

**National Strategic Plan
for
Prevention and Control of Avian Influenza
and
Human Influenza Pandemic Preparedness and Response**



**Ministry of Health
Union of Myanmar
(2006)**

Government of the Union of Myanmar
Ministry of Health



National Strategic Plan
for
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and
Human Influenza Pandemic Preparedness and Response

(Revised)

31st January, 2006

FOREWORD

The outbreak of SARS in 2003 in Southeast Asia and many other countries worldwide caused over 8000 confirmed cases and about 800 deaths in addition to an economic loss of US\$ 30 to 150 billion. Fortunately Myanmar was not affected by SARS due to the high political commitment, dedication of the health professionals, multisectoral involvement of public and private sectors, NGOs and the community.

Less than six months after the World Health Organization declared the interruption of the last chain of transmission of SARS, a new infectious disease-Highly Pathogenic Avian Influenza (HPAI) H5N1 caused outbreaks in poultry in Asia since December 2003. This was followed by transmission to humans. This avian influenza outbreak among birds has now spread to Europe and human infections and death has been reported in Turkey. As of 25th January 2006, WHO reported 83 deaths out of 152 laboratory confirmed cases resulting in a mortality rate of more than 50%. In addition to this human tragedy, severe economic loss due to death and culling of infected birds is escalating.

The WHO and the international scientific and global community are duly concerned about the emergence of a novel human influenza virus arising from the present H5N1 strain due to genetic mutation or reassortment. This has led scientists to believe that a human influenza pandemic is imminent.

At present, the potential pandemic is expected to cause a low of 2-7 million to a high of 2-50 million deaths worldwide in addition to the immense social and economic disruption. Thus, all the member states of the WHO are working towards pandemic preparedness and response to combat the threat of a potential pandemic.

Based on preparedness plans put into place during the worldwide SARS outbreak, Myanmar has formulated a pandemic preparedness plan jointly with the Ministry of Livestock and Fisheries since January 2004. Monthly work committee meetings are held regularly to co-ordinate the implementation of all activities, and to review, revise and update plans in accordance with the WHO guidelines and recommendations and also with the changing disease epidemiology.

To face the challenge of the impending pandemic the developing countries need to strengthen early warning systems and reporting, upgrading of laboratories for human health and animal health, stockpiling of antivirals (and vaccines if available) and personal protective equipment (PPE) for high risk persons.

It is encouraging to learn that the international community has pledged a total of US\$ 1.9 billion at a recent international meeting in Beijing for prevention and control of avian influenza and preparedness and response to a possible human influenza pandemic. We hope that financial assistance will be addressed towards the needs of the developing countries to implement the pandemic preparedness and response plan.

Myanmar, as a member of the international community is politically committed to fight against this impending pandemic threat with concerted efforts of all stakeholders and community involvement utilizing all available resources.

Work Committee
Prevention and Control of Avian Influenza
and
Human Influenza Pandemic Preparedness and Response

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1. BACKGROUND

1.1 Introduction

Avian influenza viruses refer to a large group of different influenza viruses that primarily affect birds. On rare occasions, these bird viruses can infect other species, including pigs and humans. The vast majority of avian influenza viruses do not infect humans. However, due to changes in genomic structure of the avian influenza virus they are capable of transmitting to humans. The avian influenza A (H5N1) subtype first infected humans in Hong Kong in 1997, causing 18 cases, including six deaths. On that occasion, culling within three days of Hong Kong's poultry population, estimated at 1.5 million birds, is thought to have averted a possible pandemic. Since mid-2003, this virus has caused the largest and most severe outbreak in poultry on record. In December 2003, infections in people exposed to sick birds were identified. Since then, 152 laboratory-confirmed human cases have occurred in Cambodia, Indonesia, Thailand, Viet Nam, China and Turkey, and more than 50% of patients have died (Table 1).

Table 1. Cumulative Number of Confirmed Human Cases of Avian Influenza A (H5N1)
Reported to WHO

As of 25th January 2006

Date of onset	Cambodia		China		Indonesia		Thailand		Turkey		Viet Nam		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
2003	0	0	0	0	0	0	0	0	0	0	3	3	3	3
2004	0	0	0	0	0	0	17	12	0	0	29	20	46	32
2005	4	4	8	5	16	11	5	2	0	0	61	19	94	41
2006	0	0	2	2	3	3	0	0	4	2	0	0	9	7
Total	4	4	10	7	19	14	22	14	4	2	93	42	152	83

Total number of cases includes number of deaths.
WHO reports only laboratory-confirmed cases.

At present the avian influenza virus (H5N1) infects humans who have contact with infected birds although there are reports of human patients who had no direct exposure to infected birds. Firm evidence of human-to-human transmission is still lacking.

However, when a novel virus emerges either through genetic re-assortment or genetic mutation of the present avian influenza virus (H5N1), an influenza pandemic may occur, due to its easy transmissibility from human to human.

Three pandemics occurred in the previous century; the first pandemic “Spanish Flu” in 1918, the second “Asian Flu” in 1957 and the third “Hong Kong Flu” in 1968. The pandemics caused an estimated 20–40 million human deaths in 1918, 2 million in 1957 and one million in 1968.

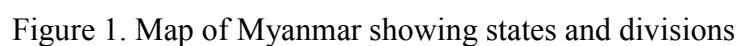
At present, we are facing a huge potential threat of human influenza pandemic. The reasons are: H5N1 virus is still widespread among birds, having established a permanent ecological niche in poultry and, human cases of avian influenza are still continuing to occur. Moreover, seasonal influenza viruses are circulating among the human population; therefore there is high probability of an emergence of a pandemic human influenza virus (novel virus). International scientists and experts are of the opinion that a human influenza pandemic is imminent. It is presumed that international spread will be much faster due to increased international travel, trade and tourism. When a pandemic occurs it will be highly contagious like the seasonal influenza and deadly like the avian influenza. It has been estimated that 20 to 50 percent of the world population could be affected due to virulence of the virus and lack of immunity (resistance) in the community. Estimated deaths range from a low of 2 to 7 million to a high of 2 to 50 million and there will be more severe socio-economic loss than the previous severe acute respiratory syndrome (SARS) outbreak in 2003 which cost about US\$ 30 to 150 billion globally.

For these reasons, governments, political leaders, scientists, international agencies and institutions all over the world are holding international forums focusing on prevention, preparedness and response to this potential human influenza pandemic. Those who are well prepared will be the least affected. During the SARS outbreak in Asia, due to strong political commitment and energetic, dedicated and concerted efforts of health professionals, non-governmental organizations (NGOs) and community involvement, we were able to prevent occurrence of SARS in Myanmar. Based on the lessons learnt and experience gained from SARS prevention and preparedness, the national strategic plan for prevention and control of avian influenza and human influenza pandemic preparedness and response has been formulated.

The plan for prevention and control of avian influenza and human influenza pandemic preparedness and response was been drawn on January 20, 2004 by the Ministry of Health based on WHO guidelines and a similar plan on prevention and control of avian

Myanmar is one of the developing countries in South East Asia and a member of the ASEAN family with a total land area of 676,578 sq km. Administratively it is divided into 7 states and 7 divisions, consisting of 65 districts, 325 townships, 59 sub-townships, 2759 wards, 13729 village tracts and 64986 villages (Figure 1).

The population of Myanmar in 2004-05 is estimated at 53.22 million with a growth rate of 2.02 percent. About 70% of the population resides in rural areas whereas the remaining are urban dwellers. The population density ranges from 390 per sq km in the Yangon Division to 10 per sq km in Chin State in the northwestern part of the country.



1.3 Health Service Delivery System

The Ministry of Health is providing comprehensive health services, covering promotive, preventive, curative and rehabilitative aspects to raise the health status of the people with the objective of achieving Health for All goals. Successive National Health Plans have been developed and implemented in accordance with the guidelines of the National Health Policy.

Myanmar health service delivery is carried out under the guidance of the National Health Committee, which is the highest policy making body, chaired by the Secretary (1) of the State Peace and Development Council. It has 14 members comprising of ministers of health and health-related ministries and the deputy minister of health acts as the secretary. The National Health Committee takes the leadership role and gives guidance for efficient and systematic implementation of the health programmes. Under the National Health Committee, various health committees have also been formed at respective administrative levels of the country down to the village level (Figure 2).

The township health department is the backbone of Myanmar health service delivery system which covers both urban and rural populations. Urban health system consists of township hospital, urban health centre, maternal and child health center, school health and disease control teams. At the rural area there are station hospitals manned by medical officers and rural health centers and sub centres manned by health assistants, lady health visitors, midwives and public health supervisors.

The township health department is under the supervision of the district health department which has district hospital and district public health units manned by specialists. At the state/division level, the state/division health department is responsible for state/division planning, coordination, training and technical support, close supervision, monitoring and evaluation of health services in the respective states and divisions. The state and division hospitals are staffed by senior specialists both in clinical and public health domains.

The national NGOs such as Union Solidarity and Development Association, Myanmar Women's Affairs Federation, Myanmar Maternal and Child Health Association, Myanmar Red Cross Society and health professional bodies and associations are also taking a share of service provision hand in hand with the health personnel of the Ministry of Health.

UN and international agencies are also assisting in the implementation of the health programmes of the country.

Health Service Delivery System

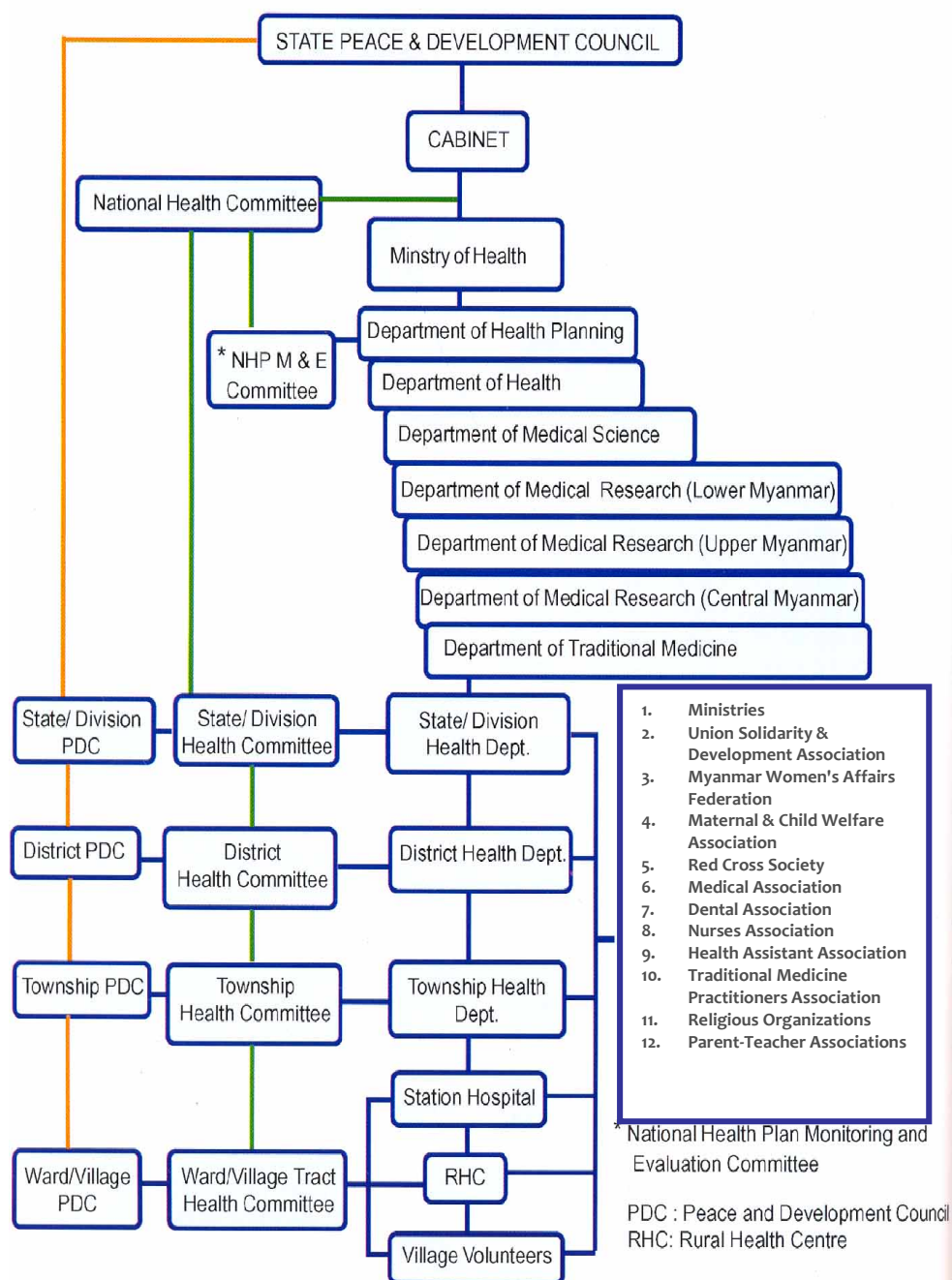


Figure 2. Health service delivery system

1.4 Current Diseases Surveillance System

Central Epidemiology Unit under the Department of Health is responsible for surveillance, prevention and control of communicable and non-communicable diseases in Myanmar. Special Disease Control Units established at state and division levels for communicable disease surveillance and response, provide technical advice to district and township level and also to the basic health services in the rural areas.

Surveillance of diseases are being carried out on principal epidemic diseases that are immediately notifiable, including avian influenza and 17 diseases under the National Disease Surveillance System.

Surveillance activity is conducted through:

- (a) Daily active hospital surveillance (major hospitals in Yangon City)
- (b) Weekly active hospital surveillance (major hospitals in states and divisions)
- (c) Monthly sentinel surveillance (29 sites of the country)
- (d) Laboratory surveillance
- (e) Adverse effects following immunization (AEFI) surveillance
- (f) Vector surveillance
- (g) Integrated acute flaccid paralysis (AFP), neonatal tetanus and measles surveillance
- (h) Community-based surveillance

Reporting system is being carried out:

- (a) Daily by central level hospitals in Yangon,
- (b) Weekly by state and divisional health departments and
- (c) Monthly by township and district health departments through Health Management Information System

1.5 Establishment of focal units and focal points

Surveillance of avian influenza is concerned with many sectors. Its most important function is to detect and respond rapidly so as to contain and avert outbreaks.

Myanmar has established focal units at related Ministries such as,

- (a) Ministry of Health --- conducting surveillance among humans

- (b) Ministry of Livestock and Fisheries ----- conducting surveillance among animals and birds
- (c) Ministry of Progress of Border Areas and National Races and Development Affairs --- conducting surveillance of animal markets all over the country.
- (d) City Development Committees --- conducting surveillance of animal markets in Yangon and Mandalay
- (e) Ministry of Forestry --- conducting surveillance of wild birds and migratory birds

Immediate sharing of information through telecommunication system and joint outbreak investigation is being carried out as necessary.

Central Epidemiology Unit, Department of Health, Ministry of Health has been assigned as country focal point of avian influenza and contact details are (Contact telephone – 95-1-380040, 95-1-09-500-1210 and 95-1-291078, **Email: mbds@mptmail.net.mm**) Livestock Breeding & Veterinary Department, Ministry of Livestock and Fisheries is also a focal unit and contact details are (Tel: 95-1-642453, Fax: 95-1-642927, 95-1-640032, **Email: lbvd@mptmail.net.mm**)

1.6 Current Surveillance Activities for Avian Influenza

WHO case definition of avian influenza has been adopted and used. This disease has been identified as immediately notifiable throughout the country.

- **Close surveillance has been conducted in -**
 - Major hospitals all over the country
 - 29 sentinel townships
 - 14 townships bordering Thailand and China
 - International ports
- **Current surveillance system focuses on the following groups-**
 - People exposed to infected birds/ animals
 - People involved in culling
 - Health care workers
 - Laboratory workers
 - Incoming travelers from affected countries

- **Current surveillance networking has been established:**

- at national level - among focal units of human health and animal health
- at regional level - through WHO, Mekong Basin Disease Surveillance Net, ASEAN + 3 Disease Surveillance Net.
- Networking information system still needs improvement for more effective response to avian influenza outbreak.

Our surveillance system and rapid response teams established during the SARS outbreak had successfully prevented occurrence of SARS in Myanmar.

1.7 Current laboratory and infection control status

1.7.1 Laboratory capacities

National Health Laboratory is the public health laboratory and Department of Medical Research (Lower Myanmar) is the reference laboratory for avian influenza and these laboratories have been equipped with facilities for cell culture, serology and molecular diagnosis. Although laboratory staff are qualified, well trained and experienced, the public health laboratory (National Health Laboratory, Department of Health), the reference laboratory (Department of Medical Research - Lower Myanmar) and the veterinary laboratory (Livestock Breeding and Veterinary Department) need to achieve biosafety level 3 (BSL-3) capability.

At present, a rapid diagnostic test (Directigen Flu A) is used for field investigation of suspected avian influenza patients. SD-Bioline rapid diagnostic test is used for field investigation of outbreak of illness among birds. Field and clinical specimens are sent to the WHO and FAO/OIE reference centres for confirmation.

1.7.2 Infection control activities

Waibagi Infectious Disease Hospital (Yangon) and Kandawnadi Hospital (Mandalay) had been used as designated hospitals for isolation and quarantine for contacts and suspected patients during the SARS outbreak. These hospitals are also designated for similar purposes for avian influenza suspected patients. The isolation wards of state and division, district and township level hospitals were also prepared for isolation and quarantine.

Health workers and auxiliary staff have been trained for infection control measures and Practical Guidelines for Infection Control in Healthcare Facilities (WHO/SEARO/

WPRO 2004) and Safety Measures for Use in Outbreak of Communicable Diseases (WHO/Geneva 1986) have been distributed to all hospitals in the country.

1.7.3 Requisition of supplies and equipment

Limited amount of Personal Protective Equipment (PPE) is available for the surveillance and response teams. A total of 10,000 doses of antiviral drugs have been requested from WHO. More PPE and antivirals will be needed during pandemic alert and pandemic phases.

1.8 Animal Health Services

The Ministry of Livestock and Fisheries is providing animal health services. Of the seven departments under the ministry, the Livestock Breeding and Veterinary Department is responsible for surveillance, prevention and control of highly pathogenic avian influenza (HPAI) outbreak in poultry. It has set up state and division, district and township veterinary departments for monitoring, reporting and control of any outbreak concerning animal illness.

The livestock population includes 12 million cattle, 2.7 million water buffaloes, 2.3 million sheep and goats, 5.6 million pigs, 78.9 million poultry and 9 million ducks. The agricultural sector which includes food crops, estate crops, livestock, fisheries and forestry is an important segment of Myanmar's economy. In 2003-2004, livestock and fisheries accounted for 9% of the national GDP and 18.4% of agricultural GDP. Livestock and fisheries sector is a fast growing sector of the country's economy.

Indigenous poultry constitutes about 80% of the total poultry population, layers comprising 13% and broilers 7%. Poultry production is mainly for domestic consumption.

Myanmar has a low density of poultry population (241 birds per square mile). The smallest farm (backyard farm) has 10-20 native chickens per household. Commercial farms are relatively smaller than that of other countries with the majority having 300 to 6000 birds and the minority having 6000 to 10,000 birds. The usual distance from one commercial farm to the other is 1-5 kilometers (Figure 3).

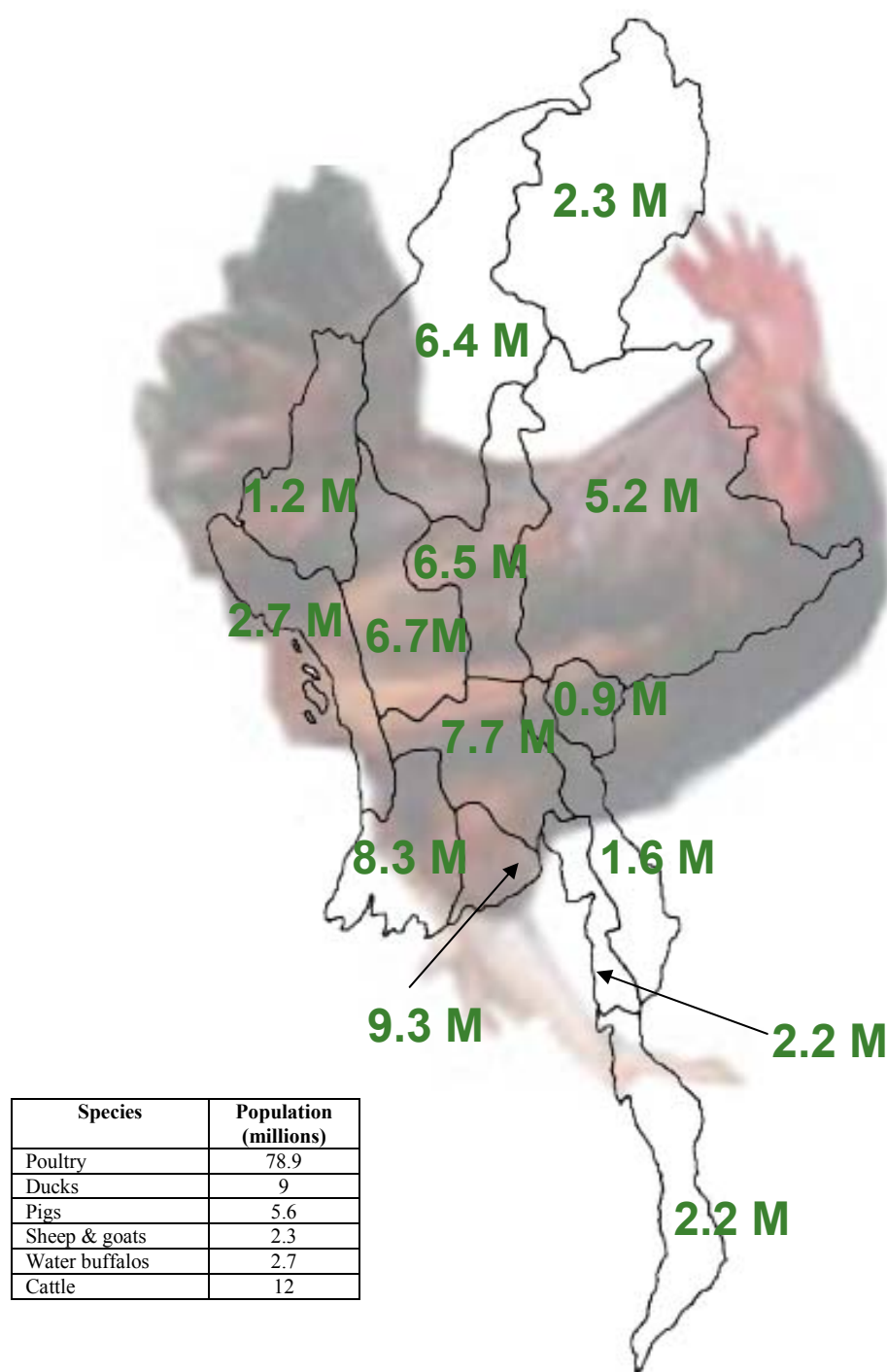


Figure 3. Poultry population in different states / divisions in Myanmar (number of birds in millions)

Myanmar has 33 wildlife sanctuaries with an average area of 250 square miles per sanctuary. About 1035 species of birds have been identified.

Consultative Technical Committee, investigation and response teams, and sub-committees for overseeing the importation of eggs, day old chicks and poultry products from avian influenza affected countries, were formed since January 2004 for the prevention and control of avian influenza outbreak in poultry. The investigation teams were organized with personnel from various departments such as Health, Livestock Breeding and Veterinary Department, City Development Committee and representatives from local authorities at all levels to inspect hotels, restaurants and barbecue shops.

Cooperation and collaboration with the Health Department was done in the following areas:

- development of preparedness and control plan for avian influenza.
- surveillance and laboratory diagnosis.
- epidemiological survey
- poultry farm inspection at different levels.
- proper destruction and disposal of illegal importation of day old chicks and eggs.
- investigation and management of suspected outbreaks

1.9 Joint Investigation Activities

(Department of Health and Department of Livestock Breeding and Veterinary)

Since January 2004, when WHO announced an alert on outbreak of avian influenza, a joint action plan was developed by the Ministry of Health, the Ministry of Livestock and Fisheries, the Ministry of Forestry, City Development Committees and other related ministries, departments and organizations for prevention and control of avian influenza. Department of Health and Department of Livestock Breeding and Veterinary are the principle stakeholders.

Joint surveillance and investigation have been carried out since 2004. The following table shows the joint investigation activities and findings (Table 2).

Myanmar has no reported cases of avian influenza both in animals and humans as yet.

Table 2. Joint Investigation Activities (*Department of Health and Livestock Breeding and Veterinary Department*)

No	Date	Place	Case / Deaths	Lab- Investigation	Results
1	1.2.04	Hmawbe Yangon Division	Fowl deaths	Rapid test kit for Influenza	- Negative -Very virulent Newcastle Disease
2	13.2.04 to 19.2.04	Mawlamyine, Mon State	57 crows, 1 pigeon	Rapid test kit for Influenza	- Negative - Cypermethrin poisoning
3	19.2.04	Mingaladon, Yangon Division	2 human cases	Rapid test kit for Influenza	- Negative
4	20.8.04 to 25.8.04	Madaya Township, Nga Lan Pyan Village, Mandalay Division	6 cases and 3 deaths from one family	Rapid test kit for Influenza	- Negative - Adult dengue haemorrhagic fever
5	24.1.05 to 26.1.05	Daik Oo Township, Ka Doke Pha Ya Gyi Village, Bago Division,	6245 ducks died	Rapid test kit for Influenza	- Negative - duck septicaemia
6	3.2.05	Hlegu Township, Inn Taung Village, Yangon Division	3 human cases from one family	Rapid test kit for Influenza	-Negative -Staphylococcal food poisoning

7	26.2.05	Pathein Gyi Township, TB Hospital Compound, Mandalay Division,	30 pigeons died	Rapid test kit for Influenza	- Negative - pigeon pox
8	8.6.05	Thonegwa Township, Aung Bone Village, Yangon Division	1 human death	Rapid test kit for Influenza	Negative PM diagnosis - Hypertensive heart and kidney failure
9	14.7.05 to 15.7.05	Mawlamyine Hospital compound, Mawlamyine, Mon State,	33 pigeons died	Rapid test kit for Influenza	Negative potash poisoning
10	3.8.05 to 4.8.05	Kayin State,	37 pigeons died	Rapid test kit for Influenza	- Negative - Pigeon pox
11	8.8.05	Shan (East) Tachileik	4 pigeons died	Rapid test kit for Influenza	- Negative - Pigeon pox
12	22.10.05	Shan (East) Kyaington	17 human cases 4 deaths	(JE, MP, DHF, Meningitis) Rapid test kit for Influenza Ref: Lab result from WHO	- Negative - Influenza A positive - Influenza A (H1N1) positive (4 positive out of 9 pts)

Since Jan 2004, Myanmar has banned illegal importation of chicken and eggs at all entry points of the country. The following table shows the activities conducted since 2004 (Table 3).

Table 3. Activities against illegal importation of chicken and eggs from affected countries

Sr.No	Date	Place	Chicken/egg	Activities
1	20.4.04	PyinOoLwin, Patheingyi Township, Mandalay Division	9339 chickens 69286 eggs 900 ducks	destroyed
2	3.6.04	Thanlyin Township, Yangon Division	6400 chickens	destroyed
3	26.5.05	Kawthaung, Taninthari Division	3000 chickens	destroyed
4	23.6.05	Tarchileik ,Eastern Shan State	Chicken products 300 kg	destroyed
5	31.7.05	Myeik, Taninthari Division	2000 chickens	destroyed
6	31.7.05	Myeik, Taninthari Division	2000 chickens	destroyed

1.10 Participating in International meetings on Avian Influenza and, preparedness and response for human influenza pandemic.

- ASEAN+3 Health Ministers' and Senior Officers' Meeting on Avian Influenza, Bangkok, 25-26 November 2004
- Regional Workshop on Human Influenza A (H5N1) Detection and Control (Bangkok) (Feb 19-20, 2005)
- China + ASEAN Special Meeting on HPAI Control (Beijing) (March 2, 2005)
- Informal Consultation Meeting on Avian Influenza (Bangkok) (July 1-2, 2005)

- APEC Meeting on Avian Influenza Prevention and Control (Australia, Brisbane)
(Oct 31 to Nov 1, 2005)
- Regional Meeting on Avian Influenza Pandemic Preparation (Bangkok) (Nov 21-24, 2005)
- FAO/OIE Emergency Regional Meeting on Avian Influenza Control in Asia, Bangkok, Thailand. (26.2.2004 to 29.2.2004)
- Meeting on Preventive and Control of Avian Influenza, Beijing, China. (25.2.2004 to 5.3.2004)
- Training Workshop on Diagnosis of Avian Influenza, Geelong, Australia. (1.5.2004 to 15.5.2004)
- Workshop on Highly Pathogenic Avian Influenza (HPAI), Singapore (9.5.2004 to 19.5.2004) .

2. NATIONAL PREPAREDNESS AND RESPONSE ON AVIAN INFLUENZA

2.1 Endorsement of plan of action by the National Health Committee

The National Health Committee is a high level inter-ministerial and policy making body concerning health matters and taking the leadership role and, giving guidance for systematic and efficient implementation of the health programmes. The Myanmar National Plan was prepared and submitted to the National Health Committee on 2-8-2005. The committee endorsed the National Plan and gave guidance to take all necessary measures to implement the plan with full cooperation of all sectors including the private sector, NGOs and the community.

2.2 Formation of committees and subcommittees

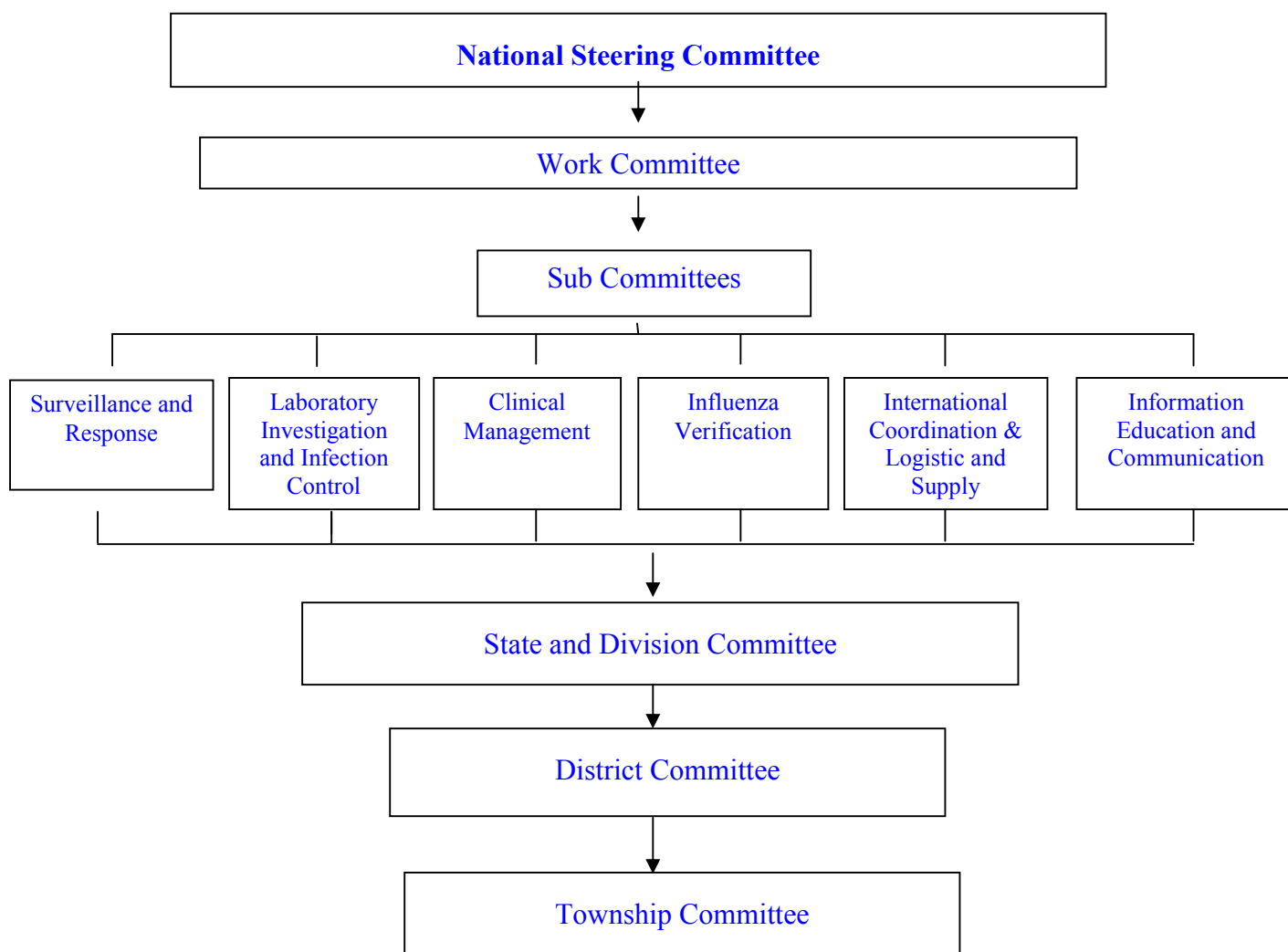


Figure 4. Committees and subcommittees

The above committees and subcommittees have been formed with members from various ministries, professional bodies and associations and non-governmental organizations (Figure 4).

(i) National Steering Committee on prevention and control of Avian Influenza and Human Influenza Pandemic Preparedness & Response

This committee, chaired by the Minister for Health is composed of 25 members from related ministries and provides policy guidelines on prevention, management and control of Avian Influenza and mechanism for intersectoral collaboration and coordination.

(ii) Work Committee on Prevention, Management and Control of Avian Influenza and Human Influenza Pandemic Preparedness and Response

This is the main oversight working committee on avian influenza, chaired by the Deputy Minister for Health. It has 50 members from related departments, local NGOs professional bodies and associations. According to the policy laid down by the National Steering Committee, it oversees national preparedness and provides necessary guidance on all activities to prevent the occurrence of avian influenza or contain it if it does occur. The working committee has developed national guidelines related to surveillance, management and infection control and has also strengthened the manpower to fight against avian influenza.

(iii) Subcommittee on Verification of Avian Influenza

This sub committee provides technical expertise on case definition of suspected case, probable case and confirmed diagnosis of avian influenza case and reviews all cases reported. After evaluation of the clinical and laboratory data, a final diagnosis will be given by this subcommittee. Appropriate samples will be sent to the WHO Collaborating Centre on Reference and Research on Influenza for confirmation.

(iv) Subcommittee on Surveillance and Response

This subcommittee supervises the surveillance activities in all ports of entry into Myanmar, including the cross border points in the country and monitors case reports from all hospitals including private hospitals and clinics. It also oversees the surveillance of contacts and high risk groups, surveillance, investigation and management on influenza-like illness, severe pneumonia and unknown causes of death. There is strong surveillance networking among the Department of Health, Veterinary Department, Forestry Department and City Development Committee and organizations concerned.

(v) Subcommittee on Clinical Management

This subcommittee supervises the preparation and running of designated facilities for isolation and care of avian influenza cases. It is also responsible for preparation and distribution of case management guidelines, providing case management training for Intensive Care Unit (ICU) staff, hospital staff and all health care workers, and monitoring and reporting of severe pneumonia cases and influenza-like illness.

(vi) Subcommittee on Information, Education and Communication

This subcommittee organizes and implements health education activities on avian influenza for health professional bodies and organizations, NGOs and community through various media and issued reports on avian influenza. It also coordinates with WHO, FAO and OIE to provide updates on avian influenza to the public and various partners involved in health education.

(vii) Subcommittee on Laboratory Investigation and Infection Control

This subcommittee has developed laboratory guidelines and recommended infection control procedures for both human and animal health. It also supervises hospitals and laboratories to follow WHO, FAO and OIE guidelines. It is in the process of upgrading the National Health Laboratory, Department of Medical Research (Lower Myanmar) laboratory and the Veterinary Diagnostic Laboratory to attain biosafety level 3 (BSL-3).

It reviews laboratory and infection control guidelines on avian influenza and makes revisions as necessary. This subcommittee also participates in field investigations and has the responsibility for management and control of outbreaks by providing prompt diagnosis.

(viii) Subcommittee on International Coordination & Logistic and Supply

This subcommittee ensures procurement, storage and distribution of supplies and equipment necessary for responding to avian influenza outbreak. . It is also responsible for stock piling of antiviral drugs, provision of supplies, equipment including personal protective equipment, antibiotics necessary for management of Avian Influenza. It has also collaborated with WHO, UN agencies, other international and local organizations in a concerted effort to prevent and contain Avian Influenza

(ix) State and Division, District and Township Avian Influenza Prevention and Control Committees

States and divisions subcommittees on avian influenza prevention management and control have been established. Under the state and division subcommittees, 325 township subcommittees were also taking the responsibility for avian influenza prevention and control activities. Chairmen of the Peace and Development Councils of the respective states, divisions and townships are the chairmen and the chief medical officers of respective levels are the secretaries of these subcommittees. Public and private sectors and NGOs are represented on these subcommittees.

3. PREVENTION AND CONTROL OF AVIAN INFLUENZA AND HUMAN INFLUENZA PANDEMIC PREPAREDNESS AND RESPONSE

WHO global influenza pandemic plan (November, 2005) has designated phases as follows :

Table 4. WHO Global Influenza Pandemic Phases

Inter-pandemic phase New virus in animals, no human cases	Low risk of human cases	1
	Higher risk of human cases	2
Pandemic alert New virus causes human cases	No or very limited human- to- human transmission	3
	Evidence of increased human- to -human transmission	4
	Evidence of significant human- to -human transmission	5
Pandemic	Efficient and sustained human- to -human transmission	6

Ref: http://www.who.int/csr/disease/avian_influenza/phase/en/index.html

The phase-wise objectives of strategic actions (WHO/CDS/CSR/GIP/2005.8) are stated as follows:

Phase : pre-pandemic

1. Reduce opportunities for human infection
2. Strengthen the early warning system

Phase: emergence of a pandemic virus

3. Contain or delay spread at the source

Phase: pandemic declared and spreading internationally

4. Reduce morbidity, mortality and social disruption
5. Conduct research to guide response measures

For operational purposes, based on the above WHO phases and objectives, Myanmar National Plan for Prevention and Control of Avian Influenza and Human Influenza Pandemic Preparedness and Response was formulated in the national context.

The pandemic phases are designated as follows:

Pandemic phases

Inter-pandemic Phase

Avian Influenza Phase (Pandemic Alert Level I)

Human Influenza Pandemic Alert Level II

Human Influenza Pandemic Phase

Post-pandemic Phase

The phases of pandemic are designated based on criteria and the objectives and strategic actions are formulated as follows:

3.1 Inter-pandemic Phase

3.1.1 Criteria:-

- (a) Transmission of avian influenza (H5N1) infection among birds and animals
- (b) Circulating avian influenza virus poses risk of human infection
- (c) No transmission from bird to human and human to human
- (d) No novel human influenza virus detected

3.1.2 Objectives:-

- (a) Prevention and control of outbreak of avian influenza (H5N1) among birds
- (b) Prevention of transmission from birds to humans
- (c) Capacity building and resource mobilization for pandemic preparedness and response

3.1.3 Strategic actions:-

- (a) Strengthening surveillance of wild birds / migratory birds
- (b) Strengthening surveillance of avian influenza outbreak in birds and investigation and control of outbreak at source
- (c) Surveillance of poultry farm workers and people who are in contact with birds
- (d) Strengthening advocacy and implementation of good poultry farming practice in accordance with FAO and OIE guidelines.
- (e) Strengthening of laboratory facilities and human resource development
- (f) Intensify national and international networking especially with FAO, OIE, WHO etc.

(Action-oriented detailed activities shown in Annex)

3.2 Avian Influenza Phase (Pandemic Alert Level I)

3.2.1 Criteria:-

- (a) Outbreaks of avian influenza (H5N1) infection among birds
- (b) Transmission of avian influenza (H5N1) infection to humans who have contacts with birds
- (c) No human-to-human transmission
- (d) No novel human influenza virus detected

3.2.2 Objectives:-

- (a) Prevention of avian influenza transmission through birds and bird products from affected countries.
- (b) Prevention of transmission of avian influenza from birds to human
- (c) Strengthening of early warning system
- (d) Developing mechanisms for human influenza pandemic preparedness and response

3.2.3 Strategic actions:-

- (a) Intensify strategic actions adopted in inter-pandemic phase.
- (b) Contingency planning
- (c) Overall government response

- (d) Developing national guidelines for surveillance, infection control and patient management.
- (e) Surveillance activities at border areas and ports for preventing importation of birds and bird products from affected countries
- (f) Ensuring laboratory capacity for animal health and human health
- (g) Designating hospitals and wards for isolation and quarantine of contacts and suspected patients and proper and effective management of patients
- (h) Detection and management of cluster pneumonia in the community as well as in hospitals
- (i) Intensify health education programmes for the public regarding knowledge and behavior for the prevention of avian influenza through printed and audio-visual media
- (j) Education and training of workers of animal and human health in infection control, outbreak investigation and case management
- (k) Stockpiling of PPE, antivirals, antibiotics, vaccine (if available) and other necessary supplies
- (l) Promoting preventive measures in health care sectors
- (m) Promoting preventive measures in the community
- (n) Improving surveillance in human population
- (o) Adopting policies for:-
 - i. maintaining essential services (such as hospitals, transportation, communication, electricity and water supply etc.,) during pandemic period
 - ii. isolation and quarantine of local outbreaks of pandemic influenza in localized areas.
 - iii. general public health measures and prophylaxis (antivirals and vaccine if available) for essential workers during pandemic period
 - iv. social distancing at schools, entertainment places, public gathering areas etc., during pandemic period
- (p) Promotion of research in traditional medicine for prevention and treatment of influenza
- (q) Strengthening of co-operation and collaboration with public and private sectors, professional bodies and associations, local NGOs and community

- (r) Strengthening of collaboration and networking with WHO, FAO, OIE and regional and international agencies and countries
 - (s) Participation in regional and international forums
- (Action-oriented detailed activities shown in Annex)**

3.3 Human Influenza Pandemic Alert Level II

3.3.1 Criteria:-

- (a) Declaration of novel human influenza virus by WHO
- (b) Small clusters of human-to-human transmission in a country
OR
Large clusters of human-to-human transmission confined to a region of a country
OR
Widespread human-to-human transmission of novel influenza virus in a country
- (c) No international spread as yet

3.3.2 Objectives:-

- (a) Prevention of spread of human pandemic influenza virus from affected countries
- (b) Containment or delay of spread of infection at source in Myanmar
- (c) Ensuring effective management of patients
- (d) Preparation for maintenance of essential services

3.3.3 Strategic actions:-

- (a) Enhancing implementation of relevant strategic actions adopted in pandemic alert level I
- (b) Surveillance, investigation and management of cluster pneumonia cases in the community as well as in hospitals.
- (c) Surveillance of persons entering from affected countries at ports of entry and border-crossings.
- (d) Proper and effective management of contacts, suspected persons and affected patients in hospitals

- (e) Providing regular and effective information and risk communication to the community on the pandemic situation.
- (f) Implementation of policies adopted in pandemic alert level I on social distancing, prophylaxis for essential workers, isolation and quarantine of local outbreaks of pandemic influenza in a local area and maintenance of essential services.

(Action-oriented detailed activities shown in Annex)

3.4 Human Influenza Pandemic Phase

3.4.1 Criteria:-

- (a) Global human influenza pandemic announced by WHO
- (b) Efficient and sustained human-to-human transmission in more than one country

3.4.3 Objectives:-

- (a) Same as objectives (a) and (b) of Human Influenza Pandemic Alert Level II.
- (b) Effective management of patients
- (c) Reduction of morbidity and mortality
- (d) Promotion of personal protective measures in the community
- (e) Maintenance of essential services
- (f) Mitigation of social and economic impact

3.4.4 Strategic actions:-

- (a) Intensify relevant strategic actions as adopted in Human Influenza Pandemic Alert Level II
- (b) Implementation of policies adopted in Avian Influenza Phase (Pandemic Alert Level I) by respective authorities and sectors
- (c) Maintenance of essential services by responsible sectors
- (d) Requesting of international assistance for antivirals, antibiotics, PPE and other supplies and equipment and technical assistance if necessary

(Action-oriented detailed activities shown in annex)

3.5 Post-pandemic Phase

- End of pandemic phase

4. CONCLUSION

Avian influenza is an unprecedented challenge for all countries including Myanmar. To overcome this challenge, the National Influenza Pandemic Preparedness and Response Plan has been formulated under the guidance of the National Health Committee and the plan is being implemented by all stakeholders to prevent and avert an impending human influenza pandemic.

It is imperative for all public and private sectors, NGOs and the community to be actively involved with concerted effort for close cooperation and collaboration in the successful implementation of this plan.

For enhancing surveillance and early warning, it is essential to strengthen the laboratory capacity of human health and animal health for rapid and accurate diagnosis of avian and human influenza infection. Upgrading of the laboratory infrastructure to BSL 3 capability and human resource development are needed to achieve this purpose. There is also needed for personal protective equipment for the health care workers in both human and animal health departments who are at high risk to infection. Although antivirals are available in the developed world, these drugs are not accessible for developing countries. But stocks pilling of antivirals are essential for the effective management of the patients and prophylaxis for high risk personnel. It is thus very essential to obtain full support of international agencies like WHO, FAO and OIE and international donors to fill this gap of essential requirements such as PPE, antivirals, diagnostic tests, vaccine (if and when available) and other supplies and equipment. Without such international support, developing countries will be in a difficult position to prevent and manage a pandemic effectively and efficiently. An outbreak occurring in a country may pose as a threat to the whole international community. Therefore, the global community should demonstrate solidarity by assisting the needy countries with the essential requirement to avert this pandemic.

Myanmar, as a member of the international community, is committed to fight against this impending pandemic threat with all out efforts utilizing all available resources.

5. BUDGETARY REQUIREMENT

The budgetary requirement for the implementation of national strategic plan for prevention and control of avian influenza and human influenza pandemic preparedness and response is shown.

Strategies		2006 (USD)	2007 (USD)	2008 (USD)
1	Leadership, planning and coordination	87,000	66,000	66,000
2	Reducing exposure of humans to H5N1	806,000	705,000	705,000
3	Enhancing surveillance and early warning	2,980,000	450,000	450,000
4	Rapid / effective containment and response	1,105,000	400,000	400,000
5	Health systems response to reduce morbidity and mortality	1,340,000	1,310,000	810,000
6	Social measures should a pandemic virus emerge	710,000	450,000	350,000
7	Communication	100,000	65,000	65,000
Total (USD)		7,128,000	3,446,000	2,846,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
1	Leadership, Planning and Coordination			
	Management structure e.g. national steering committee established; technical committees Command and Control	2,500	2,500	2,500
	Country situation outlined – risk assessment	4,000		
	Integrated multisectoral (at all levels) plan Describe roles and responsibilities	1,000		
	Work plan	1,000		
	Monitoring and evaluation – indicators/targets to monitor activities included	5,000	5,000	5,000
	Budget (with country contribution for each activity) to support work plan: Immediate need Medium term need	2,500	2,500	2,500
	Animal vaccination policy			
	Desktop & Simulation exercises to test various components of the plan	20,000	5,000	5,000
	Incident rooms (with facilities for extra phone lines; fax) identified	50,000	50,000	50,000
	Mechanism outlined for regular review of the plan with named persons responsible	1,000	1,000	1,000
	Total	87,000	66,000	66,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
2	Reduce exposure of humans to H5N1			
	OIE/FAO recommendations included			
	Policy re-importation of birds	1,000		
	Migratory birds: Risk assessment Monitoring movement	20,000	20,000	20,000
	Stockpiling PPE for animal workers	150,000	50,000	50,000
	Distribution strategy for PPE			
	Educational messages to animal health workers	10,000	10,000	10,000
	Food safety measures	25,000	25,000	25,000
	Wet Markets	50,000	50,000	50,000
	Safe animal husbandry practices	50,000	50,000	50,000
	Policy re safe handling and disposal of sick/culled birds	500,000	500,000	500,000
	Total	806,000	705,000	705,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
3	Enhance Surveillance and Early Warning			
	Surveillance and early warning systems for:			
	Animals	150,000	50,000	50,000
	Humans	170,000	50,000	50,000
	Reporting system for notification of cases described:			
	Animals	30,000	30,000	30,000
	Human	30,000	30,000	30,000
	Lay reporting	20,000	10,000	10,000
	Rumour Verification	30,000	10,000	10,000
	Laboratory:			
	Capacity for animal testing	1,000,000	150,000	150,000
	Capacity for human testing	1,500,000	100,000	100,000
	Laboratory Networking inter country & regional	50,000	20,000	20,000
	Total	2,980,000	450,000	450,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
4	Containment and Response			
	Rapid response teams	200,000	100,000	100,000
	Stockpile of antivirals	400,000	200,000	200,000
	Strategy for antiviral use			
	Strategy for vaccine use			
	Stockpile of PPE	500,000	100,000	100,000
	Distribution strategy for PPE			
	Case management guidelines	5,000		
	Infection control policy			
	Isolation facilities identified			
	Total	1,105,000	400,000	400,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
5	Health Systems Response to reduce morbidity and mortality			
	Staff capacity:			
	Case management	100,000	100,000	100,000
	Infection control	100,000	100,000	100,000
	Medical supplies considered – antibiotics, antipyretics; syringes etc	100,000	100,000	100,000
	Additional equipment considered e.g. ventilators	1,000,000	1,000,000	500,000
	Hospital surge capacity – bed capacity earmarked	10,000	10,000	10,000
	Additional mortuary facilities identified	30,000		
	Total	1,340,000	1,310,000	810,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
6	Social measures should a pandemic virus emerge			
	Port health capacity – border control measures	100,000	100,000	100,000
	Facilities for isolation	500,000	250,000	150,000
	Quarantine facilities	100,000	100,000	100,000
	Cordoning off – who will advise/enforce?	10,000		
	Social distancing e.g. mass gatherings; school closure; workplace attendance			
	Legal issues e.g. enforcing social distancing – human rights vs. public good compensation for farm owners			
	Ethical issues e.g. who will get scarce antivirals/vaccines			
	Total	710,000	450,000	350,000

Strategies and Activities		Budget (USD) 2006	Budget (USD) 2007	Budget (USD) 2008
7	Communication			
	Strategy for risk communication included – IEC material, media, interpersonal approaches	65,000	30,000	30,000
	Protocol for internal communication within government should a case (human/animal) be notified. e.g. whose responsibility and who should be informed	20,000	20,000	20,000
	Protocol for external communication e.g. from Government to WHO or other agencies	10,000	10,000	10,000
	Nominated spokespersons from various sectors	5,000	5,000	5,000
	Total	100,000	65,000	65,000
	Grand Total	7,128,000	3,446,000	2,846,000

**PANDEMIC PHASE-BASED DETAILED ACTIVITIES
AND
SECTOR-WISE RESPONSIBILITIES**

1. INTER-PANDEMIC PHASE

(a) Strengthening surveillance of wild birds / migratory birds

- performing surveillance and close monitoring of bird sanctuaries, wildlife parks and zoological gardens
- periodic and random laboratory testing of wild bird droppings and wild bird falls
- tracking the migratory paths of wild birds in the country
(*Ministry of Forestry, Ministry of Livestock and Fisheries*)

(b) Strengthening surveillance of avian influenza outbreak in poultry and investigation and control of outbreak at source

- development and strengthening of community network on active disease surveillance and dissemination of information and knowledge among farmers and the public enabling them to promptly identify symptoms of illness in sick and dead poultry
- immediate reporting of suspected outbreaks to community leaders or health and livestock authorities to take immediate action
- periodic and random testing of birds in poultry farms, wet markets, pet markets and bird trading ventures
- categorization of priority in distribution of PPE, priority being given to outbreak investigators, animal cullers and veterinary laboratory personnel
- immediate dispatch of the regional (state/divisional) rapid response team to outbreak area as soon after receipt of outbreak report
- rapid on-site diagnosis of the cause of the disease outbreak
- immediate announcement of disease control areas and imposition of control on mobility of poultry, humans, vehicles in the outbreak area
- rapid culling of infected poultry, appropriate disposal their carcasses and disinfection of farms
- guidelines for personnel involved in culling and disposal of birds especially for appropriate personal protective measures
- monitoring the health of personnel involved in culling and disposal of

birds with appropriate measures required during an avian influenza outbreak.

- appropriate use of vaccines, according to international standards to control disease outbreak in poultry.

(Ministry of Health, Ministry of Live stock and Fisheries, , Ministry of Progress of Border Areas and National Races and Development Affairs, Yangon City and Mandalay City Development Committees and Local Administrative Authorities)

(c) Surveillance of poultry farm workers and people who are in contact with birds

- self monitoring and reporting of any fever or respiratory illnesses of poultry farm workers (including backyard farmers and their immediate families), wet market workers, wholesale and retailers of poultry and handlers of raw poultry
- monitoring the health of personnel involved in culling and disposal of birds
- arrangement of vaccination with seasonal influenza vaccine to animal health care workers and others exposed to animal infection to limit risk of dual infection.

(Ministry of Health, Ministry of Live stock and Fisheries, , Ministry of Progress of Border Areas and National Races and Development Affairs, Yangon City and Mandalay City Development Committees)

(d) Strengthening advocacy and implementation of good poultry farming practice in accordance with FAO and OIE guidelines.

- institution of biosecurity measures in poultry farms including restriction of entry of unnecessary persons, appropriate cleaning and disinfection measures and preventing close proximity of poultry and wild /migratory birds by installation of bird-nets
- education of backyard poultry farmers on preventive measures
- provision of information, education and communication on prevention of avian influenza to animal health workers
- provision of health education on preventive measures to wet market workers and food handlers for safe and proper handling of live poultry and raw poultry and poultry products

- proper and thorough cleaning and disinfection of wet markets, poultry retail stalls at the end of the working days
- provision of health education on safe and proper handling of live poultry, raw poultry and poultry products and on proper cooking of poultry and poultry products
- training of personnel involved in culling and disposal of birds especially in taking appropriate personal protective measures
(Ministry of Live stock and Fisheries, , Ministry of Progress of Border Areas and National Races and Development Affairs, Yangon City and Mandalay City Development Committees)

(e) Strengthening of laboratory facilities and human resource development

- strengthen capability of central laboratories (human as well as animals) for the rapid diagnosis and increase the potential of central laboratories for rapid provision of influenza type and subtype data (Ministry of Health, Ministry of Livestock and Fisheries)
- local as well as overseas training in expertise in laboratory investigations (Ministry of Health, Ministry of Livestock and Fisheries, UN Agencies)
- update laboratory biosafety guidelines and put into practice biosafety measures in laboratories handling clinical samples from suspected influenza cases (Ministry of Health, Ministry of Livestock and Fisheries)
- provide structured hands-on training programmes on infection control and emergency response to frontline healthcare workers (Ministry of Health, Ministry of Livestock and Fisheries, UN Agencies)
- provide public health laboratory consultation service to public and private hospitals in the collection of samples, performing rapid near-patient test for influenza, packaging and transport of samples to the central laboratories supply rapid near-patient tests for detection of influenza to public and private hospitals for rapid detection of cases
(Ministry of Health)

(f) Intensify national and international networking especially with FAO, OIE, WHO etc.

- continue maintenance of close communication and share data with WHO and health authorities in other countries (*Ministry of Health*)
- participation in regional and international influenza networks e.g. *Flunet* (*Ministry of Health, Ministry of Livestock and Fisheries*)
- forward antigenically atypical isolates to the WHO Collaborating Centres for Reference and Research on Influenza and OIE Centres for confirmation and further analysis (*Ministry of Health, Ministry of Livestock and Fisheries*)

2. AVIAN INFLUENZA PHASE (PANDEMIC ALERT LEVEL I)

(a) Intensify strategic actions adopted in inter-pandemic phase

(b) Contingency planning

- develop contingency plans on influenza pandemic for all sectors at all levels

(All Government Ministries)

(c) Overall government response

- develop an overall government emergency response mechanism providing
 - a mandate for adopting and implementing policies on social distancing, prophylaxis for essential workers, isolation and quarantine of local outbreaks of pandemic influenza in a local area and maintenance of essential services
 - a clear command structure for making strategic decisions
 - distinct roles and responsibilities for different stakeholders
 - the line of command to launch various types of operations
 - the response times where appropriate
- fine-tuning of the plan according to local and overseas experience and increased knowledge of the disease
- ensure readiness by regular testing of the contingency plan through drills and exercises
- develop contingency plans for each government department and documentation, verification and testing the components of these contingency plans
- setting priorities and criteria for deployment and use of antivirals during pandemic alert and pandemic periods.

(All Government Ministries)

(d) Developing national guidelines for surveillance, infection control and patient management

- development of detailed guidelines and standard operating procedures (SOPs) for surveillance and rapid response
 - guidelines for active community-based surveillance in animals as well in humans down to the village/ward level
 - guidelines for sentinel hospital-based surveillance for cases with severe pneumonia

- serological surveillance on poultry farm, wet market, healthcare workers and laboratory personnel
- structure, composition and functions of rapid response teams at the central and state/divisional level
- guidelines to follow during outbreaks in poultry including guidelines for personnel involved in culling and disposal of birds especially for appropriate personal protective measures, setting up of quarantine and security zones, controlling movement of people, vehicles and inanimate objects
- development of guidelines for infection control and laboratory investigations
 - guidelines in infection control for personnel involved in mass slaughter of potentially infected animals, poultry workers, backyard poultry farmers, wet market workers, butchers and bird sanctuary personnel and food handlers
 - guidelines for infection control in health care facilities and for healthcare workers, laboratory personnel, sanitation workers and mortuary personnel
 - guidelines and SOPs for collection, packaging, transport and processing of clinical samples, laboratory procedures and reporting
- development of guidelines for clinical management
 - guidelines for case definition of suspected, possible and confirmation cases of human avian influenza
 - guidelines for management of influenza cases at different levels of hospitals on case finding, management protocols and algorithms, infection control measures, triaging and staffing strategies.

(Subcommittees for Prevention and Control of Avian Influenza and Human Influenza Pandemic Preparedness and Response)

(e) Surveillance activities at border areas and ports for preventing importation of birds and bird products from affected countries

- surveillance in ground crossing points at border areas of poultry and bird imports
 - prohibition of poultry, poultry products and bird imports from affected countries
- (Ministry of Health, Ministry of Livestock and Fisheries, Ministry of Trade, Ministry of Finance and Revenue)*

(f) Ensuring laboratory capacity for animal health and human health

- ensuring the activity (f) of the inter-pandemic phase
(*Ministry of Health, Ministry of Livestock and Fisheries*)

(g) Designating hospitals and wards for isolation and quarantine of contacts and suspected patients and proper and effective management of patients

- establishment of designated hospitals (Waibagi Specialist Hospital in Yangon and Kandawnadi Hospital in Mandalay)
- designation and establishment of isolation wards in hospitals throughout the country with facilities for triaging, isolation, barrier nursing and clinical management
(*Ministry of Health*)

(h) Detection and management of cluster pneumonia in the community as well as in hospitals

- active surveillance and prompt reporting of cluster pneumonia in the community by volunteer health workers, basic health workers and trained NGOs
- immediate investigation, management and control by the rapid response team on receiving reports of case clusters
- regular zero reporting and immediate reporting of cluster pneumonia cases in station, township, district, state/divisional and central hospitals by responsible health authorities
- development of interim guidelines for management of influenza cases at different levels of hospitals on case finding, management protocols and algorithms, infection control measures, triaging and staffing strategies.
- education, training and conducting drills for health care workers on proper infection control practice.
- promoting awareness and strengthening training of health care workers on pandemic influenza
(*Ministry of Health, NGOs*)

(i) Intensify health education programmes for the public regarding knowledge and behavior for the prevention of avian influenza through printed and audio-visual media

- educational material in the form of brochures, pamphlets and posters to reach the community especially in rural areas
- inserts, editorials and articles in newspapers, periodicals and magazines
- radio and television talk shows, interviews, short plays and inserts
- health education talks and roundtable discussions in schools, work places and communities as activities of non-governmental organizations

(Ministry of Health, Ministry of Livestock and Fisheries, Ministry of Information, NGOs)

(j) Education and training of workers of animal and human health in infection control, outbreak investigation and case management

- Desktop/simulation exercise to test various components of the plan
- hands-on training in infection control for veterinary personnel and human health workers especially in proper culling procedures, personal protective measures, biosafety in the field and in the laboratory
- provision of guidelines and detailed SOPs and training of rapid response teams in personal protective measures, on-site diagnosis, management and control measures
- guidelines and algorithms provided to basic, station, township, district, state/division and central health care workers in the clinical diagnosis, sample collection, packaging and transport, and case management

(Ministry of Health, Ministry of Livestock and Fisheries)

(k) Stockpiling of PPE, antivirals, antibiotics, vaccine (if available) and other necessary supplies

- acquisition and stockpiling of antivirals (oseltamivir), at least the minimum amount necessary to control a localized outbreak
- acquisition and stockpiling of antibiotics necessary for treatment of concomitant bacterial infections
- acquisition and stockpiling of personal protective equipment

(Ministry of Health)

(l) Promoting preventive measures in the health care sectors

(i) Public health system

➤ **Prevention of infection in healthcare settings**

- provide training on infection control to stakeholders in the community, selected government departments and health care workers in public and private sectors (*Ministry of Health, Union Solidarity and Development Association, Myanmar Medical Association, Myanmar Red Cross Society, Auxillary Fire Service*)
- provision of risk-based clinical management and infection control guidelines to health care workers (*Ministry of Health*)
- put into practice rigorous infection control measures in hospitals and clinics to lessen the spread of infectious diseases (*Ministry of Health, Myanmar Medical Association*)
- augment manpower capacity for infection control and epidemiological investigations (*Ministry of Health*)
- sustain a state of heightened preparedness including (a) stocking of adequate personal protective equipment (PPE) and (b) infection control measures (*Ministry of Health*)

➤ **Provision of laboratory support and prevention of infection in the laboratory**

- strengthen capability of central laboratories (human as well as animals) for the rapid diagnosis, typing and subtyping of influenza isolates (*Ministry of Health, Ministry of Livestock and Fisheries*)
- forward antigenically atypical isolates to the WHO Collaborating Centres for Reference and Research on Influenza and OIE Centres for confirmation and further analysis (*Ministry of Health, Ministry of Livestock and Fisheries*)
- training in laboratory techniques for influenza diagnosis (*Ministry of Health, Ministry of Livestock and Fisheries*)
- update laboratory biosafety guidelines and put into practice biosafety measures in laboratories handling clinical samples from suspected

influenza cases (*Ministry of Health, Ministry of Livestock and Fisheries*)

- maintenance of laboratory capacity and safety (*Ministry of Health, Ministry of Livestock and Fisheries*)

➤ **Capacity building**

- provide structured hands-on training programmes on infection control and emergency response to frontline healthcare workers (*Ministry of Health, Ministry of Livestock and Fisheries, UN Agencies*)
- overseas training in expertise for laboratory investigations (*Ministry of Health, Ministry of Livestock and Fisheries, UN Agencies*)

(ii) Private health system

➤ **General practitioners**

- maintenance of close relationship with general practitioners and to convince them to:
 - take correct infection control measures in their clinics
 - be alert and report clusters of pneumonia or influenza-like illness to the focal points for surveillance of influenza
- recruit them to volunteer for surge capacity in public health services (*Myanmar Medical Association*)

➤ **Private hospitals**

- maintenance of close association with private hospitals and induce them to:
 - set up and practice infection control measures
 - maintain a high degree of alertness to watch out for avian influenza/pandemic influenza cases
 - assist in the surveillance of pandemic influenza by active monitoring of respiratory illness among hospital staff
 - estimate the requirement and maintain adequate stocks of personal protective equipment
 - provide beds when hospital surge capacity occurs (*Ministry of Health*)

➤ **Myanmar traditional medicine practitioners**

- maintenance of close link with Myanmar medicine practitioners to:
 - inform them of the pandemic preparedness plan,
 - advise them to remain vigilant and
 - take appropriate infection control measures in their clinics
- (Myanmar Traditional Medicine Practitioners Association)*

(m) Promoting preventive measures in the Community

(i) Schools

- parents required
 - to take the temperature of their children daily before sending them off to school
 - to keep their children at home if they are febrile or have respiratory symptoms
 - schools required
 - to clean and disinfect the premises and facilities daily
 - to provide adequate facilities for hand washing
 - to maintain good indoor ventilation
 - issue handbooks on prevention of influenza to teachers and students
- (Ministry of Education)*

(ii) Homes for the elderly and people with disabilities

- issue guidelines on infection control for residential care homes for the elderly and persons with disabilities
- implement:
 - enhanced information exchange mechanism among relevant parties to enable early detection of infectious diseases
 - timely notification and prompt action to combat any infectious disease outbreaks
- advise and assist residential care homes for the elderly and disabled persons to make available space for cohorting arrangements in the event of an outbreak

- designate an Infection Control Officer in each residential care home for the elderly and disabled persons

(Ministry of Social Welfare, Relief and Resettlement)

(iii) Workplace

- educate workers not to go to work if febrile or ill with respiratory symptoms to prevent dissemination of infection to fellow workers
- exhort employers to take measures to prevent spread of infection by cleanliness of the workplace and environment

(Ministry of Labour)

(n) Improving surveillance in human population

- classification of influenza as a mandatory notifiable disease and all medical practitioners are required to report any suspected cases to the Department of Health
- regular review, update and dissemination of the case definition of human avian influenza to assist in the timely and rapid reporting of avian influenza by health care workers, laboratories and relevant service providers
- enhance surveillance of human avian influenza under a sentinel surveillance system through the established channels including general outpatient clinics, general practitioners, childcare centres, homes for the elderly and persons with disabilities
- collection of samples from suspected cases in sentinel sites for isolation, typing and subtyping of influenza virus
- monitor hospital admissions, admissions to intensive care units, discharges and deaths due to respiratory illnesses including chest infections or pneumonia in public and private hospitals on a weekly basis
- monitor hospital admissions of residents of homes for the elderly and disabled with the diagnosis of pneumonia or chest infections
- strengthen the communicable disease surveillance system already in place by expanding the surveillance network for the detection of rapid and early warning signals

(Ministry of Health, Myanmar Medical Association)

(o) Adopting policies for:-

(a) maintaining essential services (such as hospitals, transportation, communication, electricity and water supply etc.,) during pandemic period

- drawing of plans for a rotating skeleton staff to operate the essential services in case of a pandemic
- deferment and suspension of non-essential tasks of these services
- allowing non-essential staff to stay at home but to be on-standby to perform the essential services if necessary

(Ministry of Health, Ministry of Transport, Ministry of Home Affairs, Ministry of Communications, Ministry of Electric Power, Development Committees)

(b) isolation and quarantine of local outbreaks of pandemic influenza in localized areas

- in localized outbreaks (a village or a village tract, a township) institution of *cordon sanitaire* of affected areas
- restriction of movement in and out of affected area and if necessary to be enforced by security personnel

(Local Administrative Authorities)

(c) general public health measures and prophylaxis (antivirals and vaccine if available) for essential workers during pandemic period

- education of essential workers in personal hygiene and protective measures against the pandemic influenza
- consideration of providing antivirals to essential workers depending on the availability and priority

(Ministry of Health, Ministry of Transport, Ministry of Home Affairs, Ministry of Communications, Ministry of Electric Power, Development Committees)

(d) social distancing at schools, entertainment places, public gathering areas etc., during pandemic period

- closure of teaching institutions and entertainment places
- prohibition of public gatherings like social occasions, pagoda pwes, religious gatherings

- designation of the authority responsible for instituting social distancing measures

(Ministry of Education, Ministry of Home Affairs)

(p) Promotion of research in traditional medicine for prevention and treatment of influenza

- randomized controlled trials to determine the efficacy of traditional medicines in the prevention and management of influenza

(Ministry of Health)

(q) Strengthening of co-operation and collaboration with public and private sectors, professional bodies and associations, local NGOs and community

- active involvement of local NGOs including Union Solidarity and Development Association, Myanmar Red Cross Society, Auxillary Fire Services, local community in the active surveillance, reporting, control and management of outbreaks in poultry or humans

(Ministry of Health, Ministry of Livestock and Fisheries, NGOs, local administrative authorities)

(r) Strengthening of collaboration and networking with WHO, FAO, OIE and regional and international agencies and countries

- strengthening the activity (f) of the inter-pandemic phase

(Ministry of Health, Ministry of Livestock and Fisheries)

(s) Participation in regional and international forums

- attending and participation in regional and international meetings convened by the ASEAN+3, WHO SEARO and WPRO, WHO Headquarters, FAO, OIE and other international agencies

(Ministry of Health, Ministry of Livestock and Fisheries)

3. HUMAN INFLUENZA PANDEMIC ALERT LEVEL II

(a) Enhancing implementation of relevant strategic actions adopted in pandemic alert level I

(b) Surveillance, investigation and management of cluster pneumonia cases in the community as well as in hospitals.

- active surveillance and prompt reporting of cluster pneumonia in the community by volunteer health workers, basic health workers and NGOs
- immediate investigation, management and control by the rapid response team
- regular zero reporting and immediate reporting of cluster pneumonia cases in station, township, district, state/divisional and central hospitals (public and private) by the responsible authorities
- estimation of pharmaceutical and other material supply needs; commencement of arrangements to secure supplies
- ensure access to antivirals for national use(e.g. stockpiling); ensuring availability of data to project likely needs during higher phases
- recommendation of vaccination with seasonal influenza vaccine to health care workers and others exposed to animal infection to limit risk of dual infection, once there is a confirmed case of avian influenza in animals / birds in the country.

(Ministry of Health)

(c) Surveillance of persons entering from affected countries at ports of entry and border-crossings

forestalling import and export of human cases

- enforcement of public health control measures at international airports and border crossings- temperature screening of incoming as well as outgoing passengers
- distribution of self-assessment health cards at airports

(Ministry of Transport, Ministry of Health)

- travel health education
 - health education to tour operators, hoteliers and operators of tourist destinations

- distribution of health education pamphlets on preventive measures to be taken against avian influenza at airports, seaports and border crossings
(*Ministry of Hotels and Tourism, Ministry of Health*)

(d) Proper and effective management of contacts, suspected persons and affected patients in hospitals

- triaging of suspected cases
- establishment proper isolation and barrier nursing
- appropriate management including intensive care
- proper personal protective measures for healthcare workers
- proper cleaning and disinfection, waste disposal
- proper handling of the dead body
(*Ministry of Health*)

(e) Providing regular and effective information and risk communication to the community on the pandemic situation.

- timely release of accurate information on matters relating to avian/pandemic influenza (e.g. alerts and cases in other countries/areas, development in the understanding of the disease) to the public, not to alarm but to keep up a high degree of alert
- regular reports in the printed and audio-visual media of the pandemic situation in the international and local level
- communication on preventive measures to be taken by the community in different situations
(*Ministry of Health, Ministry of Information*)

(f) Implementation of policies adopted in pandemic alert level I on social distancing, prophylaxis for essential workers, isolation and quarantine of local outbreaks of pandemic influenza in a local area and maintenance of essential services

- implementation of policies by the respective stake holders

4. HUMAN INFLUENZA PANDEMIC PHASE

(a) Intensify relevant strategic actions as adopted in Human Influenza Pandemic Alert

Level II

➤ surveillance

- monitoring of geographical spread of disease from point(s) of introduction/first detection.
- use of enhanced surveillance and case-management database to identify initial cases/contacts and track initial geographical spread.
- monitoring for possible changes in epidemiology, clinical presentation and virological features.
- monitoring and assessment of national impact (morbidity, mortality, workplace absenteeism, regions affected, risk groups affected, health-care worker availability, essential worker availability, health-care supplies, bed occupancy / availability, admission pressures, use of alternative health facilities, mortuary capacity, etc.).
- assessment of need for emergency measures, e.g. emergency burial procedures, use of legal powers to maintain essential services.
- if resources are sufficient, forecasting of trends (course of pandemic) and economic impact.
- assessment of uptake and impact of treatment and countermeasures
- monitoring of global situation (vaccine/antiviral availability, recommendations for best practices, etc.)
- estimation of the impact of vaccination and antiviral programmes used elsewhere (safety, efficacy and antiviral resistance).

➤ case management

- reviewing and updating case definitions, protocols and algorithms to assist with case finding, management and infection control, based on WHO guidance.
- assessment of clinical characteristics of infections in humans and sharing with relevant international partners.

- ensuring implementation of infection control procedures to prevent nosocomial transmission.
- assessment of effectiveness of treatment protocols and infection control measures and revision if necessary.
- using antivirals for early treatment of cases and considering antiviral prophylaxis for close contacts of cases based on risk assessment and severity of illness in humans.
- use of prototype pandemic vaccine if available.
- training of health care workers to detect/identify human cases.
- optimizing treatment protocols.
- conducting clinical research if resources are available and establishing links with regional network.

(All Relevant Ministries)

(b) Implementation of policies adopted in Avian Influenza Phase (Pandemic Alert Level

I) by respective authorities and sectors

(All Ministries)

(c) Maintenance of essential services by responsible sectors

(All Ministries)

(d) Requesting of international assistance for antivirals, antibiotics, PPE and other supplies and equipment and technical assistance if necessary

- urgent request of antivirals for containment and limiting the spread of pandemic influenza at the source
- immediate request to fulfill the surge capacity of antibiotics, personal protective equipment
- request of technical assistance for minimizing the social and economic disruption caused by the outbreak

(Ministry of Health)