms of influenza with symptoms of purulent sputum or thoracic pain when taking a deep breath or breathlessness or anorexia or vomiting or diarrhoea or confusion or drowsiness.
GUIDELINES FOR HAND HYGIENE AND DISINFECTION

HAND HYGIENE PROCEDURES

A. How to Wash Hands (using non antimicrobial soap and antimicrobial soap)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remove jewelry before hand wash procedure.</td>
</tr>
<tr>
<td>2</td>
<td>Rinse hands under warm running water. &lt;br&gt;<strong>Rationale:</strong> This allows for suspension and washing away of the loosened Microorganisms.</td>
</tr>
<tr>
<td>3</td>
<td>Lather with soap and, using friction, cover all surfaces of the hands and fingers. &lt;br&gt;<strong>Rationale:</strong> The minimum duration for this step 10 seconds: more time may be required if hands are visibly soiled. &lt;br&gt;For antimicrobial agents 3-5mL are required. &lt;br&gt;Frequently missed area are thumbs, under nails, backs of fingers and hands.</td>
</tr>
<tr>
<td>4</td>
<td>Rinse under warm running water. &lt;br&gt;<strong>Rationale:</strong> To wash off microorganisms and residual hand washing agent.</td>
</tr>
<tr>
<td>5</td>
<td>Dry hands thoroughly with a single-use towel. &lt;br&gt;Drying achieves a further reduction in number of microorganisms. &lt;br&gt;Re-useable towels are avoided because of the potential for microbial contamination.</td>
</tr>
<tr>
<td>6</td>
<td>Turn off faucet without re-contaminating hands, e.g. use single use towel. &lt;br&gt;<strong>Rationale:</strong> To avoid re-contaminating hands.</td>
</tr>
<tr>
<td>7</td>
<td>Keep fingernails short and do not use fingernail polish or artificial nails. &lt;br&gt;<strong>Rationale:</strong> Chipped nail polish may increase bacterial load. Artificial nails including wraps, acrylics or tips increase bacterial load. Nail polish and artificial nails impede visualization of soil under nails.</td>
</tr>
</tbody>
</table>

Adapted from Health Canada Infection Control Guidelines: Hand Washing, Cleaning, Disinfection and Sterilization in Health Care.

B. Decontaminating Hands with an Alcohol-based Hand Rub

To decontaminate hands that are not visibly soiled* using an alcohol-based hand rub:

- Follow the manufacturer’s recommendations on the volume of product to use;
- Apply product to palm of one hand and rub hands together, covering all surfaces of hands and finger, until hands are dry.

Note: * Hand wash if hands are visibly dirty or contaminated with proteinaceous material or are visibly soiled with blood or other body fluids by washing with either a non-antimicrobial soap and water or an antimicrobial soap and water as outlined above, How to Wash Hands (adapted from Health Canada).
## DISINFECTION PROCEDURES:

### Table A. Cleaning Procedures for Common Items

<table>
<thead>
<tr>
<th>Surface/object</th>
<th>Procedure</th>
<th>Special considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal surfaces</td>
<td>1. Thorough regular cleaning</td>
<td>Special procedures sometimes called Carbolizing are not necessary.</td>
</tr>
<tr>
<td></td>
<td>2. Cleaning when soiled</td>
<td>Some environmental surfaces may require low level disinfection (e.g., in nurseries, pediatric settings, critical care, bum units, emergency rooms, operating rooms and bone marrow transplantation facilities).</td>
</tr>
<tr>
<td></td>
<td>3. Cleaning between patients / clients and after discharge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Should be cleaned regularly with a detergent and as splashes/visible soil occur.</td>
<td></td>
</tr>
<tr>
<td>Floors</td>
<td>1. Thorough regular cleaning</td>
<td>Detergent is adequate in most areas.</td>
</tr>
<tr>
<td></td>
<td>2. Cleaning when soiled</td>
<td>Blood/body fluid spills should be cleaned up with disposable cloths followed by disinfections with a low level disinfectant.</td>
</tr>
<tr>
<td></td>
<td>3. Cleaning between patients / clients and after discharge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damp mopping preferred</td>
<td></td>
</tr>
<tr>
<td>Carpets/upholstery</td>
<td>Should be vacuumed regularly and shampooed as necessary.</td>
<td></td>
</tr>
<tr>
<td>Toys</td>
<td>Should be regularly cleaned, disinfected with a low level disinfectant,</td>
<td>For pediatric settings, toys should be constructed of smooth, nonporous (i.e., not plush) materials to facilitate Cleaning and decontamination.</td>
</tr>
<tr>
<td></td>
<td>thoroughly rinsed, and dried (between patients in acute care setting).</td>
<td>Do not use phenolics.</td>
</tr>
<tr>
<td>Toilets and commodes</td>
<td>1. Thorough regular cleaning</td>
<td>These may be the source of enteric pathogens such as <em>C. difficile</em> and <em>Shigella</em>.</td>
</tr>
<tr>
<td></td>
<td>2. Cleaning when soiled</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Clean between patients / clients and after discharge. Use a low level disinfectant</td>
<td></td>
</tr>
</tbody>
</table>
# Table B. Directions for Preparing and Using Chlorine-based Disinfectants

<table>
<thead>
<tr>
<th>Product</th>
<th>Intended</th>
<th>Recommended dilution</th>
<th>Level of available chlorine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household bleach (5% sodium hypochlorite solution with 50000 ppm* available chlorine)</td>
<td>Cleanup of blood spills</td>
<td>Use concentrations ranging from 1 part bleach to be mixed with 99 parts of tap water (1:100) or one part of bleach to be mixed with 9 parts of tap water (1:10), depending on the amount of organic material (e.g., blood or mucus) present on the surface to be cleaned and disinfected.</td>
<td>0.05% or 500 ppm 0.5% or 5000 ppm</td>
</tr>
<tr>
<td></td>
<td>To add to laundry water</td>
<td>One part (one 8 ounce cup) Of bleach to be mixed with About 500 parts (28 Gallonst) of tap water.</td>
<td>0.01% or 100 ppm</td>
</tr>
<tr>
<td></td>
<td>Surface cleaning Soaking of glass-ware or plastic items</td>
<td>One part (one 8 ounce cup) to be mixed with about 50 parts (2.8 gallons) of tap water.</td>
<td>0.01% or 1000 ppm</td>
</tr>
<tr>
<td>NaDCC (Sodium dichloroisocyanurate) powder with 60% available chlorine.</td>
<td>Cleanup of blood spills</td>
<td>Dissolve 8.5 g in one litre of tap water.</td>
<td>0.85% or 5000 ppm</td>
</tr>
<tr>
<td>Chloramine-T powder with 25% available chlorine.</td>
<td>Cleanup of blood spills</td>
<td>Dissolve 20 g in one litre of tap water.</td>
<td>2.0% or 5000 ppm</td>
</tr>
</tbody>
</table>

* Parts per million  
† Imperial gallon (4.5 litres)
GUIDELINES ON THE USE OF FACE MASKS DURING INFLUENZA PANDEMIC

1. Introduction

There are 3 types of masks that are used during the outbreak of PI.

**Type 1: N100 Respirator (N 100 mask)**

**Special property of N100 mask:** The mask provides 99.97 % filtration from contamination and is meant to provide high level protection for those at high risk of getting infection from infected material

**Indications:**

- All workers working in Biosafety Level 3 Laboratory
- *Anyone who is at high risk of exposure to a high inoculum of the virus eg. during the conduct of viral studies*

Additional protection equipment like gloves, goggles or visors and protective gowns are mandatory.

**Type 2 : N95 Respirator (N 95 Mask)**

**Special property of N 95 mask:** The mask provides 95 % filtration from contamination and is meant to provide protection to those at high risk of getting infection from patients with PI.

**Indications:**

All health care workers who is going to do procedures that can expose them to patient’s “splashing” or “spillage” for example from naso-pharyngeal or laryngeal larvage etc. Apart from wearing mask, goggles or face shield should be used.

**Type 3 : Surgical facemask (surgical mask)**

**Benefit of surgical mask (3 Ply):** It helps contain droplets from those already infected and may provide some protection for those exposed to anyone with respiratory symptoms.

**Type of surgical mask to be used:** 3 ply surgical mask.
Indications:

1. All health care workers and hospital personnel who is at high risk of contact with suspect or probable PI patients. Doctors, nurses, other health workers and all other workers working, right from the triage area to the isolation ward would fall into this category.
2. All health personnel transporting suspected patients to designated hospitals including sending them home.
3. Parents accompanying their children who is been admitted to the ward for PI.
4. **All personnel involve in triaging (screening) of patients or travelers at entry points**
5. **All health care working at entry points and not directly involved in triaging (screening)**
6. Individuals exhibiting respiratory symptoms
7. Suspected or probable PI patients transported from triage to isolation ward.

2. **Guidelines on wearing the N95 or N 100 Masks**

2.1 Wash hands before wearing a mask and after taking one off.
2.2 Make sure the mask fits properly. To check the fit, cover the front of the mask completely with both hands, being careful not to disturb the position of the mask. Inhale sharply. A negative pressure should be felt inside the mask. (no air is felt flowing from outside)
2.3 The mask should fully cover the nose, mouth as well as the chin. Make sure the strap is well adjusted and tight.
2.4 The metallic wire part of the mask should be fixed securely over the bridge of the nose to prevent leakage
2.5 Change the mask once it is wet or contaminated with secretions or splashes from the patient’s body fluids or if it is damaged.
2.6 Discard masks into the clinical waste bin (yellow plastic bin) provided at point of care, each time after usage.
2.7 Do not bring used mask home.
2.8 Do not share mask with other staff.
2.9 Each mask should only be used during one shift. (NOT more than 8 hours)

3. **Guidelines on wearing surgical masks (3 Ply)**

3.1 If you have running nose or flu like symptoms, you are advised to stay at home. If you need to go out, make sure you wear a surgical mask.
3.2 Avoid crowded places. Wear a surgical mask if you cannot avoid them
3.3 Wash hands before wearing a surgical mask and after taking one off.
3.4 When wearing surgical mask , the following should be noted:

3.4.1 The facemask should fit snugly over the face
3.4.2 The coloured side of the mask should face outside
3.4.3 Tie all the strings that keep the mask in place
3.4.4 The mask should fully cover the nose, mouth as well as the chin.
3.4.5 The metallic wire part of the mask should be fixed securely over the bridge of the nose to prevent leakage.
3.4.6 The surgical mask should not be used more than a day but if it is wet, damaged or soiled by secretions or body fluid at any time, change the mask immediately.
3.4.7 Discard all used masks into a plastic bag which should then be tied properly before disposing it into a rubbish bin.

4. General Advice to the public

Members of the public are advised to take precautionary measures to prevent respiratory tract infections:

4.1 Good personal hygiene should be observed at all times.
4.2 Wash hands frequently with liquid soap, especially after sneezing, coughing or cleaning the nose, after going to toilet or before preparing food.
4.3 Build up body immunity by practising healthy lifestyle e.g eating healthy food, having adequate rest, exercising regularly and avoiding smoking.
4.4 Cover nose and mouth when sneezing or coughing
4.5 Avoid spitting in public places.
4.6 Avoid visiting crowded places with poor ventilation. If you happen to be in crowded places, like shopping malls or cinemas, wear a surgical mask if somebody nears you starts coughing or sneezing.
4.7 If there is a family member who develops fever or respiratory symptoms within 10 days after returning from an affected country, all other members of the family should wear a surgical mask as a precautionary measure.
4.8 Consult the doctor immediately if you develop fever or any respiratory symptoms.
Appendix 11

GUIDELINES FOR CLOSURE AND/OR CANCELLATION OF GATHERINGS, EVENTS AND INSTITUTIONS DURING INFLUENZA PANDEMIC

Some Considerations for closure and / cancellation

There are neither data nor guidelines to determine which public gatherings to close or when to close them. What constitute a public gathering? Are they essential or non essential? Public gatherings may include transportation (air, rail, water), childcare, schools, colleges and universities, malls and supermarkets, workplaces, places of worship, and community events (cultural, sports etc.).

In dealing with the hand, foot and mouth disease outbreak in Malaysia, kindergardens were closed. The closure will depend on the infectious diseases, its mode of transmission and also the susceptibles.

The principles to determine when, how and which public gatherings will be restricted or cancelled/closed ought to be based on common sense strategies and should be consistently applied within, and across jurisdictions.

In an influenza pandemic, the severity of the pandemic strain and the stage of the pandemic as it unfolds globally, regionally, in neighbouring countries of even within the country should be considered when making this determination. The epidemiological data available as the pandemic unfolds may alter the types of closure of public gatherings that are needed to slow down the transmission. The questions of having good infection control guidelines for individuals, community and public institutions and gatherings may help to limit transmission as well and may be considered hand in hand with other control measures.

If restrictions or closure of public gatherings are needed in an influenza pandemic it should be done early enough to affect transmission. If there is widespread pandemic in the country such restrictions or closure may be more difficult to do and may not be effective to control the widespread transmission of the disease.

Medical Officers of Health should have predetermined strategy for such closure and/or cancellation of public gatherings or events when before the pandemic arrives in the country in the form of a preparedness plan for such closure.

In effecting such a strategy, they should include the following:

- the delineation of what constitute a public gathering
- specifying the time period within the pandemic phases to implement the strategy
- applicability and consistency across jurisdiction
- availability and priority use of vaccines and anti-virals for risk groups
- to have the relevant backing of legislation if the strategy needs to be made mandatory.
GUIDELINES FOR
MANAGEMENT OF CONTACT OF INFLUENZA PANDEMIC (PI)

1. Definition of PI contact

A contact is a person who may be at greater risk of developing PI because of exposure to a suspect or probable case of PI. Information to date suggests that risky exposures include having cared for, lived with, or has had direct contact with the respiratory secretions, body fluids and/or excretion (e.g. faeces) of a suspect or probable cases of PI.

a. Suspected case

A person presenting with history of:

♦ High fever (> 38º C )
   AND
   Dry cough,

   AND one or more of the following: sore throat, nasal congestion/blockage, myalgia, headache, fits (infant), vomiting (infant); with or without

♦ Recent history of travel to areas** reporting cases of PI; and / or

Close contact* with a person diagnosed with PI within 10 days of the onset of symptoms

b. Probable case

♦ A suspected case with limited laboratory confirmation of Influenza A/sub-type OR

♦ A person with an unexplained respiratory illness resulting in death with history of close contact with a person diagnosed with PI within the last 10 days or recent history of travel to areas reporting cases of PI.

* Close contact means having cared for, having lived with, or having had direct contact with secretions and body fluids of person with PI

** Countries identified thus far: ........

2. Management of Contacts of Suspect PI Cases

As a minimum the following follow up is recommended:

• Give information on clinical picture, transmission etc of PI to the contact.
• Place under passive surveillance for 10 days.
• If the contact develops any symptoms, the contact should self report via the telephone to the public health authority.
• Contact is free to continue with usual activities.
• The most consistent first symptom which is likely to appear is fever.

3. **Management of Contacts of Probable PI Cases**

• Give information on clinical picture, transmission, etc. of PI to the contact.
• Place under active surveillance for 10 days and recommend voluntary home isolation.
• Ensure contact is visited or telephoned daily by a member of the public health care team.
• Record temperature daily.
• If the contact develops disease symptoms, the contact should be investigated locally at an appropriate health care facility.
• The most consistent first symptom that is likely to appear is fever.
**DAFTAR PEMANTAUAN KONTAK PI**

<table>
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<tr>
<th>Bil</th>
<th>Nama Kontak</th>
<th>Alamat</th>
<th>Kes indek</th>
<th>Umur</th>
<th>Jantina</th>
<th>Bangsa</th>
<th>Pemantauan</th>
<th>Keputusan*</th>
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*Nyatakan hasil pemantauan kontak. Jika kontak dirujuk ke hospital, sila nyatakan nama hospital, wad, tarikh masuk dan diagnosis awal.*
CASE DEFINITIONS

a. Suspected case
A person presenting with history of acute onset of:

♦ High fever (> 38º C )
   AND
   Dry cough,
   AND one or more of the following: sore throat, nasal congestion/blockage,
   myalgia, headahce, fits (infant), vomiting (infant); with or without

♦ Recent history of travel to affected areas** reporting cases of PI; and/or
   Close contact* with a person diagnosed with PI within 10 days of the onset of symptoms

b. Probable case
♦ A suspected case with limited laboratory confirmation of Influenza A / sub-type
   OR
♦ A person with an unexplained respiratory illness resulting in death with history of
   close contact with a person diagnosed with PI within the last 10 days or recent
   history of travel to areas reporting cases of PI.

* Close contact: having cared for, lived with, or had direct contact with respiratory
secretions or body fluids of a suspect or probable case of PI
** Affected area: an area in which local chain(s) of transmission of PI is / are
occurring as reported by the national public health authorities.

Exclusion criteria
A case should be excluded if an alternative diagnosis can fully explain patient’s illness.

Reclassification of cases
As more epidemiological data made available during the influenza pandemic, WHO may
provide new case definitions for pandemic influenza. Thus the status of a reported case may
change over time. A patient should always be managed as clinically appropriate regardless of
their case status.

▪ A case initially classified as suspect or probable, for which an alternative diagnosis can
   fully explain the illness, should be discarded.
- A suspect case who, after investigation, fulfill the probable case definition should be reclassified as “probable”

- A suspect case who dies, on whom no autopsy is conducted, should remain classified as "suspect". However, if this case is identified as being part of a chain transmission of PI, the case should be reclassified as "probable".

- If an autopsy is conducted and no pathological evidence of PI is found, the case should be "discarded".
## NOTIFICATION FORM FOR INFLUENZA CASE

**Disease Control Division**  
**Ministry Of Health Malaysia**

1. **Reporting Centre**
   - Name of Hospital:  
   - State:  
   - Phone:  
   - Fax:  
   - E-mail:  

2. **Information of Patient**
   - Name:  
   - Age:  
   - Sex:  
   - Male ( ) Female ( )  
   - Phone(Home):  
   - Fax:  
   - E-mail:  
   - RN No:  
   - Address:  
   - H/Phone:  
   - NIC No:  
   - Country of Origin:  
   - Occupation:  
   - ( ) HCW ( ) others, please state:  
   - Date of symptom onset: [dd/mm/yr]  
   - ( ) Fever ( ) Cough  
   - ( ) Sorethroat ( ) Myalgia ( ) Headache  
   - Temperature on admission: ................℃  
   - Other symptom (specify):  

3. **Signs and Symptoms**
   - ( ) Evidence of lung infiltrates consistent with pneumonia  
   - Yes ( ) No ( ) Not done  

4. **Chest X-ray finding**
   - Evidence of lung infiltrates consistent with pneumonia  
   - Yes ( ) No ( ) Not done  

5. **Is there any alternative diagnosis that can fully explain patient’s illness?**
   - Yes ( ) No ( )  

6. **Clinical status at time of report**
   - Was patient hospitalized?  
   - Yes ( ) No ( )  
   - Date:  
   - Ward:  
   - ( ) Isolation ward  
   - ( ) General ward  
   - ( ) ICU  
   - Progress  
   - ( ) On treatment  
   - ( ) Died  
   - Date:  

   **If patient died:**
   - Was an autopsy performed?  
   - Yes ( ) No ( ) Pending  

7. **Exposure History**
   - (Last 7 days)
   1. Did patient have history of visit to affected countries?  
   - Yes ( ) No ( )  
   - Date:  
   - If yes, please state the name and address  
   2. Did patient have history of visit to affected areas in Malaysia?  
   - Yes ( ) No ( )  
   - Date:  
   3. Did patient have history of contact with influenza cases?  
   - Yes ( ) No ( )  
   - If yes, please state the name and address  

8. **Similar illness**
   - Anybody in the neighbourhood had similar illness?  
   - Yes ( ) No ( )  

9. **Diagnosis Evaluation**
   - Date taken  
   - Date sent to lab  
   - Name of laboratory  
   - Result  
   - Virology  

10. **Working diagnosis (Please state)**
    - Signature:  
    - Date:  
    - H/Phone No:  

11. **Contact tracing**
    - Has contact tracing been done?  
    - Yes ( ) No ( )  
    - Date of contact tracing done:  
    - Number of contacts examined:  
    - Number of contact with similar illness:  
    - Number of contact quarantined:  
    - Number of contact referred to hospital:  

12. **Active case finding**
    - Has active case finding been initiated?  
    - Yes ( ) No ( )  
    - No. of cases referred to hospital:  
    - Number of cases quarantined:  
    - Number of people with similar illness:  

13. **Investigating Officer**
    - Signature:  
    - Date:  
    - H/Phone No:  

**Note:** Please fax this form within 24 hours to District Health Office
Flow Chart Of Management Of Influenza Pandemic (PI)
At Outpatient Unit

Patient screened

Triage

Clinical history Examination

Non PI
Treat accordingly

Suspect PI
Refer to designated hospital
GUIDELINES FOR INTENSIVE CARE PREPAREDNESS

Patients who should be considered for intensive care referral are those with:

1. hypoxia with PaO2 < 60mmHg despite oxygen administration Fi O2 > 0.6
2. progressive hypercapnia
3. severe acidosis (pH < 7.25) or bicarbonate < 18 mmol/L
4. septic shock
5. primary viral pneumonia or a CURB-65 score of 4 or 5
   (new bilateral lung shadowing on CXR consistent with primary viral pneumonia
   should be taken as a feature of severe pneumonia regardless of CURB-65 score)

CURB-65 score (score 1 point for each feature present);

- confusion (Mental Test Score of < 8, or new disorientation in person, place or
  time
- urea > 7 mmol/L
- respiratory rate > 30/min
- blood pressure (SBP < 90mmHg or DBP < 60mmHg)
- Age > 65 years

Indications For Mechanical Ventilation For These Patients Are As For Any Patient
With Acute Respiratory Failure.

Location of mechanically ventilated patients with influenza

As most of the existing intensive care units in the Ministry of Health hospitals have no
isolation facilities for management of highly infectious patients, the following are
recommended.

1. Patients who need intensive care will be cared for in the designated area in the
   hospital for influenza. The number of patients who can be ventilated in this area will
   be limited by the number ventilators with stand alone air compressors and space
   availability. Wherever possible these patients should be ventilated in individual
   isolation rooms. If isolation rooms are not available, the inter-patient spacing must be
   at least 6 feet apart.
2. Care of the patients who require mechanical ventilation should be under the charge of the intensive care team. This is to optimise care to ensure favourable outcome of patients and also for the safety of staff caring for these patients.

3. Should be number patients requiring mechanical ventilation, then the existing general intensive care unit will be used to ventilate only patients with influenza. Arrangements will be made to ventilate only patients with influenza. Arrangements will be made to transfer the non-avian influenza patients to other critical care areas or other hospitals.

4. When both areas have been utilized, all other critical care areas will then care for the patients with influenza who require mechanical ventilation.

5. In the worst scenario where all the above areas are utilized, a ward is to be used for the care of these patients.

**Staff caring for mechanically ventilated patients with influenza**

As a general principal, healthcare workers who care for influenza patients should not care for other patients. Healthcare workers who are pregnant or immunocompromised should not be involved in the care of these patients. Each hospital must identify staff to take care of those patients who need intensive care in the following order:

1. Staff from the general intensive care unit and other critical care units.

2. Staff from the general wards with post basic intensive care nursing training. (These staff need to be refreshed on the care of the ventilated patient with regards to the infection control measures in droplet precautions. They will be attached to the intensive care unit for a day prior to providing care)

3. Staff from the general wards without post basic intensive care nursing training. (These staff need to be trained prior to providing care by doing a one week clinical attachment in an intensive care unit.)

All staff involved in providing care for influenza patients will need training and education in the following:

- High risk procedures, alternatives and precautions.
- Ways of minimizing exposure and effective use of time when in the room
- How to ‘undress’ and “re-dress” without contamination
- Importance of vigilance and adherence to all infection control precautions.
- Importance of monitoring own health
- Information on avian influenza as it evolves
3.4.10 Infection control measures specific to respiratory care

Influenza is well established to be transmitted from person-to-person through close contact. The balance of evidence points to large droplet and direct and indirect contact as the most important routes of transmission. Airborne, or fine droplet transmission, may also occur especially during aerosol generating procedures. (Aerosol-generating procedures: include intubation, nasopharyngeal aspiration, trancheal suctioning, tracheostomy care, chest physiotherapy, bronchoscopy, nebuliser therapy).

In view of this, Standard Infection Control Principles and Droplet Precautions are the principal infection control strategies which should be rigorously followed. Hand hygiene, use personal protective equipment and containment of respiratory secretions are essential. Personal protective equipment to be worn during aerosol-generating procedures must include:

- N95 mask
- Water repellent disposable gown
- Plastic apron
- Disposable cap
- Gloves
- Goggles
- Full-face shield/visor

In the event that evidence shows that the transmission of the virus is airborne or via fine droplets, the use of positive airway pressure respirator may become necessary when performing aerosol-generating procedures.

3.4.11 Infection control measures for aerosol-generating procedures

1. The performance or aerosol-generating procedures should be minimized as is feasible without compromising patient care. To avoid unnecessary exposures, only those health care workers needed to perform the procedure should be present.
2. In addition to N95 masks, eye protection (goggles and full-face shield/visor) must be worn to prevent eye contact with infectious material during such procedures.
3. Disposable respiratory equipment must be used wherever possible. Reusable equipment must be disinfected in accordance with local policy and manufacturers guidelines.
4. For non-intubated patients requiring oxygen therapy, non-humidified oxygen can be delivered via nasal prongs or simple face mask. Do not use bubble-through water humidification. Venture masks or high flow masks should not be used.

5. Ventilators should be identified only for use for patients with avian influenza.

6. All ventilator used on patients must be fitted with 2 viral filters; a filter is to be placed between the distal end of expiratory tubing and the ventilator (to prevent contamination) while another filter is to be placed at the exhalation outlet of the ventilator (to minimize contamination to the environment)

7. Use disposable ventilatory breathing circuit. The ventilatory circuit should not broken unless absolutely necessary. Do not change ventilatory circuits on a routine basis. Ventilators should be put on the stand by mode or turned off if there is a need to break the circuit.

8. Closed suctioning system must be used. Do not disconnect from ventilatory and manually ventilate during suctioning. Instead switch to 100% oxygen from the ventilator during suctioning.

9. Water humidification should not be used. Use combination of heat moisture exchange with viral filter. It is to be placed at the Y-piece of the breathing circuit.

10. Avoid the use of nebulisers. For intubated patients use metered dose inhalers if necessary.

11. Do not a T-piece breathing system in weaning from the ventilator.

12. When using a manual resuscitator bag, connect a viral filter between the endotracheal tube and the manual resuscitator bag.

13. During bronchoscopy, patient must be paralysed to minimize coughing and the spread of infection.

14. Do not attempt insertion of naso-gastric tube in a non-intubated patient unless absolutely necessary.

15. The use of non-invasive positive pressure ventilation is strongly discouraged.

16. Transportation of patients should be avoided wherever possible.

### 3.4.12 Infection control measures during intubation

1. Only experienced doctors should attempt intubation (spread of infection at the time of intubation appears to be associated with difficult intubation, prolonged manual bagging)

2. Rapid sequence induction should be used for intubation. Avoid awake intubation. Ensure the patient is adequately paralysed before attempting laryngoscopy.

3. A viral filter should be fitted between the face mask and manual resuscitator bag.

4. Minimise manual ventilation. If essential, it should be carried out by two persons: one holds mask tightly against patients face while the other squeezes the bag gently.
5. Inflate ETT cuff before ventilating the patient.
6. The ventilator should only be turned on when it is connected to the endotracheal tube.
7. All staff involved in the intubation should all personal protective equipment and don new equipment immediately after the intubation.

**3.4.13 Equipment and consumables**

Disposable equipment should be used wherever possible during the treatment and care of patients and should be disposed of appropriately in the clinical waste. If equipment is to be reused, then it should undergo high-level disinfection between patients and in accordance with the manufacturer’s instructions.

1. **Ventilators:**
   a) Transport ventilators should not be used as they usually do not have the necessary modes of ventilations to ventilate this group of patients.
   b) Ventilators including portable ventilation must have the capability to ventilate patients with acute respiratory distress syndrome (ARDS).
   c) In situation where there is no piped compressed air supply, ventilators with air compressors should be used.
   d) Preferably the ventilators should also have the standby mode.
   e) When the beds in the intensive care unit are fully occupied, then arrangements must be made to source for additional ventilators. (refer to summary)
   f) Cleaning and disinfection of ventilators must be carried out in the designated area and not in the respiratory laboratory which is usually located in the intensive care unit.

2. **Monitoring devices**

   The minimum monitoring devices are:
   i. ECG
   ii. Invasive blood pressure/NIBP
   iii. Pulse oximeter
   iv. Central venous pressure

3. **Beds; the minimum monitoring patients should be nursed in kinetic beds.**

4. **Suction equipment**
Suction equipment can be either pressure generated or electricity powered. The equipment must be able to generate at least – 80 cm water.

5. Modified emergency cart for each room

6. Infusion and volumetric pumps
   Each ventilated patient will need 2 to 6 infusion pumps and 1 to 2 volumetric pumps.

7. Feeding pumps
   Each ventilated patient will need 1 feeding pump.

8. Powered air purification respirators (PAPR)
   PAPR will become necessary if new evidence shows that transmission of the avian influenza virus could be air-borne.

9. Special consumables
   a) N95 mask
   b) Water repellent gown
   c) Disposable cap
   d) Disposable and surgical gloves
   e) Shoe covers / boots
   f) Goggles
   g) Full face shields / visors
   h) Plastic aprons
   i) Endotracheal tube
   j) Closed suction catheter
   k) Heat moisture exchanger (HME) with viral filter
   l) Viral filter
   m) Simple face mask
   n) Nasal prong catheter
   o) Disposable ventilatory
   p) Disposable laryngoscope
   q) Disposable resuscitation bag
   r) Face mask for manual resuscitation bag
### Summary of response to care of patients on ventilator during influenza pandemic

<table>
<thead>
<tr>
<th>Estimated no. of ventilated patients (a typical state hospital)</th>
<th>Location</th>
<th>Response</th>
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</table>
| 2 – 4                                                          | Designated area with isolation facility | • Deploy intensive care team to isolation ward to provide care  
• Once exceeds capacity for ventilation, admit patients to ICU |
| 6 – 12                                                         | General ICU | • Stop elective surgery that requires ICU beds  
• Transfer non-avian flu patients to other critical care areas in the hospital or non-designated hospitals  
• Once exceeds capacity for ventilation, admit patients to other critical care units  
• Deploy ventilators from other hospitals within the state |
| 6 - 12                                                         | Other critical care units e.g.CCU,HDU | • Transfer non-avian flu patients to non-designated hospitals  
• Once exceeds capacity for ventilation, convert a ward to ventilate patients  
• Deploy ventilators from other states  
• MOH to purchase / lease ventilators from companies |
| 10 - 20                                                       | Open ward | • Deploy staff from other wards  
• Further emergency planning required  
• Open more wards, deploy staff from other hospitals |

Capacity for ventilated cases = 24 to 48 per hospital
RECOMMENDATION OF PRIORITY POPULATION GROUPS FOR VACCINATION DURING INFLUENZA PANDEMIC

Priorities for vaccination need to be established during the interpandemic period in order to facilitate planning for an efficient and consistent pandemic immunization strategy. In keeping with the overall goal of pandemic response, the prioritization process must consider the impact the vaccine will have on:

i. reducing morbidity and mortality by maintaining the health services response and by individual protection of high risk groups, and
ii. minimizing societal disruption by maintaining the essential services upon which everyone depends.

The pandemic vaccine will become available in lots and supply is likely to be limited during the early stage of the pandemic. Furthermore it is likely that two doses of vaccine will be required to achieve a protective response in the vaccinee. Therefore, when vaccine becomes available it is essential that it be distributed in a pre-defined equitable and consistent manner across all states and districts.

MOH has developed the following recommendations for the use of vaccine in a limited supply situation to provide guidance for State or district level. The priority groups will need to be reassessed, and possibly altered, as soon as epidemiologic data on the specific pandemic virus becomes available to ensure that they are consistent with the overall goal of the pandemic response. Once data on the epidemiology of the pandemic becomes available, the NIPPC will be the lead in the final identification and prioritization of population groups to receive influenza vaccine. These recommendations will be distributed as national guidelines as soon as possible, with the expectation that they will be followed by all in order to ensure a consistent and equitable program.

Recommended Priority Groups

Group 1: Health care workers, paramedics/ambulance attendants and public health workers (approximately 25,000)

Rationale: The health care and public health sectors will be the first line of defence in a pandemic. Maintaining the health service response and the vaccine program is central to the implementation of the response plan, in order to reduce morbidity and mortality. Health services workers may be considered in the following work settings for vaccine program planning:

- acute care hospitals
- long term care facilities/nursing homes
- private physicians’ offices
- home care and other community care facilities
- public health offices
• ambulance and paramedic services
• pharmacies
• laboratories

**Group 2:** Essential service providers (approximately ….)

*Rationale:* The ability to mount an effective pandemic response may be highly dependent on persons, within the groups listed below, being in place to maintain key community services. Those individuals that are essential to the response or to maintaining key community services and they include:

• police
• fire-fighters
• the armed forces
• key emergency response decision makers (e.g. elected officials, essential government workers and disaster services personnel)
• utility workers (water, gas, electricity and essential communications systems)
• funeral service/mortuary personnel
• people who work with institutionalized populations (e.g., corrections)
• persons who are employed in public transportation and the transportation of essential goods (such as food)

Vaccine eligibility criteria should be defined based on the work/duties the individual performs rather than position label.

**Group 3:** Persons at high-risk of severe or fatal outcomes following influenza infection

*Rationale:* To meet the goal of reducing morbidity and mortality, persons most likely to experience severe outcomes should be vaccinated.

Prioritization of the following subgroups within Group 3 would depend on the epidemiology of influenza disease in the time of a pandemic.

A: persons in nursing homes, long-term care facilities, homes for the elderly e.g. lodges (approximately ….);

B: persons with high-risk medical conditions living independently in the community (approximately ….);

C: persons over 65 years of age living independently and not included in 3A and 3B (approximately ….);

D: children 6 months to 23 months of age (current vaccines are not recommended for children under 6 months of age);

E: pregnant women * (approximately ….).
# NATIONAL INFLUENZA–SURVEILLANCE
## DIAGNOSTIC REQUEST FORM

### A. MAKLUMAT PESAKIT

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<table>
<thead>
<tr>
<th>Hospital / Klinik Kesihatan:</th>
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<table>
<thead>
<tr>
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<table>
<thead>
<tr>
<th>No. K/P:</th>
<th>Umur:</th>
<th>Jantina:</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>L / P</td>
</tr>
</tbody>
</table>

### B. MAKLUMAT KLINIKAL

**Gejala (Simptom)**

<table>
<thead>
<tr>
<th>Gejala (Simptom)</th>
<th>Ada / Tiada (Tandakan √)</th>
<th>Tarikh mula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demam tinggi secara tiba-tiba (<em>Sudden onset of high grade fever</em>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Batuk tidak berkahak (<em>Dry cough</em>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hidung tersumbat (<em>Nasal congestion / blockage</em>)</td>
<td></td>
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<tr>
<td>Sakit tekak (<em>Sore throat</em>)</td>
<td></td>
<td></td>
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<tr>
<td>Sakit otot (<em>Myalgia</em>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kejang (<em>Convulsion / fits</em>) (<em>bayi / infants</em>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muntah (<em>bayi / infants</em>)</td>
<td></td>
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</tr>
</tbody>
</table>

### C. SPESIMEN KLINIKAL

**Spesimen (*potong mana yang tidak berkennan dan tandakan √ diruang berkenaan)**

<table>
<thead>
<tr>
<th>Spesimen</th>
<th>Tarikh diambil</th>
<th>Tarikh penghantaran</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>/ /</td>
<td>/ /</td>
</tr>
<tr>
<td>Nasopharyngeal aspirate / swab*</td>
<td>/ /</td>
<td>/ /</td>
</tr>
<tr>
<td>Nostril swab / throat swab*</td>
<td>/ /</td>
<td>/ /</td>
</tr>
<tr>
<td>Tracheal aspirate</td>
<td>/ /</td>
<td>/ /</td>
</tr>
<tr>
<td>Darah / Serum*</td>
<td>/ /</td>
<td>/ /</td>
</tr>
</tbody>
</table>

### D. MAKLUMAT PEMOHON

<table>
<thead>
<tr>
<th>Nama dan Cop Pegawai:</th>
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<tr>
<th>No. fax:</th>
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<tr>
<th>e-mail:</th>
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</table>

### E. MAKMAL (Untuk Kegunaan Makmal)

**Keadaan spesimen:**

<table>
<thead>
<tr>
<th>Spesimen</th>
<th>Jenis ujian</th>
<th>Keputusan ujian</th>
<th>Komen</th>
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</thead>
<tbody>
<tr>
<td>Nasopharyngeal aspirate / swab*</td>
<td></td>
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<td></td>
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<td>Nostril swab / throat swab*</td>
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<tr>
<td>Tracheal aspirate</td>
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<tr>
<td>Darah / Serum*</td>
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<table>
<thead>
<tr>
<th>Nama dan tandatangan Pegawai Makmal:</th>
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<tr>
<th>jawatan Pegawai Makmal dan Cop Makmal:</th>
<th>Tarikh:</th>
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* ) Note: All samples except blood / serum and nasopharyngeal aspirate (NPA) must be in the viral transport media (VTM) and send immediately in ice pack to Influenza designated laboratories
GUIDELINES FOR CLINICAL SAMPLES COLLECTION FOR DIAGNOSIS OF INFLUENZA PANDEMIC (PI)

CASE definition of Pandemic Influenza (PI) – Generic, subject to change

SUSPECT CASE:
A person presenting an acute onset of high fever > 38C, AND
- Dry cough : cough, SOB, difficulty in breathing AND
- ONE OR MORE of the following:
  - sore throat, myalgia, headache, nasal congestion/blockage
  - close contact* with a person diagnosed as PI
  - recent travel to areas reporting cases of PI

**Possible diseases/pathogens**
- Influenza
- Respiratory syncytial virus (RSV)
- Diphtheria
- Streptococcal pharyngitis
- Hantavirus pulmonary syndrome
- Pertussis
- Bacterial pneumonia due to
  - S. pneumoniae
  - H. influenzae
  - Staphylococcus aureus
  - Moraxella catarrhalis
  - Legionella spp
  - Mycoplasma pneumoniae
  - Chlamydia spp
  - Coxiella burnetii
  - Bacillus anthracis
  - Yersinia pestis

**Laboratory studies**
- Throat swab
- Serum
- Nasopharyngeal swab
- Microscopy
- Bacterial/Viral Culture
- Antimicrobial susceptibility (for bacteria)
- Antigen detection
- Serology
- Blood culture
- Paired sera
- Sputum/BAL
- Urine (for Legionella)

All laboratory results to be faxed to Surveillance Section, MOH (Fax: 03-8888 6271)
GUIDELINES FOR CLINICAL SAMPLES COLLECTION, HANDLING AND TRANSPORTATION FROM FIELD/SENTINEL SITES TO THE LABORATORY

RESPIRATORY TRACT SPECIMEN COLLECTION

Specimens are collected from the upper or lower respiratory tract, depending on the site of infection. Upper respiratory tract pathogens (viral and bacterial) are found in throat and nasopharyngeal secretions. Lower respiratory tract pathogens are found in sputum specimens. For organisms such as *Legionella*, culture is difficult, and diagnosis is best based on the detection of antigen excreted in the urine.

In patient with stridor or when acute epiglottitis is suspected, no attempt should be made to take throat or pharyngeal specimens and neck Xray since these procedures may precipitate respiratory obstruction. However the aetiological agent may be isolated on blood culture.

Protection for Health Care Workers

While taking specimen, HCW should exercise droplet and contact protection. HCW should wear a surgical mask or N95 mask as appropriate. If the procedure involves a high risk of splashing of contamination by clinical specimen, the HCW should wear appropriate eye protection.

Materials for collection:

- Transport media – bacterial and viral
- Cotton swabs
- Tongue depressor
- Flexible wire calcium alginate tipped swab (for suspected pertussis)
- Nasal speculum (for suspected pertussis – not essential)
- Suction apparatus or 20-50 ml syringe
- Sterile screw-cap tubes, and wide-mouthed clean sterile jars (minimum volume 25 ml).

UPPER RESPIRATORY TRACT SPECIMENS

Method of collecting a throat swab
1. Hold the tongue down with the depressor. Use a strong light source to locate areas of inflammation and exudate in the posterior pharynx and the tonsillar region of the throat behind the uvula.

2. Rub the area back and forth with a cotton swab. Withdraw the swab without touching cheeks, teeth or gums and insert into a screw-cap tube containing transport medium.

3. Break off the top part of the stick without touching the tube and tighten the screw cap firmly.

4. Label the specimen containers.

5. Complete the laboratory request form.

Method of collecting pernasal and post-nasal swabs (for suspected pertussis and influenza)

1. Seat the patient comfortably, tilt the head back and insert the nasal speculum.

2. Insert a flexible calcium alginate swab through the speculum parallel to the floor of nose without pointing upwards. Alternately, bend the wire and insert it into the throat and move the swab upwards into the nasopharyngeal space.

3. Rotate the swab on the nasopharyngeal membrane a few times, remove it carefully and insert it into a screw-cap tube containing transport medium.

4. Label the specimen tube.

**LOWER RESPIRATORY TRACT SPECIMENS**

**Method of collecting sputum**

1. Instruct patient to take a deep breath and cough up sputum directly into a wide-mouthed sterile container. Avoid saliva or post-nasal discharge. Minimum volume should be about 1 ml.

2. If no sputum, induce cough by hypertonic saline nebulisation.

3. Label the specimen containers.

4. Complete the laboratory request form.
BRONCHOALVEOLAR/TRACHEAL LAVAGE

Method is not documented here as these procedures are only performed by experienced personnel.

Samples required from fatal cases:

Collect all specimens mentioned above, in addition collect:-

Cardiac tissue
Liver tissue
Lung tissue
Brain stem tissue

place in sterile plastic tube container
(keep cold and ship as soon as possible)

HANDLING AND TRANSPORT

1. All respiratory specimens except sputum are transported in appropriate bacterial/viral media.
2. Transport as quickly as possible to the laboratory to reduce overgrowth by commensal oral flora.
3. For transit periods up to 24 hours, transport bacterial specimens at ambient temperature and viruses at 4-8°C in appropriate media.
4. Samples should be packaged in three layers (see diagram)
Figure 4: Packing infectious substance for the post
FLOW CHART FOR COLLECTION, AND TRANSPORTATION OF CLINICAL SAMPLES FOR INFLUENZA FOR LABORATORY TESTING

**Specimens**
- Nasopharyngeal swab/aspirate
- Throat swab
- Throat gargle
- Sputum
- Bronchoalveolar /tracheal lavage

**Nasopharyngeal Aspirate**
- Sputum
- Throat gargle
- Bronchoalveolar /tracheal lavage

**Plain sterile container**

**Throat swab**
- Nasal swab

**Viral transport media (VTM)**

**Send the specimens to the laboratory ASAP in ice**
**Keep specimens at 4°C**
**DO NOT FREEZE**

**Transport specimens in ice**

**Influenza processing laboratories**

But during an influenza pandemic if level of biosafety III laboratory is required, then all clinical specimens for PI should be sent to only IMR virology unit for diagnosis.
FLOW CHART FOR INFLUENZA PANDEMIC (PI) SPECIMEN RECEIPT AT IMR SPECIMEN RECEPTION COUNTER

Clinical Specimens

Use PPE*

*Tyvex disposable own, gloves, google and N100 mask

Transfer specimen to Biohazard Cabinet

Specimen from suspect case of influenza pandemic PI,

Yes

DO NOT OPEN

Leave specimen in biohazard cabinet

Contact IMR Virology staff, Ext:

No

Other specimen, process in usual manner.
GUIDELINES FOR LABORATORY BIOSAFETY IN HANDLING AND PROCESSING SPECIMENS ASSOCIATED WITH INFLUENZA PANDEMIC

Listed below are interim biosafety guidelines for handling PI specimens:

1. The following activities may be performed in Biosafety level (BSL) 2 facilities using BSL-2 practices as described in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories manual:
   
a. Pathologic examination and processing of formalin-fixed or otherwise inactivated tissues.
   b. Molecular analysis of extracted nucleic acid preparations.
   c. Electron microscope studies with glutaraldehyde-fixed grids.
   d. Final packaging of specimens for transport to diagnostic laboratories for additional testing. Specimens should already be in a sealed, decontaminated primary container.

2. The following activities may be performed in Enhanced Biosafety Level (BSL) 2 facilities using BSL-3 practices:
   
a. Aliquoting and/or diluting specimens
   b. Performing diagnostic tests that don’t involve amplifying the agent in vitro or in vivo. These may include IFA, DFA, and other direct microscopic tests on fixed slides and rapid molecular methods on untreated specimens.
   c. Nucleic acid extraction procedures involving untreated specimens.
   d. Serologic testing

   Particular attention should be given to the following:
   Manipulations should be carried out in a certified biological safety cabinet.

   Laboratory workers should wear protective equipment, including disposable gloves, solid front with cuffed sleeves, eye protection and respiratory protection. Acceptable methods of respiratory protection include Negative-95 or Negative-100 respirators, or powered air-purifying respirators (PAPRs) equipped with Negative-95 or high efficiency particulate air (HEPA) filters. Personnel who cannot wear Negative-95 respirators because of facial hair or other fit-limitations should wear powered air purifying respirators PAPRs.

   Centrifugation should be carried out using sealed centrifuge cups or rotors that are loaded and unloaded in a biological safety cabinet.

3. The following activities require BSL-3 facilities and work practices:
   
a. Culture-based attempts to isolate the agent, including inoculation onto cell culture, bacteriological or mycological media and eggs.
b. Initial characterization agents recovered in cultures of PI specimens.

4. The following activities require Animal BSL-3 facilities and work practices:
   a. Inoculation of animals for potential recovery of the agents from PI samples.
   b. Protocols involving animal inoculation for characterization of putative PI agents.
GUIDELINES FOR INFECTION CONTROL and STANDARD OPERATING PROCEDURE FOR BIOLOGICAL SPILL AND EXPOSURE

1.0 OBJECTIVE

To ensure all biological spill and exposure are handled in accordance to safety guidelines.

2.0 SCOPE

This procedure provides a guideline to biohazardous spill cleanup and exposure in the laboratory.

3.0 REFERENCES

Emergency Guide Environment, Health and Safety Office, University of alifornia, San Diego

4.0 DEFINITION AND ABBREVIATION

ABBREVIATION

BSL-2 : Biosafety Level 2
BSC : Biosafety Cabinet

5.0 PROCEDURE

Precautions:

(i) The following procedures are provided as a guideline to biohazardous spill cleanup. In each of the following cases, depending on the size of the spill, notify everyone in the lab, and inform the officer in-charge.

(ii) If a spill contains BSL-2 or greater containment material, or if the spill is considered too large or too dangerous for laboratory personnel to safely clean up, secure the area – including the whole lab – and inform the officer in-charge immediately for assistance.

(iii) 5% clorox to be used as disinfectant for spillage and to disinfect work place and equipment.
(A) Inside the Biosafety Cabinet (BSC)

1. Wait at least five minutes to allow the BSC to contain aerosols.
2. Wear lab coat, safety glasses, and gloves during cleanup.
3. Allow cabinet to run during cleanup.
4. Apply disinfectant and allow a minimum of 20 minutes contact time.
5. Wipe up spills with disposable disinfectant-soaked paper towel.
6. Wipe the walls, work surface, and equipment in the cabinet with a disinfectant-soaked paper towel.
7. Discard contaminated disposable materials using appropriate biohazardous waste disposal procedures.
8. Place contaminated reusable items in biohazard bags, autoclavable pans with lids, or wrap in newspaper before autoclaving and cleanup.
9. Expose non-autoclavable materials to disinfectant (20 minute contact time) before removal from the BSC.
10. Remove protective clothing used after cleanup and place in a biohazard bag for autoclaving.
11. Run cabinet 10 minutes after cleanup before resuming work or turning cabinet off.

(B) In the Lab, Outside the Biosafety Cabinet

(i) Biological spills outside biological safety cabinets will generate aerosols that can be dispersed in the air throughout the laboratory. These spills can be very serious if they involve microorganisms that require Bio-safety Level 3 containment, since most of these agents have the potential for transmitting disease by infectious aerosols. To reduce the risk of inhalation exposure in such an accident, occupants should leave the laboratory immediately.

(ii) The laboratory should not be reentered to decontaminate or clean up the spill for at least 30 minutes. During this time the aerosol may be removed from the laboratory via the exhaust ventilation systems.

Procedure:

1. Inform the officer in-charge if the material is BSL-2 or greater containment.

2. Clear area of all personnel. Wait at least 30 minutes for aerosol to settle before entering spill area.

3. Initiate cleanup with disinfectant as follows:

   3.1 Place dry paper towel on spill (to absorb liquids); then layer a second set of disinfectant-soaked paper towels over the spill.

   3.2 Encircle the spill with additional disinfectants being careful to minimize aerosolization while assuring adequate contact.
3.3 Decontaminate all items within the spill area.

3.4 Allow 20 minutes contact time to ensure germicidal action of disinfectant.

3.5 Wipe equipment with appropriate disinfectant.

3.6 Discard contaminated disposable materials using appropriate biohazardous waste disposal procedures.

3.7 Disinfect reusable items.

3.8 If a spill involves broken glassware, the glass should never be picked up directly with the hands. It must be cleaned up using mechanical means, such as a brush and dustpan, tongs, or forceps.

(C) Biological Spill On Body

1. Remove contaminated clothing and place in biohazard bag to be autoclaved.
2. Vigorously wash exposed area with soap and water for one minute.
3. Obtain medical attention as required.
4. Report incident to supervisor.
FLOW-CHART OF THE WORK PROCESS FOR PROCESSING SPECIMEN SAMPLE

1. Wear PPE
2. Transfer to BSL-3.
3. Check specimen with request form in BSL-3 cabinet *
4. Process Specimen in BSL-3 cabinet. Aliquot for PCR and EM *
5. Analysis of specimen by Cell Culture, *
6. Recording of Results
7. Check and Report
   - Repeat Test
8. Dispatch report form

*Discard all waste in biohazard bag, autoclave biohazard bag before leaving
GUIDELINES FOR CLINICAL SAMPLES PROCESSING (INFLUENZA SURVEILLANCE)

**Receipt of clinical samples**

- **Verification and matching of patients’ identities with samples, assignment of laboratory identification number and recording**

  - **Respiratory secretions (NPA, Sputum, BAL)**
  - **Swabs (nasal, per-nasal, throat etc.) in 2 ml VTM**

  - **Transfer an aliquote into 1 ml of sterile PBS in Falcon tube**
  - **Vigorously agitate on vortex**

  - **Break clumps of mucous by pipetting up and down**
  - **Express the fluid by squeezing the swab against the inner wall of the vial and remove swab**

  - **Resuspend the cell-pellet with 10 ml PBS follow by centrifugation (repeat 2 to 3 times to remove mucous)**
  - **Inoculate and store remainder at -70°C**

  - **Transfer 200 µl into 2 ml VTM**
  - **Add antibiotics and mixed well by gentle shaking**

  - **Leave at room temperature for 1 hour**

  - **Discharge 10 µl into each well of Teflon coated slide and allow to dry**

  - **Fixed in cold acetone for 10 minutes**

  - **Detection by IF using commercial respiratory screening and typing monoclonal antibodies kit**

  - **Centrifuge at 800g for 10 mins to remove**

  - **100 µl (optional) nucleic acid extraction**

  - **RT-PCR Detection**

  - **Suspend remainder in 10 ml PBS**

  - **Resuspend the cell-pellet in appropriate volume of PBS (± 250 cells / 10 µl)**

  - **Detection**
Appendix 27

GUIDELINES FOR REPORTING TO SENTINEL CENTRES AND SURVEILLANCE SECTION, MINISTRY OF HEALTH

WARD / HOSPITAL / HEALTH CENTRE / CLINIC
Collect clinical specimen for influenza

As soon as possible, by region send to
NATIONAL INFLUENZA LABORATORIES (NILCs)
Receive specimen and perform the required tests

Isolates for subtyping

NATIONAL COLLABORATING CENTRES (NICs)
Receive specimen and perform the required tests

As and when results are available
RESULT
weekly

NATIONAL INFLUENZA CO-ORDINATING CENTRE (NICC)
Surveillance Section Of Infectious Disease, MOH
weekly

COLLATE, ANALYSE and DISSEMINATE
To relevant parties / organizations including posting in WHO - FluNet
## GUIDELINES ON NATURE AND QUANTITY OF STOCKPILE

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<thead>
<tr>
<th>No</th>
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<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Specimen containers/ Transport Media/ Media/ reagents</td>
<td>Sufficient to process 500 specimens</td>
<td>Designated influenza laboratories and National Influenza Centres (NICs)</td>
<td>Order in stages To exchange before expiry</td>
</tr>
<tr>
<td></td>
<td>• Sterile containers</td>
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<td></td>
<td>• Swabs</td>
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<td></td>
<td>• VTM</td>
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<td></td>
<td>• 2° and 3° Containers</td>
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<td>for packaging and transport</td>
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<td></td>
<td>• Boxes for exporting spec</td>
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<tr>
<td></td>
<td>• Reagents: diagnostic kits, Cell Lines, Monoclonal Antibody (MAb)</td>
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</tr>
<tr>
<td>2</td>
<td>Containers for hazardous Materials (WHO Standard)</td>
<td>Metal Cylinder/ capsule 30/centre</td>
<td>Stockpiles centre</td>
<td>IMR to purchase centrally and distribute to reference laboratory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boxes (IMR) 30/centre</td>
<td>Export Purposes: NICs (IMR and UMMC)</td>
<td>Licensed person (3 from IMR) for export of hazardous materials. Training for packaging and export of infectious materials every 2 years.</td>
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IMR to function as export centre during an outbreak
FLOW CHART FOR INVOKING MECHANISM FOR RESPONSE
UNDER NATIONAL SECURITY COUNCIL

Line of Communication – Alert Mechanism Flow Chart
(Outbreak information and support request)

Key:  
- Outbreak detected at the district
- Outbreak detected at the ministry / state level

MKN

Disease Control Division, MOH  
Alert  
Other states, IMR, PHL, Other relevant authorities

Phone, followed by preliminary report
Within 24 Hours

State Director  
Alert  
Neighbouring State Director

Phone, followed by preliminary report
Within 24 Hours

District MKN  
Alert

State MKN

District Hospital  
Local PHL

Alert  

District PKD  
Alert  
Neighbouring District PKD