

Draft:

# **INFLUENZA PANDEMIC PREPAREDNESS AND RESPONSE**

**National Influenza Pandemic Preparedness Plan**  
*Sri Lanka*  
*October 2005*

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## EXECUTIVE SUMMARY

Avian influenza (AI) H5N1 was first widely reported across Southeast Asia in December 2003. It has since become well established in the region's poultry populations. However, in Sri Lanka, neither the zoonotic disease among poultry nor the cases of Avian Influenza among human caused by H5N1 strain has been reported to date.

H5N1 virus which is highly pathogenic has been expanding its geographical spread. Russia and Kazakhstan reported outbreaks of Avian Influenza in poultry and confirmed H5N1 virus as the causative agent as recently as early August. The latest countries to report the outbreak are Turkey, Greece and Rumania. These outbreaks in Europe confirm the spread of the H5N1 virus beyond their initial focus in South East Asian countries. As of 07th November, 2005, the H5N1 virus has caused 122 human cases of which 63 have been fatal in Vietnam, Thailand, Cambodia and Indonesia. Limited human to human transmission is thought to have occurred in rare instances. As there is a possibility that the H5N1 virus may mutate on its own or re-assort with a human influenza strain to acquire the capacity to transmit efficiently between humans, so too does the threat of a pandemic of influenza. Though the start of a pandemic cannot be predicted with any certainty, Sri Lanka, like the rest of the world, must be prepared to deal with the enormous health, economic and social disruption that would inevitably accompany such a global health emergency.

Hence, there is an urgent need for Sri Lanka to have a preparedness plan outlining the framework to respond to the pandemic of influenza prior to its emergence by preventing the occurrence of initial human cases as a result of exposure to livestock and subsequent, widespread transmission among humans.

The pandemic preparedness is the responsibility of all stakeholders in the government, private sector and community. This plan of pandemic preparedness aims to define the roles to be played by the Ministry of Medium Small Scale Plantation Industries, Rural Human Resources Development and Live stock, the Ministry of HealthCare, Nutrition and Uva Wellassa development and other relevant ministries. Each of these agencies will assume a leadership role during different stages of the pandemic in a coordinated and comprehensive response to the influenza pandemic. Strengthening the mechanisms for coordination, disease surveillance, prevention and control, health care response, and risk communication are critical steps of preparedness. For prevention and control, both non-pharmaceutical public health measures, e.g., culling, bio security, personal protective equipments, personal hygiene etc. and pharmaceutical interventions such as the use of anti-viral medications and vaccines will be considered as appropriate when the need arises.

## STRATEGIES AND PHASES

WHO has defined the conditions for six pandemic phases, based on the risk assessment of viral transmission among humans. The phases of the pandemic in effect in the country will be determined by the government of Sri Lanka according to global phase in progress and the national epidemiological situation.

Five key strategies for preparedness and response to the pandemic of influenza have been identified:

- planning and coordination;
- surveillance and early warning;
- prevention and control;
- health systems response; and
- risk communication.

Specific activities for response are outlined within each strategy by pandemic phase.

**Planning and coordination:** This will define the roles and responsibilities of those agencies involved in implementing the plan of pandemic preparedness and coordinated procedures of decision making. A multi-sectoral response to minimizing the pandemic's impact will be undertaken.

**Surveillance and early warning:** The disease surveillance in animals and humans will be continually strengthened including appropriate laboratory support. The capacity for early warning and epidemiological investigations will be enhanced, together with improved implementation of surveillance of influenza-like illness, with a particular focus on diagnosis of avian influenza .

**Prevention and control:** This includes specific approaches for minimizing the spread of influenza in humans, such as the implementation of public health measures including protection of cullers and health care workers. The availability and distribution of antiviral and stockpiles of vaccine will also be considered according to the situation.

**Response of Health system:** The health care system must be reinforced in order to adequately deal with the increased demand on hospitals and health services required for an emerging pandemic. Referral hospitals must be properly equipped and their staff appropriately trained. Staff surge-capacity may necessitate strengthening.

**Risk communication:** Transparency is a key strategy to gain public trust in the government which is critical to disaster management. It will be essential to provide updated information to various groups, particularly the public, health care personnel, stake holders and the media during each pandemic phase. A comprehensive communication strategy will include a proactive media strategy as well as the development of key messages to address public concerns as guided by established principles of risk communication.

## BUDGET

The national budget for the activities of the Ministry of Health Care and Nutrition and the Department of Animal Production and Health has been estimated for a 3 year period including the remaining months of 2005 (2005/06-2008) to be approximately USD 74,94500.00

STRATEGIES	2005/06	2007	2008	Total
Planning and coordination	\$226,000.00	\$400,000.00	\$400,000.00	\$1026,000.00
Surveillance	\$640,000.00	\$560,000.00	\$510,000.00	\$1710,000.00
Strengthening of the National Reference Laboratory	\$664,000.00	\$265,500.00	\$250,000.00	\$1179,500.00
Prevention and control	\$1292,000.00	\$640,500.00	\$393,000.00	\$2325,500.00
Health systems response	\$295,000.00	\$130,000.00	\$133,000.00	\$558,000.00
Risk communication	\$205,500.00	\$250,000.00	\$240,000.00	\$695,500.00
<b>TOTAL</b>	<b>\$3322500.00</b>	<b>\$2246000.00</b>	<b>\$1926,000.00</b>	<b>\$7494500.00</b>

# **INFLUENZA PANDEMIC PREPAREDNESS AND RESPONSE**

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*Ministry of Health Care & Nutrition*  
*October 2005*

# 1. BACKGROUND AND RATIONALE

## GLOBAL AND REGIONAL SCENARIO

Throughout the history, influenza pandemics have occurred approximately in every 10-50 years often causing calamitous loss of life and having significant economic and social impact. In the 20<sup>th</sup> century, there were three pandemics occurring in 1918, 1957, and 1968. These have resulted in 40-50 million and 1-4 million deaths respectively often in the span of less than a year. These pandemics have typically been caused by strains of influenza viruses that jumped the species barrier having originated in animals.

Avian influenza caused by H5N1 virus has been widely reported across Southeast Asia since December 2003 and now well established in the region's poultry populations. H5N1 virus which is highly pathogenic has been expanding its geographical spread. Russia and Kazakhstan reported outbreaks of avian influenza in poultry and confirmed H5N1 virus as the causative agent as recently as early August. The latest countries to report the outbreak are Turkey, Greece and Rumania. These outbreaks in Europe confirm the spread of the H5N1 virus beyond their initial focus in South East Asian countries. As of 07<sup>th</sup> November 2005, the H5N1 virus has caused 122 human cases of which 63 have been fatal in Viet Nam, Thailand, Cambodia and Indonesia.

## COUNTRY SCENARIO

According to the WHO's staging of pandemic of Avian Influenza, Sri Lanka is in the first phase of the global pandemic where no new influenza virus sub types have been detected in humans. A sub type of influenza virus that has caused human infection may be present in animals. Even if the virus is present in animals, the risk of human infection is considered to be low.

Although, Sri Lanka is an island nation, the country is vulnerable to the potential threat of a pandemic. Poultry farming is widely spread in the Island and a considerable number of people are actively involved in poultry farming. In addition to the large scale poultry business, back yard poultry farming is also common in the country. An equally higher number of people who are involved in meat processing are also at risk of contracting the disease. The presence of migratory birds in Sri Lanka also increases the risk. Another significant risk factor that needs attention, considering the possibility of emergence of a novel and pandemic virus, is the increased travel of people to and from the areas which are currently affected by the avian influenza.

## RATIONALE FOR PLANNING

Since 1997, H5N1 has continually demonstrated its ability to cross the species barrier and infect humans. The current spread of infection in birds increases the opportunities for direct infection of humans. If more humans become infected over time, the likelihood also increases that humans, if concurrently infected with human and avian influenza strains, could serve as the "mixing vessel" for the emergence of a novel subtype with sufficient human genes to be easily transmitted from person to person. Such an event would mark the start of an influenza pandemic.

The social and economic impact of this event highlights the need to reinforce national response capacity in the event of an influenza pandemic. While the effects of a pandemic will have devastating consequences on social infrastructure, economy and national security, these can be mitigated with sufficient and appropriate multisectoral preparedness planning.

Hence, there is an urgent need for Sri Lanka also to have a preparedness plan outlining the framework for responding to the influenza pandemic prior to the emergence of a novel and deadly pandemic virus.

In the event of such a widespread disease outbreak, the response of a national health infrastructure is of paramount importance. The capacity of the national disease surveillance system needs to be further strengthened. The capacity of the laboratory facilities is grossly inadequate both at central and provincial levels considering the demand of the potential pandemic scenario. Although the health infrastructure is in place, a prompt, effective and efficient mechanism of coordination needs to be initiated before such a pandemic.

Though the experts opine that the countries must stockpile at least a limited stock of anti virals, Sri Lanka needs to register these drugs as they have not been either registered or used locally previously. Procurement of drugs also takes a considerable amount of time. More importantly, the estimation of the current need is essential as further replenishment may take a lead time. Therefore, health authorities need to plan and stockpile a substantial stock of anti viral drugs for emergency management of those with a potential threat of exposure. The same applies to vaccines as well when it will be available. Another issue that affects the capacity of response to such a pandemic is the lack of financial resources. Preparation of a budget estimation and collaboration with various agencies to mobilise financial resources is also an important requirement.

Pandemic preparedness is the responsibility of all and it needs a multisectoral and intersectoral approach. This means that all organisations including the government, private sector and community require close collaboration and synergy. Fragmented action may initiate an inefficient response.

This plan will provide an integrated framework for national preparedness and response to an influenza pandemic. As a framework for action, it will facilitate an organized and coordinated response of all health sector resources and related agencies in facing the pandemic of influenza. Further, it describes a collaborative process, which is acceptable and applicable to all stakeholders and clearly identifies their roles and responsibilities.

## **2. DEMOGRAPHIC AND SOCIAL PROFILE**

Sri Lanka is an island off the southern coast of India and covers an area of 65,454 square kilometres. The estimated population for 2005 is approximately 19.5million of which around 20% live in urban areas.

For all administrative purposes, Sri Lanka is divided into 8 provinces and 25 Districts. Under a District Secretary, within a district, there are Divisional Secretariat (DS) divisions which are further

divided into Grama Niladhari(GN) areas. There are 302 DS divisions, 13,913 GN areas and over 38,000 villages in the country. Of the 51 local Government bodies, 14 are Municipalities.

One of the most clearly visible features in the country is the increasing proportion of older age groups in the composition of the population. The proportion of the 30-59 year group has increased from 29% in 1981 to 37.3% in 2000 while the 60 years and over group has increased from 6.7% to 10.1% during the same period. It is projected that by the year 2020, 20% of Sri Lanka's population would be 60 years of age or over.

Registration of births and deaths was made compulsory by an Act implemented in 1897. All live births have to be registered within 42 days and deaths within 5 days of their occurrence by registrars who carry out these functions within a prescribed area called a "Registrar's Division". Stillbirths are registered only in "Proclaimed Towns" where the registrars are medical personnel (Medical Registrars). In the case of estates, the Superintendent of the estate has to inform the District Registrar of such events within 3 days. Surveys have revealed that the completeness of registration is 98.8% for births and 94.0% for deaths.

While Sri Lanka is a developing country, its health indicators are comparable to a developed country (Crude Birth Rate-19.1/1000(2004), Infant Mortality Rate-12.2/1000 (2004) Child Mortality Rate - 0.9/1000 children and Maternal Mortality Rate - 0.43/1000(2004).)

Life expectancy at birth in 2001 was 73 years (Males 70.7, Females 75.4) while the literacy rate is relatively high (90%). Sri Lanka is suffering from a double burden of diseases. While there is still a high prevalence of communicable diseases such as Malaria, Tuberculosis, Dengue Fever /DHF, Japanese encephalitis, Diarrhoeas, and Acute Respiratory Infections, non communicable diseases such as Cardiovascular diseases, Diabetes and Cancers are now causing increased morbidity and mortality.

### Organization of Health Services

Health care is provided by both the public and private sector. While the public sector provides free health care (curative, preventive and rehabilitative), the private sector provides mainly curative care to nearly 50% of the population mainly in the urban and suburban areas. Ninety five percent of inpatient care is provided by the public sector.

The health services function under the Minister of Health Care, Nutrition and Uva Wellasa Development who is assisted by a Deputy Minister. The Secretary of Health is administratively supported by an Additional Secretary and Senior Assistant Secretaries.

The Director General Health Services(DGHS) heads the Department and has 15 Deputy Director General (DDG) including a DDG who heads the Public Health Services. Under their jurisdiction, there are several Directors who are responsible for various programmes and organizations.

With the devolution of power to the Provincial Councils in 1989, certain functions of the Ministry of Health at the national level were handed over to the separate Ministries of Health in each of the eight Provincial Councils.

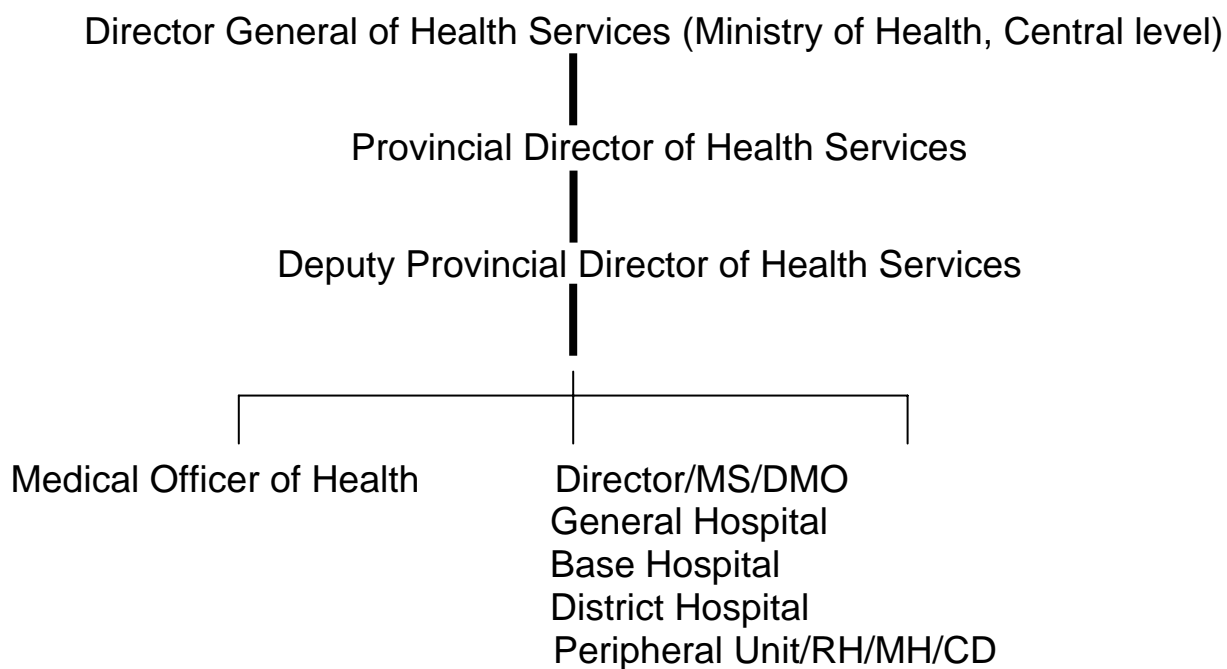
The eight Provincial Directors of Health Services (PDHS) are assisted by 26 Deputy Provincial Directors of Health Services (DPDHS) who are in charge of an administrative District within the Province. Each District is further subdivided into several areas i.e. Medical Officer of Health (MOH). The preventive and promotional health care within a division with a population of 60000 – 80000 is the responsibility of a MOH.

Each area is further divided into smaller areas and assigned to a Public Health Inspector (PHI) who is responsible for sanitation, control of communicable diseases, nutrition and hygiene in his area. A PHI area is further subdivided into areas of the size of approximately 3000-4000 population for carrying out activities of Maternal and Child Health. An area of Medical Officer of Health may have one or more Public Health Nursing Sisters (PHNS).

There are three levels of curative care facilities in the country. Primary care facilities comprise Central dispensaries, Maternity Homes, Rural Hospitals, Peripheral Units and District Hospitals. Secondary care is provided at the Base and General Hospitals while tertiary care is provided at Teaching Hospitals and Special Hospitals (Eye, Cancer, Mental, Children's Hospitals etc.). As of December 2002, there were 576 medical institutions with inpatient facilities and 411 Central Dispensaries.

A health manpower study carried out by the WHO in 1973 indicated that a health care facility of some sort is available within 1.4 kilometres from most homes. Additionally, allopathic health care provided by the state free of charge is available within 4.8 kilometres on an average.

Conditions have changed considerably since then. During the period spanning from 1973 to 2002, the number of government institutions providing curative care has increased from 753 to 987 and MOH offices from 98 to 261. In addition, the private sector providing allopathic, ayurvedic and other systems of medicine to the general public have expanded considerably.



Political structure		Health Structure	
Level	Position	Level	Position
Central	Govt Sri Lanka	Ministry of Health	Minister of Health
Provincial	Governor/Chief Minister	Provincial Health Office	Provincial Director of Health services Office
District		Deputy provincial Directors office	Deputy Provincial Directors Office
		MOH office	Medical Officer of Health

### **3 ANALYSIS OF THE COUNTRY SITUATION**

The Advisory Committee on Communicable Diseases (ACCD) of the Ministry of Health decided to appoint a Steering Committee, Technical Committee and a Focal Point for the preparation of containment measures to be taken in the background of the current threat of Avian Influenza on its meeting held on 12<sup>th</sup> September 2005. Subsequently, a joint National Steering Committee and a Joint Technical Committee were appointed to guide and facilitate the complete planning process including preparations, logistics and budgeting in collaboration with the Ministry of Medium and Small Scale Plantation Industries , Rural Human Resource Development and Livestock and other relevant ministries. The Epidemiologist of the Ministry of Health and the Director General of the Department of Animal Production and Health have been appointed as the focal points in respective ministries.

There is close collaboration and good relations between Ministry of Health and Department of Animal Production and Health of the Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock. The national pandemic preparedness plan has been compiled by the National Technical Committee on Avian Influenza.

Therefore, in relation to the pandemic preparedness of influenza and contingency plan to be implemented during the pandemic, there is a stepwise approach in planning and coordination from the lowest to the highest level.

#### **EXISTING SURVEILLANCE SYSTEMS IN SRI LANKA**

In Sri Lanka, the surveillance of communicable disease is based on the notification of certain diseases of priority. The Quarantine and Prevention of Diseases Ordinance of 1897 and its subsequent amendments provide the necessary legislation for the implementation of this system.

The list of diseases to be notified includes the three diseases under the International Health Regulation (Group A) and a second list (Group B) which presently includes 25 diseases. The list is reviewed from time to time by the Advisory Committee on Communicable Diseases of the Ministry of Health and additions and deletions are made. For legislative purposes, the amended list is published in the Government Gazette.

According to the instructions in the above ordinance, every medical practitioner (Government or Private) attending on a patient suffering from a notifiable disease is expected to immediately notify such a case to the Medical Officer of Health of the area where the patient resides. This notification may even be made by the principal of a school (in case of a student) or even the Chief Occupant of a house.

The list of present notifiable diseases is given below:

Group A	Group B
Cholera	AFP (Polio)
	Chicken Pox
Plague	Dengue/DHF
Yellow fever	Diphtheria
	Dysentery
	Encephalitis
	Enteric fever
	Food poisoning
	Human Rabies
	Leptospirosis
	Malaria
	Measles
	Meningitis
	Mumps
	Rubella/CRS
	Simple continued fever of 7 days duration or more.
	Tetanus
	Typhus fever
	Viral hepatitis
	Whooping cough
	Tuberculosis
	SARS
	Any other syndrome in excess number (non gazetted)

Cases are notified to the Medical officer of Health (MOH) of the area where the patient resides using a standard notification card (form Health 544). Notifications, usually regarding inpatients, originate mostly from hospitals. Notifications of outpatients seeking care at hospitals in the public sector are low. Similarly, notifications from the private sector too are very minimal, AFP (Polio) and Dengue being exceptions.

On receipt of the notification card, the MOH enters details regarding the patient in his notification register and forwards the card to the relevant range PHI (according to the patients address) for prompt investigation and confirmation. After investigation, the PHI enters details regarding the patient in his Infections Disease Register (IDR) (H 700), completes the communicable diseases Report (H411) and forwards this report together with form H544 to the MOH within one week of the receipt of the notification. The MOH then enters the patient's details in the IDR.

Every Saturday, the MOH completes the Weekly Return of Communicable Diseases (Form H399) along with the form H411”a” for each investigated case. The weekly Return is forwarded to the Epidemiologist with copy to the Regional Epidemiologist by post.

Forwarding of returns to the Epidemiology Unit by MOHs commenced in 1960. These returns had been sent to the Regional Epidemiologist (RE) since 1970 when the first two REs were appointed to Kalutara and Kurunegala districts. This process covers the whole island at present.

A sentinel reporting system has been established for AFP, Dengue, Hepatitis, Leptospirosis and other EPI diseases. This gives an indication of the trend of the incidence of these diseases in the geographical area of concern. Several methods have been used by the Epidemiological Unit as early warning reporting systems. In addition to routine reporting and sentinel surveillance, entomological surveillance, news, rumour reports and e-mail alerts are the methods employed. Since 1960, a feedback in the form of a Quarterly Epidemiological Bulletin and Weekly Epidemiological Report (WER) has been sent by the Epidemiology Unit to all medical institutions, MOHs, the WHO and other international agencies.

Information on routine surveillance on occurrence of disease from all health facilities (Hospitals at various levels, both from OPD and in-patient Departments) and laboratories are collected, registered and transmitted to higher levels.

In case of an outbreak, prompt investigation is undertaken. Such an investigation is carried out with a formal feed back by the centre, provincial or district level.

Disease surveillance activities need to be further strengthened to collect data to enable the decision makers to respond appropriately and adequately to face challenges during the advancement of the pandemic process.

- **AREAS TO BE STRENGTHENED**

- Laboratory confirmation
- Transport of specimens to laboratories
- Reporting system

## **PREVENTION AND CONTROL ACTIVITIES RELATED TO AVIAN INFLUENZA**

- **Control of Avian Influenza in animals.**

The Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock implements avian influenza prevention and control strategies at present. These strategies include :

1. Strict bio security
2. Control of avian traffic
3. Surveillance and monitoring of unusual events in the flock
4. Increasing public awareness
5. Investigation and reporting of unusual events in the flock

- **Anti viral drugs**

Anti-viral drugs have been requested to be supplied by the Medical Supply Division (MSD) of the Ministry of Health. Currently the MSD is in the process of purchasing anti viral drugs. The use of anti-viral drugs and vaccines will depend on actual need, their availability and effectiveness. Therefore, specific guidelines will be formulated on anti-viral drugs and vaccines with the advancement of the phases of influenza pandemic and on the basis of specific circumstances during each phase. The use of vaccine will be limited only to the poultry farmers and their close contacts. In the case of Pandemic of Influenza, WHO guidelines will be adhered to.

- **Health education.**

Health education materials are currently being prepared

- **Health systems response.**

Infectious Disease Hospital, Colombo (IDH) will be the focal point of management of cases at the national level. Provincial General Hospitals and Teaching Hospitals will be the focal points at provincial level. The training will continue until enough health personnel with specific knowledge and skills are ready to join the total mobilization of health services whenever the worst scenario of the pandemic really emerges in the country.

- **Risk communication.**

Communication of information pertaining to risks and prevention of avian influenza to the public will be intensified; Strategy for responding to the media and press queries will be reviewed and improved based on previous experiences. Focal points (spokespersons) have already been identified and action will be taken to minimise the negative implications of statements and press releases. A communication sub-committee has been established.

## 4. NATIONAL INFLUENZA PANDEMIC PREPAREDNESS PLAN (NIPPP)

The National Influenza Pandemic Preparedness Plan (hereafter referred to as “the Plan”) is designed to enable the Ministry of Health of Sri Lanka to prepare for recognizing and management of the response to an influenza pandemic. The Plan describes the strategies and activities to be undertaken by the Ministry of Health, Sri Lanka in close collaboration with the other key agencies such as Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock and other ministries and related stakeholders in preparation for and response to influenza. By outlining the elements of the required response, the Plan will allow preparations to be made in advance of the emergence of a pandemic influenza virus.

There are three distinct stages of response during which some agencies will bear the primary responsibility while the others will also be active: **inter pandemic** (phase 1 and 2), **pandemic alert** (phases 3 to 5) and **pandemic** (phase 6) (see ANNEX 1). The Ministry of Health will be involved in each stage in different capacities as outlined in the Plan.

In the first stage, described as the “interpandemic” period by WHO, novel strains of influenza virus for which humans have no immunity will only exist in animal, primarily populations of birds. Therefore the onus of response to avian influenza will reside with the Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock. The role of the Ministry of health during this stage is to monitor closely the emergence of human cases of avian influenza by strengthening surveillance and response as outlined below and by working closely with the veterinary authorities.

In the last stage, during the actual pandemic, the role of the Ministry of Health is to support for specific health-related activities in response to massive influenza outbreaks. These activities are outlined under Phase 6.

There is recognition at all levels about the need for collaboration within and outside the Ministry of Health in order to enhance and strengthen the plan of response for a future pandemic.

- **PURPOSE**

The aim of a national plan of influenza is to facilitate a coordinated and effective national response in the event of an influenza pandemic. It will provide specific advice, actions, and assist both national and local public health services and other agencies to prepare their own contingency arrangements. Besides these disease-related effects, pandemic preparedness can be used as a model to strengthen the infrastructure and multidisciplinary collaboration in case of major outbreaks in general.

- **GOAL**

To be prepared at all levels and in all sectors of the country for an actual influenza pandemic so that if one occurs, there will be minimal impact on not only the health of the nation but also societal structures.

- **OBJECTIVES:**

1. To reduce transmission of the virus and the opportunities for human infection from infected animals
2. To strengthen the early warning system of surveillance for early and coordinated response to outbreaks
3. To contain or delay spread of virus at the source
4. To reduce the impact of the pandemic virus on morbidity and mortality and minimize social disruption
5. To monitor and evaluate the evolving response to the pandemic

- **STRATEGIES AND KEY ACTIVITIES**

This plan describes the strategies and actions for preparedness and response that Sri Lanka will undertake for each phase for five major strategies outlined below. The National Influenza Pandemic Preparedness Plan (NIPPP) will undertake the evaluation and determination of the pandemic phase in effect for the country. This will be done by assessing the global WHO phase in progress and the current status of outbreaks and human transmission of influenza within the country. Decisions to move from one phase to another will be made by the National Technical Committee on Avian Influenza (see ANNEX 2 , for composition and terms of reference)

- **PLANNING AND COORDINATION**

The organizations and individuals involved and the mechanisms for collaboration during each phase are identified under this strategy. The structure and framework for policy and decision-making and for mobilization of national response is given.

Objectives:

- To advocate responsible authorities, institutions, diagnostic and manufacturing laboratories in the implementation of the pandemic preparedness plan.
- To promote a multi sectoral response to control and contain the impact of the pandemic

## **SURVEILLANCE**

The disease surveillance system consists of on-going collection, interpretation and dissemination of data to enable the development of evidence-based interventions. Specific activities under surveillance and for rapid response to alerts will change according to the pandemic phase in effect and the current national epidemiological situation.

### Objectives:

- To continue strengthening routine surveillance and early warning system, including laboratory roles
- To enhance capacity for epidemiological investigation (outbreak response teams) and contact management
- To continue to improve implementation of ILI surveillance with focus on avian influenza

### **PREVENTION AND CONTROL**

Strategies for minimizing spread of influenza virus in human populations include pharmaceutical (antiviral drugs, vaccines) and non-pharmaceutical (social distancing, quarantine, movement restriction etc) interventions. Specific measures will be elucidated for each phase and situation as the pandemic phases progress.

### Objectives

- To develop a strategy and decision-making scheme for implementing public health measures
- To manage availability, supply and develop strategy for use of antiviral and vaccine stockpiles

### **HEALTH SYSTEM RESPONSE**

As the pandemic phases progress, the role of health services and facilities will become more crucial. Planning will involve all sectors of the health system including delineating resources and capacity required for responding to the health care needs during the emerging situation.

### Objectives

- To prepare national and sub-national health care system for response to pre-pandemic and pandemic phases
- To train personnel and equip identified referral hospitals and other health care facilities.

### **RISK COMMUNICATION**

A communication committee including senior technical and communication staff with expertise in risk communication will be formed to advise senior management on all relevant issues of communication. Surveillance of public and media concerns will be conducted to allow for the development of more targeted key messages

### Objectives

- To establish and ensure an integrated communication strategy responsive to public concerns
- To ensure coordination among technical and communication staff regarding key messages
- To ensure media training for key technical and communications spokespersons

## 5. STRATEGIES AND KEY ACTIVITIES

- **Phases**
  1. Pre-pandemic preparedness and planning phase
  2. Emergency response and Pre-emptive phase, and
  3. Pandemic phase to minimise the impact
- **Strategies**
  1. planning and coordination;
  2. surveillance and early warning;
  3. prevention and control;
  4. health systems response; and
  5. risk communication
- **Key activities by phases of pandemic and strategies:** The following are only guiding plans of activities but need to modify according to country situation and feasibility. This plan serves as a roadmap and needs to be reviewed and updated with evolving situation of avian influenza and the possible influenza pandemic. Similarly, in the event of a pandemic, strategies have to be adjusted and adapted based on experiences and lessons from the response in other countries and emerging evidence and scientific developments.

### PRE-PANDEMIC PREPAREDNESS AND PLANNING PHASE

#### Planning and coordination

- Establish a national multi-sectoral pandemic planning committee
- Assessment of risk, vulnerability and capacity
- Initiate steps to formulate an integrated and multisectoral national preparedness and response plan
- Exercise preparedness drills and use results for improvement of plans
- Establish collaboration between agencies of public health, animal husbandry, poultry industries etc.
- Set up multidisciplinary rapid response teams
- establish stockpile of antiviral and PPEs and develop guidelines for use of antiviral

#### Surveillance, early warning and response

- Characterize and share influenza virus isolates and information on circulating strains, both from animals and humans, with relevant international agencies, such as WHO, FAO and OIE.
- Strengthen and enhance national systems for influenza surveillance in both humans and animals and report results rapidly and regularly to all partners.
- Assess the burden of seasonal influenza
- Rapidly deploy response teams to conduct outbreak investigations in affected areas.
- Ensure expertise and capacity for virological surveillance in national laboratories.

#### Prevention and control

- Ensure optimal response to animal outbreak and protect the handlers/cullers
- Establish national guidance for food safety, safe agricultural practices and other animal health issues related to AI.
- education relating to procedures for safe collection/transport of animal and human specimens from site to appropriate laboratory

- implement routine laboratory bio safety and safe specimen handling and transport policies.
- reduce human contact with potentially infected animals

### **Health system response**

- Conduct/observe table-top pandemic intervention exercises and use the results to improve planning.
- Develop a stockpile of antiviral drugs and PPE and diagnostics; develop guidelines for appropriate use
- Develop a national consensus on vaccination against seasonal influenza and regarding procurement of AI vaccine, if and when available
- Strengthen logistic and operational aspects for rapid delivery of antiviral drugs and lifesaving drugs and vaccines.
- Alert local health-care providers to strengthen practice of appropriate infection control and bio safety measures
- alert health system and prepare contingency plan regarding hospital beds and staff deployment & capacity strengthening in clinical care and isolation practices in the light of the perceived enhanced demand

### **Risk communication**

- Assess communication infrastructure both in public and private sector including media channels, capacity to deliver messages to diverse audiences (risk populations, local languages etc).
- Familiarize news media with national plans, preparedness activities and decision-making related to seasonal and pandemic influenza.
- Develop mechanisms to address rumours proactively, and correct misinformation.
- Communicate information on risk and prevention (risk of infection; safe food; animal handling).
- Identify target groups for delivery of key messages and develop appropriate materials
- Field test materials for quality and appropriateness and consistency

## **PANDEMIC ALERT AND EMERGENCY RESPONSE PHASE**

### **Planning and coordination**

- Organise meeting of the steering committee with all relevant stakeholders including government departments, private sector, and civil society
- Obtain highest levels of political commitment
- Activate overarching national command and control
- Deploy rapid response teams as needed
- Ensure international collaboration for information-sharing, technical assistance and coordination of emergency responses
- Prepare for imminent pandemic, including command-and-control system and staffing surge capacity

### **Surveillance, early warning and response**

- Strengthen human and animal surveillance.
- Obtain and transport laboratory samples for rapid virological characterization of the virus.
- Ensure reporting of cases promptly using appropriate channels (e.g. International Health Regulations), obtain detailed epidemiological, clinical and laboratory data.

- Agree on national case definition.
- Implement real-time monitoring of essential resources (medical supplies, pharmaceuticals, infrastructure, vaccines, hospital capacity, human resources, etc.).

### **Prevention and control**

- THIS SHOULD PRIMARILY BE ON ANIMAL HEALTH
- Ensure implementation of infection-control procedures to prevent nosocomial transmission.
- Identify priority geographical areas and risk groups for targeting with preventive measures.

### **Health system response**

- Use antivirals for early, strategic treatment of cases and prophylaxis of close contacts
- Consider administration of pandemic vaccine if available
- Implement appropriate interventions as identified in the contingency plan including social distancing
- Review vaccine use strategies including inventories of necessary supplies and use for mass or targeted emergency vaccination campaigns
- Orient public and private health-care providers on case definitions, protocols and algorithms to assist with case-finding, management, and infection control
- Implement contingency plans for strengthening staffing human resources in health-care facilities
- Commence triage arrangements and other emergency procedures for efficient use of health-care facilities
- Implement contingency plan

### **Risk communication**

- Reinforce key messages on self-protection and prevention of spread.
- Inform public on the situation and outbreak response.
- Utilize last “window of opportunity” to refine communications strategies and systems in anticipation of imminent pandemic.
- Inform public about interventions that are being implemented.

## **PANDEMIC PHASE**

### **Planning and coordination**

- Implement all relevant elements of national pandemic plan
- Apply emergency powers, if not done already

### **Surveillance, early warning and response**

- Use enhanced surveillance and case-management database to identify initial cases/contacts and track initial geographical spread of disease.
- Monitor for possible changes in epidemiology, clinical presentation and virological features and share information with international partners.
- Monitor and assess national impact of pandemic on all sectors.
- Assess need for emergency measures, e.g. emergency burial procedures, use of legal powers to maintain essential services.
- Assess uptake and impact of: treatments and countermeasures.

- As disease activity intensifies and becomes more widespread, adjust surveillance (reduce virological surveillance, discontinue case management database) and adjust case definition.

#### **Health system response**

- Mobilize all health systems and essential services, at national and local levels where affected; monitor health system status; adjust triage system if necessary; deploy additional workforce and volunteers; ensure staff support; provide medical and non-medical support for sick people in alternative (non-health-care) facilities if needed; provide social/psychological support for health-care workers, victims and communities.
- Early and strategic use of antiviral and implement social distancing; close schools, ban public gatherings etc.
- Implement vaccination campaign according to priority status, in line with plans and availability.

#### **Risk communication**

- Use all channels to disseminate information relating to disease and methods of protection
- Provide factual information, counter disinformation and remove public anxiety and hysteria.

## **6. ROLES AND RESPONSIBILITIES OF VARIOUS AGENCIES / ORGANIZATIONS**

### **Roles and responsibilities**

Since many sectors in Sri Lanka have been decentralized, including health, the roles, responsibilities and authorities of the decentralized areas are very crucial for implementing guidelines for the pandemic phases. They will work in close collaboration with each other. Full mobilization of health services and strict enforcement of epidemic law during pandemic will only be successful on the basis of full participation of decentralized levels (districts, municipalities down to the grassroots level).

The programme on influenza will be collectively managed by participation of the stakeholders. The primary agency for response will change over the course of the stages of pandemic and this will depend on the phase in effect in Sri Lanka. During the pandemic phase, Ministry of Health will be the lead agency, other stakeholders will include: Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock, civil societies, military police, private sectors, etc. as needed. They will work in close collaboration with one another.

### **ROLES AND RESPONSIBILITY OF THE MINISTRY OF HEALTH CARE AND NUTRITION**

Ministry of Health will be responsible for following:

- **National oversight and monitoring of the response to the pandemic of influenza** - Ministry of health will establish a national "Operation Room" to support operational activities of all health services. Further, it will act as a focal point for links and coordination of health services, vaccine distribution and prioritization and distribution of antiviral drugs.
- **Provincial health services**- These will maintain a 24 hour capability to support district health services and the rest of health services including that of the private sector and where necessary to coordinate all responses to public health emergencies.
- **All hospitals and ambulance services**- These are responsible for deploying the health care resources for those affected by pandemic influenza. Each service must be able to mobilize local resources flexibly and to the maximum and to be consistent for maintaining essential care. Each service must also plan to offer effective support to any neighbouring service which is substantially affected and in return shall be able to rely on such mutual support if needed.
- **All Primary Care services**-All Primary Care services must be able to mobilise and direct health resources to local hospitals at short notice to support them and to sustain patient period. They must also plan to harness and effectively utilize primary care resources where needed to support. They must also have agreed systems in place to enable them to work as "lead" primary health care services with others or, as appropriate, in support of primary health care activities.
- **Establish National Technical Committee on Avian Influenza (NTCAI)**-The Committee is the technical and advisory body for the Ministry of Health and will oversee the development and implementation of the NIPPP. It will be responsible for developing strategies appropriate to the country's needs and situations drawing expertise from the WHO, international and local multidisciplinary experts. In the event of a pandemic , the Ministry of Health will be the lead agency for the country with technical inputs from the Committee.
- **Laboratories under Ministry of Health**- These are responsible for collection of specimens, examining them, reporting of results, sending specimens to WHO collaborating centres based on WHO recommendations. Algorithm etc is needed.

#### **ROLES AND RESPONSIBILITIES OF THE MINISTRY OF MEDIUM AND SMALL SCALE PLANTATION INDUSTRIES, RURAL HUMAN RESOURCE DEVELOPMENT AND LIVESTOCK**

Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock works in harmonized coordination with the Ministry of Health and other related ministries.

The role of Ministry of Medium and Small Scale Plantation Industries, Rural Human Resource Development and Livestock is crucial especially during the early phases (1 and 2) of the pandemic when the disease is primarily in animal and livestock populations. They have a primary role in averting or delaying influenza in human beings by controlling the disease in the animal reservoirs.

An avian influenza control plan consists of the following strategies and can be referred from FAO and OIE recommendations on the prevention, control and eradication of HPAI(Highly Pathogenic Avian Influenza) in Asia (September 2004):

- Effective disease surveillance for early detection and reporting of outbreaks
- Enhanced bio security of poultry farms and associated premises
- Control of movement of birds and products that may contain virus, including controls at the interface of infected and uninfected areas
- Changes to industry practices to reduce risk
- Rapid, humane destruction of infected poultry at high risk of infection
- Disposal of carcasses and potentially infective material in a bio secure and environmentally acceptable manner
- The proper use of vaccination

#### **ROLES AND RESPONSIBILITIES OF THE PROVINCIAL AND DISTRICT HEALTH AUTHORITIES, PRIVATE SECTOR AND OTHER STAKEHOLDERS**

Since many sectors in Sri Lanka, including health, have been decentralized, the roles, responsibilities and authorities of the decentralized services are very crucial for implementing guidelines for the pandemic phases.

Full mobilization of health services and strictly enforcing the epidemic law during pandemic will be successful only on the basis of the full participation of decentralized levels (districts, municipalities down to the grass root level).

Private sector has an important role to play in providing specific health protection for private workers, hospitals, community groups, etc. The private health sector will be important as a partner for the Ministry of Health in all phases of the pandemic.

Non-governmental organizations (NGOs) will play specific roles according to their respective ability and capacity. They will be the key for supporting the response to the pandemic.

Religious and other social organizations always play important roles in all disasters. Disaster due to influenza pandemic is not an exception. Corpses, orphans, widows, displaced persons, psychosocial support are the main concerns of these organisations

#### **7. PLAN OF IMPLEMENTATION AND MANAGEMENT**

The structure for implementing and managing the NIPPP for Ministry of Health is described below. As pandemic influenza is unpredictable in terms of timing and impact, the activities are centred on preparation and readiness for response. Thus the plan is a “living document” whereby the specific activities that are outlined will be further elucidated and developed by the technical committees and possibly revised and updated on the basis of new evidence and lessons learnt. The contents of this plan need to be updated regularly. The implementation is a process rather than a programme.

The programme management structure at national level is chaired by the President or the Prime minister and oversees inter sectoral committee at all administration levels. The sectoral committee within the Ministry of Health consists of three elements as shown in the diagram below:

- Sectoral National Steering Committee to provide broad policy and strategic direction.
- Expert Committee, giving specific advice as requested by Technical Committee or own initiative based on specific urgencies.
- Programme Secretariat which would be responsible for planning and implementation of the national preparedness response plan.

(see ANNEX 5 for the organogram for structure)

## 8. MONITORING AND EVALUATION

Monitoring and evaluation is based on system approach which consists of inputs, processes, outputs and outcomes. All inputs, processes, outputs and outcomes will be monitored carefully based on the assessment of key indicators during the advancement of the pandemic from one phase to the other. Among others, key milestones will include:

- Preparation of the draft work plan and budget for the first 3 years based on identified core activities and capacity strengthening needs in each strategic area – **IMMEDIATE**
- Socialization, advocacy and training ,at all levels of administration, on aspects of the plan and current status – **IMMEDIATE**
- Identification of Key responsible agencies and individuals for the implementation of the Plan – **IMMEDIATE**
- Identification of the focal point of communication for coordinating and initiating risk communication and public health education activities – **IMMEDIATE**
- Sharing the pandemic preparedness plan with all stakeholders within and outside the Ministry of Health – **Deadline 20 November 2005**
- Review of issues in respective areas and provision of recommendations to NIPC by technical sub committees – **Deadline 15 November 2005**
- Addressing legal and regulatory issues – **15 December 2005**
- Identification of government resources for influenza preparedness and remaining gaps in order to undertake resource mobilization – **15 November 2005**
- Implementation of the pandemic preparedness plan to suit the appropriate phase – **15 December 2005**

- Identification of appropriate “table top “ exercises to prepare for subsequent phase with all related partners in order to build capacity , improve coordination and response-  
15 January 2006

## 9. CONCLUSION AND NEXT STEPS

The next influenza pandemic is closer than ever before. But there is no way of knowing how close it is and it could happen tomorrow, next year or in 10 years. Because of this unpredictability and the grave consequences of such an event on all aspects of social and economic life, there is an imperative to move forward in putting preparations in place to mitigate the eventual impact. For the Ministry of Health, this imperative is the mitigation of morbidity and mortality. The Plan is therefore also a process. Financial and technical constraints are the main constraints of implementing the programme on influenza . The programme cannot be fully financed by the Government of Sri Lanka . For instance, stockpile of adequate quantities of necessary antiviral drugs and vaccines are not available currently. In addition necessary laboratory equipment and hospital materials are still not available. Therefore, resources must be identified in order to implement the plan and prepare the country. The best possible time to raise funds is when the country is still in pre-pandemic preparedness phase during which donor agencies are keen to assist.

### Next steps

- The pandemic preparedness plan must be implemented according to the phases as outlined although the timing and emergence of the pandemic virus is unpredictable.
- A work plan and budget for each activity must be outlined with responsible persons, timeline and indicators for evaluating progress.
- The process should be described in terms of key responsible agencies, individuals, and provide benchmarks and timelines for measuring progress.
- Technical sub-committees must review the issues in their areas and forward recommendations to NIPPC as early as possible. If external technical assistance is required, this may be identified and requested.
- The Plan should be shared with all stakeholders within and outside the Ministry of Health for buy-in and cohesiveness
- Socialization, advocacy and training at all levels of administration on all aspects of the Plan and current status must be discussed with appropriate stake holders
- Risk communication should be coordinated and public education should be initiated
- Government resources that can be made available for influenza preparedness and the gaps that remain must be identified so that resource mobilization can be undertaken
- Appropriate “table top” exercises to prepare for subsequent phases must be undertaken with all related partners in order to build capacity and improve coordination and response. These scenario simulations will allow identification of gaps and weaknesses as well as means to improve elements of the plan.

## **ANNEX 1: PANDEMIC PHASES**

### **Interpandemic period**

**Phase 1.** No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals in which case the risk of human infection or disease is considered to be low.

**Phase 2.** No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.

### **Pandemic alert period**

**Phase 3.** Human infection(s) with a new sub-type , but no human-to-human spread, or at most rare instances of spread to a close contact.

**Phase 4.** Small cluster(s) with limited human to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.

**Phase 5.** Larger cluster(s) but human-to human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

### **Pandemic period**

**Phase 6.** Pandemic phase: increased and sustained transmission in general population

### **Postpandemic period**

Return to inter pandemic period.

## **ANNEX 2**

The Technical Committee includes

1. Chief Epidemiologist
2. Director Environment & Occupational Health
3. Director Private Health Sector Development
4. Director Quarantine
5. Director Public health Veterinary Services
6. Director Medical Supplies Division
7. Director Health Education & Publicity
8. Director National Hospital Sri Lanka
9. Deputy Epidemiologist
10. Assistant Epidemiologist I
11. Assistant Epidemiologist II
12. Consultant Physician, Infectious Diseases Hospital
13. Consultant Virologist, national Reference Laboratory
14. Consultant Clinical Bacteriologist/Advisor Ministry of Health
16. Chief MOH/MC Colombo
17. Consultant Physician / Senior Lecturer , Department of Medicine, Faculty of Medicine, Colombo
18. Senior Lecturer, Molecular Biology laboratory, University of Kelaniya
19. Director General Animal Production & Health
20. Director Animal Health



Draft:

## ANNEX 4 Implementation Work plan and Proposed Budget during 2005/06 - 2008

Five key strategies are elaborated for preparation and response to pandemic influenza, within which specific activities will be undertaken. The objectives of these strategies are outlined below:

### Implementation work plan and budget 2005/06-2008

#### Strategy 1 - Planning and Coordination

Activity	Timeframe	Key responsible	Co-responsible	Output indicator	2005/06 USD	2007 USD	2008 USD
Framework for AI control mobilized and implemented	Phase 1 Inter Pandemic period	MoH - MoAg	Local Governments: Provincial Health & Agriculture	Consensus, better coordination, better plan	\$5,000	0	0
Advocacy to raise awareness about influenza at all levels including administration	Phase 1 Inter Pandemic period	MoH - MoAg	Local Governments: Provincial Health & Agriculture	Consensus, better coordination, better plan	\$10,000	\$10,000	\$10,000
Training of health personnel-introduce new issues of AI into regular curricula and specific skills and knowledge	Phase 1 Inter Pandemic period	MoH - MoAg	Local Governments: Provincial Health & Agriculture	Consensus, better coordination, better plan	\$10,000	\$10,000	\$10,000
Active collaboration with MoAg and other related organizations	Phase 2 Inter Pandemic period	MoH - MoAg	Local Governments: Provincial Health & Agriculture	Consensus, better coordination, better plan	\$10,000	\$10,000	\$10,000
Analysing preparedness status and identifying gaps	Phase 2 Inter Pandemic period	MoH	Local Governments: District Health & Agriculture	Consensus, better coordination, better plan	\$30,000	\$30,000	\$30,000
To ensure the ability for rapidly getting supplies needed during the pandemic	Phase 2 Inter Pandemic period	MoH	Local Governments: District Health & Agriculture	Consensus, better coordination, better plan	\$10,000	\$10,000	\$10,000
Sectoral Meeting MoH and MoAg for Planning & Coordination	Phase 3 Pandemic Phases	MoH - MoAg	Local Governments: District Health & Agriculture	Consensus, better coordination, better plan	\$5,000	\$30,000	\$30,000
Sectoral Meeting Internal MoH for	Phase 3 Pandemic	MoH - MoAg	Local Governments: Provincial Health &	Consensus, better coordination, better	\$5,000	\$30,000	\$30,000

Planning & Coordination	Phases		Agriculture	plan			
Intersectoral Meeting with Additional Necessary Sectors (Ministry of Social Services, Ministry of Education, etc)	Phase 3 Pandemic Phases	MoH – MoAg	Local Governments: Provincial Health & Agriculture	Consensus, better coordination, better plan	0	\$30,000	\$30,000
Meeting with Representative of Decentralized Areas	Phase 3 Pandemic Phases	MoH – MoAg	Local Governments: Provincial Health & Agriculture	Consensus, better coordination, better plan	0	\$50,000	\$50,000
				<b>TOTAL</b>	<b>\$85,000.00</b>	<b>\$210,000.00</b>	<b>\$210,000.00</b>

**Implementation work plan and budget 2005/06-2008**  
**Strategy 2 - Surveillance**

Activity	Timeframe	Key responsible	Co-responsible	Output indicator	2005/06 USD	2007 USD	2008 USD
Strengthening clinical surveillance system in place	Phase 1 Inter Pandemic Phase	All institutions involve in Early Warning System (26 Districts)	Provincial Health, District and Divisional Health Service	Earliest detection of cases	\$30,000	\$30,000	\$30,000
Study tour in Neighbouring Countries for Surveillance /Laboratory Training	Phase 1 & 2	MOH	Provincial Health, District and Divisional Health Service	Development of skills for better screening & diagnosis	\$10,000	\$5,000	\$5,000
Increased AI surveillance	Phase 2 Inter Pandemic Phase	All institutions involve in Early Warning System (26 Districts)	Provincial Health, District and Divisional Health Service	Earliest detection of cases	\$50,000	\$50,000	\$50,000

a. Training of Personnel of Sentinel Areas	Phase 2 Inter Pandemic Phases	MoH /EU	Provincial Health, District and Divisional Health Service	Skill full and knowledgeable personnel	\$30,000	\$15,000	\$15,000
b. National Workshop	Phase 2 Inter Pandemic Phases	MoH / EU	Research Institutes and Universities	Wide distribution of knowledge and regulation on Influenza	\$30,000	\$15,000	\$15,000
c. Expert Committee Meeting	Phase 2 Inter Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Formulation of recommendation and strategy	\$5,000	\$10,000	\$10,000
d. Sero-Survey: 2 endemic AI provinces-'06 4 endemic AI provinces-'07 6 endemic AI provinces-'08	Phase 2 Inter Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Collected data on sero-status of Farmers their closed contact	\$5,000	\$10,000	\$15,000
e .Epidemiology Networking: 1. National Workshop 2. Training for Epidemiological Surveillance Regionally	Phase 3 Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Better communication and sharing of surveillance data	0	\$5,000 \$45,000	0
				<b>TOTAL</b>	<b>\$160,000.00</b>	<b>\$185,000.00</b>	<b>\$140,000.00</b>

**Implementation work plan and budget 2005/06-2008**  
**Strategy 3 – Strengthening the National Reference Laboratory**

Activity	Timeframe	Key responsible	Co-responsible	Output indicator	2006 USD	2007 USD	2008 USD
Strengthening the National Reference Laboratory	Phase 1 Inter Pandemic Phase	MoH	--	Well equipped National Reference Laboratory	\$260,000	\$117500	\$102,000
<b>Total</b>					<b>\$260,000</b>	<b>\$117500</b>	<b>\$102000</b>

**Implementation work plan and budget 2005/06-2008**  
**Strategy 3 - Prevention and Control**

Activity	Timeframe	Key responsible	Co-responsible	Output indicator	2006 USD	2007 USD	2008 USD
Stockpiling drugs & materials: antivirals for persons 500 and PPE for 1000 high-risk groups	Phase 1 Inter Pandemic Phase	MoH	--	Protect frontline workers	\$15,000	\$15,000	\$15,000
Formulation of Policies on strategic antiviral use & on vaccination for high-risk groups	Phase 1 Inter Pandemic Phase	MoH	--	Protect frontline workers & high-risk groups	\$5,000	0	0
Formulate and socialize universal precaution guidelines/PPE guidelines for HC and hospital personnel	Phase 1 Inter Pandemic Phase	MoH	Provincial and District/Municipality Health Service	Protect frontline workers & high-risk groups	\$10,000	\$5,000	\$5,000
Review antiviral/PPE use	Phase 2 Inter Pandemic Phase	MoH	Provincial and District/Municipality Health Service	Protect frontline workers & high-risk groups	\$5,000	\$5,000	\$5,000
Public health education materials and activities carried out	Phase 2 Inter Pandemic Phase	MoH	Provincial and District/Municipality Health Service	Earliest detection of cases	\$5,000	\$10,000	\$10,000

Guideline books	Phase 2 of Pandemic Phases	MOH – 10,000 books	Provincial and District/Municipality Health Service	Guided implementation	0	\$10,000	0
Operational Cost for Command Post	Phase 3 of Pandemic Phases	MoH	--	Earliest information on Outbreaks, suspected cases.	\$5,000	\$5,000	\$5,000
Logistics	Phase 3 of Pandemic Phases	MOH	Provincial and District/Municipality Health Service	Secure logistics	0	\$12,500	\$12,500
LABORATORY Serological Examination using: - ELISA, - RT – PCR - Etc	Phase 3 of Pandemic Phase	MoH		Results of Laboratory examinations (Confirmation of diagnosis)	\$50,000	0	0
Workshop for Clinicians/Internists/Chest Physicians	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Better case management, Improve case management guidelines	\$35,000	0	0
Workshop for Hospital Doctor in AI Case Management	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Better case management	\$35,000	0	0
Training for Hospital Paramedics in AI Case Management	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Better care of patients	\$30,000	0	0
Review activities of Rapid Response Team	Phase 3 of Pandemic Phases	MoH - MoAg	Provincial and District/Municipality Health Service	Earliest appropriate response	\$30,000	0	0
Field Investigation	Phase 3 of Pandemic Phases	MoH - MoAg	Provincial and District/Municipality Health Service	Earliest data collection		\$20,000	0
Meeting of Experts	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Formulation of recommendation and strategy	\$10,000	0	0
Operational Vehicles: - Ambulance - Operational Cars	Phase 3 of Pandemic Phases	MoH - Hospitals	Provincial and District/Municipality Health Service	Facilitated field operation	\$100,000		
Operational Motorcycles	Phase 3 of	MOH	Provincial and	Facilitated	0	\$15,000	\$15,000

	Pandemic Phases		District/Municipality Health Service	transportation at grass root level			
Central referral hospital preparation -IDH - Isolation Rooms - ICU Rooms	Phase 3 of Pandemic Phases	MoH - Hospital	Provincial and District/Municipality Health Service	Availability of well prepared referral hospital	\$435,000	0	0
Preparing referral hospital: - Isolation Rooms - ICU Rooms	Phase 3 of Pandemic Phases	MOH - 09 provincial hospitals	Provincial and District/Municipality Health Service	Well equipped referral hospitals	0	\$225,000	0
Procurement of additional ventilators	Phase 3 of Pandemic Phases	MOH - 09 provincial hospitals	Provincial and District/Municipality Health Service	Well equipped referral hospitals	0	\$30,000	0
Recruitment of 10,000 village volunteers	Phase 3-4-5 of Pandemic Phases	MOH	Provincial and District/Municipality Health Service	Better village preparedness	0	0	\$50,000
Socialization of guideline books	Phase 3-4-5 of Pandemic Phases	MOH	Provincial and District/Municipality Health Service	Well understanding and correct implementation of guidelines	0	0	\$10,000
Health education materials (poster, leaflet, booklet)	Phase 3-4-5 of Pandemic Phases	MOH		Better public awareness	0	0	\$10,000
				<b>TOTAL</b>	<b>\$770,000</b>	<b>\$352,500</b>	<b>\$137,500</b>

**Implementation work plan and budget 2005/06-2008  
Strategy 4 - Health System Response**

<b>Activity</b>	<b>Timeframe</b>	<b>Key responsible</b>	<b>Co-responsible</b>	<b>Output indicator</b>	<b>2006 USD</b>	<b>2007 USD</b>	<b>2008 USD</b>
Formulation of Guidelines and Material - Triaging & initial assessment of cases - Hospital admission policies - Collection,	Phase 1 Inter Pandemic Phase	MoH/EU/MRI	--	Standard guidelines	\$15,000	0	0

transportation & examination of specimens							
Provide and prepare screening and diagnostic test materials	Phase 1 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Strengthened screening facilities	\$10,000	0	0
Strengthening Public Health Laboratories: - Lab Equipments (5 TH Laboratories)	Phase 1 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Better screening laboratories	\$250,000	\$100,000	\$100,000
Formulating New Public Health Regulation	Phase 1 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Availability of necessary regulations	\$10,000	0	0
Review and ensure readiness of referral hospitals	Phase 2 Inter Pandemic Phase	MoH	Provincial and District/Municipality Health Service	Availability of well prepared referral hospital	0	\$10,000	0
Rumour Verification	Phase 3 of Pandemic Phases	MoH/EU	Provincial and District/Municipality Health Service	Verified rumors	\$5,000	\$10,000	\$15,000
Data Analysis and Feedback	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Profile, newsletters, rapid feedback through email, fax, SMS	\$1,000	\$2,000	\$4,000
Rapid Response Team	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Immediate and appropriate response	\$1,000	\$2,000	\$5,000
Outbreak Investigation	Phase 3 of Pandemic Phases	MoH	Provincial and District/Municipality Health Service	Collected data	\$3,000	\$6,000	\$9,000
				<b>TOTAL</b>	<b>\$295,000</b>	<b>\$130,000</b>	<b>\$133,000</b>

**Implementation work plan and budget 2005/06-2008**  
**Strategy 5 - Risk Communication**

<b>Activity</b>	<b>Timeframe</b>	<b>Key responsible</b>	<b>Co-responsible</b>	<b>Output indicator</b>	<b>2006 USD</b>	<b>2007 USD</b>	<b>2008 USD</b>
Formulation of national risk communication strategy	Phase 1 Inter Pandemic Phase	MoH	Ministry of Information	Well designed information	\$10,000	0	0
Establish communication networking among all stakeholders	Phase 1 Inter Pandemic Phase	MoH	Ministry of Information	Well designed information	\$5,000	\$5,000	0
Design feedback mechanism to identify level of public knowledge	Phase 1 Inter Pandemic Phase	MoH	Ministry of Information	Well designed information	\$5,000	\$10,000	\$10,000
Holding press conference	Phase 1 Inter Pandemic Phase	MoH	Ministry of Information	Well designed information	\$5,000	\$10,000	\$10,000
Establishment of internal command post for rapid communication	Phase 2 Inter Pandemic Phase	MoH	Ministry of Information	Well designed information	\$2,500	\$5,000	\$5,000
TV Media	Phase 3 of Pandemic Phases	MoH – Communication Committee	Ministry of Information	Well designed information	\$50,000	\$50,000	\$50,000
Talk show	Phase 3 of Pandemic Phases	MoH – Communication Committee	Ministry of Information and Communication	Well designed information	\$10,000	\$20,000	\$20,000
Press release and Conference	Phase 3 of Pandemic Phases	MoH – Communication Committee	Ministry of Information and Communication	Well designed information	\$5,000	\$10,000	\$10,000
Meeting of Communication Experts	Phase 3 of Pandemic Phases	MoH – Communication Committee	Ministry of Information	Well designed information	\$1,000	\$5,000	\$5,000
Designing Website	Phase 3 of Pandemic Phases	MoH – Communication Committee	Provincial and District/Municipality Health Service	Well designed information	\$1,000	0	0
Website Operational Cost	Phase 3 of Pandemic Phases	MoH – Communication Committee	Provincial and District/Municipality Health Service	Well designed information	\$5,000	\$10,000	\$10,000
Socialization and Advocacy	Phase 3 of Pandemic Phases	MoH – Communication Committee	Provincial and District/Municipality Health Service	Public increased understanding and support	\$10,000	\$10,000	\$10,000
				<b>TOTAL</b>	<b>\$109,500</b>	<b>\$135,000</b>	<b>\$130,000</b>



**SRI LANKA EXOTIC DISEASE EMERGENCY PLAN**

**SEDEP**

**2005/2006**

**HIGHLY PATHOGENIC AVIAN INFLUENZA**

**CONTROL PROGRAMME**

SEDEP is a series of technical guidelines developed by Department of Animal Production and Health, Sri Lanka describing the emergency approach to an exotic animal disease introduction.

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## Preface

Avian Influenza is a highly pathogenic transboundary disease of Poultry. This disease is communicable to humans (zoonotic disease) and is never reported in Sri Lanka. The continuing outbreak of Highly Pathogenic Avian Influenza (HPAI) in several South East Asian Countries that began in 2003 and 2004 followed by a new wave of outbreak in other parts of the world such as in Europe, have been disastrous to the Poultry Industry.

This disease is of particular importance to livestock sector and the Department of Animal Production and Health (DAPH), since the responsibility of combating this poultry disease and thereby protecting the poultry industry and the public is expected from this Department. The veterinary system is the first line of defense against this disease in Sri Lanka.

The Highly Pathogenic Avian influenza is designated as a notifiable disease by the Office International des Epizootic (OIE). OIE notifiable diseases are "Communicable diseases that have the potential for serious and rapid spread, irrespective of national borders, which are serious socio-economic or public health importance and which are of major importance in the international trade of animals and animal products.

The control of HPAI in Sri Lanka requires an understanding of the behavior and ecology of influenza viruses in general and the subtype H<sub>5</sub>N<sub>1</sub> in particular. It is also important to understand the local poultry production and marketing systems, and how these affect the development and the cause of HPAI. Without proper understanding these factors, attempts to control and eradicate this disease will fail.

This disease strategy for the control and eradication of HPAI is an integral part of the SRI LANKA EXOTIC DISEASE EMERGENCY PLAN (SEDEP). This strategy sets out the disease control principals that have been approved by the Animal Health Committee of the Department of Animal Production and Health, considering recommendation of the FAO, WHO and OIE Terrestrial Animal Health Code.

The purpose of this document is to provide guiding principles and minimum requirements for surveillance, diagnosis and management of an outbreak of HPAI. This document also summarize provides the risks associated with HPAI and a cost estimate in combat in this disease.

Although effective surveillance and diagnosis are critical to the control of HPAI, other important measures include;

- Rapid Humane destruction of infected poultry and poultry products at High risk of infection.
- Disposal of carcasses and potentially infective material in a bio-secure and environmentally sustainable manner.
- Enhance bio-security at poultry farms and associated premises, including movement of personnel.
- Control of movement of birds and products that may contain viruses.
- Changes to industry practices to reduce risk.

A concise summary of activities, which should be implemented before, during and after the outbreak, is given towards the end of the plan. Necessary relevant information is given in the form of annexures . This document will be updated periodically with new findings and recommendations.

Dr.S.K.R.Amarasekera  
Director General

2005.12.22

# 1. Avian Influenza

Avian influenza (AI) is a highly contagious viral infection, primarily affecting all avian species. Clinical manifestations range from inapparent in waterfowl to a rapidly fatal condition characterized by gastrointestinal, respiratory and/or nervous signs in chickens and turkeys. The disease, originally known as ‘fowl plague’, was first reported from Italy in 1878. From 1984, the name highly pathogenic avian influenza (HPAI) was used to describe the most pathogenic form of infection. The World Organization for Animal Health (Office International des Epizooties, OIE) lists AI as a notifiable disease.

HPAI has never been reported in Sri Lanka. The disease is considered as an exotic disease to the country and requires notification to the Government Veterinary Authority in case of any suspected cases/outbreaks.

Recent outbreaks of HPAI in eastern Asia have caused devastating effects in the local economies and in addition, recent changes in the epidemiology of AI virus infections, particularly the capacity of AI virus to infect humans (H5N1), has led to a situation of serious public health concern.

## 1.1 Aetiology and pathogenicity

### 1.1.1 AI virus

All AI viruses are members of the family Orthomyxoviridae. The influenza viruses of this family are categorized into types A, B and C on the basis of the antigenic character of the nucleoprotein antigen. Only influenza A viruses have been isolated from avian species. Influenza A viruses are further divided into subtypes on the basis of haemagglutinin (H) and neuraminidase (N) antigens present on the envelope of the virus. At present, sixteen H subtypes (H1 –H16) and nine N subtypes (N1-N9) have been identified. Each virus has one of each subtype in any combination (i.e: H5N1, H3N1). Due to the risk of a H5 and H7 virus of low virulence becoming virulent by mutation, all H5 and H7 viruses have been identified as notifiable avian influenza (NAI) by the OIE.

### 1.1.2 Pathogenicity

The species in the orders Anseriformes (ducks, geese, swans) and Charadriiformes (shorebirds, waders, gulls) are regarded as the reservoir hosts for influenza viruses. HPAI due to H5 and H7 subtypes can cause severe clinical disease and even subtypes of low pathogenicity, including H5 and H7, can be associated with severe clinical disease in the presence of other infectious agents. The pathogenicity of AI viruses depends on the genetic properties of the virus and the species of the host. *Only viruses with H5 and H7 antigens have been isolated so far from HPAI in poultry.*

It has been recorded that low pathogenic avian influenza (LPAI) infections of chickens and turkeys with H5 and H7 subtype that have been allowed to continue without adequate control or eradication procedures have ultimately turned into virulent HPAI infections.

## **1.2. OIE definition of Avian Influenza**

The OIE has adopted the following criteria for classifying Avian influenza (OIE Terrestrial Animal Health Code 2005).

### ***Notifiable Avian Influenza (NAI) :***

An infection of poultry caused by any influenza A virus of the H5 or H7 subtypes or by any AI virus with an intravenous pathogenicity index (IVPI) greater than 1.2 (or as an alternative at least 75% mortality).

NAI viruses can be divided into highly pathogenic notifiable avian influenza (HPNAI) and low pathogenicity notifiable avian influenza (LPNAI).

## **1.3 World distribution**

AI virus occurs, in one or a number of its many serotypes, in all continents where research has been carried out. It appears to be endemic in waterfowl, in which it does not often cause disease. Migratory birds are considered to be one of the means by which the disease travels across and between continents.

Internationally, 12 outbreaks of HPAI were recorded up to 1994 following the recognition in 1955 that fowl plague, or HPAI, was caused by an influenza virus; since 1994, there have been 29 further outbreaks, most of which occurred from 2000 onwards.

The highly pathogenic H5N1 strain is currently circulating in a number of Asian and East European countries.

## **1.4. Epidemiology**

### **1.4.1 Susceptible species**

AI virus is infective for almost all commercial, domestic and wild avian species. Infections in monkeys, pigs, ferrets, horses, cattle, felines, seals and whales have been reported. The significance of non-avian species in spreading HPAI viruses is not well understood, but appears to be minimal.

*Chickens and turkeys:* Chickens and turkeys are highly susceptible to infection and clinical disease.

*Ducks and geese:* Ducks and geese are susceptible to infection with all AI virus strains, but only some very virulent viruses produce clinical disease. AI virus is commonly isolated from these species in endemic areas. Their potential as reservoir hosts is considered to make waterfowl a major source of virus for poultry.

*Guinea fowl, quail, pheasant and partridge:* Guinea fowl, quail, pheasant and partridge are susceptible to infection and clinical disease.

*Other wild birds:* AI viruses are readily recovered from free-flying aquatic birds throughout the world. No significant disease problems due to AI are known to occur in these birds. However, research suggests that the huge pool of viruses in wild birds, especially waterfowl, in which the virus replicates in the intestine, provides the opportunity for new combinations of H and N subtype viruses to arise through genetic re-assortment.

### **1.4.2 Incubation period**

Incubation periods are extremely variable for HPAI, from a few hours to 2–3 days. The *OIE Terrestrial Animal Health Code* gives a maximum incubation period of 21 days, for regulatory purposes. The less virulent strains have a very variable incubation period, but their transmissibility should ensure that many sick birds would be seen in the early stages of an outbreak. An incubation period extending to 16 days, for both LPAI and HPAI, has been recorded.

### **1.4.3 Persistence of virus**

#### **General properties/environment**

AI viruses are not very resistant to warm temperatures, but they remain viable for longer periods in cold and humid environments. Environmental conditions have a marked effect on virus survival outside the bird. Survival is prolonged in aerosols by low relative humidity and low temperature, and low temperature and high moisture levels prolong survival in faeces.

AI virus can survive in faeces for at least 35 days at 4°C, and survival of virus in dust in poultry houses has been reported for two weeks after depopulation. AI virus can survive within the poultry house environment for up to five weeks.

The virus is stable over a pH range of 5.5–8 and, destroys by the acidic pH.

AI virus can be isolated from lake water where waterfowl are present. Virus may remain infective in lake water for up to four days at 22°C and over 30 days at 0°C.

The presence of lipid in the AI virus envelope makes the virus highly susceptible to disinfectants, including detergents, but only if items have been properly cleaned before they are disinfected.

### **Wild birds**

AI virus is infective for almost all wild avian species, which form an important reservoir for the virus. AI virus that is highly pathogenic for domestic poultry could emerge from the pool of viruses in wild birds at any time.

#### ***Waterfowl***

Wild aquatic birds, such as waterfowl and seabirds, are important reservoirs and can shed AI virus for up to one month, compared with two weeks in domestic species. AI virus from waterfowl can remain viable in faeces and water for up to 32 days.

#### ***Wild birds other than waterfowl***

AI virus has been recovered from autolysed carcasses of wild birds (other than waterfowl) after 23 days at 4°C. The virus has been isolated from captured exotic species, but the duration of virus excretion is not known.

Crows have been reported dead in repeated outbreaks in Japan.

### **Live poultry**

Viruses with the potential to be highly pathogenic for chickens and turkeys can be carried and shed in faeces and from the respiratory tract for at least two weeks and up to 30 days by birds after recovery from the disease, while the virulent viruses can be carried by other avian species without signs of clinical disease. The importance of spread by live poultry became apparent in the 2004 eastern Asia epidemic. Cloacal shedding can continue for longer than 30 days after infection in the presence of immunosuppressive diseases or other physical stresses.

### **Carcasses**

AI virus survives for several days in carcasses at ambient temperatures, compared with a few weeks at refrigeration temperatures. There is insufficient data on the spread of virus from fresh, frozen and processed meat, but this has not been highlighted as an important method of transmission in outbreaks. Birds processed during the viraemic stage will contaminate other carcasses with blood or faecal material containing virus. Packaging and the drips that develop during storage are also important, as both can be contaminated with virus from infected carcasses.

### **Meat products**

Virus can persist in poultry meat products. Following temperatures are considered to be sufficient to kill AI viruses in cooked poultry meat products:

- 70°C for a minimum of 30 minutes;
- 75°C for a minimum of 5 minutes; or
- 80°C for a minimum of 1 minute

### **Table eggs and egg products**

Although severely affected birds will stop laying, eggs laid in the early phase of the outbreak could contain AI virus in the albumen and yolk and/or on the shell. The virus can penetrate cracked or intact shells and, more significantly, contaminate the egg fillers. The survival time on the eggs and fillers is sufficient to allow wide dissemination.

Eggs laid by birds with LPAI infections have significant external AI virus contamination, as the oviduct is a site of virus reproduction.

Egg products could be another source of the virus. Pasteurization procedures are not sufficient to inactivate AI virus, which requires at least 4.5 minutes at 64°C, 5 minutes at 60°C or over 15 minutes at 55°C

### **Fertile eggs**

AI virus has been isolated from eggs laid by infected breeding hens.

### **Poultry byproducts**

Rendered meals, produced from boned-out skeletons, viscera, blood, feathers, feet, heads, necks, off cuts, are added to poultry feed as poultry offal meal and tallow. They may also be added to pet foods.

Poultry offal meal and pet foods are usually cooked at above 100°C for from several minutes to more than one hour, which is sufficient to kill AI virus. However, if the procedure is not carried out properly or cooked product is subsequently contaminated by unprocessed product, AI virus could persist in the by product for several weeks.

### **Waste products**

Waste can be any of the unwanted byproducts of processing. All products that go into the production of rendered meals may also be discarded as waste. In addition, there will be wastes from hatcheries, laboratories (cultures and specimens, dead birds), farms, processing establishments and egg marketing establishments (unsaleable eggs), as well as chicken manure and litter. AI virus has the potential to persist in these products and could be spread by vehicles that transport them unless the products are treated before movement.

## **Fomites**

Persistence of the virus in faeces and respiratory secretions is of major importance. Their stickiness facilitates spread over a wide geographical area on footwear, clothing, equipment and other fomites. This is the main way infection is transmitted between premises.

### **1.4.4 Modes of transmission**

Not all strains of AI viruses are highly transmissible for poultry; highly and lesser pathogenic viruses can begin with low transmissibility but, following passage through flocks, transmissibility as well as pathogenicity for the host can increase in the field.

The significance of live poultry markets in generating and spreading HPAI has been observed in several countries. Live market movements have also assisted the dissemination of LPAI viruses in some countries.

In recent times, dissemination of HPAI virus between flocks has been primarily attributed to:

- the movement of infected birds (including vaccinated birds); and
- the actions of humans in moving feedstuff, personnel, equipment and vehicles into and from premises that are contaminated with infected faeces or respiratory secretions.

Contamination of personnel and fomites is now being considered as the principal way that infection spreads during outbreaks.

Aerosols may cause some secondary spread during AI outbreaks.

## **Wild birds**

Direct or indirect contact with waterfowl is the most likely source of infection in poultry.

## **Live poultry**

Transmissibility in poultry varies enormously between AI virus strains. Contact with faeces or respiratory secretions are important, while airborne spread is not considered significant.

## **Eggs**

Vertical transmission via infected eggs has never been proved, although AI virus has been detected on the shell surface and in the yolk and albumen of eggs, suggesting that the potential for spread exists. Normal incubation temperatures of 38.7°C in the early stages of embryo development may be lethal to AI virus, or infected embryos may be

killed by the virus early during incubation. Persistence through the incubation process is most likely through shell contamination.

### **Fomites**

AI can spread very rapidly and can be carried over long distances by transport of contaminated materials such as bird cages, pallets, egg trays/boxes, manure and feed, and on contaminated clothing, equipment and vehicles.

### **Other vectors**

There is no evidence to suggest that invertebrates are involved in the interepidemic maintenance of transmission. However, there is a possibility of mechanical transmission by either invertebrate or vertebrate vectors through contact with infected faeces, although such transmission would be infrequent.

### **1.4.5 Factors influencing transmission**

The principal means by which highly and lesser pathogenic AI viruses initiate outbreaks through the contamination by wild birds of food or water supplies of poultry. Subsequent spread of infection is through the movements of infected live birds or of faecally contaminated feed, equipment, materials and personnel.

Infected backyard poultry and live bird markets can be a source of AI virus for commercial poultry, so it is important that the commercial poultry industry operates with strict biosecurity measures to prevent the inadvertent transfer of infection to commercial flocks.

Lower temperatures and higher relative humidity favour virus survival.

Improving biosecurity is the most important way that poultry producers can prevent the spread of virus.

## **1.5 Diagnosis of the disease**

### **1.5.1 Clinical signs**

The clinical signs of AI infection are variable and influenced greatly by the virulence of the viruses involved, the species affected, age, immune status, existence of concurrent infections and the environment. The pathogenicity in chickens can vary during an outbreak.

### **HPAI**

- In acute cases involving sudden death (per acute), clinical signs may not be seen and mortalities occur as early as 24 hours after the first signs of the disease, and

frequently within 48 hours. In other cases, more diverse visible signs are seen, and mortalities can be delayed for as long as a week. Overall mortality rates for per acute/acute cases of nearly 100% have been reported.

- Clinical signs in chickens and turkeys include severe respiratory signs with excessively watery eyes and sinusitis, cyanosis of the combs, wattle and shanks, oedema of the head, ruffled feathers, diarrhoea and nervous signs. The last eggs laid after the onset of illness frequently have no shells.

The disease in turkeys is similar to that seen in chickens, but is often complicated by secondary infections such as fowl cholera, turkey coryza and colibacillosis.

## **LPAI**

- Clinical signs in chickens and turkeys range from in apparent to mild or severe respiratory disease and can be confused with infectious laryngotracheitis and other respiratory tract infections.
- Mortality may vary from 3% to 15 %. High mortalities to 90% have been recorded in young turkey poults.
- Egg production in layers can drop by up to 45%, with recovery to normal in 2–4 weeks.

### **1.5.2 Pathogenesis**

Most HPAI viruses isolated from poultry have been from chickens and turkeys. Clinical signs result from the replication of the virus in the respiratory tract and subsequent systemic replication in the visceral organs and brain. The viruses that are nonpathogenic replicate only on the surfaces of the respiratory and intestinal tracts.

### **1.5.3 Pathology**

#### **Gross lesions**

In many cases, poultry dying from the per acute form of the disease lack visible gross lesions; such chickens die on day 1 or day 2 after infection. With the acute infections recorded in some countries there have been severe lung congestion, haemorrhage and oedema in dead chickens; other organs and tissues appeared normal.

In the acute form of infection, more diverse visible lesions are evident. Chickens have ruffled feathers, congestion and/or cyanosis of the comb and wattles, and swollen heads. The changes in the comb and wattles progress to depressed areas of dark red to blue areas of alchemic necrosis. Internally, the characteristics of acute infections with viruses

causing HPAI are haemorrhagic, necrotic, congestive and transudative changes. The oviducts and intestines often have severe haemorrhagic changes. As the disease progresses, the pancreas, liver, spleen, kidney and lungs can display yellowish necrotic foci. Haemorrhages (petechial and ecchymotic) cover the abdominal fat, serosal surfaces and peritoneum. The peritoneal cavity is frequently filled with yolk from ruptured ova, associated with severe inflammation of the air sacs and peritoneum in birds that survive 7–10 days. Haemorrhages may be present in the proventriculus, particularly at the junction with the gizzard.

In infections such as mildly pathogenic AI, lesions may be seen in the sinuses, characterized by catarrhal, serofibrinous, mucopurulent or caseous inflammation. The tracheal mucosa may be oedematous with an exudate varying from serous to caseous. The air sacs may be thickened and have a fibrinous to caseous exudate. Catarrhal to fibrinous peritonitis and egg yolk peritonitis may be seen. Catarrhal to fibrinous enteritis may be seen in the caeca and/or intestine, particularly in turkeys. Exudates may be seen in the oviducts of laying birds.

#### 1.5.4 Laboratory Techniques

As pathological changes are not definitive for the disease, diagnosis needs to be confirmed by the isolation and characterization of the causative virus.

As screening test Rapid HPAI detection is performed to detect antigen. For conformation of the disease either Virus Isolation (Egg Inoculation, Haemagglutination, Haemagglutination Inhibition Test) or Reverse Transcriptase Polymerase Chain (Rt – PCR) is performed. Enzyme Linked Immuno absorbent Assay (ELISA) is being used for Sero Surveillance.

	Type of Test	Time
Screening Test -Antigen Detection	Rapid HPAI detection	1 hour
For Conforamtion -	* Egg Inoculation * Haemagglutination * Haemagglutination Inhibition Test	4 – 7 days 2 days 2 days (Altogether 10 days)
For Conformation – Direct RNA Detection	Reverse Transcriptase Polymerase Chain (Rt –PCR).	2 days
For Sero Surveillance	Enzyme Linked Immuno absorbent Assay (ELISA)	

### 1.5.5 Differential diagnosis

Avian influenza could be confused with a number of other diseases that have similar clinical symptoms. Diseases that can cause a large numbers of sudden deaths of birds include:

:

- Newcastle disease
- Acute fowl cholera
- Infectious laryngotracheitis
- *Escherichia coli* cellulitis of the comb and wattles; and
- Acute poisonings
- Management mishaps (i.e: power failures)

HPAI should be suspected whenever sudden bird deaths occur with severe depression, loss of appetite, nervous signs, watery diarrhoea, severe respiratory signs and/or a drastic drop in egg production, with production of abnormal eggs. The likelihood of AI is increased by the presence of facial subcutaneous oedema, swollen and cyanotic combs and wattles, and petechial haemorrhages on the internal membrane surfaces. Young chickens, or those dying from the per acute form of the disease, may not show any lesions.

### 1.6 Risk factors associated with introduction of Highly Pathogenic Avian Influenza ( HPAI ) into Sri Lanka

Highly Pathogenic Avian Influenza ( HPAI ) has never been reported in Sri Lanka. The disease could enter into Sri Lanka by several ways.

#### Possible sources of entry in to Sri Lanka

The virus could be introduced through:

1. Wild birds and migratory birds.
2. Import of live poultry or poultry products and by- products from other countries.
3. Import of pet birds from other countries.
4. Smuggling of pet birds, poultry and poultry meat from other countries.
5. Infection carried by International passengers and fomites.

Sri Lanka being an island , the risk of introducing the disease into the country could be minimized, if we identify the ways of introducing the HPAI infection into the country and take strict preventive measures.

### **1.6.1 Migratory birds and wild birds.**

A large number of migratory birds annually visit Sri Lanka during the period September to November through Central Asian flyway (**Eastern, Western and Andaman**) into Northern, Southern and Western regions. These birds begin to leave the country by February. Migratory birds arriving via eastern fly way route settle in Northern region such as Mannar and Western fly way route settle in Kumana park, Wilpattu etc. It is very difficult to identify and reach these locations of these fly way risk areas and bird sanctuary areas where these migratory birds are resting or settled. Further, wild birds and some aquatic birds from infected countries or flying via infected countries may enter and contaminate the surface water of lakes or lagoons where back yard indigenous chicken may get infected.

#### **Action to be taken:**

Monitoring of the migratory birds travel routes and surveillance at the place of resting (bird sanctuary ) should be taken up in collaboration with the Dept. of wild life involved in these areas. Active surveillance should be carried out in the birds migratory routes, entry points with special reference to water fowls. Poultry farms around that areas to be advised and strict bio security measures to be adopted. Small scale integrated farms where ducks and swine are reared together, should also be monitored closely.

*The entry of HPAI virus through this way could be considered as high risk.*

### **1.6.2 Import of live poultry and poultry products from other countries**

Some HPAI strains of H<sub>5</sub> and H<sub>7</sub> have been reported from several countries and there is a possibility of introduction of this virus through certified legal imports of poultry and poultry products. HPAI is also known to be transmitted over contaminated surfaces of eggs and therefore hatching eggs could be a potential source of HPAI infection.

It is also known that avian influenza (highly pathogenic or mildly pathogenic ) virus could harbour in pigs and get transmitted without animals showing any symptom. However there is no evidence so far of the current HPAI subtypes being present in pigs , but precautions need to be taken.

#### **Situation at present:**

Parent and Grand parent chicks are allowed only into Sri Lanka from registered poultry breeder farms in HPAI non-infected countries. Import of Poultry products are allowed exclusively for further processors and BOI approved hotels from HPAI non-infected countries. Poultry by-products (i.e feathers ) are allowed from HPAI non-infected countries; only for BOI approved companies. All these imports are traceable. However, the Department of Animal Production and Health (DAPH) has taken preventive measures at present, by imposing temporary restrictions on import of live poultry, poultry products, poultry by-products from all countries.

### **Further action to be taken to minimize risk:**

There is a need to impose temporary restrictions on imports of live pigs and pig products until the situation becomes clear in the affected countries. Import of live poultry and poultry products, by-products from non infected countries could be allowed only after screening out the documents carefully and obtain a certification from the exporting country to state that country / state of origin of the consignment has been declared as free from HPAI and, assessing other risk factors in those countries. Strict quarantine measures to be adopted at the port of entry and follow up activity be taken during the post quarantine period.

*Accordingly, this route of entry of HPAI is minimal.*

### **1.6.3 Import of pet birds from other countries.**

Pet bird owners/ breeders, National Zoological gardens and individuals usually import pet birds from other countries on import permits issued by the DAPH. These birds may harbour HPAI without showing any clinical symptoms and shed the virus posing danger to the poultry.

### **At present;**

DAPH has curtailed issuing of permits and banned import of pet birds from all countries since early 2004.

*Therefore, the risk of introduction of HPAI infection by this route is minimal.*

### **1.6.4 Smuggling of live poultry, poultry meat and pet birds.**

Smuggling of live poultry, poultry products and pet birds into Northern region of Sri Lanka has been observed. This type of illegal imports from infected countries pose a high risk of introducing infection in to the country. This depends on the survival of the virus in the illegally imported product. Illegal import of live poultry and pet birds from infected countries could pose **high risk** to the country.

### **Action to be taken:**

North – East relevant administrative authorities and security personnel to be advised on this issue. Illegal entry points to be identified, quarantine inspection and strict quarantine measures at the entry point should be strengthened. All live birds and products without import license should be confiscated and destroyed at the point of entry.

### **1.6.5 Infection carried by international passengers and fomites**

The virus could remain viable for long periods in faecal material of birds and this is considered to be the main source of transmission from bird to bird and between birds and

human beings. There is a possibility of spreading the virus via faecal contamination on clothing and shoes of people coming from the infected countries if such persons have been at the farms or have come in contact with infected materials. However heavy faecal contamination is possible unless such person/s are not careful about personnel hygiene. *Further, the biosecurity measures adopted at the port of entry is not adequate to screen out the passengers who has come from HPAI infected countries or visited HPAI infected poultry farms from those countries.*

**At present:**

DAPH has given instruction to the animal quarantine officers for screening of international passengers .

**Action to be taken:**

Travel guidelines should be issued and necessary information should be provided to the International passengers.

**1.6.6 Conclusion:**

By considering all these facts, overall risk of introduction HPAI virus into the country is at a moderate level. Further, migratory birds and wild birds and through International passengers who has come from HPAI Infected countries pose a high risk of introduction of the disease into different zones in Sri Lanka.

## 2. Poultry Production Systems in Sri Lanka

Being from the back-yard industry, poultry sector in Sri Lanka has shown a phenomenal growth and emerged as a dynamic industry within a short span of time. With more and more participation from the private sector, the industry has shown a rapid progress particularly from the year 1990 onwards. The growth was more prominent in the broiler sector, whereas there had been no remarkable growth in the layer sector.

The poultry industry today, is to a great extent in the hands of the private sector, few companies dominating the industry output. Due to major structural changes that have taken place in the industry over the past two decades, economics of scale in farms have increased leading to higher productivity and increased competitiveness. Integration has taken place in the sector and at present, the industry is capable of producing chicken meat and eggs that are required for the domestic market.

The country's breeder and commercial poultry farms, feed manufacturing plants, processing establishments are mostly concentrated in the Western (WP) and North-Western provinces (NWP) , the area being called the *poultry belt*. Poultry production is concentrated in these areas due to increased consumption levels, transport and marketing facilities and availability of land (in the North-western Province) and other resources conducive for poultry production ( Annexure I A )

Intensification in the poultry industry has clearly differentiated two production systems (Annexure I A Annexure I B). The organized commercial (intensive) poultry production and unorganized back yard poultry production system.

### **Organized commercial (intensive) poultry production system /farms**

#### Layer

*Small-medium scale farms* : These are individual farms which are located outside NWP and WP . The average flock size may vary and range between 300 to 1000.

*Large- scale farms* : These farms are mostly concentrated in the NWP and the WP in the country ; average flock size is above 1000 birds. Input supply ( day-old chicks, feed, medicines, vaccines) are provided by Feed Manufacturers and Feed Mixers in the NWP.

#### Broiler

*Small- scale farms* : These are individual farms which are not linked to organized buy-back (out-grower ) system. The average flock size may vary and range between 300 to 1000.

*Out-grow r(large-scale) farms*: These are farms which are either linked to Integrated Companies and operate as out-grower farms or maintained by Integrated companies. The

average flock size in out-grower farms is above 1000 and, it could go up to 25,000 birds in company owned farms.

**Unorganized back yard poultry production system/farms.**

Back-yard poultry farms are scattered in the island and average flock size per holding is around 10 to 25.

### **3. Veterinary Service to Poultry Farms**

#### **3.1 Government Sector**

##### **Veterinary Services**

The Department of Animal Production and Health (DAPH) established in 1978 is the main organization in Sri Lanka responsible for the Veterinary Service in the country. This Department is under the purview of the Ministry of Estate Infrastructure and Livestock. It is the National Institution responsible for Control of Livestock Diseases, Livestock Research, Animal Breeding, Training of trainers in animal husbandry, preparation of project proposals for developing the industry and implementing special development programs covering the whole island. The Department also implements a range of statutes to regulate important aspects of the livestock industry and provide technical expertise to the Provincial Departments of Animal Production and Health.

The Provincial DAPH which comes under the administration of the different provincial councils of the country are responsible for carrying out programs relevant to their area of operation in addition to implementing the national programs on animal health, animal breeding and human resource development. The delivery of field level services is carried out by the provincial DAPH which has a network of 226 veterinary offices assisted by around 600 middle level technicians.

The most important function of the DAPH is the Surveillance / Control of scheduled and emerging animal diseases of economic importance by implementing suitable strategies and eradication programs which is carried out by the Division of Animal Health. The regional level disease diagnosis and surveillance is done by the Veterinary Investigation Officers located at Welisara, Pannala, Matara, Polonnaruwa, Jaffna and Badulla. Action is being taken to establish investigation centres in each district within the next 3 years. These officers are equipped with the required chemicals, materials and test kits to diagnose Avian Influenza (AI) at field level.

The Veterinary Research Institute which functions under the DAPH is responsible in planning and implementing of research programs and provide technical products and specialized services that is required for diagnosis and confirmation of AI.

The Animal Quarantine service is responsible for strict vigilance at the ports of entry to prevent the introduction of the disease from imports. The Regulatory unit of the DAPH carry out the statutory aspects of imports and exports and regular monitoring of hatcheries for maintaining standards of bio-security.

The Human Resource Development Division is responsible for updating the knowledge of technical personnel involved in AI surveillance and diagnosis program, conducting awareness programs for stakeholders in the poultry sector and dissemination of correct information for the media and the general public.

### **Other institutions involved in providing the veterinary service;**

The veterinarians in state institutions namely, Local Government Veterinary Service, Department of Wild Life Conservation, National Zoological Gardens, National Livestock Development Board, Faculty of Veterinary Medicine and Animal Science and the veterinarians engaged in operating Private clinics are also involved in the network providing the veterinary service in the country.

1. A Private Veterinary structure consisting of Farm Veterinary Surgeons & Clinicians
2. Local Government Veterinary Structure.
3. Wild Life Department
4. Faculty of Veterinary Medicine

1. The Veterinary Surgeons employed in Private Farms though small in number constitute an important section of this service by being stationed in intensively managed farms and have better experience in relevance to their operational activities.

There are 42 Veterinary Surgeons employed in Poultry Farms and 18 Veterinary Surgeons are employed in Pharmaceutical companies dealing with poultry drugs. The private clinicians ( About 120 in the whole country )) too have a significant role in the provision of services.

- 2 We have a small (12) but a very active group of Veterinary Surgeons who are involved in food hygiene ,Zoonotic control ,an meat hygiene and in contact with live bird markets and poultry movements employed in the Local government sector.
- 3 Wild Life Veterinary Surgeons ( 3) though small in number could give us valuable information about migratory birds and wild bird/ animal disease occurrences.
- 4 The Academic Staff (52) and the Undergraduates (300) in the faculty of Veterinary Science could play an important role in Surveillance and in general control activities in time of an outbreak.

Ref. Annexure II & III

### **3.2 Private Sector**

With the rapid development of Poultry Industry in the country, following the global trends, the role of the State Sector in poultry development has also been changed. Prior to 1980, a major share of the poultry breeding, feed production and the provision of poultry health and extension services have been accomplished by the State. This role has gradually been taken over by the Private Sector while the government programs shifted towards performing legal activities and quality control.

The industry at present has several segments namely breeding sector, feed manufacturing, commercial farms, processing, input supply, marketing and other services. Like many other countries, integration has taken place in the industry and some companies are engaged in multiple activities such as breeding, feed manufacturing, processing, marketing etc.

These companies have employed their own Veterinarians and they are engaged in providing poultry health, advisory and diagnostic services to their customers/ farmers. The involvement of company veterinarians in the broiler sector is comparatively higher than that of the State sector, due to rapid expansion and integration in this segment.

Currently there are 42 Veterinarians who are employed by the private poultry establishments/companies to deal with poultry health, production and advisory services. Furthermore, there are 18 veterinarians engaged in the pharmaceutical sector who are also catering to the needs of the poultry sector.

## 4. Policy

### 4.1 Policy on Highly Pathogenic Avian Influenza:

According to the World Organisation for Animal Health (OIE), Highly Pathogenic Avian Influenza (HPAI) is a notifiable disease highly lethal to poultry and has the potential to infect humans. An outbreak of HPAI in poultry if not contained would cause severe production losses with massive economic losses in the poultry industry.

The Department of Animal Production and Health (DAPH) and the Poultry Industry Groups have endorsed that if HPAI gain entry to Sri Lanka the policy is to eradicate the disease in the shortest possible time, limiting the risk of human infection and minimising economic impact, by implementing the following strategies:

- *stamping out* by destruction of all birds on infected premises (IPs) where there is clinical disease or evidence of active infection with HPAI virus, and the sanitary disposal of destroyed poultry and contaminated poultry products to remove the source of infection;
- possible *pre-emptive slaughter* of birds on other premises, depending on information derived from the tracing, surveillance and study of the behaviour of the disease;
- *quarantine and movement controls* on poultry, poultry products and associated items in declared areas to prevent spread of infection;
- *decontamination* of facilities, products and associated items to eliminate the virus on IPs and to prevent spread in declared areas;
- *tracing and surveillance* to determine the source and extent of infection and to establish proof of freedom from the disease;
- *increased biosecurity* at poultry establishments;
- *a public awareness campaign* to promote cooperation from industry and the community; and
- **protection of public health, by requiring that personnel engaged in eradication activities be vaccinated (with the currently available human vaccine), treated with antivirals (if appropriate) and wear protective clothing.**

Under the Emergency Animal Disease Response to come to an agreement with the industry groups for cost sharing, **80% of the cost will be shared by government and 20% by industry;**

### 4.2 Strategy for eradication of outbreaks of HPAI

The objective is to implement disease control strategies that will eradicate the disease from domestic birds and re-establish Sri Lanka's HPAI-free status in the shortest possible time. Stamping out is the most acceptable and effective control method for eradication, and needs to be accompanied by strict quarantine and control measures, decontamination of infectious material on IPs, targeted tracing and surveillance, and

enhanced biosecurity by all levels of the poultry production and processing industries. Because of concerns about human health, the World Health Organization (WHO) has recommended that all HPAI outbreaks be promptly stamped out (WHO 2004b; see Section 2.1).

The strategies for an effective and efficient eradication program for HPAI will be:

- quarantine and movement controls on infected and suspect birds;
- stamping out of infected flocks and decontamination of IPs;
- comprehensive, integrated local and national surveillance and diagnostic programs;
- improved biosecurity by all levels of the poultry production and processing industry and government agencies; and
- effective information flow to the industry about the means for AI control, the importance of surveillance and the control strategies being undertaken.

It will be necessary to ensure regular and ongoing liaison with industry, poultry owners and farm managers to seek their involvement, cooperation and support for eradication, particularly with regard to stamping out, disposal, decontamination and improved biosecurity. Industry involvement with the media will also be needed to ensure informed reporting, and with the public to provide information and clear explanations.

#### **4.2.1 Stamping out and pre-emptive slaughter**

All birds on IPs will be subject to stamping out if there is clinical disease or evidence of active HPAI virus infection. Decisions on the destruction of birds on premises at high risk (because of their location or management) and dangerous contact premises will be based on the information that becomes available from the tracing, surveillance and pathotyping of viruses.

The important first steps to control the spread of infection will be to define the boundaries of infection and place restrictions in that area to slow the spread of infection and prevent it getting out of the defined infected area. Pre-emptive slaughter of birds on close-contact poultry premises can be undertaken to control infection spread in the infected area if the infection is spreading rapidly and there are resources available to destroy and safely dispose of the poultry and carry out decontamination. Where shed design and other factors allow, poultry may be destroyed by gassing in modified truck trays or sheds

People engaged in eradication activities should be protected from infection and should have Personnel Protective Equipment (PPE, Annexure V)

#### **4.2.2 Quarantine and movement controls**

A national standstill for containment of AI infections is not adopted, since it would have a severe negative effect on the operations of the poultry industry and on the welfare of poultry.

IP and a 3 Km radius around IP will be declared as the Restricted Area (RA) will be subjected to strict quarantine, and movement controls on items as outlined as risk material. Movements of manure and litter off these premises will be prohibited. Equipment (egg boxes/crates, live bird crates etc) and eggs (table and fertile) may need to be destroyed on site. Movements of people and vehicles will be controlled, and personal and vehicle decontamination will be required before leaving the premises. The access of wild birds to sheds and water supplies will be restricted. Farmers will be advised to prevent other species of birds entering the premises. Pets will be confined.

RAs will be subjected to strict movement controls during investigations into the status of the premises and during the OIE-prescribed incubation period of 21 days. These restrictions will ease as the situation is better defined. It is important that restrictions on declared premises be eased as soon as circumstances permit.

There will be a declaration of two major disease control areas:

- a restricted area (RA) with a radius of 3 km around all IPs. More than one RA may be declared; and
- a control area (CA) encapsulating each RA, with a boundary no closer to the RA boundary than 7 km, to form a buffer between the infected and free areas — this will help contain the disease within the RA, will have its own level of restrictions.

The initial boundary of the CA may correspond with the district or other geopolitical border, but the boundary will be amended on the basis of epidemiological evidence obtained over time to allow as much commercial activity as possible, in line with accepted disease control measures.

Movement controls should not hinder the movements of the general public unless human infection with the outbreak virus is occurring. Quarantine arrangements for humans will need to be agreed with health authorities.

Industry support for the eradication program through strict biosecurity measures on poultry farms will be vital.

#### **Zoning**

To meet international trading requirements, zoning could be introduced as soon as possible after the epidemiological investigations have been completed and the extent and severity of the disease have been determined. Zoning requirements must be

adequate to meet international standards and OIE guidelines in Chapter. Zoning would be established to ensure earlier access to international markets from free zones. Zones may be established on the basis of geographic areas, enterprises, infection status. Potential free zones are those areas outside CAs. To achieve free zone status, serosurveillance to prove freedom within the zone would be required.

If an outbreak of a HPAI virus is rapidly spreading, establishing RAs and CAs containing all IPs as soon as possible will allow rapid investigation of the extent of infection and the later application of zoning. It is important that the extent declared infected areas be limited to as small an area as necessary to cover the likely extent of infection. The relevant factors for establishing zones are as follows:

- Limits should be set on the basis of natural, artificial or legal boundaries.
- Documentation should be prepared using the guidelines defined by the OIE Scientific Commission for Animal Diseases, taking account of any specific matters in the relevant OIE Terrestrial Code chapter for HPAI (see Annexure IV).
- Information establishing the claimed status for the zone should be available for scrutiny.
- The country's capacity to maintain the status of free zones should be documented, and records of the surveillance that supports continuing freedom from infection should be maintained.
- A request should be made to the relevant trading partners for recognition of the free zone(s).
- For industry's operational purposes, each zone should be self-sufficient in poultry operations, including slaughtering.

An application for zoning of the country will require rigorous surveillance for the disease agent and the imposition of controls on the movement of poultry and poultry products between the infected and free zones. All the restrictions associated with zoning need to be acceptable to the poultry industry.

#### **4.2.3 Treatment of HPAI infected birds**

The treatment of infected birds will not be permitted.

#### **4.2.4 Tracing and surveillance**

Tracing and surveillance will be conducted to determine the source and extent of infection and to establish proof of freedom from the disease.

Because of the large number of movements of birds, products and service providers in the industry, the task of tracing will be time consuming. It must begin as soon as possible after HPAI is suspected. Movements of birds, products, people, vehicles and

materials, to and from the suspected premises, will be traced for at least 21 days before the first signs of disease, and until full quarantine is imposed on the IP. The original source of the virus should be traced, as it could remain a source for more outbreaks.

Surveillance will be undertaken on those premises considered at risk, and include inspections of birds, follow-up of reports of sick birds, examination of flock records, postmortem and laboratory examination of dead birds, and serological testing of flocks.

Serological or virus detection surveys of birds may be conducted on at-risk and other premises to find the extent of the infection. Backyard poultry may be included in the surveys, although the main means of controlling the disease and gaining knowledge of its spread will be by defining the extent of infection in the commercial poultry flock. Proof of freedom from HPAI can best be achieved by clinical observations and sampling of dead birds in repopulated sheds and in possible disease outbreaks, rather than by widespread biological testing.

Thorough monitoring will be needed to ensure the early detection of AI infection in mammalian species, especially pigs. Any pigs on IPs and in the RA need to be monitored for infection, including collection of samples for virus isolation and serology. Commercial poultry industry is responsible for omniqué contact between wild birds and poultry.

People engaged in tracing and surveillance should be protected from infection and wear PPE.

#### **4.2.5 Decontamination**

As AI virus is relatively stable in faeces and litter, buildings, equipment, vehicles, manure and litter on Ips must all be cleaned and disinfected, or destroyed. People should undergo personal decontamination procedures. Other premises will be decontaminated as considered necessary. All items to be disinfected must be thoroughly cleaned before disinfection.

Decontamination should include standard insect vector and rodent control to minimize mechanical spread of the agent to nearby premises.

People engaged in decontamination activities should be protected from infection by using PPE.

#### **4.2.6 Public health implications**

Personnel engaged in eradication activities may be vaccinated as advised by the Ministry of Health, treated with antivirals (if appropriate) and be protected from infection by wearing protective clothing. Face masks or other equipment preventing eye splash should be worn at all times when near birds.

#### **4.2.7 Public awareness and media**

Media releases prepared should conform with DAPH recommendations and have a fact sheet on HPAI attached. The initial media communiqué confirming HPAI needs to be issued by the DG/AP&H.

#### **4.2.8 Overall policy for emergency avian influenza classified as LPAI**

Avian influenza (AI) caused by a strain of avian influenza virus that is of H5 or H7 subtype, that produces mild or no clinical disease in poultry and could mutate to highly pathogenic avian influenza (HPAI) and cause significant disease problems in the poultry industry.

The LPAI has not yet been reported in Sri Lanka. However the policy is to carry out research studies on its prevalence.

### **4.3 Funding and compensation**

Funds required to implement the Emergency Response will be provided from the government of Sri Lanka and International Organizations.

It is proposed that small scale poultry farmers to be paid 100% compensation and assist in repopulation after eradicating the disease.

For the commercial industry groups, the government will pay a certain proportion of the losses and this has to be agreed by the authorities.

## 5. Surveillance Programme

### Highly Pathogenic Avian Influenza (HPAI) Surveillance Program:

#### Objectives of Surveillance:

- Detect clinical disease and infection
- Understand the disease condition and control AI
- Help define and control risks to public health
- Monitor antigenic drift
- Help understand the evolution of AI viruses
- Maintain the viability of poultry production
- Demonstrate freedom from disease and infection in order to facilitate trade

HPAI clinical disease with H5N1 virus is thought to be the “visible tip of an iceberg of infection”. As such it is important that surveillance program is in place for early detection of disease in the country.

Surveillance strategies must be refined to meet the priorities of the country and in this program the standardized, minimum requirements for HPAI surveillance and diagnosis developed by the FAO consultants has been followed. This is known as the “Guiding Principles for HPAI surveillance and Diagnostic networks in Asia”

H5N1 Avian Influenza viruses have been present in Asia for several years, but there is no evidence at present that the emergence of Highly Pathogenic subtypes from Low pathogenic Avian Influenza is the key to the epidemiology of H5N1 in Asia. It appears that farmed ducks and other waterfowls play a significant role in HPAI epidemiology.

#### Guiding Principles:

- Surveillance and Control Strategies must be adjusted by considering the different levels of **biosecurity** in farming sectors and the different levels of challenge.
- Poultry production sectors can be described according to production and marketing systems. These sectors are a continuum, with multiple overlapping production systems and biosecurity issues.

#### Poultry Production Sector 1:

- Industrial integrated system
- high level biosecurity
- birds/products marketed commercially

#### Poultry Production Sector 2:

- Commercial non-integrated poultry production system
- Moderate to high biosecurity
- Birds and products marketed commercially

### **Poultry Production Sector 3:**

- Commercial poultry production system
- Minimum biosecurity
- Marketing via live bird markets

### **Poultry Production Sector 4:**

- Village or backyard production
- No biosecurity
- Informal marketing

It is important to have detail information on the above sectors in the country. A survey need to be undertaken initially to obtain exact information on the poultry production sectors in Sri Lanka to develop a meaningful, output orientated Surveillance Program for HPAI.

### **Requirements for effective surveillance:**

- ✓ Legal Authority should be in place and HPAI should be made “Notifiable”
- ✓ There should be a Veterinary system for detecting and investigating outbreaks of disease.
- ✓ Capability to diagnose HPAI.
- ✓ Disease Reporting System in place.

### **Surveillance Methods:**

Surveillance comprises of two methods.

1. Active – based on specific targeted investigation of population at risk for evidence of infection by antibody detection or antigen detection.
2. Passive

### **Minimum Requirements For Detection of Disease:**

**Food/water consumption** and **mortality** are considered to be the recommended “trigger points”. These criteria that would trigger a disease investigation by veterinarians are “unusual circumstances” in “normal” poultry production in the four production sectors identified earlier. These normal or expected fluctuations for food/water consumption and mortality vary from country to country and also according to the production sectors.

Thus we should identify the values that are valid to our country and production system in consultation with the industry and poultry production specialists. This validation could be done by means of consultations or small surveys.

**Trigger Points for chicken in production sectors indicated in OIE Guidelines:**

<i>Sector</i>	<i>Trigger Points for chicken</i>
<b><i>Production Sector 1</i></b>	<b><i>Food and Water intake reduced by 20% for one day or mortality of 1% for 2 days</i></b>
<b><i>Production Sector 2</i></b>	<b><i>Daily mortality of 1% for 2 days</i></b>
<b><i>Production Sector 3</i></b>	<b><i>Daily mortality of 1% for 2 days</i></b>
<b><i>Production Sector 4</i></b>	<b><i>Daily mortality of 5% for 2 days</i></b>

- ❖ *If these trigger points are exceeded, veterinarians should undertake field investigation.*
- ❖ *Following Data should be collected and analyzed.*
  - *Population Data – Population at risk of infection with HPAI needs to be defined. Chickens, ducks and other avian species on farms as well as pigs.  
(Validation of data using surveys – Regular Research Activity)*
  - *Avian Livestock Population Dynamics – Information on typical birth and mortality rates in relevant avian species should be obtained by review of existing literature, including reports of projects conducted in the region or through targeted studies.*
  - *Disease Data – Collection of data on disease frequency as part of the screening and confirmatory laboratory diagnostic activities. Geographical location of any such events has to be recorded. Minimum data fields required are in Table 1.*
  - *Movement Data – Dynamics of AI infection is influenced strongly by movements of birds and people. Surveys at bird market will provide useful information on spatial coverage of surveillance activities.*
  - *Risk Factor and other Data – Listed in Table 2. Information should be geographically referenced in animal health information system.*

***HPAI has never been reported in Sri Lanka thus we should follow the OIE Guidelines on SURVEILLANCE IN UNINFECTED COUNTRIES.***

**District Border Areas**

***Sri Lanka being an Island does not have land borders with any other country. However we could use these guidelines stipulated for Border Areas to detect infection in different districts in the country.***

- ***Inspection of transport vehicles carrying poultry for dead or sick birds.***  
If dead birds detected, collect cloacal swab for virus isolation
- ***Surveillance of live bird markets in each district. Collect samples from dead birds either weekly or monthly: all dead birds in one week or if mortality is 50% above normal, 'Cage swabs' collected from selected markets once a month. To enhance the probability of isolating a virus, dirty cages or housings mixed species of poultry (waterfowls) should be included.***  
***Sufficient number of samples should be collected to give 95% probability of detecting infection if virus is present in 2% of samples. Five to ten samples pooled.***
- ***Surveillance in slaughter houses.***

- *Targeted surveillance on selected farms in Production Sector 3 and 4, especially those near roads and wetlands.*

Ducks (Domestic Waterfowl)

- *Serological screening test on ducks (domestic waterfowls) with no evidence of infection to assess whether birds have been exposed to H5 virus. Statistical table should be used to derive the sample size.*

**Individual farms need to be tested at a level to give 95% probability of detecting at least one seropositive bird if infection is present above 20%.  
[14 samples for flocks of 500 birds]**

- *If seropositive, Virus isolation on cloacal swabs should be attempted.  
[Pools of 5 swabs per sample bottle to give 95% probability of detecting at least one virus positive bird if 2% of ducks are excreting virus.  
100 swabs for flocks of 500 birds]*
- *Seronegative sentinel ducks could be introduced to the farm and cloacal Swabs collected twice weekly for three weeks.*

Dead wild birds

- *Unusual mortalities in wild birds can provide an early indication of HPAI Infection.*
- *Cloacal swabs should be collected as above.*

*ACTION PLAN*

<i>Activity</i>	<i>Action to be taken</i>	<i>Time frame</i>	<i>Responsibility</i>
<i>Information on existing poultry production sectors in the country</i>	<i>Survey</i>		
<i>Validation of Trigger Points according to local standards</i>	<i>Survey Consultations</i>		
<i>Field investigations</i>			
<i>Data collection</i>			
<i>Surveillance at district border areas</i>	<i>Transport vehicle Live bird markets Slaughter houses Selected farms in Sector 3 &amp; 4</i>		
<i>Surveillance at Domestic waterfowl farms</i>	<i>Serology</i>		
<i>Investigation of wild bird deaths</i>	<i>Cloacal swabs for virus isolation</i>		
<i>Imported pet birds &amp; Exotic birds</i>	<i>Cloacal swab for virus isolation</i>		

Action plan need to be expanded further in consultation with all the stakeholders

Table 1: Minimum data collection requirements in a disease investigation

<i>Item</i>	<i>Content</i>
<b>General</b>	<i>Type of observation: initial/followup</i> <i>Date of observation</i> <i>Date of reporting</i> <i>Name of entry officer</i> <i>Reporting officer/institution</i> <i>Sensitivity: high/low</i> <i>Source of information</i> <i>Reference</i> <i>Date of first case</i> <i>Date of end of outbreak</i> <i>Public and private comments</i>
<b>Locality (with coordinates)</b>	<i>Province</i> <i>District</i> <i>Veterinary Range</i> <i>Village</i> <i>Farm</i> <i>Farming System</i>
<b>Animals affected</b>	<i>Species</i> <i>Number of cases/deaths/at risk/examined</i> <i>Age/sex</i> <i>Vaccine used</i>
<b>Clinical signs and lesions</b>	<i>Species/signs</i> <i>Species/lesions</i>
<b>Samples</b>	<i>Species</i> <i>Sample type</i> <i>Sample identification</i> <i>Type of test</i> <i>Date of sample sent</i> <i>Date results received</i> <i>Laboratory results</i> <i>Comments</i>
<b>Diagnosis</b>	<i>Tentative diagnosis (differential diagnosis)</i> <i>Final diagnosis (diagnosing officer and date of diagnosis)</i>
<b>Epidemiology</b>	<i>Source</i> <i>Comments</i>
<b>Actions and treatment</b>	<i>List of actions (destruction, quarantine, stamping-out) and number</i> <i>List of treatments and number</i> <i>[trace-back and trace-forward activities]</i>
<b>Validation</b>	<i>Validation date of initial data entry and date last modified</i>

Table 2: Risk factors and other data

<i>Data Category</i>	<i>Data</i>	<i>Comments</i>
<b><i>General</i></b>	<i>Surface water</i> <i>Road network</i> <i>Populated places</i> <i>Administrative boundaries</i>	<i>Rivers and lakes</i> <i>Major roads</i>  <i>Smallest level possible</i>
<b><i>Agriculture and Disease</i></b>	<i>Land use</i> <i>Farming system</i> <i>Husbandry systems</i> <i>Market locations</i> <i>Slaughterhouse location</i> <i>Poultry species density</i>	
<b><i>Natural environment</i></b>	<i>Rainfall, temperature,</i> <i>Humidity</i> <i>Elevation</i> <i>Vegetation</i> <i>Wild birds</i>	
<b><i>Human population</i></b>	<i>Socioeconomic data</i> <i>Festivals</i> <i>Cultural factors</i>	<i>Consumer habits</i>

## **6. Prevention and Control/Eradication Plan**

Sri Lanka is free of HPAI at present and it is essential to maintain this Disease free status by taking appropriate measures in order to prevent the introduction of the disease into the country.

### **6.1 Preventive Programme**

The major risk factors associated with the possible introduction of HPAI has been identified as Importation of live birds and poultry products etc. and the entry of migratory birds into the country. Farmers are alerted on the risks associated with migratory birds.

#### **6.1.1 Import Control**

Since 2003, DAPH has taken initiatives to control the import of live birds and poultry products from affected countries. Currently the imports have been temporarily restricted.

#### **6.1.2 Pro active Surveillance**

The DAPH has already initiated active surveillance in ' hot spots' where migratory birds have habitats in water reservoirs. This has also been extended to identified areas to accommodate commercial poultry too. (Ref. Annexure No.VI)

#### **6.1.3 Awareness Programmes**

Since the Asian outbreaks of HPAI and the increased risk of introduction to our country, the DAPH together with other Poultry interested Organisations have conducted awareness programmes such as training, press release, printed materials etc. to poultry farmers, Veterinarians and other stake holders. There have been joined programmes with Health department too. This programme is conducted continuously.

#### **6.1.4 Pre Planned Alertness**

The stake holders have been alerted and the Teams have been constituted to carry out specific functions such as Investigation (District Emergency Team) Diagnosis (VRI and VICC), Depopulation and Disposal (Depopulation and Disposal Team}etc. (Ref. Annexure Nos.VIII and IX A&B )

### **6.2 Control /Eradication**

#### **6.2.1 Early Detection and Reporting**

Poultry breeders in the event of the disease being suspected in a farm, should report it immediately to the Government Veterinary Surgeon, who in turn (after a preliminary investigation) would inform the DET, PD and D/AH. (Annexure –Structure of DAPH ,Reporting Formats )

### **6.2.2 Field Investigation and Diagnosis**

Disease investigation in the farm will be conducted by the DET , samples collected and sent through to VIC/VRI for testing.

### **6.2.3 Legislative Declaration, Quarantine and Movement Control**

If the diagnostic tests are found to be positive for HPAI , RA declared by DG/D/AH ,DS and quarantine measures are implemented in the RA. A press release by DG.

### **6.2.4 Depopulation , Disposal and Decontamination**

If the tests are found to be positive , the Depopulation Team moves into the RA and carries out the Depopulation. Birds are killed using carbon dioxide and carcasses are incinerated/ buried in the affected farm premises itself. Decontamination according to recommended methods and using suggested detergents.

(Ref. Annexure No.X A&B)

### **6.2.5 Post Outbreak Surveillance**

Serosurveillance in control area to detect any residual foci of infection and necessary follow up.

## **6.3 Resumption of Disease free Status**

### **6.3.1 Restocking**

Restocking in RA after 45 days and surveillance for any sign of reoccurrence of the disease. Use of Sentinels ?

### **6.3.2 Active Sero Surveillance.**

Serosurveillance in RA continuously for 12 months to determine the disease status.

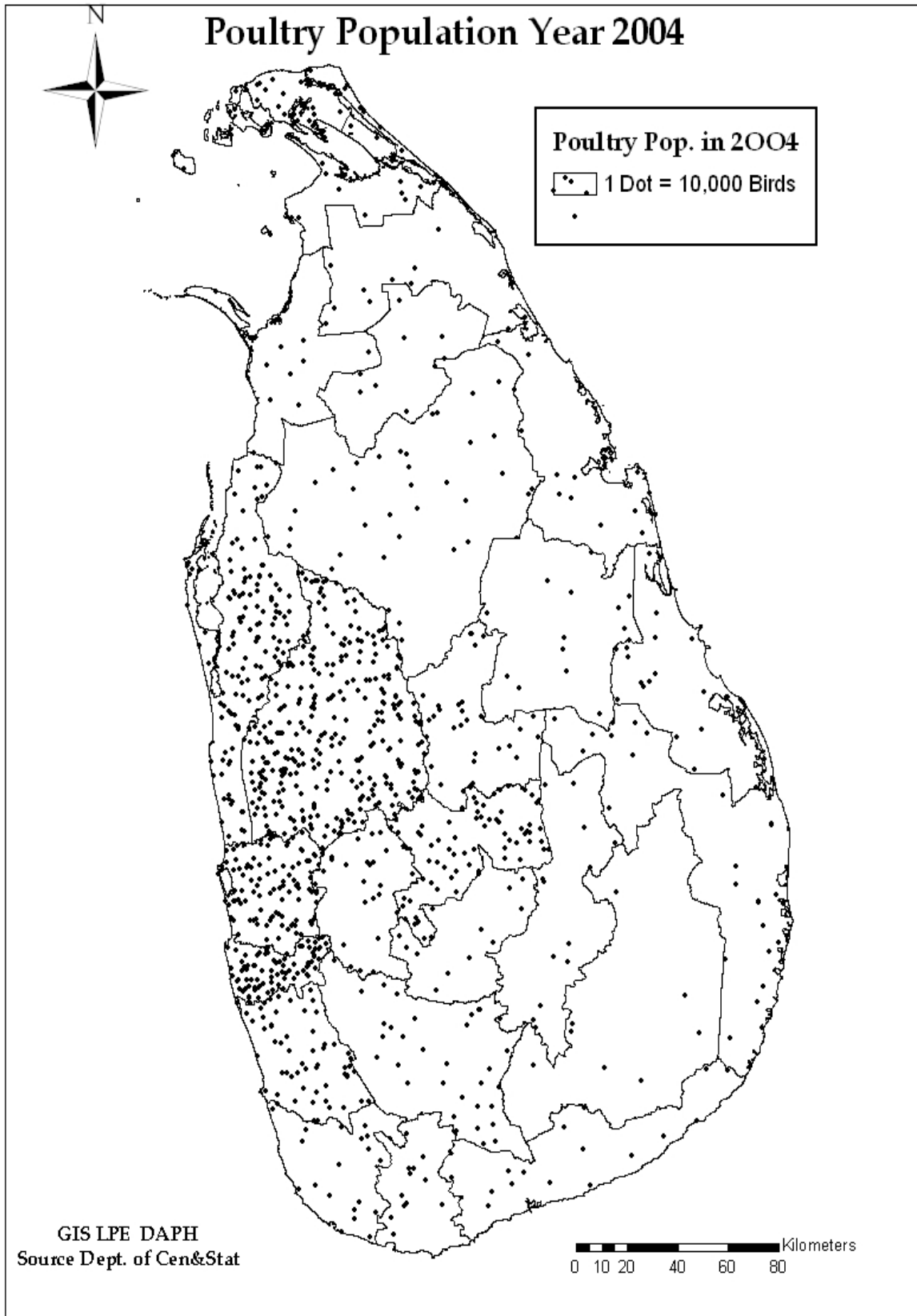
### **6.3.3 Declaration of Freedom from Disease**

Declaration of Disease Free Status after 90 days on non occurrence of disease.

## **8. Costing**

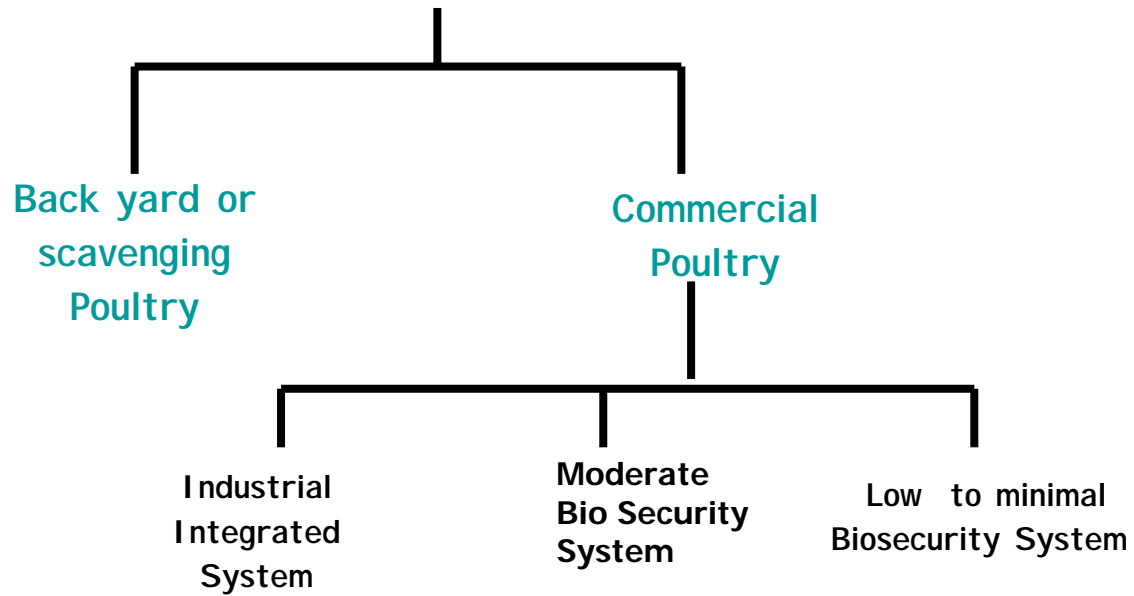
**Please See Annexure XII**

# Annexure IA : Distribution Pattern of Poultry Population



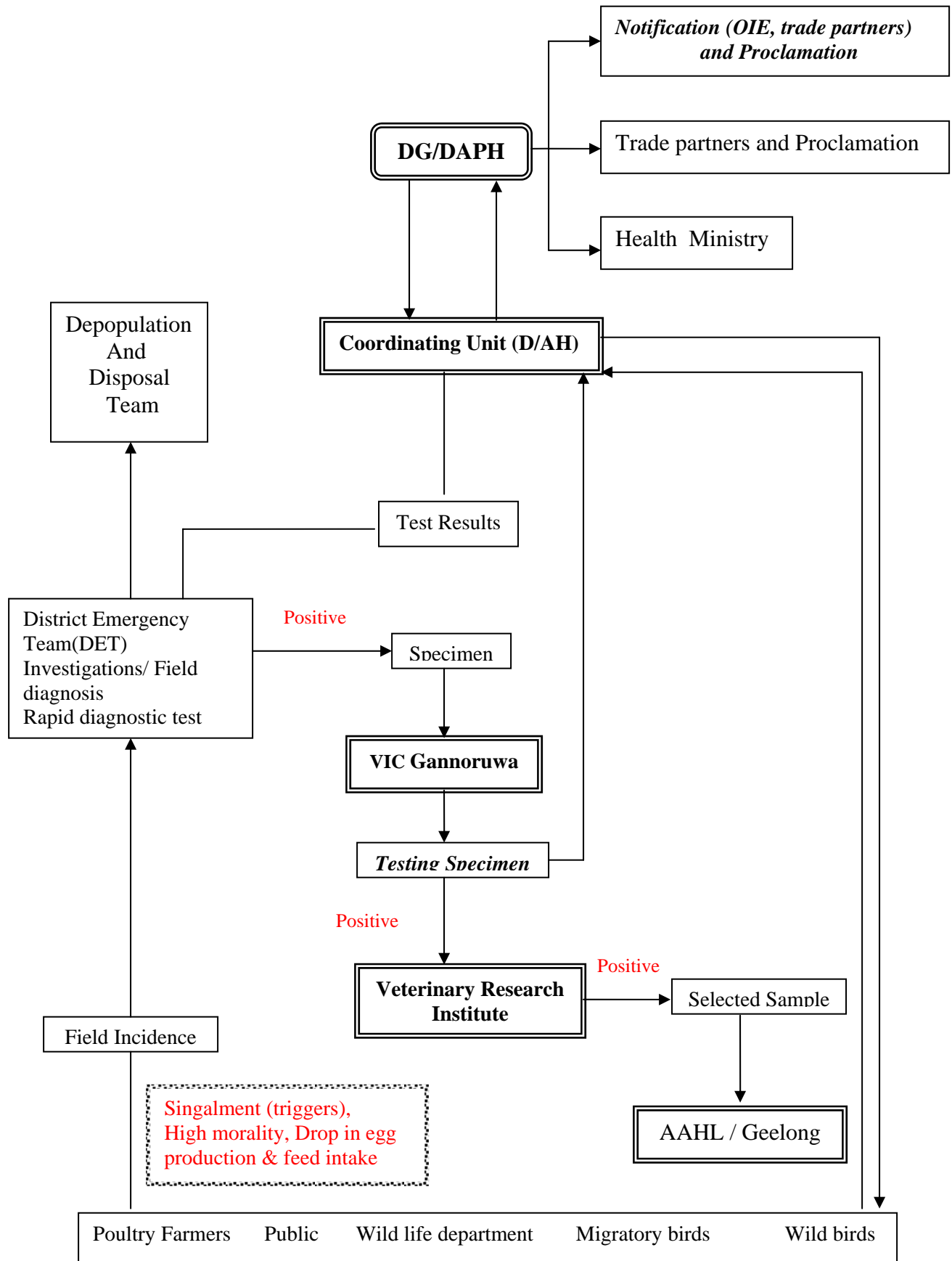
**Annexure I B :**

## **Poultry Rearing Systems in Sri Lanka**



## **Annexure II: Organogram of the Veterinary Service In Sri Lanka**

### Annexure III: Flow chart – HPAI diagnosis and reporting network



## Annexure IV : OIE Terrestrial Code

### CHAPTER 2.7.12.

#### AVIAN INFLUENZA

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##### Article 2.7.12.1.

1. For the purposes of this *Terrestrial Code*, avian influenza in its notifiable form (NAI) is defined as an infection of poultry caused by any influenza A virus of the H5 or H7 subtypes or by any AI virus with an intravenous pathogenicity index (IVPI) greater than 1.2 (or as an alternative at least 75% mortality) as described below. NAI viruses can be divided into highly pathogenic notifiable avian influenza (HPNAI) and low pathogenicity notifiable avian influenza (LPNAI):
  - a. HPNAI viruses have an IVPI in 6-week-old chickens greater than 1.2 or, as an alternative, cause at least 75% mortality in 4-to 8-week-old chickens infected intravenously. H5 and H7 viruses which do not have an IVPI of greater than 1.2 or cause less than 75% mortality in an intravenous lethality test should be sequenced to determine whether multiple basic amino acids are present at the cleavage site of the haemagglutinin molecule (HA0); if the amino acid motif is similar to that observed for other HPNAI isolates, the isolate being tested should be considered as HPNAI;
  - b. LPNAI are all influenza A viruses of H5 and H7 subtype that are not HPNAI viruses.
2. Poultry is defined as 'all birds reared or kept in captivity for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds'.
3. For the purposes of *international trade*, this Chapter deals not only with the occurrence of clinical signs caused by NAI virus, but also with the presence of infection with NAI virus in the absence of clinical signs.
4. The following defines the occurrence of infection with NAI virus:
  - a. HPNAI virus has been isolated and identified as such or viral RNA specific for HPNAI has been detected in poultry or a product derived from poultry; or
  - b. LPNAI virus has been isolated and identified as such or viral RNA specific for LPNAI has been detected in poultry or a product derived from poultry; or
  - c. antibodies to H5 or H7 subtype of NAI virus that are not a consequence of vaccination have been detected in poultry. In the case of isolated serological positive results, NAI infection may be ruled out on the basis of a thorough epidemiological investigation that does not demonstrate further evidence of NAI infection.

For the purposes of the *Terrestrial Code*, 'NAI free establishment' means an *establishment* in which the poultry have shown no evidence of NAI infection, based on surveillance in accordance with Appendix 3.8.9.

For the purposes of the *Terrestrial Code*, the *incubation period* for NAI shall be 21 days.

Standards for diagnostic tests, including pathogenicity testing, are described in the *Terrestrial Manual*. Any vaccine used should comply with the standards described in the *Terrestrial Manual*.

#### Article 2.7.12.2.

The NAI status of a country, a zone or a compartment can be determined on the basis of the following criteria:

1. the outcome of a risk assessment identifying all potential factors for NAI occurrence and their historic perspective;
2. NAI is notifiable in the whole country, an on-going NAI awareness programme is in place, and all notified suspect occurrences of NAI are subjected to field and, where applicable, laboratory investigations;
3. appropriate surveillance is in place to demonstrate the presence of infection in the absence of clinical signs in poultry, and the risk posed by birds other than poultry; this may be achieved through an NAI surveillance programme in accordance with Appendix 3.8.9.

#### Article 2.7.12.3.

##### **NAI free country, zone or compartment**

A country, zone or compartment may be considered free from NAI when it has been shown that neither HPNAI nor LPNAI infection has been present in the country, zone or compartment for the past 12 months, based on surveillance in accordance with Appendix 3.8.9. The surveillance may need to be adapted to parts of the country or existing zones or compartments depending on historical or geographical factors, industry structure, population data, or proximity to recent outbreaks.

If infection has occurred in a previously free country, zone or compartment, free status can be regained:

1. In the case of HPNAI infections, 3 months after a stamping-out policy (including disinfection of all affected establishments) is applied, providing that surveillance in accordance with Appendix 3.8.9 has been carried out during that three-month period.
2. In the case of LPNAI infections, poultry may be kept for slaughter for human consumption subject to specified conditions or a stamping-out policy applied; in either case, 3 months after the disinfection of all affected establishments, providing that surveillance in accordance with Appendix 3.8.9 has been carried out during that three-month period.

#### Article 2.7.12.4.

##### **HPNAI free country, zone or compartment**

A country, zone or compartment may be considered free from HPNAI when it has been shown that HPNAI infection has not been present in the country, zone or compartment for the past 12 months, although its LPNAI status may be unknown, when, based on surveillance in accordance with Appendix 3.8.9, it does not meet the criteria for freedom from NAI but any NAI virus detected has not been identified as HPNAI virus. The surveillance may need to be adapted to parts of the country or zones or compartments depending on historical or geographical factors, industry structure, population data, or proximity to recent outbreaks.

If infection has occurred in a previously free country, zone or compartment, free status can be regained 3 months after a stamping-out policy (including disinfection of all affected establishments) is applied, providing that surveillance in accordance with Appendix 3.8.9 has been carried out during that three-month period.

Article 2.7.12.5.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for live poultry (other than day-old poultry)

the presentation of an international veterinary certificate attesting that:

1. the poultry showed no clinical sign of NAI on the day of shipment;
2. the poultry were kept in an NAI free country, zone or compartment since they were hatched or for the past 21 days;
3. the required surveillance has been carried out on the establishment within the past 21 days.

Information concerning the vaccination status of the poultry (including the dates of vaccination and the vaccine used) should be included in the veterinary certificate.

Article 2.7.12.6.

Regardless of the NAI status of the country, zone or compartment of origin, Veterinary Administrations should require:

for live birds other than poultry

the presentation of an international veterinary certificate attesting that the birds:

1. showed no clinical sign of infection with a virus which would be considered NAI in poultry on the day of shipment;
2. were kept in isolation approved by the Veterinary Services since they were hatched or for the 21 days prior to shipment and showed no clinical sign of infection with a virus which would be considered NAI in poultry during the isolation period;
3. were subjected to a diagnostic test 7 to 14 days prior to shipment to demonstrate freedom from infection with a virus which would be considered NAI in poultry;
4. are transported in new containers.

Article 2.7.12.7.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for day-old live poultry

the presentation of an international veterinary certificate attesting that the poultry:

1. were kept in an NAI free country, zone or compartment since they were hatched;
2. were derived from parent flocks which had been kept in an NAI free country, zone or compartment for 21 days prior to and at the time of the collection of the eggs.

Information concerning the vaccination status of the poultry and the parent flocks (including the dates of vaccination and the vaccine used) should be included in the veterinary certificate.

Article 2.7.12.8.

When importing from an HPNAI free country, zone or compartment, Veterinary Administrations should require:

for day-old live poultry

the presentation of an international veterinary certificate attesting that the poultry:

1. were kept in an HPNAI free country, zone or compartment since they were hatched;
2. were derived from parent flocks which had been kept in an NAI free establishment for 21 days prior to and at the time of the collection of the eggs;
3. are transported in new containers.

Information concerning the vaccination status of the poultry and the parent flocks (including the dates of vaccination and the vaccine used) should be included in the veterinary certificate.

Article 2.7.12.9.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for hatching eggs

the presentation of an international veterinary certificate attesting that the eggs:

1. came from an NAI free country, zone or compartment;
2. were derived from parent flocks which had been kept in an NAI free country, zone or compartment for 21 days prior to and at the time of the collection of the eggs.

Information concerning the vaccination status of the parent flocks (including the dates of vaccination and the vaccine used) should be included in the veterinary certificate.

Article 2.7.12.10.

When importing from an HPNAI free country, zone or compartment, Veterinary Administrations should require:

for hatching eggs

the presentation of an international veterinary certificate attesting that the eggs:

1. came from an HPNAI free country, zone or compartment;
2. were derived from parent flocks which had been kept in an NAI free establishment for 21 days prior to and at the time of the collection of the eggs;
3. are transported in new packing material.

Information concerning the vaccination status of the parent flocks (including the dates of vaccination and the vaccine used) should be included in the veterinary certificate.

Article 2.7.12.11.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for eggs for human consumption

the presentation of an international veterinary certificate attesting that the eggs come from an NAI free country, zone or compartment.

Article 2.7.12.12.

When importing from an HPNAI free country, zone or compartment, Veterinary Administrations should require:

for eggs for human consumption

the presentation of an international veterinary certificate attesting that the eggs:

1. come from a HPNAI free country, zone or compartment;
2. come from establishments in which there has been no evidence of NAI in the past 21 days;
3. are transported in new packing material.

Article 2.7.12.13.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for egg products

the presentation of an international veterinary certificate attesting that the egg products come from, and were processed in, an NAI free country, zone or compartment.

Article 2.7.12.14.

Regardless of the NAI status of the country, zone or compartment of origin, Veterinary Administrations should require:

for egg products

the presentation of an international veterinary certificate attesting that the egg products:

1. are derived from eggs which meet the requirements of Articles 2.7.12.9., 2.7.12.10., 2.7.12.11. or 2.7.12.12.; or
2. were processed to ensure the destruction of NAI virus (under study), and the necessary precautions were taken after processing to avoid contact of the commodity with any source of NAI virus.

Article 2.7.12.15.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for poultry semen

the presentation of an international veterinary certificate attesting that the donor poultry:

1. showed no clinical sign of NAI on the day of semen collection;
2. were kept in an NAI free country, zone or compartment for the 21 days prior to and at the time of semen collection.

Article 2.7.12.16.

When importing from an HPNAI free country, zone or compartment, Veterinary Administrations should require:

for poultry semen

the presentation of an international veterinary certificate attesting that the donor poultry:

1. came from an HPNAI free country, zone or compartment;
2. were kept in an NAI free establishment for 21 days prior to and at the time of semen collection.

Information concerning the vaccination status of the donor flocks (including the dates of vaccination and the vaccine used) should be included in the veterinary certificate.

Article 2.7.12.17.

Regardless of the NAI status of the country, zone or compartment of origin, Veterinary Administrations should require:

for semen of birds other than poultry

the presentation of an international veterinary certificate attesting that the donor birds:

1. were kept in isolation approved by the Veterinary Services for the 21 days prior to semen collection;
2. showed no clinical sign of infection with a virus which would be considered NAI in poultry during the isolation period;
3. were tested between 7 and 14 days prior to semen collection and shown to be free of NAI infection.

Article 2.7.12.18.

When importing from an NAI free country, zone or compartment, Veterinary Administrations should require:

for fresh meat of poultry

the presentation of an international veterinary certificate attesting that the entire consignment of fresh meat comes from birds:

1. which have been kept in an NAI free country, zone or compartment since they were hatched or for the past 21 days;
2. which have been slaughtered in an approved abattoir and have been subjected to ante-mortem and post-mortem inspections for NAI with favourable results.

Article 2.7.12.19.

When importing from an HPNAI free country, zone or compartment, Veterinary Administrations should require:

for fresh meat of poultry

the presentation of an international veterinary certificate attesting that the entire consignment of fresh meat comes from birds:

1. which have been kept in an establishment since they were hatched or for the past 21 days and in which there has been no evidence of NAI in the past 21 days;
2. which have been slaughtered in an approved abattoir and have been subjected to ante-mortem and post-mortem inspections for NAI with favourable results.

Article 2.7.12.20.

Regardless of the NAI status of the country, zone or compartment of origin, Veterinary Administrations should require:

for meat products of poultry

the presentation of an international veterinary certificate attesting that:

1. the commodity is derived from fresh meat which meet the requirements of Articles 2.7.12.18. or 2.7.12.19.; or
2. the commodity has been processed to ensure the destruction of NAI virus (under study);
3. the necessary precautions were taken to avoid contact of the commodity with any source of NAI virus.

Article 2.7.12.21.

Regardless of the NAI status of the country, zone or compartment of origin, Veterinary Administrations should require:

for products of poultry origin intended for use in animal feeding, or for agricultural or industrial use

the presentation of an international veterinary certificate attesting that:

1. these commodities come from birds which have been kept in an NAI free country, zone or compartment since they were hatched or for the past 21 days; or
2. these commodities have been processed to ensure the destruction of NAI virus (under study);
3. the necessary precautions were taken to avoid contact of the commodity with any source of NAI virus.

Article 2.7.12.22.

Regardless of the NAI status of the country, zone or compartment of origin, Veterinary Administrations should require:

for feathers and down (from poultry)

the presentation of an international veterinary certificate attesting that:

1. these commodities come from birds which have been kept in an NAI free country, zone or compartment since they were hatched or for the past 21 days; or
2. these commodities have been processed to ensure the destruction of NAI virus (under study);
3. the necessary precautions were taken to avoid contact of the commodity with any source of NAI virus.

Article 2.7.12.23.

Regardless of the NAI status of the country, zone or compartment, Veterinary Administrations should require for the importation of:

meat or other products from birds other than poultry

the presentation of an international veterinary certificate attesting that:

1. the commodity has been processed to ensure the destruction of NAI virus (under study);
2. the necessary precautions were taken after processing to avoid contact of the commodity with any source of NAI virus.

Contact : [trade.dept@oie.int](mailto:trade.dept@oie.int)

**Annexure V: Personnel Protective Equipment -Emergency Response to  
HPAI-Purchase**

<b>Items</b>	<b>Unit Price</b>	<b>Available - Place</b>
Special Mask	Rs.1400/=	Island wide Scientific (Pvt) Ltd , No. 41, Francis Road, Colombo 10
Eye Protective (Goggles)	Rs.460/=	Science House , No 222/A, D.S.senanayake Veediya, Kandy.
Disposal overalls	Rs.736/=	Technical Supplies Company, LTD. , No. 46/1 .Amrasekara Mawatha. Colombo 5
Caps ( Disposal )	Rs.17/=	
Boots (smooth sole)	Rs.1556/=	
Foot protective shoe covers.	Rs.660/=	
Disposal latex gloves	Rs.270/=	Swarna Trading Industries (pvt) LTD.. No. 6, Kalugala Mawatha, Katugastota

## Annexure VI : Hot Spots of Migratory Birds

District	Place
Mannar	Giant Tank, Mudflats, Lagoons
Puttalam	Puttalam Lagoon, Mundal, Palavi to Kalpitiya
Chilaw	Anavilumdawa Lakes, Katupotha Tank, Chilaw Bay
Colombo	Muthurajawela, Negombo Lagoons, Kelaniya Estuary
Hambantota	Salterns, Bundala Sanctuary, Koholankala
	Lagoons, Mudflats in Yala
	Udawalwe National Park
	Arugam Bay, Kalapuwas, in Pottuvil
Mullaitivu	Lagoons and Mudflats
Jaffna	Lagoons, Mudflats

## Annexure VII: Emergency Team- Check List

S.No	Item	Quantity
1.	Plastic box to carry Items	01
2.	Cool box	01
3.	Ice packs	04
4.	Mobile Phone	01
5.	GPS	01
6.	Emergency Report	04
7.	Detailed Report	10
8.	Form accompanying samples	05
9.	Distinctive signs a. AI infected area b. AI infected building c. AI suspected building d. AI suspected area	02 02 02 02
10.	Writing Pad	01
11.	Labels (large &small)	20 each
12.	Tape	01
13.	Envelop	05
14.	Fencing tape	01
15.	Nails	10
16.	Hammer	01
17.	List of Telephone numbers	01
18.	Torch with spare batteries	01
19.	Disposal Overalls	03 (L, XL,XXL)
20.	Boots(smooth sole)	03 (S,M, L)
21.	Disposal gloves	05
22.	Platic bags (suspicious material)	05
23.	Carcass bags	10
24.	Plastic Bucket	01
25.	Disinfecting soap	01
26.	Disinfectant (Virkon)	1 L
27.	Disinfectant (Citric acid)	1 L (2% Solution)
28.	Hypodermic syringe (1 ml)	10
29.	Needles	15
30.	Scalpel Blade	01
31.	Tweezers (sterile)	01
32.	Scissors (Sterile)	01
33.	Serum tubes	15
34.	Sterile swabs	20
35.	Container with lid (small)	04
36.	Container with lid (large)	04

## Annexure VIII: HPAI - District Emergency Team

District	Name	Post	Station	Tele
Colombo	Dr.(Mrs) S.Wakista Dr.(Mrs) G.R.Rajapakse Mr.W.M.Karunadasa	VS VIO RA	VS Office , Colombo VIC, Welisara VIC, Welisara	011 - 2834603 011 - 2958213 011 - 2958213
Gampaha	Dr.(Mrs) Wickramasooriya Dr.(Mrs) G.R.Rajapakse Mr.W.M.Karunadasa	VS VIO RA	VS Office , Gampaha VIC, Welisara VIC, Welisara	033 - 2288699 011 - 2958213 011 - 2958213
Kalutara	Dr.A.Abeyawickrama Dr.(Mrs) G.R.Rajapakse Mr.W.M.Karunadasa	VS VIO RA	VS Office, Mathugama VIC, Welisara VIC, Welisara	037 - 2223267 037 - 2246829 037 - 2246829
Kurunegala	Dr.N. Tilakaratne Dr.(Ms)L.M.P.Wijemanne Mr.H.M.C.Weerasinghe	DVS VIO RA	DVS Office, Kurunegala VIC, Pannala VIC, Pannala	037 - 2223267 037 - 2246829 037 - 2246829
Puttalam	Dr.W. J.Subasinghe Dr.(Ms)L.M.P.Wijemanne Mr.H.M.C.Weerasinghe	DVS VIO RA	DVS Office, Putlam VIC, Pannala VIC, Pannala	032 - 2251652 037 - 2246829 037 - 2246829
Anuradhapura	Dr.K.M.U.M.Amarasinghe Dr.T.Puvirajan Mr.A.M.D.B. Abeysinghe	DVS VIO RA	DVS Office, Anuradhapura VIC, Polonnaruwa VIC, Polonnaruwa	037 - 2223267 027 - 2222077 027 - 2222077
Polonnaruwa	Dr.(Mrs) T.C.K.Wimalarathne Dr.T.Puvirajan Mr.A.M.D.B. Abeysinghe	DVS VIO RA	DVS Office, Polonnaruwa VIC, Polonnaruwa VIC, Polonnaruwa	027 - 2222434 027 - 2222077 027 - 2222077
Matara	Dr(Ms)S.Ramanayake Dr.(Mrs) S.Hettige Mr.R.Wimalagunaratne	AD VIO RA	AD Office,Matara VIC, Matara VIC, Matara	041 - 2264879 041 - 2222162 041 - 2222162
Hambantota	Dr.(Mrs).K.H.S.Wasanthie Dr.(Mrs) S.Hettige Mr.R.Wimalagunaratne	AD VIO RA	AD Office, Hambantota VIC, Matara VIC, Matara	047 - 2222281 041 - 2222162 041 - 2222162
Galle	Dr.A.Samaraweera Dr.(Mrs) S.Hettige Mr.R.Wimalagunaratne	AD VIO RA	AD Office, Galle VIC, Matara VIC, Matara ctor	091 - 2233713 041 - 2222162 041 - 2222162
Kegalle	Dr.(Mrs) S. Abeyratne Dr.M.Somarathne Mr. Wijithasiri	DCO VS RA	DIC Office, Kegalle VIC, VRI, Gannoruwa VIC, VRI, Gannoruwa	035 - 2223688 081 - 2388312 081 - 2388312
Ratnapura	Dr. Pathirathna Dr.(Mrs) S.Hettige Mr.R. Wimalagunaratne	DCO VIO RA	DIC Office, Ratnapura VIC, Matara VIC, Matara	045 - 2222306 041 - 2222162 041 - 2222162

Kandy	Dr.B.Sivayoganathan Dr.M.Somaratne Mr.Wijithasiri	VS VS RA	VS Office , Yattinuwara VIC, VRI, Gannoruwa VIC, VRI, Gannoruwa	081 - 2575279 081 - 2388312 081 - 2388312
Matale	Dr.D.Wijetunga Dr.M.Somaratne Mr.Wijithasiri	VS VS RA	VS Office , Ukuwela VIC, VRI, Gannoruwa VIC, VRI, Gannoruwa	065 - 2242213 081 - 2388312 081 - 2388312
Nuwara – Eliya	Dr.K.Kulashwarakumar Dr.M.Somaratne Mr.Wijithasiri	VS VS RA	VS Office , Talawakelle VIC, VRI, Gannoruwa VIC, VRI, Gannoruwa	052 - 2258220 081 - 2388312 081 - 2388312
Badulla	Dr.S.K.Weerasundhara Dr.(Mrs) Ramya Samarakoon	VS VIO	VS Office , Passara VIC, Badulla	055 - 2288265 -
Moneragala	Dr.W.K.R.Dhayanandha Dr.(Mrs) Ramya Samarakoon	VS VIO actg	VS Office , Moneragala VIC, Badulla	055 - 2276105 -
Batticaloa	Dr.(Ms) M.Amirthalingham Dr.T.Puvirajan Mr.A.M.D.B. Abeysinghe	AD VIO RA	Asst. Director - Batticaloa VIC, Polonnaruwa VIC, Polonnaruwa	065 - 2222397 027 - 2222077 027 - 2222077
Trincomalee	Dr.T.K.Thavarajan Dr.T.Puvirajan Mr.A.M.D.B. Abeysinghe	DD VIO RA	DD Office, Trincomalee VIC, Polonnaruwa VIC, Polonnaruwa	026 - 2222380 027 - 2222077 027 - 2222077
Ampara	Dr.(Ms) M.Amirthalingham Dr.T.Puvirajan Mr.A.M.D.B. Abeysinghe	AD VIO RA	AD Offic, Batticaloa VIC, Polonnaruwa VIC, Polonnaruwa	065 - 2222397 027 - 2222077 027 - 2222077
Jaffna	Dr.P.Ramanathan Dr.(Mrs) V.Amirthalingham Mr.N.Vinayagarajah	AD VIO RA	AD Offic, Jaffna VIC, Jaffna VIC, Jaffna	021 - 2222387 027 - 2222077 027 - 2222077
Vavuniya	Dr.S.Sivanathan Dr.(Mrs) V. Amirthalingham Mr.N.Vinayagarajah	AD VIO RA	AD Offic, Vavuniya VIC, Jaffna VIC, Jaffna	024 - 2222219 027 - 2222077 027 - 2222077
Kilinochchi	Dr.S.Sivanathan Dr.(Mrs) V. Amirthalingham Mr.N.Vinayagarajah	AD VIO RA	AD Offic, Vavuniya VIC, Jaffna VIC, Jaffna	024 - 2222219
Mullaitivu	Dr.S.Sivanathan Dr.(Mrs) V. Amirthalingham Mr.N.Vinayagarajah	AD VIO RA	AD Offic, Vavuniya VIC, Jaffna VIC, Jaffna	024 - 2222219
Mannar	Dr.S.Sivanathan Dr.(Mrs) V. Amirthalingham Mr.N.Vinayagarajah	AD VIO RA	AD Offic, Vavuniya VIC, Jaffna VIC, Jaffna	024 - 2222219

## **Annexure IX A: Depopulation and Disposal Team (DDT)**

There shall be three (03) Depopulation and Disposal Teams identified for each district as per shown in the Annexure IX B Each team will have three members and will be headed by a government Veterinary Surgeon who is employed in the same District.

Members of the Depopulation and Disposal Teams should be vaccinated (with the latest available human vaccine), and treated with antivirals if appropriate. They must be provided with adequate protective measures from infection by means of Personal Protective Equipments (PPE) which include cap, goggles, face mask, gloves, Overall, boots and shoe-cover and having the required standard in accordance with the national occupational health and safety guidelines for Avian Influenza. These items should be worn at all times when they are near the infected birds or in the infected premises.

### **1. Destruction of birds**

Handling dead chickens produces less airborne contamination than catching and handling live birds and also reduces the exposure of workers to contamination, and makes working in the recommended protective equipment more bearable. Therefore, every attempt should be made to destroy the birds inside the shed with minimum handling.

- The sheds should be closed up during depopulation.
- The birds need to be collected in an enclosed trailer or container or in a plastic bag with suitable thickness and to be put inside another bag; and to be gased with carbon dioxide.

### **2. Disposal**

It is important to ensure prompt and effective disposal of contaminated items such as dead birds, eggs, feed and litter (if appropriate). Available methods include burial, incineration, burning, rendering and composting.

- Dead birds, eggs and contaminated feed need to be buried in the same infected premises.
- If there is no suitable burial site at the infected premises, arrangements may have to be made for burial elsewhere within the restricted area. (If infected material must be transported for disposal, particular attention should be paid to prevent the spread of the virus. For example, truck body trays must be waterproof and all loads carefully covered with tarpaulin (canvas or oilcloth) to ensure that material cannot be blown out).

- The burial pit should have a minimum of 2 meters wide by 2 meters deep, and enables disposal of 300 birds (medium weight 1.8 Kg.) per 1.3 meters of surface. The carcasses have to be covered by a layer of calcium hydroxide on the top, and then with a layer of earth at least 40 cm. depth.
- The dead birds have to be buried within 24 hours of death.
- Eggs and contaminated feed have to be buried or burnt.
- Manure and litter waste has to be preferably buried or burnt. If not can be composted inside sheds or otherwise on site, eliminating the risk of spreading the virus during transport.
- Equipments and items that cannot be disinfected effectively have to be collected in a disposable bag and have to be incinerated.

### **3. Decontamination**

Decontamination entails cleaning and disinfection of the infected site to remove all infective material.

- Litter – The surface of the litter has to be disinfected using 0.2% Citric acid and thereafter composted inside the shed or in the infected premise.
- The shed, cages and other equipments need to be cleaned thoroughly and disinfected using 4% Sodium carbonate anhydrous for 30 minutes.
- Vehicles and other machineries have to be cleaned using soap or detergent allowing to be in contact for 10 minutes and thereafter disinfected using 4% Sodium carbonate anhydrous for 30 minutes.
- Water tanks and water sources - chlorination by hypo chlorite or oxidation by chlorine dioxide to bring the pH to 2.5
- Personnel decontamination – Thoroughly wash with soap and detergent and decontaminate using 0.2% Citric acid for 30 minutes.
- Clothing, Footwear, crates, feed sacks etc. have to be destroyed or if not decontaminated appropriately.

## Annexure IX B: Depopulation and Disposal Team List

District	Name	Post	Station	Telephone
Colombo	Dr.(Ms).H.M.R.K.Dissanayaka	VS	VS Office , Homagama	011-2855276
	Dr.(Ms).K.G.K.N.Wijeratne	VS	VS Office , Kesbawa	011-2604522
	Dr.(Ms).S. de Livera	VS	VS Office , Moratuwa	011-2645325
	Mr.K.G.N.D.Premalal	LDO	VS Office , Moratuwa	
	Ms. Anula Wijeywardana	LDO	VS Office , Homagama	
	Ms.Sriyani Wijayatilaka	LDO	VS Office , Kolonnawa	
	Mr.H.N.Chandrasiri	DL	VS Office, Moratuwa	
	Mr.W.L.Tilakaratna	DL	VS Office, Homagama	
	Mr.B.S.Disanayaka	DL	VS Office, Kolonnawa	
Gampaha	Dr.L.D.Kithsiri	VS	VS Office, Dompe	033-2267430
	Dr.(Ms). T.D.Warusamana.	VS	VS Office, Kadawattha	011-2925294
	Dr.S.Shanamuganathan.	VS	VS Office, Welisara	011-2958476
	Ms.A.G.C.M.Amarasinghe	LDO	VS Office, Kadawata	
	Mr.N.P.Ukwatta	LDO	VS Office, Negombo	
	Mr.Sisira Kumara	LDO	VS Office, Attanagalla	
	Mr.W.A.Kularathne	DL	VS Office, Kadawata	
	Mr.M.H.Robinson	DL	VS Office, Negombo	
	Mr.Nalaka Kumara.	DL	VS Office, Attanagalla	
Kalutara	Dr.(MS).A.P.Liyanaage	VS	VS Office, Horana	034-2261271
	Dr.S.Cooray	VS	VS Office, Kalutara	034-2222411
	Dr.(Ms).K.Malkanathi	VS	VS Office, Beruwela	
	Mr.Chaminda Srilal	LDO	VS Office, Horana	
	Mr.Anuradha Tewarapperuma	LDO	VS Office, Kalutara	
	Mr.S.Wadutantri	LDO	VS Office, Beruwela	
	Ms.Vanitha Kariyaperuma	DL	VS Office, Horana	
	Ms.Rajika Rangani	DL	VS Office, Horana	
	Ms.Geethika Kubalathara	DL	VS Office, Beruwala	
Kandy	Dr.S.A.Seelanath	VS	VS Office, Teldeniya	081-2374922
	Dr.S.Samarakone	VS	VS Office, Kundasale	081-2420547
	Dr.M.Dissanayaka	VS	VS Office, Wattegama	081-2476229
	Mr.C.Wettewa	LDO	VS Office, Teldeniya	
	Mr.V.Jayawardene	LDO	VS Office, Kundasale	
	Mr.A.Molagoda	LDO	VS Office, Wattegama	
	Mr.E.M.Y.A Aberatne Banda	DL	VS Office, Teldeniya	
	Mr.R.M.P. Ratnayake	DL	VS Office, Galagedara	
	Mr.Sumith Kumara	DL	VS Office, Talatuoya	
Matale	Dr.I.Silva	VS	VS Office, Rattota	066-2222477
	Dr.J.M.Senaviratna Banda	VS	VS Office, Dambulla	
	Dr.(Mrs).A. Warsavithana	VS	VS Office, Matale	
	Mr.K.R.M.P.S.B.Wijesekara	LDO	VS Office, Rattota	
	Mr.Markes Fernando	LDO	VS Office, Galewela	
	Mr.H.M.G.Ekanayake	LDO	VS Office, Naula	
	Mr.D.G.Sugathadasa	DL	VS Office, Ukuwela	
	Mr.K.G.A.R. Wijeratne	DL	VS Office, Yatawatta	
	Mr.P.G.Senaviratne	DL	VS Office, Matale	

Nuwara Eliya	Dr.E.A.P.C.Kumara Dr.R.A.J.U.Marapana Dr.(Mrs).N.Ekanayake Mr.D.M.C.N.Dissanayake Mr.Ananda Wijekoon Mr.W.G.M.Bandara Mr.Andrew Devaraj Mr.N.M.S.S.K. Medagama Mr.LakmalRoshanPushpakumar	VS VS VS LDO LDO LDO DL DL DL	VS Office, Ragala VS Office, N.Eliya VS Office, Punduloya VS Office, Hatton VS Office, N.Eliya VS Office, Kotmale VS Office, Hatton VS Office, N.Eliya VS Office, Talawakella	052-2265409 052-2222463 052-2365232
Kurunegala	Dr.S.G.P.Subasinghe Dr.B.S.S.Perera Dr.(Ms)R.P.L.Fernando Mr.R.M.U.S.Bandara Mr.U.A.L.Senavirathna	VS VS VS LDO DL	VS Office, Pannala VS Office, Bingiriya VS Office, Dummalasooriya	037-2246010 - 032-2241200
Puttalam	Dr.S.P.K.Sapputhanthri Dr.W.M.S.K.Premasiri Mr.R.Fernando Mr.N.P.S.K.Talangama Mr.K.P.R.Jayasena Mrs.K.A. Daya Padmalatha Mr.K.K.D.A. Patric Mr.C.P.Weerasooriya Mr.T.G.Siriwardana	VS VS LO LDO LDO LDO DL DL DL	VS Office, Marawila VS Office, Andigama District Office, Puttalam	032-2254262 - 032-2265213
Galle	Dr. M.G.J. Premathilaka Mr.N.Gunaratna Mr. W.K.D. De Silva	VS LDO DL	VS Office, Galle	091-2222083
Matara	Dr. H.W.A. Abeysekera Mr. S.P. Wiedramathunga Mr. L.M. Jayathissa	VS LDO DL	VS Office, Weligama	-
Hambanthota	Dr ( Mrs) V.R.N. Munasinghe Mr. A.B. Ama Udara Mr.S.B. Ranjith	VS LDO DL	VS Office, Matara	041-2222336
Anuradhapura	Dr.H.R.D.S.A.Karunaratna Dr.H.R.R.H.Sumathipala Dr.M.A.N.P.Masinghe Mr.K.B.Dissanayaka Mr.P.M.S.Madhawa Pathirana Mr.D.Nimal Perera	VS VS VS LDO LDO LDO	VS Office, Nochchiyagama VS Office, Kekirawa VS Office, Medawachchiya VS Office, Nochchiyagama VS Office, Kekirawa VS Office, Medawachchiya	025-2257921 025-2264549 025-2248303
Polonnaruwa	Dr.A.M.O.Adhikarinayake Dr.P.M.Rathnayake Dr.D.T.D.Perera Mr.R.A.G.Chandrarathnabanda Mr.P.B.Nandhasena Mr.R.G.Upanandha	VS VS VS LDO LDO LDO	VS Office, Polonnaruwa VS Office, Welikanda VS Office, Bakamuna VS Office, Polonnaruwa VS Office, Welikanda VS Office, Bakamuna	027-2222434 027-2256696

## Annexure X A: Recommended Disinfectant/ Chemical/Procedure

Key	Form and final concentration	Contact time and notes
1. Soaps and detergents		Leave in contact 10 minutes
2. Oxidising agents		
2a. Sodium hypochlorite	Liquid, dilute to final 2-3% available chlorine	Not good for organic materials. 10-30 minutes contact.
2b. Calcium hypochlorite	Solid or powder , dilute 2-3% available chlorine (20 g/litre powder, 30g/l solid)	Not good for organic materials. 10-30 minutes contact.
2c. Virkon <sup>®</sup>	2% (20 g/litre)	10 minutes. Excellent disinfectant
3. Alkalis		
3a. Sodium hydroxide (causticsoda)(NaOH). Do not use with aluminium and like alloys	2% (= 20 g/litre)	10 mins. Do not use in presence of aluminium
3b. Sodium carbonate anhydrous (washing soda) (Na <sub>2</sub> CO <sub>3</sub> . 10 H <sub>2</sub> O)	4% (=40 g/litre) from powder 100 g/l from crystals	10 mins. Recommended for use in presence of organic materials as above. 30 mins
4. Acids		
4a. Hydrochloric	2% (20 ml/litre)	Corrosive, use only when better not available.
4b. Citric	0.2% (2 g/l)	30 mins, safe for clothes and body decontamination
5c. Formaldehyde gas	Special generation required	15-24 hrs. Toxic, only if others cannot be used.

## Annexure X B: Recommended Disinfection Method

<b>Item</b>	<b>Disinfectant/chemical/procedure</b>
Dead birds/Carcases	Bury or burn
Animal housing/equipment/cages	1, 2a, 2b, 2c, 3
Humans	1
Electrical equipment	5c
Water tanks	Drain to pasture if possible
Ponds used by poultry/ducks	Drain to pasture if possible
Feed	Bury
Effluent, manure	Bury or burn, 4, 3
Human housing	1, 2a, 2b, 2c
Machinery, vehicles	1,3
Clothing	1,2a,2b,2c,3



**Annexure XI B:**

**Report to be faxed : 081-**

**AVIAN INFLUENZA**

**EPIDEMIOLOGICAL INQUIRY FORM**

Date:.....

Dr.....

Suspicion No:.....

Confirmation No:.....

Name of establishment:.....

Address:.....

District:.....

Province:.....

Farm code or identification number:.....

Owner:.....

Address of the owner:.....

Information provided by:.....

Farm Veterinarian Dr..... Present: Yes / No

**INFORMATION CONCERNING THE FARM**

Type of Establishment: Industrial / Rural / Dealer / Retailer

Category / Production Line: Table-egg layers / Meat birds

Type: Grandparents / Parents / Pullets / Broilers / Layers

**NUMBER OF BIRDS AND SPECIES PRESENT**

Chickens	Meat No.....	Breeders No.....	Layers No.....
Turkeys	Meat No.....	Breeders No.....	
Guinea-fowl	Meat No.....	Breeders No.....	
Ducks	Meat No.....	Breeders No.....	
Pigeons	Meat No.....	Breeders No.....	
Pheasants	Meat No.....	Breeders No.....	
Geese	Meat No.....	Breeders No.....	
Quail	Meat No.....	Breeders No.....	
Other			

**HATCHERY OF ORIGIN**

Name:.....

Address:.....

Debeaking operation. Date:..... Performed by:.....

**HOUSING SYSTEM**

Presence of sheds: Yes / No

Type of ventilation system: Natural / Natural with fans / Artificial

Free-ranging system: Yes / No

Bird proof nets: Yes / No

Possibility of contact with wild birds: Yes / No Species:.....

Other birds present on site (captive or free): Yes / No Species:.....

Present of ponds or lakes: Yes / No

Other water reservoirs: Yes / No (specify)

Presence of pigs: Yes / No

Other animals: Yes / No

Remarks:

**MOVEMENTS OF BIRDS**

**Introduction of birds from other establishments: Yes / No**

(Twenty days before the onset of the first clinical sign)

Date:..... No:..... Species:.....

Origin:.....

**Exit of birds / eggs to other establishments: Yes / No**

(In the time span between twenty days before the onset of the first clinical sign and the date the farm was put under restriction)

Date:..... No:..... Species:.....

Destination:.....

**MOVEMENTS OF VEHICLES**

(In the time span between twenty days before the onset of the first clinical sign and the date the farm was put under restriction)

Date of entry	Vehicle No.	Name of Establishment	Purpose of visit	Name of Driver	Other personnel

**MOVEMENTS OF PEOPLE**

Date:..... Purpose:.....  
Name:..... Address:.....

**INDIRECT CONTACT WITH OTHER POULTRY ESTABLISHMENT**

(Sharing of equipment, vehicles, feed, staff etc. in the time span between twenty days before the onset of the first clinical sign and the date the farm was put under quarantine)

Date of contact:.....  
Mode of contact:.....  
Name of establishment:.....  
Species in the farm:.....

**OTHER FARMS OWNED BY THE OWNER**

Name of the establishment:.....  
Address:.....

**POULTRY FARMS LOCATED NEAR THE OUTBREAK: Yes / No**

Name of the establishment:.....  
Address:.....  
Distance in meters:.....

**ANAMNESTIC DATA**

(Data concerning mortality rates recorded in the 6 weeks prior to the onset of clinical signs)

Week		Number of Animals dead
From	To	

Remarks:.....

Date of onset of AI clinical signs:.....

Clinical signs observed by the farmer:.....

<b>TOTAL NUMBER OF BIRDS</b> Farm put under restriction (dead or alive)	<b>Number of ill birds</b> (Farm put under restriction)	<b>Number of dead birds</b> (Farm put under restriction)	<b>Number of birds depopulated</b>

**N.B. this information must refer to the data collected when the farm has been put under restriction with mortality and morbidity referring to the suspicion of AI.**

**VACCINATION of birds**

Vaccination of birds practiced: Yes / No

Date of vaccination	Type of vaccine (Live or inactivated)	Commercial name	Administration route

Vaccinating staff: Family / Employee / External staff / Other

Remarks:.....

**ADMINISTRATION OF DRUGS / MEDICAMENTS**

In the last 15 days: No / Yes (specify)  
 .....

Staff who administered the medicament: Family / Employee / External staff / Other  
 Remarks:.....

**CLINICAL INVESTIGATION PER SPECIES**

Clinical signs		Species			
Depression					
Respiratory signs	Mild				
	severe				
Drop or cessation of egg laying					
Oedema, cyanosis or cutaneous hamorrhages					
Diarrhoea					
Nervous signs					
Other					

**GROSS FINDINGS**

		Species			
Rhinitis and sinusitis					
Tracheitis	<i>catarrhal</i>				
	<i>haemorrhagic</i>				
Aerasacculitis					
Haemorrhages	<i>Epicardium</i>				
	<i>Endocardium</i>				
	<i>Proventriculus</i>				
	<i>Ovarian follicles</i>				
Enteritis	<i>catarrhal</i>				
	<i>haemorrhagic</i>				
Pancreitis					
Other					

Remarks:.....

**Signature**

**Annexure XI C:**

**Report to be faxed : 081-**

**ANIMAL DISEASE ACT No. 59 OF 1992**

**REGULATION No.5(1)**

**Proclamation**

Where as ..... has broken out among ..... in ..... Divisional Secretary Division at ..... District of the ..... Province, I ..... Animal Production & Health by virtue of the powers vested on me under the Animal Disease Act No. 59 of 1992, Regulation No. 5(1) do hereby declare the area having the following boundaries as ***'Infected area'***.

North -

East -

South -

West -

Under regulation No. 5(3) of the same Act, I proclaim that no movement of ..... or ..... from and to this area shall be allowed until this proclamation is revoked.

The attention of all ..... owners in this area is drawn to the Animal Diseases Act, No.59 of 1992 which lay down the actions which persons are by law required to take in an "Infected Area". Details of these regulations can be obtained from the Government Veterinary Surgeon at ..... or the Divisional Secretary at ..... Divisional Secretary Division.

This declaration shall take effect from the date hereof.

.....  
Director General,  
Department of Animal Production and Health.

Office of the Director General  
Department of Animal Production & Health,  
Peradeniya

## **Acknowledgement :**

**We wish to acknowledge with thanks the producers of the AUSVETPLAN which guided us in the preparation of this Sri Lanka Exotic Disease Emergency Plan.**

## AnnexueXII- Implementation Work Plan and Proposed Budget During 2005/2006 to 2008

Five key strategies are elaborated for preparation and response to pandemic HPAI, within which specific activities will be undertaken. The objectives of these strategies are outlined below.

### Implementation work plan and budget 2005/06-2008 Strategy 1- Planning and Coordination

Activity	Timeframe	Key Responsible	Co-responsible	Output Indicator	2005/06 USD	2007 USD	2008 USD
Framework for AI Control mobilized and implemented	Phase 1 Pre Outbreak	MoH, DAPH	DAPH, Wild life dept. Provincial Health and AP&H Local Government	Consensus,Better Coordination,Better Plan	\$10,000	\$5,000	5000
Advocacy to raise awareness about influenza at all levels including administration	Phase 1 Pre Outbreak	MoH-DAPH	DAPH, Wild life dept. Provincial Health and AP&H local Government	Consensus,Better Coordination,Better Plan	\$20,000	\$15,000	\$15,000
Training of veterinarians and middle level technical staff introduce issues on AI, improve knowledge, specific skills	Phase 1 Pre outbreak	MoH-DAPH	DAPH, Wild life dept. Provincial Health and AP&H Local Governments	Consensus,Better Coordination,Better Plan	-\$20,000	\$10,000	\$10,000
Active collaboration with other related organizations	Phase 2 Pre outbreak period	MoH-DAPH	DAPH, Wild life dept. Provincial Health and AP&H Local Governments	Consensus,Better Coordination,Better Plan	\$15,000	\$15,000	\$15,000
Analysing preparedness status and identifying gaps	Phase 2 Pre outbreak period	DAPH	DAPH, Wild life dept. District Health and AP&H Local Government	Consensus,Better Coordination,Better Plan	\$35,000	\$35,000	\$35,000
To ensure the ability for rapidly getting supplies needed during the an outbreak	Phase 2 Pre outbreak period	DAPH	DAPH, Wild life dept. District Health and AP&H Local Government	Consensus,Better Coordination,Better Plan	\$20,000	\$20,000	\$20,000
Sectoral meeting MoH and DAPH for Planning and Coordination phases	Phase 3 Outbreak	DAPH- MoH	DAPH, Wild life dept., District Health and AP&H Local Government	Consensus,Better Coordination,Better Plan	\$7,000	\$25,000	\$25,000
Internal meeting DAPH for Planning & Coordination	Phase 3 Outbreak	DAPH- MoH	DAPH, Wild life dept., District Health and AP&H Local Government	Consensus,Better Coordination,Better Plan	\$7,000	35,000	35,000
Intersectoral meeting with Poultry Industry Groups, Ministries of Social Services, Education, Tourism and University	Phase 3 Outbreak	DAPH-MoH	DAPH, , Provincial AP& H Provincial Health and AP&H Local Government	Consensus,Better Coordination,Better Plan	\$7,000	\$30,000	\$30,000
				TOTAL	\$141,000	\$190,000	\$190,000

Implementation Work Plan and Budget 2005/06-2008  
Strategy 4- Prevention and Control

Activity	Timeframe	Key Responsible	Co-responsible	Output Indicator	2005/06 USD	2007 USD	2008 USD
Establishment of quarantine facilities and BIA Katunayaka pet birds		DAFH	CAQO	Increase facility of quarantine sector	\$70,000	\$20,000	\$30,000
Procurement of Rapid Screening test kits for testing AI by DET	Phase 1 Pre outbreak	DAFH	VRI	Availability of Rapid Test kits	\$12,000	\$15,000	\$15,000
Procurement of Rapid test kits for diagnosis of HPAI by VIC / Gannoruwa	Phase 1 Pre outbreak	DAFH	VRI	Availability of Rapid HPAI Test Kit	\$40,000	\$35,000	\$35,000
Procurement of dangerous sample despatch boxes meeting IATA standards & airlift	Phase 1 Pre outbreak	DAFH	VRI	HPAI confirmed by AAHL Reference Laboratory	\$5,000	\$8,000	\$10,000
Vaccination of personnel at risk, antivirals, PPE for 2500 high risk groups	Phase 1 Pre outbreak	DAFH- MoH	Provincial AP&H, Wild life dept.	Protect Frontline personnel	\$25,000	\$20,000	\$20,000
Stockpiling of disinfectants , carbondioxide	Phase 1 Pre outbreak	DAFH	Provincial AP&H, Wild life dept.	Disinfect contaminated premises, utensils and use humane method to destroy birds in Restricted Area	\$10,000	\$5,000	\$2,500
Depopulation and disposal birds in high risk areas	Phase 1 Outbreak	DAFH	Provincial AP&H, Local Government	Prevent the spread of HPAI	\$20,000	\$15,000	\$15,000
Compensation for losses as per DAPH policy	Phase 2 Outbreak	DAFH	Provincial AP&H	Recovery of poultry industry	\$45,000	\$45,000	\$35,000
Guideline Books	Phase 2 Outbreak	DAFH-10,000 Books	Provincial AP&H Wild life dept.	Implementation of guidelines	\$10,000	\$2,000	\$0
Operational cost for District Emergency Teams (DET)	Phase 3 Outbreak	DAFH	Provincial AP&H Wild life dept.	Earliest Information on Outbreaks, Suspected Cases	\$5,000	\$5,000	\$5,000
Operational cost for Depopulation & Disposal Teams	Phase 3 Outbreak	DAFH	Provincial AP&H Wild life dept.	Earliest Information on Outbreaks, Suspected Cases	\$15,000	\$25,000	\$25,000
LABORATORY	Phase 3 Outbreak	DAFH		Results of Laboratory			
Serological examination using: - ELISA - RT-PCR - Etc	Phase 3 Outbreak	DAFH	VRI-Virology Division	Examinations (Conformation of Diagnosis)	\$50,000	0	0
Workshop for Veterinarians on Emergency Response	Phase 3 Outbreak	DAFH	Provincial AP&H, Wild life Dept.	Better implementation of Plan Improve Response guidelines	\$25,000	\$10,000	\$5,000
Training for Middle level staff in handling suspected HPAI handling, despatch of samples	Phase 3 Outbreak	DAFH	Provincial AP&H	Better understanding of the disease	\$30,000	\$10,000	\$8,000
Review activities of DET	Phase 3 Outbreak	DAFH	Provincial AP&H	Earliest Appropriate Response	\$30,000	0	0
Field Investigation	Phase 3 Outbreak	MoH -MoAg	Provincial AP&H	Earliest Data Collection	\$5,000	\$20,000	\$5,000
Meeting of Experts	Phase 3 Outbreak	DAFH	Provincial APH, MoH Wild life Dept.	Formulation of Recommendation & Strategy	\$10,000	0	0
Operational Vehicles: - Jeeps - Bachos, Tippers	Phase 3 of Outbreak	DAFH	Provincial AP&H	Facilitated Field Operation	\$100,000	\$30,000	\$20,000
Operational Motorcycles	Phase 3 Outbreak	DAFH	Provincial AP&H	Facilitated Transportation at Grass Root Level	\$10,000	\$15,000	\$15,000
Educational Materials (Posters,Leaflet,Booklet)	Phase 3 Outbreak	DAFH	Provincial AP&H	Better Public Awareness	\$5,000	\$8,000	\$10,000
				<b>Total</b>	<b>\$522,000</b>	<b>\$288,000</b>	<b>\$255,500</b>

Implementation Work Plan and Budget 2005/06-2008  
 Strategy 2- Surveillance

Activity	Timeframe	Key Responsible	Co-responsible	Output Indicator	2005/06 USD	2007 USD	2008 USD
Strengthening disease Surveillance system in place	Phase 1 Pre outbreak	All institutions involve in early warning system (25 Districts)	Provincial DA&H, Wild life dept.	Earliest detection of cases	\$50,000	\$50,000	\$50,000
Establishment of Epidemiological unit					100,000		
Study tour in neighbouring countries for surveillance/ laboratory training	Phase 1 & 2	DAH	DAH, Provincial DAPH	Development of skills for better screening & diagnosis	\$20,000	\$15,000	\$15,000
Increased AI surveillance	Phase 2 Pre outbreak	All institutions involve in early warning system (25 Districts)	DAH, Provincial AP&H	Earliest detection of cases	\$70,000	\$70,000	\$70,000
a. Training of Veterinarians <ul style="list-style-type: none"> <li>- clinical diagnosis of HPAI</li> <li>- Serosurveillance on High risk areas</li> <li>- Veterinary net working with GIS</li> </ul>	Phase 2 Pre outbreak	DAH,FAO	DAH, Provincial AP&H	Skill full & Knowledgeable personnel Collected data on sero-status of farmers their closed contact Better communication and sharing of surveillance data	\$75,000 \$70,000 \$60,000	\$75,000 70,000 \$60,000	\$75,000 \$70,000 \$60,000
b. National work shop	Phase 2 Pre outbreak	DAH, FAO	Research institutes and universities	Wide distribution of knowledge & regulation on HPAI	\$30,000	\$25,000	\$20,000
c. Expert committee meeting	Phase 2 Pre outbreak	DAH	DAH, Provincial AP&H municipality, Wild life dept. Local Government	Formulation of recommendation & strategy	\$5,000	\$10,000	\$10,000
				TOTAL	\$480,000	\$375,000	\$370,000

Implementation Work Plan and Budget 2005/06-2008  
 Strategy 3- Strengthening of National Laboratories

Activity	Timeframe	Key Responsible	Co- Responsible	Output Indicator	2006 USD	2007 USD	2008 USD
Services of a consultant to for - identifying a suitable land - Designing of P3 level lab.	Phase 1 Pre outbreak	DAPH,FAO		Location identified for P3 level laboratory	\$50,000	0	0
Establishment of standardised diagnostic techniques for HPAI - PM, Collection, transportation & examination of samples & Examination of Specimens	Phase 1 Pre outbreak	DAPH,FAO		SOP available	\$100,000	\$40,000	\$35,000
Strengthening VIC Laboratories - Lab. Equipment (Seven Laboratories) - Lab. consumables	Phase 1 Pre outbreak	DAPH,FAO	Provincial APH	Better Screening Laboratories	\$250,000	\$100,000	\$100,000
Training of laboratory staff on techniques and lab.management	Phase 1 Pre outbreak						
Data Analysis Feedback	Phase 3 Outbreak	DAPH	Provincial APH	Reports,Newsletters,Rapid Feedback through email,	\$1,000	\$2,000	\$4,000
Outbreak Investigation	Phase 3 Outbreak	DAPH	Provincial APH	Collected Data	\$3,000	\$6,000	\$9,000
				TOTAL	\$404,000	\$148,000	\$148,000

Implementation Work Plan and Budget 2005/06-2008  
 Strategy 2- Surveillance

Activity	Timeframe	Key Responsible	Co-responsible	Output Indicator	2005/06 USD	2007 USD	2008 USD
Strengthening disease Surveillance system in place	Phase 1 Pre outbreak	All institutions involve in early warning system (25 Districts)	Provincial DA&H, Wild life dept.	Earliest detection of cases	\$50,000	\$50,000	\$50,000
Establishment of Epidemiological unit					100,000		
Study tour in neighbouring countries for surveillance/ laboratory training	Phase 1 & 2	DAFH	DAFH, Provincial DAFH	Development of skills for better screening & diagnosis	\$20,000	\$15,000	\$15,000
Increased AI surveillance	Phase 2 Pre outbreak	All institutions involve in early warning system (25 Districts)	DAH, Provincial AP&H	Earliest detection of cases	\$70,000	\$70,000	\$70,000
a. Training of Veterinarians - clinical diagnosis of HPAI - Serosurveillance on High risk areas  - Veterinary net working with GIS	Phase 2 Pre outbreak	DAFH, FAO	DAFH, Provincial AP&H	Skill full & Knowledgeable personnel Collected data on sero-status of farmers their closed contact Better communication and sharing of surveillance data	\$75,000 \$70,000 \$60,000	\$75,000 70,000 \$60,000	\$75,000 \$70,000 \$60,000
b. National work shop	Phase 2 Pre outbreak	DAFH, FAO	Research institutes and universities	Wide distribution of knowledge & regulation on HPAI	\$30,000	\$25,000	\$20,000
c. Expert committee meeting	Phase 2 Pre outbreak	DAFH	DAFH, Provincial AP&H municipality, Wild life dept. Local Government	Formulation of recommendation & strategy	\$5,000	\$10,000	\$10,000
				TOTAL	\$480,000	\$375,000	\$370,000