

# **Influenza Pandemic Strategic Plan**



**Centers for Disease Control, Department of Health,  
R.O.C. (Taiwan)**



# Influenza Pandemic Strategic Plan

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# 1. Framework

## 1.1 National Goals

- To avoid the occurrence of domestic human infection with avian influenza virus during pandemic alert period.
- To prevent further transmission of imported human infection with avian influenza virus during pandemic alert period.
- To mitigate the health impact of a pandemic and to maintain social functions and economic activities during a pandemic.
- To recover from social, economic and psychological impacts during post-pandemic period.



## 1.2 Hierarchy of Plans

### · National Influenza Pandemic Preparedness Plan (Preparedness Plan)

In May 2005, the Executive Yuan approved the Preparedness Plan, which announced the highest guiding principles for influenza pandemic preparedness. Based on the Preparedness Plan, central and local governments can budget for stockpiling medicines and vaccines, coordinating response system and training personnel.

### · Influenza Pandemic Strategic Plan (Strategic Plan)

Based on the Preparedness Plan, the Department of Health (DOH) formulated the Strategic Plan and annually revises it as needed. The strategies for each pandemic phase are elaborated and will be employed by all authorities to develop their practical plans.



- **Influenza Pandemic Response Plan (Response Plan)**

Based on the Strategic Plan, the Centers for Disease Control (CDC) formulated the Response Plan to regulate the implementations of each strategy outlined in the Strategic Plan. The latest edition includes 10 working plans, 2 guidelines and 1 checklist. The Response Plan will be constantly revised as updated information becomes available during a real situation.

## **1.3 Administrative Mechanisms**

### **1.3.1 Central Government**

- **National Security Level**

The National Security Meeting is convened by the President to analyze international epidemic situations, assess the risks that a pandemic could pose to national security, and give strategic instructions to the Executive Yuan.

- **Executive Yuan Level**

Since October 2005, the Executive Yuan has been holding for the Coordination Meeting periodically. Its convener was assigned by the Premier. The associated ministries and departments were assembled to make decisions on each cross-sectoral issue related to avian influenza and pandemic influenza. Table 1 details the responsibilities of the involving authorities.

- **Department of Health Level**

Since September 2005, the DOH has been holding the Preparedness Meeting, which regularly reviews the preparedness progress of each health strategy outlined in the Strategic Plan.

**Table 1. Responsibilities of Selected Ministries**

<b>Ministries</b>	<b>Responsibilities</b>
Department of Health	Surveillance, Isolation, Quarantine, Stockpile of vaccine and antivirals, Infection control and healthcare system preparedness
Council of Agriculture	Surveillance and quarantine on animals, Food and agriculture continuity
Ministry of Interior	Entry/Departure inspection, Emergency services, Police, Response to corpse surge
Ministry of Foreign Affairs	International affairs, Stranded passenger assistance, Seeking or providing international assistance
Ministry of National Defense	Military manpower and sickbeds support
Ministry of Finance	Remitted taxation, Emergent importation/exportation control of PPEs
Ministry of Economic Affairs	Wet market management, Marketing management of mask, Continuity of electric power, energy and water, Promotion of business continuity
Coast Guard Administration	Smuggling control
Ministry of Education	Supervising disease surveillance and health education in every graduation school, Directing to draw up the home-study plan as necessary
Ministry of Transportation	Vehicles impressments, Transportation continuity
Government Information Office	Communicating with the Media and the Public
Central Personnel Administration	Government continuity
Environmental Protection Administration	Waste disposal continuity
Fair Trade Commission	Monitoring the price surge of PPEs and livelihood necessities
Council of Labor Affairs	Labor right protection, Negative pressure isolation rooms/equipments establishment
Mainland Affairs Council	Negotiation with Mainland China
Council for Economic Planning and Development	Evaluating economic impact, Planning economic recovery strategies
Financial Supervisory Commission	Banking and Finance continuity
National Communication Commission	Telecommunication continuity





- **Emergency Mobilization Mechanism**

According to the “Communicable Disease Control Act” and the “Enforcement Regulations Governing the Central Epidemics Command Center”, the Executive Yuan would form the Central Epidemic Command Center for pandemic response. The command center should efficiently coordinate and allocate the resources, equipment and staff.

### 1.3.2 Local Governments

Article 5 of the Communicable Disease Control Act defines the responsibilities of the central and local governments. Based on the strategies formulated by the DOH, the local governments should establish and implement their own countermeasures.

The local governments should develop the cross-sectoral coordination mechanism and budget, manage the medical resources, stockpile personal protective equipments, conduct surveillance, inspect infection control practice of medical facilities, mobilize volunteers, and set up the Local Epidemic Command Centers during a pandemic.

## 1.4 Outline of Strategies

### 1.4.1 Four Major Strategies

#### Strategy I - Early Detection

The surveillance systems have been established to detect any unusual cluster of influenza-like illness (ILI), to detect abnormal clinical manifestations in influenza cases, and to monitor influenza virus activities.

#### Strategy II – Interruption of Transmission

Several non-pharmaceutical public health interventions such as personal hygiene practices, isolation of patients, quarantine of contacts, and social distancing measures, have been formulated to interrupt the transmission of pandemic influenza.

### **Strategy III - Antivirals**

In the past, neuraminidase inhibitors have been proven effective as treatment and prophylaxis for seasonal influenza. Therefore, they have been stockpiled to treat patients and to contain avian influenza or pandemic influenza at the early stage of a pandemic. Furthermore, the antivirals are expected to reduce morbidity and mortality during a pandemic.

### **Strategy IV - Influenza Vaccine**

In order to maintain essential social functions and protect the high-risk groups during a pandemic, pre-pandemic influenza vaccines have been stockpiled. Furthermore, the domestic capacity for manufacturing influenza vaccine is currently under development.

## **1.4.2 Five Lines of Defense**

### **First Line of Defense – Containment Abroad**

In order to assist with early containment of a potential pandemic, it is necessary for every country to actively participate in the global collaboration plan and stay updated with the newest international epidemic situation.

### **Second Line of Defense – Border Control**

Should the virus' transmissibility to humans continue to increase, reinforcing quarantine inspection at airports and seaports would be critical for protecting the health of all citizens. Health monitoring and management of incoming passengers will be adjusted according to the international epidemic situation.

### **Third Line of Defense – Community Epidemic Control**

During the pandemic phase, epidemic control in the community, such as isolation, quarantine, and social distancing, will become the major tools to lessen the pandemic's impact. The government will combine forces with civil groups and volunteers to provide people with the correct information, to ensure the public's compliance with control measures.



#### Fourth Line of Defense – Maintaining Medical System Functions

The “Communicable Disease Control – Medical Network” has been established for the placement of highly contagious patients in order to ensure continuity of healthcare for other patients and to manage the increased demand for medical care. In addition, the local governments need to set up additional isolation facilities for the surge of pandemic influenza patients.

#### Fifth Line of Defense – Individual and Family Protection

During the pandemic period, people should be instructed to stay home and to avoid unnecessary social interaction. In addition, people with mild illness should be encouraged to recuperate at home. Higher levels of personal hygiene and social distancing should also be recommended.

### 1.5 Phases of Pandemic Response

Classification	Activation time
Phase 0	Overseas: Human infection(s) with a new influenza virus subtype, but no human-to-human transmission Domestic: No human infection(s) with a new subtype
Phase A1	Overseas: Cluster(s) with human-to-human transmission Domestic: No Human infection(s) with a new subtype
Phase A2	Domestic: Human infection(s) with a new subtype
Phase B	Domestic: Cluster(s) with human-to-human transmission
Phase C	Domestic: Sustained transmission

## 2. Surveillance

### 2.1 Utilization of Multiple Surveillance Systems

- **Phase 0:**

The current surveillance systems (Table 2) maintain routine operation regularly. If should any suspected avian influenza case, abnormal influenza cluster or unusual increase of ILI be detected, a further investigation will be conducted.

**Table 2. Current Surveillance Systems**

System	Operations
Notifiable Diseases Surveillance System	Case of “influenza with severe complications” has to be reported. Its classification has to be determined based on clinical manifestation, epidemiological evidence and lab results.
Symptom Surveillance System	<ul style="list-style-type: none"> <li>· Patients who meet the criteria for “person under investigation for H5N1 influenza” or clusters of ILI should be reported to health authorities.</li> <li>· Fever patients found in the airport should also be reported to health authorities immediately.</li> </ul>
Contracted Virus Labs Surveillance System	In order to understand the activities of the influenza virus, more than 100 sentinels collect two samples each week and send them to 13 contracted labs for pathogenic analysis.
Surveillance System for Populous Institutions	The managers or health-care providers in populous institutions should report any abnormal health situation to health authorities within 24 hours.
Sentinel Surveillance System	Approximately 700 sentinel physicians monitor the numbers of ILI patients by phone, fax, email or mail on a weekly basis.
School-Based Surveillance System	More than 400 elementary schools report ILI situation on a weekly basis.

*\*The reporting criteria used by the above surveillance systems will be revised at any given moment according to the latest information about the H5N1 case released by the WHO.*

*\*The cases reported by the above surveillance systems are regularly compared with a name list of poultry workers, which is provided by the Council of Agriculture.*

- **Phase A1:**

Voluntary quarantine would be recommended for incoming passengers from affected countries. The local health authorities should monitor their health condition through the information system.

- **Phase A2 and above:**

The reporting frequency of some surveillance systems will be increased to remain updated with the newest pandemic situation and evaluate the effort of interventions.

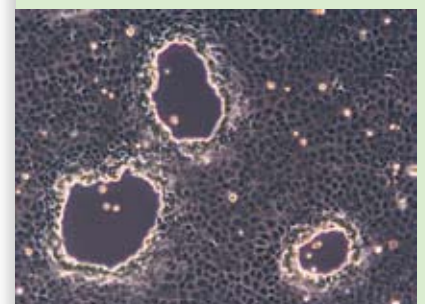
## 2.2 Laboratory Diagnosis

The National Influenza Center (NIC) is responsible for establishing standardized diagnostic techniques for influenza virus for all domestic laboratories. The current diagnostic techniques that the NIC employs include real time RT-PCR and virus culture. In addition, the NIC provides consulting services for other domestic laboratories and maintains close communication with international laboratories, including some WHO reference laboratories.

A total 13 laboratories have contracted with the CDC for influenza virus diagnosis. Currently, 12 of the laboratories can identify the type and subtype of influenza virus. The abilities of those laboratories are re-evaluated every year.

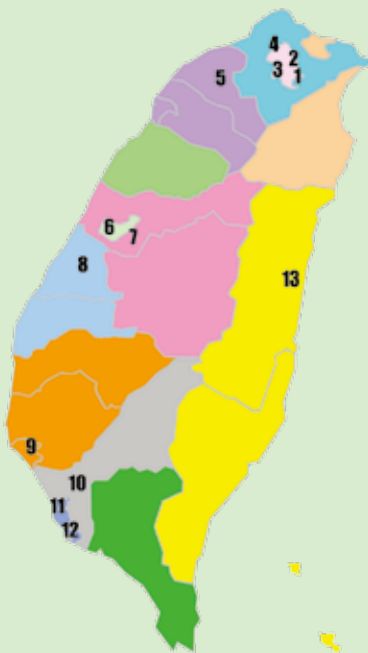
The NIC and the 13 contracted laboratories can increase their diagnosis capacity according to disease surveillance needs. The maximum capacity is 4,700 specimens per day. The capacity, estimated number of staffs, and budget for different phases of pandemic response have been proposed.

The regulations for specimen package, collection and transportation have been formulated by CDC. All the related procedures have to follow biosecurity guideline mandated by CDC. Specimens are regularly deposited in the contracted laboratories. Should the storing



## 2. Surveillance

## Contracted Laboratories



- 1 CDC, Taiwan
- 2 Tri-Service General Hospital
- 3 Taipei Veterans General Hospital
- 4 Taiwan University Hospital
- 5 Chang Gung Memorial Hospital, Linkou
- 6 China Medical University Hospital
- 7 Chunghua Christian Hospital
- 8 Cheng Kung University Hospital
- 9 Kaoshiung Veterans General Hospital
- 10 Kaoshiung Medical University Hospital
- 11 Chang Gung Memorial Hospital, Kaoshiung
- 12 Buddhist Tzu Chi General Hospital
- 13 Taichung Veterans General Hospital

capacity be exceeded during a pandemic, the CDC can provide storage for additional specimens.

Sharing of specimens and virus strains has been carried out following the domestic “Biological Materials Transfer Agreement Project” and WHO’s recommendations. The latest information on influenza virus on the CDC’s website is updated weekly. The database of influenza virus gene sequence is also regularly updated and announced.

## 2.3 Case Investigation

During the early phase of a pandemic, case investigation plays a critical role in understanding the transmission mode and communicability of the new influenza virus. Therefore, the information gained through the investigation will be used in modifying the countermeasures.

“Human Cases of influenza A/H5N1” has been subsumed as a notifiable disease and classified as Category I disease. According to the Communicable Disease Control Act, clinical manifestation and exposure history of such diseases should be investigated within 24 hours of being reported. Next, the CDC will compile all related information to determine whether the reported case is indeed infected with H5N1 influenza virus. If the case’s conditions meet the criteria of “suspected case”, their close contacts should be identified as soon as possible.

The close contacts of a suspected case will be mandated to implement voluntary quarantine. The local health authorities will take the responsibility in tracing and monitoring the close contacts of the case for 7 days. Should the close contacts have ILI during the duration of the quarantine, a medical examination and care should be arranged for them.



## 3. Transmission Interruption

“Non-pharmaceutical public health interventions” will be used to interrupt the transmission of pandemic influenza. During phase A2 and phase B of a pandemic, individual-level interventions, including patient isolation and contact quarantine, will be implemented to postpone the pandemic. During phase C of a pandemic, community-level interventions such as social distancing will be the major measures used to delay the peak incidence, thus reducing the impact on the medical care system.

The Central Epidemic Command Center will remind the public to carry out social distancing measures. The local governments, medical facilities and communities should promote those measures cooperatively.

### 3.1 Isolation

The suspected, probable, and confirmed cases of avian or pandemic influenza should be put under isolation during phase A2 ~ B of a pandemic. The isolation period will be determined depending on the communicability of the pandemic virus strain. Isolation sites have been planned, including designated wards, homes or other specific isolation facilities.

### 3.2 Quarantine

During phase A2 ~ B of a pandemic, the close contacts of the suspected, probable and confirmed cases of avian or pandemic influenza will be required to undergo quarantine. The tentative quarantine duration is 7 days. The practical options include home quarantine, facility quarantine, work quarantine, and community quarantine. The local governments should maintain

communication with those who have to be quarantined, and assist in accommodating living needs for them.

### **3.3 Social Distancing**

It is necessary to encourage the public to adapt infection control practices such as washing hands frequently, maintaining respiratory hygiene and cough etiquette, and keeping a clean living environment.

Gatherings and public places should only be cancelled or closed when the Central Epidemic Command Center determine necessary and feasible.

- Cancellation of gatherings: Prohibit sports games, concerts, festivals, religious activities, wedding parties, etc.
- Closure of public places: Shut down schools, libraries, museums, swimming pools, shopping malls, entertainments parks, theaters, etc.

### **3.4 Sheltering**

Sheltering is to require the public to stay at home, like on typhoon days. Such activity is expected to interrupt the virus transmission by decreasing social interactions.

Sheltering may cause a huge public response, so it will only be considered when isolation, quarantine, and social distancing fail to effectively slow down large-scale transmission occurring in the community.

### **3.5 Travel Restriction**

Travel restriction will be implemented to prevent the virus from being transmitted from affected areas out of the country or in the country. Travel alerts, cordon sanitaire, and flight cancellations are options that can be considered.



### 3.6 Volunteers Mobilization

NGOs and volunteers are important partners to promote the measures of public health interventions. They can provide the essential support for implementing those measures, and promote self-caring abilities in the community.

- **NGOs and volunteers can help:**
  - assist isolated patients and quarantined contacts with daily living needs;
  - set up quarantine facilities;
  - care for the health condition of community residents;
  - promote the infection control and social distancing activities.

## 4. Border Control

When the pandemic phase reaches A1, the regular release of travel health information will continue. In addition, the Central Epidemic Command Center will issue travel alert, and recommend unnecessary travels should be suspended.

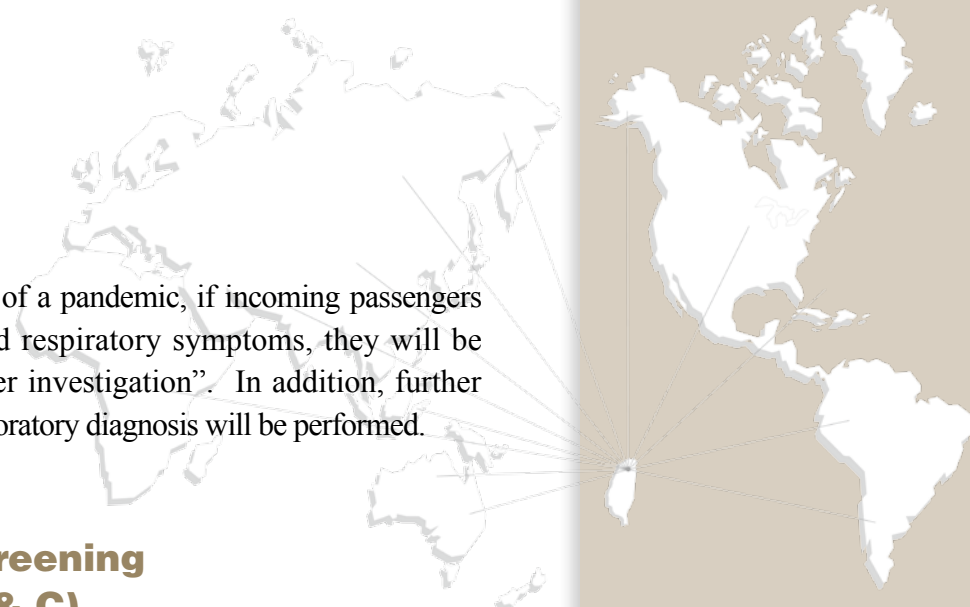
The necessity of mandatory travel restriction and flight deferral will be thoroughly evaluated when an influenza pandemic occurs.

Arrival from and departing to China through Kinmen and Matsu (mini three links) also follow the border control measures.

### 4.1 Arrival Screening and Voluntary Quarantine (in Phases A1 & B)

Infrared thermometers have been set up at international airports and seaports. Body temperature screening and health declaration for incoming passengers are routine measures that have been established since the SARS epidemic. Additional quarantine measures will be instituted when the pandemic phase is raised to A1.





During phases A1 and B of a pandemic, if incoming passengers are detected with fever and respiratory symptoms, they will be considered as “person under investigation”. In addition, further medical examination and laboratory diagnosis will be performed.

## **4.2 Departure Screening (in Phases B & C)**

During phases B and C of a pandemic, the suspected, probable and confirmed cases of avian or pandemic influenza will be prohibited from going abroad before their recovery. The same prohibition will also apply to their close contacts until symptoms are ruled out or they are fully recovered.

Body temperature monitoring and health declaration will be implemented on departing passengers during pandemic phases B and C. The passengers with fever or respiratory symptoms will not be allowed to leave the country unless they present a medical certificate ensuring that they are not infected with pandemic influenza.

## **4.3 Flight / Voyager Management**

The crews of flights and sea voyagers should not only remind passengers to comply with the quarantine regulations, but should also take care of ill passengers. Such care may include separating the ill passengers from the others, notifying their conditions to the port authority of the destination, properly using personal protective equipment, and providing the manifest to assist contacts tracing. The Ministry of Transportation and the DOH will instruct the aviation and ship companies to become familiarized with these practices.

## 5. Antivirals Strategy

### 5.1 Antivirals Stockpile

The size of the antivirals stockpile is maintained to cover 10% of the population. The two neuraminidase inhibitors stockpiled are oseltamivir (both capsules and active pharmaceutical ingredient) and zanamivir.

Besides purchasing new drugs to renew the expired ones, self-manufacturing capabilities are under development for the purpose of maintaining the stockpile.



### 5.2 Antivirals Application

During the pandemic alert phases, antivirals should be used to contain the potential pandemic virus. Therefore, suspected avian influenza cases and their close contacts should be given antivirals as treatment and prophylaxis, respectively. The criteria for antivirals usage are outlined in Table 5.1.

During the pandemic phase, antivirals should be used to reduce fatality and maintain essential functions. The priority of antivirals usage during phase C has been outlined in Table 5.2.

**Table 5.1 Criteria for Antivirals Usage**

Phases	Antivirals Recipients
A1	Those who meet the criteria of PUI* and the suspected, probable, and confirmed cases of human H5N1 influenza
A2	1. Those who meet the criteria of PUI* and the suspected, probable, and confirmed cases of human H5N1 influenza 2. Close contacts of the probable and confirmed cases
B	1. Those who meet the criteria of PUI* and the suspected, probable and confirmed cases of human H5N1 influenza 2. Close contacts of the probable, and confirmed cases 3. Ring prophylaxis for rapid containment

\* person under investigation

**Table 5.2 Priorities of Using Antivirals in Pandemic Phase C**

Priority	Target groups	Intentions
1	Hospitalized pandemic influenza patients	Treatment
1	Among the outpatients with pandemic influenza (mild cases): The groups with the highest risk of hospitalization or death upon infection such as immunodeficient patients or pregnant women who cannot be immunized by vaccine.	Treatment
1	Among the outpatients with pandemic influenza (mild cases): The groups with higher risk of hospitalization and death upon infection such as --children between 12-23 months --elderly above 65 years --other population (depending on the real situation)	Treatment
1	Influenza patients who are healthcare providers, epidemic control and public safety guard personnel or core decision-makers in the governments	Treatment
2	Healthcare providers on duty	Prophylaxis
2	Residents in populous facilities (when cluster occurs)	Prophylaxis
2	Other influenza outpatients	Treatment

### **5.3 Antivirals Distribution**

Oseltamivir capsules and zanamivir are to be distributed from certain medical facilities and local health authorities. The local health authorities will administer antivirals to patients through the prescription of physicians.

The active pharmaceutical ingredient (API), Oseltamivir, is stored by the CDC. API will be dispensed and distributed to hospitals by trained pharmacists.

The stockpile and distribution of antivirals are commanded through an information system called Management Information System (MIS). Central and local health authorities can utilize MIS to monitor the distribution of the antivirals, and to trace treatment or prophylaxis effectiveness and side-effects experienced by those who take the medicine.





## 6. Vaccine Strategy

Since vaccination is the most effective intervention to control seasonal influenza epidemic, it is also expected to be effective in controlling pandemic influenza. However, at the present time, no domestic capacity is available for manufacturing influenza vaccines. Therefore, the way for acquiring a sufficient quantity of vaccines during a pandemic is a tremendous challenge that should be addressed.

The seasonal influenza vaccination campaign has been implemented since 1998, and the vaccination coverage has been gradually increasing. Annual promotion of the seasonal influenza vaccine has increased the market demand for the vaccine, and, subsequently, has facilitated the building of a production capacity.

### 6.1 Short-Term: Stockpile of “Pre-Pandemic” Vaccines

One hundred and ninety thousands doses of human H5N1 vaccines have been stockpiled. These vaccines will be used to protect the first-line medical care workers and epidemic control personnel when the pandemic occurs. In the future, the quantity of stockpile will be increased accordingly as more advanced vaccines are marketed.

### 6.2 Mid-Term: Emergency Self-Manufacturing of Vaccines

The CDC coordinated “the Research and Development Plan of Influenza Vaccine” which involved several domestic research institutions. The plan was conducted from 2006 to 2008. A total of 20 branch plans are categorized into 3 research fields, including “selection of vaccine strain and vaccination policy”,

“establishment of basic vaccine technique” and “promotion of vaccine industry and clinical trials”.

“The emergency manufacturing line of pandemic influenza vaccine” was planned and established by the National Health Research Institutes. The facility is expected to produce H5N1 vaccines in the 3rd quarter of 2008 and will file an Investigational New Drug Application (IND) for clinical trials in the 4th quarter of 2008.

### **6.3 Long-Term: Self-manufacturing of Seasonal and Pandemic Vaccines**



The first domestic vaccine manufactory will be set up at the end of 2010. The estimated annual production is at least 16 million doses of tri-valent influenza vaccines. Should a pandemic occur, the manufactory could provide enough pandemic vaccines to at least one-fourth of the population within 3 months. According the Law for Promotion of Participation, the manufactory will be built and owned by a private organization. That organization would also be responsible for the operation of the vaccine manufactory.

### **6.4 Administration of Pandemic Vaccine**

The recipients of the pandemic vaccine will be determined by the number of pandemic vaccines that would be available. However, medical care workers, personnel who maintain essential social functions and high-risk groups who tend to develop serious complications or death will have first priority for receiving the vaccine. (As outlined in Table 6)

The vaccination campaign during a pandemic will be schemed on the basis of seasonal influenza vaccination program, including responsibilities of the central and local governments, cold-chain system, mass vaccination sites, regulations for healthcare facilities and adverse reaction monitoring and compensation.



**Table 6. Priority of Pre-Pandemic and Pandemic Vaccines Administration**

Phases	Classification of Personnel
0+phase3	<ul style="list-style-type: none"> <li>· Personnel in charge of avian influenza monitoring</li> <li>· Personnel involved in culling operation if avian influenza occurs</li> <li>· Smuggling investigators</li> <li>· Poultry workers</li> </ul>
A1+phase4	<ul style="list-style-type: none"> <li>· Customs, Immigration, Quarantine, and Security (CIQS) personnel in the international airports/ harbors</li> <li>· Responders from the CDC branch offices and local health officials</li> <li>· Personnel in NIC and contract laboratories</li> </ul>
A1+phase5	<ul style="list-style-type: none"> <li>· Healthcare workers in designated hospitals responsible of caring for communicable disease patients</li> <li>· Personnel in border quarantine facilities</li> </ul>
A2+phase3~5	<ul style="list-style-type: none"> <li>· All CDC personnel and related personnel in local governments</li> <li>· Supporting personnel for case investigation</li> <li>· Personnel involved in the research and development of influenza vaccine</li> </ul>
B+phase5	<ul style="list-style-type: none"> <li>· Members of the central and local command centers</li> <li>· Volunteers assisting with rapid containment</li> <li>· Supporting personnel for laboratory diagnosis</li> <li>· All healthcare workers</li> </ul>
C+phase6	<ul style="list-style-type: none"> <li>· Personnel in the temporary isolation facilities</li> <li>· Ambulance drivers</li> <li>· Personnel maintaining essential social functions</li> <li>· Militaries supporting disease control</li> </ul>

## 7. PPEs Preparedness (Personal Protective Equipment)

### 7.1 Maintenance of PPEs Safety Stock



Personal protective equipment (PPEs) is prepared for first-line healthcare workers and epidemic control personnel. In order to balance the supply and demand at the early pandemic stage, the safety stock of PPEs should be kept before a pandemic occurs. The safety stock estimation (as shown in Table 7) is obtained by software modeling and according to medical experts' suggestion.

The local governments and all regional hospitals and medical centers are required to establish stockpiles of PPEs according to the safety stock estimation (as shown in Table 7). On the other hand, the central government has also signed options contracts with the manufacturers to ensure further PPEs supply.

In order to maintain the stockpile, mechanisms have been set in place to continuously replace expired PPEs supplies.



## 7.2 Integration of Real-time PPEs Stockpile Management

The web-based “Management Information System (MIS)” has been developed to integrate information of PPEs procurement, distribution and consumption, which is uploaded onto MIS in real time. In order to ensure the quality of such information, MIS incorporated an automatic checking function. Moreover, the CDC and local governments regularly audit the accuracy of the information.

## 7.3 Emergency Delivery of PPEs

During phases A2 and B of a pandemic, healthcare facilities should maintain sufficient amounts of PPEs, and the local governments should dispatch and support PPEs supply within their prefecture.

During phase C of a pandemic, MIS will integrate market information from public and private sectors to establish a direct supply chain. The central government will coordinate and distribute PPEs in a timely and reliable manner.

If the PPEs supply and delivery fail to meet the demand for personnel at healthcare facilities and disease control systems, PPEs exportation will be suspended temporarily by the Ministry of Economic Affairs and Ministry of Finance. In addition, reusing some PPEs items will be recommended under defined safety conditions.

In order to deal with a shortage of PPEs, the domestic manufacturers will be required to increase the PPEs production with appropriate subsidy. The capacity of the military logistics will also support the production line when necessary. In addition, accelerating PPEs importation, releasing of expired but stable PPEs, and accepting donated PPEs will serve as alternative sources.



Based on the SARS experience, an increased need for mask by the public will come with the panic of becoming infected with the pandemic influenza. As a result, the central government has planned to stockpile 75 million procedure masks to balance the supply and demand during such a need. Moreover, the central government has planned to release the procedure masks to the market according to the production and the price surge of procedure masks during a pandemic.

**Table 7. PPEs Safety Stock and Allocation**

Items	Levels	Central Government	Local Governments	Healthcare Facilities	Total
N95 equivalent or higher-level masks (pcs)		500,000	500,000	1,000,000	<b>2,000,000</b>
Surgical mask (pcs)		1,750,000	1,750,000	3,500,000	<b>7,000,000</b>
Procedure mask (pcs)		75,000,000	0	0	<b>75,000,000</b>
Protection clothes (suit)		200,000	200,000	400,000	<b>800,000</b>

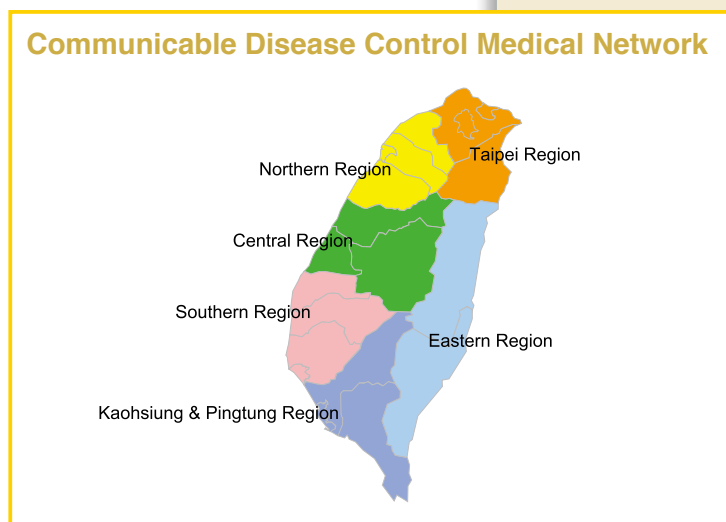
# 8. Healthcare Preparedness

An increase in the number of pandemic influenza patients will bring about a heavy impact on the healthcare system. In addition to the strict infection control measures, the arrangement of triage and placement of the influenza and non-influenza patients are critical when dealing with the impact.

## 8.1 Establishment of Communicable Disease Control Medical Network

6 sub-networks in the nation have been organized to coordinate within each sub-network. In each sub-network, response hospitals are designated for the management of contagious patients during a pandemic and for infectious diseases of special concern.

The Communicable Disease Control Medical Network committee was formed within each sub-network by experts of hospitals, public health, and infection control and key individuals from local health departments. The committee is responsible for overseeing the installation and improvement of related facilities, equipments and practices, and to orchestrate the activation and operation of the response hospitals.



## **8.2 Roles and Responsibilities of Healthcare Facilities**

### **· Primary Healthcare Facilities**

The local governments should evaluate the care capacity of the primary healthcare facilities and designate the responsibilities of each primary healthcare facility prior to the occurrence of a pandemic. The primary healthcare facilities should cooperate with the local governments to care for mild patients during the pandemic period.

### **· Isolation Hospitals**

The local governments should designate the isolation hospitals that are equipped with negative pressure isolation wards to care for patients infected with notifiable communicable diseases. Those hospitals will be on call for receiving contagious patients during a pandemic under the command of the Central Epidemic Command Center.

### **· Response Hospitals**

Some of the isolation hospitals will be designated as response hospitals, which will primarily accept avian or pandemic influenza patients during a pandemic. These hospitals will have to organize manpower, equipment, and patient transfer mechanism, and formulate evacuation plans. All the response hospitals will have to conduct drills to determine their preparedness.

### **· Other Healthcare facilities**

In order to care for influenza and non-influenza patients separately, the local governments will also need to prepare expropriation plans for other hospitals. These hospitals, designated by the local governments, should also formulate response plans that are to be initiated at the early stage of phase B. These hospitals will also have to cooperate with the local governments to provide necessary healthcare services.



### 8.3 Healthcare in Off-Shore Islands

Placement of influenza patients from off-shore islands will depend on the patient's condition, the situation in Taiwan and on the off-shore islands, the care capacity at that time, the risk of transfer, and other administrative factors. The options will include treating locally, dispatching medical teams, and transferring the patient to Taiwan. All the relevant measures must be planned in advance by the local government in each off-shore island.

### 8.4 Response to Patients Surge

“Care at home” will be recommended for patients with mild illness. The local governments will coordinate the resources needed to provide healthcare services to those patients. The ways of providing self-care guidance, medicine and living support would be included in the local response plans. “Influenza hotlines” will be set up to provide telephone-based consultation services.

The “temporary isolation facilities” will be set up for influenza patients without risk of developing severe complications. Local governments should plan adequate manpower, equipment, and related resources for such facilities. Additionally, backup hospitals and transfer mechanism should be planned out in advance. The facilities expropriated as the “temporary isolation facilities” will be compensated according to the “Regulations Governing the Operational Procedures and Compensation for Designation and Expropriation for the Establishment of Quarantine and Isolation Site and Requisition of Related Personnel” and the “Regulations Governing the Operational Procedures and Compensations for the Expropriation and Requisition of Property for the Control of Communicable Diseases.”



## 9. Risk Communication

The objectives of risk communication are to urge the public to protect themselves, to enhance public compliance with the control measures, to eliminate discrimination against the patients and their contacts, and to deal with the public's panic.

### 9.1 Establishment of the Public's Trust

The information released from all governmental sectors nationwide should be consistent with the announcement made by the Central Epidemic Command Center. An influenza website for information release has been set up. In addition, according to the Communicable Disease Control Act, the Central Epidemic Command Center can expropriate televisions channels and broadcasts for public communication.

Information about local healthcare services and social support will be released by the local governments.





## 9.2 Early Announcement

During the pandemic period, the Central Epidemic Command Center will update the media with domestic and international pandemic situation every day. In order to reach different audiences, the Central Epidemic Command Center will set up multiple channels of communication, including the influenza website, hotline, print media, and electronic media. All the announcements will be updated as necessary.

## 9.3 Information Accuracy

The information to be communicated depends on the pandemic phases and will roughly include correct hygiene, control measures, and responses to rumors and miscommunications. The information will be announced according to the principles of risk communication.



## 9.4 Understanding the Public

A survey of the public will be conducted to evaluate their understanding, attitude, and behavior regarding the pandemic influenza and different control measures. Monitoring the media is essential for obtaining immediate feedback and allowing for a timely response. Recording of hotline inquiries is another source to find gaps between the policy and the public's opinion.

## **10. Continuity of Social Functions and Economic Activities**

In order to ensure a safe and stable living environment, social functions and economic activities should be maintained during the pandemic period. Therefore, both public and private sectors have to be prepared for the occurrence of an influenza pandemic.

The major impact of a pandemic on the governments and enterprises will be manpower shortage for a prolonged period, since many employees will be sick or have to be away from work to care for their families. Furthermore, some might even refuse to work due to the fear of becoming infected at workplace. All sectors should formulate or revise their emergency plans to strengthen their continuity strategies and infection control measures against the effects of the influenza pandemic.

### **10.1 Information Sharing**

All the stakeholders should be notified of the most recent global and domestic avian and pandemic influenza situations. In addition, new developments of the national strategy should be regularly released to allow all the stakeholders to be informed of the control measures and to assess and respond to possible impacts.

To assist in formulating preparedness plans, the Industrial Technology Research Institute has released “Guidelines: Business Continuity Management for Influenza Pandemic”, which is based on the specialty of business management. Simultaneously, the CDC has established “Infection Control Practices in Workplace for Influenza Pandemic” as another reference.

· **The principal responses recommended by the CDC include:**

- Protecting employees' health: request employees to practice personal hygiene.
- Maintaining a healthy work environment: clean up and disinfect the workplace and air conditioner, and adopt social distancing measures.
- Assisting infected or exposed employees: help employees follow the control measures such as isolation, quarantine and contacts investigation.
- Maintaining core business activities: prepare backup manpower, materials, equipments, and information for supporting core business activities.
- Regulating support of human resources: regulate absenteeism, and determine the rights and responsibilities of the employee and employer.



## 10.2 Critical Infrastructure Protection

Critical infrastructures should be protected during any disaster, including an influenza pandemic.

· **At least 11 critical infrastructures under the jurisdiction of nine ministries have been identified as follows:**

- Electric power, Energy, Water (Ministry of Economic Affairs)
- Transportation (Ministry of Transportation)
- Food and Agriculture (Council of Agriculture)
- Emergency Services (Ministry of Interior)
- Healthcare (Department of Health)
- Banking and Finance (Financial Supervisory Commission)
- Telecommunication (National Communication Commission)
- Waste Disposal (Environmental Protection Administration)
- Education (Ministry of Education)

Jurisdictional ministries are required to plan for business continuity, emergency contact network, manpower support system (within or between facilities), measures for personnel protection, and alternative ways of continuous operation. In order to ensure critical infrastructures are preserved during the

10. Continuity of Social Functions and Economic Activities

pandemic period, the Executive Yuan will conduct exercises or drills to assess the related ministries' performance.

### **10.3 Business Continuity Promotion**

All enterprises, regardless of size, should formulate a business continuity plan for influenza pandemic. In addition, the planning process would also contribute to strengthening the international competitiveness of the enterprises.

The National Science Council has undertaken the promotional activities for the enterprises in the Science Park. The Ministry of Economic Affairs has also assisted some enterprises in applying the international standard system to their emergency preparedness plans.

Some larger and international enterprises have already formulated continuity plans. Their plans will serve as a benchmark to the small and medium enterprises to strengthen their preparedness through supply chain.





# 11. Response and Execution

## 11.1 Domestic Phase 0 and Overseas Phase 3

- **Objectives**

- To contain the new overseas strain of influenza virus that has pandemic potential.
- To avoid domestic occurrence of a new strain of influenza virus.

- **Administrative Coordination**

- Establish central and local emergency response mechanisms.
- Convene cross-sectoral coordinating meetings and conduct exercises.

- **Surveillance and Assessment**

- Activate surveillance systems to detect human cases of avian influenza and monitor influenza virus activities; and update the criteria of case reporting and specimen sampling promptly as new information becomes available.
- Investigate influenza cases with severe complication and abnormal ILI clusters.
- Ensure the capability of laboratories.
- Maintain communication with other countries and related international organizations.
- Establish mathematical modeling of the impact of the influenza pandemic.

- **Prevention and Control**

- Participate in international cooperation to contain the virus with pandemic potential.

- Evaluate the accessibility, safety and effectiveness of anti-virals, and adjust the antivirals strategy accordingly.
- Assess the pandemic vaccine strategy, formulate registration and market approval procedures for pandemic vaccine, and include pandemic influenza vaccine to the vaccine injury compensation program.
- Obtain technology for influenza vaccine development and production.
- Rapidly contain the avian influenza outbreak in poultry farms, and protect the workers involved in outbreak control operations.
- Improve the hygiene condition of wet markets.
- Screen the temperature of incoming passengers, and investigate those with fever.
- **Healthcare System Response**
  - Provide guidelines on infection control and bio-safety to all healthcare facilities.
  - Conduct drills on patient management and ward evacuation. (The designated response hospitals)
  - Designate temporary isolation facilities. (The local governments)
- **Risk Communication**
  - Review and update the information communicated to the public.
  - Recommend the public not to contact poultry when traveling in areas affected by avian influenza.
  - Educate incoming passengers on how to monitor their health condition by themselves.

## **11.2 Domestic Phase A1 and Overseas Phase 4**

- **Objectives**
  - To prevent the importation of the more transmissible new virus.
  - To enhance domestic preparedness.



- **Administrative Coordination**

- Activate the Central Epidemic Command Center.
- Review the preparedness conditions again using the WHO checklist.

- **Surveillance and Assessment**

- Enhance surveillance systems to detect human cases of avian influenza and monitor influenza virus activities, update the criteria of case reporting and specimen sampling promptly.
- Investigate influenza cases with severe complication and abnormal ILI clusters.
- Strengthen the physicians' ability to detect cases and improve the validity of surveillance systems.
- Increase the capacity of laboratory diagnosis.
- Monitor the health condition of incoming passengers.
- Maintain communication with the affected countries.

- **Prevention and Control**

- Provide international aid if feasible.
- Review the antiviral strategy again, and assess the necessity to distribute more antivirals to local sites.
- Collect the other countries' information on the experiences with the pandemic vaccination, and purchase more vaccines according the information.
- Request incoming passengers and crews from the affected areas to carry out voluntary quarantine.

- **Healthcare System Response**

- Update guidelines on infection control and bio-safety for all healthcare facilities and inspect how those practices are implemented.
- Evaluate the response strategies of medical services and assess the stockpile of PPEs again.

- **Risk Communication**

- Review and update the information communicated to the public.

- Provide guidance on personal hygiene and medical services to the public.
- Educate incoming passengers on how to comply with the regulations of arrival screening and voluntary quarantine.

### **11.3 Domestic Phase A1 and Overseas Phase 5**

- **Objectives**

- To prevent the importation of the more transmissible new virus.
- To complete domestic preparedness.

- **Administrative Coordination**

- Confirm that all sectors of the Central Epidemic Command Center have completed the preparedness plan to respond to the influenza pandemic.
- Confirm the resources at the local level.

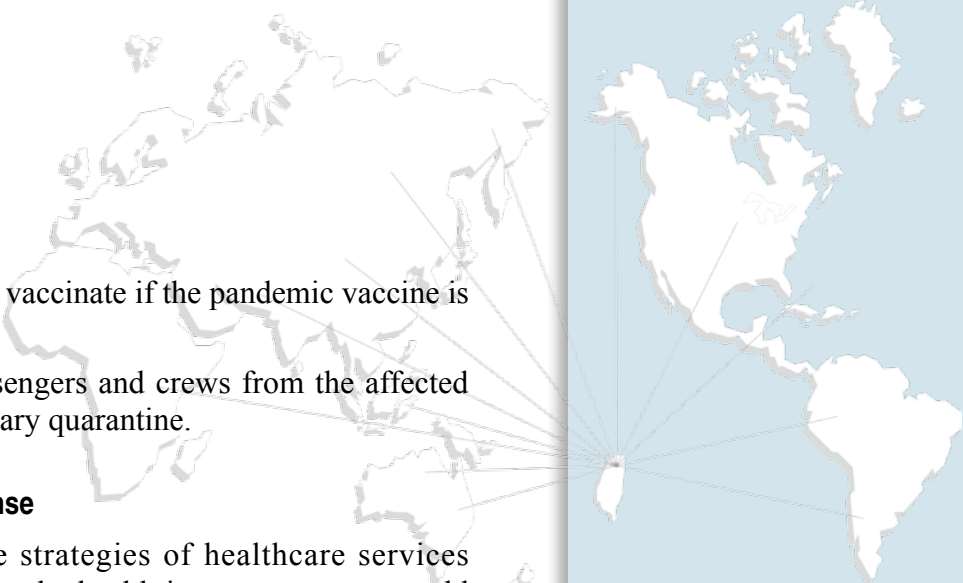
- **Surveillance and Assessment**

- Revise the criteria of case reporting and specimen sampling, and provide the latest information about clinical manifestation and transmission route to the physicians.
- Investigate influenza cases with severe complication and abnormal ILI clusters.
- Strengthen the physicians' ability and will to report cases, and then improve the efficiency and validity of surveillance systems.
- Ensure the capability of laboratories.
- Monitor the health condition of incoming passengers.
- Maintain communication with the affected countries.

- **Prevention and Control**

- Modify the antivirals strategy according to the practical experience of treatment and prophylaxis.
- Contact vaccine manufacturer about the available amount of and the timeframe for supplying the amount of pandemic





vaccine, and prepare to vaccinate if the pandemic vaccine is available.

- Request incoming passengers and crews from the affected area to carry out voluntary quarantine.

- **Healthcare System Response**

- Evaluate the response strategies of healthcare services again, and consider how the health insurance system could be involved.
- Update the guidance on infection control and bio-safety, if necessary.
- Strengthen the training for healthcare workers.

- **Risk Communication**

- Issue travel alert and recommend cancelling unnecessary trips to the affected areas.
- Review and update the information communicated to the public.
- Provide guidance on medical services and daily living necessities to the public.

## **11.4 Domestic Phase A2 and Overseas Phase 3~5**

- **Objective**

- To prevent further transmission of the virus from sporadic cases.

- **Administrative Coordination**

- Upgrade the Central Epidemic Command Center.
- Activate the Local Epidemic Command Center in the city/county where cases occur.

- **Surveillance and Assessment**

- Initiate case management and investigation, trace the source of infection, and collect information about clinical manifestation and virological characteristics.
- Report cases to the WHO.

- Look for new cases using house-to-house surveys around the case's neighborhood.
- Revise the criteria for case reporting and specimen sampling, and investigate all ILI clusters.
- Conduct the sero-epidemiology study on close contacts and health-care workers to evaluate the spread of the disease.
- **Prevention and Control**
  - Quarantine the close contacts to monitor their health conditions and provide antiviral prophylaxis.
  - Implement the public health interventions to stop the virus from spreading, and evaluate whether to conduct the ring-prophylaxis and sanitaire cordon.
  - Revise the guidance on antiviral usage, clinical management, and infection control measures.
  - If a case is suspected to be infected from poultry,
    - \* provide antiviral prophylaxis to others who have the same exposure.
    - \* promote the seasonal influenza vaccination and self-protection for the poultry workers.
  - Assess the effectiveness of the antiviral.
  - Research and develop a prototype pandemic vaccine.
- **Healthcare System Response**
  - Confirm that infection control practices are completely implemented in all healthcare facilities.
  - Confirm that bio-safety practices are implemented in all laboratories.
- **Risk Communication**
  - Release the correct information of the epidemic condition and self-protection measures.
  - For the community where cases occur, enhance the public's recognition of the virus' characteristics, self-protection measures, how to seek medical care, and, when necessary, mobilize volunteers for assistance.



## 11.5 Domestic Phase B and Overseas Phase 5

- **Objective**

- To prevent transmission of the virus from sporadic clusters.
  - < The same response already in place in Phase A1 and Phase 5, the incremental response is described below.>

- **Administrative Coordination**

- Upgrade the Central Epidemic Command Center.
- Activate the Local Epidemic Command Centers in the cities/counties where clusters have occurred or that are near the cluster location.
- Announce the county or city where the cluster has occurred as the “affected area”.

- **Surveillance and Assessment**

- Implement case management, conduct investigation, trace the infected source, and collect information about the clinical manifestation and virologic characteristics.
- Report cases to the WHO.
- Look for new cases using a house-to-house survey around the case’s neighborhood.
- Revise the criteria of case reporting and specimen sampling, and investigate all ILI clusters.
- Conduct the sero-epidemiology study on the close contacts and on the medical workers to evaluate the spread of the disease.
- Assess the necessity of seeking international aid.
- Ensure that the information systems can rapidly provide all the necessary information, including the distribution of beds, antivirals, vaccines, essential facilities and manpower.
- Set up a mechanism to evaluate the effectiveness of the interventions.

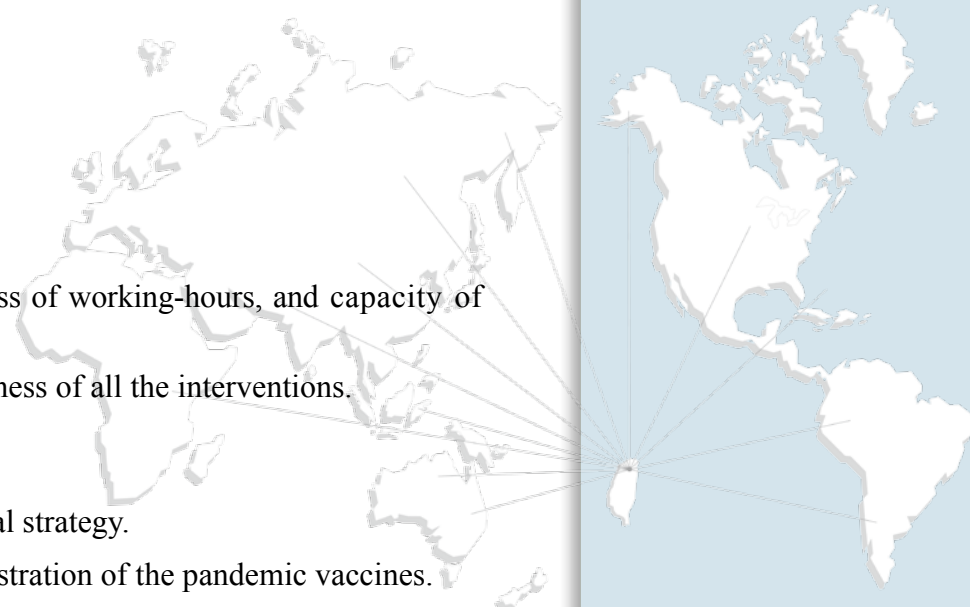
- **Prevention and Control**

- Provide antiviral prophylaxis to the close contacts and request them to comply with the control measures.

- Monitor the virus' resistance to the antivirals.
- Implement the public health interventions to contain the virus spreading, and evaluate whether to conduct the ring-prophylaxis and cordon sanitaire.
- Review usage and modify the guidance on antiviral usage.
- Research and develop a prototype of pandemic vaccine.
- Launch departure screenings at airports and seaports.
- **Healthcare System Response**
  - Initiate the response plans for healthcare facilities.
  - Arrange the supporting personnel for healthcare services.
- **Risk Communication**
  - Announce that all people should strictly comply with the control measures.

## **11.6 Domestic Phase C and Overseas Phase 6**

- **Objectives**
  - To postpone and lower the incidence peak.
  - To ensure that the limited resources such as antivirals and vaccines will be allocated reasonably.
  - To decrease the social and economic impact.
- **Administrative Coordination**
  - Upgrade the Central Epidemic Command Center.
  - Activate all the Local Epidemic Command Centers.
  - Consider announcing a state of emergency.
- **Surveillance and Assessment**
  - Monitor the pandemic trends according to geographic spread, epidemiological and virological characteristics, and clinical magnification, and review and justify the surveillance policy.
  - Assess all the possible impacts such as case number, hospital



admissions, deaths, loss of working-hours, and capacity of health-care services.

-- Evaluate the effectiveness of all the interventions.

- **Prevention and Control**

-- Implement the antiviral strategy.

-- Implement the administration of the pandemic vaccines.

-- Carry out the social distancing measures, such as school closures, flexible working hours, and prohibition of public gatherings.

-- Maintain the departure screenings at airports and seaports.

- **Healthcare System Response**

-- Carry out and modify the response plans for healthcare facilities.

- **Essential Social Functions Response**

-- Maintain all the critical systems such as electric power, water, energy, transportation and tele-communication.

-- Enhance the law enforcement to maintain social order.

- **Risk Communication**

-- Suggest measures about health and living.

-- Deal with the public's panic.

## **11.7 Subsided Period (end of pandemic or between waves)**

- **Objective**

-- To be prepared for the next wave of influenza pandemic.

- **Administrative Coordination**

-- Announce the end of the first wave of pandemic.

- **Surveillance and Assessment**

-- Assess if any additional resources should be prepared for the next wave of pandemic.

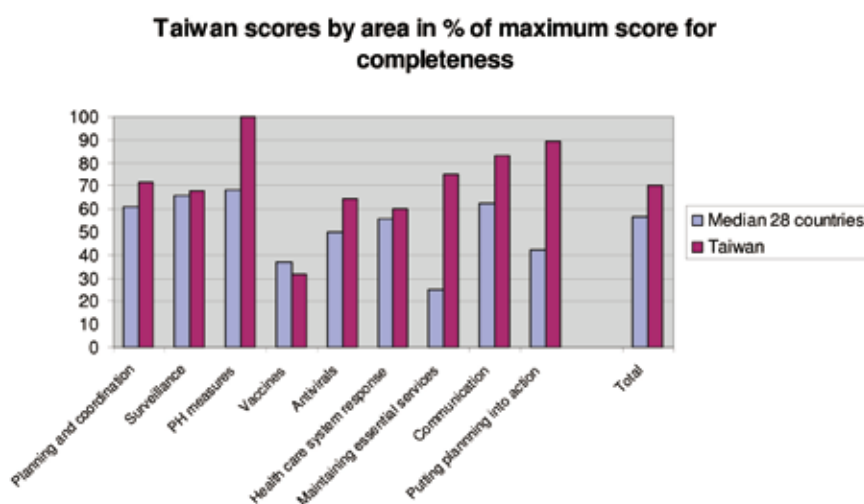
- Evaluate the social psychological impact.
- Evaluate the economic impact.
- Share the experience of implementing response activities with other countries.
- **Prevention and Control**
  - Consider supporting countries still under severe conditions.
  - Review the effectiveness of all the interventions and modify the related guidelines.
  - Evaluate the necessity and feasibility of increasing the stockpiles of antivirals.
  - Assess vaccine coverage and determine whether to vaccinate those not yet vaccinated or to add the pandemic strain to the seasonal influenza vaccine.
- **Healthcare System Response**
  - Ensure that medical personnel get an opportunity to rest.
  - Re-stockpile medicines and PPEs, and repair other equipments.
  - Review and revise the response plans for healthcare services.
- **Essential social functions response**
  - Rebuild the critical systems, for example, core personnel replacement.
  - Provide the economic recovery plans.
- **Risk Communication**
  - Inform the public of the uncertainty of the next wave of the pandemic.

# 12. Evaluation and Exercise

## 12.1 Preparedness Evaluation

The central government should evaluate the national preparedness plan using the “WHO Checklist for Influenza Pandemic Preparedness Planning”. Such evaluation should be conducted every year. The “Strategic Plan” and the “Response Plan” should be revised according to the evaluation results.

The local governments should evaluate the local preparedness situation using the “Checklist for Influenza Pandemic Plans of the Local Governments”, which is included in the “Response Plan”. Local governments should revise their plans based on the evaluation results. In addition, the central government will conduct integrated assessments of all the local plans or offer opportunities for the local governments to share their experiences.



## **12.2 Exercise Conduction**

Exercises can help the command centers, the first-line personnel, and the public to become familiar with the existing control measures. Moreover, it can also reinforce vertical (between central and local governments) and horizontal (between different sectors) communication.

In order to conduct more specialized and systematic exercises, a workshop on conducting an exercise was held in 2007 by the Department of Health and the Department of National Defense. The guidelines for conducting an exercise have been published and are revised periodically. In addition, the exercises are frequently shared with other countries.

- **The items that should be exercised by the central government are as follows:**
  - Operation of the Central Epidemic Command Center;
  - Decision-making on national strategies in different pandemic phases;
  - Control measures for incoming passengers in the airport and seaport;
  - Deployment of antivirals, vaccines and PPEs;
  - Medical service for infected cases from off-shore islands;







- **The items that should be exercised by the local governments are as follows:**
  - Operation of the Local Epidemic Command Center;
  - Case management: reporting, surveillance, delivery and testing of samples, and case investigation procedures;
  - PPEs management: PPEs delivery, and operation of MIS;
  - Patient delivery mechanism: procedures for case transfer and related protection and disinfection;
  - Communication plan: vertical (with central authorities), horizontal (across all bureaus and departments, across other county or city governments) and media communication;
  - Response to patient surge: establishment of temporary isolation facilities;
  - Transmission interruption: isolation, quarantine, and social distancing measures;
  - Maintain social functions.

# Influenza Pandemic Strategic Plan

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