Pandemic Influenza Preparedness and Response Plan

2006

PANDEMIC PLAN 2006

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(1) Pandemic Influenza Preparedness Plan Background

1 Seasonal Influenza and Influenza Pandemic

A. Seasonal Influenza Epidemic

- Influenza is an acute infection caused by the influenza virus. Each year, there is an outbreak of influenza among humans, usually during the winter season.
- The extent of the influenza epidemic depends on the degree of the antigenic mutation. In case of an antigenic drift, 10%-20% of the population will be infected, and the mortality among the older population and chronic patients increase due to respiratory illness.
- Antigenic drift usually recurs every few years and may occur in both influenza virus type A and type B.

B. Influenza Pandemic

- Influenza virus type A has the unique characteristic of undergoing an antigenic shift every 10 to 40 years, causing a worldwide pandemic.
- When an antigenic shift occurs, the new virus requires a different antigen than the pre-existing antibody protection in most people's immune system. If the new virus that undergoes the antigenic shift acquires the ability to efficiently transmit from person-to-person and develops into clinical influenza, over 20%-50% of the entire population may be infected, resulting in a pandemic with high morbidity and mortality rates.

❍ Antigenic shift of type A influenza virus is known to result from either an adaptive mutation, where the influenza virus is transmitted directly to the human body from birds, the natural hosts, or genetic re-assortment, where the virus is transmitted to the human body through a third host, such as a pig.

2 Impacts of Past Influenza Pandemics

A. Worldwide Influenza Pandemics: History and Impact

❍ Periodic Recurrence of Influenza Pandemics

- The first well-documented case of pandemic influenza can be traced back to 1580. Since then, until 1900, about 28 cases of influenza pandemic have been recorded.
- Since 1900 to the present, there have been at least three pandemics: the Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968.

❍ Impact of Influenza Pandemics

- The epidemiologic characteristics of the three documented influenza pandemics of the 1900s all differed, including the seasonal timing of initial outbreak, the number of outbreaks, and the age group of the infected and the dead.
- The Spanish Influenza of 1918, caused by influenza type A virus (H1N1), was major disaster in human history. It is estimated that somewhere from 20 to 80 million people died from the pandemic influenza. The World Health Organization (WHO) estimates that almost 1/50 of the world's population, or 40 to 50 million people, died from the influenza.
- What made the 1918 pandemic unique was the higher mortality rate among the younger population. Most of the victims were under the age of 65, especially with people between 20 to 45 accounting for 60% of the fatalities.
- The Asian Flu of 1957 was caused by the less virulent form of

type A virus (H2N2). Unlike the Spanish Flu, the Asian Flu caused more harm during the first outbreak rather than the second. Also, the outbreak occurred between late summer and fall. Furthermore, those mainly infected were above 55 years old.

- The Hong Kong Flu of 1968, despite being the least virulent type A of the three pandemic viruses (H3N2), resulted in roughly 1 million deaths worldwide and caused great damage with recurrences every following winter.

B. Impacts of Influenza Pandemics in South Korea

❍ Impact of the 1918 Pandemic

- About 7,588,400 infected (about 38% of the population) and 140,518 deaths (about 0.8% of the population).
- According to the records, there were already those infected in Seoul by September of 1918. By October of the same year, the pandemic reached its peak, forcing private and public schools and dormitories to close. The records also reveal that various government offices and organizations were unable to function.
- By November, the mortality in Gaeseonggun county rose to 7 folds of its usual level. In the Seosan region of South Chungcheong Province, 64,000 of the 80,000 residents were infected, with 100 to 150 patients dying each day and leaving the region with no one to dispose the dead.
- More than half the farms were unable to harvest because of the shortage of farmhands.

❍ Impact of the 1957 Pandemic

- According to a Chosun Ilbo article published in September of 1957, the total number of patients infected with the influenza was 2,770,000 nationwide, with a morbidity rate of 17.3% across the nation and 62% in major cities.

❍ Impact of 1968 Pandemic

- Although there are no surviving statistics, newspaper articles

describe the wide spread of influenza.

(2) The Need for a Pandemic Influenza Preparedness Plan

1 Increased Possibility of an Influenza Pandemic

❍ Heightened Possibility of Pandemic Influenza Due to the Recent Epidemic of Avian H5N1 Influenza A Virus

- Since the end of 2003, avian H5N1 influenza A virus spread throughout the world, starting with a large outbreak in Southeast Asia. Currently in 2006, the infection and the epidemic zone have spread to the Middle East, Europe, and Africa, with continued increase in new patients and deaths.
- Although the currently spreading influenza A (H5N1) virus is highly pathogenic and records a high mortality rate among infected patients, the virus has yet to acquire the ability to easily transmit from person-to-person.
- If, however, influenza A (H5N1) acquires the ability to easily transmit from person-to-person, then it could immediately transform into a pandemic influenza.
- Especially, judging from the avian H5N1 influenza A virus's rapid spread to various regions, steadily increasing number of human infection, and its genetic characteristics vastly different from when it was first isolated in Hong Kong in 1997, it may only be a matter of time before the virus acquires the ability to transmit from human to human.

2 Common Characteristics of Influenza Pandemics

❍ Although previous influenza pandemics showed differences in terms of the timing of the outbreak, epidemiologic characteristics, and clinical severity, they shared the following characteristics.

Table 1. Common Characteristics of Influenza Pandemics

- Lack of pre-existing antibody protection to the novel antigen, resulting in high morbidity and mortality due to the spread of the influenza.
- Restriction on normal daily activities, including schools and government offices, with possibility of total closure due to high mortality and absence.
- High direct health care cost due to high morbidity and morality, along with indirect costs reaching astronomical proportions because of socio-economic disruptions and recovery expenses.
- Demands during the outbreak straining the capacity of existing healthcare system, leading to extreme shortage and disruption of medical resources.
- Worldwide spread of the pandemic with little to no early warning.

3 Basic Orientation of Pandemic Preparedness

A. Strengthen the Response Infrastructure against Influenza Pandemic

❍ Pandemic influenza response infrastructure needs to be reinforced by measures such as stockpiling necessary supplies, including antiviral drugs and personal protective equipment (PPE), and building up a domestic pandemic vaccine production base.

❍ Pandemic influenza preparedness should aim at enhancing overall response capabilities by establishing a closely coordinated structure between the relevant government offices and agencies, capacity building for the facilitation of information sharing and communications, and enhancing core capabilities through tabletop exercises, and improving infection control capabilities of healthcare facilities.

B. Promote Pandemic Preparedness Planning for the Public

❍ Planning for pandemic influenza should not only take place at the national, regional, or agency levels, but also at hospitals, businesses, military, schools, and various other sectors of society.

❍ Planning should include the non-disruptive provision of transportation, communication, electricity, water, public security, and other essential community services during a pandemic.

C. Improve Public Health Emergency Response Capabilities through Tabletop Exercises

❍ Influenza Pandemic is a national emergency. Thus, response capabilities in a public health emergency situation need to be enhanced through well-planned tabletop exercises.

❍ Public health emergencies include natural disasters, war, biological terror, and chemical and radiological disasters. Emergency response planning for influenza pandemic can serve to structurally improve the general preparedness against such public health emergencies.

D. Ongoing Review and Revision of the Pandemic Preparedness Plan

❍ Due to the rapid change and accumulation of knowledge worldwide regarding pandemics, the current plan must continue to be reviewed and revised.

❍ Review the current plan to assess its strengths and weaknesses and continue to revise the plan and fill the gaps.

❍ Review laws and regulations relevant to pandemic preparedness, and amend if necessary.

Ⅱ Purpose and Goals

1 Purpose

❍ Prepare for an influenza pandemic by developing a comprehensive plan to minimize the impact of a potential pandemic.

2 Goals

❍ Provide preparedness measures the Korean government must undertake in advance.

❍ Provide detailed description of responses to be taken at each pandemic phase.

Ⅲ WHO Pandemic Phases and Korea's Pandemic Phases

1 The WHO Pandemic Phases

- Define the phases of pandemic influenza to aid in setting specific action goals and developing a guideline for each phase.
- WHO announced the six pandemic phases on May 2000, with each phase corresponding with different risk levels of human infection. The organization recommended that the WHO Member States develop their own pandemic plans and goals in line with these phases. (Table 2)
- During an actual pandemic, the upward transition, from Phase 1 to Phase 6, may be unclear and hard to pinpoint. At the same time, the transition from one phase to the next may be extremely rapid.
- Especially, the time it takes to advance from Phase 5 to Phase 6 is strategically critical, with the central goal being containment of the spreading infection to buy more time to develop the vaccine and to carry out the pandemic response plan.
- WHO recommends that all nations subdivide the global pandemic phases into: when a particular locality or the country is not suffering a pandemic (A), and when a pandemic has occurred domestically (B).

Table 2. WHO's 6 Pandemic Phases: Definition and Goals			
Period	**Phase**	**WHO Phase Definition**	**Public Health Goals**
Interpandemic Period	**Phase 1**	• No new influenza virus subtypes 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 influenza pandemic preparedness at the global, regional, national, and subnational levels.
Interpandemic Period	**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.	Minimize the risk of human-to-human transmission; detect and report such transmission rapidly if it occurs.
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.	Rapid isolation of the new virus subtype. Early detection, notification, and response to additional cases.
Pandemic Alert Period	**Phase 4**	• Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	Contain or delay the spread of the new subtype at the early stages to gain time to implement preparedness measures, including vaccine development.
Pandemic Alert Period	**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).	Contain or delay the spread of infection to possibly avert a pandemic, or to gain time to implement pandemic response measures.
Pandemic Period	**Phase 6**	• Pandemic: increased and sustained transmission in general population.	Minimize the impact of the pandemic.

A: No domestic outbreak, but outbreaks overseas

B: Domestic outbreak

2 Korea's NSC National Disaster Phases

❍ Korea has four different phases that apply to all national disasters, including disaster due to infectious diseases. The four phases are Concern, Caution, Alert, and Severe.

Table 3. NSC National Disaster Phases

Class	Evaluation Criteria	Pandemic Influenza	Note
Concern (Blue)	• Outbreak of newly emerging infectious disease overseas. • Domestic cases of infected patients of unknown cause. • Meteorological reports of typhoon or heavy rainfall.	• Outbreak of avian flu in domestic poultry stocks.	Symptom Observation
Caution (Yellow)	• Spread of emerging infectious disease from overseas into Korea. • Domestic outbreak of emerging infectious disease. • Regional outbreak of re-emerging infectious disease. • Massive flooding and outbreak of waterborne disease.	• Domestic incidence of human infection(s), but no human-to-human spread. • Outbreak of foreign human-to-human spread in small or large clusters.	Mobilize Coordinated Response Systems
Alert (Orange)	• Spread of emerging infectious disease from overseas into Korea and subsequent transmission to other regions. • Domestic outbreak of emerging infectious disease and subsequent transmission to other regions. • Spread of re-emerging infectious disease to other regions. • Spread of waterborne disease to other regions.	• Limited human-to-human transmission • Epidemic among the general population overseas.	Assess preparation & response plan
Severe (Red)	• Signs of emerging infectious disease from overseas spreading throughout the nation. • Signs of emerging domestic infectious disease spreading throughout the nation. • Signs of re-emerging infectious disease spreading throughout the nation. • Signs of waterborne disease spreading throughout the nation.	• Epidemic among the general population in Korea.	Immediately enter into response mode.

3 Korea's Influenza Pandemic Phase Classification as Part of Pandemic Preparedness

- Based on WHO's 6 pandemic phases, the NSC National Disaster Phases will be applied as shown below, depending on whether the outbreak is foreign or domestic. (Table 5)
- In case of a foreign outbreak, the phases will follow the WHO phases as announced. In case of a domestic outbreak, the phase will be determined according to the expert opinion of the Influenza Advisory Committee.
- The NSC (National Security Council) National Disaster phases will correspond as shown below to the foreign pandemic phases as determined by the WHO or the domestic pandemic phases as determined by the Influenza Advisory Committee. In a situation where the foreign pandemic and domestic phases are different, the NSC phase will correspond with the higher of the two phases (e.g. - if the foreign pandemic phase is 6, the NSC phase will be "Alert (Orange)" even if there are no domestic patients).

Table 4. NSC National Disaster Phases vs WHO's 6 Phases

NSC Phase	Overseas Outbreak	Domestic Outbreak
Concern (Blue)	Phase 1: Virus detected in birds Phase 2: Outbreak among birds, no human infection Phase 3: Human infection, but no transmission.	Phase 1: Virus detected in birds Phase 2: Outbreak among birds, no human infection
Caution (Yellow)	Phase 4: Outbreak of small epidemic cluster(s) Phase 5: Outbreak of large epidemic cluster(s)	Phase 3: Human infection, but no transmission.
Alert (Orange)	Phase 6: Outbreak in the general population.	Phase 4: Outbreak of small epidemic cluster(s). Phase 5: Outbreak of large epidemic cluster(s)
Severe (Red)		Phase 6: Outbreak in the general population.

Ⅳ Estimated Impact of an Influenza Pandemic

(1) Estimated Impact of An Influenza Pandemic: Assumptions

1 Assumptions for Estimating the Impact of An Influenza Pandemic

- The number of outpatients, hospitalizations, severely ill, and deaths during an influenza pandemic is the most central data for pandemic preparedness planning.
- Based on these impact estimates, it is possible to approximate the amount of necessary medical resources (e.g., health care workers, medical supplies, and hospital beds) and the socio-economic impact, giving us an idea of what and how much of it to prepare.
- The impact of an influenza pandemic, however, depends on the unique characteristic of the influenza virus causing the pandemic. Such characteristic of the virus cannot be known until the onset of the pandemic, making it impossible to predict the exact extent of the impact.
- Projected impact in a pandemic response plan is determined by calculating, to the extent possible, characteristics of prior pandemic influenzas. The estimate should not be taken as a prediction of the exact number of patients, but rather a tool for formulating policies for pandemic preparedness.

2 Estimated Impact of An Influenza Pandemic: Assumptions and Methodology

- Influenza pandemic impact estimation was done using FluAid, developed by the U.S. CDC based on methodologies used by Meltzer and colleagues.
- FluAid is the standard method used in many countries because it is

relatively simple and provides an easy way to calculate the necessary data for pandemic preparedness planning. FluAid's basic model uses outpatient visits, hospitalizations, and deaths, for different age groups and high-risk groups to run a simulation.

❍ The following assumptions and parameters for estimating the impact of an influenza pandemic were determined by reviewing the expansive materials of 10 national experts and the Delphi technique.

Influenza Pandemic Impact Estimates: Assumptions and Parameters

- Pandemic Impact Estimate, Gross Attack Rate : 30%
- 1st Pandemic Period : 8 weeks
- High Risk Percentages by Age Group
- 0 - 18 yrs : 4%
- 19 - 64 yrs : 11%
- 65+ yrs : 37%
- Number of deaths, hospitalizations, and outpatient visits during an influenza pandemic of high risk percentages by age group.

Table 5. Estimated Mortality, Hospitalizations, and Outpatient Visits of High-risk Groups Used in the Influenza Pandemic Impact Estimates

(Per 1,000)

Age Group	Mortality (95% CI)	Hospitalizations (95% CI)	Outpatient Visits (95% CI)
0-18	1.0(0.31, 1.68)	4.4(1.03, 7.77)	258(125, 390)
19-64	2.7(0.88, 4.52)	3.8(0.88, 6.73)	137(42, 231)
65-	4.6(1.56, 7.64)	10.6(3.58, 17.6)	166(70, 262)

(2) Estimated Impact of an Influenza Pandemic

1 Estimated Number of Deaths during an Influenza Pandemic

❍ FluAid 2.0 simulation based on the National Statistical Office's 2006 population estimates shows number of deaths as follows (Table 6).

Table 6. Estimated Number of Deaths during an Influenza Pandemic

Age Group	Gross Attack Rate		
	20% (95% CI)	30% (95% CI)	40% (95% CI)
0-18 yrs	1,527	2,291 (691, 3,239)	3,055
19-64 yrs	22,771	34,156 (14,319, 40,168)	45,541
65+ yrs	12,098	18,147 (8,444, 26,693)	24,196
Total	36,396 (15,636, 46,733)	**54,594 (23,454, 70,100)**	72,792 (31,274, 93,466)
% of Total Population	0.07 (0.03, 0.10)	**0.11 (0.05, 0.14)**	0.15 (0.06, 0.19)

❍ In case of Korea, based on a 30% gross attack rate, it is estimated that about 54,600 (0.11%) of excess mortality will occur. Broken down by age groups, about 2,300 will be among the 0-18 year-old group, 34,000 among 19-64 year-old group, and 18,000 among the 65+ year-old group.

❍ Out of the 54,600 total number of deaths, 25,659 (47%) will be from the high-risk group.

❍ Based on the number of infected patients, assuming that the duration of the pandemic wave is 8 weeks, deaths will peak around week six to seven at 20,750 deaths per week, about 2 weeks later than when the number of newly infected patients will

peak, around week four or five.

2 Estimated Number of Hospitalizations During an Influenza Pandemic

- In case of Korea, when the gross attack rate is 30%, the number of hospitalizations is estimated to be 235,600, 0.48% of the entire population. (Table 7)
- 20% of the 236,000 hospitalizations, or 47,120, will be from the high-risk group.

Table 7. Estimated Number of Hospitalizations During an Influenza Pandemic

Age Group	Gross Attack Rate		
	20% (95% CI)	30% (95% CI)	40% (95% CI)
0-18 yrs	10,007	15,011 (4,009, 21,677)	20,014
19-64 yrs	112,628	168,942 (49,620, 167,331)	225,257
65+ yrs	34,426	51,639 (20,437, 73,198)	68,852
Total	157,061 (46,880, 174,804)	235,592 (74,066, 262,006)	314,123 (98,755, 349,608)
% of Total Population	0.32 (0.10, 0.36)	**0.48 (0.15, 0.54)**	0.65 (0.20, 0.72)

3 Estimated Number of Outpatients During an Influenza Pandemic

- The estimated number of outpatients is about 8,840,000, 18.2% of the entire population. This result is similar to those of other countries. (Table 8)
- 13% of the outpatients, 1,149,300, will be from the high-risk group.

Table 8. Estimated Number of Outpatients During an Influenza Pandemic

Age Group	Gross Attack Rate		
	20% (95% CI)	30% (95% CI)	40% (95% CI)
0-18 yrs	1,110,786	1,666,179 (807,809, 2,524,155)	2,221,572
19-64 yrs	3,906,351	5,859,527 (2,607,288, 10,269,689)	7,812,703
65+ yrs	876,475	1,314,712 (688,665, 2,453,658)	1,752,949
Total	5,893,612 (2,735,841, 10,165,001)	**8,840,418 (4,103,762, 15,247,502)**	11,787,224 (5,471,683, 20,330,002)
% of Total Population	12.2 (5.6, 21.0)	**18.2 (8.5, 31.4)**	24.3 (11.3, 41.9)

4 Estimated Number of Cases by Region

- With a 30% gross attack rate, the estimated numbers of hospitalizations, outpatients, and deaths distributed for the 16 major cities and provinces are as follows (Figure 9).
- The number of patients and deaths increases proportionately with the size of the population, and the rates slightly vary depending on the age distribution of the population.
- The result of this simulation has no significance other than for use in assessing the general trend and for setting pandemic preparedness policies.

Figure 9. Estimated Number of Patients by Region During Pandemic

	Deaths	Hospitalizations	Outpatients
Seoul	10,969	48,601	1,818,472
Incheon	2,728	12,146	466,745
Busan	4,058	17,666	655,241
Daegu	2,765	12,138	460,235
Ulsan	1,081	4,935	194,174
Daejeon	1,527	6,820	262,933
Gwangju	1,491	6,615	257,344
Gyeonggi	11,460	50,884	1,962,697
Gangwon	1,893	7,793	283,894
Gyeongnam	3,601	15,200	567,178
Gyrongbuk	3,394	13,751	493,873
Jeonnam	2,521	9,861	348,657
Jeonbuk	2,275	9,235	335,970
Chungnam	2,457	9,958	360,535
Chungbuk	1,758	7,377	273,634
Jeju	616	2,613	98,837
National	54,594	235,592	8,840,418

* This table is only intended as a reference for aid in understanding general trend.

Ⅴ Legal and Ethical Considerations

(1) Legal Considerations

- Identify and review in advance the various legal issues that may arise in relation to the influenza pandemic response and create a legal basis for them.
- In the event of a pandemic, many legal issues may arise, including isolation of patients and home isolation of contacts, restrictions on domestic and international travel, restrictions on public gatherings, use of unlicensed vaccine, mandatory vaccination of first responders, compensation in case of infection or death of first responders and other necessary personnel for maintaining critical societal functions.
- Future research will be done to study the potential legal issues arising during a pandemic. Accordingly, the Infectious Disease Prevention Act, the Pharmaceutical Law, and the Quarantine Act will be reviewed and revised as needed.

(2) Ethical Considerations

- Identify in advance the various ethical problems that may arise in the process of effectively distributing limited supplies during an influenza pandemic. Obtain social consensus regarding how to approach such problems in order to effectively deal with them during an influenza pandemic.
- During a pandemic, there may be many ethical issues over how to distribute limited medical resources. This includes issues such as vaccination priority, antiviral drug priority, treatment and hospitalization priority, and intensive care beds and respirators priority.
- Further research will be undertaken to address potential ethical problems during a pandemic. Policies will be reviewed and modified as necessary.

Ⅱ The Preparedness Plan by Component

Ⅰ Command and Control

(1) Purpose

❍ Improve national emergency response capabilities by establishing a command and coordination structure to effectively deal with a national emergency situation brought on by an influenza pandemic.

(2) Goal

❍ Establish response procedures and specific actions to be undertaken by central government agencies and local authorities in case of a national emergency due to an influenza pandemic.

(3) Emergency Management: Legal Basis

1 Laws Relevant to National Emergency Management

❍ Disaster and Safety Management Act

❍ Basic Guideline for National Emergency Management

- Management of a national crisis caused by an infectious disease is described in the Standard Manual for National Emergency Management and the Practical Manual for National Emergency Response

2 Laws Relevant to Healthcare and Infectious Disease Management

❍ The Health Care Act

❍ The Communicable Disease Prevention Act

❍ The Quarantine Act
❍ The Medical Service Act
❍ The Emergency Medical Service Act

(4) Overview of a National Emergency due to Infectious Disease

1 Infectious Disease as a Subject of National Emergency Management

❍ Infectious diseases such as SARS, avian influenza (AI), BSE, swine fever, foot-and-mouth disease, and others require advance preparation. An outbreak of such diseases may have direct or indirect impact on a variety of areas such as health, life, and national economy, and can potentially destabilize the country's foundation.

2 Infectious Disease Risk Scenarios

❍ Emerging infectious disease is imported from abroad and becomes widespread in Korea.
❍ Emerging domestic infectious disease becomes widespread in Korea
❍ Re-emerging domestic infectious disease becomes widespread in Korea.
❍ Waterborne disease caused by natural disaster becomes widespread in Korea.

3 National Emergency Control of Infectious Diseases

❍ The Ministry of Health and Welfare (MOHW) is the primary agency.
- Ministry of Foreign Affairs and Trade (MOFAT), Ministry of Justice (MOJ), Ministry of National Defense (MND), Ministry of Government Administration and Home Affairs (MOGAHA), and

Ministry of Agriculture and Forestry (MOAF) are the other concerned ministries that closely cooperate with and assist MOHW.

- Full coordination between agencies involved in national emergency management, such as the National Security Council (NSC, in the Office of the President), The Central Safety Management Committee (in the Office of the Prime Minister), and Central Disaster and Safety Countermeasures Headquarters (CDSCH, in MOGAHA).

(5) Influenza Pandemic: Decision-Making Process

1 Issuance and Dissemination of the National Emergency Alert During a Pandemic

❍ The Minister of Health and Welfare shall determine and announce the level of emergency.

- The Minister of Health and Welfare shall convene an internal crisis assessment meeting and hold consultations to seek advice on the issuance of the National Emergency Alert.
- The Minister of Health and Welfare shall issue the National Emergency Alert to all citizens and relevant agencies.
- The Director of KCDC shall act pursuant to the Minister's orders and relay the alert to the National Infectious Disease Control System.

❍ If the Minister of Health and Welfare needs to issue a National Emergency Alert which requires the response of the entire government (Orange or Red), the Minister shall obtain prior consent from the NSC Secretariat (Crisis Management Center) and Director-General of CDSCH (Minister of Government Administration and Home Affairs).

- If the Crisis Alert level needs to be revised or changed, such revisions shall be done through prior consultations with the NSC Secretariat (Crisis Management Center) and Director-General of CDSCH (Minister of Government Administration and Home Affairs).

2 Making Decisions on Issues that Significantly Impact People's Health and Lives

❍ Major Issues

- Pandemic vaccine use and priority
- Antiviral drug use and priority
- Public healthcare measures, and determining the priority for healthcare service provision

❍ Decision-Making Process

- The Influenza Pandemic Advisory Committee shall deliberate and make recommendations to the Minister of Health and Welfare.
- The Minister of Health and Welfare shall make the primary decision.
- In cases where the consent of the entire government is necessary, the Central Safety Management Committee shall be convened to make the decision.

Ⅱ Risk Communication

(1) Purpose and Goals

1 Purpose

❍ Minimize impact, such as social disorder and disruptions of economic activities, and ensure effective response by providing timely and accurate information to citizens, agencies, and other stakeholders.

2 Goals

❍ Establish a principle of risk communication.

❍ Define specific risk information to be communicated in each subject area.

(2) Necessity and Principle

1 The Necessity of Risk Communication

A. Minimize Societal Disruption by Timely and Accurate Sharing of Information

- Since an epidemic cannot be evaded and is hard to predict, proper sharing of risk information is needed to minimize overblown, unnecessary fear and social panic.
- During a chaotic pandemic, even the slightest delay of communication can cause a sector to fall into a state of disorder, possibly leading to a society-wide state of lawlessness. Therefore, each pandemic phase requires a specific communication plan and corresponding action guideline for the general public. There must also be a plan to develop an IT infrastructure which enables rapid dissemination of

information.

2 Principles of Information Sharing and Communication

A. Building Trust

❍ The government must gain the confidence of the general public.

- Policy-makers, spokesperson, and officials in charge must speak and act with consistency in order to maintain mutual trust among the three parties.

B. Announcing Early

❍ To the extent possible, problems should be announced at its initial stage.

- Announcements should not be delayed even if the epidemic is small in scale, or if there is a lack of information.

C. Transparency

❍ The government has the responsibility to disclose information to the public in a transparent manner.

- There must be a balance between individual civil rights and the public's right and need to know for its own benefit.
- The government must also clarify any limitation in the information it provides to the public at the time of disclosure, and must inform that new upcoming information could possibly alter the situation.

D. Providing Information Based on the Understanding of the Public

❍ Have a good understanding of the stakeholders requiring information (e.g., the public, members of the press, etc.) and establish a strategy for effective provision and sharing of information

- Involve the stakeholders in the policy decision-making process, and inform the public of personal preventive measures.

E. Planning in Advance

❍ Things to consider in planning for risk communication

- What needs to be done?
- Who needs to know?
- What agency has the lead?
- Who needs to act?

(3) Information Sharing and Communication between Different Counterparts

1 Communication with International Organizations and Other Governments

A. Purpose

❍ Early identification of a novel influenza virus and epidemic through global collaboration

B. Information Source

❍ WHO, OIE, FAO, and other international organizations, and Korean embassies and consulate offices overseas.

❍ Infectious disease dedicated systems such as inter-governmental hot-lines and ProMed.

C. Materials

❍ Novel influenza virus report (laboratory, clinical, poultry, mammals).

❍ Epidemiologic characteristics, transmission status of novel influenza.

❍ Vaccine status, efficacy and immunity.

❍ Antiviral status, sensitivity, etc.

D. Information Gathering and Distribution

❍ In accordance with the amended International Health

Regulations(2005), KCDC (Center for Communicable Disease Surveillance and Response) will be the National Focal Point.

- Center for Communicable Disease Surveillance and Response will collect international data and provide information to the WHO.

2 Intra-governmental Communication and Internal Communication within MOHW (KCDC)

A. Purpose

❍ Effective response through swift communication across relevant government ministries/agencies, as well as within MOHW

B. Scope of Communicated Information

❍ Status of pandemic outbreaks in and out the country

❍ Measures to prevent pandemic influenza

❍ Government's action and inter-ministerial cooperation for each phase.

C. Communication System

❍ Government Ministries/Agencies

- The situation room of Central Crisis Control Committee(CCCC) within MOHW will be responsible for intra-governmental communication
  - ▪ All government ministries and agencies are involved in the pandemic response
- Establish emergency contact system with relevant bodies for a 24-hour information update.

❍ MOHW Internal Communications

- The concerned divisions and organizations of the MOHW(CCCC) and KCDC(CIDPH)
- Establish an emergency contact system between the response divisions (teams) to share information 24-hours a day.

❍ Local Authorities

- Regional(city/provincial) and local(city/county/ward) Infectious Disease Prevention Headquarters, and Rapid Response Teams at regional(city/provincial) and local(city/county/ward) quarantine stations

3 Public Outreach and Media

A. Purpose

❍ Minimize societal disruption and ensure effective pandemic response through quick and accurate dissemination of information.

B. Scope of Communicated Information

❍ Status of pandemic outbreaks in and out the country

❍ Pandemic influenza prevention and response in case of an outbreak.

❍ Government measures and guidance on citizens' actions for different situations

C. Information Distribution: Method and Preparation

❍ Establish a briefing network and schedule

- Identify and select media outlets and other organizations requiring information.
  - ▪ Media outlets
  - ▪ Relevant organizations' media and websites.
- During emergency situations, the government must hold pre-scheduled briefings to continuously provide up-to-date information.

❍ Appoint a spokesperson and take preparatory measures

- Appoint a spokesperson to deliver consistent and unified information to the media.
  - ▪ The spokesperson will be on call 24-hours, and the working team will operate 24-hours.

- The public relations officer shall act as the spokesperson for the government.
- Compile in advance key information on the pandemic and run a practice session for sharing risk information.

❍ During emergency situations, establish a 24-hour information dissemination scheme.

- Operate hot-lines
  - ▪ Provide information through an emergency hot-line(1339). If necessary, operate additional lines.
- Provide the latest information through the Internet.
  - ▪ Continuously provide information about the pandemic through the Disweb (http://dis.cdc.go.kr/)

※ In order to limit person-to-person contact during a pandemic, the Internet, phone, cell phone, broadcast, an others will be the primary means for risk communication. Therefore, these media channels must be further enhanced.

D. Principles for Risk Communication

❍ The information should be easy to access, and the format should make the information easy to comprehend.

❍ The latest information should be provided through regular updates.

❍ Ongoing provision of information should be possible.

❍ Publicize the expert group's opinion, and if possible, include a communications specialist in the expert group.

4 Information Provision to Healthcare Workers

A. Purpose

❍ Aid in effective management of patients and minimize deaths by providing timely information to healthcare workers.

B. Scope of Communicated Information

❍ Status of pandemic outbreaks in and out the country
❍ Guidelines for infection control, patient management, contacts management.
❍ Government measures and guidance on citizens' actions for different situations

C. Information Distribution System

❍ KCDC (CIDPH) shall be responsible for providing key information.
- KCDC shall prepare the various guidelines in advance.

❍ If necessary, obtain advice from civilian experts to quickly prepare the information.

D. Methods of Information Distribution

❍ Periodic Information Publications
- Use emergency newsletters or periodic publications of pertinent organizations (e.g., Journal of Korean Medical Association, or Journal of Korean Nurses Association)

❍ Websites
- Use the websites of MOHW, KCDC's Communicable Disease Information System (Disweb), Korean Medical Association, Korean Nurses Association, or various medical societies

❍ Network of Experts
- Use Infection Specialist Network, Emergency Room-based Syndromic Surveillance System, and various other sentinel surveillance systems and networks to provide information.

Ⅲ Surveillance

(1) Purpose and Goals

1 Purpose

❍ Early detection of influenza epidemic signs through constant and regular monitoring of new cases of influenza-like illness (ILI) in local communities, and monitoring isolation of influenza virus.

2 Goals

❍ Record the common characteristics of the population group infected by the influenza and collect/provide information about the currently spreading virus strain.

❍ Provide information about unusual increase in patient number or detection of a new virus strain.

❍ In case of a pandemic, track the outbreak and spread to provide information about the effectiveness of the response.

(2) Clinical Surveillance

1 Ongoing Sentinel Surveillance of ILI Patients: Structure and Operation

❍ The Korea Influenza (Class III National Notifiable Communicable Disease) Surveillance Scheme (KISS) encompasses approximately 700 healthcare facilities around the country.

❍ Weekly Influenza Surveillance Scheme

- Includes 600 healthcare facilities.
  - ▪ Weekly report to the KCDC of the total number of patients and patients with influenza-like-illness

❍ Daily Influenza Surveillance Scheme

- Includes 100 healthcare institutions
  - ▪ Daily report to the KCDC through its website (http://dis.cdc.go.kr/influenza) the total number of patients and ILI patients.

❍ Definition of influenza-like-illness (ILI) patient

- Sudden fever above 38℃ with coughing or sore throat

❍ Data Analysis and Feed-back

- Analyze the trend of the ILI patient rate to determine the status of the influenza epidemic.
- Influenza ILI ratio is calculated by the number of ILI over total number of inpatients (per thousand)

※ Baseline level of ILI ratio in Weekly Surveillance Influenza Outbreak Threshold : 7.5 persons out of 1,000

2 Pandemic Influenza (Human Infection) Surveillance

❍ The following are applicable when H5N1-type new strain of influenza has emerged and spread widely. (Class 4 National Notifiable Communicable Disease)

- Amend the case definition to establish a standard for reporting pandemic influenza, applicable for all physicians, including those practicing oriental medicine. (Using WHO PI case definition)
- PI case is categorized by suspected, probable and confirmed case.

※ If H5N1 can no longer cause a pandemic but only continues to cause seasonal influenza outbreaks, it will be placed under sentinel surveillance, as is the current H3N2, H1N1 and B type of seasonal influenza virus.

❍ Disseminate the case-definition of PI to all physicians by working with professional associations such as the Korean Medical Association.

- Strengthen partnership and encourage the participation of medical association and individual doctors in the surveillance system.

3 Supplementary Surveillance

❍ School Absenteeism Surveillance Program

- Overview
  - ▪ Includes 70 schools nationwide. School nurses play the main role.
- Reporting requirements
  - ▪ The number of absentees from common cold, chickenpox, mumps, meningitis, conjunctivitis, pneumonia.
  - ▪ For every 1,000 students in schools participating in the program, the number of absentees due to the above diseases (per thousand).
- Application
  - ▪ During the influenza pandemic phases, supplement KISS by monitoring the trend of school absenteeism due to cold or respiratory illness.
  - ▪ Program will operate until schools are shut down as directed by WHO Pandemic Phase, or due to progression of the influenza situation.

❍ Emergency Room-based Syndromic Surveillance System

- Overview
  - ▪ Select 125 health care facilities nationwide as sentinel surveillance institutions and monitor patients arriving in the emergency room with acute respiratory syndromes.
- Reporting requirements
  - ° Patient Description: Acute Respiratory Syndrome
  - ° Illnesses: Bubonic Plague, Anthrax, Influenza, SARS, etc.
  - ° Sudden fever above 38℃ with acute respiratory syndromes. (e.g., coughing, sore throat, hemoptysis, dyspnea, or chest pain)
  - ° Critical patients (hospitalized): Report each individual case.
  - ° Other patients: Report number of patients per each age group.

<Exception Criteria of Acute Respiratory Syndrome>
◦ Patients with chronic respiratory disorder (e.g., COPD, asthma, or lung cancer) whose respiratory problems have worsened due to the underlying disorder and not an acute infection. (Consider other symptoms of infection such as fever or chills

▪ Operating method: Daily report through the web. (http://bioterrorism.cdc.go.kr)

- Application

▪ At each phase of the influenza pandemic, supplement the Korean Influenza Surveillance Scheme(KISS) by monitoring the trend of patients visiting the emergency room due to acute respiratory syndrome.

▪ As the influenza pandemic phase escalates, patient surge will overwhelm smaller healthcare facilities and cause many private practices to close down in order to avoid infection. Such events will cause serious gaps in the influenza sentinel surveillance scheme in such a case, an emergency sentinel surveillance system will be taking over.

❍ Infection Specialist Network

- Overview

▪ In case of an infectious disease possibly caused by bio-terrorism, or when a emerging or re-emerging infectious disease appears, immediately report the outbreak to a healthcare institution to prevent an outbreak.

- Operating Method

▪ Daily report through the web. (http://bioterrorism.cdc.go.kr)

▪ Participating Healthcare Institutions: 50 designated sentinel medical institutions nationwide. (Of the institutions qualified by

the Medical Service Act, Article 3, those equipped with departments of infection control and infection specialists will participate)

- Surveillance Requirements
  - ▪ Patients suspected of potential bio-terror infectious disease. (smallpox, anthrax, botulism, plague, and viral hemorrhagic fever.
  - ▪ Diarrhea patients suspected to be part of a large outbreak
- Application
  - ▪ Improve the influenza pandemic and disaster preparedness of the public, government, and schools by strengthening the relationship between doctors and MOHW through a collaborative network.
  - ▪ In an influenza pandemic or other healthcare emergency, establish a close and collaborative response system that includes specialists in the private sector.

(3) Influenza Laboratory Surveillance

1 Establish Routine Laboratory Surveillance System

Table 10. The Role of Laboratory Surveillance System

Organizations	Roles & Responsibilities
Laboratories Surveillance Facilities	·Collect samples from ILI patients / perform RAT ·Fill out specimen referral forms to send to Public Health & Environment Research Institute(PHERI)
City and Provincial Research Institutes of Public Health & Environment	·Distribute VTM to Public Health Centers(PHC) and participating healthcare institutions ·Perform virus isolation in cell culture or RT-PCR molecular detection on samples received from surveillance facilities ·Send samples testing positive under the cell culture or molecular detection to the KCDC influenza virus team. Also send culture supernatant and unconfirmed samples. ·Report influenza test results on the web (Organizations performing RAT should send the test results once a month) ·Data feed-back on test results
KCDC / KNIH Division of Influenza and Respiratory Viruses	·Perform subtype and antigenic characterization of the isolates through tests such as Hemagglutination Inhibition Test and RT-PCR. ·Perform final identification and confirmation of the isolates. ·Subtype and genetic characterization of the isolates through genetic analysis ·Participate in global influenza surveillance. Send isolates to WHO Collaborating Centers (the US CDC, Japanese NIID and join Flu-Net)

2 Operation of the Surveillance System

A. Specimen Collection and Referral (Annex 1-1)

❍ Specimen Collection

- Cases for Collection

① ILI patients showing typical symptoms.

※ ILI, Influenza-like illness: Sudden fever above 38℃ with coughing or sore throat

② Up to 20% of the daily ILI patients visiting the hospital.

- Specimen Collection Method

① Types of specimen: throat swab, nasopharyngeal aspirate, etc.

② Package a patient's throat swab placed in a VTM or 3~5㎖ of nasopharyngeal aspirate placed in a sterilized vessel.

- Specimen Referral

▪ Complete the influenza fill out specimen referral forms and send to a Public Health & Environment Research Institute (PHERI)

▪ The referral form is to be completed separate from the influenza ILI patient report form.

▪ Accurately label each specimen container with the patient's sex, age, and collection date.

▪ Frequency of Test Referrals

° October to November: Twice a week (every Tuesday and Thursday)

° December to September: Once a week (every Thursday)

- Sample Transportation and Storage

▪ When sending the specimen to the a PHERI, pack in ice or refrigerants and place in an ice box to maintain an internal temperature of 4℃.

Caution

◦ Ensure that the sample does not freeze by coming into direct contact with the ice or refrigerant.

◦ Make sure to send the sample with the test referral form.

◦ If transport to a PHERI is not possible immediately after collection, store at 4℃until transport. (Can store at temperature as low as -70℃)

B. Laboratory Diagnostics

① Rapid antigen test
② Serology
- ❍ Hemagglutination Inhibition Test
- ❍ Western blotting

③ RT-PCR
④ Viral culture

C. Laboratory Diagnosis During a Pandemic

1] Laboratory Diagnosis

❍ As the pandemic progresses, and the local influenza morbidity reaches a high level, clinical diagnosis is critical due to the high possibility of false negatives.
- Not all patients require diagnostic tests.

❍ Many examinations may be required for viral culture, serology, and RT-PCR.
- Viral culture should only be performed in BSL (Biosafety level)-3 biocontainment conditions. Other tests may be performed in BSL-2 biocontainment conditions or higher.

❍ Diagnostic Test to Distinguish Influenza-like-illness (ILI) Cases
- Disease such as Respiratory Syncytial Virus, Parainfluenza Virus, Adenovirus, Rhinovirus, Legionellosis, and Mycoplasma Pnuemoniae requires a test to distinguish it from influenza.
- Tests such as blood and sputum culture exam, urine antigen test, serum test, and PCR should be conducted, and the possibility of a concurrent bacterial and viral infection must be considered.

2] Laboratory Preparation

❍ Preparatory Measures by the KCDC

- Establish a plan to handle the increased number of samples and cases during a pandemic.
  - ▪ Temporarily reassign and train workers from other research departments.
  - ▪ Secure and train temporary lab researchers
- Assess the quality and quantity of currently available diagnostic reagents and personal protective equipment (PPE).
  - ▪ Evaluate the potential demand during a pandemic and prepare to stockpile reagents and suitable substitutes.

❍ Laboratories must comply with Biosafety standards

- The 17 regional and local PHERIs (Public Health and Environment Research Institute) are carrying out virus isolation using MDCK cells and RT-PCR.
- The PHERIs in Seoul, Busan, Daegu, Incheon, Daejeon, Gyeonggi, Jeonbuk, Gangwon, and Jejuare preparing to be the regional bases for avian influenza isolation using BL3 facility.

※ During the early stages of the pandemic when testing volume is heavy, private facilities may be used to perform RT-PCR tests for the detection of new cases of infection. If necessary, positive test results may be retested for verification at KCDC.

Ⅳ Healthcare Service

(1) Purpose and Goals

1 Purpose

❍ Provide appropriate care to meet the healthcare need during a pandemic when there is a surge in patients. Also protect healthcare workers, who are vital resources, from infection, thereby promoting patient recovery and minimizing deaths.

2 Goals

❍ Analyze the impact of a pandemic on the healthcare system.

❍ Establish a plan to effectively use limited resources.

❍ Prepare guidelines for patient management, infection control, and disposal of the deceased.

(2) Impact of a Pandemic on the Healthcare System

1 Increased Demand for Healthcare During a Pandemic and the Need for Advance Preparation

❍ In the event of a pandemic, the number of patients will rapidly increase over a short period of time and overstress the healthcare system.

- The number of patients requiring hospitalization will increase sharply and exacerbate the shortage of resources. The demand may surpass the current capacity of the healthcare system.
- Advance planning for effective resource distribution is particularly essential in order to minimize deaths when there is a surge of critical patients requiring artificial respirators.

2 Projected Healthcare Demand During a Pandemic

❍ Assuming a gross attack rate of 30%, the number of hospitalizations in Korea will reach approximately 235,600 or 0.48% of the total population. (simulated with FluSurge)

- Of the total hospital admissions, 38% (89,520) will occur over 2 weeks - from the 4th and the 5th week of the 8-week pandemic. During this peak period, an average of 6,600 new admissions will take place every day.

❍ Some of the hospitalized patients will need critical care and a respirator.

- It is estimated that during the peak period for critical patients (4th~6th week), about 9,000 patients will need intensive care and about half of those in intensive care patients will need a respirator.
- As of 2006, the current number of hospital beds is 382,000, out which 12,800 are for critical patients. The number of respirators is estimated at 5,900.

※ Refer to "Estimated Impact of an Influenza Pandemic" in section IV of I. Introduction and Background:

(3) Healthcare Service

1 Early Detection of Influenza Cases in Local Communities

❍ During the beginning stage of an overseas pandemic, or the early stage of a national pandemic, recognize new cases in local communities as early as possible and provide appropriate treatment.

- To facilitate early treatment, conduct education and public awareness campaigns for local citizens and healthcare workers.
- In the early stages, education should be provided on the specimen collection standards and collection/transport methods.

2 Designation of Treatment Hospitals

❍ Prior Consultations and Designation of Treatment Hospitals

- In order to prevent confusion in patient management during a pandemic and to ensure the effective use of resources, consult with healthcare facilities/organizations and identify, in advance, the healthcare facilities to provide treatment.
- Provide the designated hospitals with advance training and guidance in areas such as antiviral drug use, patient management, patient treatment, and infection control.

❍ Dealing with Suspect Cases during the Pandemic Alert Period

- If a suspect case occurs during the Pandemic Alert Period, treat the patient at a designated or pre-consulted hospital.
- Currently, there are 516 designated beds (general isolation facilities) at 38 hospitals. There are, however, no properly equipped isolation facilities for pandemic patients. Presently, plans are underway to add 80 beds in negative pressure rooms and 320 beds in general isolation rooms over the next 4 years.
- Until properly equipped isolation beds are available, use the current beds and later transfer patients to properly equipped isolation beds.

❍ Treatment of Suspect Cases During a Pandemic

- Once the pandemic starts, treat patients at designated treatment hospitals
- Once the pandemic spreads throughout the local community, the stockpiled antiviral drugs will be allocated to healthcare facilities, with primary focus on the pre-designated hospitals.

3 Patient Triage and Staff Assignment (Annex 1-2)

❍ The Need for Triage

- Conduct triage on patients as they are admitted to identify persons who might be infected, and to ensure appropriate and prompt care

according to severity and/or complications.

- Establish separate ILI patient evaluation & management protocols for private clinics, hospital emergency rooms, or outpatients. This will ensure proper patient management, and prevent inter-hospital transmission and unnecessary consumption of medical resources.

❍ Suspect Cases of Pandemic Influenza Are to Be Differently Classified Depending on the Severity of the Pandemic.

- During the Pandemic Alert Period, the Prepandemic Period, or during the early phase of the Pandemic Period, all patients suspected of the pandemic influenza should be hospitalized.
- As the pandemic begins to spread, decide on hospitalization or home care according to the severity of the patient's condition.

❍ Appoint Staff in Charge of Patient Triage

- Establish a protocol for patient triage and provide advance training to assigned staff.
- Although patient triage can be conducted in several ways, including phone triage, on-site triage at healthcare facilities should be the main method.
- The 1339 Emergency Medical Center, local health clinics, and healthcare facilities can provide consultations.

4 Emergency Response Plan of Hospitals (Annex 1-3, 1-4, 1-5, 1-6)

❍ All healthcare facilities, in addition to the hospitals designated for treatment, must establish an emergency response plan for a pandemic influenza.

- After the full onset of the pandemic, there may be a shortage of manpower and supply. Therefore, hospitals need to have an emergency operation plan based on maximum utilization of manpower and materials supply.
- During a pandemic, quick decisions and implementation are required for various issues such as infection control education for healthcare

personnel, determining/revising hospital admittance and discharge criteria, prohibiting hospitalization for elective surgery, transforming surgical wards to internal medicine ward, and staff assignment.

- In preparation of a patient surge during a pandemic, establish a treatment plan for both existing and influenza patients.
- If emergency care or surgery is not necessary, defer hospitalization.
- Discharge non-critical patients.

❍ Hospital Emergency Response Committee

- Unlike the Interpandemic Period, antiviral drug is in limited supply in the beginning of a pandemic, and there is no developed vaccine. Therefore, infection control is critical.
- Considering the uncertain characteristic of pandemic influenza (severity, communicability, clinical behavior, geographical distribution, mainly-affected age group), it is necessary to have a committee that can flexibly respond to the evolving situation and make decisions based on latest information.

5 Home Care (Annex 1-4)

❍ The Need for Home Care

- Due to a sudden increase of patients during a pandemic, there may be a shortage of healthcare facilities and personnel. Therefore, patients with mild symptoms should be treated at home.
- Home care is encouraged because an increased flow of patients can cause nosocomial transmission, and also because the infection can spread further as patients travel to and from the hospital.

❍ Ensure Adequate Healthcare Service

- Effective home care requires assurance of proper healthcare service; prescription of basic medications, and transport to hospital when the patient's condition worsens

6 Resource Management

❍ For effective resource management, it is necessary to assess the number of doctors and health care workers, hospital and facilities, respirators and equipment, and other available medical resources. There must also be a plan for mobilizing or distributing these resources at each level.

- There must be a contingency plan for a situation where a large number of healthcare personnel or the family caretakers become infected, as this will cause a great shortage in available manpower and disrupt treatment.
- Establish a plan for mobilizing and training retired healthcare workers and volunteers.
- Assess the demand for antibiotics, various medical supplies, and protective equipment (PPE) and establish a plan to acquire them.

❍ Securing and Supplying Safe Blood during a Pandemic

- Advance planning is necessary, since the society-wide chaos during a pandemic may disrupt the supply of blood.

7 Develop Guidance for Patient Treatment, Patient Management, and Infection Control

❍ Develop in advance guidance for patient treatment, patient management, and infection control. Train concerned individuals in advance to ensure effective response during a pandemic. (Annex 1-3, 1-4, 1-5)

Ⅴ Vaccines and Antivirals

(1) Purpose and Goals

1 Purpose

❍ Provide guidance on the development, stockpiling, vaccination, and administration of vaccines and antiviral drugs, to minimize infection and deaths during a pandemic.

2 Goals

❍ Provide safe and effective vaccine program.
❍ Determine vaccination priority.
❍ Develop a plan for quick allocation, supply, and vaccination of priority groups.
❍ Provide guidance on antiviral drug use during a pandemic.
❍ Stock antiviral drug in case of pandemic and determine priority.
❍ Specify safety and other warnings to be provided when dispensing antiviral drugs.

(2) Vaccine

1 Seasonal Influenza Vaccine

A. Seasonal Influenza Vaccine: Efficacy and Composition

❍ Efficacy of Seasonal Influenza Vaccine
- Vaccination is the most effective means of prevention against influenza. When the vaccine and circulating viruses are antigenically well-matched, influenza vaccine prevents influenza illness among approximately 70%~90% of the vaccine recipients.

(The antibody remains effective for an average of 6 months: 3~12 months.)

- Most children and adults develop high post-vaccination antibody titers after vaccination. The elderly and high-risk groups tend to develop lower post-vaccination antibody titers, but still show lower hospitalization and mortality rate compared those not vaccinated.
- Contains transmission of virus.

❍ Composition of Trivalent Vaccine

- The vaccine is composed of virus strains the WHO recommends for that season.
- The seasonal influenza vaccine includes the three virus strains most likely to circulate during that year according to epidemic predictions.

❍ The Need to Increase Vaccination Coverage as Part of the Pandemic Response

- If an avian influenza outbreak occurs and infects a person already infected with a seasonal flu virus, a genetic recombination may occur. The result may be a new influenza with person-to-person transmission ability and spark an influenza pandemic.
- Seasonal influenza vaccination eliminates the chance for avian influenza virus to undergo an antigenic drift and acquire the ability to spread from person to person.
- Promoting seasonal influenza vaccination coverage will lead to expanded vaccine production capacity and establish the foundation for securing an adequate supply of the pandemic vaccine.

B. Seasonal Vaccine Supply Volume and Vaccination Coverage in Recent Years

❍ There are a total of 7 domestic companies which import bulk vaccine and package it into individual doses. (Approximately 15 million doses)

❍ Based on seasonal influenza vaccine sales, the vaccination coverage

up to '02~'03 period was about 19% of the population (8~10 million). During the '03~'04 period, about 31% (15 million) and during the '04~'05 period, about 34% (16 million) of the population were vaccinated.

- Based on the '04~'05 vaccination record, of those recommended for vaccination, 80% of over 65 group and 55% of individuals with chronic disease were vaccinated.

C. Vaccine Adverse Events Surveillance System

❍ Purpose of the surveillance

- Monitor frequency and tendency of vaccination adverse reactions.
- Should establish an acute surveillance system in preparation for a pandemic.

❍ Potential Adverse Events following Influenza Vaccination

- After vaccination, less than 1% may develop fever, fatigue, myalgia, headache, and other symptoms. Adverse reactions typically occur within 6 to 12 hours following vaccination and last for 1~2 days.
- Allergic reaction to the egg protein left over from the manufacturing process.
- Guillain-Barr-syndrome.

D. Vaccination Documentation and Record-keeping

❍ Vaccination documentation and record-keeping are carried out for all routine and "catch-up" vaccinations by Public Health Centers and other vaccination facilities.

❍ The recipient's individual's National ID Number is verified and recorded on the vaccination registry before vaccination.

2 Prepandemic Vaccine

❍ Several H5N1 vaccines have been developed from isolates collected in Vietnam and Indonesia in 2004 and are being produced using the

egg-based production method. The vaccines, however, are all in clinical trials and none has yet been approved.

❍ Cell-culture based H5N1 vaccines are being researched and developed, with plans for future production.

❍ Prepandemic H5N1 Vaccine Stockpile

- A stockpile of vaccine must be built during the Prepandemic Period, so that they can be used on first responders.

3 Pandemic Vaccine (Annex 1-8)

A. Pandemic Vaccine: Efficacy and Composition

❍ Efficacy of Pandemic Vaccine

- Vaccine is the most cost effective prevention and will be indispensable during a pandemic.
- Because the entire or most of the population may not have immunity against the virus causing the pandemic, two doses of vaccine may have to be administered. This will be known only after the pandemic starts.

❍ Pandemic Vaccine Composition

- During a pandemic, production of the current trivalent (3-strain) vaccines will cease and be replaced by production of monovalent (1-strain) vaccines consisting of the pandemic virus strain.

B. Pandemic Vaccine Production and Supply

❍ It will take about at least 4~6 months to produce a vaccine, since the pandemic vaccine can be produced only after the pandemic starts and a prototype virus has been acquired.

❍ Major influenza vaccine manufacturing companies are developing cell-culture-based vaccine as an alternative to egg-based vaccine.

- Current worldwide manufacturing capacity is around 300 million doses of vaccine, covering roughly 5% of the world population.
- Because the yield varies by prototype strain, it is impossible to

project the vaccine production volume.

❍ The Plan to Meet Vaccine Demand during a Pandemic

① Pursue Plans to Construct Domestic Vaccine Production Plants.

- It will be realistically impossible for a country lacking vaccine production facilities to meet the vaccine demand during a pandemic.
- The only way to ensure vaccine availability during a pandemic is to have domestic production facilities.

※ The Green Cross Corp. is pursuing the construction of a new vaccine production plant at Hwasun, South Jeolla Province. (To begin production in '09)

② Vaccine Supply Contracts

- It is possible to secure pandemic vaccine availability by signing supply contracts with vaccine manufacturers in conjunction with contracts for seasonal influenza vaccine.
- Due to unforeseen circumstances, such as low yield or contamination, it is advisable to sign contracts with multiple suppliers.

C. Pandemic Vaccine Use

❍ Vaccination Priority during a Pandemic

- A priority for vaccination must be established, as production volume will not be enough to vaccinate the entire population during the beginning stages, or throughout the pandemic.
- It is impossible to know which age group will have the highest incidence or mortality rate. Thus, a decision will have to be made after the pandemic starts considering the epidemiologic conditions.
- Pursuant to the Communicable Disease Prevention Act, vaccination priority will be determined by the Influenza Subcommittee of the Korea Advisory Committee on Immunization Practices.

D. Other Issues Related to Pandemic Vaccine

❍ Documentation and Record-keeping of Individuals Vaccinated with the Pandemic Vaccine

- A record keeping system is required, because individuals may need to be vaccinated twice.
- In case of a vaccine shortage, vaccination records are necessary to ensure that priority groups are vaccinated first.

❍ Monitoring for Adverse Events

- Vaccinated individuals should be monitored for adverse reactions, as there may not be sufficient time to fully prove the safety and efficacy of the vaccine during a pandemic.

❍ Amending Regulations to Permit Unlicensed Vaccine

- During a pandemic, due to the time lag involved in producing the vaccine, unlicensed vaccines may need to be used. Regulations must be amended to permit such practice.

※ Communicable Disease Prevention Act and Pharmaceutical Affairs Act must allow exceptions to permit use of unlicensed vaccine in special circumstances.

❍ Promote domestic development of vaccine, including H5N1 vaccine in order to build a domestic vaccine production base required during a pandemic.

(3) Antiviral Drugs

1 The Importance of Antiviral Drugs During a Pandemic

❍ Antiviral drugs are the most effective means of response at the early stages of a pandemic. In particular, oseltamivir (Tamiflu) is the most promising antiviral, both in terms of administering method and projected efficacy.

- For that reason, the stockpiling of Tamiflu and its planned use are an important part of pandemic preparedness planning in many

countries around the world.

❍ The preventive effects of antivirals are immediate. Especially in the beginning, until a pandemic vaccine is developed, antiviral drug is deemed the only effective treatment and preventive method.

- When antivirals are administered within 48 hours after onset of symptoms, it is effective in alleviating the symptoms or shortening the duration of the disease 70~80% of the time. Antiviral products also reduce hospitalizations and antibiotics uses. It is hoped that antiviral drugs also reduce the mortality rate as well.

❍ The effects of antivirals may substantially mitigate the impact of a pandemic influenza on public health, society and economy. Therefore, countries are including stockpiling of antiviral drugs in their pandemic preparedness plans.

2 Use of Antiviral Drug During an Influenza Pandemic (Annex 1-9)

A. Purpose of Using Antiviral Drugs

① Routine Prophylaxis

- Due to high costs, seasonal prophylaxis is not recommended during a pandemic. Antiviral drugs may be used by medical staff, patient's family, and laboratory researchers in case of close contact, with an infected patient or specimen.

② Post-Exposure Prophylaxis

- In case of close contact with an infected patient or specimen, 75 mg of oseltamivir (Tamiflu) may be administered for 7 days. It may be administered for 10~21 days if using for the purpose of preventing mass infection in closed setting.

③ Treatment of Confirmed Patients

- The goal is to administer twice a day for five days within 48 hours of initial symptoms.

④ Prophylaxis of High-risk Groups

- Conduct prophylaxis of workers involved in Phase III disease control activities, including cullers.

⑤ Prophylaxis for Pandemic Prevention

- Conduct prophylaxis during the Pandemic Alert Period (Phases 4,5) or the early stages of Phase 6 to prevent or contain spread of the virus.

B. Stockpiling Antiviral Drugs During a Pandemic

❍ The decision to stockpile antiviral drugs for a pandemic depends on the estimated impact of a pandemic and benefits of stockpiling.

- The cost-benefit analysis shows that antiviral drugs may be beneficial if it is used based on a pre-set priority, such as a priority for high risk groups.
- Countries around the world consider antiviral drug stockpiling and use priority as an important issue.

❍ The most ideal antiviral drug to stock is Tamiflu, a neuraminidase inhibitor that is simple to take and has a clear chemoprophylactic effect. Relenza may be considered as an alternative substitute.

C. Domestic Antiviral Drug Use Priority

❍ During a pandemic, it may be impossible to stock a sufficient amount of antiviral drugs to meet demand. Therefore, in order to use the antiviral drugs in the most cost-effective manner, drugs should be used based on prioritization.

❍ Pre-establish guidance for using, distributing, and transporting antiviral drugs during a pandemic. This will maximize resources and prevent social chaos and panic.

D. Important Issues Related to Antiviral Use

❍ Advance preparation is needed to safely store, distribute, and

administer antiviral drugs that are in short supply.

- If necessary, police or military force should be mobilized to guarantee safety.

❍ Ethical Issues of Administering Antiviral Drug

- If there are only enough antiviral drugs to administer to some of the patients, prioritization of recipients may raise ethical considerations.
- Close oversight is required to prevent individuals with access to the antiviral drugs, such as those responsible for storage or medical personnel, from taking advantage of their positions.

Ⅵ Public Health Measures

(1) Purpose and Goals

1 Purpose

❍ Develop public health measures to be implemented in order to contain or minimize the spread of the pandemic in local communities.

2 Goals

❍ Establish public health measures such as quarantine, isolation, restriction of social activities, etc.

❍ For each public health measure, define specifics, such as the scope of application and measures to be taken at phase.

(2) Overview

1 Scope of Public Health Measures

❍ Public health measures are designed to prevent the spread of the influenza virus. Measures include management of suspect cases and contacts, school closures, restriction on public gatherings, social distancing within the local community, travel restrictions, and quarantine measures.

- Public health measures on a personal level are the following: patient management, tracing contacts, preventive measures at the personal level of individuals exposed to the virus (annual influenza vaccination, personal protective equipment (PPE), cough etiquette, hand washing, voluntary home quarantine in case of infection), and limiting social activities.
- Important decisions related to the local community's effort to

contain infection, such as school closures, restrictions on public gatherings and other social distancing measures, must be aimed at minimizing the spread of influenza.

❍ It is difficult to accurately assess which public health measures will be effective in the early stages of a pandemic when the epidemiologic characteristics of the virus are yet to be known. Nevertheless, the public health measures and the underlying principles should continue to subject to planning and evaluation in line with each phase of the pandemic.

- Public health measures will depend on the characteristics of the particular virus such as the incubation period, transmission modalities, infectivity, pathogenicity, and antiviral susceptibility.

2 Public Health Measures by Pandemic Phase

A. Interpandemic Period (Phases 1, 2)

❍ Establish principles and guidance for epidemiologic investigations such as patient management in different phases, tracing contacts, etc.

❍ Establish standards and guidance for implementing measures such as restrictions on public gatherings and school closures.

❍ Establish standards for travel restrictions and quarantine.

❍ Prepare public health education materials for protection at the personal level.

❍ Prepare a manual for efficient implementation of public health measures.

❍ Prepare infection control guidelines to minimize transmission in the community.

B. Pandemic Alert Period (Phases 3-5)

❍ In order for public health measures to be effective, active and drastic measures must be taken during the Pandemic Alert Period.

❍ It is especially critical to dispatch Rapid Response Teams as soon a suspect case is identified during Phase 4 and 5, thereby detecting and controlling the case as soon as possible and tracing all contacts to actively contain the spread of the virus.

❍ In case of pandemic overseas, strengthen border control and travel restrictions. (Annex 1-12)

❍ During phase 4 and 5, when clusters are occurring in the country, it is possible to try and contain the pandemic with the affected area containment measures and prophylactic administration of antivirals, as long as the affected area is limited, the infection did not spread to adjacent areas, and the infectivity of the virus is sufficiently low.

C. Pandemic Period (Phase 6)

❍ During a pandemic, many individuals are already infected. Therefore, there is a need to reinforce education on action guidelines, such as avoiding public gatherings and maintaining personal hygiene for protection.

❍ Basic Action Guidelines Include the Following

- When ill or with fever, do not go to school, work, or other places of public gathering.
- Refrain from unnecessary travel.
- Avoid places where a large crowd gathers.
- Thoroughly wash hands frequently.
- Follow cough etiquette when coughing or sneezing. (Annex 1-10)
- Maintain a clean and disinfected environment.

❍ Get immunized if a pandemic vaccine has been developed and is available

3 Rapid Response Team Operation (Annex 1-11)

❍ Operate a Rapid Response Team during the early stages of the

pandemic in order to immediately respond to possible influenza cases.

❍ The team will quickly assess the situation on hand and report to KCDC. At the site, the team conducts epidemiologic investigations and patient management.

(3) Patient Management

1 Purpose of Patient Management

❍ Conduct immediate epidemiologic investigations and public health measures on patients reported to public health authorities.

- Inform the reported patients on what they need to do in order to prevent the spread of the disease.

❍ Contain or delay the spread of the virus.

❍ Establish an information system for reporting, filing and managing the information of patients meeting the criteria for surveillance.

2 Patient Management by Pandemic Phase

A. Phase 3: Rare and Sporadic Cases in the Country

❍ Strengthen surveillance to detect patients with influenza-like-illness (ILI).

❍ Perform epidemiologic investigation, specimen collection, and laboratory diagnosis on identified patients.

❍ Isolate the patient from other patients in the hospital.

❍ Provide treatment, including antiviral administration, within 48 hours of the onset of illness.

- Monitor for clinical progress and adverse reactions after administering antiviral drugs. Evaluate antiviral susceptibility of the virus.

B. Phases 4 and 5: Domestic Outbreak in Clusters

❍ Implement the Phase 3 patient management measures above.

❍ Aggressively track down contacts and isolate them at home.

- In case of home isolation, educate the family about infection control guidelines within the family and what to do in case of infection.

❍ Strengthen infection control at hospitals.

❍ Adjust the isolation period according to the epidemiologic characteristics of the pandemic virus.

C. Phase 6: Outbreak among the General Population

❍ Change surveillance activity from reporting individual cases to measuring the individual case's impact on the pandemic.

- Daily number of hospitalizations, deaths, and local incidence level.

❍ Change from individual patient measures to public health measures and education.

- Provide information on voluntary home isolation care, and on how to utilize healthcare services and limited resources.

❍ Isolation period is adjusted according to the epidemiologic characteristics of the pandemic virus and the individual patient's conditions.

❍ Public outreach and communication are needed during Phase 6, as antiviral drugs are allocated first to priority groups.

D. Post Pandemic

❍ Gradually shift to socio-psychological response activities targeting patients, the deceased, and their families.

3 Voluntary Home Isolation and Care

❍ During a pandemic, symptomatic persons should receive treatment at home and avoid public places such as school, work, and other places of public gathering.

(4) Management of Contacts[1)]

1 Overview

❍ Prevent or delay the spread of the virus by tracing contacts and taking appropriate measures before they acquire infectivity.

- Provide information to the contact on how to minimize contact with the virus in the future.
- Management of contacts is important during the Interpandemic Period, however, it will not be conducted during the Pandemic Period.

2 Management of the Exposed in Each Pandemic Phase

A. Common Management Issue

❍ All healthcare workers coming into contact with patients must abide by the infection control guidelines.

❍ Inform every exposed individual about hand and personal hygiene measures. Also provide information about influenza symptoms, measures to take when symptoms occur, and activities to avoid.

❍ If the exposed individual shows symptoms within the incubation period after the last contact, handle according to patient criteria.

❍ If necessary, antiviral drugs may be used after exposure as a prophylaxis during the interpandemic or Pandemic Alert Period.

B. Phase 1 and 2: When There is Outbreak among Animals, but None among Humans

❍ During this period, people coming into close contact with animals

1) Contacts refer to coming within 1 meter of the patient and having more than a face-to-face conversation, as long as the epidemiologic characteristics of the pandemic virus remain the same.

must be managed. Refer to the "Avian Influenza Human Infection Prevention and Guidelines (KCDC 2004)" during this period.

C. Phase 3: Rare and Sporadic Cases in the Country

❍ Track every individual exposed to patients and monitor them for symptoms for the duration of the longest incubation period.

- Exposed individuals may be restricted in their activities. Furthermore, even if the exposed individuals do not report symptoms themselves, actively check for symptoms on the 2nd and 5th day after exposure. If necessary, the monitoring period may be extended.

❍ Because human-to-human transmission has not yet occurred, exposed individuals or family members will not be administered an antiviral drug as a prophylactic measure.

- If human-to-human transmission is deemed possible, however, administer antiviral drugs.

❍ Conduct seasonal influenza vaccination

D. Phases 4 and 5: Domestic Outbreak in Clusters

❍ Track every individual exposed to patients and actively monitor them for symptoms for the duration of the longest incubation period.

- Include not only those personally exposed to patients, but also conduct an exposure evaluation at the location (e.g., school or workplace) and conduct proactive surveillance.
- During the incubation period, restrict activities of the exposed individuals and forbid contact with others.

❍ Even if the exposed individuals do not report symptoms themselves, actively check for symptoms on the 2nd and 5th day after exposure.

- Provide education on self-monitoring and give the number for immediate contact if symptoms occur.

❍ If drug resistance is not an issue, administer antiviral drugs after exposure.

- If there is a high possibility for upscaling to Phase 6 where there is outbreak among the general population, then stop administering antiviral drugs to contacts, but follow the antiviral administration priority applicable in Phase 6.

❍ Implement seasonal influenza vaccination.

E. Phase 6: Domestic Outbreak among the General Population

❍ Educate exposed individuals on self-monitoring for symptoms and activity restriction, but no active monitoring.

❍ Administer antiviral drugs according to Phase 6 priority.

F. Post-Pandemic Period

❍ Evaluate the effectiveness of managing contacts.

(5) Border Control

1 Purpose of Border Control against Pandemic Influenza

❍ Prevent Import of a Pandemic Influenza

- If a pandemic influenza breaks out overseas in a scale above a small cluster with human-to-human transmission, or is in the early stages of a pandemic with no domestic cases being reported, prevent introduction by screening inbound travelers.

❍ Prevent Export of a Pandemic Influenza

- In case of a domestic outbreak of a pandemic influenza in small clusters with human-to-human transmission or if a pandemic has started, prevent transmission to outside the country by screening outbound travelers.

※ WHO recommends exit screening for efficient resource management during phases 4 and 5 or during a pandemic (phase 6)

❍ Delay introduction and Retard Spread

- When a pandemic breaks out overseas due to a novel influenza virus strain, prevent transmission into the country or delay domestic spread through border control.

※ Quarantine stations should set early detection and quick evacuation as the goals.

※ Once a pandemic starts and spreads through the community, quarantine will be meaningless. Therefore, quarantine will only be effective during WHO Phases 4, 5, and the early stages of Phase 6.

2 Quarantine Station: Response Activities during Pandemic

A. Definition of Pandemic Influenza Suspect Case

❍ Definition of a suspect case of pandemic influenza applies after the onset of the pandemic and will reflect the epidemiologic characteristics of the influenza

❍ The Current Definition of a Pandemic Influenza Suspect Case at Quarantine Stations (WHO Phase 3)

① Meets the following clinical criteria

- Fever above 38℃
- Influenza-like-illness (ILI); pain in the pharynx, coughing, difficulty breathing

② Also has one of the following epidemiologic connections

- Direct contact with sick poultry at an avian influenza outbreak zone.
- Close contact with confirmed or suspect patient in an avian influenza outbreak region.

※ Direct Contact

- Directly touching the poultry
- Touching the poultry's waste or ground polluted with the waste.
- Consuming uncooked poultry or poultry by-product.
- Contact with confirmed or suspected patient within 1 meter.

B. Response Activities during Phase 3

❍ Collect quarantine questionnaires from travelers arriving from high-risk regions.

❍ Inform travelers arriving from high-risk regions of the proper measures to take if symptoms occur.

❍ Handling of Suspect Case upon Border Entry

- Airport
  - ▪ Provide surgical mask to the influenza suspect patients to minimize the possibility of respiratory transmission.
  - ▪ Diagnose and confirm at the airport clinic.
  - ▪ If a potential suspect case is detected, report to KCDC.
  - ▪ Enter as suspect case in the Epi-trace system
- KCDC
  - ▪ Notify, through the city and provincial authorities, the Public Health Center of the patient's residential district area
- Public Health Centers (PHC)
  - ▪ Isolation is not needed. If possible, recommend staying at home.
  - ▪ Follow up a suspect case with a phone call after 5 days. If there are no additional cases among people close to the patient, no other action is necessary.
  - ▪ If additional cases occur, report to KCDC through the city or province.
  - ▪ If a new patient emerges among those that come in contact with the patient, immediately hospitalize the patient and start home isolation of the contacts.

C. Response Activities during Human-to-Human Transmission Overseas (Phase 4 and 5)

❍ Definition of a Suspect Case

- Change the standard to reflect the epidemiologic situation.

※ Especially, because human transmissibility has increased, the definition

must be expanded to include not only those coming into direct contact with poultry or close contact with patients, but also visitors to the area where human-to-human transmission occurred.

❍ Quarantine

- Entry Screening Method
  - ▪ Conduct a thermal screening on inbound travelers, and have them fill out and submit quarantine questionnaires.
- Personal Protective Equipments (PPEs) for quarantine workers
  - ▪ Once a report on a suspect case is received, the quarantine officer and epidemiologic investigator should interface the patient after wearing a protective gear.
  - ▪ When contacting suspect cases after receiving a report, quarantine officials and epidemiologists should wear personal protective gears.

  ※ PPEs include N-95 mask, goggle, gown, hat, and gloves.
- During this phase, individuals must wear personal protective gear during even routine quarantine process.

  ※ There will be some discretion allowed in the level of protective gear to be worn during the pandemic phases,

❍ Measures to Take upon Detection of a Suspect Case

- Upon the discovery of a suspect case of avian influenza(AI), immediately commence epidemiologic investigation to verify whether the case meets clinical and epidemiologic criteria.
- If the suspect case meets all clinical and epidemiologic criteria, put N-95 mask on the patient and immediately place the patient in temporary isolation until transported to a designated.
- Transport Process
  - ▪ Upon arrival of a suspect case of avian influenza, immediately quarantine to first cut off contact with other people.
  - ▪ Leave the patient in isolation and let an official handle immigration and customs on behalf of the patient.
  - ▪ During patient transport, temporarily evacuate areas where the

patient has to pass, such as immigrations and customs area

▪ If temporary evacuation is impossible due to large number of passengers, transport the patient through the apron.

▪ Immigration and customs officials positioned in patient transport path should wear N-95 masks. Furthermore, identify the officials to track and monitor them for 10 days. (Or provide on-site education so that the officials will immediately report to a quarantine station in case of fever or symptoms.)

❍ Management of Contacts

- Forward the list of contacts to KCDC by checking the seat assignment. The local Public Health Centers shall track and monitor the individuals.

3 Operating Temporary Isolation Rooms during Phase 4 and Above

❍ When keeping suspect AI case in a temporary isolation room, first stop the ventilation of the room.

- At the entrance of the temporary isolation room, place personal protective gears and waste collection bin. Individuals should put on the personal protective equipment(PPE) before entering the temporary isolation room. After caring for the patient, individuals exit the room and dispose the protective gears in the waste bin before leaving.
- Provide a separate restroom for suspect cases.
- Prepare a waiting area in front of the temporary isolation room for guardians so that they can stay there until patient is transported.

❍ After transporting the suspect case, get support from KCDC and follow KCDC guidelines to disinfect and ventilate the site.

4 Handling Suspect Cases on Board (the Airplane)

❍ Make sure that the suspect case maintains a minimum of 1 meter distance with other passengers.

- Provide a mask or handkerchief to prevent viral transmission via respiratory secretions.
- If wearing a mask is not feasible due to severe breathing difficulties, prevent airborne transmission by at least covering sneezing or coughing with a handkerchief.

❍ Wear gloves when coming into direct contact with a suspect case.

- Always wear a mask when coming within 1 meter from the suspect case.
- The flight captain must report the suspect case to the quarantine station before landing.

❍ Upon receiving the report from the captain, quarantine officials shall immediately contact an epidemiologist to check whether the suspect case meets the clinical and epidemiologic criteria. Officials shall also inform the captain and crew of the measures that need to be taken to prevent the spread of infection.

❍ Upon receiving a report of a suspect case on the flight, the airport quarantine station shall immediately report to KCDC.

(6) Infectious Disease Control at the Local Community Level

1 Schools and Childcare Facilities

❍ Influenza morbidity is high among school-age children who can also easily transmit the disease to others. Therefore, temporary school closures may be considered.

- Such a measure may retard the spread of the influenza in the local community.
- Measures regarding schools are needed during the early stages of Phase 6. The measures may vary depending on the epidemiologic characteristics of the disease and other conditions.

❍ Temporary closures of schools or kindergartens will increase the childcare burden on parents. This could, in turn, affect economic

activities, so planning must also include measures to address the economic impact.

❍ Schools must develop guideline for how to respond a pandemic influenza and other emergency situations.

❍ Provincial/city Education Offices and the Ministry of Education & Human Resource Development (MOEHRD) must establish a response and preparedness plan, provide guidance to schools in the event of an influenza pandemic, and help schools make timely decisions.

2 Restricting and Refraining from Public Activities

❍ Public activities that involve large crowds promote the spread of infectious disease need to be restricted.

❍ Large-scale public activities, such as sporting events, theatre, and large-scale symposia and exhibitions, need to be restricted.

- The extent and timing of these restrictions on public activities should be determined by reaching an agreement through consultations between the stakeholders and local public health authorities.
- Measures to minimize transmission are also necessary for activities such as weddings, funerals, and religious gatherings.
- Restriction of public activities depends on the epidemiologic characteristics of the pandemic virus. If the restriction does not appear to clearly have the intended effect, the restriction may be lifted or applied only to a certain age-group or class.

❍ Provide the following guidance on the restrictions of public activities and social contact during a Pandemic Period.

- Refrain from unnecessary home visits or invitations.
- Cancel or postpone family gatherings or group travel.
- Avoid unnecessary handshake or greeting with strangers.
- Stock enough basic supplies to last for about 4 weeks in order to minimize shopping trips and be prepared for an emergency.

- Minimize contact with others (e.g., phone calls instead of direct contact, ATM instead of bank visits, etc.)
- Rather than using public transportation in rush hours, set up flexible workings hours or work at home if possible.
- Walk to places within walking distance.
- Pack a lunch for work instead of going to public restaurants.
- Instead of face-to-face meetings, use the phone, video conference or email.
- When conversing with strangers, maintain a 1 meter distance.

3 Other Public Health Measures Regarding Social Restrictions

A. Distribute and Use Masks

❍ There is no clear evidence that using a regular mask prevents influenza infection.

- Symptomatic individuals should wear a surgical mask and adhere to cough etiquette.
- Healthcare personnel working face-to-face with patients should wear N-95 masks or surgical masks for protection.

❍ There is no clear evidence that wearing a mask reduces infection for ordinary people.

B. Other Considerations

❍ Unless special circumstances arise, closure of organizations other than schools and dormitories will not be considered.

(7) Public Health Information Management

1 The Need to Manage Public Health Information

❍ During an influenza pandemic, the progress of the pandemic may change by the hour.

- A pandemic has a large impact on various sectors of society. Therefore, it is necessary to have an information system that covers the entire situation in order to effectively control the situation.

❍ A central situation room and analysis system are needed in order to combine and manage the existing communicable disease information system and the additional information system required during a pandemic.

- This set-up will provide the information and data needed for effective resource distribution, monitoring and verification, projection of future pandemic progression, and prioritization of decision-making.

2 Use of Public Health Information

A. Development and Use of a Public Health Information Network in Preparation for a Pandemic

❍ Information System for Healthcare Resource Distribution

- An information system is needed to manage and assess the status and management of resources in extreme short supply during a pandemic. Such resources include medical personnel, hospital beds, ICUs, antiviral drugs.
- A database and information management system covering all pandemic response workers and volunteers is needed.
- An information system is needed to adequately track the recipients, confirm safety, and monitor adverse events of antiviral drugs and vaccines.

❍ Post-documentation of Emergency Response Activities

- During the Pandemic Alert Period, when a suspect case is reported, a Rapid Response Team team will be dispatched. Upon dispatch, the team will take care of the patient and contacts, and enter the results of epidemiologic investigations and specimen test of the

patient and contacts into a database.

- Such information is vital for the identification of the link between outbreak clusters, the risk factors, and the epidemiologic characteristics of the virus. The information will also be the underlying evidence for taking public health measures during the Pandemic Period.

❍ Patient and Mortality Monitoring System

- A system that links to hospital data and produces data on patient surge, critically ill patients, and influenza fatalities.
- Design the system to enable fast and simply-formatted reporting so that the central situation room can identify the number of patients and deaths on a daily basis.
- The information regarding healthcare resources and projection of future pandemic progression will be the underlying evidence for key decisions by the central government.

B. Utilizing the Existing Communicable Disease Information System

❍ Continue to operate the existing notifiable infectious disease surveillance system, syndromic surveillance system, emergency room-based surveillance system, and sentinel surveillance system. The information produced from the various systems will be combined and analyzed.

Ⅶ Education and Research

(1) Education and Research

1 Purpose

❍ Educate and train public healthcare workers, healthcare service professionals, and workers at public health authorities and related civil organizations. The training is to foster understanding of the pandemic influenza and the response guidelines for proper execution of response activities.

2 Goal

❍ Select the individuals to be educated and trained for pandemic preparedness and response. Detail the necessary information for each phase of the pandemic.

3 Education Target and Information for Each Phase

A. Interpandemic Period (Phase 1 and 2)

❍ Evaluate the information that the healthcare facilities and workers need on each subject. The subjects are pandemic surveillance, report, diagnosis, transmission, exposure management, personal protective gear, and isolation and quarantine.

❍ Develop education material to be provided to health care organization personnel

- Pandemic influenza preparation and response guideline
- Clinical and laboratory diagnosis method
- Planning for treatment, and for possible shortage of hospital beds, and vaccine, antiviral drugs during treatment
- Infection control
- Isolation and quarantine guidelines

- Addressing the social stigma of patients
- Travel restrictions
- Legal issues
- Socio-psychological issues for responders in various sectors
- The roles and responsibilities of relevant organizations

❍ Compile and update constantly-changing pandemic information and provide to necessary agencies and organizations.

❍ Continuously educate healthcare facilities and partners in the local community about pandemic influenza guidelines and related information.

❍ Promote response capabilities through tabletop exercises

B. Pandemic Alert Period (Phase 3 and 4)

❍ Identify education target groups and prepare education materials. Start ongoing distribution of updated information including new virus infections to concerned individuals.

- Concerned individuals are doctors, dentists, doctors of oriental medicine, and nurses. Also include healthcare professional organizations, hospital organizations, association of practicing physicians, medical facilities organizations, as well as Public Health Centers and institutions related health and wellness.

❍ In the education materials distributed during this time, include the most up-to-date information on the following:

- Guidance for surveillance of and reporting criteria for novel virus infections
- The difference between avian influenza and influenza strains with pandemic potential
- Infection containment plans
- Patient management plans
- Community containment measures
- Travel advisory and precautions
- Prioritization rules for vaccine and antiviral administration

❍ Consider and use various methods to distribute education materials to public healthcare workers and healthcare service providers (e.g., long-distance meeting, mass e-mail, web seminar, video conference).

- Plan and hold regular education and training programs for preparedness against pandemic influenza
- Identify education targets at local levels (city/province, city/county/ward levels). Distribute education materials prepared by the central government.

❍ Evaluate state of preparedness and improve response capability through tabletop exercises.

❍ Provide education on patient management programs and surveillance programs during a pandemic

C. Pandemic Period (Phase 6)

❍ Strengthen education for pandemic preparedness planning

❍ Evaluate effectiveness of the response measures of public healthcare organizations and healthcare service providers, and provide feed-back education.

❍ Continue to provide accurate information on the situation and communicate guidance

D. Post-Pandemic Period

❍ Social and psychological rehabilitation for the victims and their families

❍ Investigate and provide counseling to address any social stigma

❍ Education for various organizations on their roles, and guidance on social reconstruction

❍ Guidance on psychological counseling for patients and their families.

(2) Tabletop Exercise

1 Purpose

❍ To ensure that the response guidelines are well understood and can be effectively executed by all personnel and organizations involved. This is done by preparing certain scenarios, assessing preparedness and response capabilities, and providing education and training in the process.

2 Goals

❍ Assess current and potential problems through the exercise (e.g., budget, regulations, or resource management). Promptly address the problem through policy measures.

❍ Improve avian influenza response capability of cities/provinces and relevant ministries/agencies.

- Assess and improve on-site response capability of medical facilities and Public Health Centers.

❍ Prepare an Avian Influenza Risk Management Manual.

❍ Establish a framework for international collaboration

3 Exercise Plan

❍ Frequency: Once a year

❍ Organizing Agency: KCDC

❍ Participants

- Avian influenza risk management exercise (tabletop and field exercises): approximately 300 people
- KCDC, 16 city and provincial Public Health Centers and officials at relevant government agencies, experts, etc.
- Related Agencies (17): NSC Secretariat, Office for Government Policy Coordination, Emergency Planning Commission, Ministry of Planning and Budget (MOPB), Government Information Agency, Ministry of Education and Human Resources Development

(MEHRD), Ministry of Foreign Affairs and Trade (MOFAT), Ministry of National Defense (MND), Ministry of Government Administration and Home Affairs (MOGAHA), Ministry of Agriculture and Forestry (MOAF), Ministry of Health and Welfare (MOHW), Ministry of Labor (MOL), National Police Agency (NPA) National Emergency Management Agency (NEMA), Armed Forces Medical Command (AFMC), National Veterinary Research & Quarantine Service (NVRQS), National Medical Center (NMC), etc.

❍ Key Points

- Evaluate and strengthen the government's ability to make timely decisions at times of crisis.
- Evaluate and strengthen the government's response capability during a crisis.
- Evaluate and strengthen cooperation of relevant ministries/agencies during a crisis.

(3) Research and Application

1 Purpose

❍ Establish an influenza pandemic preparedness and response system. Uncover and prioritize long and short term projects.

2 Goal

❍ Collect research materials, develop resources, and identify and support basic research projects in order to resolve specific problems in the different areas of response, such as including command and control, information sharing and risk communication, surveillance and diagnosis, healthcare services, antiviral drugs and pandemic vaccination, and public health management guidance.

3 Examples of Research Projects in Different Areas of Response

❍ Pandemic Situation Control and Management

- Study the conditions and impact of past pandemics, gather or generate data, and develop methods (e.g., simulation) to project future impacts.
- Promote long-term research on public health approaches to national disaster management, and research on public health emergency management.
- Train and develop personnel directly involved in pandemic situation control.
- Set up and operate public health emergency response situation room.

❍ Information Sharing and Risk Communication

- Effective distribution of the latest pandemic information and information analysis.
- Develop detailed crisis communication messages for different stages and situations
- Develop a method for effective risk communication.

❍ Surveillance and Diagnosis

- Ecological studies on the mechanisms of influenza virus pandemics.
- A plan to strengthen surveillance of birds and animals.
- Develop electronic surveillance system for assessing pandemic influenza patients, outpatients, ICU admissions, deaths, etc.
- Perform antigenic and molecular epidemiologic analysis of the novel influenza strain, and conduct studies on its infectivity and pathogenicity.

❍ Healthcare Services

- Effectiveness and characteristics of patient triage in the early stages
- Ways to procure isolation beds to quarantine patients in the early stages.
- Develop criteria and guidance material for patient triage and cohorting.

- Ways to actively protect healthcare workers to efficiently control infection during a pandemic.
- Securing extra space to add beds during a patient surge, and applicable facility standards
- Securing extra ICUs during a surge in intensive care patients, and applicable facility standards
- Ways to make hospitals and hospital organizations to proactively initiate and execute influenza preparedness plans.
- Develop effective educational materials on and methods to provide guidance for healthcare professionals during a pandemic

❍ Antiviral Drugs and Pandemic Vaccination

- Cost-effect analysis of stockpiling antiviral drugs. Review priority.
- Evaluate stockpiling and use of Relenza, and antiviral drugs for injection during a pandemic.
- Establish a system for tracking drug distribution, and monitoring drug safety and resistance during a pandemic.
- Long-term research for pandemic vaccine development.
- Secure pandemic vaccine manufacturing infrastructure.
- Study feasibility of pandemic preparedness plan for using streptococcus pneumonia vaccine.
- Investigate the immunity level against the circulating virus strain. Establish a system to conduct mass immunization in a short period of time, and to assess the effectiveness and safety of the vaccine.

❍ Public Health Management Guidance

- How to build and run a public health information system in preparation for a pandemic.
- Creating a database of the information on the epidemiologic investigations on and specimen collected from first responders during a Pandemic Alert Period.
- Connect emergency room-based syndromic surveillance system, hospital infection surveillance system, and the electronic surveillance system on infectious disease with the public health

information system for pandemic preparedness.

- Home isolation standards and methods
- Conditions and ways for enabling continued economic activity during a pandemic
- Ways to effectively control infection at the local community level
- Post-pandemic stress management for local communities and individuals.
- Socio-psychological approach to disasters

❍ Education and Research

- Develop phase and group-specific educational materials and methods.
- Support research projects with high priority.

Ⅲ Response Plan by Pandemic Phase

Table11. Response Actions by Area During WHO Pandemic Phases

WHO Pandemic Phases	Response Plan by Component
Phase1~3A	☐ Command and Control ○ Focus – Establish/enhance the Command and Control Structure for Pandemic Preparedness ○ Response Actions – Create and operate a Pandemic Advisory Committee (PAC) – Establish/align response systems at different levels – Central government level – MOHW level – KCDC level – National Infectious Disease Control System – Activate the Avian Influenza (AI) Surveillance Program (Ministry of Agriculture and Forestry, MOAF) – Establish the Joint AI Response System: MOAF, MOHW
	☐ Information Sharing and Communications ○ Focus – Set up an information sharing and communications framework for pandemic response ○ Response Actions – Set up an information sharing and communications framework for pandemic response – Overseas: Inter-governmental hot-lines; WHO/OIE/FAO etc.: Korean embassies and consulates – Emergency response organizations in central and local governments – Public outreach programs and media communications – Medical, academic and other professional groups/organizations – Monitoring the state of new AI cases in foreign countries – Monitoring new AI cases overseas (KCDC)

WHO Pandemic Phases	Response Plan by Component
	− Information sharing on new AI cases overseas − Relevant organizations in central and local governments − Medical, academic and other professional groups/organizations − Inform public and media on foreign AI cases − Inform outbound travelers and Koreans residing in foreign countries about new AI cases − Formulate public communication messages for each of the pandemic phases
	□ Surveillance <Clinical Surveillance> ○ Focus − Early detection of patients affected by influenza pandemic ○ Response Actions − Maintain ongoing monitoring of sentinel influenza surveillance − Educate physicians and public healthcare workers participating in clinical surveillance − Detect large−scale or severe cases of respiratory infection − Surveillance of overseas travelers arriving from AI affected areas in order to detect respiratory illness
	<Laboratory Surveillance> ○ Focus − Acquiring the laboratory capacity enabling an early detection of emerging novel influenza strains, and strengthening international collaboration ○ Response Actions − Ongoing laboratory surveillance − Enhance diagnostic capabilities, including development of diagnostic methods − Establish system for diagnosing human infection of novel virus subtypes. Educate relevant personnel and provide reference reagent − Develop/disseminate guidelines on biosafety − Control the quality of city and provincial of Public Health and

WHO Pandemic Phases	Response Plan by Component
	Environment Research Institutes (PHERI) and provide staff education and training. – Conduct antiviral susceptibility tests – Examine vaccine efficacy and conduct serological survey – Participate in the WHO Global Surveillance Programme – Plan for increases in specimen during the Pandemic Alert and the Pandemic Periods – Conduct laboratory surveillance of birds (MOAF) – Participate in the WHO Global Surveillance system – Plan for pandemic alert period and for increases in specimen during pandemic period – Conduct laboratory surveillance of birds (MOAF)
	□ Healthcare Response ○ Focus – Preparedness to provide adequate healthcare services during a pandemic – Provision of appropriate healthcare services to imported cases ○ Response Actions – Establish/review/enhance plan for assessing and deploying healthcare resources during a pandemic – Develop protocols/guidelines and staff training programs covering patient treatment, infection control, patient management, and disposal of deceased victims. – Designate isolation hospitals and educate staff – Continue to expand the number of qualified isolation facilities – Review/improve pandemic preparedness of isolation hospitals – Establish/assess hospitals' pandemic response plans – Establish/evaluate hospitals' plans to address a patient surge during a pandemic
	□ Antiviral Drugs ○ Focus – Establish/refine plan for the stockpiling and use of antiviral drugs ○ Response Actions

WHO Pandemic Phases	Response Plan by Component
	− Establish/refine plan for the stockpiling and use of antiviral drugs − Use additional data to reassess and refine plan for antiviral drugs use − When necessary, establish and execute plan for stockpiling antiviral drugs − Evaluate/improve guideline for antiviral administration − Provide antiviral drugs for treatment of patients and prophylaxis of contacts − Review/improve plans for storing, transporting and distributing antiviral drugs
	□ Vaccine ○ Focus − Improve seasonal influenza vaccination rate of high−risk groups − Procure vaccine, and build infrastructure for vaccination during a pandemic ○ Response Actions − Improve seasonal influenza vaccination coverage of high−risk groups − Establish/execute plan for supplying and administering seasonal influenza vaccine − Initiatives to build domestic vaccine production facilities − Establish/evaluate/execute plan for the acquisition and administration of vaccine during a pandemic − Prioritize target groups for vaccination in a pandemic − Vaccine research & development − Acquire vaccine prototype virus
	□ Public Health Measures <Quarantine> ○ Focus − Establish quarantine system to prepare for influenza pandemic. Prevent border entry of avian influenza patients ○ Response Actions

WHO Pandemic Phases	Response Plan by Component
	− Establish quarantine plans − Educate quarantine professionals − Introduce Epi−trace system for tracking foreign arrivals and managing a large number of patients − Screen travelers arriving from high−risk regions − Educate travelers destined to and arriving from high−risk regions on how to prevent infection − Take appropriate measure when a suspect case is detected among travelers originating from high−risk regions (Transport suspect case to isolation hospital, provide in−patient treatment, track and investigate contacts) − Strengthen quarantine against imported poultry or birds from affected areas (MOAF) <Other Measures> ○ Focus − Establish plan to provide necessary public healthcare during a pandemic ○ Response Actions − Review and revise guidelines for conducting epidemiological investigation and isolating imported cases. − Review and improve plans for social distancing, i.e., school closures and restriction of public gatherings − Conduct public education campaigns for infection prevention (e.g., promote hand washing, cough etiquette, etc.) − Acquire and provide necessary supplies for public campaigns (e.g., supplies for hand washing) − At the local community level, isolate imported cases as soon as they are identified; investigate contact
	□ Education and Research ○ Focus − Assess/provide the education and research required for pandemic preparedness

WHO Pandemic Phases	Response Plan by Component
	○ Response Actions – Identify areas for education – Plan education programs that are specific to different target groups – Enhance response capabilities by conducting pandemic preparedness tabletop exercises; revise guidelines – Develop and utilize group-specific educational materials – Assess research requirements for pandemic preparedness; design and implement research plans
Phase 3B	□ Command and Control ○ Focus – Eradicate AI in the country and prevent cases of (human) infection – Check and activate the Command and Control Structure for Pandemic Preparedness ○ Response Actions – Pandemic Advisory Committee (PAC) is operative – Participate in the AI Joint Response System – Full-scope expansion of activities by the Center for Communicable Disease Surveillance and Response (in KCDC) – Partially activate the National Infectious Disease Control System – The concerned and neighboring local governments (cities and provinces) – Mobilize the Central Crisis Control Committee (in MOHW) – Hold internal assessment meetings – Activate government-level pandemic response system and Central Disaster and Safety Countermeasures Headquarters (CDSCH)
	□ Information Sharing and Communications ○ Focus – Sharing information on domestic outbreaks and cases of AI infection – Communications on the prevention of human infection

WHO Pandemic Phases	Response Plan by Component
	○ Response Actions – Collect and share information on domestic introduction of AI and cases of infection – Central/local governments, and other implicated bodies – Medical, academic and other professional groups/organizations – Provide relevant information to the public and media – Utilize various media such as printed/broadcast media, the internet, 1339 and other hot-lines – Inform the human health and veterinary authorities, and local residents of affected area on the evolving situation of infection, as well as information on ways to prevent infection – Inform international organizations of human cases of AI in the country – Start to hold regular media briefings – Provide information and counseling services through 1339 and other hot-lines – Start providing guidelines and training emergency response workers and healthcare workers at various levels
	□ Surveillance <Clinical Surveillance> ○ Focus – Rapid detection of human infection in the country ○ Response Actions – Strengthen surveillance of influenza-like illnesses (ILI) in affected regions – Strengthen surveillance of high-risk groups, including cullers, and farm workers on the affected farms – Encourage reporting by healthcare facilities to detect an unusual mass occurrence of influenza-like illnesses (ILI) or acute respiratory illnesses – Strengthen surveillance through the Infection Specialist Network, and the emergency room-based syndromic surveillance.

WHO Pandemic Phases	Response Plan by Component
	<Laboratory Surveillance> ○ Focus – Early detection of pandemic influenza virus ○ Response Actions – Establish system for diagnosing human infection of novel virus subtypes. – Educate professionals and provide reference reagent – Conduct antiviral susceptibility test, genetic analysis, and immunogenicity study of the avian viruses isolated from patients. – Send the isolates to WHO Collaborating Center and share results – Examine vaccine efficacy and conduct serological survey – Review the response plan for a specimen surge during a pandemic – Strengthen laboratory surveillance of domestic birds and poultry – Strengthen laboratory surveillance of domestic respiratory infection patients in the areas where birds were infected (MOAF)
	□ Healthcare Response ○ Focus – Provision of appropriate healthcare services to infected patients in the country – Preparedness to provide adequate healthcare services during a pandemic ○ Response Actions – Review/improve plan for assessing and deploying healthcare resources during a pandemic – Develop protocols/guidelines and staff training programs covering patient treatment, infection control, patient management, and disposition of deceased persons – Continue to secure appropriate isolation facilities

WHO Pandemic Phases	Response Plan by Component
	− Designate hospitals for treatment of influenza cases and educate staff − Conduct education and training to all hospitals and clinics on infection control, patient triage, and patient management − Establish pandemic response plans of hospitals and stockpile necessary supplies − Hospitalize and treat new cases (does not have to be isolation hospitals)
	□ Antiviral Drugs ○ Focus − Refine plans for stockpiling and using antiviral drugs in a pandemic − Administer antiviral drugs to high−risk population to prevent a pandemic ○ Response Actions − Initiate stockpiling of antiviral drugs when necessary − Use antiviral drugs to prevent spread − Treat influenza patients or patients with influenza−like illness (ILI) − Chemoprophylaxis of epidemiologists who came into contact with influenza patients or patients with ILI; pandemic health responders such as vaccinators; and healthcare workers − Chemoprophylaxis of individuals who came into contact with infected animals (including cullers) − Chemoprophylaxis of other exposed individuals with epidemiologic links − Review/improve plan on the use of antiviral drugs, based on gathered data − Review/improve plan for storing, transporting and distributing antiviral drug
	□ Vaccine ○ Focus − Improve seasonal influenza vaccination coverage

WHO Pandemic Phases	Response Plan by Component
	− Pursue initiatives for domestic production of pandemic vaccine, and build infrastructure for a safe immunization program ○ Response Actions − Acquire vaccine prototype virus − Ongoing initiatives to build a domestic production base for vaccine − Improve seasonal influenza vaccination rate, with focus on high−risk groups − Enhance seasonal influenza vaccination of high−risk group including farmers to prevent genetic re−assortment − Prioritize target groups for pandemic vaccination − Review and improve plan for pandemic vaccination
	□ Public Health Measures <Quarantine> ○ Focus − Prevent border entry of avian influenza patients ○ Response Actions − Screen travelers coming from high−risk regions − Take appropriate measures when a suspect case is detected among travelers coming from high−risk regions − Educate outbound travelers on actions to take when symptoms occur <Other Measures> ○ Focus − Prevent the emergence of a pandemic by isolating AI patients and managing contacts ○ Response Actions − Isolate patients and investigate contacts as soon as a case emerges in the country − Strengthen education of the local residents of affected

WHO Pandemic Phases	Response Plan by Component
	communities on ways to prevent and respond to infection – Review/improve plans for social distancing, i.e., school closures and restriction of public gatherings – Conduct public education campaigns for infection prevention (e.g., promote hand washing, cough etiquette, etc.) – Develop, review and improve educational and communications material to enhance pandemic preparedness – Provide supplies for hand washing (e.g., soap or towels)
	□ Education and Research ○ Focus – Assess/provide the education and research required for pandemic preparedness ○ Response Actions – Identify areas for pandemic preparedness education – Plan education programs specific to different target groups – Develop and utilize group-specific educational materials – Assess research requirements for pandemic preparedness; design and implement research plans.
Phase 4A, 5A	□ Command and Control ○ Focus – Prevent introduction of pandemic influenza into the country – Check and activate the Command and Control Structure for Pandemic Preparedness ○ Response Actions – The Pandemic Advisory Committee (PAC) is operative – Mobilize Intra-governmental Pandemic Response Coordination Mechanism (IPRCM) – Mobilize the Central Crisis Control Committee (MOHW) – Hold internal crisis evaluation meetings – Partially mobilize the Center for Communicable Disease

WHO Pandemic Phases	Response Plan by Component
	Surveillance and Response (in KCDC) and National Infectious Disease Control System – Monitor overseas outbreak of pandemic influenza – Rapid Response Teams in quarantine stations – Mobilize Emergency Quarantine Response Teams in local governments/authorities
	□ Information Sharing and Communications ○ Focus – Collect and disseminate information on overseas outbreaks of pandemic influenza – Activate information sharing and communications framework in preparation for an imminent pandemic ○ Response Actions – Make official announcement on the influenza pandemic overseas – Monitor/disclose information on how the situation is evolving and being managed in affected countries – Central and local governments, other related authorities – Medical, academic and other professional groups/organizations – Inform the public and media – Update public messages, such as public action guidelines. Update contents on websites – Hold regular and ad-hoc media briefings on the overseas pandemic – Train 1339 call responders to provide effective information and counseling services
	□ Surveillance <Clinical Surveillance> ○ Focus – Detect the first imported case of pandemic influenza among inbound travelers ○ Response Actions – Maintain an ongoing influenza sentinel surveillance system

WHO Pandemic Phases	Response Plan by Component
	− Collect information on suspect case with travel history to affected areas. Conduct an epidemiological analysis of the data. − Encourage reporting by physicians and medical institutions to detect any unusual and large outbreak of influenza−like illness (ILI) or any other acute respiratory illness − Identify travelers with ILI arriving from affected countries − Collect and share clinical and epidemiologic information gathered from imported cases (e.g., suspected or confirmed cases) at all point−of−entries <Laboratory Surveillance> ○ Focus − Prevent spread of influenza through early detection of imported cases ○ Response Actions − Strengthen laboratory surveillance system − Provide training on new diagnostic methodologies and reference reagent to local PHERI and private laboratories − Enhance safety management in laboratories − Enhance laboratory surveillance of respiratory infection of travelers arriving from high−risk regions − Check/build inventory of reagents and medical devices for diagnosing novel viruses. − Conduct antiviral susceptibility test, genetic analysis, and immunogencity study of the novel strain (when virus is acquired) − Examine vaccine efficacy and conduct serological survey − Participate in WHO Global Surveillance Program − Enhance collaboration between relevant ministries/agencies, international bodies, and foreign institutions − Review/prepare to implement the strengthened surveillance system during a pandemic
	□ Healthcare Response

WHO Pandemic Phases	Response Plan by Component
	○ Focus – Provision of appropriate healthcare services to imported cases – Preparedness to provide adequate healthcare services during a pandemic ○ Response Actions – Review/improve plan for utilizing healthcare resources during a pandemic – Review/refine guidelines covering patient treatment, infection control, patient management, and disposition of deceased persons – Continue to increase the number of qualified isolation facilities – Continue to provide education and training to all hospitals and clinics on infection control, patient triage, and patient management – Review and improve pandemic response plans of hospitals and stockpile necessary supplies – Transport necessary supplies (e.g., antiviral drugs, personal protective equipments, etc.) to strategic sites
	□ Antiviral Drugs ○ Focus – Refine plan for stockpiling and using antivirals during a pandemic ○ Response Actions – Stockpile antiviral drugs when necessary – Review/activate plans for the use, distribution and transportation of antiviral drugs – Administer antiviral drugs to prevent a pandemic – Treat influenza patients or patients with influenza-like illness (ILI) – Prophylaxis of epidemiologists, quarantine and vaccination workers, and healthcare workers who came into contact with influenza patients or suspect cases – Prophylaxis of individuals who came into contact with infected

WHO Pandemic Phases	Response Plan by Component
	animals (including cullers) – Prophylaxis of other exposed individuals with epidemiologic linkage
	□ Vaccine ○ Focus – Improve seasonal influenza vaccination coverage – Establish base for domestic production of pandemic vaccine and build infrastructure for safe vaccination ○ Response Actions – Acquire vaccine prototype virus – Continue initiative to build a domestic vaccine production base – Procure pandemic vaccines – Pursue initiatives for domestic production of the pandemic vaccine (when the production base for pandemic vaccine is in place) – Promote seasonal vaccination coverage targeting high-risk groups – Prioritize target groups for vaccination in a pandemic – Review and prepare to implement pandemic vaccination program
	□ Public Health Measures <Quarantine> ○ Focus – Prevent entry of PI cases ○ Response Actions – Travel advisory prohibiting or recommending against traveling to and from high-risk regions – Screen travelers arriving from high-risk regions – Take immediate and appropriate measures when a suspect case is identified among arrivals from high-risk regions – Educate entering/exiting travelers on ways to prevent infection

WHO Pandemic Phases	Response Plan by Component
	<Other Measures> ○ Focus – Establish/activate public health measures for a pandemic ○ Response Actions – When patients are identified among travelers arriving from overseas, immediately isolate them. Investigate and place contacts in home isolation, and administer antiviral prophylaxis on contacts when necessary. – When suspect cases occur in the country, immediately isolate them and investigate contacts – In case of a mass outbreak of cases, establish containment plans and share plans with relevant central and local government authorities – Take steps to activate plans for social distancing, i.e., school closures and restriction of public gatherings – Conduct public outreach programs for infection prevention (e.g., promote hand washing, cough etiquette, etc.) – Procure and provide supplies for precautionary measures, such as items for hand washing (e.g., soap or towels)
	□ Education and Research ○ Focus – Assess/provide the education and research required for pandemic preparedness ○ Response Actions – Identify areas for pandemic preparedness education – Plan education programs specific to different target groups – Revise and utilize group-specific educational materials – Identify/plan/conduct researches that are required to enhance pandemic preparedness.
Phase 4B, 5B	□ Command and Control ○ Focus – Contain the spread of pandemic influenza ○ Response Actions

WHO Pandemic Phases	Response Plan by Component
	− The Pandemic Advisory Committee (PAC) is operative − Mobilize the Intra−governmental Pandemic Response Coordination Mechanism (IPRCM) − Hold internal and external crisis evaluation meetings − Mobilize crisis management mechanisms at all response levels − Central Safety Management Committee − Central Disaster and Safety Countermeasures Headquarters (CDSCH) − Central Crisis Control Committee − Fully mobilize the Center for Communicable Disease Surveillance and Response (in KCDC) and the National Infectious Disease Control System − Mobilize Emergency Response Headquarters and Emergency Quarantine Response Teams in local governments. Mobilize Rapid Response Teams in quarantine stations. − Take initial response measures to contain the pandemic
	□Information Sharing and Communications ○ Focus − Fully activate the information sharing and communications framework ○ Response Actions − Report pandemic influenza cases to international organizations − Share information on influenza cases − Central and local governments, other related authorities − Medical, academic, and other professional groups/organizations − Provide information to the public and media − Hold regular or ad−hoc media briefings − Public, institutional, corporate action guidelines according to evolving situation − Rapid communications with local governments/authorities of the affected communities on the evolving situation and response measures − Increase information provision and counseling services through

WHO Pandemic Phases	Response Plan by Component
	1339 and other hot-lines
	□ Surveillance <Clinical Surveillance> ○ Focus - Prevent a pandemic through early identification of patients with potential to cause a pandemic in the country ○ Response Actions - Maintain an ongoing influenza sentinel surveillance system - Strengthen surveillance on ILI patients in AI affected areas - Strengthen surveillance on suspect cases with travel history to affected areas within Korea - Conduct epidemiological investigation on mass outbreak cases and analyze the data - Encourage reporting by physicians and medical institutions to detect any unusual and large outbreak of influenza-like illnesses (ILI) or any other acute respiratory illnesses - Conduct ILI surveillance of PI patients (confirmed or suspected) and healthcare workers who were exposed to the specimen. - Monitor the PI distribution based on temporal, spatial and human data. <Laboratory Surveillance> ○ Focus - Prevent a pandemic through early detection of patients with potential to cause a pandemic in the country ○ Response Actions - Enhance laboratory surveillance of respiratory infections in regions of large outbreaks - Enhance safety management in laboratories - Check/build inventory of reagents and medical devices for diagnosing novel types of virus.

WHO Pandemic Phases	Response Plan by Component
	– Provide education on new diagnostic methodologies and reference reagents to local Public Health & Environment Research Institutes (PHERI) and private laboratories – Conduct antiviral susceptibility test, genetic analysis, and immunogenicity study of the novel strain (when virus is acquired) – Examine vaccine efficacy and conduct serological survey – Send isolated virus to relevant ministries/agencies, international organizations, and foreign institutions, and share research outcomes – Review/prepare to implement a strengthened surveillance system during a pandemic
	□ Healthcare Response ○ Focus – Healthcare response in regions where there was a large outbreak of novel influenza with pandemic potential – Preparedness for adequately responding to healthcare needs during a pandemic ○ Response Actions – Treat mass outbreak patients infected with novel influenza virus (isolate in isolation hospitals) – Assess medical resources, and review/refine plan of deployment during the pandemic period – Activate pandemic response plans of all hospitals and clinics – Continue to provide education and training to all hospitals and clinics on infection control, and patient triage and management – Evaluate/enhance response plans of hospitals. Take inventory and stockpile additional hospital supplies – Transport necessary supplies (e.g., antiviral drugs, personal protective equipment, etc.) to strategic sites
	□ Antiviral Drugs ○ Focus – Prevent or delay the emergence of influenza pandemic through

WHO Pandemic Phases	Response Plan by Component
	the appropriate use of antiviral drugs ○ Response Actions – Initiate stockpiling of antiviral drugs when necessary – Transport antivirals to areas where there is an outbreak of pandemic influenza – Prevent or delay the emergence of influenza pandemic by administering antiviral drugs – Treatment of patients and suspect cases – Prophylaxis of individuals who came into contact with influenza patients or suspect cases, such as epidemiologists, vaccinators and other quarantine workers, and healthcare workers – Prophylaxis of individuals who came into contact with infected animals (including cullers) – Prophylaxis of other exposed individuals with epidemiologic links – Consider prophylaxis of residents within a certain radius of the epicenter in order to contain the pandemic
	□ Vaccines ○ Focus – Promote seasonal influenza vaccination – Actively promote domestic production of the pandemic vaccine and implement plans for a safe immunization program ○ Response Actions – Acquire vaccine prototype virus – Actively promote domestic production of the pandemic vaccine – Ongoing procurement of pandemic vaccine – Improve seasonal vaccination coverage – Select/confirm priority target groups for pandemic vaccination – Review pandemic vaccination program – If the pre-pandemic vaccine has been proven to be effective and a sufficient amount is secured, initiate vaccination to contain transmission or to immunize high-risk groups – If a sufficient amount of pre-pandemic vaccine is procured,

WHO Pandemic Phases	Response Plan by Component
	vaccinate initial emergency responders
	□ Public Health Measures <Quarantine> ○ Focus – Prevent PI patients from leaving the country ○ Response Actions – Travel advisory prohibiting or recommending against travel to and from high-risk regions – Screen travelers arriving from high-risk regions – Educate travelers destined to high-risk regions – Take appropriate response measures when a suspect case is identified among arrivals from high-risk regions <Other Measures> ○ Focus – Contain/delay the spread of pandemic through appropriate public healthcare measures ○ Response Actions – Take aggressive initial response measures to prevent a pandemic – Confirm/isolate patients, and isolate contacts – Restrict movement in affected areas, close down schools, and administer antiviral prophylaxis – Reinforce public education and outreach programs in affected areas (e.g., promote hand washing, cough etiquette, etc.)
	□ Education and Research ○ Focus – Conduct education and research required for pandemic preparedness ○ Response Actions – Update pandemic education materials, and implement education

WHO Pandemic Phases	Response Plan by Component
	programs – Make preparations to conduct pandemic research – Assess the burden of disease and the socioeconomic impact – Analysis of the epidemiological characteristics of the pandemic virus, etc. – R&D of pandemic vaccine, characterization of the virus – Preserve serum for serological study, etc.
Phase 6A	□ Command and Control ○ Focus – Complete preparation against introduction of pandemic influenza into the country – Mobilize the Command and Control Structure for Pandemic Preparedness ○ Response Actions – The Pandemic Advisory Committee (PAC) is operative – Mobilize Intra-governmental Pandemic Response Coordination Mechanism (IPRCM) – Hold internal and external crisis evaluation meetings – Crisis management system goes into emergency operation mode at all response levels – Central Safety Management Committee – Central Disaster and Safety Countermeasures Headquarters (CDSCH) – Central Crisis Control Committee – Fully mobilize the Center for Communicable Disease Surveillance and Response – National Infectious Disease Control System goes into emergency operation mode
	□ Information Sharing and Communications ○ Focus – Fully activate the information sharing and communications framework ○ Response Actions

WHO Pandemic Phases	Response Plan by Component
	− Assess information on the scale and epidemiologic characteristics of pandemic overseas − Strengthen coordination with international organizations and neighboring countries − Acquire/share information on overseas pandemics and how they are being controlled − Central and local governments, other relevant authorities − Medical, academic and other professional groups/organizations − Provide information to the public and media − Continue to provide information on government response measures and action guidelines − Public action guideline − Rules for emergency response workers − Guideline for healthcare workers and medical institutions − Essential organizations and companies − Actively utilize various media − Mass media, the internet − 1339 and other hot−lines − Specialist Networks
	□ Surveillance <Clinical Surveillance> ○ Focus − Contain or delay the transmission by detecting the first imported case of PI among arrivals from overseas ○ Response Actions − Maintain an ongoing influenza sentinel surveillance system − Collect information on suspect case with travel history to affected areas. Conduct an epidemiological analysis of the data. − Encourage reporting by physicians and medical institutions to detect any unusual and large outbreak of influenza−like illness (ILI) or any other acute respiratory illness − Strengthen surveillance of ILI among arrivals from affected countries

WHO Pandemic Phases	Response Plan by Component
	− Collect and share clinical and epidemiologic information gathered from imported cases (e.g., suspected or confirmed cases) at all point−of−entries <Laboratory Surveillance> ○ Focus − Early detection of national pandemic caused by novel influenza virus ○ Response Actions − Strengthen laboratory surveillance − Strengthen laboratory surveillance on respiratory infections of travelers to and from high−risk regions − Recheck/stockpile reagents and medical devices for diagnosing novel strains of virus − Enhance safety management in laboratories − Provide education on new diagnostic methodologies and reference reagent s to local Public Health & Environment Research Institutes (PHERI) and private laboratories − Conduct antiviral susceptibility test, genetic analysis, and immunogenicity study of the novel strain (when virus is acquired) − Examine vaccine efficacy and conduct serological survey − Enhance collaboration in laboratory surveillance between relevant ministries/agencies, international organizations, and foreign institutions. − Review/prepare to implement the strengthened surveillance system during a pandemic
	□ Healthcare Response ○ Focus − Review and prepare to execute the healthcare response plan during a pandemic − Provide healthcare to patients with novel influenza that could potentially escalate into a pandemic

WHO Pandemic Phases	Response Plan by Component
	○ Response Actions – Hospitalize and treat imported cases in isolation hospitals – Continue to provide education and training to all hospitals and clinics on infection control, patient triage, and patient management – Activate hospitals' pandemic response plans – Take inventory and stockpile additional hospital supplies – Transport necessary supplies (e.g., antiviral drugs or personal protective equipment) to strategic sites – Review/improve plans to respond to a nationwide surge of patients
	□ Antiviral Drugs ○ Focus – Review/prepare to activate plan for antiviral use during a pandemic ○ Response Actions – Stockpile antiviral drugs when necessary – Determine priority of target groups for antiviral administration based on the epidemiologic characterization of the pandemic influenza – Review/finalize guidelines for antiviral administration – Consider safely transporting the antiviral stockpile to a strategic location – Identify individuals belonging to the priority groups – Prepare to start documentation and record-keeping of target groups
	□ Vaccines ○ Focus – Improve seasonal influenza vaccination coverage – Pursue initiatives for domestic production of the pandemic vaccine and establish the infrastructure for a safe immunization program

WHO Pandemic Phases	Response Plan by Component
	○ Response Actions – Acquire vaccine prototype virus – Continue to build up domestic production base for vaccine – Ongoing procurement of pandemic vaccine – Pursue initiatives for domestic production of the pandemic vaccine (when the pandemic vaccine production base is in place) – Continue seasonal vaccination with focus on high-risk groups – Prioritize target groups for vaccination in a pandemic – Select/confirm priority groups for pandemic vaccination – Review and prepare to initiate pandemic vaccination program
	□ Public Healthcare Measures <Quarantine> ○ Focus – Prevent border entry of PI patients ○ Response Actions – Travel advisory prohibiting travelers from entering into or departing from high-risk regions. – Screen travelers arriving from high-risk regions – Take appropriate measures when a suspect case is identified among arrivals from high-risk regions (isolate patient, track and manage contacts) – Inform travelers departing/entering high-risk regions <Other Measures> ○ Focus – Contain or delay introduction of pandemic influenza into the country by taking appropriate public healthcare measures ○ Response Actions – Early identification/isolation of imported cases in local communities. Home isolation of contacts. – Restrict movement to and from local communities where a foreign-arriving patient is identified. Close down schools, and

WHO Pandemic Phases	Response Plan by Component
	conduct prohylactic administration of antivirals – Conduct public education to promote public healthcare measures to prevent infection (e.g., promote hand washing, cough etiquette, etc.) – Procure and provide necessary supplies to affected communities, such as supplies for hand washing
	□ Education and Research ○ Focus – Identify/conduct education and research on pandemic ○ Response Actions – Provide education on pandemic – Educate the public and healthcare workers on various preventive measures against infection – Provide training to replacement healthcare workers when necessary – Prepare to conduct research on the pandemic – Collect various pandemic-related data to assess the burden of the pandemic disease and its socioeconomic impact – Conduct researches such as the epidemiological characterization of the pandemic virus – Establish plan to preserve serum for serological study – R & D of pandemic vaccine and characterization of virus
Phase 6B	□ Command and Control ○ Focus – Bring early end to a pandemic – Minimize impact of the pandemic ○ Response Actions – The Pandemic Advisory Committee (PAC) is operative – Mobilize the Intra-governmental Pandemic Response Coordination Mechanism (IPRCM) – Hold internal and external crisis evaluation meetings – Mobilize crisis management system at all response levels – Central Safety Management Committee

WHO Pandemic Phases	Response Plan by Component
	− Central Disaster and Safety Countermeasures Headquarters (CDSCH) − Central Crisis Control Committee − Fully mobilize the Center for Communicable Disease Surveillance and Response (in KCDC) and the National Infectious Disease Control System − Mobilize Emergency Response Centers and Emergency Quarantine Response Teams in local governments. Mobilize Rapid Response Teams in quarantine stations
	□ Information Sharing and Communications ○ Focus − Fully activate the information sharing and communications framework − Minimize societal disruption through effective communications ○ Response Actions − Inform international organizations and neighboring countries of the current state and epidemiologic characteristics of the domestic pandemic − Assess information on the scale and epidemiologic characteristics of pandemic overseas − Information sharing and close communications with all stakeholders including government authorities and organizations at various levels − Provide information on new outbreaks using various media − Continuously update public on the government response measures and action guidelines − Hold regular and ad−hoc media briefing
	□ Surveillance <Clinical Surveillance> ○ Focus − Evaluate burden of disease by monitoring incidence of pandemic influenza ○ Response Actions

WHO Pandemic Phases	Response Plan by Component
	− Maintain an ongoing influenza sentinel surveillance system − Encourage reporting by physicians and medical institutions to detect any unusual and large outbreak of influenza−like illness (ILI) or any other acute respiratory illness − Conduct ILI surveillance of PI patients (confirmed or suspected) and healthcare workers who were exposed to the specimen. − Implement hospital−based surveillance system. (including monitoring emergency room visits made by ILI patients, hospital admissions for influenza or pneumonia, deaths from influenza or pneumonia, ILI/respiratory illness among medical staff, staff absenteeism) − Monitor the pandemic influenza distribution based on temporal, spatial and human data. − Monitor the impact of PI on healthcare workers and essential service providers − Assess the efficacy of PI vaccines − Evaluate antiviral susceptibility − Monitor adverse reactions to PI vaccination − Determine availability of essential service providers − Evaluate adequacy of treatment and prophylaxis <Laboratory Surveillance> ○ Focus − Early detection of domestic outbreak of novel influenza virus ○ Response Actions − Initiate laboratory surveillance program for pandemic period (characterization of isolated virus, study of antiviral susceptibility and immunity level) − Increase laboratory diagnostic workers to respond to specimen surge. Retain back−up personnel to replace workers who become infected − Provide protection to laboratory diagnostic workers − Enhance collaboration between relevant ministries/agencies,

WHO Pandemic Phases	Response Plan by Component
	international organizations, and foreign institutions. – Send isolates to WHO Collaborating Center and share study outcomes – Acquire/preserve specimen for post-pandemic research
	□ Healthcare Response ○ Focus – Minimize pandemic damage through efficient use of medical resources that are in short supply ○ Response Actions – Activate pandemic response plans in all hospitals and clinics – Start in-hospital infection control, patient triage and management – Recommend home care for patients with mild symptoms – Provide in-patient treatment to patients with severe symptoms – Activate public pandemic healthcare provision plan – Implement emergency plan for patient surge
	□ Antiviral Drugs ○ Focus – Minimize pandemic damage through efficient use of antivirals ○ Response Actions – Final determination of the priority groups forantiviral administration, based on the epidemiologic characterization of the pandemic influenza – Review/finalize guidelines for antiviral administration – Safely transport antivirals to strategic locations for distribution – Identify the individuals belonging to the priority groups – Start record-keeping of antiviral target groups, and monitor for adverse reactions. – Administer antiviral drugs according to the pre-determined priority – Review and finalize administering guidelines
	□ Vaccines ○ Focus

WHO Pandemic Phases	Response Plan by Component
	− Initiate domestic production of pandemic vaccine and implement a safe vaccination program (when supply is available) ○ Response Actions − Acquire vaccine prototype virus − Pursue initiatives for domestic production of the pandemic vaccine (when domestic production base is in place) − Stockpile additional pandemic vaccine − Determine priority of target groups for pandemic vaccination − Select/confirm priority groups for vaccination − Implement pandemic vaccination program − Initiate vaccination according to the pre−determined order (when supply of vaccine is available) − Start documenting and record−keeping of pandemic vaccination, and start monitoring for adverse reactions.
	□ Public Health Measures <Quarantine> ○ Focus − Prevent or delay PI cases from departing the country ○ Response Actions − Travel advisory prohibiting or recommending against residents of high−risk regions from departing the country − Screen travelers arriving from high−risk regions − Educate outbound travelers from high−risk regions − Take immediate and appropriate measures when a suspect case is identified among arrivals from high−risk regions ※ Apply only during the initial stages of a national pandemic <Other Measures> ○ Focus − Delay the spread of pandemic influenza

WHO Pandemic Phases	Response Plan by Component
	○ Response Actions – Identify and isolate patients during the early stages of the pandemic. Home isolation of contacts. – When necessary, recommend social distancing, such as school closures, or restrictions on public gathering – Continue with public education to promote public healthcare measures to prevent infection (e.g., promote hand washing, cough etiquette, etc.) – Procure and provide necessary supplies, such as items for hand washing, to affected communities
	□ Education and Research ○ Focus – Heighten pandemic response capabilities through education ○ Response Actions – Provide education on pandemic – Provide education and guidelines on infection control to healthcare workers – Train replacement healthcare workers when necessary – Make preparations to conduct research on the pandemic – Collect basic data for evaluating the burden of disease and socioeconomic impact analysis of the pandemic – Epidemiological characterization of the pandemic virus – R & D of pandemic vaccine, and characterization of virus – Preserving serum for serological study, etc.

Annex 1-1

Specimen Collection, Referral, and Laboratory Test Guidelines

(1) Specimen Collection

1 Specimen Types

❍ Throat Swab, Nasal Aspirate, and other Respiratory Specimens

- In the case of children, obtain specimens by nasopharyngeal washing. For adults, obtain specimens by both nasal & throat swab, as these methods have high degree of sensitivity and specificity.

❍ Serum (Collect twice. Collect the second specimen 2 weeks after the initial blood collection.)

- It may be necessary to confine testing to those aimed at testing immunity levels. During a pandemic, collecting blood twice is most probably unrealistic.
- Collect 5ml of whole blood or 1ml of serum.
- For transport, ship at 4ºC, in an ice pack or refrigerated in dry ice

2 Specimen Collection Method

❍ Throat Swab

- Use the cotton swab included in a commercial Virus Transport Medium (VTM) kit.
- Place the used swab in a vial containing the transport medium. Break off the swab stick near the mouth of the vial and tightly close the cap.
- Take care not to contaminate the inside by touching with hand.
- Immediately place the vial containing the specimen in a refrigerator at a temperature of 4℃.

❍ Nasal Aspirate

- When collecting aspirate from the nasal cavity, insert a catheter until it reaches the back of the pharynx. Start suctioning, then slowly and gently pull out the tubing while turning it slightly.
- Store in a sterile container at 4℃.

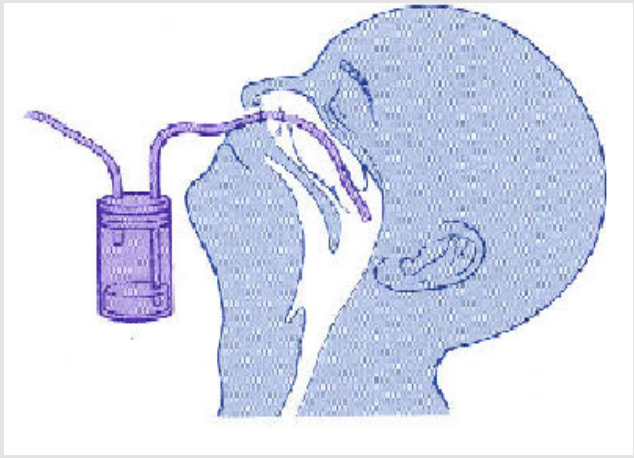

Figure 1. Nasal Aspirate Collection

※ After specimen collection, label the transport medium with the patient's personal information.

※ Fill out specimen referral form and immediately send with the specimen to testing facility (stored at 4℃).

❍ Bronchoalveolar Lavage Specimen (BAL), Tracheal Aspirate

- To minimize contamination from other liquids, use a double-tube system.
- Centrifuge half of the specimen and fix half the specimen in formalin. Place the remaining half in a sterile vial and seal it with an O-ring.
- Ship it at 4℃ in an ice pack.

❍ Sputum

- Explain to the patient about the difference between sputum and oral secretions.
- Have the patient rinse the mouth with water and then expectorate deep cough sputum directly into a sterile container, then seal the container.

- Ship it at 4℃ in an ice pack.

❍ Serum: Collect the whole blood in a plain tube in a sterile environment. Allow the blood to fully clot, centrifuge and send at least 1ml.

❍ Autopsy Specimen

- Collect the specimen from the organ suspected of infection. (e.g., the heart the in case of myocarditis, and the lung in the case of pneumonia)
- Ship at room temperature.
- Use fresh-frozen unfixed specimen for RT-PCR.

(2) Specimen Packing

1 Specimen Packing Method

❍ Specimens should be packed and transported according to the international infectious pathogen packing guidelines.

❍ Ensure that the specimen is not contaminated during collection. Completely seal the specimen to prevent leakage during transport.

❍ Seal the test referral form and other documents in a plastic bag and place in the package with the 2nd container.

❍ Send with the Influenza Specimen Referral Form.

① Place the specimen in the 1st container and affix label. (Specify name, specimen type, and collection date

② Wrap the 1st container in cushioning material.

③ Pack in 2nd container.

④ Seal the 2nd container.

⑤ Sterilize the surface of the 2nd container with 0.5% sodium hypochlorite (1:10 diluted solution of household bleach)

⑥ Pack the 2nd container and the sealed documents in a 3rd container.

⑦ Pack the 3rd container in the following order.

Ⓐ Ⓑ
Ⓒ Ⓓ

⑧ Affix the biohazard sticker and write the sender and recipient information.

※ If there are any questions, contact the KCDC KNIH Division of Influenza and Respiratory Viruses at (Phone: 380-1502~4)

Suspected Patient Specimen Referral Form

Referring Organization		Collection Date	(Year)/ (Month)/ (Date)
Phone Number			

Patient Name		Sex	□M □F	Age	Yrs Mos
National ID Number	※ Provide date of birth in case of children			Home Phone	
				Mobile Phone	
Address	City-Province Gun Gu/Myeon (Eub) Dong/Ri Apt. Dong Apt. No				
Major Clinical Symptoms					
Specimen Type	□ Throat Swab □ Nasal Aspirate □ Other Respiratory Specimen ( ) □ Serum : □ Acute Serum (Collection Date :) □ Convalescent Serum (Collection Date :)				
Avian Influenza Risk Factors	□ Affected Farm Worker □ Culler □ Infection Control Officer □ Farm Worker on Farm Within 3km of the Affected Farm □ Farm Worker on Farm Within 3~10km of the Affected Farm □ Other ( ) □ Don't Know				
Travel History to Affected Countries	□ Travel History (Country Traveled: , Travel Duration: ~) □ No Travel History □ Other ( ) □ Don't Know				
Influenza Vaccination History	□ Vaccinated (Vaccination Date: Month Day) □ Not Vaccinated				
RAT Test	□ Performed (Result : □ Positive □ Negative) □ Not Performed				
Influenza Antiviral Drug	□ Administered: Name of Drug (Start Date: Month Day) □ Not Administered				

Annex 1-2

Pandemic Influenza Suspected Patient Triage

[1] Patient Triage Process

1 During the Pandemic Alert Phase

A. Patient Evaluation

- ❍ Ascertain infection of a patient suspected of pandemic influenza based on the clinical diagnostic criteria.
- ❍ If infection is suspected, immediately notify the relevant officials at Public Health Centers (PHC).
- ❍ If the likelihood of pandemic influenza infection is low, but follow-up observation is needed, immediately notify the relevant officials at PHCs.
- ❍ Upon receiving report, the Rapid Response Team will verify the possibility of a pandemic influenza, and conduct epidemiologic investigations and initiate response activities if necessary.

B. Management of Patients

❍ If Uninfected with the Pandemic Influenza :

- Discharge or take appropriate measures according to the patient's condition.
- If a re-evaluation of the patient is necessary, report to a Public Health Center. The director of the Public Health Center should evaluate the patient's condition within 48 hours of the report, over the telephone phone or by other means.

❍ If Pandemic Influenza Infection is Suspected :

- Report to relevant Public Health Center

- The relevant clinic notifies the Communicable Disease Control Team at KCDC through the city/provincial government.
- The officer in charge of pandemic influenza response at KCDC will perform the initial evaluation. If necessary, dispatch the Rapid Response Team for investigation.
- If a patient is suspected of infection by a new strain of influenza, isolate at pre-consulted hospital or a pre-designated isolation hospital.

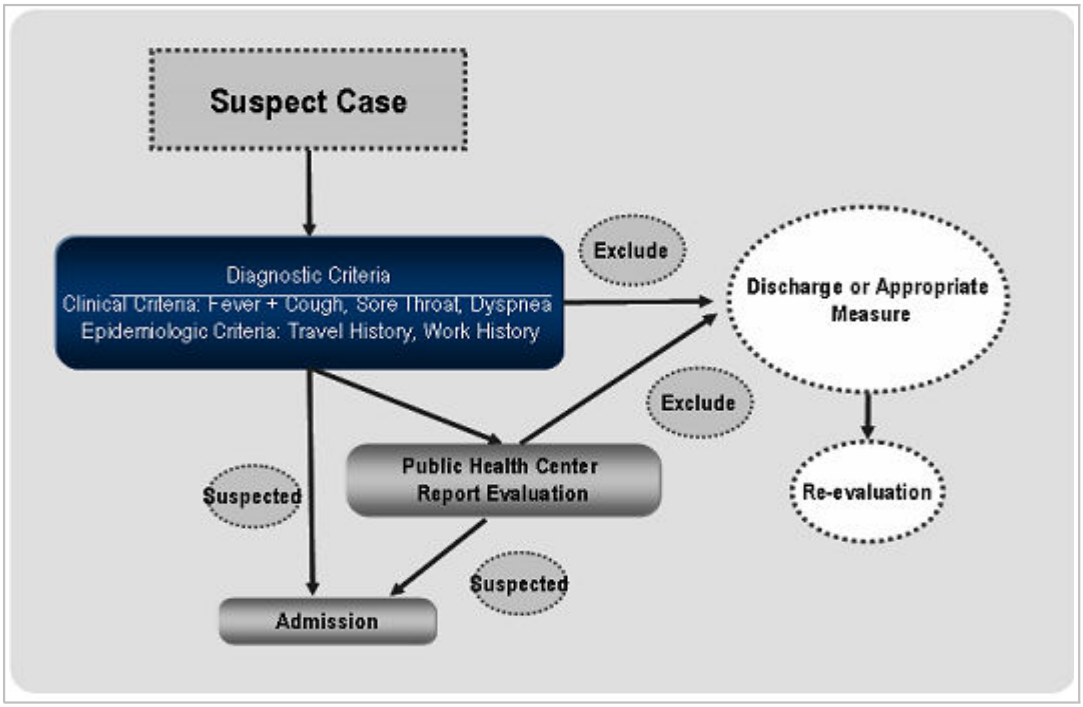

Figure 2. Pandemic Influenza Suspect Patient Triage (Prior to Influenza Pandemic)

2 Patient Triage during the Pandemic Phase

A. Patient Evaluation

- A triage officer should evaluate patients suspected of pandemic influenza to determine whether the patient is infected.
- During the early stages of the pandemic, immediately report suspect cases to Public Health Centers.
- If the possibility of infection is low, but follow-up observation is

deemed necessary, immediately report to the director of a Public Health Center to arrange for tracking and follow-up surveillance (early stages).

※ Once the pandemic spreads, isolation no longer has any meaning. Therefore, once it is determined that patient detection and isolation is no longer needed, the public health authorities should announce this fact through available information sharing systems.

B. Management of Patients

❍ If Not Infected With Pandemic Influenza

- Discharge or take appropriate measures according to the patient's condition.
- If a re-evaluation is necessary, the directors of the Public Health Centers should evaluate the patient's condition within 48 hours of receiving the report.

❍ If Suspected of Pandemic Influenza Infection

- During the early stages of a pandemic, isolate the patient.
- Once the pandemic progresses, isolation becomes pointless. Treat the patient according to their condition with reducing mortality as the goal.

※ Once patient isolation is deemed unnecessary, the public health authorities shall communicate this through the Korean Medical Association, Korean Hospitals Association and other available information sharing system.

- Evaluate patients showing the following symptoms with particular attention.

Fever (>38℃) or hypothermia, fast heartbeat (100 bpm or more), systolic blood pressure of 100 mmHg or lower, orthostatic dizziness (dizziness on standing), dyspnea (shortness of breath, 24 breaths per minute or more), cyanosis, chest pains, auscultation abnormalities, deterioration in level of consciousness, dyspnea (oxygen saturation of 90% or below without oxygen supply), bloody sputum, fever running for 4 to 5 days, condition deteriorating after recovery from fever (or another fever

- Assess the possibility of coinfection with pneumonia. If the patient also has pneumonia, decide on hospitalization based on severity of condition.
- If necessary, take chest x-ray or chest CT scan.
- If not co-morbid with pneumonia, the medical staff should decide on whether or not to admit patient by assessing the risk of complications and possible exacerbation of underlying medical conditions.

・If the underlying condition worsens or if the patient is part of a high-risk group, hospitalization may be considered. The patient, however, is not a priority group for hospitalization, and the final decision will be made by the responsible medical staff.

・If the underlying condition is unlikely to deteriorate and the patient is not part of a high-risk group, consider home care. The final decision is up to the assigned medical staff.

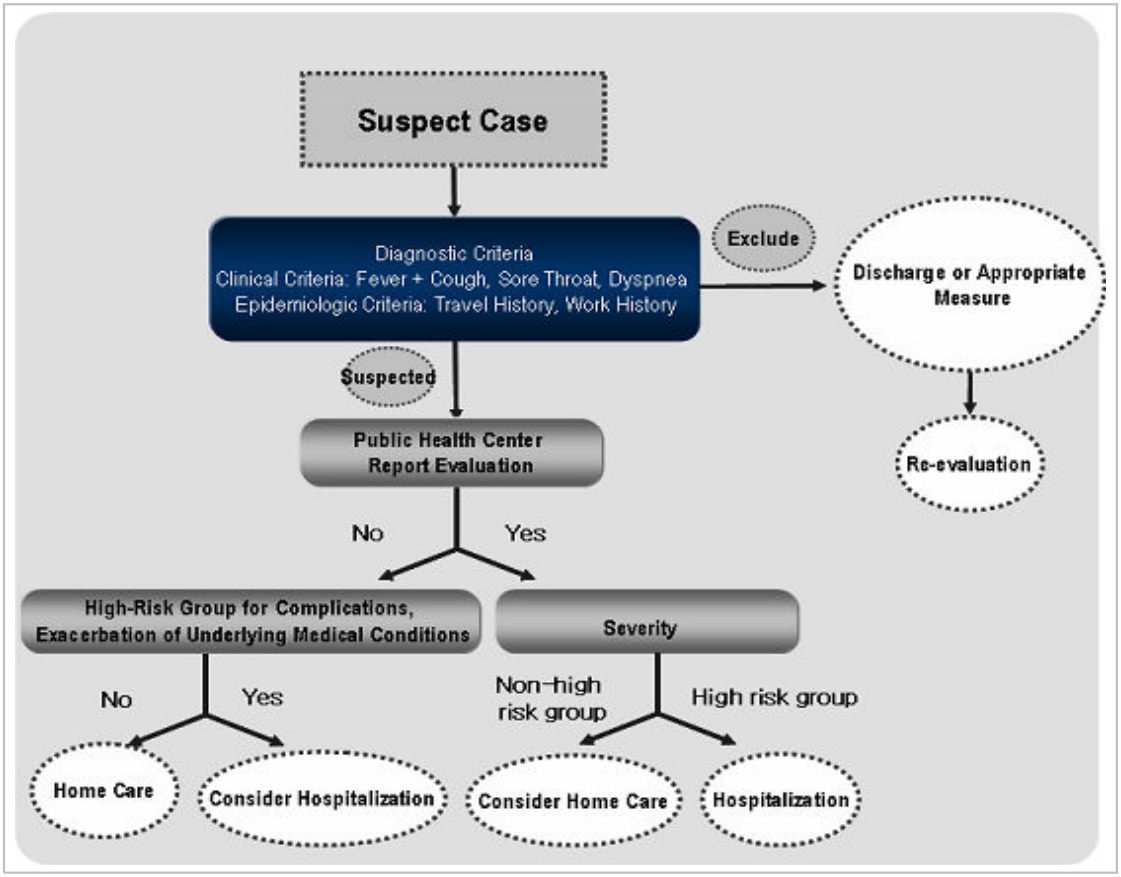

Figure 3. Flowchart for Patient Triage During a Pandemic

C. Patient Re-evaluation

❍ Educate patients being discharged or home cared to be on the watch for the following symptoms. If the symptoms appear, visit a healthcare facility for re-evaluation

- Difficulty breathing during everyday activities.
- New pleuritic pain
- Bloody sputum, new purulent sputum
- Continuous fever for 4 or more days without improvement
- Recurrence of fever after recovery period
- Deterioration in level of consciousness
- Persistent vomiting

Table 12. Pneumonia Patient Severity Assessment

- Evaluation List

① Deterioration in level of consciousness
② Respiratory rate: 30 or more breaths per minute
③ Low Blood Pressure (Systolic blood pressure of 90mmHg or lower, or diastolic blood pressure of 60mmHg or lower)
④ Over 65 Years of Age

- Number of Applicable Criteria from Above

- 0~1 : Home Care
- 2 : Short term hospitalization or outpatient care
- 3 or above : Hospitalization

Table 13. High-risk Group for Influenza-related Complications (From the British, CDC, Canadian guidelines)

- Persons aged 65 or older
- Patients with chronic pulmonary disease (e.g., COPD or asthma)
- Patients with chronic cardiovascular disease
- Patients with chronic renal failure
- Patients with chronic liver disease
- Metabolic disease (including diabetes)
- Immunocompromised patients (including patients receiving chemotherapy, AIDS patients, and organ donors)
- Residents of Chronic-Care Facilities
- 6 months-18 years old taking Aspirin on a long-term basis
- Children aged 6-23 months
- Pregnant women (in 2nd and 3rd trimester)
- Patients with hematologic disease (e.g., anemia or hemoglobinemia)
- Cancer patients
- Patients unable to move on their own

3 Phone Consultation during the Pandemic Phase

- Consultation on the possibility of influenza infection based on epidemiologic factors such as fever, respiratory symptoms.
- If evaluation is difficult, advise the caller to immediately visit a healthcare facility.
- If necessary, the operator should re-assess the patient's condition within 48 hours of the report through phone or other means.

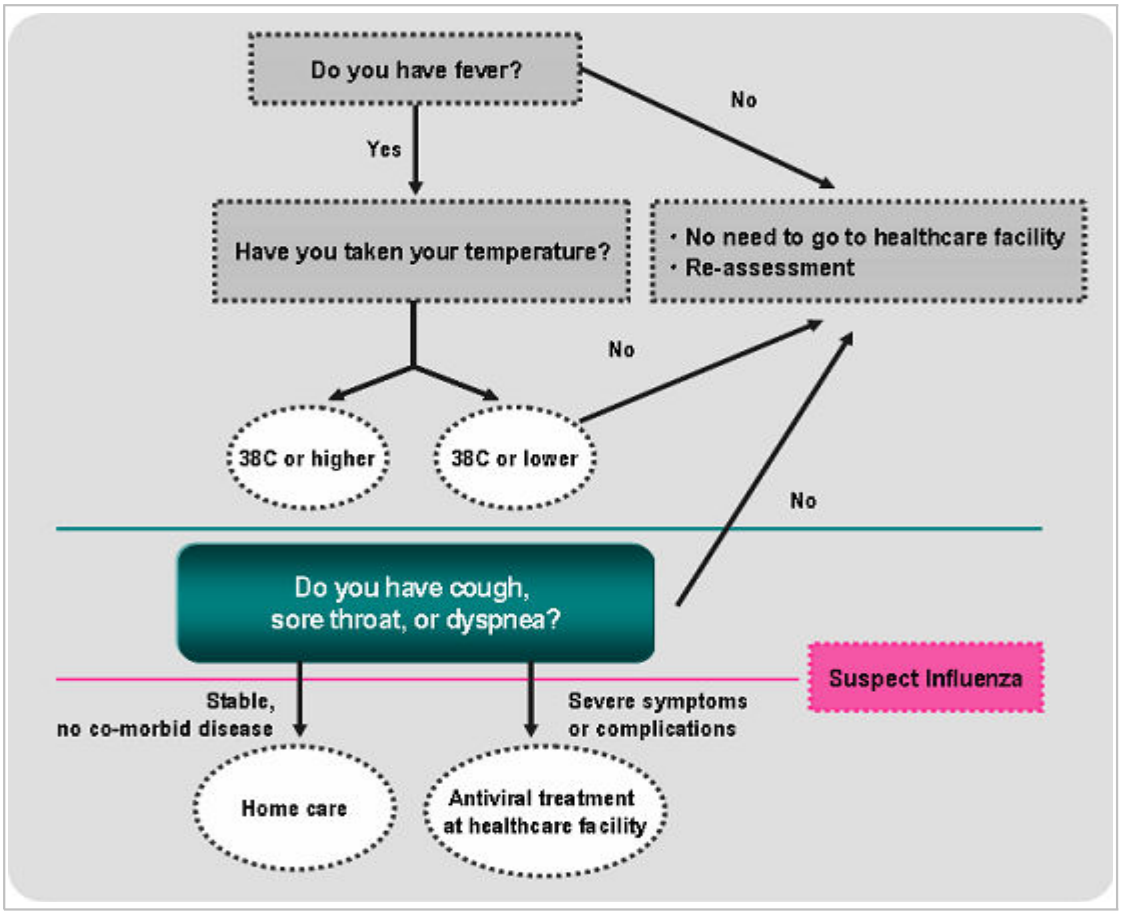

Figure 4. Flowchart for Phone Consultation During a Pandemic

Phone Consultation Record

Name		Sex	☐M ☐F	Age	
Address					
Phone				Mobile Phone	
Consultation Date				Consulting Officer	

Influenza Clinical Diagnosis	
● Do you have fever?	☐Yes ☐No
● Have you taken your temperature?	☐Yes ☐No
● Is your temperature 38℃ or higher	☐Yes ☐No
● Which of the following symptoms do you have?	
-Cough	☐Yes ☐No
-Sore throat (pain in the pharynx)	☐Yes ☐No
-Dyspnea	☐Yes ☐No
Severity Assessment	
● Bloody or greenish-yellow sputum	☐Yes ☐No
● Confusion	☐Yes ☐No
● Vomiting	☐Yes ☐No
● Chest pain	☐Yes ☐No
● Continuous fever for 4 days or more	☐Yes ☐No
Complication Risk Groups	
● Persons aged 65 or older	☐Yes ☐No
● Patients with chronic pulmonary disease (e.g., COPD orasthma)	☐Yes ☐No
● Patients with chronic cardiovascular disease	☐Yes ☐No
● Patients with chronic renal failure	☐Yes ☐No
● Patients with chronic liver disease	☐Yes ☐No
● Metabolic disease (including diabetes)	☐Yes ☐No
● Immunocompromised patients (including patients under chemotherapy, AIDS patients or organ donors)	☐Yes ☐No
● Residents of Chronic-Care Facilities	☐Yes ☐No
● 6 months to 18 years old taking aspirin on a long term basis	☐Yes ☐No
● Child 6 to 23 months old	☐Yes ☐No
● Pregnant women (in 2nd, 3rd trimester)	☐Yes ☐No
● Patients with hematologic disease (e.g., anemia or hemoglobinemia)	☐Yes ☐No
● Cancer patients	☐Yes ☐No

- Qualifies as suspect influenza case (fever + cough / sore throat, dyspnea)
  - If assessed as severe or belonging to a high-risk group for complications, send to healthcare facility.

- Educate those recommended home care to immediately visit a healthcare facility if any of the following occurs.
  - Difficulty breathing during everyday activities.
  - New pleuritic pain
  - Bloody sputum or new purulent sputum
  - Continuous fever for 4 or more days with no improvement
  - Recurring fever after recovery period
  - Deterioration in level of consciousness
  - Persistent vomiting

(3) Patient Triage Process within the Healthcare Facility

1 Measures Regarding an Influenza Suspect Case Visiting a Healthcare Facility

❍ Seek appropriate treatment and prevention of the spread of influenza within the hospital through early identification of pandemic influenza patients.

2 Preliminary Measures on Influenza Suspect Patients Visiting a Healthcare Facility

A. Measures to Take on Suspect Cases Visiting a Primary Healthcare Provider

❍ Early Identification and Triage of Suspect Cases

- Post visual notices (poster) at a visible place, such as the hospital entrance or the receptionist's window, to induce quick management of patients with influenza-like-illness (ILI), and contain spread by informing the public on cough etiquette.

- Before the patient visits the hospital, check infection by talking to the patient calling to make an appointment. By doing so, prevent unnecessary visits to healthcare facilities.
- Measure the temperature of all visiting patients.

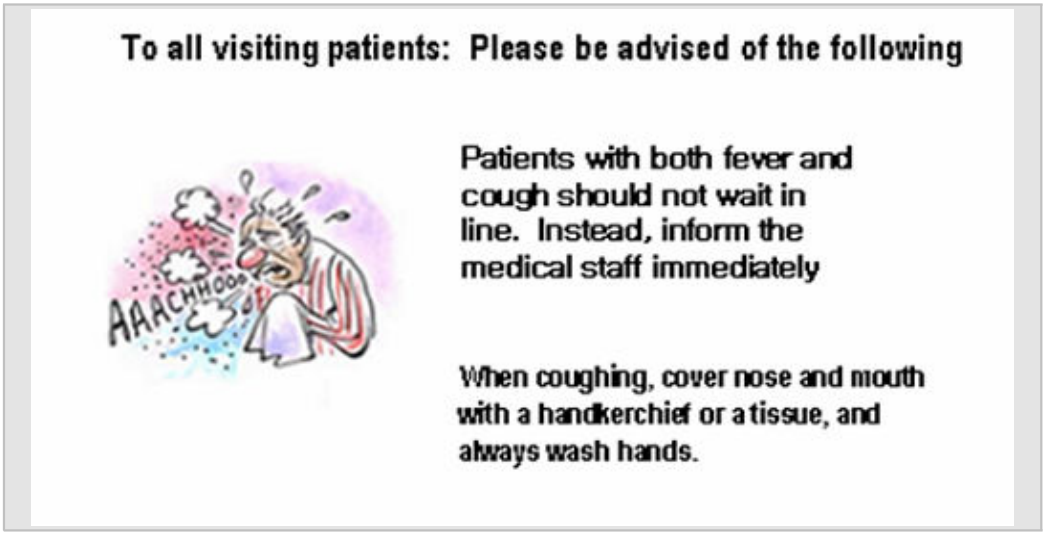

Figure 5 Example of Informational Poster for Influenza Suspect Patients

❍ If possible, keep or treat patients with fever or respiratory symptoms in separate areas.
- Establish segregated area equipped with ventilation system.
- Keep patients in an isolated waiting room, with 1m of distance from each other.

❍ Provide tissue for patients to use when coughing
- Place a trash bin (one that can be operated without touching it with hands) in the waiting room for used tissues.
- Setup a hand washing facility in the waiting room with disposable towels. If this is not feasible, then provide hand disinfectant (alcohol-based disinfectant).
- Minimize patient movement.

❍ Minimize contacts with regular patients in the waiting room.

- If a patient is suspected of being infected with the influenza, have them wear surgical or procedure mask.
- Install an air filtration system within the hospital.
- If there is no air filtration system, then install a fan or open a window to aid in ventilation and circulate the air.

❍ Wear Personal Protective Equipment (PPE)

- When treating patients, wear personal protective equipment and strictly practice hand hygiene.
- Stock disinfecting alcohol gel, N95 mask, and gloves.

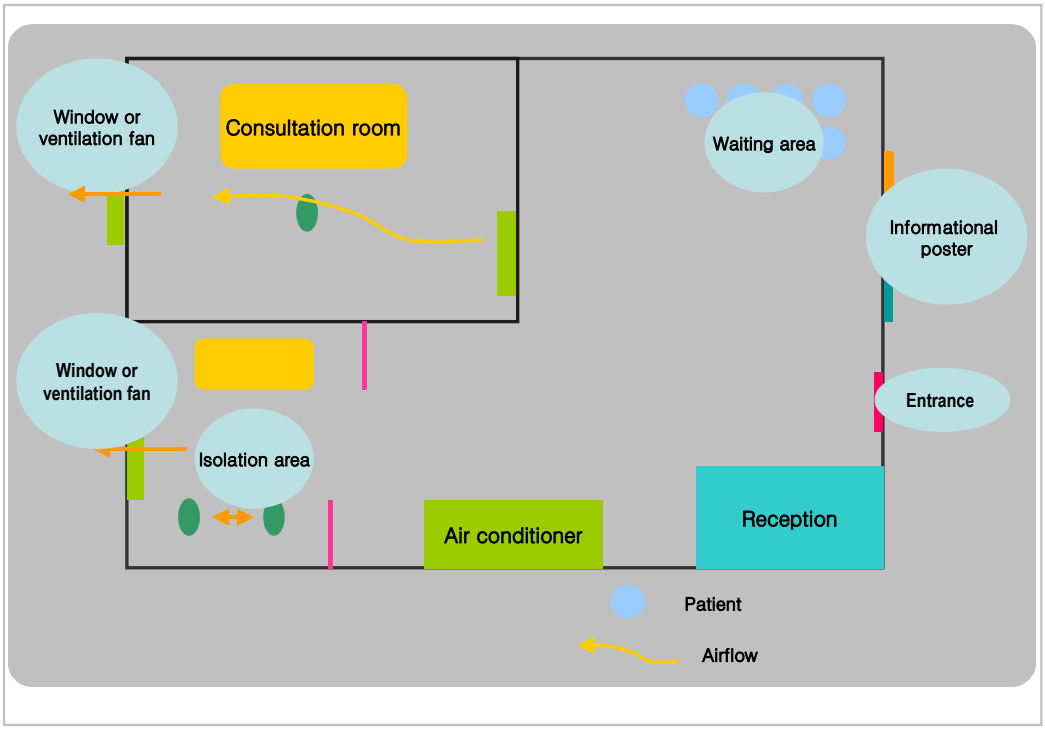

Figure 6. Example of a Separate Isolated Area for Outpatients

B. Emergency Room Admission of Patients Suspected of Pandemic Influenza

❍ Promote appropriate treatment and prevent the spread of influenza within the hospital through early detection of patients.

❍ Early Detection and Triage of Patients Suspected of Influenza

- Post visual notices (poster) at the entrance of the emergency room to expedite processing of patients with influenza-like-illness. Inform people of cough etiquette to help prevent further spread.

- Assign personnel (e.g., triage officer, doctor or nurse) to classify patients. Check all patients visiting the emergency room for to see whether they are infected.
- Measure the body temperature of all patients and visitors.
- Have patients fill out a questionnaire (fever, respiratory symptoms).

❍ Patient Management

- While examining patients, strictly adhere to personal hygiene such as wearing personal protective equipment and hand washing.
- Prepare a separate waiting room exclusively for suspect cases or patients with respiratory symptoms.
- In order to minimize contact with other patients, allow influenza cases to receive preliminary examination as soon as they arrive.
- Form a preliminary examination team reserved for influenza cases. The team is to refrain as much as possible from involvement in treatment of other patients. The daily team assignment should be made in advance.
- The examination team should question all patients about influenza related symptoms during examination.
- Once decision to admit patient is made, quickly take patients to rooms.
- Patients should wear a surgical or procedure masks and wash hands before going to rooms.
- When going to rooms, patients should be transported via the shortest route which is not used by other people (or patients).
- Decide on a transport route in advance to avoid confusion.
- Medical personnel escorting the patient should adequately protect themselves.
- Admission paper work should be processed by a dedicated division in order to expedite the process.

※ When setting up an isolation room inside the emergency room

- To the extent possible, suspect cases should wait and be treated in an isolated setting.

※ When setting up an isolation room outside the emergency room

- In case of a mass influenza outbreak, an isolation facility may be set up outside the emergency room to treat suspect cases.
- Use tent, container, makeshift structures, etc.

Table 14. Isolation Room Requirements

- Independent ventilation system
  - Negative pressure ventilation system is the standard. If not feasible, install air filtration system.
  - If air filtration system is not available, install a fan or open windows for ventilation and adequate air flow.
- Separate restrooms.
- Patients in isolated waiting rooms should be distanced from each other by approximately 1 m.
- Provide tissue for patients to use when coughing.
- Place a trash bin (one that can be operated without touching it with hands) in the waiting room to dispose contaminated tissue and other objects.
- Keep thermometer, hemadynamometer, stethoscope, torniquet, and CPR equipment and other equipment in a separate place.
- Use disposable supply during treatment. Thoroughly disinfect when reusing.
- Use portable X-ray machine for radiography.
- Have patients suspect cases wear surgical or procedure mask.
- Setup a hand washing facility in the waiting room. If this is not feasible, then provide hand disinfectant (alcohol-based disinfectant).
- Minimize movement of patients in the waiting room.
- Minimize contact with patients in the regular waiting room.
- If possible, have separate entrances.
- Display detailed information at entrance and exits.

C. Protocol for Handling Suspect Cases Visiting the Hospital as Outpatients

❍ Once a pandemic develops, the number of patients visiting with influenza- like-illness symptoms will increase. Therefore, triage officer should be appointed to be in charge of patient triage. Also prepare separate waiting and treatment areas to prevent transmission.

❍ Early Detection and Triage of Suspect Cases

- Post visual notices (informational posters) at hospital entrance, entrance for outpatients, receptionist's window, and information desk, to expedite processing of patients with influenza-like-illness, and to inform people to practice cough etiquette to deter further spread.
- Measure temperature of hospital visitors (patients and visitors).
- Take survey at the hospital entrance and exits regarding symptoms (fever, respiratory symptoms).
- Assign a person in charge of triage for proper classification of all visiting patients.
- When patients visit the hospital, assess patients in advance through means such as phone consultations for setting up appointments. Prevent unnecessary visits to healthcare facilities.

❍ Infection Control

- Have influenza patients (or patients with respiratory symptoms) wait in a separate reserved waiting room.
- Negative pressure ventilation system is the standard. If not feasible, install air filtration system.
- If air filtration system is not available, install a fan or open windows for ventilation and adequate air flow.
- Patients in isolated waiting rooms should be placed about 1 m apart.
- Provide tissue for patients to use when coughing.
- Have coughing patients wear surgical or procedure mask.
- Place a trash bin (one that can be operated without touching it with hands) in the waiting room for used tissues.
- Have suspect cases wear surgical or procedure mask.
- Setup a hand washing facility in the waiting room with disposable towels. If this is not feasible, then provide hand disinfectant (alcohol-based disinfectant).
- Minimize patient movement.
- Minimize the opportunity to come into contact with other patients

in the waiting room.

- If possible, have a separate entrance.
- Display detailed information at entrance and exits.
- While examining patients, strictly adhere to personal hygiene such as wearing personal protective equipment and hand washing.
- Measures when hospitalizing
- Once decision to hospitalize is made, quickly move to the patient's room.
- When transporting patients, wear a surgical or procedure mask and wash hands prior to transport.
- Use the shortest possible transport route. Use a route that other people (or patients) do not use.
- Decide on a transport route in advance to avoid confusion.
- Medical personnel transporting the patient should adequately protect themselves.
- Admission paper work should be processed by a dedicated division in order to expedite the process.

Annex 1-3

Influenza Diagnosis and Treatment During a Pandemic

(1) Influenza Diagnosis During a Pandemic

1 Pandemic Influenza Diagnostic Criteria

A. Interpandemic and Pandemic Alert Periods

❍ Clinical Criteria

- Influenza-like illness (ILI) is defined as fever above 38℃ with one or more of the followings: cough, sore throat, or dyspnea.
- The clinical behavior of the influenza, however, may depend on the age group and the outbreak strain. Therefore, symptoms of conjunctivitis or digestive problems may be accentuated.Elderly patients may not have high fever.
- Also, in case of H5N1, the symptoms may appear similar to severe acute respiratory disease.
- Therefore, additional symptoms must be redefined depending on the characteristics of the pandemic strain.
- The clinical criteria at the early stages of the pandemic should be amended to fit the clinical behavior of the pandemic strain through surveillance.
- During the interpandemic and the pandemic alert period, the RT-PCR and the viral culture test are recommended only for the following patients: hospitalized patients suspected of influenza along with pneumonia, or patients not hospitalized but possibly exposed to a novel influenza virus (contact with poultry or pandemic influenza patient at an outbreak zone).

❍ Epidemiologic Criteria

- The risk level of contact with a novel virus with pandemic potential

is related to epidemiologic criteria. The important risk factors are travel and work history.

- The incubation period for seasonal influenza is about 1~4 days. In the case of a pandemic by a novel virus, however, the time between contact and symptoms may be longer.
- Therefore, the evaluation of a patient's exposure history should cover up to 10-days within symptom onset.
- The following jobs are epidemiologically relevant occupations: medical professionals examining patients suspected of infection by a novel influenza virus, laboratory researcher handling influenza virus or conducting animal testing, and poultry farm workers or poultry meat processors on farms where there was an outbreak of avian influenza.

- Epidemiologically relevant travel history includes visits to poultry farm with avian influenza outbreak, direct contact with poultry, close contact with patient infected with the new influenza, and travel to pandemic influenza outbreak zone.

  * History of Direct Contact with Poultry
    1) Handling sick or dead birds
    2) Touching poultry feces or surfaces contaminated with poultry feces
    3) Consuming undercooked poultry in the outbreak zone.
  * Close contact with pandemic influenza patient is defined as a handshake distance (about 1m).

※ In reality, testing for avian influenza (H5N1) is not possible in many regions. Therefore, close contact with patientswith unexplained severe respiratory infection must be evaluated for the possibility of pandemic influenza virus infection.

- Areas for Evaluation in Patients Suspected of Influenza during the Interpandemic and Pandemic Alert Periods

① Assess Risk for Contact with Novel Influenza Virus: Travel and Work History
② Seasonal Influenza and Pneumococcal Meningitis Vaccination History
③ RT-PCR, Viral Culture: Hospitalized patients and those with confirmed epidemiologic contact
④ Depending on the patient's clinical condition, perform the following tests
- Oxygen Saturation Test
- Chest X-Ray
- CBC, Blood Culture Test
- Sputum and Pleural Test (Gram Stain and Culture Test)
- Virus Isolation Test Using Throat Specimen (Culture, PCR, Immunofluorescent analysis)
- Legionella Urinary Antigen Testing, Pneumococcal Urinary Antigen Testing
- If evidence of pneumonia: Mycoplasma, Chlamydia PCR
- Liver Function Test, Kidney Function Test

B. Pandemic Period

❍ Clinical Criteria
- Defined as fever above 38℃ with one or more of the followings: cough, sore throat, or dyspnea. The new pandemic influenza, however, has different clinical symptoms. In this case, the criteria will need to be redefined to fit the new symptoms.

❍ During the pandemic period, the novel influenza virus is already widely spread and the clinical criteria are already established. Therefore, the clinical criteria are enough to diagnose a patient and the epidemiologic criteria (recent contact) is not important.

❍ Required Evaluation on and Processing of Suspected Patients during the Pandemic Period
- Early Pandemic Stage: Evaluate all patients prior to cohorting.
- Pandemic in Progression: Laboratory confirmation is not needed for all patients. Perform on some patients to monitor antigenic change and antiviral drug resistance.

* RT-PCR, viral culture

* Depending on the patient's clinical condition, perform the following tests.
  - Oxygen Saturation Test
  - Chest X-Ray
  - CBC, Blood Culture Test
  - Sputum and Pleural Liquid Test (Gram Stain and Culture Test)
  - Virus Isolation Test Using Nasopharyngeal Specimen (Culture, PCR, Immunofluorescent analysis).
  - Legionella Urinary Antigen Testing, Pneumococcal Urinary Antigen Testing
  - If evidence of pneumonia: Mycoplasma, Chlamydia PCR
  - Liver Function Test, Kidney Function Test
    * Perform secondary evaluation and treatment for viral pneumonia.
  - Sputum Gram Stain and Culture Test: *Streptococcus pneumoniae, Staphylococcus pneumoniae GroupA streptococcus, Hemophilus influenza*
  - Respiratory Infection Prevention Plan
  - Antibiotic Treatment: extended-spectrum macrolide, fluoroquinolone

(2) Decision to Hospitalize

1 Factors to Consider in Decisions for Hospitalization

❍ The criteria for hospitalization are variable. During the early stages, limit hospitalizations to patients with severe complications and gradually expand the scope according to the following clinical and epidemiologic factors.
  - Available healthcare workers and hospital beds.
  - The existence of high-risk underlying medical condition(s)
  - Complications (e.g., severe pneumonia or exacerbation of underlying conditions)
  - Age

❍ Decision to Hospitalize Based on High-Risk Underlying Conditions

- Patients in unstable condition will be considered high priority. If a high- risk patient worsens despite treatments such as antibiotic administration, resort to hospitalization.

Table 15. Groups at High Risk for Complications in Case of an Influenza

● Over 65 Years of Age ● Patients with Chronic Pulmonary Disease (e.g., COPD or Asthma) ● Patients with Chronic Cardiovascular Disease ● Patients with Chronic Renal Failure ● Patients with Chronic Liver Disease ● Metabolic Disease (Including diabetes) ● Immunocompromised persons (Including those receiving Chemotherapy, AIDS patients, and organ donors)	● Residents of Chronic-Care Facilities ● Children and Adolescents (6 Months~18 years) Taking Aspirin on a Long-Term Basis ● Children aged 6~23 months ● Pregnant Women (in 2nd or 3rd trimester) ● Patients with Hematologic Disease (e.g., anemia or hemoglobinemia) ● Cancer Patients ● Patients Unable to Move on Their Own

❍ For patients with pneumonia, decide on hospitalization by the severity of the condition. Patients may be evaluated using the CRB-65 score.

● Evaluation list

① Confusion

② Respiratory rate: 30 or more breathes per minute

③ Low Blood Pressure (Systolic Blood Pressure 90mmHg or lower, or Diastolic Blood Pressure 60mmHg or lower)

④ Over 65 Years of Age

● Number of Applicable Criteria Above

- 0~1 : Home Care
- 2 : Short term hospitalization or outpatient care
- 3 or more : Hospitalization

(3) Patient Management

1 Guidelines for Home Care and Home Nursing of Pandemic Influenza Patients

A. Management of Influenza Patients in Home Care

❍ To the extent possible, separate the influenza patient from the rest of the family members.

❍ Wearing surgical masks during contact with caregiver may be beneficial.

❍ If dishes and utensils can be washed in warm water and soap, there is no need to use separate dishes and utensils for the patient.

B. Management of Other Family Members at Home

❍ Consider designating one family member with low risk of infection as the primary care giver.

❍ Persons who are not essential for patient care should not enter the patient's room. If a person must enter the room, avoid close contact.

❍ Be vigilant for the development of influenza-like-illness (ILI), such

as fever, cough, and sore throat.

2 Patient Hospitalization Management

A. Designate Hospital for Inpatient Treatment

❍ Interpandemic Period

- Designate central treatment hospital in each region.
- During the interpandemic period, patients suspected or confirmed of new influenza virus infection will be, by rule, immediately transported to the central hospital.

❍ Pandemic Period

- During the early stages of the pandemic, if necessary, patients will be transported to designated treatment hospitals for treatment.
- During the pandemic period, patients requiring hospitalization can be admitted to any nearby hospital or designated treatment hospitals instead of going to the central hospital.

B. Cohorting

❍ Cohorting should be used on patients hospitalized during a pandemic to separate confirmed patients and clinically diagnosed patients.

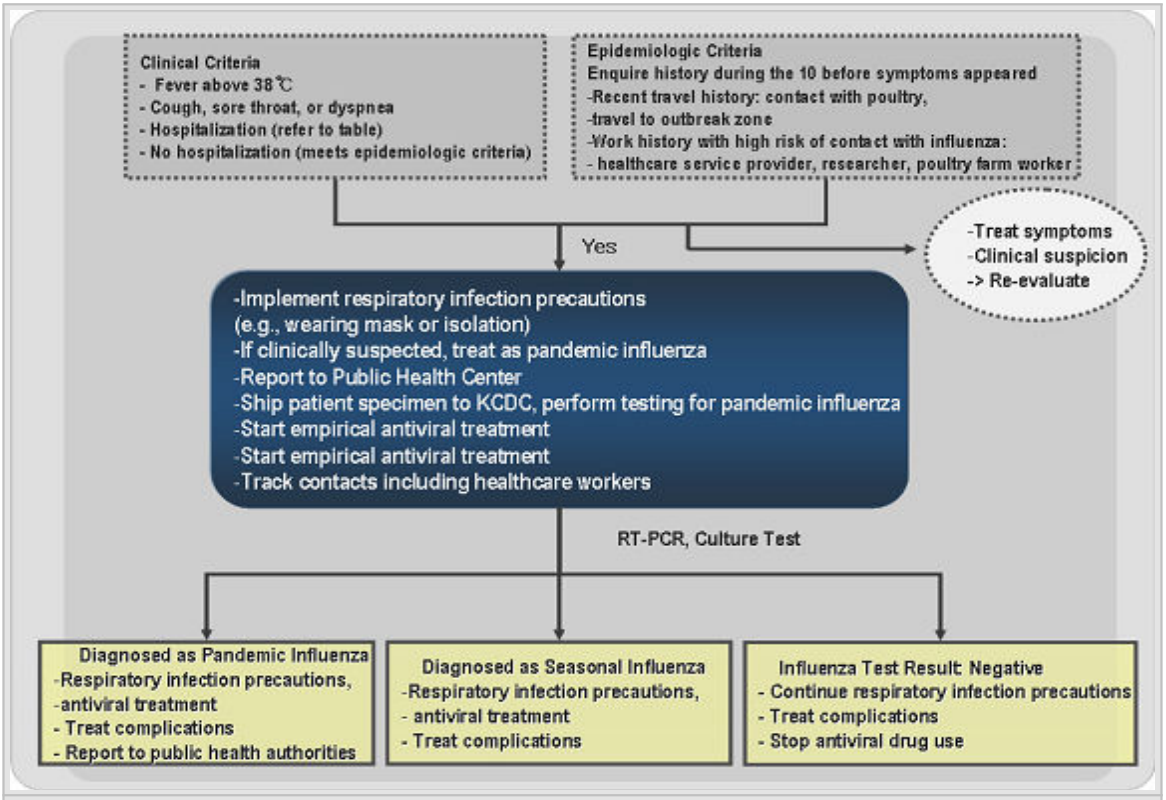

Figure 7. Suspect Patient Diagnosis During an Influenza Pandemic

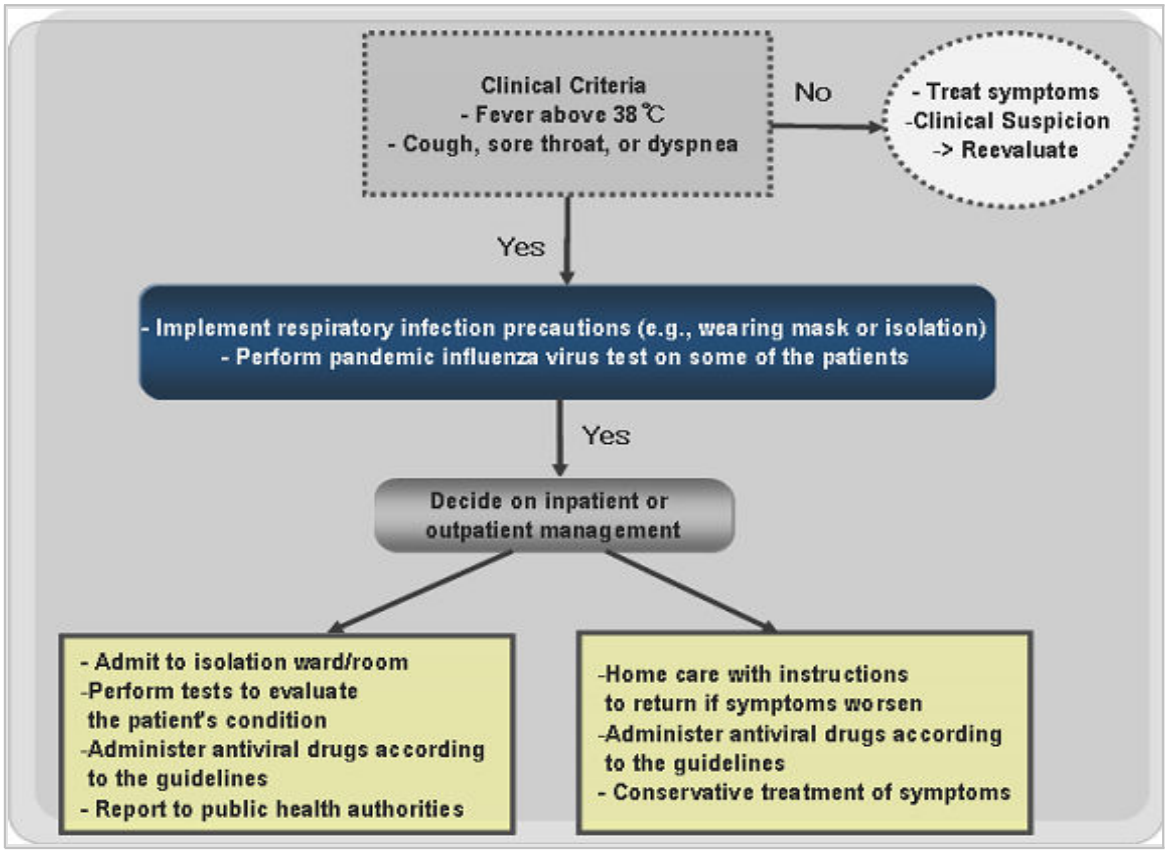

Figure 8. Criteria for Inpatient/Outpatient Triage During an Influenza Pandemic

Annex 1-4

Home Care Guidelines

Influenza patients receiving home care will be able to stay at home and be cared for by family members or others who live in the household. During the incubation period, the patient's family has a higher risk for developing influenza. The main objective in a home care setting is to limit the transmission of pandemic influenza within and outside the home.

Influenza Self-Diagnosis at Home

❍ **How do you know if you have influenza-**

- Sudden illness
- Fever >38℃
- Cough
- One or more of the following symptoms: sore throat, myalgia, or fatigue

❍ **How do you know if you have fever**

- Fever associated with a disease is a sign that the body is fighting the infection. Although sometimes it is possible to know whether you have a fever simply by touching your forehead or neck, you still need to confirm the fever by measuring you temperature. Temperature may be measured with a thermometer at the mouth, ear, armpit, or rectum. Because mercury is poisonous and glass can easily break, using a glass mercury thermometer is not recommended. Ideally, a digital thermometer should be used at the mouth, armpit, or rectum,and a special ear thermometer should be used to measure ear temperature. These thermometers may be purchased at a pharmacy.

- In the following situations, you or your child has the fever.
  - ・Rectum temperature of 38.5℃ or more
  - ・Mouth or ear temperature of 38℃ or more

・Armpit temperature of 38℃ or more

Influenza Self-Care at Home

A. Home Care for 18 Years and Older

❍ **No co-morbidity :**

- Take Tylenol (Acetaminophen), Brufen (ibuprofen), or Aspirin (acetylsalicyclic acid) to treat arthralgia or myalgia
- Fluids
- Rest
- Drink hot liquids
- Decongestants
- Do not smoke or be exposed to second had smoke

❍ **Co-morbidity: In addition to above**

- Supervision: family, friends, nurse, etc.
- After treatment by the primary physician, administer antiviral drugs if possible. (If the patient visits hospital before 48 hours of onset, pandemic priority is undetermined)
- Review the home care guidelines and call or visit hospital after 48 hours.

B. Home Care for Children

❍ **Influenza of Newborns to 6 Years of Age without Complications**

- Most symptoms will go away in 5 to 7 days.
- Administer Tylenol or Brufen to relieve fever (give the dose recommended on the package every 4 to 6 hours until temperature drops. Do not exceed 5 doses in a 24 hour period). Do not give aspirin. Antibiotics will not help.
- Dress the child in lightweight clothing and keep the room temperature at around 20℃.
- The child should get rest and stay home for at least 6 days.
- Drop salt solution into the nose to alleviate stuffy nose.
- Teach the child to cover the mouth when coughing. Teach the child

to dispose used tissues in a trash bin, and to wash hands frequently.
- Avoid cool baths.

❍ **Influenza of Child Over the Age of 6**
- Make the child get rest.
- While awake, make the child frequently consume liquid. If the child's urine color is dark, consume more liquid.
- Give the recommended dose of Tylenol or Brufen every 6 hours for fever and muscle aches. Do not give aspirin to child under the age of 18. Antibiotics do not help.
- Treat the child's symptoms.
- Teach the child to cover the mouth when coughing, dispose used tissues in a trash bin, and wash hands frequently.
- Until you feel the child has gotten a little better, take at least 6 days off from school.

Other Measures

❍ The following is recommended for individuals who live alone, are a single parent of young children, or takes care of a disabled person by him/herself.

- Consume plenty of fluids for 1 to 2 weeks.
- Stock enough basic supplies of household items (e.g., tissues) to last for at least for 1 to 2 weeks
- Have Tylenol and a thermometer ready. Learn how to use and read a thermometer correctly
- Think of someone to call for assistance when severely ill with the flu and discuss the possibility with him/her.
- Make arrangements for some person/place to take care of the children in emergency situations.

Influenza Patient Management at Home

- To the extent possible, physically separate the influenza patient from others who are not ill.
- Patients should not leave the house while he/she is infectious to others. If it is necessary to leave the house, (e.g. hospital visits), the patient should follow respiratory hygiene/cough etiquette and wear a mask
- Wearing surgical masks during contact with caregiver may be beneficial.
- If dishes and utensils can be washed in warm water and soap, it is not necessary to separate dishes and utensils to be used by the patient

Management of Others During Home Care

- Persons unexposed to influenza pandemic and unessential for patient care should not enter the patient's room while the patient is running a fever.
- If an unexpected guest needs to enter the home, avoid close contact with the patient.
- Household members of a home with a pandemic influenza patient should minimize contact with the patient.

Infection Control at Home

- Consider designating one family member at low risk as a primary caregiver.
- Unless necessary for patient care, family members should not enter the patient's room. If someone must enter, avoid close contacts.
- Family members should be vigilant for the development of influenza like symptoms, such as fever, coughing, and sore throat. Consult with healthcare providers to determine whether a pandemic influenza vaccine or antiviral prophylaxis should be considered during a influenza pandemic.
- All family members must practice hand hygiene after contact with the patient or patient's surrounding environment.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical/procedure mask when dealing with the patient may be beneficial.
- Dishes and utensils should be washed in warm water and soap. Separation of dishes and utensil for use by the patient is not necessary.
- Laundry may be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate the patient's laundry from other people's laundry. Care should be used when handling laundry to avoid self-contamination. Hand hygiene must be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Place a bag for this purpose at the bedside.
- Environmental surfaces in the home should be disinfected using normal procedures.

Annex 1-5

Hospital Preparedness and Response for Influenza Pandemic and Infection Control

[1] Hospital Emergency Response Committee

❍ A committee should be formed with the following personnel for hospital infection control and personnel management.

- Committee Head: President/Chief Administrator of Hospital, or Chief Medical Officer
- Head of Infection Control
  - Infectious disease physician
  - Head of Respiratory Therapy or Internal Medicine Department (in the absence of an infectious disease physician)
- Infection Control Officer
  - If the hospital does not have an infection control nurse, appoint a senior nurse from the internal medicine department
- Fellow Representative
- Resident Representative
- Social Worker
- Emergency Room Head Physician or Head Nurse
- Head of Intensive Care Unit, Head of Surgery
- Head of General Affairs/Management/Administration
- Chief Nursing Officer for Outpatients, Chief Nursing Officer of Inpatients
- Head of Pharmacy Department
- Head of Nutrition Services
- Head nurse of Central Supply, head nurse of outpatient ward(internal medicine), head nurse of inpatient ward (internal medicine)
- Head of Contracted Cleaning Service

(2) Inpatient Management

1 Cohorting

❍ During the early stages of the pandemic, in order to prevent cross-transmission when housing patients with influenza-like-illness virus (e.g., para-influenza virus, seasonal influenza virus, or respiratory syncytial virus), separate confirmed influenza patients from clinically diagnosed patients.

2 Compliance with Respiratory Infection Control Guidelines

❍ Hospitals should establish and follow respiratory infection control guideline

1) Once the pandemic progresses, due to increased number of false negatives, the benefits of diagnostic tests are limited. Therefore, isolate and treat patients if they meet the clinical criteria for influenza.
2) Radiography should be performed using portable X-ray equipment inside the isolation ward. Movement outside the isolation ward should be minimized. If it is necessary to move the patient out of the ward, make sure that the patient wears a surgical mask and performs hand hygiene.
3) Personnel assigned to pandemic influenza isolation ward such as doctors, nurses, transport team, and caregivers should not be involved in patient treatment, care, or transport in any other ward.
4) Education and restriction of visitors are needed.
- Screen visitors for signs or symptoms of influenza infection, and restrict symptomatic persons from entering.
- Limit visitors to persons who are essential to the patient's emotional well-being and care.
- Firmly instruct visitors to wear masks and practice hand hygiene before entering the isolation ward.

3 Adequate Isolation Ward (Patient Room) Conditions

❍ A space isolated from general wards is need.

- If possible, section off a zone, such as a wing, and convert it to an isolation area.
- If possible, the facility should be equipped with a separate ventilation system including a negative pressure system.
- A treatment room is needed within the isolation ward for aerosol-generating procedures.
- A space should be provided for medical personnel to disinfect, shower, and change after treating patients.
- Isolation wards must be equipped with separate medical equipment for use during non-emergencies.
- During a pandemic, if the negative pressure system is not available or out of service, provide a separate room for cohorting influenza patients (patients should be 1 meter or more apart).

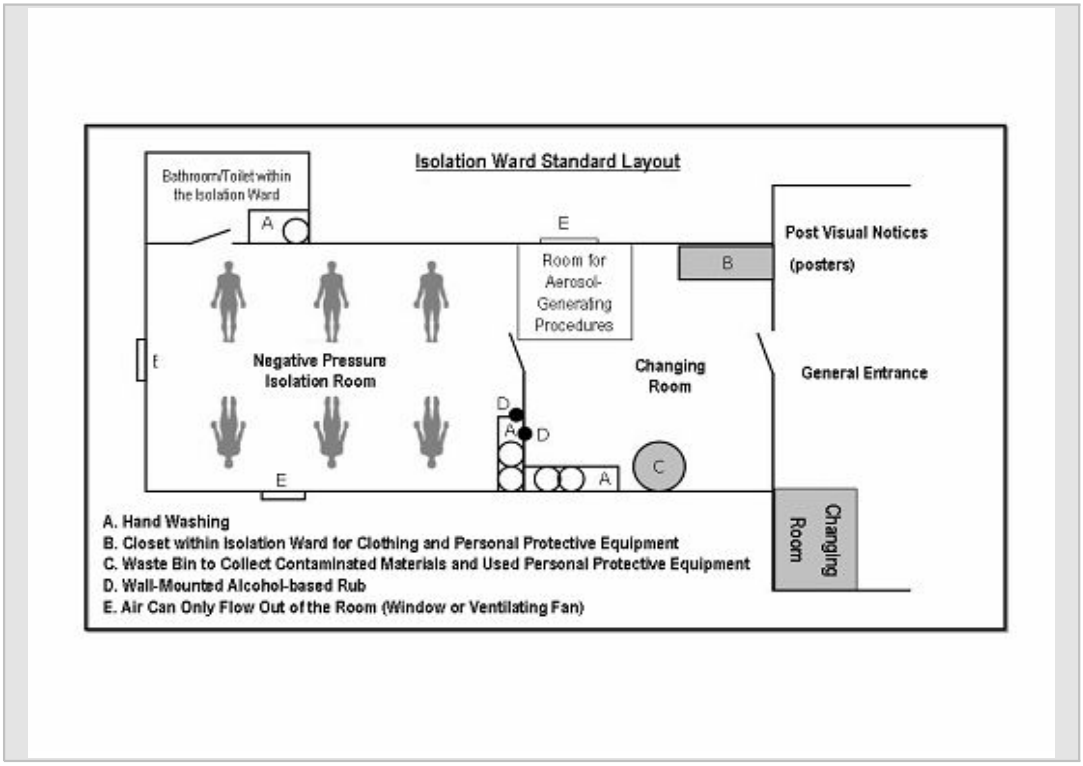

Figure 9. Example of a Pandemic Influenza Isolation Ward

4 Management of Infectious Influenza Patients in the Hospital

A. Influenza Transmission Routes

❍ Droplet Transmission (Main Infection Route)

- Droplets may be generated when coughing, sneezing, talking, and during suctions or bronchoscopy. Infections occur by exposure to droplets at the conjunctivae or the mucous membrane of the nose of mouth within a handshaking distance (about 1m).

❍ Transmission by Direct Contact

❍ Infections may occur through direct contact with the patient's contaminated skin while doing activities such as turning the patient or cleaning the patient's wound.

❍ Contact transmission may also occur through indirect contact through objects such as bedding contaminated with the influenza virus.

❍ Airborne Transmission

- The possibility of long-range infection by airborne transmission of influenza is low.

❍ It may be possible when aerosol-generating procedures are performed in a closed, unventilated space. Such procedures include endotracheal intubation, suctioning, nebulizer treatment, tracheostomy, bronchosocopy.

B. Prevention of Nosocomial Transmission of Influenza (See Attachment)

❍ In order to prevent nosocomial transmission, each hospital should handle patients according to the Respiratory Infection Control Guidelines.

○ **Patient Placement**

(1) Place patient in a single-occupancy room that has a negative pressure compared to surrounding environment and ventilated 6-12 times an hour.

(2) Always close the patient's room door.

(3) If solitary room is not an option, group patients with same virus in the same room.

○ **Medical Personnel and Visitor Protection**

Use N95 mask when going into a patient's room.

○ **Patient Transport**

Minimize patient transport. If transport is necessary, then make the patient wear a surgical mask to minimize droplets.

❍ Other Issues

- Radiography should be performed using portable X-ray equipment inside a closed isolation ward. Minimize movement outside isolation ward.
- If movement outside the isolation ward is necessary, ensure that the patient wears a surgical mask and performs hand hygiene.
- A surveillance system is needed for early detection of influenza-infected patients within the hospital.
- Have the medical staff keep a daily log of the patients and record fever, sore throat, cough, and dyspnea to monitor any developments.
- Early detection among hospitalized patients suspected of influenza can be done through fever monitoring.

❍ Isolation of influenza patient is needed (isolation room or isolation ward)

- Interpandemic, Pandemic Alert, or Early Pandemic Period
- For normal patients, isolate until 7 days after fever goes down.

- For child patients, isolate until 21 days after start of symptoms.
- For immunocompromised individuals, isolation is needed for the duration of the illness.

❍ Pandemic Period

- Pursuant to the Hospital Emergency Response Committee's decision, isolation period may be shortened. Depending on the patient's condition, the patient may be isolated at home after fever reduces.
- Once the pandemic spreads in the local community, isolation may no longer be necessary.

❍ Education for Patients Infected With the Influenza

- Teach respiratory hygiene and etiquette to patients suspected of influenza infection.
- Cover mouth and nose while coughing or sneezing.
- Use tissue to wipe respiratory secretions.
- Dispose tissues used to wipe respiratory secretions in the nearest separate-collection waste container.
- If the hands touched respiratory secretions or surfaces/objects that could be contaminated, thoroughly wash hands with soap.
- Post visual notice (poster) in the patient's room where it is noticeable.

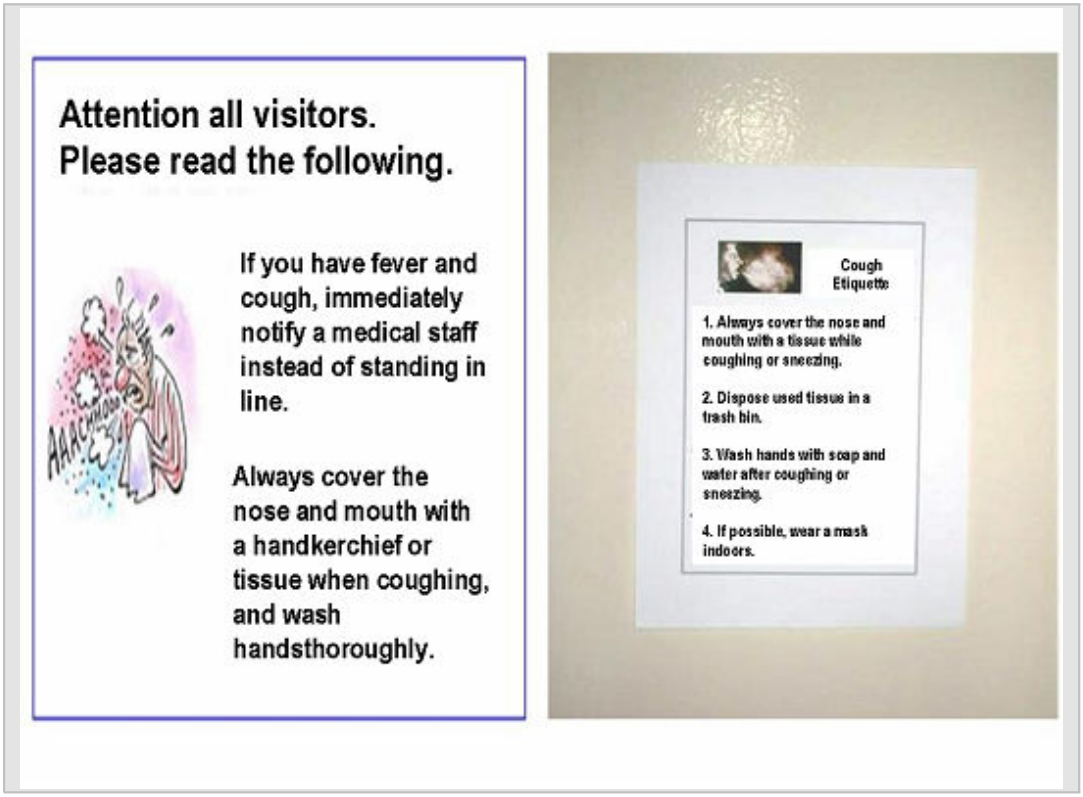

Figure 10. Informational Poster of Pandemic Influenza Cough Etiquette

❍ Wear Adequate Personal Protective Equipment(PPE) while Attending Patients.

- Mask: Always wear a mask inside the isolation ward
  · Wear a N95 mask while entering and leaving the isolation room.
- Head-covering and glove
  · In attending patients, wear headgear and gloves. If necessary wear a gown and protective eyewear.
  · If gloves become damp while handling patients, wash hands and put on new gloves.
  · Do touch eyes, face, or surrounding environment while wearing gloves.
  · Do not reuse gloves or masks.
- Gown
  · Wear a separate gown when attending to influenza patients.
  · Disposable or washable gowns should be used only once and placed in a laundry room or separate bin. If gowns are in short

supply, establish a priority for use.

- Hand washing
  - ㆍAlways wash hands after contact with influenza patient.
  - ㆍWash hands after removing gloves.
  - ㆍProvide plenty of tissues and trash bins with pedals operated by foot.
  - ㆍPlace soap and disposable hand tissue at the wash basin.
  - ㆍPlace alcohol-based hand disinfectants.
- The order of putting on protective gear is: hand washing, gown, mask, headgear, protective eyegear, gloves. The order of removing protective gear is protective eyegear, headgear, gown, gloves, hand wash, mask, and hand washing.

❍ Vaccinate high-risk patients and medical personnel (if vaccine exists).

❍ Consider administering antiviral drugs for treatment to those with contacts with pandemic influenza infected patients, or patients and medical personnel treating or handling patients

Figure 11. Outfit for Handling Pandemic Influenza Patients

Table 16. Recommendations for Pandemic Influenza Patient Management and Related Infection Control

Infection Control Subjects	Recommendations
Standard Precautions	
Hand Hygiene	- Wash hands after touching saliva, blood, body fluids, and other secretions and in between patient contacts. - Alcohol-based products (gel, rinse, foam) vs. soap (antimicrobial and non-anitmicrobial soap) :In the absence of visible soiling, alcohol-based products are preferable because they are convenient and dry quickly.
Personal Protective Equipment (PPE)	- When entering a patient's room, wear personal protective equipment, such as N95 mask, gown, and gloves. Remove all equipment before exiting
Patient Resuscitation	- Avoid unnecessary mouth-to-mouth contact : mouthpiece, resuscitation bag, other ventilation device
Laundry / Utensils Cleaning	- Although the influenza patient's laundry may be washed with other people's laundry, avoid carrying the laundry in both arms and "hugging" it. Make sure to wash hands after laundry. - Wear gloves while handling the patient's dishes and utensils.
Environmental Cleaning and Disinfection	- Use EPA-registered disinfectants to disinfectthe environment, paying special attention to frequently touched surfaces. (bed rails, phones, lavatory basin, toilet)
Disposal of Contaminated Waste	- Collect and dispose of contaminated waste in accordance with national, local, or hospital regulations. - When handling waste, wear gloves and wash hands after removing gloves.
Respiratory Hygiene /	- Cover mouth and nose with hand while coughing or

Cough Etiquette	sneezing. - Wear mask if possible and maintain a distance of 1 m or more with others. - Always wash hands after touching respiratory secretions.
Droplet Precautions	
Patient Placement	- Cohort patients in isolation room or ward. - Door should always remain closed. * During the early stages of a pandemic, all influenza patients should be laboratory diagnosed and confirmed, if possible.
Personal Protective Equipment (PPE)	- Always wear a N95 mask in an isolation ward. - Wear extra personal protective equipment according to the type of patient handling.
Patient Transport	- Unless medically necessary, limit patient movement outside of the isolation room or ward. - If movement is necessary, have the patient wear a surgical mask.
Aerosol-Generating Procedure	- Endotracheal intubation, suctioning, nebulizer treatment, tracheostomy, bronchoscopy. : Wear a N05 mask, gloves, gown, and protective eyewear.

Table 17. Applicability of Personal Protective Equipment(PPE) According to Influenza Pandemic Phases and Risk Levels

	Primary Physician/ Assigned Professor/Assigned Nurse	Other Medical Service Providers, Visitors	Cleaning Staff	Other Medical Personnel
Pandemic Alert Period				
Medium-risk Area Non-isolation Ward	○ Ⅰ (Treating Fever Patients)	○	Kitchen Gloves	Ⅰ(Contact with Fever Patient) Ⅳ (Aerosol-generated)
High-Risk Area Isolation Ward ICU Virus Testing Room	III	Ⅲ	Ⅲ	II (Contact with Fever Patient) Ⅳ (Aerosol-generated)
Pandemic Period				
Medium-risk Area :Other Ward	Ⅱ (Treating Fever Patients)	Ⅰ	Ⅲ	Ⅲ Ⅳ(Aerosol-generated)
High-risk Area	II/ⅡI	II/IⅡ	III or Ⅳ	Ⅱ Ⅳ (Aerosol-generated)

*** Personal Protective Equipment (PPE) Level**

0: No personal protective equipment needed

Ⅰ: Surgical mask, standard precaution

Ⅱ: N95 (FFP2) mask, standard precaution

Ⅲ: N95 (FFP2) mask, disposable gloves, disposable gown

Ⅳ: N05 (FFP3) mask, disposable gloves, disposable gloves, protective eyewear

Standard Precaution: Emphasize hand washing, gloves (when touching saliva, body fluids, blood), gown and mask (when droplets can be released).

Table 18. Personal Protective Equipment(PPE) by Levels in Isolation Ward During an Influenza Pandemic

	Entering and Leaving Isolation Ward	Close Contact (1m or less)	Aerosol-Generating Procedure
Hand Washing	○	○	○
Gloves	×	○	○
Gown	×	○	○
Apron	x	○*	○*
FFP3/FFP2 Mask	○	○	○
Head Gear	×	○	○
Protective Eyewear	×	Evaluate Risk Level	○

* When contamination from patient's waste is possible.

5 Visitor Management

❍ Education and restriction of visitors are necessary.

- Monitor visitors for influenza-like symptoms and restrict hospital visits.

❍ While visiting patients, visitors should wear **appropriate personal protective equipment (PPE)* .**

6 Infection Control for Medical Staff in the Hospital

❍ Take measures to ensure that physicians, nurses, transport team, and caregivers assigned to pandemic influenza patient isolation wards do not get involved in patient treatment, nursing, or transport in other wards.

❍ Wear personal protective equipment (PPE) when treating patients and strictly adhere to hand hygiene.

- Prepare disinfecting alcohol gel, N95 mask, glove, etc.

❍ Medical personnel working in an influenza isolation ward should monitor themselves for fever or respiratory symptoms. Hospital staff should record any respiratory symptoms as they enter and leave the isolation ward. A self-assessment form should be placed at the

entrance, and regular weekly evaluations should be performed.

- ❍ Seasonal influenza vaccination should be mandatory for all medical personnel working at the hospital. The medical staff treating patients infected with the influenza virus will receive top priority for antiviral treatment.
- ❍ Once vaccination for pandemic virus is available, medical personnel treating patients should be the first to be vaccinated.

7 Hospital Environmental Cleaning and Disinfection

A. Environmental Cleaning and Disinfection

- ❍ Clean at least once a day and after patient is discharged.
- ❍ Clean medical equipment and door knobs at least twice a day.
- ❍ Do not vacuum. Spray floor with water before sweeping.

B. Materials and Equipment Management

- ❍ Medical Equipment
  - Clean surfaces of equipment with an EPA-registered disinfectant before removing from the patient's room.
- ❍ Patient's Bedding and Clothing
  - Influenza patient's laundry may be washed with other persons' laundry. Do not, however, carry the laundry while holding it against the chest, or "hugging" it, and do not shake laundry items.
  - Always wash hands after doing the laundry.
  - Place bed linen and patient gown in a laundry bag inside the patient's room.
  - Close the opening of the laundry bag inside the patient's room.
  - Gloves should be worn when carrying and moving the laundry bag.
  - Gloves and gowns should be worn when handling the contaminated laundry.
- ❍ Bed Curtain

- Change the bed curtains every time the bed occupant changes.

❍ Utensils

- Wash utensils with hot water in dishwasher (do not wash manually).

❍ Uniforms

- Do not go to other areas in uniform.
- Set up a separate changing room next to the patient caring area.

Annex1-6

Hospital Preparedness Checklist

Preparedness Subject		Check
Ⅰ. Structure for planning and decision-making		
1. A committee for influenza preparedness has been established.		
2. List of influenza preparedness coordinators ** Members of the planning committee should include the following hospital staff members.(insert names)*		
Administration		
Legal counsel		
Infection control		
Hospital disaster coordinator		
Facility engineering		
Nursing administration		
Medical staff		
Intensive care		
Emergency department		
Laboratory services		
Respiratory therapy		
Psychiatry		
Environmental services		
Security		
Materials management		
Occupational health		
Clinical pathology		
Diagnostic imaging		
Pharmacy		
Mortuary		
Other members		
3. A local health center person has been identified as a committee liaison (Insert name)		
Ⅱ. Development of a written pandemic influenza plan 》A written plan has been completed or is in progress that includes the elements listed in Ⅲ below.		
1. The plan describes the organization structure that will be used		

to operationalize the plan.	
2. Responsibilities of key personnel related to executing the plan have been described.	
3. A simulation exercise has been developed to test the effectiveness of the plan. − A simulation exercise has been performed. (Date performed:)	
Ⅲ. Elements of an influenza pandemic plan	
1. A surveillance plan has been developed.	
(1) Syndromic surveillance has been established in the emergency room	
(2) Criteria for distinguishing pandemic influenza is part of the syndromic surveillance plan.	
(3) Responsibility has been assigned for reviewing global, national, regional, and local influenza activity trends and informing the pandemic influenza coordinator of evidence of an emerging problem. (Name:)	
(4) A system for monitoring for pandemic influenza activity in patients presenting to the emergency department	
(5) A system for monitoring for nosocomial transmission of pandemic has been implemented.	
2. A communication plan has been developed.	
(1) Person responsible for external communication	
(2) Health authority contact	
(3) Person responsible for contact with other public facilities	
(4) Essential personnel for communication and a list of other healthcare facilities	
(5) A meeting with local healthcare facilities has been held to discuss a communication strategy	
(6) A system to track pandemic influenza admissions and discharges	
(7) A plan for holding regular meetings to develop plans which reflects evolving situation in a pandemic	
(8) A plan for informing patients and visitors about the level of pandemic influenza activity has been established	
3. An education and training plan on pandemic influenza has been developed.	
(1) Level−appropriate materials for educating all personnel about pandemic influenza and the facility's pandemic influenza plan have been identified	
(2) Means for long−distance and local education of clinicians have been identified when influenza pandemic is confirmed.	
(3) Means for accessing web−based influenza training programs	

have been identified.	
(4) A facility has been identified to provide patient care when the hospital reaches surge capacity.	
(5) A location and means have been identified for rapidly training staff members.	
(6) The following groups of healthcare personnel have received training on influenza preparedness : – Resident – Fellow – Nursing staff – Laboratory staff – Emergency department personnel – Outpatient personnel – Environmental services personnel – Engineering and maintenance personnel – Security personnel – Nutrition personnel	
4. A triage and admission plan has been developed.	
(1) A specific location has been identified for triage of patients with possible pandemic influenza.	
(2) The plan includes provision of instructions and information for patients with possible pandemic influenza on the triage process	
(3) Patients with possible pandemic influenza will be physically separated from other patients	
(4) A system for phone triage of patients for purposes of prioritizing patients who require a medical evaluation has been developed. – Criteria for determining which patients need a medical evaluation are in place.	
5. A facility access plan has been developed	
(1) Criteria and protocols for closing the facility to new admissions are in place.	
(2) Criteria and protocols for limiting visitors have been established	
(3) A plan for maintaining hospital security is in place	
6. An occupational health plan has been developed.	
(1) A system for rapidly delivering vaccine or antiviral prophylaxis to healthcare personnel has been developed.	
(2) A method for prioritizing healthcare personnel for receipt of vaccine or antiviral prophylaxis hased on level of patient contact and personal risk for influenza complications has been established.	
(3) A system for detecting influenza among staffs in the hospital	

have been established.	
(4) A policy for managing healthcare personnel with symptoms of or documented pandemic influenza has been established. The policy considers : − When personnel may return to work after having pandemic influenza − When personnel who are symptomatic but well enough to work, will be permitted to continue working	
(5) A method for furloughing or altering the work locations of personnel who are at high risk for influenza complications has been developed	
(6) Mental health and faith−based resources who will provide counseling to personnel during a pandemic have been identified	
7. A vaccine and antiviral use plan has been developed	
(1) A contact for obtaining or managing influenza vaccine has been identified : (Name) _____	
(2) A contact for obtaining or managing antivirals has been identified : (Name) _____	
(3) A priority list and estimated number of patients and healthcare personnel who would be targeted for influenza vaccination or antiviral prophylaxis has been developed − Number of 1st priority health personnel − Number of 2nd priority health personnel − Number of remaining personnel − Number of 1st priority patients − Number of 2nd priority patients	
(4) A system for rapidly distributing vaccine and antivirals to patients has been developed	
8. Staffing in a pandemic	
(1) A plan is in place to address staffing needs in the hospital	
(2) The minimum number and categories of personnel needed to care for patients with pandemic influenza has been determined	
(3) Responsibility for monitoring clinical staffing needs during an influenza pandemic has been assigned. (name and title of persons responsible:)	
(4) A plan for education and training of newly recruited healthcare personnel	
(5) A plan for staffing newly recruited healthcare personnel	
(6) A method for sharing staff with other healthcare facilities in the region has been identified	
9. Strategies to increase bed capacity have been identified	
(1) Plans have been developed for canceling/delaying elective	

admissions and surgeries	
(2) Facilities that could be utilized for increasing the number of beds have been identified. – The estimated patient capacity for this facility is _____ – Plans for expanded bed capacity have been discussed with public health centers	
(3) Anticipated durable and consumable resources needs have been determined – A primary plan and contingency plan to address supply shortages has been developed. – Plans for obtaining limited resources have been discussed with public health centers.	
(4) A strategy for handling increased numbers of deceased persons has been developed. – Plans for expanding morgue capacity have been discussed with public health centers. – Local morticians have been identified. – Mortality estimates have been used to estimate the number of body bags and shrouds.	

Annex1-7

Hospital's Pandemic Preparedness Stockpiles

Supplies	Amount
Medical supply/equipment	
Test reagent	
Sphygmomanometer cuff(in various sizes)	
Stethoscope	
Thermometer(with disposable cover)	
Sterilized gauze pad	
Tourniquet	
Syringe	
3cc syringe, 25 gauge needle	
25 gauge 7/8" needle (for epinephrine)	
Tuberculin syringe with 5/8" needle (for epinephrine)	
Intravenous equipment	
Intravenous fluid	
Intravenous tubing	
Intramuscular diphenhydramine 50mg ampule	
Hypodermic 1:1000 epinephrine ampule	
Disposable tip, catheter, tubing, canisters	
Disposable manual ventilator	
Ventilator	
Oxygen tubing	
Oxygen mask	
Adult airway tubing	
Pediatric airway tubing	
Nasal prong	
Portable oxygen mask	
Oxygen saturation monitor and probe	
Inline suction catheter	
Portable inhaler	
Cotton ball	
Cotton swab	
Nasopharygeal swab	

Vaccine(daily dosage)	
Vaccine refrigerator/freezer	
Adverse reaction report form	
Vaccine consent form	
Vaccine information sheet	
Sterilize tissue	
Acetone	
Alcohol-based hand sanitizers	
Alcohol wipes	
Antibacterial hand wash	
Liquid soap	
Chlorine sprayer	
Gloves (latex, non-latex, in all sizes)	
Adherent tape(hypo-allergenic)	
Band	
Surgical/procedure mask	
Paper gowns in all sizes	
Protective eyeglasses	
Paper tablecloth	
Paper towel	
Pillow	
Blanket	
Bed/mattress	
Sick bag	
Waste bag (for ordinary waste, biohazard waste, autoclave waste)	
Patient identification tag	
Container	
Clean and sterilized surface	
Cold-pack (sodium nitrate, ammonium nitrate, jelly pack)	
Flashlights	
Corpse transport	
Supplies for antivirals	
Printed labels	
Antivirals	
Medical information sheet	
Pill counting tray or spatula	

Resealable pill pockets	
General supplies and equipments	
Canned food and beverage	
Chair	
Blackboard	
Supplies	
Drinking cup	
Envelope	
Cosmetic tissue	
File box	
Trash bin	
Staff name tag or uniform	
Emergency contact list	
Paper	
Paper towel	
Stationery	
Portable screen	
Post-it	
Rubber band	
Scissors	
Identification tools, tags	
Stapler	
Hospital table cover or pad	
Table	
Tape	
Telephone	
Water	
Supplies for exercise, communications	
Computer	
Papers for photocopy	
Printer	
Hospital broadcasting system	
Interactive mini radio or message delivery tools for VIPs or safety management	
VCR/TV (exercise or rehearsal, as appropriate)	
Camcorder (exercise or rehearsal, as appropriate)	

Annex 1-8

Vaccination Priority During a Pandemic

[1] Pandemic Vaccine Use When in Short Supply

1 Shortage of Vaccine Supply during a Pandemic

A. Worldwide Manufacturing Shortage

❍ Pandemic Vaccine Manufacturing Capacity Extrapolated from Seasonal Vaccine Manufacturing Capacity

- Currently, the trivalent (three-strain) flu vaccine is being manufactured worldwide. 15ug of each antigens are used to produce seasonal vaccine for about 300 million people (5% of the world population).
- During a pandemic, if the same amount of antigen (15ug) is used to produce a monovalent (one-strain) vaccine, it would be possible to manufacture three times as much as the currently manufactured volume.

B. Characteristics of a Pandemic Vaccine

❍ A large amount of antigen might be required for the pandemic vaccine to acquire sufficient immunity.

- Efficacy studies indicate that the seroconversion rate of the current H5N1 prepandemic vaccine is slightly above 50% after two 90ug doses. (NEJM, Safety and Immunogenicity of an Inactivated Subvirion Infiuenza A H5N1Vaccine)
- Therefore, in the case of the H5N1 strain, vaccine production output will decrease.
- Pharmaceutical companies are conducting researches on various adjuvants to improve immunogenicity.

❍ Two doses may be required for a pandemic vaccination to be effective.

❍ All assumptions, however, can only be confirmed after the pandemic onset.

❍ Vaccine pharmaceutical companies around the world are researching methods other than egg-based manufacturing, such as cell-culture method and DNA vaccine.

(2) Vaccination in the Case of a Vaccine Shortage

1 Prioritization and Phased Vaccination Depending on Vaccine Supply

❍ During a pandemic, vaccine will be in short supply. Therefore, it will be necessary to select priority groups, and vaccinate the population according to the pre-set priority.

2 Selecting Vaccination Priority Groups During Shortages

❍ Technical review and deliberation by the Influenza Subcommittee under the Korea Advisory Committee on Immunization Practices

- If necessary, KCDC shall establish an influenza subcommittee which will conduct a technical review, deliberate on the issue, and report to the Minister of Health and Welfare.

❍ Selecting Vaccination Priority Groups

- The initial decision will be made by the Minister of Health and Welfare
- If a government-wide consensus is necessary, then a Central Safety Management Committee meeting will be convened and consensus will be reached.

❍ Changing Priority Groups Based on the Epidemiologic Characteristic of the Pandemic Virus

- The order of priority should be flexible and adaptable to any change in the high-risk groups for pandemic virus infection and death.

- During the 1918 pandemic, in addition to infants/young children and the elderly, many of the fatalities were from the young 10~30 age group.
- In case of the 1957 and 1968 pandemic, many of the fatalities were from infants/young children and the elderly, as it usually is with seasonal influenza.

3 Current Pandemic Vaccine Use Priority (Draft)

❍ Vaccination is prophylactic with the goal of minimizing deaths and maintaining critical community services during a pandemic.

Table 19. Vaccination Priority Group Recommendation

Category	Rationale	Detailed Description
Healthcare Workers and First Responders	·Healthcare Workers are at the highest risk for infection and may transmit to patients. ·Healthcare Workers are essential service providers. ·Healthy medical personnel are necessary for patient treatment to reduce mortality	·Healthcare Workers (Hospital and clinic workers) ·First Responders (patient management, isolation, epidemiologists, quarantine inspectors) · Long-term Care Facilities Workers · 119 emergency responders
Essential Service Providers	·Must maintain essential community services	·Police, fire-fighters, utility workers (electricity and water) ·Communications & media workers, public transport and transportation workers. ·Critical administrative personnel (including civil servants in local governments) ·Military forces ·Undertakers and mortuary service providers.
High-Risk Groups	·Reduce morbidity and mortality ·Reduce demand on medical service by reducing morbidity	·Residents of chronic-care facilities, patients with underlying medical conditions (e.g., cardiac or pulmonary disorders) ·Pregnant women, 6-23 months old infants
Others	·To contain transmission by addressing key groups responsible for transmission	·Healthy adolescents and children aged 2-18 ·Healthy adults

4 Establishing Pandemic Vaccination Priority and Estimating Demand

※ Vaccination priority must be established during the interpandemic period.

❍ Pandemic Vaccination Priority Principles

- Healthcare service should be well-maintained. The high morbidity and mortality in high-risk groups should be taken into consideration.
- Must minimize impact on basic social functions and social order.
- Vaccination priority should be revised during a pandemic through re-evaluation based on epidemiologic investigations.

(1) Healthcare Workers

❍ Healthcare workers are the first line of defense in a pandemic. Maintaining healthcare services and the vaccine program is central to the implementation of the pandemic response plan.

❍ In South Korea, approximately 340,000 fall into this group, including physicians, nurses, and pharmacists.

Table 20. Number of Healthcare Workers by Occupation

Occupation	Number of Professionals
Physicians	82,000
Nurses	202,000
Pharmacists	54,000
Doctors of Oriental Medicine	15,000
Dentists	21,000
Midwives	8,500
Medical Technicians	160,000
Total	542,500

*2004 figures from the National Statistics Office (Healthcare and Medicine)

(2) Essential Service Providers

- These are occupation groups necessary for handling emergencies and maintaining basic social order.
- Approximately 700,000 workers, including military personnel, fire fighters, and utility workers fall into this group. The demand may increase depending on the scope of essential service providers.

(3) High-risk Groups by Medical Conditions

- Immunocompromised patients due to underlying diseases such as chronic bronchitis, asthma, circulatory or respiratory ailments, such as renal failure, cirrhosis of the liver, diabetes, malignant tumor will display a higher morbidity and mortality rate due to influenza.
- Doses for about 5.5 million people will be used.

Table 21. Number of Individuals by High-risk Groups

Chronic Disease	Number of Individuals
Chronic Cardio-Pulmonary Disease	912,653
Diabetes	1,516,604
Malignant Tumor	160,000
Chronic Liver Disease	460,987
Chronic Renal Failure	18,900
Total	5,498,401

* Estimated according to the National Influenza Control Guideline. Announced in the "Recommended Criteria and Methods for Vaccination" (Ministry of Health and Welfare Public Notice #2002-50-Huh)

(4) Children Aged 6-23 Months

- Young children can shed virus for a long time, and can act as vectors of influenza virus transmission for a long time. Thus, young children should be considered as a pandemic influenza vaccination

priority group.

❍ Approximately 1.2 million fall into this group.

(5) Pregnant Women

❍ Pregnant women are at a high risk for complication from influenza infection due to decrease in cellular immunity. Considering the effect it may have on the fetus, pregnant women should be considered as a vaccination priority group.

❍ The risk level will especially increase during a pandemic caused by a novel influenza virus strain. Each year, there are about 470,000 pregnant individuals.

(6) Elderly Individuals of 65-years or Older

❍ Due to the body's anatomical and physiological change and decrease in immunity (decrease in cellular immunity is especially important) brought on by age, the elderly population is at a higher risk for bacterial pneumonia caused by influenza and complications.

❍ The number of elderly individuals 65 years or older are likely to increase every year. In 2004, the number reached 4.17 million, including individuals with chronic diseases.

(7) Avian Influenza Response Workers and Poultry Farm Workers

❍ 293,000 workers belong (29,300 workers in avian influenza response organizations and over 263,000 workers with poultry farm-related occupations) in this group. Because these individuals are at high risk of exposure to novel avian influenza virus, they should be considered as a vaccination priority group.

Annex 1-9

Antiviral Drugs

[1] Antiviral Drug Administration

1 Antiviral Drug Types and Administration

❍ Seasonal influenza virus showed a 30% resistance incidence against M2-ion inhibitors (admantadine, rimantadine), which are already developed antiviral drugs. More recently, the avian influenza virus also showed resistance against these drugs, making them difficult to use for treatment or prophylaxis in the event of an influenza pandemic.

❍ There are also neuraminidase inhibitors, such as zanamivir (Relenza) and oseltamivir (Tamiflu). However, since Relenza is inhaled, its use limited when there is an underlying bronchial condition, such as asthma.

Table 22. Antiviral Drug Types and Basic Administration

	Relenza[a] (Zanamivir)	Tamiflu[b] (Oseltamivir)	
	Treatment, Influenza A and B	Treatment, (Influenza A and B)	Prophylaxis (Influenza A and B)
1−6	Not Applicable	Adjust Dosage According to Weight[c]	Not Applicable
7−9	10mg Twice Daily	Adjust Dosage According to Weight[c]	Not Applicable
10−12	10mg Twice Daily	Adjust Dosage According to Weight[c]	75mg/daily 7 days after last contact
13−64	10mg Twice Daily	75mg Twice Daily for 5 days	75mg/daily 7 days after last contact
≧65	10mg Twice Daily	75mg Twice Daily for 5 days	75mg/daily 7 days after last contact

a. Use device included in the medication package for inhale.
b. Administer orally. Adjust dosage for individuals with kidney or liver conditions.
c. Children: weight≦15kg: 30mg twice daily
Children: 15kg<weight≦23kg: 45mg twice daily
Children: 23kg<weight≦ 40kg: 60mg twice daily
Children: weight>40kg: 75mg twice daily

(2) Antiviral Drug Administration Priority During a Pandemic

1 Antiviral Drug Administration Priority During a Pandemic

❍ Antiviral drugs may used at any time during pandemic phases 1-6. The shortage will most likely occur during pandemic phase 6.

A. Outbreak in Other Country

❍ Recipients in Pandemic Phase 1~5

- Suspect cases and domestic cases with epidemiologic links to foreign outbreak.
- Chemoprophylaxis of other domestic contacts epidemiologically deemed to require prophylaxis.

B. Outbreak in the Country

❍ Antiviral Target Groups During Pandemic Phases 1~3

- Treatment of patients or suspected patients
- Chemoprophylaxis of epidemiologists, quarantine and communicable disease control officials, and healthcare service workers coming into direct contact with patients or patients suspected of influenza.
- Chemoprophylaxis of individuals exposed to infected animals (including cullers).
- Chemoprophylaxis of other contacts with epidemiologic linkage

❍ Antiviral Target Groups During Pandemic Phase 4~5 and Early Phase 6

- Treatment of patients or suspected patients.
- Chemoprophylaxis of epidemiologists, quarantine and communicable disease control officials, and medical service providers coming into direct contact with patients or suspected patients.
- Chemoprophylaxis of individuals exposed to infected animals (including cullers).
- Chemoprophylaxis of other contacts with epidemiologic linkage.
- Chemoprophylaxis of residents and contacts for the containment of affected area (only when there is sufficient evidence of the need)

❍ If during this stage, the clusters are confined to a local area, spread to other areas is extremely limited, and infectivity of the influenza is sufficiently weak so that community containment is deemed useful in preventing a pandemic onset or retarding transmission, then community containment or antiviral drug administration may be considered as a first response.

❍ Target Groups During Pandemic Phase 6 (Outbreak in the General

Population)

- A shortage of antiviral drugs is anticipated at the pandemic stage, when there is an outbreak among the general population. During this period, administer the antiviral drugs in stock according to priority.
- Although the Influenza Advisory Committee recommended a priority as shown in table 23, the priority may change depending on the epidemiologic characteristics of the pandemic virus such as the age group with highest most morbidity and mortality.
- If there are sufficient antiviral drugs, consider prophylactic administration.

Table 23. Tamiflu Priority Groups and Estimated Usage (Severe Phase)

Priority	Target Groups	Administration Purpose
1	Hospitalized Patients (High Risk, Non-high Risk	Treatment
2	Healthcare Workers at Hospital and Clinics (Inpatient, Critical Patient, Emergency Room, Outpatient)	Treatment
3	High Risk Outpatien	Treatment
4	Epidemiologists, Isolation and Quarantine Officers, Essential Public Health Administrative Personnel, Essential Administrative Service Personnel	Treatment
5	119 Emergency Workers, Fire Fighters, Police Force	Treatment
6	Public Utility Workers, Media Workers, Transportation and Communications Workers	Treatment
7	Outpatient Over the Age of 6	Treatment
8	Other Non-high Risk Outpatients	Treatment

* Absence from this table does not necessarily mean that the group does not need the antiviral drugs.

** Estimated number of individuals per target group does not include individuals belonging to a group with higher priority. Therefore, the number is different from the number of individuals per occupation category.

*** For treatment purposes, adults should take 2 capsules (1 capsule = 75mg) for 5 days, a total of 10 capsules. Children weighting under 40kg will require a smaller dosage.

(3) Antiviral Drug Use and Monitoring During a Pandemic

- During a pandemic, stockpiled Tamiflu must be distributed to priority groups in time. Logistical planning is also needed in order to ensure distribution to hospitals, healthcare facilities, and other final users during a pandemic when the traffic situation can become chaotic.
- In order to administer the drug for treatment purposes within 48 hours of symptom onset, distribute required amounts of Tamiflu to the 16 regional (provincial/city) and local(city/county/ward) Public Health Centers (PHCs) and designated treatment hospitals before the onset of the pandemic phases.
- Treatment hospitals must be educated to ensure that stockpiled Tamiflu is to be used according to priority groups. PHCs will carry out the monitoring.
- Document and keep record of individuals who were administered Tamiflu.
- Antiviral drugs should continuously be monitored for drug resistance during pandemic period phase 1~6. In particular, during phase 6, nationwide monitoring is needed when a large volume is being administered,
- During phase 6, monitor adverse effects of antivirals through hospitals, healthcare facilities, and PHCs.

Annex1-10

Cough Etiquette

(1) The following etiquette should be practiced when a person has symptoms such as coughing, nasal secretion, sneezing due to respiratory infection.

- Cover nose/mouth when coughing or sneezing.
- Use tissue to contain nasal secretion or sputum.
- Dispose used tissues in the nearest waste receptacle.
- Perform hand hygiene after touching respiratory secretion, contaminated objects or materials.

(2) Healthcare facilities and public facilities should provide the following so that patients and visitors can practice cough etiquette.

- Provide tissues and no-touch trash receptacles. People other than authorized persons should not handle trash receptacles.
- Provide conveniently-located alcohol-based hand rub.
- Supply hand soap and disposable hand towels at sinks.

(3) Keep a distance from patients with symptoms of respiratory infection.

- When respiratory infection incidence is increasing in a local community, provide surgical masks to people who are coughing. Individuals who are coughing should stay at least 1m away from other patients in the waiting rooms at hospitals.

Annex1-11

Operation Plan for the Rapid Response Teams

(1) Rapid Response Team: Organization and Mobilization

1 Organize Rapid Response Teams

❍ Organize a total of 3 teams

- Responsible for containment, epidemiologic investigations, and diagnosis

Responsibilities	Detailed Activities
Containment	·Patient management such as hospitalization and isolation ·Respond to media and file field reports
Epidemiologic Investigation	·Patient investigation · Specimen collection · Clinical diagnosis of suspected patient · Create, analyze, and maintain epidemiologic investigation database · Patient outbreak monitoring
Pathogen Diagnosis	·Specimen management and transport · Laboratory management for PHCs and local PHERIs

- The head of the Rapid Response Team will act as the quarantine officer and epidemiological investigator and will be responsible for on-site control and investigation under the supervision of the director of Communicable Disease Control Team.

2 Mobilization of the Rapid Response Team

❍ During the pandemic alert period, once a sign of a suspect case is detected, immediately dispatch the Team by the order of the Director of KCDC.

- The Director of CIDPH (Central Infectious Disease Prevention Headquarters, i.e., Director of KCDC) shall convene a meeting of

the Coordinating and Planning Board to assess indications of the emergency situation.

- The Chair of Coordinating and Planning Board (Director-General of the Center for Communicable Disease Surveillance and Response) shall report the team's dispatch to the Public Health Policy Officer who is also the Chair of the Internal Risk Assessment Meeting.
- The director of the Communicable Disease Control Team shall notify the director of the Epidemic Intelligence Service Team about the mobilization and dispatch of the Rapid Response Team. The director of the Epidemic Intelligence Service Team head shall support the overall field activities of the Rapid Response Teams.

❍ The director of the Epidemic Intelligence Service Team mobilizes the Rapid Response Team

- Mobilizes the pre-appointed Rapid Response Team members and dispatch to the site location as quickly as possible.
- The director of the Epidemic Intelligence Service Team shall also be the head of the Rapid Response Team, assuming the dual role of quarantine officer and epidemiologist
- Make arrangements so that the Rapid Response Team's operational equipment and stockpiled items are transported by bioterrorism response vehicles.

(2) Rapid Response Team Activities

❍ Set up field investigation headquarters

- Set up headquarters at a strategic location that facilitates cooperation with and support from the PHCs, local (city/county/ward) authorities, relevant organizations, and civil organizations.
- Set up or procure communication equipment to hold teleconferences or video conferences (use webcam) with KCDC.

❍ Initiate and Report Activities

- The head of the Rapid Response Team (also the Director of EIS)

shall report to the Chair of the Coordinating & Planning Board (CPB) after setting up the investigation headquarters and assessing the situation on the field.

- The Chair of CPB shall report to the Director of KCDC and communicate orders from the KCDC Director.

❍ Patient Surveillance, Isolation, and Public Outreach

- Transport confirmed and suspected patients to treatment hospitals or isolation hospitals.
- Strengthen public outreach programs on infectious disease prevention and appropriate community response through local media (e.g., TV or newspapers).
- Monitor high-risk groups, pneumonia cases of an unknown cause, patients with acute respiratory failure, and deaths from respiratory infection.

❍ Collaboration with the Local Community

- Hold consultative meetings with relevant agencies and organizations such as city/province/ward governments, Office of Education, police stations, fire stations, military units, and local medical associations and request for their participation and cooperation.

❍ Terminate Field Operation

- The head of the Rapid Response Team shall consult with the director of the Communicable Disease Control Team and bring in the Rapid Response Team from site.
- After the Rapid Response Team withdraws from the field, determine the follow-up measures to be implemented out by the Central Epidemiologic Investigation Team and decide to continue or terminate activities.

Annex1-12

Entry/Exit Screening in Phases 4, 5 and early Phase 6

❍ Physicians or quarantine inspectors will question the traveler and determine appropriate measures when :

① Traveler reports symptoms on the health questionnaire

② Quarantine officials or crews have identified sick travelers

③ Fever is screened on the thermometer

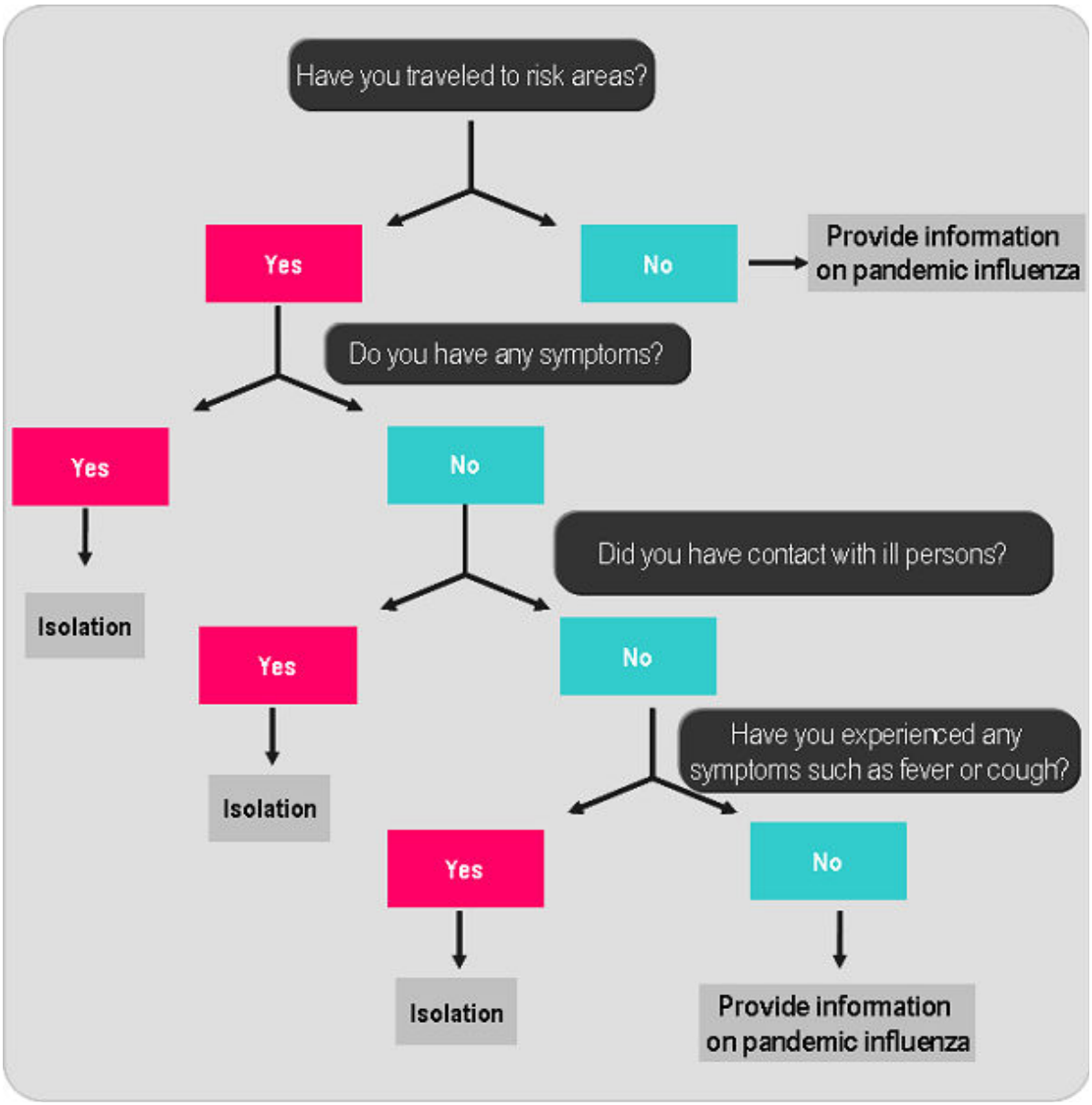

Figure 12. Procedure for Entry/Exit Screening in Early Phase 6

List of Abbreviations

CCCC	Central Crisis Control Committee
CDSCH	Central Disaster and Safety Countermeasures Headquarters
CIDPH	Central Infectious Disease Prevention Headquarters
CPB	Coordinating and Planning Board
CSMC	Central Safety Management Committee
IHRs	International Health Regulations
ILI	Influenza-like Illness
IPRCM	Intra-governmental Pandemic Response Coordination Mechanism
KCDC	Korea Centers for Disease Control and Prevention
KISS	Korean Influenza Surveillance System
MND	Ministry of National Defense
MOAF	Ministry of Agriculture and Forestry
MOFAT	Ministry of Foreign Affairs and Trade
MOGAHA	Ministry of Government Administration and Home Affairs
MOHW	Ministry of Health and Welfare
MOJ	Ministry of Justice
NSC	National Security Council
PAC	Pandemic Advisory Committee
PHC	Public Health Center
PHERI	Public Health and Environment Research Institute
PPE	Personal Protective Equipment
WHO	World Health Organization