

Operation for the  
Nullifying and  
Eradication of  
Avian  
Influenza in  
Mauritius  
Mauritius

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Compiled at the Animal Health Laboratory

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## 1. INTRODUCTION

There is a potential risk that HPAI subtype H5N1 might be carried by wild birds from South East Asia region along migratory flyways to Africa and Europe. Recent outbreak in Nigeria, Niger and new countries in Asia namely India and Pakistan have also declared outbreaks of HPAI. The disease seems to be now spreading in multidirectional sites in different continents. The complex overlapping of major flyways and the lack of information on migratory species involved in AI disease spread make simple association of wild bird flyways with outbreaks of AI difficult.

In Mauritius, migratory birds start coming at the Terre Rouge Estuary as from the month of September to April peaking between January and February with An average total head count of some 1200-1500. It also refers to the most probable time when the risk of contagion is most likely to occur.

The OIE has developed guidelines for the progressive control of HPAI around the world and Mauritius is in constant touch with OIE as regards to latest developments. Mauritius has therefore adopted a strategy in line with OIE recommendations for the prevention and control of the disease. Consequently, a National Committee comprising of different Ministries and major stakeholders both from the private and public sectors has been set up to monitor and make recommendations. This Committee has been meeting regularly and has already formulated a series of recommendations outlined in the Contingency Plan prepared by the committee. (Annexure 1)-(composition of the committee with phone numbers etc.).

The objectives of the Contingency Plan are:

- ★ To articulate on the procedures to be followed in case of a suspected and / or confirmed outbreak of Avian Influenza.
- ★ To ensure that there is necessary personnel to assist the Division of Veterinary Services with administration and procurement of necessary material and equipment.
- ★ To constantly update and inform the population in order to avoid nationwide panic and to a on compensation modalities in the event of mass destruction of affected poultry.

## **2. IMPACT OF AN OUTBREAK OF HPAI**

- \* Direct effect on poultry production in Mauritius.
- \* Negative effect on Tourism
- \* Direct effect on exports, trade bans etc...
- \* Feed industries and retail outlets
- \* Employment
- \* Public health implications.

### **2.1 Risk of spreading disease**

- \* The disease is highly contagious as the virus rapidly multiplies in susceptible flocks; virus is excreted in the air and in the faeces.
- \* Direct spread is through contact with live infected birds, infected premises, infected products, contaminated equipment, or by movement of personnel, vehicles, etc.
- \* Virus can survive in/on carcasses, feathers, meat, on eggs, offal, and faeces/litter.
- \* Wet markets/backyard farming is important potential source for the rapid dissemination of HPAI diseases.

### **2.2 Possible routes of entry of contagion into Mauritius**

- Importation of live poultry and pet birds
- Importation of poultry products
- Smuggling of birds or products
- Returning passengers (Tourists and Mauritians) who have been in direct/indirect contact with infected chickens/premises overseas
- Migratory birds especially waterfowl and water birds at the Terre Rouge Estuary
- Ship entering Mauritian territorial waters will be subjected to strict veterinary control

### **2.3 Early detection of disease**

Early detection, reporting and diagnosis of disease together with the swift imposition of effective eradication and movement controls are essential in an attempt to contain an outbreak is already in place. However, a continued awareness campaign should be maintained at all levels especially at the level of back yard farmers.

## **3. REPORT OF DISEASE**

Where any stock has become infected with a disease, or is suspected to have become infected with a disease, the owner of the stock shall report the fact to the Veterinary Services or to the Officer in Charge of the nearest Police Station who shall notify the Veterinary Services. In case of a Private Veterinarian who suspects pathogenic Influenza, the PVO should be immediately be notified. In the case of a Government Veterinary Officer who suspects or diagnoses Avian Influenza, the case must be reported to the Principal Veterinary Officer or his representative immediately.

### **3.1 Collection of samples**

Collection of samples will be deemed necessary when abnormal mortality in poultry (all species) above 10% associated with signs of respiratory distress is reported. A team comprising of Veterinary Officers and trained laboratory personnel will proceed with utmost urgency to the site of suspected outbreak for collection of relevant samples.

Samples will include the following:

★ Dead birds:

- Pooled trachea, lung and intestinal samples and cloacal swabs.

★ ‘Healthy’ birds:

- Cloacal and tracheal swabs
- At least 10 blood samples from the flock

- (Cloacal swabs from at least 1-5% depending upon the flock size. Ensure that at least one gram of faeces on swab; transport swabs in virus transport medium.
- \* The blood samples and organs will be packed aseptically and sealed in sterile plastic tubes, bags or sample bottles and brought to the Animal Health Laboratory for diagnosis and confirmation of the disease.
- \* All samples to be sent on ice (4°C).
- \* Swabs should be placed in 2 to 5 ml sterile PBS.

### **3.2 Animal Health Laboratory testing**

The testing facilities presently available include the rapid antigen detection method, Elisa tests, and Haemagglutination Inhibition and Immunodiffusion testings. Processed samples from suspected poultry will also be sent to the nearest reference laboratory for confirmation and further investigations as may be required. A standing agreement and a master permit for the rapid despatch of organs /blood and relevant samples to a Reference laboratory has been made.

It is proposed that besides current diagnostic facilities available at the Division of Veterinary Services, the Virology Section of the Animal Health Laboratory be reinforced with more advanced techniques such as RT- PCR. This should be given top priority.

## **4 DISINFECTION**

After handling a suspect infected or confirmed infected animal, the officer/technician must immediately disinfect his/her hands, shoes, glasses, hat and any clothing that he/she wore during the preceding inspections on that farm/premises and any other thing that might be contaminated. The farm personnel on infected/suspect premises will be under the observation by the Health Services.

## **5. FIELD ACTIONS FOR CONFIRMED OUTBREAK**

### **5.1 Strategy for disease control**

Eradication/control procedures are more likely to be successful if the main conditions are met, i.e. early identification of outbreak and the rapid implementation of control/stamping measures and total participation and collaboration of all stakeholders.

#### **\* Compulsory measures:**

**Under the control and guidance of veterinary services in collaboration with the crisis committee the following will be applied-**

Immediate quarantine and movement controls of affected farms and premises.

- \* Reinforcement of bio security measures
- \* Zoning of restricted (infected) area/s (road blocks), control (surveillance) area/s and disease free areas
- \* Immediate stamping out and disposal of infected and in-contact birds and litter etc. to terminate the multiplication of virus (Euthanasia).
- \* Decontamination
- \* Surveillance and epidemiological investigations.
- \* Testing for absence of disease before restocking.

### **5.2 Disease Control Centre**

A Disease Control Centre has to be established to co-ordinate the necessary actions to be taken during the control of the disease outbreak. The disease control centre will comprise of coordinators from the Ministry of Agriculture, Ministry of Health, Police Department, Ministry of Environment and the Ministry for Local Government and representatives from the private sector. The main responsibility of the Disease Control Centre will be to establish effective liaison with each department in case of outbreaks and optimise human resource and to apprise the authorities of the current situation. The crisis committee will identify persons to assign specific duties during the monitoring process. The crisis committee will be in constant touch with the PVO who will be

authorised to release information via the parent ministry. The disease control centre will be located in Redit within the precinct of the Office of the PVO. A hotline service will be needed for better and efficient liaison.

### **5.3 Responsibilities**

#### **5.3.1 Office of the Principal Veterinary Officer**

Disseminates information

Authorises destroying of animals

Issues directives

Authorises personnel

Appoints valuation committee

Arranges for detachment of personnel from other veterinary centres

Informs the public and the media with the assistance of the press attaché of the Ministry

#### **5.3.2 Police department**

- Supply required roadblock equipment
- Assist with roadblocks
- Assist with law enforcement

#### **5.3.3 Ministry of Environment**

- Provide with necessary authority for carcass disposal at localised sites

#### **5.3.4 Ministry for local Government**

- Assist in the supply of trucks, carriers and bins for the transport of dead and culled poultry carcasses.

### 5.3.5 Ministry of Health

- To monitor personnel of affected farms
- To provide treatment
- To dispense advice as required
- Employ Human Resources and necessary equipment required in the field action.

## 5.4 Quarantine and movement control

### 5.4.1 Upon receiving confirmation of a diagnosis

- \* A farm should be placed under quarantine by issuing a quarantine notice from the DVS.
- \* No movement of poultry and poultry products will be allowed
- \* The PVO or his representative will take stock of all poultry, feed and poultry products on the farm.
- \* The PVO or his representative will establish the number of birds on the farm, the sourcing and selling of birds and determine the history of flocks
- \* The farm should be monitored 24 hours a day

### 5.4.2 Bio security measures

#### Access to infected premises.

Set up effective telephone and/or radio contact with staff on infected premises.

All personnel require protective clothing when entering the farm

Provisions of a portable field tent which can be used by the crisis committee.

#### \* **Staff and equipment required:**

- Quarantine identification

- Mobile disinfection units
  - Security lights (night)
  - Official Vet
- Staff (for depopulation and bird removal etc.) including protective clothing, masks, goggles.  
Vaccination with current WHO recommended influenza vaccine and anti-viral treatment for suspected human infection with HPNAI).
- Vehicles (ensure that no feathers or faeces can fall/blow off the truck, by installing a frame with a double layer of plastic on either side of the truck)
  - Identification of routes for vehicles with dead birds
  - Police – escort trucks
  - Signs: Road block/Control Point/No Entry/Quarantine Area etc.
- ★ Protection of burial site to prevent theft.
  - ★ Gas, drugs, etc. to kill birds.
  - ★ Appropriate containers for disposal of infected material.
  - ★ Escavators, plastic bags and sprayers.

## 5.5 Killing of birds

- ★ Environmentally controlled house: stop fans, close off ventilation, infiltrate gas.
- ★ Small house: Seal house or remove birds into plastic bags for gassing or dislocation of necks or euthanasia.
- ★ Gassing: CO<sub>2</sub> (use 17, 5 kg/1000 m<sup>3</sup>). Birds need to be exposed to an atmosphere of at least 30% carbon dioxide to ensure loss of consciousness and then at least 70% carbon dioxide to kill the birds. This concentration must be maintained for at least 3 minutes.
- ★ Mechanical: eggs, chicks

### 5.5.1 Disposal

- ★ Burial trench 3 metres wide (not more than 3 m wide) and 3 metres deep. Cover with soil to a minimum depth of cover over birds of 1.5m. (This size trench will carry about 1 200 x 6 week old broiler per linear metre.)  
Bottom of trench must be at least 1 metre above the water table.

- \* Cover with layer of calcium hydroxide (quick lime)
- \* Incinerators to be considered

### 5.5.2 Disposal/destruction of infected material

- \* **Eggs:**

- Eggs
- Egg trays
- Egg products
- o Burial/ incineration

- \* **Litter:**

- Burial or spray with disinfectant, cover with plastic sheeting
- leave for at least 42 days and record core temperature(composting)
- Protect against birds, animals.
- Incineration

- \* **Animal feed:**

- Fumigation, then incineration or burial.
- Protect against theft

- \* **Feathers:** spray with disinfectant, bury or incinerate.

## 5.6 Decontamination

- ★ **Vehicles:**

- Thorough disinfection of vehicle, boot and tyres

- ★ **Walls, floors, ceilings:**

- Remove organic material
- Wash
- Disinfect

- ★ **Equipment:**

- Wash
- Treat with disinfectant for at least 48 hours

- ★ **Water reservoirs:**

- Empty
- Wash
- Disinfect

- ★ **Feed tanks:**

- Empty
- Wash with hot water (pressure)
- Fumigate

- ★ **After washing and disinfection:**

- ★ **Units:**

- fumigate twice with an interval of 2 weeks

**Protective clothing and footwear:**

Disinfect, wash, re-pack.

**Disinfectants:**

Any disinfectant currently registered for use in Mauritius

E.g.; detergents, hypo chlorites, alkalis, glutaraldehydes, QAC's etc

Quarternary ammonium	4% solution	equipment
Formalin and permanganate	Fumigation	Walls, floors, ceiling Electrical, hatcheries
Na hypochlorite	2% active chlorine	Equipment

**5.7 Surveillance and epidemiological investigation**

All movements of poultry, poultry products, potentially infected materials, vehicles to and from the infected premises to be traced and recorded up to a time to be determined by the crisis committee.

**Surveillance:**

Organised National Surveillance.

- ★ Serological testing of commercial and village chickens, post mortem examinations in diagnostic labs, sentinel birds, monitor certain high density waterfowl/water bird areas for the presence of virus.
- ★ Continuous surveillance of all poultry premises should take place within the Control Area
- ★ Surveillance involves physical inspection of poultry for clinical signs of avian influenza, increased mortality and serological sampling

- ★ Serological samples should be tested by means of the ELISA, HI or AGID test.
- ★ No repopulation until authorised by the crisis committee.

## **6. REPORTS**

The crisis committee and all stakeholders to meet as often as necessary and to report on each sectors of operation and new line of actions taken in view of current observations.

## **7. TERMINATION**

The Principal Veterinary Officer approves the cancellation of quarantine to be determined by the Principal Veterinary Officer after the clinical endpoint, after all animals are found to be healthy.

## **8 COMPENSATION**

Compensation arrangements whereby farmers or others can be paid fair and quick compensation for any animals or other property destroyed as part of a disease control. This issue is to be taken up at Government level.

## **9. RECOMMENDATIONS**

### **9.1 CONTROL MEASURES TO PREVENT THE ENTRY OF THE VIRUS INTO THE COUNTRY:**

Mauritius, including Rodrigues is currently free from HPNAI and our laws play a role in maintaining this freedom,(Animal Diseases Act). The following measures are in place to safeguard against the introduction of this virus into the country:

- ★ No live poultry, birds or ANY poultry products are allowed into the country, unless an import permit has been obtained from the Division of Veterinary Services. An import permit is only issued once the risk of importation has been assessed and found to be acceptable.

★ The importation of live poultry and poultry products are only allowed from countries that are free from NAI.

★ Imported live doc and birds are subjected to post-importation quarantine at approved quarantine stations in the country. Birds dying in quarantine are sent to the Animal Health Laboratory for examination and routine testing for the presence of AI or Newcastle disease.

★ Continuous monitoring of the disease status of all trade partners is essential to prevent the importation of products from infected countries.

★ Illegal importation (Smuggling):

The importation of live poultry or birds or poultry products without a permit poses a serious threat to the poultry industry, as it could allow entry of the virus into the country. The following actions are thus required:

- Train officials at ports of entry
- Alert police at ports of entry

★ Return of persons from a known infected country or region:

- Train officials at ports of entry
- Footbath (disinfectant-impregnated sponge mat) at airport
- Create awareness of responsibility of persons not to visit or be in contact with poultry, poultry farms etc when visiting known HPAI infected countries/areas.
- Declaration card by returning passengers of not having been onto farms etc when re-entering country.
- Customs/Immigration officers to know which countries are experiencing disease outbreaks.
- “Exotic disease control Posters” at airports in departure lounges, immigration halls, baggage collection areas etc.

★ Wild birds

It is important that all poultry houses are bird and rodent proof.