



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

Central Zoo Authority



BY E-MAIL/POST

F.No.25-1/2002-CZA(Vol.II)(AK)/2831/2016

DATE: 21.10.2016

To

The Director/Curator/Officer in charge of all Large, Medium, Small, Mini category zoos

CIRCULAR

Subject: Incidence of Avian Influenza – regarding

This authority has received information about Avian Influenza among free living birds inside the zoo campus and their mortality. In the past, the Central Zoo Authority has issued advisories in this regard vide letter F.No.25-1/2000-CZA(290)(M) dated 20.09.2005 and F. No. 25-1/2002-CZA(290)(M), dated 20.02.2006 in the matter (copies enclosed).

The Department of Animal Husbandry, Dairying and Fisheries, Government of India has uploaded an 'Action Plan on preparedness, control and containment of Avian Influenza' on its website under the link Livestock Health – Bird Flu (<http://www.dahd.nic.in/about-us/divisions/livestock-health>). A copy of the same is attached herewith.

It is again to advise you to go through the above action plan and you are also advised to take necessary precautionary measures for safety of the birds being displayed in your zoos, the wild (free living) migratory / resident birds of the zoo campus as well as of the keepers / personnel directly in-charge for handling of animals in the zoo. The zoo personnel handling animals should take all precautionary measures while they are working in the zoo like use of safety gear / clothes / aprons / gloves / face mask / mask with filter / cover over head / gum-boots etc. The sanitation / hygiene / disinfection of personnel, animal enclosures of birds and campus be maintained of highest standards. All bio-security and safety measures be adopted strictly.

In case of any suspicion, detection or mortality among birds, the samples be got tested immediately at National Institute for High Security Animal Diseases (NIHSAD), Bhopal or the designated diagnostic laboratories in the country list of which is attached herewith.

Continued.

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In the event of positive report about Avian Influenza being received in the reports, the Joint Secretary (Livestock Health), Department of Animal Husbandry, Dairying and Fisheries, Government of India and the Director, Animal Husbandry Department of the State and the local officer of the Animal Husbandry Department should be contacted immediately and a contingency plan be prepared and implemented as per the above mentioned action plan, a copy of which is attached herewith.

A report in this regard may be sent to this authority for information and further necessary action by fax and e-mail.

Yours sincerely,



(Dr. D. N. Singh)
Member Secretary

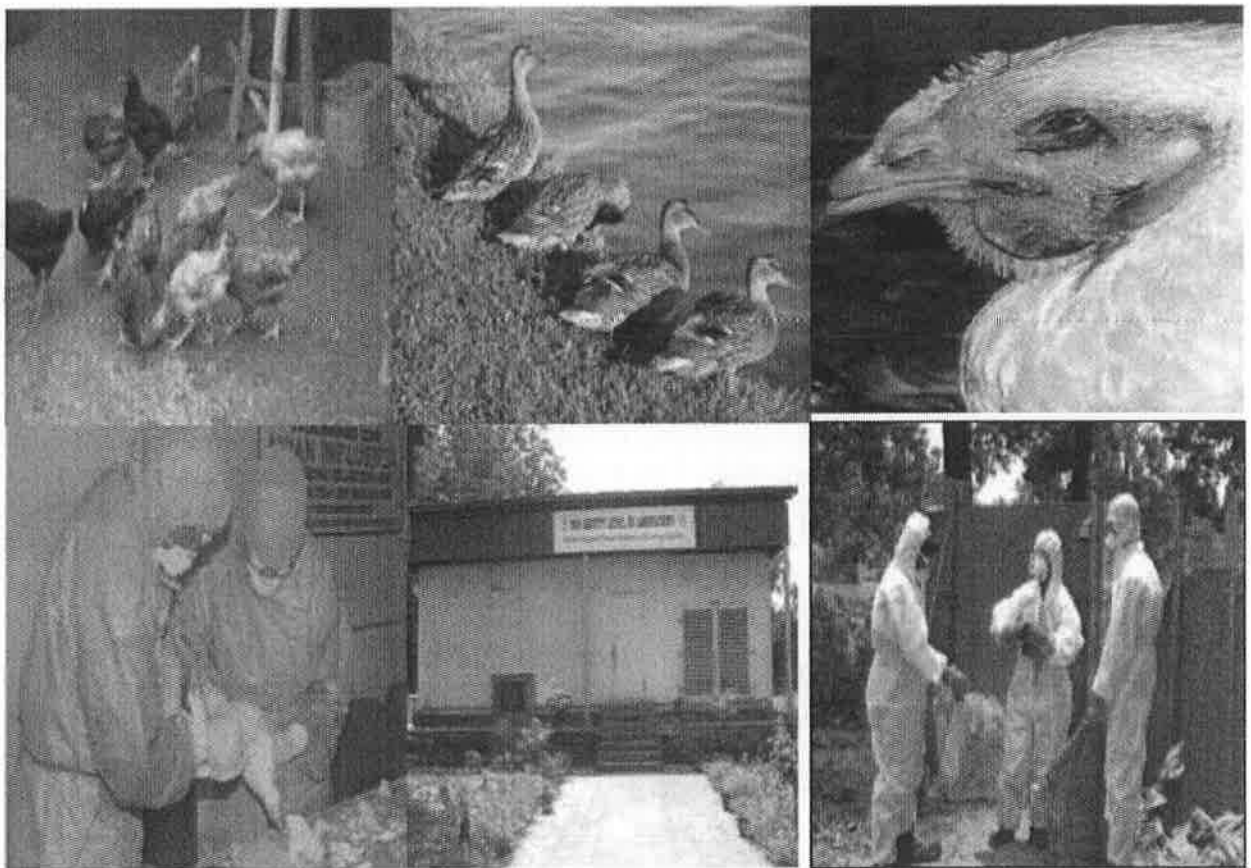
Enclosure: as above

Copy to:

1. The Chief Wildlife Wardens of all States/UTs
2. Municipal Commissioners of Ahmedabad, Surat, Rajkot, Vadodara, Gwalior, Indore, Mumbai, Aurangabad, Solapur, Pune, Coimbatore
3. Managing Directors of Bhilai Steel Plant, Bhilai and Tata Steel & Iron Company, Jamshedpur, Bokaro Steel Plant, Rourkela Steel Plant
4. The Director, Indian Veterinary Research Institute, Bareilly (Uttar Pradesh) – National Referral Centre

March, 2015

Action Plan of Animal Husbandry for Preparedness, Control and Containment of Avian Influenza



सत्यमेव जयते

Government of India

Ministry of Agriculture

Department of Animal Husbandry, Dairying and Fisheries

Action Plan for Prevention, Control & Containment of Avian Influenza (Revised – 2015)

Introduction

Avian influenza (AI), as per World Organization for Animal Health (OIE), is defined as an infection of poultry caused by any influenza A virus of the H5 or H7 subtypes or by any influenza A virus with an intravenous pathogenicity index (IVPI) greater than 1.2 (or as an alternative at least 75% mortality) as described below. These viruses are divided into high pathogenicity avian influenza viruses and low pathogenicity avian influenza viruses:

- a. High pathogenicity avian influenza viruses have an IVPI in six-week-old chickens greater than 1.2 or, as an alternative, cause at least 75% mortality in four-to eight-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 high pathogenicity avian influenza isolates, the isolate being tested should be considered as high pathogenicity avian influenza virus;
- b. Low pathogenicity avian influenza viruses are all influenza A viruses of H5 and H7 subtypes that are not high pathogenicity avian influenza viruses.

Avian Influenza (AI) viruses have been circulating worldwide for centuries with four known outbreaks recorded in the last century. The present wave of highly pathogenic avian influenza (HPAI) emerged in Hong Kong in 1997. India notified the first outbreak of avian influenza on 18th February, 2006. Since then, outbreaks have been reported in Maharashtra, Gujarat, Madhya Pradesh, Manipur, West Bengal, Tripura, Assam, Sikkim, Odisha, Meghalaya, Karnataka, Bihar, Chhattisgarh, Kerala and Chandigarh.

In view of a threat of global outbreak of AI and apprehensions of a human pandemic, the Department of Animal Husbandry, Dairying & Fisheries (DADF), Government of India had prepared an action plan in 2005 which was revised in 2006 and lately in 2012 for guidance of State Government for prevention, control and containment of Avian Influenza in the Country. The action plan further been updated based on the further experience gained and lessons learnt from the past occurrences and the contemporary scientific information.

The Action Plan is comprised of four chapters. Chapter I, advises the states/ UTs on preparedness against AI outbreaks. Chapter II, indicates the actions to be taken if an outbreak of AI is suspected. Chapter III, describes the actions during an outbreak of the disease, and Chapter IV, identifies persons who will handle Avian Influenza (AI) infected poultry and advises on biosafety and biosecurity measures.

Chapter: 1. General Preparedness against Avian influenza

I.1 *Assessment of Preparedness*

- Assessment should be made in routine, irrespective of any outbreak. The check-list for preparedness, control and containment of AI in general (at Annexure I) and Immediate steps to handle AI, if outbreak is confirmed (Annexure II) can be assessed. The states can add to the check-list and continually upgrade it as per local requirements.
- Training of the key-persons, who are likely to be involved in the operations, should be taken as part of preparedness, as under:
 - a) All the vets and paravets should be made aware of and trained in the control and containment activities.
 - b) Civil-administration involving Chief Secretary, District Collector (DC), Revenue officers, District Magistrate, Chairman and members of Panchayati Raj Institutions/ Municipality/ Local bodies, Officers of Home Department, Health and other line departments should be familiarized with action plan by organizing awareness/sanitization workshops.

I.2 **Surveillance Plan for Avian influenza**

Disease surveillance is an integral and key component of all government veterinary services. It is of utmost importance for animal disease emergency preparedness particularly for the diseases like Avian Influenza. This is important for early warning of diseases, planning and monitoring of disease control programme, provision of sound animal health advice to farmers, certification of export of livestock / livestock products, international reporting and evidence of freedom from diseases.

The avian influenza surveillance programme should include an early warning system throughout the production, marketing and processing chain for reporting suspicious cases.

Objectives

1. Early detection of clinical disease and infection
2. Assess temporal and spatial patterns of the disease to improve effectiveness of control efforts
3. Demonstrate country freedom from the disease

Surveillance strategies

Surveillance is aimed at identification of disease and infection and should cover all the susceptible poultry species within the country, zone or compartment. Routine surveillance which consists of active and passive surveillance for Avian Influenza should be ongoing.

The frequency of active surveillance should be at least every six months. Surveillance should be composed of random and targeted approaches using molecular, virological, serological and clinical methods.

Targeted surveillance e.g. based on the increased likelihood of infection in particular localities or species, may be an appropriate strategy for valuable clues on the disease.

Special emphasis should be given on surveillance in Live Bird Markets (LBMs), at border areas, areas with high bird density and the areas inhabited by wild and migratory birds to rule out any possibility of new or low pathogenic virus strains.

Surveillance must include both poultry and migratory birds: Poultry includes chickens and all other domesticated birds viz. ducks, geese, turkeys, guinea fowls, quails etc. India has a poultry population of nearly 650 million including backyard poultry. A large population of migratory birds start arriving in India during September and leave by the end of March every year. Surveillance, therefore, in migratory birds and poultry would include the following components:

1. **Clinical surveillance:** aims at the detection of clinical signs of avian influenza at the flock level.
2. **Virological surveillance:** (of cloacal and oro-pharyngeal swabs in poultry and wild birds where possible). It should be conducted to monitor at risk populations; to confirm clinically suspect cases; to follow up positive serological results; in establishments epidemiologically linked to an outbreak.
3. **Serological surveillance:** aims at the detection of antibodies against avian influenza virus.

The States should follow the surveillance plan of Government of India by taking a block as a geographical unit. As regards to migratory/ wild birds, the State Animal Husbandry Department shall carryout the surveillance along with State Department of Forest. Surveillance plan shall take into account the following factors:

- i. Population and density of poultry in each block, both in backyard and commercial establishments.
- ii. Flyways of migratory-birds.
- iii. Live-bird markets including wet-markets.
- iv. Existence of wildlife sanctuaries/ national-parks/ water-bodies visited by migratory/ wild birds.
- v. Areas adjacent to international land-borders, especially those affected with AI.
- vi. Interstate borders with the AI affected States.

Surveillance procedure for AI free establishments for recognition of AI free compartments is mandatory.

Avian population at risk

There is a need to define and identify the population at risk of infection with AI in the first instance. This is done in accordance to the bird population in the area

Population at high risk for Avian Influenza

- (i) Commercial birds with high density- chickens and ducks
- (ii) Backyard Birds – chickens, ducks, pigeons and other species- The bio-security is usually poor and there is no specific population estimate or density distribution estimate for backyard birds.
- (iii) Wild/migratory birds
- (iv) Live bird markets including wet markets particularly at the border areas

The risk factors for Avian Influenza are as under:

1. Disease situation in neighboring area across the border
2. States/districts previously affected by AI and adjoining states/districts
3. Shared borders with neighbouring country like Bangladesh, Pakistan, Nepal, Bhutan, China and Myanmar
4. Domestic duck populations
5. Backyard bird populations
6. Number and activity of live bird markets
7. Poultry Value chain / Wholesale live bird markets
8. National sanctuaries, wetlands / lakes used by migratory/ wild birds and their proximity to domestic poultry population/ establishments.
9. Captive birds
10. Fly-ways of migratory birds

More efforts are required in the high risk areas/ hot spots.

A detailed surveillance plan on Avian Influenza is given at Annexure III. The Surveillance Plan is an ongoing activity and may be updated from time to time based on new requirements, experience gained, scientific knowledge and epidemiology of the disease.

Processing of survey samples: The faecal and/or oro-pharyngeal swabs, collected from the poultry by the officials of the State Department of Animal Husbandry; and from the wild birds by the officials of the State Forests Department should be packed properly as per standard procedure and sent to National Institute of High Security Animal Diseases (NIHSAD), Bhopal (formerly HSADL Bhopal) and RDDs, as per Annexure IV.

I.2.2 Arrangements for Immediate reporting of Unusual Sickness and Mortality in Birds

- (i) The poultry owners/ integrators/ hatcheries, their consultants, field veterinary institutions and anyone who notices it, must report unusual sickness/ mortality in domestic or wild birds immediately and in any case within 24 hours of its occurrence to the nearest veterinary institution and/or any other government agency.

- (ii) The entire machinery of the Animal Husbandry/Veterinary Department in every district should remain in a state of full alertness and preparedness in case of report of unusual sickness and mortality in birds.
- (iii) Concerned veterinary staff must make regular visits to high-density poultry units (backyard and commercial). Section 4(2) of the Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009 also states that the Village Officer, as designated by State Government under this Act, shall visit the area falling within his/her jurisdiction for reporting any outbreak of the disease. All veterinary officers in the district (government, semi-government or private) should report to the CVO/ DAHO on phone/ or fax or e-mail, of any unusual sickness or mortality in poultry and wild birds.
- (iv) Similarly, the forest guard/ forester in Forest Department should remain vigilant and report any unusual sickness/ mortality in wild and migratory birds, in sanctuaries and water-bodies etc to the senior forest officials and or to the nearest veterinarian /CVO/ DAHO of the State Animal Husbandry Department.
- (v) Create public-awareness about reporting any unusual sickness and mortality in poultry and wild birds and encourage them to provide informal and supplementary information about any unusual sickness and mortality in avian species in their vicinity. This can be done through regular IEC campaigns for poultry farmers, holding Gram-Sabhas in rural areas and through print and electronic media. However, due care should be taken not to create any panic in the public.

The state governments should ensure capacity-building measures to get mortality reports at the earliest. Establishment of separate Avian influenza Cells and Toll-Free telephones are some of the suggested ways.

Co-ordination between State Department of Animal Husbandry and Forests

The Chief Secretaries of the States should ensure that the Department of Animal Husbandry and of Forestry must undertake coordinated survey programmes. As a first step, the Forest Department should prepare details of the areas visited by wild/ migratory birds. Simultaneously, the Department of Animal Husbandry should prepare details of areas of poultry concentration. High density poultry areas visited by the migratory birds, live-bird/wet-markets and international borders porous for poultry and birds are the core and critical areas for targeted surveillance. Prepare lists/maps of such critical areas and circulate to all concerned including the Government of India. This would help the designated diagnostic laboratories to setup priorities for testing the material. Advice on the role of different departments as summarized at Annexure V.

1.3 Guidelines for Collection, Packing and Transportation of Samples

The following guidelines are extremely important. States should adhere to these guidelines:

- (i) The States/ UTs must distinguish at their level between unusual sickness/ mortality and normal incidences of sickness and mortality in poultry. Only in case of unusual sickness/ mortality raising suspicion of AI, forward the samples immediately either to respective Regional Disease Diagnostic Laboratory or directly to National Institute of High Security Animal Diseases (NIHSAD), Bhopal through special messengers under

intimation to the Joint Secretary (Livestock Health), in the Department of Animal Husbandry, Dairying and Fisheries, Government of India.

- (ii) Timely collection of samples in the prescribed manner and packaging and quick dispatch to RDDDLs/NISHAD is of utmost importance for quick and accurate results.
- (iii) Sampling will be governed by the Surveillance Plan as given in Annexure III of the Action Plan which may be reviewed/ updated from time to time and accordingly notified to the States/UTs.
- (iv) All the samples from a village should be packed together so that if required, the samples can be pooled and tested. Samples from other villages / areas should be kept separate.
- (v) In case of mortality, the dead birds are the sample of choice.
- (vi) It is imperative that the cold-chain is maintained while dispatching the samples.
- (vii) The samples should be accompanied with a prescribed proforma (Annexure-VI) for referring to designated laboratories for diagnosis of AI. The details of the area from where the samples were collected, place etc. should accompany the samples. The laboratories shall not accept samples without fully filled proforma.

Contact details of RDDDLs, NIHSAD and DADF are given at Annexure-VII.

I. 4 Obtaining results of Diagnostic tests.

Designated laboratories (RDDDLs/ NIHSAD) are to communicate the results of testing of samples to the Secretary, Animal Husbandry Commissioner and Joint Secretary (Livestock Health) of Department of Animal Husbandry, Dairying & Fisheries and to the Chief Secretary of the concerned State.

A series of immediate actions will be taken by State Govt. in case of confirmed positive report as detailed in the Action Plan of the Department and also 'Contingency Plan' of Ministry of Health & Family Welfare on Bird Flu issued in 2005 for rapid control & containment operation. These actions to be taken by Animal Husbandry & Public Health Department of State Government include setting up of a control room in the State, constitution of Rapid Response Teams (RRTs), setting up of infected zone of 1 Km of radius from epicenter, surveillance zone of 01-10 Km radius of epicenter with details of population of birds involved in 1 Km radius for culling operations and 01-10 Km for surveillance zone, medicines/disinfectants, Personal Protective Equipment (PPE) kits, health check-up and supply of tamiflu. Further action involved are restriction of movement of birds from infected & surveillance zone, mass culling of birds in the culling zone and disposal of dead/culled birds, Information, Education & Communication (IEC) campaign on the disease and payment of compensation to farmers on the birds culled is also to be done as per Action Plan.

After culling operations, clean-up and disinfection of the culling area will have to be done as per Action Plan and sanitization certificate will be issued by the State Govt. for issue of Post Operational Surveillance Plan (POSP).

The requisite information on population of birds, geographical location of the place with map of the epicenter/s should be sent to the Department of Animal Husbandry, Dairying & Fisheries, Govt. of India for further notifying the disease outbreak to OIE and concerned Ministries.

I.5 Role of District Collector/Deputy Commissioner/ District Magistrate

District Collector/Deputy Commissioner/District Magistrate has to play a central and coordinating role to deal with the outbreak of AI. He /she should ensure proper enforcement of restrictions including movement control, ban on sale of poultry related products, closure of shops, payment of compensation (payment and verification), clean-up and maintenance supply lines for equipment etc. Associated revenue officers should be thoroughly familiarized with the Action Plan to enable them to assume responsibility in case of outbreak. He/she should also define and monitor role of officers from line departments required to be deployed during control and containment operation.

I.6 Legislative Frame Work

The Government of India has enacted an Act namely "The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009". The Act has come into force in all the states/ UTs. The list of notifiable diseases by the states is given in the schedule of the Act. The states have been empowered to take necessary action to appropriately deal with disease situations.

I.7 Stocking and Sourcing of Equipment/ Instruments/ Machinery etc. required for Conduct of Operations

Equipments/materials such as Personal Protective Equipment (PPE) kits (Annexure-VIII), slack-lime and quick-lime, sodium-hypochlorite, formalin, sodium phenol barbital, gunny-bags, plastic-sheets, plastic-bags, spray-pumps suitable for crops, spray-pumps suitable for spraying at height such as on trees etc., fogging-machines, jetting-cum-suction machines, gumboots, JCB-machines, flame-guns, LPG cylinders, fire-wood, kerosene and coal etc. are required for conduct of operations. The states should develop reserves of these items and determine source of supply in case of an emergency; ensure ability of suppliers to provide equipment/ materials throughout an outbreak as-per-requirements and finalise procedural and financial formalities well in advance. Vehicles and machinery may have to be hired in situation of outbreak. An illustrative list of instruments/ equipments/ other materials required in AI operations is at Annexure IX.

Chapter: II Steps to be undertaken in Case of Suspicion of Avian influenza Outbreak

II.1 Visit to the site of outbreak (Epicentre)

On report of unusual sickness or mortality of poultry or other birds etc, the CVO/ DAHO/ Disease Investigation Officer (DIO) shall visit that place immediately and ascertain the circumstances, facts and oversee activities as demanded by the situation. While visiting the farm/ village/ affected premises, all precautions including use of PPE etc. should be exercised and proper instructions on biosecurity measures to the owners of the birds

including cleanliness/ hygiene, segregation of healthy birds from the sick ones, restriction of movement of birds and human beings within the premises and from outside.

DO NOT OPEN ANY BIRD SUSPICIOUS of AI FOR POST-MORTEM IN THE FIELD

II.2 Kit for Veterinary Officers / DIO and its use

- Each investigation officer should be equipped with a 'kit' (indicated in Annexure VIII), so that he/she is in a position to conduct preliminary and clinical investigations as demanded by situation and, if necessary, collect and dispatch samples for laboratory analysis. All investigation officers who are required to visit the suspected/ outbreak areas should wear the PPE (details given at Annexure VIII). Two or three fogging/ spraying machines and 10 or more sets of essential kits, should be carried to each suspected place. The office of every CVO/ DAHO should have at least five fogging/ spraying machines and fifty sets of protective clothing as per details at Annexure X.

It must be ensured that the used PPE are disposed-off by burning prior to departure from the suspected site of infection.

- The DIO must wear protective gear in a room designated as changing-room for the convenience of reference before entering the suspected premises. He/she must leave the following items from the kit in the changing room:
 - * Leak-proof and water resistant container;
 - * Thermos container (ice-box) for carrying samples;
 - * Two pairs of latex gloves;
 - * Five autoclavable plastic-bags;
 - * Five black disposal bags;
 - * Disinfecting solution.

The remaining components of a kit must be carried inside the premises to be examined.

II.3 Preliminary and Clinical Investigations to be Done by Disease Investigation Officer (DIO) / Veterinarian etc.

Collect the following information depending on system of poultry rearing:

a) Commercial Farms:

- (i) Preliminary identification and topography (name of owner, village & district) of the production unit and sub-units of the farm.
- (ii) Whether commercial farm or village/backyard poultry under suspicion.
- (iii) Number of birds and other animals present in the farm/village.
- (iv) Date-wise morbidity and mortality-rate in each species of birds kept in the farm / village.
- (v) Identification of staff as well as vehicles directly involved with that unit.

- (vi) History about the recent movement of people, equipment, vehicles and animals/ birds in the farm / village.
- (vii) Availability of disinfectants and equipment for disinfecting the premises (if it is a farm).
- (viii) Weekly market from where the birds are purchased, if any.
- (ix) Anamnestic data - data concerning mortality rate recorded in 6 weeks prior to onset of clinical signs, data relating to vaccinations carried out and any untoward reaction, sickness or mortality after vaccination or medication.
- (x) Presence of ornamental birds for fancy keeping, fighter-cocks for gambling etc. in the village / on the farm etc.
- (xi) Information about any cross-border movement of poultry and products in the vicinity of the farm / in the village.

Clinical Investigation :

The DIO should establish clinical situation on the farm including sick and suspected birds. The clinical-investigation must be performed on all susceptible species (chicken, ducks, turkeys, guinea-fowl, goose, quail etc.) present in the farm/ village and it must begin from the most peripheral units.

II.3.3 Epidemiological Inquiry Report

An epidemiological inquiry report must be faxed or e-mailed immediately to the Secretary/ Director of Animal Husbandry of the state/ UT as well as to the Government of India (DADF) as per Annexure XI.

II.3.4 Actions following Clinical Investigations

If AI is not suspected, adequate local publicity should be given for the same so as to re-assure the poultry farmers and general public.

If the preliminary investigation further raises suspicion of AI, then the CVO/ DAHO has to ensure that the following steps are taken immediately:

II.4 Collection of samples and dispatch for laboratory tests

II.4.1 Type of Samples to be sent to the Laboratory for Testing / Post-Mortem

- (i) At least 5 birds (either recently died or the birds showing acute signs of disease after sacrificing them) ;
- (ii) Cloacal and oro-pharyngeal swabs collected from at least 10 healthy birds. Swabs must be collected ensuring that the oro-pharyngeal swabs are completely wet and at least one gram of faecal material is actually present on the fecal swab and immersed in virus transport medium (PBS or tissue culture medium);
- (iii) Serum samples from at least 10 birds showing acute signs of disease;

- (iv) In case, any duck population is present in the vicinity of mortality, at least 5 serum samples should be sent.

Mortality in Wild Birds: In case of unusual mortality of wild birds like crows, parrots, egrets, pigeons, migratory-birds etc. in the area, suitable samples on the above lines may also be sent.

II.4.2 Collection and Dispatch of Samples:

Samples must be packaged, wrapped in at least two leak-proof plastic bags to avoid seepage of the infectious-agent and transported inside a polystyrene box (ice-box) containing icepacks (Annexure XII). The polystyrene box must be appropriately disinfected before leaving the premises. The samples must be accompanied with an appropriate form (Annexure XIII).

A special messenger/ courier should leave for NIHSAD (formerly HSADL), Bhopal or to the respective Designated Diagnostic Laboratory within 24 hours from the initial report and reach the laboratory as soon as possible, by air, if necessary. The CVO/ DAHO should inform to the State Secretary/ Director of Animal Husbandry/ the respective laboratory in advance of the dispatch and to the DADF, Government of India. The Animal Husbandry Commissioner (AHC) on Tel: 011-23384146 (O), Joint Secretary (LH), GOI (Tel: 011-23384509 (O) or Joint Commissioner (LHS), GOI, Tel. No. 011-23384190/ 23384960/ 23389606. NIHSAD, Bhopal /respective Designated Diagnostic Laboratory should be requested to receive the samples to carry out the tests as soon as the samples reach there (Telephone nos. of NIHSAD, Bhopal and other Designated Diagnostic Laboratories are at Annexure XIV).

Following the collection of samples, the DIO and his assistants should change their protective gear in the designated changing room and burn them off within the premises prior to departure, collect all sterilizable equipments in an autoclavable bag, sealed and inserted into a second bag which is disinfected externally. All single use materials, paper-sheets, disposable gear and shoe-covers should also be burnt.

II.5 Immediate reporting to the Director, Animal Husbandry, the District Collector and others

The CVO/ DAHO shall immediately report by telephone, fax or e-mail the matter to the state Secretary/ Director of Animal Husbandry, District Collector, District Medical Officer and the Revenue Department (Sub Divisional Officer, Tehsildars etc.) The District Administration and state Department of Animal Husbandry will then proceed to take action with regard to enforcement of restrictions indicated below:

II.6 Identification of "alert-zone"

All villages and habitations within 10 km radius from the affected place are identified as "Alert-Zone". The Panchayat/ Municipal Authorities, Civil, Veterinary and Health Officials in those areas should be alerted about the possibility of AI outbreak and requested to enforce the restrictions mentioned below.

II.7 Restrictions to be Enforced at the Site, and in the “Alert-Zone”, Pending Receipt of Test Results

• Restrictions and Activities within an “Alert-Zone”

Pending receipt of the test results, the entire suspected farm or site should be cordoned off and the following restrictions should be immediately brought into effect in the alert zone, by the district administration with the assistance of the Animal Husbandry Department etc:

- (i) No vehicles should be allowed to ply in and out of the affected farm/ site. Personal vehicles should be left outside the farm premises.
- (ii) No movement of poultry, eggs, dead carcasses, manure, used litter, farm machinery, equipment or any such material should be allowed to and from the alert zone
- (iii) The personnel working inside the farm should wear protective clothing all the time inside the farm, including face-masks and gloves, gumboots (or shoes with disposable covers) etc. While leaving the farm, leave the protective clothing etc at the farm and clean themselves thoroughly with suitable disinfectants.
- (iv) Movement of people to and from the suspected farm should be restricted to the barest minimum. No other animals and birds should be allowed in the farm.
- (v) Inter-sectional movements of farm personnel should be banned. They should not visit any other poultry farm, bird-sanctuary or zoo etc.
- (vi) Disinfection procedures (e.g. by using 2% NaOH/ KMnO₄) should be strictly applied at the entrance of the premises.
- (vii) All records of birds present at the farm are to be maintained properly.
- (viii) Before the test results are received, the possibility of closing the markets and shops in the area may be explored by the District Collector/sub-divisional officer/revenue authorities in consultation with the State Animal Husbandry Department, particularly if more farms become suspect during this period.
- (ix) Practices of scavenging of poultry in the open backyard should be prevented and marketing of birds/chicks/eggs through basket-wala should be banned.
- (x) Police force should be deployed for assistance to enforce above measures, if necessary.
- (xi) **Continued Surveillance and collection of Information Pending Receipt of Results:** The DAHO should arrange to record mortality or sickness of birds at the suspected site and in the alert-zone. Also he/she should collect information about the total poultry population (with details of age, breed) with individual poultry farmers, both backyard and commercial within a radius of 0-1 KM (for

the purpose of culling) and between 1-10 KM (for the purpose of carrying out movement restrictions and surveillance) from the suspected site. For this purpose, a scale-map has to be drawn indicating all the villages in 0-1 and 1-10 km radius.

(xii) **Action by Forest Department in bird sanctuaries etc.:**

In case the suspected site happens to be a bird sanctuary, the actions indicated from (i) to (xi) above paragraphs are to be undertaken by the Forest Department with assistance of the Animal Husbandry Department, wherever required. The Department of A.H and of the Forests should assign at least one officer each as the Designated officer to co-ordinate necessary procedures.

II.8 Action to be taken in case laboratory diagnosis is Negative for AI

Lift the restrictions mentioned above. However, if the above average mortality or disease situation continues, the restriction should continue till the mortality subsides. The laboratory must test for the associated/suspected diseases like Newcastle disease, Marek's disease, Infectious bursal disease etc. as differential diagnosis.

Chapter III: Action Plan to deal with Confirmed Outbreak of AI

III.1 Notification and Information of Outbreak of Avian Influenza (AI).

- The NIHSAD (formerly HSADL) Bhopal/ Designated Diagnostic Laboratory will confirm AI to DADF, Government of India with a copy to Chief Secretary of the state concerned. State will notify the disease and take immediate actions for control and containment of Avian Influenza as detailed in Para I.4.
- The Government of India will depute the Central Observers of Department of Animal Husbandry, Dairying & Fisheries, if situation so warrants or if specifically requested for by a state government. The Central Observer will provide technical assistance and guidance to the state government in the conduct of operations.
- The Chief Secretary/ Secretary Animal Husbandry of the State will notify to the highest authorities of the State Government, all the concerned private and public agencies, of the outbreak along with necessary guidelines/instructions.
- The officials of the Animal Husbandry Department will immediately inform of the AI outbreak to their counterpart officials in the Human Health Department at District, State and National level.
- Department of Animal Husbandry, Dairying & Fisheries, Govt. of India will notify the disease outbreak to OIE as per the procedure.

III.2 Implementation of Contingency Procedures under the Co-ordination of District Collector/ Deputy Commissioner

Once AI is notified in a particular area, all contingency procedures for its control and containment should be implemented at once. The responsibility shall rest with the

District Collector/ Deputy Commissioner/ District Magistrate, with technical assistance from the Departments of Animal Husbandry, the Human Health and the Forest etc. as appropriate. While the CVO/ DAHO will act as the supervisory officer for all technical operations in general, only the concerned forest officer will take charge for containing outbreaks in a zoo/ wildlife sanctuary or other forest area etc.

Following step-wise activities are suggested:

- (i) **Quick start of a Coordination Process:** District Magistrate/ Dist. Collector / Deputy Commissioner should hold an emergency meeting with the Senior Superintendent of Police, Chief Medical Officer, Chief Veterinary Officer and officers of other line departments e.g. P.W.D, Heads of Panchayats /Local Bodies and other Government and NGO's and establish the following:
 - (a) Set out the strategy of the whole work of control and containment operation for AI in the shortest possible time;
 - (b) Define the roles and responsibilities of all the departments as per Annexure VI;
 - (c) Draw a scale-map of infected and surveillance zone showing all villages to be covered. This will help in calculating the poultry population, number of commercial farms, human population and number of houses etc. in the area.
- (ii) **Establishment of a Control Room:** Set-up a 24-hour Control-Room within the infected area, equipped with telephones, STD-facility, fax-machines, computers with internet access and secretarial-assistance etc. The personnel deployed in the Control-Room should be able to clearly receive and disseminate all comprehensive information. The Control-Room may be contacted by several news agencies/media.
- (iii) **Establishment of Rapid Response Teams (RRT)**

Rapid Response Teams (RRTs) fully equipped with PPE and sanitization materials for disinfection need to be established.

The RRTs will be responsible for operations like culling, disposal of birds, supervising and undertaking clean-up and disinfection of infected premises etc. All the veterinary, para-veterinary and other related personnel of the State Animal Husbandry Departments are trained in the control and containment of Avian influenza by the states. Daily wages untrained/ unskilled laborers/ or personnel, if engaged on contractual basis, should be trained for their personal safety and quarantine measures, apart from control and containment operations.

The states are advised to check following issues as part of preparedness:

- The RRTs for clean-up and disinfection will function under the overall supervision of veterinarians/para-veterinarians and comprise of Class IV employees, labour, etc.
- Total number of RRT's required to be set up based on area, type and concentration of poultry.

- Allot the work and the area to each RRT in a precise manner and keep a record of it. This should be started well in advance. Arrangements for food and refreshments must be a part of this exercise.
- Arrange boarding and lodging for RRTs.
- If need be, Director A.H./Commissioner should mobilize manpower from other districts. Faster mobilization of RRTs to outbreak areas is an important element of planning. Necessary medical check-up of the RRTs should be planned accordingly.

(iv) **Personal Protective Equipment (PPE)**

Prior to start of operations, briefing must be given to all involved on the importance of kit, its use and disposal etc. PPE must be used by RRTs and all persons having direct and active exposure to infected poultry. Workers/ labour force, if engaged for clean-up and disinfection etc. must also be provided with PPE. Operations should not be started without the use of PPE.

The composition of the kit is given at Annexure VIII. Kits used by the direct handlers i.e. cullers and others having direct exposure to infected poultry must have a face mask with a filter (N-95).

The sequence for wearing the PPE is as under:

- i). Wear shoe-cover
- ii). Wash hands
- iii). Wear 'dangri'
- iv). Put on the face-mask/ mask with filter (N95 standard)
- v). Fix protective glasses over eyes (goggles)
- vi). Fix hood over head
- vii). Put on gloves

The sequence of removing PPE should be followed as below:

- i) Remove shoe-covers
- ii) Remove gloves
- iii) Wash hands
- iv) Remove 'dangri' with attached hood
- v) Remove disposable protective glasses (goggles)
- vi) Remove face masks (for other than direct handlers)/ face mask with hepa- filter, N95 standard (for direct handlers)
- vii) Dispose off all by burning
- viii) Wash hands with disinfectants

(v) *Safety of Personnel Engaged in Control Operations*

Persons engaged in control operations have high chances of exposure to infection. It is therefore, of utmost importance to ensure the safety measures as explained in succeeding paras:

- **Health check up of personnel before start of operations**

The members of the RRTs must be physically and mentally healthy.

- **Use of Antiviral Drug (Oseltamivir):**

Prophylactic medication with the antiviral drug, (Oseltamivir) of the personnel coming in direct contact with poultry is essential. One tablet is to be taken orally daily for 10 days. It can be taken up to six (6) weeks in case of continued exposure. The Deptt. of Public Health, supplies Oseltamivir free of cost to all those engaged in operations including labor.

- All persons exposed to infected chickens or to farms under suspicion should be under close monitoring by local health authorities. Serological surveillance of exposed farm workers and veterinarians is encouraged. Further details can be obtained from the "Contingency Plan for Management of Human Cases of AI" hosted on the website of the Ministry of Health & Family Welfare, Government of India (www.mohfw.nic.in).

- **Personal-Hygiene and cleanliness**

Proper hand-hygiene through regular and proper washing is necessary for the cullers and transporters after each operation. Quarantine of all the personnel engaged in operations of culling/ cleaning operations must be enforced under medical supervision. Arrangements for boarding/ lodging of such personnel during this period and payment of wage for the labor should be ensured. Self-surveillance is strongly advised with quick reference to a health institution, governmental or private, in case of any flu-like symptoms or respiratory complaints etc.

III.3 Demarcation of Surveillance and Infected Areas and Actions to be Taken

The district administration will notify the names of all the villages and habitations within a radius of 0-1 km i.e. 1 km radius from the site of confirmed AI case and within 1-10 kms radius. The area within one km from the site of confirmed AI will be designated as "**Infected Zone**". Rest of the area within 1- 10 km is the "Surveillance Zone". The infected zone should be clearly and prominently displayed in the local language, preferably through sign-boards. The Surveillance zone should act as a buffer-zone between the infected area and the disease-free area. The State Government, in consultation with the Government of India may change the radii of the infected zone by one more km each, maximum up to 3 km., if the foci of infection / mortality are scattered over a larger area. In such a case, the culling zone will be extended to one km radius from the new site of infection without notifying the disease again. Further/more occurrence of AI, if any, beyond 3 km. radius of this limit will require to be notified as a fresh/new outbreak by the Department/ State Government as per due procedure.

III.4 Immediate Tasks of the Designated Veterinary Officer

The designated veterinarian must take PPE and antiviral drug (Oseltamivir) as indicated above and immediately undertake the following steps:

(i) **Assessment of the situation:**

- Quickly assess the state and condition of the farm/ premises/ site to determine the nature and scope of operations to be conducted.
- Identify locations where vehicles leaving the farm/ premises/ site can be properly washed and disinfected.
- Activate the disinfection procedures at the point of entrance to/ exit from the infected premises; identify sites where staff may wash and disinfect; and ensure that on leaving the premises, all staff, wash and disinfect exposed body parts and shoes and agree to wash their clothing as soon as they return home and the disposable gear is disposed-off by burning. Ensure that they do not go from one farm to the other.
- Ensure that vehicles are washed and disinfected properly and should leave the infected premises only if absolutely necessary.
- Take necessary steps to ensure that contamination of water-reservoirs is avoided.

(ii) **Estimating Requirements of Store and Manpower:**

Handling of an AI outbreak may need the following items / manpower:

- * 100-150 kg of slack lime is required to cover 2m x 2m x 2m burial pit.
- * On an average, one gunny bag can carry 35-40 culled birds.
- * One member of culling team can cull 100-250 birds a day in an organized poultry farm, 18-100 in backyard poultry depending on the rate of arrival of birds etc.
- * Requirement of PPEs dependent on number of shifts, number of members of RRTs, and number of days required to complete the culling and sanitization operation.

III.5 Absolute Ban on Movement of Poultry

Movement of live birds from and to the infected area should be completely banned by the State Government. Restocking of poultry in that area will commence not before three month after the Sanitization Certificate is issued as per Para III.11 subsequent to the approval of the DADF, Government of India. Police, Local bodies, media and representatives of the farm organizations should be involved with this work. Various types of physical restrictions like Nakabandi, drop-gates on all outgoing roads of the infected area may be imposed by engaging police personnel.

III.6 Closure of Poultry and Egg Markets/ Shops

The States or District administration should immediately announce the closure of all shops and markets dealing with poultry products and eggs within the radius of 10Kms from the infected site. Take the assistance of revenue, municipal and Panchayat authorities. These shall remain closed till completion of culling and sanitization operations. Thereafter, inward trade of eggs and processed poultry / products shall be allowed within the surveillance zone without any outward movement of poultry.

III.7 Restrict Access to Wild and Stray-Birds

All possible steps should be taken to ensure that wild and stray-birds do not have access to the poultry, poultry sheds and water supplies in the infected area.

III.8 Restriction of Movement of Persons & Vehicles

To and fro movement of the number of vehicles and staff in the infected premises should be reduced to the minimum necessary to handle the outbreak, as both human beings and vehicles can be instrumental in further spread of infection. The movement of people and equipment from the infected premises should be allowed only when necessary. Staff in the infected premises may leave the farm after a complete change of clothing and disinfection and proper disposal of protective equipments.

The vehicles of the veterinarians and others visiting the infected premises must be left at least 500 meters away from it. If necessary, e.g. JCBs for control and containment operations may be allowed. However, these will be fully washed & disinfected before leaving the farm/ infected premises.

III.9 Depopulation of Birds in the Infected Zone

Stamp out all the live poultry birds/ other captive birds within the infected zone. Culling should start from the periphery of the infected zone. It should take place in the presence of designated Veterinary Officer and concerned local authorities such as officials of the Revenue Department, Municipality, Panchayat etc.

III.9.1 Method of Culling/ Depopulation on a Farm

The birds should be sacrificed by a quick twisting of the neck (cervical dislocation), taking care that the process is humane. Depopulation and disposal of infected birds must be done quickly with the doors of the shed/ house closed to prevent entry of wild-birds and other animals.

III.9.2 Culling Strategy for Backyard Poultry

Typically, backyard poultry is let out in the morning for scavenging. Public announcement should be made a day before culling, suggesting not to release the birds in the morning. Co-operation of local bodies is necessary for operations in the backyard. A common location should be identified for the culling and disposal of the culled birds in consultation with the local bodies.

Depopulation in the backyard poultry is comprised of three steps done over the consecutive days:

- i) Culling Operation: Immediately after notification of outbreak, most of the backyard birds are culled. However, a few may escape.
- ii) Mopping operation: Culling of birds which could not be presented during the culling operation.
- iii) Combing operation: Willfully hidden birds during culling and mopping operations but found during the combing operation are culled without any compensation.

III.10 Disposal of Infected Material

Do not allow transportation of infected birds, dead birds, eggs and other related materials out of the infected site under any circumstances. These must be disposed off as explained below:

III.10.1 Disposal of Dead Birds

Most appropriate is to burn or incinerate the dead / sacrificed birds. Approximately 5 quintals of wood would be required to burn 100 kg of dead birds. However, the most common practice in the recent outbreaks has been to bury in deep pits, cover with calcium hydroxide followed by atleast 40 cm layer of soil. More layers of lime and soil can be applied to level the pit. A pit of 2x2x2 meters will accommodate around 1800 birds (fowls) and about 450 turkeys. Pits must be deep enough to prevent access to rodents or dogs etc. The burial ground is suitably marked and is not opened for at least one year. Top it up with earth and lime if it sinks over time. A certificate of disposal of birds must be obtained from the designated officer. The burial site should be away from the habitat and water logged areas/ ponds/ rivers etc.

Sites for disposal of birds and its management

- i) For proper management, pits should be dug on a common land within the infected zone, in limited numbers.
- ii) All the pits should be well covered with multiple layers of lime and soil.
- iii) Adequate amount of lime should be spread over the pits.
- iv) The pit sites should be fenced with kanta/ bushes.
- v) Permanent warning signboard should be fixed in all the pit sites.
- vi) The pits should be monitored at regular intervals to check any sinking, water accumulation etc. and if necessary, steps be taken as mentioned in Sl. No. i) to iii) above.
- vii) The pits should be located on the farm premises, and in case of backyard, a village common land/ forest land preferably be at a higher level, to avoid accumulation of water during rainy season. Pits should be located away from river/ lake side and residential areas. No crop should be grown further for at least one year on the pit site. During digging of the pits, it should be ensured that no water is oozing out of the pit.

All the pits should be dug one day in advance of the culling.

III.10.2 Destruction of Contaminated Materials

Materials likely to be contaminated e.g. meat, eggs, feather, used litter, manure, feed, feed ingredients, gunny bags, curtains, paddy husks and saw dust used for bedding, egg trays, drugs and vaccines must either be buried in a deep pit along with animal carcasses or should be burnt.

III.11 Clean-up and Disinfection

Clean-up and disinfection is the last stage of a control and containment operation. The infected premises are disinfected after the birds and the infected materials have been destroyed. Different protocols may be considered for clean-up and disinfection of commercial and backyard poultry as explained in succeeding paras.

III.11.1 Cleaning and disinfection of Commercial Farms

- Jetting and suction machines should be deployed for cleaning the lower level of the two- tiered poultry sheds. Ensure complete disposal of faecal material and slurry etc. collected on the lower story. The feces slurry and water (collected on the lower story) discharged into pits dug on the same premises. The pits need to be covered properly using netting or layers of earth and lime, replenished periodically
- The infected farm premises/ area should invariably be disinfected by spraying disinfectants like 2% Sodium Hypochlorite or 4% Formalin prior to reduce the virus load.
- Wash and disinfect the walls, floors and ceilings of the sheds in the premises to remove organic material with either or a combination of the following:
 - 3% calcium-hydroxide solution
 - Sprinkling of bleaching powder and lime on the floors of the sheds
 - White-washing of concrete areas with lime
 - Fumigation of closed chambers and sheds with Potassium-permanganate (KMnO_4) and formalin
 - Treating all the equipment with 2% sodium-hypochlorite solution for 48 hrs
 - Cages and other large metal structures may be decontaminated by heat treatment (flame gun)
 - Feathers spread around the farm or attached to metal net, if any, should be burnt with the flame gun
 - All units and items which are physically or functionally connected to the establishment (e.g. hatchery, egg store rooms, packaging rooms, egg trolleys and egg product plants etc.) must also be properly disinfected. Vehicles used for transporting live birds, eggs and feed must also be disinfected.
 - Water-reservoirs must also be emptied, washed and disinfected
 - Feed tanks (silos) need to be emptied, washed with a hot water-pressure pump and subsequently fumigated
 - After washing and disinfecting, all units must be fumigated twice with at least two weeks between the fumigations
 - Wash hands and feet of farm workers and the visiting officials with soap and disinfectant with approved detergent or rectified spirit
- Use 2% solution of NaOH should be used at the entrance on foot mats to clean the shoes gumboots and other items,

- Use Quaternary-ammonium salts for the treatment of walls, floors, ceilings and equipment etc,
- Cresolic-acid 2.2% solution or Synthetic phenols 2% solution for the treatment of floors,
- * Vircon-S[®], D-125[®], Instakol Plus[®] and Trilocid concentrate[®] are available.

III.11.2 Clean-up and disinfection; Backyard poultry

- (i) Burn entire litter, baskets, feed, gunny bags, curtains, paddy husks, saw dust, egg trays and temporary cages and garbage in and around all the poultry in the infected zone.
- (ii) Spray all the houses in the villages within infected area, irrespective of the presence or absence of poultry, with 2% sodium hypochlorite solution.
- (iii) Spray poultry rearing houses in infected area with 2% sodium hypochlorite solution.
- (iv) Spray all the damp areas, drains etc. with 4% formalin except in the inhabited dwellings due to its irritant effects. In such areas, sodium hypochlorite or Trilocid concentrate[®], Vircon-S[®] or D-125[®] may be substituted. Thereafter, lime may be sprinkled.
- (v) Lime may be applied on the roads, streets etc in all the villages under operation.
- (vi) White wash the poultry rearing houses/ cages in the infected area.
- (vii) Apply lime and bleaching powder in and around the poultry houses/ cages in the infected area.
- (viii) Spray 2% Sodium-hypochlorite solution in poultry houses/ cages kept within the households / verandas and with 4 % formalin if birds were kept far away from the residency.

III.11.3 Poultry Owners to be Responsible for Clean-up and Disinfection

States should ensure clean-up and disinfection of the infected area. However, it is the responsibility of poultry owners under direct supervision of veterinarians/ para-veterinarians etc as per prescribed procedure. The poultry owners are responsible to maintain minimum standards of hygiene and must undertake post disease clean-up and disinfection.

III.11.4 Submission of Daily Reports on Control and Containment

Daily reports of control and containment are required to be compiled and sent to Government of India. This includes number of RRTs engaged, birds culled, eggs/ feed destroyed, pits dug, amount of compensation paid, surveillance and sanitization undertaken etc. The report should be sent on a prescribed proforma (Annexure XV).

III.11.5 Sealing of the Disinfected Premises and Issue of Sanitization Certificate

After the culling and disinfection have been completed, the premises are to be sealed and a sanitization certificate issued by the State Animal Health authorities stating that culling has been carried out and the area has been cleaned and disinfected as per Action Plan and operations have been concluded. Thereafter, Post-operation surveillance will be carried out for three months. The areas where the birds were culled will be repeatedly disinfected by fumigation (Indoors) or sprays (open place) at every 15 days during the 3 months of surveillance.

Chapter IV: Post Operation Surveillance and Freedom from Disease

Checklist of the materials, appliances, resources and facilities that may be required in successful conduction of POSP is at Annexure XIV.

Re-induction of Birds:

Farmers may re-start poultry production and marketing 90 days after the release of sanitization certificate. New eggs, chicks and/or birds must only be procured from the areas known to be free from AI.

Ensure that no birds are inducted into the culled and disinfected areas for the specified period of three month.

Any poultry found in the area under surveillance will be culled. No compensation will be paid for culling at this level.

(A) POSP Surveillance Zone:

The "Surveillance Zone" is the area beyond the infected/ operational area (between 1-10 km from the epicenter). Surveillance in this zone will involve collecting samples (serum and cloacal) from poultry both commercial and backyard. Samples collected as per the guidelines should be sent to the NIHSAD, Bhopal on fortnightly basis. Information on the dispatch of samples is required to be sent on a proforma (Annexure XIII).

This information should be disseminated to all villages/farms explaining the logic for it, as it is necessary to move towards a disease-free status. People try to bring in birds into the area stealthily should be prevented under all circumstances.

(B) Sample Type Size and Time Frame for POSP:

Poultry Units: Collect samples from two poultry birds in a poultry unit with 50-1000 birds and from 6 birds in the case of bigger units.

Backyard poultry: Collect samples from six birds in 50% villages that fall within the surveillance zone.

Samples will be taken four times in two months, only once from a particular poultry unit/ village and send to NIHSAD, Bhopal or to Designated Diagnostic Laboratory by a special messenger. The samples should include both serum and cloacal swabs.

DESPATCH OF CLOACAL SAMPLES:

- Send the cloacal swab samples dipped in about 5.0 ml sterile screw capped plastic vials containing 3.0 ml of PBS with 1 % Bovine Serum Albumin (pH 7.2-7.4) Viral Transport Medium containing suitable antibiotic and antifungal agents in appropriate concentration Cloacal swabs must contain minimum 1.0 g faecal material.
- Composition of PBS (0.01 M; pH – 7.2 to 7.4)
 1. Sodium-chloride – 8.0 g
 2. Potassium-chloride -0.2 g

3. Disodium hydrogen-phosphate, anhydrous -1.15 g
4. Potassium dihydrogen-phosphate, anhydrous -0.2 g
5. Distilled-water -1.0 liter
6. Antibiotics: The following antibiotics combinations can be used:
 - a) Benzyl-penicillin -2X 10 IU /l ,Streptomycin – 200 mg/l & Nystatin – 0.5x10⁶ IU/l or
 - b) Polymixin-B – 2x 10 U/l & Nystatin – 0.5x10⁶ IU/l or
 - c) Gentamicin-sulphate – 250 mg/l & Nystatin – 0.5x10⁶ IU/l

DESPATCH OF SERUM SAMPLES:

- Send at least 0.5 ml serum samples in 1.0 or 2.0 ml sterile screw capped plastic vials.
- Mark each vial properly by laboratory serial number of the dispatching districts with a water proof marker pen before putting it into ice packing.
- There must be sufficient ice packing in the carton containing the samples to avoid decomposition during transportation.
- Container having samples should be clearly marked and labeled for ease of diagnostic laboratory.
- POSP samples should be forwarded with an enclosure (Annexure XV) that contains the details of the samples. Further, the sample dispatching authority should maintain a sufficiently descriptive record for each dispatched samples so as to locate the Poultry Owner, Village, Mouza, G.P., Ward, Municipality, Block, District, type of bird, system of rearing, flock strength of the pen and farm, So as to trace back the source of sample for further necessary action.

(C) Further actions if Samples test positive in the Surveillance Ring:

Control and containment operations will be carried out in accordance with the Action Plan.

(D) Further action in the event of samples testing negative:

If samples collected test negative, repopulation of poultry will be allowed in the affected area after completion of three months from the issue of sanitization certificate.

(E) Surveillance in the Repopulated Poultry Unit / Village:

The repopulated flock in the infected area will be screened periodically. Random clinical, investigations on the repopulated flock are to be carried out at least once every fortnight to the extent of 0.5% of the population introduced as detailed below.

- (i) **Poultry Units:** Sampling of 0.5% of the population introduced will be done subject to a minimum of **2 birds** and maximum of **6 birds**. From each poultry bird, the Oro-pharyngeal swab and cloacal swab will be collected.
- (ii) **Backyard Poultry:** Sampling of 0.5% of the population introduced will be done subject to **2 birds per village**. From each poultry bird, Oro-pharyngeal swab and cloacal swab will be collected. Such sampling shall be done once every fortnight over a period of two months. Samples will be sent to the NIHSAD, Bhopal for testing. If samples test positive, control and containment operations will be again undertaken as per Action Plan.

Checklist of the materials, appliances, resources and facilities that may be required in successful conduction of POSP is at Annexure XV.

IV.2 Freedom from Disease

In case no other outbreak takes place in the area or no samples collected from the post operations surveillance test positive for the next 3 months after issue of Sanitization Certificate "Disease Free" Status can be declared under intimation to the OIE.

IV.3 Compensation to be paid for forced culling

It is GOI's policy that the farmer must be compensated for the loss of birds during culling. District Collectors should be assigned to expedite payment and to prevent the misuse of the scheme. It will be necessary to collect data on the poultry population in each area before the receipt of test results. The Government of India will share 50 % of the total cost of compensation paid.

The rate of compensation may be reviewed and decided from time to time by GOI in consultation with State Governments. The share of expenditure of Government of India can be charged to the CSS "Assistance to States for Control of Animal Disease (ASCAD)" operational in each State. It is suggested that State Governments should consider following issues as part of operational preparedness:

Compensation should be paid on the spot, immediately after the culling is over or at the time of collecting birds from the owners.

Chapter V: Education Campaign on General Awareness and Biosecurity Measures on Avian Influenza Outbreaks

V.1 Share concerns with Industry and Farmers

Following a notification of the disease, the Government (Secretary and Director, Animal Husbandry) should take the poultry industry and small poultry farm owners into confidence and inform them periodically about the measures that are being taken to control AI. Popular poultry and livestock journals and mass media should be encouraged to disseminate information about the government's initiative on AI. The support of the industry should be sought for implementing the government's decisions.

V.2 Media briefing by a designated official spokesperson

In order to avoid rumors about the impact of disease on public health and distress selling of poultry, clear and precise briefing of the media should be made regularly only and only by a designated official spokesperson of the state Government.

V.3 Advice to public on handling, processing and consuming poultry product

- Awareness in the general public should be made taking care that no panic is created. It must be emphasized that poultry meat cooked at more than 70⁰ C temperatures for 30 minutes inactivates the virus and it is absolutely safe to consume properly cooked poultry meat and eggs.
- Encourage hygienic way of slaughtering, dressing and packing of chicken meat. Media should be invited to awareness campaigns to report the things in the right perspective.
- The poultry farmers associations, cooperatives, NECC, APEDA, etc. should be actively involved in this process. Expenditure on awareness campaigns can be met from the centrally sponsored scheme of "ASCAD".

V.4 Biosecurity Measures

To control AI, strict biosecurity measures should be imposed and poultry owners be advised to adopt following measures in all farms, even though they are not currently infected:

Biosecurity Measures in Commercial Farms:

Keep-distance - Only those who take care of the poultry at the farm should be allowed to go close to the birds. Visitors should be strictly restricted from entering the sheds. Inter-mingling of other birds/ animals with poultry should be avoided.

- Disinfect and wash shoes, clothes and hands before and after contact with poultry. If equipment, tools or poultry supplies are borrowed from other farms, always clean and disinfect them before bringing them and before sending them back.

Keep-cleanliness: The bird cages should be cleaned and food and water for birds changed daily.

Do not Introduce New Birds to the Flock:

The new birds should be kept away from the flock for at least 30 days.

Know the signs of AI:

- A close check must be kept on birds mortality. Swelling around the eyes, neck, head, nasal discharge, discolouration of the wattles, combs, legs, drop in egg production, sudden weakness, drooping wings and lack of movement among birds are the warning signs.

Report about sick birds:

- Every unusual sickness or death of birds should be immediately reported to the nearest veterinary centre.

Follow uniform age group policy:

- In poultry farm, uniform age-group policy should be adopted. This is best done by adopting 'all-in-all-out' production system.

Restrict Inter-sectional movements:

- Where necessary to move to other farms, the personnel must clean their shoes and clothes.

Biosecurity Measures in backyard poultry:

- i. Keep the birds indoor. Do not allow wild and neighborer's birds to enter in the premises,
- ii. Keep the yard and surroundings clean and regularly bury/ burn the wastes
- iii. Do not catch and keep any wild or migratory birds
- iv. Report sickness/mortality in birds immediately to the veterinarians.
- v. Bury the dead birds properly. Do not throw them in drains or in open areas.

Biosecurity Measures in markets:

- i. The persons handling and dressing the poultry birds should use gloves and mask.
- ii. There should be regular/ daily sanitization of live markets/wet markets.
- iii. Care to be taken for any unusual sick/dead birds.
- iv. Hygienic dressing of birds, care to be taken for disposal of viscera/ feathers in live/ wet markets. There must be proper drainage and disinfection facility in the market.
- v. Regular cleaning of cages of birds should be undertaken. Foot bath/ spraying/ dusting and hand washing facility should be made available.
- vi. Inspection by Government agency should be undertaken on daily basis.

Other guidelines on bio-security measures are available at departmental web site (www.dahd.nic.in) under heading 'Bio Security Measures' and have also been circulated to the State Governments/ UTs through letter dated 22nd February, 2006.

V.5 Advice for Persons likely to be in direct Contact with infected poultry

V.5.1 People in areas with confirmed AI should do as under:

- Avoid contact with chickens, ducks or other poultry as much as possible. Children should not have contact with poultry or any other affected birds.
- Avoid handling (live or dead) chickens, ducks or any other poultry while visiting friends or family, even if the birds appear healthy.
- Avoid visiting poultry farms, duck farms or any farm where birds have been sick or suspected to have bird flu.
- All persons exposed to an infected environment, must wash hands and face properly and change clothes and monitor temperature for 4 days. If he/ she develop a high temperature, immediately consult doctor.
- Persons expected to work with infected birds / farms should take antifu medication (e.g. Oseltamavir-Tamiflu) in consultation with the doctor.

V.5.2: Advice for Persons likely to work with infected poultry

The persons likely to work with infected poultry should follow the guidelines as given in Chapter III.

Checklist for Preparedness for Control and Containment of Avian Influenza

Sl. No	Point of action	Details of action to be taken by State Government absence of AI outbreak
1	Familiarization with Action Plan	The Action Plan has been translated in local/ vernacular languages, circulated to all concerned and they have been familiarized with the contents. The Action Plan has also been put on the Departmental website (http://dahd.nic.in).
2	Familiarization with guidelines	Government of India guidelines and Action must be perused and studied.(website at http://dahd.nic.in)
3	Familiarize District Magistrate/ Collectors/ Commissioner and other Departments in control and containment of AI	<p>(i) The District Magistrate/ Collectors/ Commissioner have been briefed to assume <u>the</u> Charge of co-ordination of activities related to containment and control in case of outbreak, e.g., quarantine, movement control, closure of markets, ban on sale of related products, culling operations, payment of compensation, administering and developing a vaccination plan, clean-up etc.</p> <p>(ii) All personnel of the Animal Husbandry Department are familiarized.</p> <p>(iii) Concerned departments have been alerted informed about their roles.</p>
4	Rapid Response Teams (RRT's)	<p>Rapid Response Teams for culling have been formed, and also trained.</p> <ul style="list-style-type: none"> • State/UT may determine the number of RRT's required as per size/concentration/type of poultry etc.
	Time required to mobilize RRT's.	<ul style="list-style-type: none"> • Mobilization has to be immediate after notification of AI • Detailed deployment plan of RRT's i.e. how RRT's will <u>move</u>, begin and conduct operations has to be developed. The first phase will concentrate on culling of poultry etc. and disposal.

5	Personal Protective Equipment (PPE's)	<ul style="list-style-type: none"> • Sufficient stock of is readily and immediately available both for direct handlers and others. • Staff dealing with NAI must be equipped with PPE without fail. • Two types of kits of PPE, viz for direct handlers and for others are detailed in the Annexure IX. • The Hepa-mask is necessary for direct handlers i.e. cullers. • Tie-up for regular supplies during operations <p>Samples of these kits were also sent to the States in November 2005 to facilitate purchase of PPE. Further, the WHO interim guidelines for protection of persons involved in mass slaughter of birds have been conveyed to State Governments by vide letter dated 25th November, 2005 and are available as a direct link from the Departmental website.</p> <p>Large quantities of PPE's were used up in operations in Maharashtra and Gujarat and also in others States for control & containment operations. Therefore sufficient stock and continuous supplies are necessary.</p> <ul style="list-style-type: none"> • Kit has to be changed every time a worker moves from one infected premises to another • Briefing must be given on importance of kit, its use, its disposal, and the need to change the kit on exiting an infected premises. • Kit has to be disposed off by burning.
6	Antiviral drug (Oseltamivir)	Ensured availability of antiviral during (Oseltamivir) for each worker to be involved in operations. Liaison with Health authority is necessary.
7	Availability of other stocks	<p>Sufficient stock of following is should be available:</p> <ol style="list-style-type: none"> 1. Kit for testing by CVO/DIO as per Action Plan read with the letter dated 30th November 2005 of GOI. The letter is on the DADF website. 2 Equipment and drugs for depopulation of poultry as per the Action Plan. 3. Disinfectants, which are active against AI as per the Action Plan. 4. Foggers/spray machines for disinfecting the premises/area.
8	Compensation	<ul style="list-style-type: none"> • Funds should be available at local level to pay compensation on the spot, at culling of birds. • System of verifying claims must be decided in advance.
9	Information	The State Animal Husbandry Department should

	required in case of suspicion of outbreak	<p>have the following information in a stage about the suspected outbreak:</p> <p>(i) Preliminary identification of the farms/villages involved;</p> <p>(ii) Number of birds and other animals in the suspected area;</p> <p>(iii) Identification of staff as well as vehicles likely to be directly involved with that unit;</p> <p>(iv) Availability on site of disinfectants and equipments for disinfecting the premises;</p> <p>(v) Anamnestic data (data relating to immune response).</p> <p>(vi) Information on any vaccination performed</p> <p>(vii) Record of animal or poultry movements up to 20 days prior to the onset of the first clinical signs;</p> <p>(viii) Record of movement of all people (staff, relatives, servicing personnel, veterinarians etc.) who had access to the farm;</p> <p>(ix) Report of all vehicles, regardless of their contact with animals, which have had access to the unit (in case of farm).</p> <p>(x) In addition, sales of poultry, if any, over recent period may be determined and further information about sale viz. person to whom sold, place to which transported, use to which put, further sales, if any, etc needs to be verified for containment and control.</p> <p>(xi) Record of mortality or sickness of birds at the suspected site and in the alert zone is required. Collect information about the total poultry population and population with individual poultry farmers keeping more than 100 birds in the alert zone (separately within a radius of 1 Kms and between 1-10 Kms from suspected site).</p>
10	Identification of infected zone (1 Kms around infected farm premises) and surveillance zone (1 to 10 Kms around infected farm premises)	<p>Identify the following immediately before confirmation is available:</p> <ul style="list-style-type: none"> • number of villages in infected zone and surveillance zone • human population in infected zone and surveillance zone • number of households in infected zone and surveillance zone • poultry population in infected zone and surveillance zone • type of poultry in infected zone and surveillance zone viz. backyard and commercial with break up of each in each zone
11	General actions/points in	<ul style="list-style-type: none"> • Identify logistics viz: latitude and longitude of closest place where helicopter can land if

	<p>case of suspicion of outbreak</p>	<p>supplies are to be rushed</p> <ul style="list-style-type: none"> • Daily report must reach Department of Animal Husbandry, Dairying & Fisheries (DADF), Government of India • 24 hour control room should be functional in the State. Telephone Number be given to Government of India. • Person who will lead operations on from the Animal Husbandry side should be clearly identified • Communication between teams and with control authority should be ensured. Allowing re-imbursement of mobile bills up to a certain amount for the personnel engaged in operations can be considered.
<p>12</p>	<p>Restrictions to be enforced at the site and the alert zone pending receipt of test reports.</p>	<p><i>Pending receipt of the test results, the entire suspected area should be cordoned off and following restrictions should be immediately brought into effect in the alert zone</i></p> <ul style="list-style-type: none"> • No vehicles should be allowed to ply in and out of the affected premises. • No movement of poultry, eggs, dead carcass, manure, litter, farm machinery, equipment or any such material should be allowed both within the alert zone and from and to outside the zone. • The farm personnel should wear protective clothing all the time inside the farm, including face-masks and gloves, gumboots (or shoes with disposable covers) etc. While leaving the farm premises, farm personnel should leave the protective clothing etc at the farm and clean themselves thoroughly with suitable disinfectants. • Movement of people to and from the suspected premises should be restricted to the barest minimum. No other animals should be allowed in the premises. • Inter-sectional movements of personnel should be banned. They should not visit any other poultry farm, bird sanctuary, zoo etc. • Disinfection procedures should be strictly applied at the entrance of the premises. • Before the test results are received, the possibility of closing the markets and shops in the area may be explored in consultation with the district revenue authorities. Necessary legislative framework should be checked in this regard.

		The restrictions mentioned above should, of course, be abolished if the laboratory diagnosis proves to be negative for AI.
13	De-population of affected flock	If the test would be positive, the entire poultry and related material will have to be destroyed, or for action plan. Ensure that all preparations are made in advance of the results, i.e. PPEs, RRTs, Bags, disinfectants etc.
14	Disposal of contaminated material and disinfection of premises	<ul style="list-style-type: none"> • Identify method of disposal of carcasses and infected material. It can be by burning or burial and remain ready, accordingly. • Plastic sheets, bags/sacks, calcium hydroxide etc. is required in sufficient quantities for disposal. • Ensure availability of sufficient disinfectants, and related equipment.
15	Media briefing by official spokesperson	In order to avoid spreading panic both in terms of public health and distress selling by poultry farmers, clear and precise briefing of the media should be made regularly by a designated official spokesperson of the state Government.

Steps to be taken immediately in case an outbreak is confirmed

These should be read in addition to the steps listed for preparedness in Annexure I.

Sl. No.	Activity	Detailed Scheduling
•	General	<ul style="list-style-type: none"> • District Collector should implement quarantine, closure of shops etc., compensation (payment and verification), maintaining supply lines for equipment etc. • Daily report must reach Department of Animal Husbandry, Dairying & Fisheries (DADF), Government of India. • 24 hour control room should be functional in the State. Number be given to Government of India. • Person who will lead operations on the Animal Husbandry side should be clearly identified • Communication between teams and with control authority should be ensured. Allowing re-imburement of mobile bills up to a certain amount for the personnel engaged in operations can be considered.
•	Declare "Infected Zones" and "Surveillance Zone"	<ul style="list-style-type: none"> • Closely demarcate 1.0 km radius zone as "Infected Zone". • 1-10 km radius zone as "Surveillance Zone".
3.	Rapid Response Teams (RRT's)	<ul style="list-style-type: none"> • Immediately mobilize already identified RRTs and assign them areas of work with specific targets.
4.	Personal Protective Equipment (PPE's)	Large quantities of PPE's were used up in operations in Maharashtra and Gujarat and also in others States for control & containment operations. Therefore sufficient stock and continuous supplies are necessary. 2 kits have been recommended by Government of India viz for direct handlers and other than direct handlers. The hepa-mask is necessary for direct handlers i.e. cullers. The PPE is very important in conduct of operations

		<p>as it provides safety to the cullers and the vaccinators. Workers/labor force will also have to be engaged at some stages of the operation especially for clean-up and culling. They will also be provided with kits. No instance of infection in persons involved in control operations has come to light in the affected countries. It has to be ensured that persons are engaged in control and containment only after being provided these kits. Points to observe are as under:</p> <ul style="list-style-type: none"> • Ensure that every person involved with the outbreak must wear a PPE. • Availability of sufficient stock. • Tie-up for regular supplies during operations. • Kit has to be changed every time a worker moves from one infected premises to another. • Briefing must be given on importance of kit, its use, its disposal, and the need to change the kit on exiting an infected farm premises. • Kit has to be disposed off by burning on exiting a farm premises.
5.	Antiviral drug (oseltamivir)	Each worker/person involved in operations must administered antiviral drug (Oseltamivir) by the Health authorities. Liaison with Health Secretary is necessary.
6.	Regulation of access to infected premises/restrictions on movement etc.	<ul style="list-style-type: none"> • An absolute ban on movement of poultry or its products from and to the infected area is to be imposed. • All poultry and egg markets/shops in a radius of one km from the infected site immediately got closed. • Movement of people to and from the farm premises to be restricted to requirements related to handling the disease with proper cover and disinfection procedures. • Farm personnel in the infected area should not to be allowed to visit any other poultry farm.

7.	Manner of Culling	<ul style="list-style-type: none"> • Poultry can be culled by decapitation as per action plan (Given at page 17)
8.	Disposal	<ul style="list-style-type: none"> • Dispose carcasses and other related material as per Action Plan (Given at page 18.)
9.	Compensation	<ul style="list-style-type: none"> • Pay compensation on GOI approved rates, on the spot of culling, and keep records.
10.	Clean-up and Disinfection	<ul style="list-style-type: none"> • As per Action Plan (Given at page 18-20)

Surveillance Plan for Avian Influenza

Disease surveillance is an integral and key component of all government veterinary services. It is of utmost importance for animal disease emergency preparedness particularly for the diseases like Avian Influenza. This is important for early warning of diseases, planning and monitoring of disease control programmes, provision of sound animal health advice to farmers, certification of export livestock / livestock products, international reporting and evidence of freedom from diseases.

How will it benefit?

- i. Surveillance will help in early detection of the disease and hence in taking the preventive actions
- ii. Knowing the epidemiology (transmission routes, virus evolution etc.) of the disease
- iii. Risk analysis for having trade of livestock/ livestock products

Objectives

1. Early detection of clinical disease and infection
2. Assess temporal and spatial patterns of the disease to improve effectiveness of control efforts
3. Demonstrate country freedom from the disease

Surveillance strategy

The surveillance strategy may be divided into following parts:

Part I: Surveillance in the absence of Outbreak

Part II: Surveillance during the Outbreak

Part III: Surveillance for 30 days after the completion of control and containment operation (Post-Operation Surveillance Plan)

Part I. - Surveillance in the Absence of AI**Avian population at risk**

There is a need to define and identify the population at risk of infection with AI in the first instance. This is done in accordance to the bird population in the area

Population at high risk for Avian Influenza

- (i) Commercial birds with high density- chickens and ducks
- (ii) Backyard Birds – chickens, ducks, pigeons and other species-The biosecurity is usually poor and there is no specific population estimate or density distribution estimate for backyard birds.
- (iii) Wild/migratory birds
- (iv) Live bird markets particularly at the border areas

The risk factors for Avian Influenza are as under:

1. Disease situation in neighboring area across the border
2. States/districts previously affected by AI and adjoining states/districts
3. Shared borders with neighbouring country like Bangladesh, Pakistan, Nepal, Bhutan, China and Myanmar
4. Domestic duck populations
5. Backyard bird populations
6. Number and activity of live bird markets
7. Poultry Value chain / Wholesale live bird markets
8. National sanctuaries, wetlands / lakes used by migratory/ wild birds and their proximity to domestic poultry population/ establishments.
9. Captive birds

More efforts are required in the high risk areas/ hot spots.

I.2.1 Methods of Surveillance

Method of surveillance and type of samples

1. Passive Surveillance

All stakeholders/ poultry producers/ entrepreneur, associations, private veterinary practitioners, community organizations, wildlife officials, NGO participatory groups, veterinary institutions and village animal health workers are required to report to the nearest veterinary authority for any unusual sickness or mortality in poultry and other species of birds.

2. Active Surveillance

Active surveillance (Physical / Clinical Surveillance)

The veterinary authorities shall visit commercial poultry farms, backyard poultry and live bird markets (LBMs) for clinical examinations and collection of samples etc.

Active surveillance (based on sample testing)

- i). Swab samples from sick bird and collect dead birds from specific bird populations at risk
 - Swab sample shall be taken from oro-pharynx, cloaca or fresh wet faeces.
 - Tracheal samples are best for species with the virus accumulating in the respiratory tract (chickens).
 - Cloacal swabs are best for species with the virus accumulating in the intestinal tract (ducks).
 - Fresh, wet faeces swabs are useful for birds that are not handled (wild birds) or where it is uncommon to see sick or dead birds (live market and wild)
 - Fresh **droppings** from live bird market and wild water bird zone

ii) Environmental samples:

- drinking water
- waste water
- droppings in the cages
- processing tables
- knives etc.

Pooled samples (pool size of 6) should be taken from the environment.

iii). Blood samples (serum) from healthy bird population:

The blood samples are required as the targeted surveillance in the areas of high risk. The blood samples are necessary to detect the presence of Low Pathogenic Avian Influenza virus where the birds do not show the disease despite being positive; or they show very mild symptoms. H7N9 infection in China is the recent example of the same where the birds did not show the disease but affected the human beings and caused severe diseases in humans. International organizations have put a special emphasis on sero-surveillance for detection of H7N9 virus.

iv). Dead birds: A fresh whole carcass is extremely valuable with any species of bird. After proper wrapping, whole carcasses should be submitted for testing.

v). Live bird market (LBM) may be included in the surveillance strategy due to programming ease. The live bird markets play an important role in the early detection of circulating virus amongst the poultry population through the use of serological sampling. The biosecurity needs to be strengthened in the live bird markets. The market closure is a good option and should be encouraged in the event of suspicion and at least one day closure in a week in normal situation.

3. Targeted Surveillance: In the areas/ sites of high risk, targeted surveillance should be conducted.

Wild birds and Domestic poultry in Buffer Zones

- Sampling on wild dead birds should be carried out in all identified wild life sanctuaries/ water bodies & buffer zone around such areas
- Fecal samples from live wild birds may be collected from the wild birds nesting places and water bodies.
- Wildlife officials, conservation organizations, participatory groups and the public residing in the vicinity of water bodies are required to report freshly dead birds to DAHO for sampling. After proper wrapping, whole carcasses should be submitted for testing.

- Migratory waterfowl may be sampled by collecting fresh wet feces from areas used overnight by the birds in conjunction with wildlife officials.

Adequate number of pooled samples each containing feces samples are to be taken once monthly at each designated wildlife sanctuaries / water bodies during the wild bird migration season from September to March of each year. Five separate samples are to be placed in one media tube (pooled) and repeated 10 times for each sampling zone each month.

Domestic Poultry

Blood samples (serum) from domestic poultry be collected from buffer zones (national park, lake and watershed areas). Adequate number of serum samples in the buffer zone of each water bodies during the wild bird migration season (September to March). Border vigilance by the states bordering the neighboring countries shall be stepped up.

Sampling framework

Live Bird Markets:

The pooled samples are to be taken. In a small unit of 100 birds, six samples each are to be taken from:

- i) Environment
- ii) Cloacal swab
- iii) Oro-pharyngeal swab
- iv) Serum

A market with a population upto 2000 birds will be considered as a small market and above 2000 birds be considered a big market. From the markets, the number of samples to be taken is 60 from environment, 60 each from cloaca, Oro-pharynx and serum wherever possible. These samples are to be pooled at the laboratory.

If there are ducks in the market, additional samples from duck sera (60 in number) and cloacal swabs (60) are to be taken.

The frequency of the sampling will be at least once a month.

Poultry adjacent to sanctuaries, wetlands / lakes used by migratory wild birds and their proximity to domestic poultry population/establishments:

A farm of 500 birds is considered a unit. From 500 birds, six samples each from environment, cloaca, Oro-pharynx and serum are to be collected. The sample size will be multiplied according to the bird population, the maximum number being the 36 samples of each type. The frequency of the sampling will be once a month. Additional samples of duck sera and cloacal swabs are to be taken, if there is duck population.

Poultry adjacent to international borders:

A farm of 500 birds is considered a unit. From 500 birds, six sample each from environment, cloaca, trachea and serum are to be collected. The sample size will be multiplied according to the bird population, the maximum number being the 36 samples of each type. Additional samples of duck sera and cloacal swabs are to be taken, if there is duck population.

The frequency of the sampling will be once a month.

Migratory / wild birds:

Attempt should be made to take adequate samples of fresh faeces from wild/migratory birds/water fowls, with the help of Wildlife officials. The frequency of sampling is once a month from September to March months. The nesting places of migratory birds should be aimed specifically.

Surveillance data collection, analysis, monitoring and reporting

Data will be compiled, analyzed, monitored, and a report created by the State Veterinary Epidemiology Centre. This report will be in electronic form and be sent every month to: DADF, RDDDL, and respective State Directorates (AH).

Part II- Surveillance during Avian Influenza Outbreak

A specific surveillance strategy shall be applied in the Infected and High Alert Zones.

Surveillance during out break:

Surveillance Team: It may be composed of DAHO/ Veterinarian, Veterinary Technician and Helper.

The number of surveillance teams shall depend upon number and size of the outbreak, and risk. Such teams shall be appointed by Director, AH of the State and shall work in association with control room. Such teams shall formulate surveillance program and road map in their respective areas as per the surveillance plan.

1. Activities to be carried out in the Infection Zone: (up to 1 kilometers radius)

- i. All surveillance shall be carried out during culling activities
- ii. After culling, cleaning, and disinfection, environmental sampling shall be carried out
- iii. When re-stocking is allowed, clinical observation and sampling shall be carried out
- iv. Infected premises shall be visited by the veterinarian weekly for 30 days to inspect the sealed gate, burial site, and to confirm no restocking of poultry.

2. Activities to be carried out in the Surveillance (High Alert) Zone: (up to 10 kilometers outside infected zone)

- i. Visit all commercial poultry and backyard premises- clinical surveillance followed by sampling of sick/ dead birds on daily basis .
- ii. Visit live bird markets, poultry distributors, slaughter facilities, and other key stakeholders on daily basis.
- iii. Conduct community dialogue and sample collection as indicated on daily basis

Part III:- Surveillance for 30 days after the completion of control and containment operation (Post Operation Surveillance Plan)

Formation of the Surveillance Team

The number of surveillance teams shall depend upon number and size of the outbreak, and risk. Such teams shall be appointed by Director, AH. Such teams shall formulate surveillance program and road map in their respective areas as per the surveillance plan.

The surveillance teams shall be responsible for regular surveillance of backyard birds including live bird market and commercial poultry area/farms in their territory. Surveillance team shall report at least twice a week to Director, AHD. They are also responsible to monitor the illegal import and transport of any kind of poultry and poultry products. They shall monitor the local market and poultry outlets. Surveillance activities shall be carried out in the infected zone, surveillance zone and Dangerous Contact and in whole district and risk areas of adjoining districts.

Sampling and Testing Methodology

Surveillance and sampling should be as per the following sampling plan:

- a. Commercial/backyard/live market chickens (sick or dead) – Oro-pharyngeal swabs, fresh feces, fresh whole carcasses
- b. Commercial/backyard ducks – Cloacal swab, blood (serum) samples from sick and healthy birds, whole carcass in recently dead birds
- c. Ducks in wild water bird buffer zones – Cloacal swab, blood (serum) samples from sick and healthy birds, whole carcass in recently dead birds
- d. Wild birds – the fresh whole carcasses if dead. Sample fresh wet feces and Oro-pharyngeal / cloacal swabs from the live birds, if possible.

Sample Type and Size:

The proportion of fowl and duck samples shall be at the ratio of 2:1 for giving special emphasis on ducks. Samples shall be collected both from poultry units and backyard poultry as detailed below:

i. Poultry units:

- a) Poultry farm having at least 50 birds will be treated as poultry unit.
- b) The sample size will be 6 for a poultry unit having population of 50-1000 and 18 for bigger units.
- c) The samples will include both serum and cloacal swab in a ratio of 2:1.

ii. Backyard poultry:

- a) Collect samples from 50% villages of every Gram Panchayat in POS zone.
- b) The sample will include both serum and cloacal swab in a ratio of 2:1.
- c) The sample size per village will be 9.

iii. Periodicity of sampling:

Samples shall be collected in 4 phases on fortnightly basis and no sample shall be collected more than once from the same farm/village. Sampling will be done only once from a particular poultry unit / village.

iv. Surveillance in the Re-populated Poultry Unit /Sector:

The repopulated flock in the former affected area will be screened periodically over the next two months. Random clinical, virological and serological investigations on the repopulated flocks are to be carried out at least once every fortnight as detailed below:

- (i) **Poultry Units:** Sampling of 0.5% of the population introduced subject to a minimum of 6 samples and maximum of 18 samples. Both serum and cloacal samples will be lifted in a ratio of 2:1.
- (ii) **Backyard Poultry:** Sampling of 0.5% of the population introduced will be done subject to 6 samples per village. Both serum and cloacal samples will be collected in a ratio of 2:1.

v. Sampling for surveillance of H7N9:

The surveillance for H7N9 could be restricted to collection of samples from Live Bird Markets. The modus operandi could be to initiate the sample collection from the markets bordering Nepal, Bhutan and Bangladesh and thereafter, in order to know the H7N9 status of the country LBMs of the States have to be targeted.

Sample Size: Sample of Blood/sera and cloacal/tracheal swabs (150 no's each) from the LBMs pooled in 10 samples 30 environmental samples (pooled separately) may also be collected from the same LBMs.

Collection of Faecal samples from wild and migratory, wild resident, domestic birds:

The following guidelines should be followed for collection of fecal samples from a single bird or from a flock of birds:

- Birds are observed from a distance, using binoculars. All the avian species to be sampled should be first correctly identified. Ensure that birds in the flock are of one species or different species. Your approach towards birds normally causes a group of roosting birds to move or fly away and in the process some individual bird will defecate. Observe the bird species while defecating and collect fecal specimen. If bird species cannot be identified, take the photograph of bird, which will help to identify the bird with ornithological expertise later.
- Collect only fresh fecal specimens, ideally those that are still moist, using a sterile swab and place it in a pre-labelled vial with viral transport medium (VTM). Transport specimen in VTM to laboratory within 48 hours at + 4°C (with cool packs).

ROLE OF DIFFERENT DEPARTMENTS

Preparedness and control of AI is a multi departmental activity involving people from all sectors of the society. The Deputy Commissioner / District Magistrate / District Collector holds the highest administrative position in a district and as such the major role of coordinating between different relevant Departments. To monitor preparedness and the measures to counter AI form a district level committee on HPAI under the chairmanship of the Deputy Commissioner/ District Magistrate. It should include district level officers of the departments of Health, Animal Husbandry, Home, Environment, Forest and other allied departments.

Deputy Commissioner/ District Magistrate/ District Collector:-

- To chair and oversee the activities of district level committee on HPAI during day-to-day surveillance for AI.
- To play the central and coordinating role as Chief Executive Officer in different aspects of control and containment operation of AI in the district.
- Augmentation of information sharing between all concerned departments
- Collection of information regarding details of nearest paramilitary units, nearest rail head, nearest airports, helipads with coordinates etc as a part of preparedness plan.
- Imposition and execution of legislative power.
- Implementation of ban on movements of vehicles from epicenter of infection, if any outbreak is suspected.
- Reporting of activities to concerned higher authorities.
- Restriction of movement of persons and vehicles.
- Imposition of movement control of poultry birds, feed, farm supplies, farm personnel, etc.
- Cordoning off the culling and surveillance zone for easy identification and awareness of the villagers.
- Arrangement of manpower, financial, logistical support including vehicles, equipments and quarantine.
- Management for systems of compensation (payment and verification).
- Ban on sale of any poultry products, feed, chicks & any other poultry related items and scavenging of backyard poultry.
- Closure of poultry markets &/or shops.
- Monitoring of cleaning and disinfection procedures (Check posts and /or area under control and containment operation).
- Ban on reintroduction of live bird in the culling zone till freedom from disease is achieved etc.

- Monitoring the restocking of poultry in areas that has achieved freedom from AI status.
- Media briefing.

Implementing Surveillance, Control and Containment Operation: Specific duties are mentioned point-wise in the following.

(A) Animal Husbandry and Veterinary Services Department (AH & VS):

- Formulation of an effective and appropriate routine surveillance plan of AI.
- Recording of population and density of poultry birds in each Block (Backyard / Commercial) with the help of panchayat functionary.
- Fly way of migratory birds – In coordination with forest department.
- Existence of wild-life sanctuaries / National Parks etc. / Water bodies visited by migratory / wild birds in coordination with forest department.
- Block wise location and number of live bird market (wet market) and their days of operation with particular attention to the markets situated at international borders.
- Areas sharing the international border with the neighbouring countries..
- Interstate borders with the AI affected states.
- Sample collection from backyard and organized poultry farms.
- Sample collection from wild and migratory birds in Coordination with Forest Department.
- Immediate reporting of unusual mortality of poultry birds that raises suspicion of AI to Director of A.H. & V.S.
- Investigation of mortality, morbidity and collection of sample for dispatching to laboratory.
- Procurement of all logistics for Preparedness, Control and Containment, Post Operation Surveillance, etc.
- To supervise and participate in all activities related to culling, cleaning and disinfection, sealing of farm / premises, Post operation surveillance, restocking of poultry etc.
- Keeping records of birds culled, eggs destroyed and feed burnt during control and containment operation.
- Advice about biosecurity measures for both organized and backyard poultry.
- To actively participate and deliver in mass awareness programmes organized by Government Departments / Semi Government Organizations and NGOs.

(B) Forests Department:-

- Formulation of an effective and appropriate routine surveillance plan of AI particularly in the wild/migratory birds of the forest areas.
- To demarcate and identify the area visited by wild / Migratory birds.
- To draw up list of areas of notified water bodies, bird sanctuaries in the state and indicate them on state map for surveillance work of AI.
- Report for unusual mortality of wild and migratory birds to senior forest officials and civil administration with intimation to AH & VS.
- Determination of fly way of migratory birds.
- Recording of route map to notified water bodies, bird sanctuaries in the state regularly visited by wild and migratory birds.
- Recording of nearest veterinary and health institutions with notified water bodies, bird sanctuaries in the state.
- Collection of surveillance samples from wild and migratory birds with the help of ARD personnel.

(C) Health Department:-

- Formation of medical RRTs for regular health check up of RRTs for culling, vaccination, cleaning & disinfection, surveillance etc.
- Medical check up of personal involved in culling operation including testing of paired serum sample.
- Arrangement for boarding and lodging of medical RRT to provide medical facilities to the personnel engaged for control and containment operations for 24 hours.
- Procurement of required logistics for the medical RRTs.
- Arrangement for steady and timely supply of antiviral drugs.
- Quarantine measures towards members of RRTs.
- To involve in cleaning and disinfection works in control and containment operations.
- To actively participate and deliver for mass awareness programme organized by Government Departments / Semi Government Organizations and NGOs.
- Plan for management of human case of AI as posted on the web site of Ministry of Health and Family Welfare, Government of India (www.mohfw.nic.in).

(D) Panchayat and Rural Development Department:-

- To organize meeting involving all related Government Departments, panchayat functionaries and NGOs to plan activity for preparedness to counter AI at block level.

- Implementation of all the prescribed measures as imposed by the Deputy Commissioner / District Magistrate / District Collector for preparedness and control and containment of AI.
- Arrangement for boarding and lodging of RRT personnel.
- Arrangement of logistics and other pre-requisites.
- Payment of compensation and record keeping.
- Payment of wages for the labourers engaged in the control and containment operations.
- Arrangement of manpower involving NGOs, Disaster Management Group, Self Help Group (SHG) and other people having experience of handling poultry for formation of RRTs.
- Ban on reintroduction of live bird in the culling zone till freedom from disease is achieved.
- To arrange for nursing of burial pits as and when necessary.
- Organization of Mass Awareness programme on AI.
- Cordoning off the culling and surveillance zone for easy identification and awareness of the villagers.
- To erect temporary and permanent sign boards for mass awareness indicating culling and surveillance zones and indentify the pit sites.
- Assistance for post operation surveillance programme.

(E) Land and Land Reforms Department:-

- Drawing of scale map for culling and surveillance zone.
- Identification of khas and other lands in the culling zone for burial of culled birds and other related disposal materials.

(F) Public Works Department:-

- To assure availability of different machineries viz. JCB machine, Jetting cum Suction machine, Fogger machine, Spraying Machine etc. for control and containment process of AI.
- To assist in making the scale map of confirmed outbreak area.
- To assist in cordoning off the culling and surveillance zone for easy identification and awareness of the villagers.

(G) Home Department:-

- To enforce the restrictions imposed by the Deputy Commissioner / District Magistrate / District Collector.
- To assist the culling teams as and when necessary during culling, payment of compensation, combing, mopping and Post operation surveillance.
- To maintain law and order for peaceful conduction of the control and containment activity.

- To prevent introduction of birds and related products from bird flu affected neighboring states and places.

(H) Border Security Force:-

- To prevent illegal movement of birds and other related products from neighboring countries/ States.

PROFORMA FOR REFERRING SAMPLES FOR REGULAR SURVEILLANCE OF AVIAN INFLUENZA

STATE - _____ DISTRICT - _____

Sl. No.	Lab. Si. No.	Date of receipt	Date of sample collection	Block	G.P.	Mouza / Village	Corporation/ Municipality	Ward	Backyard poultry				Organized farms				Feecal Samples from water body/Sa nctuary/ Zoos	Total number of samples		
									Duck		Fowl		No. of tracheal swab/ throat swab		No. of cloaca l swab					
									No. of Serum	No. of tracheal swab	No. of cloacal swab	No. of Serum	No. of trache al swab/ throat swab	No. of cloaca l swab	No. of trache al swab/ throat swab	No. of Serum	No. of cloaca l swab	No. of trache al swab/ throat swab	No. of cloac al swab	

No. Submitted to the _____ Date..... for favour of information and necessary action, please.

Signature _____
 Name in full in capital letters _____
 Designation: _____
 Mobile Phone Number _____ email: _____

Office phone No: _____
 Other Phone numbers _____

Addresses of the Diagnostic Laboratories

Director, National Institute of High Security Animal Diseases(NIHSAD), Indian Veterinary Research Institute, Anand Nagar, Bhopal-462021 (MP)	Office: 0755-2759204 Fax: 0755-2758842 ddkulkar@rediffmail.com
Joint Director, Central Disease Diagnostic Laboratory Centre for Animal Disease Research and Development (CADRAD) Indian Veterinary Research Institute (IVRI) Izatnagar-243122 (U.P.) Director Indian Veterinary Research Institute (IVRI), (Deemed University), Izatnagar-243122 (U.P.)	Tel. (O) 0581-2302188/23100 (M) 09412288343 jdcadrad@rediffmail.com Tel. 91-581-2300096 (O) dirivri@ivri.res.in
Joint Director, Regional Disease Diagnostic Laboratory Institute of Animal Health & Veterinary Biological (IAH&VB) Govt. of Karnataka, Hebbal, Bangalore-560024	Office : 080-23515882 Fax : 080-23515882 Mob. 09845196683 mdvenkatesha@gmail.com
Joint Director, Regional Disease Diagnostic Laboratory Disease Investigation Section Department of Animal Husbandry, Govt. of Maharashtra, Aundh Pune-411007 Deputy Commissioner	Office : 020-25692135 Fax : 020-25691474 (M) 09422380604 Jcahdis@hotmail.com (M) 09423012494 rautmaresunil@yahoo.com
Joint Director, Regional Disease Diagnostic Laboratory Animal Health Institute, Ladowali Road, Jalandhar-144001	Office : 0181-2242335 Fax : 0181-2242335 Mob. 09815170643 sddlnoz@yahoo.com

<p>Joint Director, Regional Disease Diagnostic Laboratory Institute of Animal Health & Veterinary Biological (IAH&VB), 37, Belgachia Road, Govt. of West Bengal Kolkata-700037</p>	<p>Office : 033-25328033 Fax : 033-25565476 Mobile: 09433960213</p>
<p>Deputy Director, Animal Health Centre, North Eastern Regional Disease Diagnostic Laboratory, Animal Husbandry & Veterinary Department, Khanapara, Guwahati-781022</p>	<p>Office : 0361-2334177 Fax : 0361-2334177 T/F : 0361-2611596 Mob. 09435342436 nerddlguwahati@gmail.com</p>

Composition of PPE Kits for use in AI outbreak**A. Components of Kit for direct handlers**

1.	'Dangri'	Disposable, free size, full sleeves, made up of non woven fabric (spun bonded, poly propylene material not less than 90 GSM), cuff with elastics, zipper in front, hood attached covering sides of face and neck.
2.	House gloves	Disposable, ISI mark, size - 10 no.
3.	Shoe cover	Disposable, made up of polyester woven fabric with protective rubber coating preferably Tetoron, with thick padded foot base and can be used under field condition.
4.	Face Mask	Face Mask with Hepa filter (N95).
5.	Disposable protective Glasses	Disposable, with clear glasses, zero power, eye fitting and elastic band holder

B. Components of Kit for other than direct handlers

1.	'Dangri' with hood attached
2.	House gloves
3.	Shoe covers
4.	Face Mask
5.	Disposable protective glasses

Instruments/equipment/other materials required in AI operations

- PPE,
- JCB – By hiring
- Vehicles – Transportation of RRTs – by hiring,
- Jet cum suction machine – by hiring
- Fire gun,
- Foggers,
- LP Gas,
- Vaccine gun,
- Disposable needles/syringes
- Sterilizer,
- Cold cabinet,
- Vaccine carriers,
- Computer,
- Mobile Incinerator.
- Lime brisker/white wash,
- Formalin, Sodium Hypochlorite, other disinfectants
- Lime powder
- Dettol/Dettol soap,
- Napkins,
- Caustic soda,
- Drinking water for RRTs,
- Hygienic food,
- Transport facilities,
- Battery /torch
- Antiviral drug (oseltamivir),
- Spirit.
- Gunny bags,
- Thread for packing gunny bags
- Paint,
- Brush,
- Plates and sticks,
- Raincoat and gumboot if necessary,
- Stationary,
- Telephone STD/Mobile phones/internet,
- Fax/Xerox machine,
- Camera

The above list is illustrative.

KIT for the Veterinary Officer / Disease Investigation Officer

- 1) Paper and pens
- 2) Epidemiological inquiry form
- 3) Equipment necessary for the clinical visit and sampling procedures:
 - (a) PPE Kits as per composition/ specification approved by Government of India and detailed at Annexure VI.
 - (b) paper tissues
 - (c) 5 leak proof containers
 - (d) 5 leak proof and water resistant plastic bags
 - (e) torch
 - (f) active disinfectant solution
 - (g) 2 pens and a notepad
 - (h) 100 syringes 2.5 ml with needle
 - (i) 100 thin, small plastic bags
 - (j) 2 pairs of surgical scissors
 - (k) 2 pairs of forceps
 - (l) tape
 - (m) 2 felt tip pens
 - (n) 1 thermic container (ice box)
 - (o) 5 frozen icepacks
 - (p) sterile swabs
 - (q) 50 test tubes
 - (r) 10 black waste-bags
 - (s) 50 rubber bands
 - (t) Cardboard container
- 4) At least 10 of these kits should be carried to all suspected or infected places in case of suspicion of outbreak.

Epidemiological Enquiry Form

(Proforma for referring clinical material to laboratory from birds suspected of AI)

1. Name and address of the farm/farmer/owner with phone number/email. _____

2. Species from which the samples collected (encircle the appropriate):
 (a) Domestic poultry (Chicken, duck, turkey, quail, emu, pigeon, guinea fowl, geese,.....)
 (b) Other pet birds (Please specify):
 (c) Wild birds (Please specify):

3. Species of birds and livestock in the farm/backyard (Please write the number of birds/animals)

Chick en	Duck	Turkey	Goose	Guinea fowl	Quail	Pig	Other (Pl. Specify)

4. If domestic chicken ((Please tick the correct one/fill in as needed) :

A. Type of birds: Layer /Broiler

B. System of rearing: Backyard/Commercial

1) If commercial:

(a) Method of rearing : Caged/Deep litter

(b) Method of poultry housing: All in all out system (one age group)
 /Birds of various ages kept together (different age groups)

(c) Breed/Line _____

(d) Age of the birds: _____ weeks (single age in all in all out system and different age group in mixed housing)

(e) Date/s of day old chicks purchased:

(f) Name of the commercial Hatchery:

(g) Total no. of birds in the farm:

(h) Date on which clinical signs started appearing:

(i) Type /description of clinical signs:

(j) Morbidity (birds showing clinical signs/total no. of birds)

(k) Mortality pattern (number of bird death on day 1..... day
 2.....day 3..... day 4..... day

5.....day/6.....

(l) Date of start of the outbreak _____ Date

(m) Date of collection of samples: _____

(o) Type and number of samples sent:

a. Swab (Please strike out which is not applicable): Nasal /Cloacal/Oropharyngeal/ Tracheal swabs No.:

b. Serum No.: _____

c. Dead birds No.: _____

d. Sacrificed birds No. _____

e. Faeces No.: _____

f. Eggs No.: _____

g. Other (specify)

(p) Name of the preservative used in samples collected, (if applicable) :

(q) Vaccination history:

Disease	Mareks Disease	NDV				IBD	IB	Fowl Pox	Other (specify)
		NDV- F strain	NDV Killed	NDV R2B Strain	NDV Lasota				
Date of vaccination									
Source of vaccine									
Vaccinating Staff									
Route of vaccination									

(r) Tentative diagnosis made:

(s) Details of medication done (if any):

5. If backyard poultry (Please tick):

(a) Husbandry Practice: Free ranch /fenced

(b) Number of Birds:

(c) Breed Name (if any) and type of bird: (dual type/egg type

(d) History of vaccination/s done:

AVIAN INFLUENZA EPIDEMIOLOGICAL INQUIRY FORM

Name and Address of farm with Phone No.: _____ Date: _____
 _____ /email: _____

District : _____ State: _____
 Farm code or identification number: _____
 Address of the owner with Phone No.: _____

Information provided by: _____
 Farm Veterinarian's Name: _____
 Whether the Veterinarian Present during this investigation: _____ YES /NO

1. INFORMATION CONCERNING THE FARM

TYPE OF FARM: _____ Industrial/Rural/Dealer/Retailer
 CATEGORY/PRODUCTION LINE: Table-egg layers/Meat birds
 Type : Grandparents (No.)..... Parents (No.).....
 Pullets (No.).....

HATCHERY OF ORIGIN:

Commercial Hatchery Address (if any) : _____
 District: _____ State: _____
 Phone: _____ Fax: _____

HOUSING SYSTEM: Deep litter: YES/NO _____ Cage system: _____
 YES/NO

Type of ventilation system: Natural/Natural with fans /Artificial
 Presence of Bird proof nets: YES/NO
 Possibility of contact with wild birds: YES/NO
 Species of contacting wild bird: _____
 Species of other birds present on site (captive or free): _____
 Presence of ponds or lakes and other water reservoirs (specify if any): _____
 Presence of pigs/other animals (specify): _____
 Remarks if any: _____

2. INFORMATION CONCERNING MOVEMENTS OF BIRDS

(a) Introduction of birds from other establishments/hatcheries/farms/exhibitions/markets/fairs (Till twenty days prior to the onset of the first clinical signs): YES/NO

If Yes:

Date: _____ No.: _____ Species : _____
 Introduced from _____ (please tick):
 Farm/Hatchery/Exhibitions/Markets/Fairs
 Name and address of Farm/Hatchery/Exhibition/Markets/Fair: _____

District: _____ State: _____

(b) Exit of birds / eggs /other materials to other farms /establishments /hatcheries /abattoirs /other fairs/markets/exhibitions (Till 20 days prior to the onset of the first clinical signs and the date the farm was put under restriction): YES/NO

If Yes:
 Type of material: _____ Date: _____ No:
 Destination (Please tick): Other farm/Hatchery/Abattoir/other
 fairs/markets/exhibitions
 Address:
 District : _____ State: _____

3. INFORMATION CONCERNING MOVEMENT OF PEOPLE (Till 20 days prior to the onset of the first clinical signs and the date the farm was put under restriction):
 YES /NO

If Yes: _____ Date: _____
 Person moved: Veterinarian/Technician/Vaccinating crew/Debeaker
 /farmer/Dealer/Farm employee/other (specify)
 Destination of movement:
 District: _____ State: _____
 Previously visited farm : _____ Name: _____
 District : _____

4. INFORMATION CONCERNING MOVEMENT OF VEHICLES (Till 20 days prior to the onset of the first clinical signs and the date the farm was put under restriction):

Purpose of movement: (A) Transport of animals, (B) Transport of feed, (C) Transport of eggs, (D) Collection of dead animals, (E) Fuel/Gas, (Other) Specify
 Date of entry Vehicle:
 Name of owner of vehicle: _____ Phone number/Fax: _____

5a) INDIRECT CONTACTS WITH OTHER POULTRY ESTABLISHMENTS (Sharing of equipment, vehicles, feed, staff, etc. in the time span between 20 days before the onset of the first clinical signs and the date the farm was put under restriction):
 YES/NO

If yes: _____ Date of contact: _____
 Name and address of farm or establishment:
 Shared vehicle/shared feed/shared equipment/shared staff/collection/recycle of litter/other (specify):

5b) INFORMATION ABOUT POULTRY FARMS LOCATED NEAR THE OUTBREAK (within 1 KM and 10 KM):

Name of farm or establishment (if any):
 Name of the Owner: _____ Address: _____

Distance in meters:
 Species farmed: _____ Number: _____ Empty/Full

ANAMNESTIC DATA

WEEKLY MORTALITY (NB: data concerning mortality rates recorded in the 6 weeks prior to the onset of clinical signs)

WEEK: _____ FROM: _____ TO: _____

NUMBER ANIMALS DEAD: _____

Remarks:

Date of onset of AI clinical signs:

Clinical signs observed by the farmer:

TOTAL NUMBER OF BIRDS (NB: this information must refer to the data collected when the farm has been put under restriction after confirmation of NAI):

Farm put under restriction (dead or alive):

Number of ill birds (Farm put under restriction):

Number of dead birds (Farm put under restriction):

Number of birds depopulated:

6. CLINICAL INVESTIGATION:

Species: _____ Depression: _____

Respiratory signs: mild/severe

Drop or cessation of egg laying:

Oedema, cyanosis or cutaneous haemorrhages:

Diarrhoea:

Nervous signs:

Other _____

7. GROSS FINDINGS:

Rhinitis and sinusitis

Tracheitis: catarrhal/haemorrhagic –

Aersacculitis

Haemorrhages epicardium –endocardium-proventriculus –

ovarian follicles

Enteritis catarrhal/haemorrhagic –

Pancreatitis

Other: _____

Remarks _____

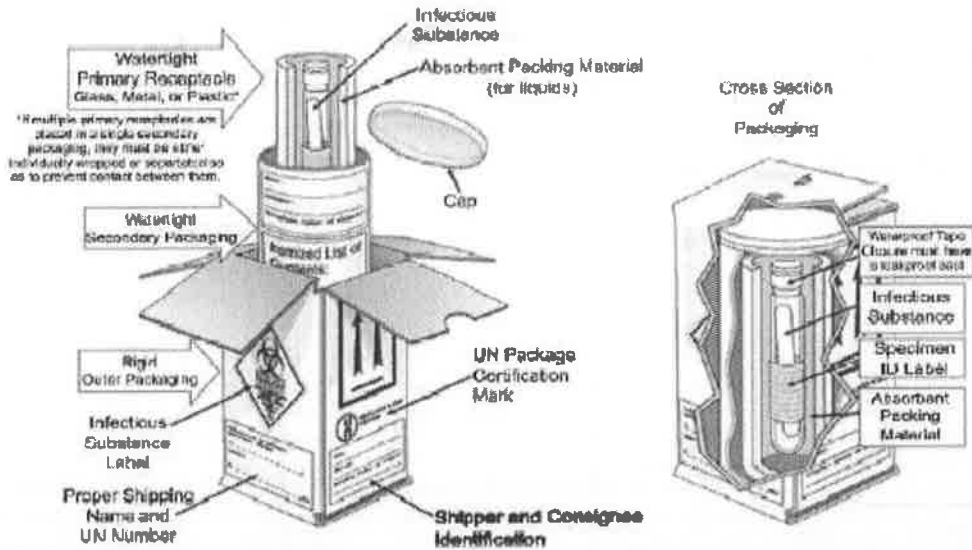
Signature _____

Date: _____

Transport of material for testing Avian Influenza in Three Layer Packing

A CATEGORY A UN STANDARD TRIPLE PACKAGING

**Packing and Labeling of Category A Infectious Substances
(See Packing Instruction 602)**



Reference: <http://www.cdc.gov/od/sap>

Annexure XIII

Format for daily report of control and containment operation

A) ACTIVITIES CONDUCTED FOR CULLING OPERATION AS ON _____				
Sl. No.	Activities	DISTRICTS/ EPICENTRES		Total
1)	Deployment of RRT			
	a) For Culling			
	b) For Mopping			
	c) For Surveillance			
	d) For Disinfection & Sanitation			
	e) For Supervision			
	TOTAL RRT			
2)	Target of culling of birds			
3)	Culling of birds			
	a) Up to _____			
	b) On _____			
	Progressive Total of Birds Culled including Mopping			
4)	No. of eggs destroyed			
	a) Up to _____			
	b) On _____			
	Progressive Total of eggs destroyed			
5)	Quantity of Feed destroyed (Kg)			
	a) Up to _____			
	b) On _____			
	Progressive Quantity of Feed destroyed (kg)			
6)	Payment of Compensation			
	a) Up to _____ (Rs.)			
	b) On _____ (Rs.)			
	Progressive total of compensation (Rs.)			

B) NO OF MORTALITY REPORTED ON _____

C) DETAILS OF EPICENTERS AS ON _____						
Name of Village/Block	Involved Districts	Date of Notification	Period of Culling	Period of Mopping & Disinfection	Date of Sanitization	No. and Date of Sanitization Certificate

SIGNATURE OF THE DESIGNATED OFFICER

CHECKLIST OF THE MATERIALS, APPLIANCES, RESOURCES AND FACILITIES THAT MAY BE REQUIRED IN SUCCESSFUL CONDUCTION OF POSP

- Glass Test Tubes, sterile, cotton plugged, 18x150 mm, rimmed/ rimless – for collection of blood.
- Hydrochloric acid – for overnight wetting of the inside of the new test tubes a 3% solution of HCl may be used to neutralize alkalinity.
- Washing Soda – for washing of overnight wetted new test tubes and routine washing of glass wares.
- Plastic bucket with lid – for acid wetting of new glass wares and other routine washing purposes.
- Test tube brush – for washing of test tubes by soda.
- Hot Air Oven – for sterilization of test tubes.
- Non absorbent cotton – for plugging of test tubes.
- Bamboo paper – for packing of washed and plugged test tubes in a lot of 10/15 before sterilization in hot air oven.
- Gas burner with LPG cylinder – for sterile collection of serum in screw capped vials.
- Adhesive sticker – for marking of blood collecting glass test tubes in field condition.
- Glass marking pen (Black or Blue inked) – for marking of samples in laboratory and in field.
- Poly syringe, 2.0 ml, sterile, individually packet – for collection of blood samples.
- Absorbent cotton – for making swabs of spirit during collection of samples.
- Rectified spirit – for making swabs during collection of samples.
- Test tube basket – for carrying sample collecting materials in field and in laboratory.
- Test tube stand – for cataloguing of serum samples before dispensing.
- Cryovial, screw cap, 1.0/ 1.8/ 2.0 ml – for collection of serum samples under strict sterility.
- Rack for cryovial, 1.0/ 1.8/ 2.0/ 4.5/ 5.0 ml – for cataloguing of collected samples.
- Poly packet of different sizes – for packing of collected samples before dispatch.
- Elastic rubber bands – for closing the opening of the poly packets.
- Cryo vial, screw cap, 4.5 / 5.0 ml, filled with 3 ml PBS containing suitable antibiotic – for collection of swab samples maintaining highest possible sterility.
- Swab, sterile, individually packed – for collection of swab samples maintaining highest possible sterility.
- Vaccine carrying box/ Thermocol Box – for dispatch of samples maintaining cold chain, if thermocol box is used, cloured cellotape of 1” diameter will be required for sealing the boxes.
- Ice-bottle/ ice gel packs – for packing of the vaccine carrying box or thermocol box for dispatching the collected samples.
- Refrigerators – for overnight keeping of collected clotted blood samples in vertical direction in test tube baskets for proper elution of serum and for

preservation of regularly collected samples under appropriate cataloguing before dispatch. Never put blood samples that have been collected for separation of serum in refrigerators before clotting because this will ultimately result in either elution of some haemolyzed serum or no serum. It is always preferable to preserve the all types of samples of Avian Influenza at a temperature of below 0°C. further, sufficient numbers of ice-bottles or ice gel packs will be required by the laboratories for sending the samples. For this a deep freezer (-20°C or less) may be used. However in absence of a deep freezer, the freezing chamber of any ordinary refrigerators had to be used.

- Computer – for accurate proper maintenance of records of the samples collected and send under particular laboratory serial number. This may be done in a table for each epicenter prepared in Microsoft Excel programme.
- Printer – for printing of reports and documents as and when necessary.
- Computer paper (in accordance with supplied printer) – for printing of documents.
- Note book – for proper maintaining records of the samples collected and send under particular laboratory serial number in conjunction with the records maintained in computer.
- Copy of format for forwarding of samples.
- Advanced Planning – for advanced intimation to the respective authorities for assisting the persons so deployed for collection of samples in a predetermined a village/ mouza/ organized farm.
- Public Awareness – for easy access of the team for collection of samples to the areas of Surveillance Ring under definite planning.
- Vehicle – for easy movement of different teams to different areas in a same day under proper planning.
- Human Resources-
 - For sample collection:
 - Trained Veterinary Professional – 01
 - Group D Employee – 01
 - For Laboratory:
 - Trained Veterinary Professional – 02 (at least 01 Veterinary Professional should have knowledge to operate Microsoft Word and Excel Programme).
 - Laboratory Attendants - 06

Format for reporting progress of activity on POSP

REPORT ON PROGRESS OF POSP AS ON

District	Date of completion of control & containment operation	1st FORTNIGHT			2nd FORTNIGHT		
		Target date of start	Actual date of start	Target of samples	Target date of start	Actual date of start	Target of samples
Total							

District	Date of completion of control & containment operation	3rd FORTNIGHT			4th FORTNIGHT			Total Target	Total Samples Collected			Remarks
		Target date of start	Actual date of start	Target of samples	Target date of start	Actual date of start	Target of samples		Serum	Swab	Total	
Total												

SIGNATURE OF THE DESIGNATED OFFICER

Important points at the start of control and containment operation

- Meeting as stated in the second para of III.2 is must to decide all the aspects and strategy of the operation.
- Scale map is to be drawn for infected and surveillance zone at the beginning of the operation.
- Cordoned off the 1/3 **km** and 10 **km** radius boundary as per notificaton.
- Before starting the operation, meeting to be arranged in all GPs in the village level (without village level meeting and convincing the people for culling the output will be very less, time consuming) involving the villagers to get higher response during operation as well as culling in the camp (not door to door at initial stages; door to door will be during mopping). While main culling will be in the camp, some mobile teams can be sent door to door. However, strategy of door to door culling can be adopted depending upon the situation.
- Announcement through PA system in the previous evening in the areas where the operation will take place in the next morning.
- In backyard the culling operation to be started in the morning by 7.00 AM.
- During culling motivators to be taken from the respective local areas for smooth operation.
- The compensation to be paid in the camp.
- A separate list of commercial farms may be prepared GP wise and all the owners may be asked individually to clean their sheds while completing the culling operation, so that as soon as the culling is completed the final cleaning and disinfection can be completed by the RRTs.
- Farm birds to be buried in the farm premises.
- Strength of drop gates and physical surveillance to be in order in the infected and surveillance zone to prevent any infiltration of poultry and poultry products in to the infected zone as well as any outward movement from the infected and surveillance zone.
- All the commercial farms where the birds have been culled by the RRTs during operation to be sorted out and to be cleaned disinfected and sealed. Any other farms where there were no birds at the time of culling operation also to be identified and cleaned and disinfected.
- After the cleaning and disinfection of all commercial farms the same has to be disinfected in every 15 days and again to be sealed.
- *The RRT members to be briefed thoroughly for clear understanding of cleaning and disinfection before starting the procedure.*

Frequently Asked Questions

- **What is avian influenza?**

AI, or “bird flu”, is a contagious disease of animals caused by viruses that normally infect only birds and, less commonly, pigs. AI viruses are highly species-specific, but have, on rare occasions, crossed the species barrier to infect humans.

In domestic poultry, infection with AI viruses causes two main forms of disease, distinguished by low and high extremes of virulence. The so-called “low pathogenic” form commonly causes only mild symptoms (ruffled feathers, a drop in egg production) and may easily go undetected. The highly pathogenic form is far more dramatic. It spreads very rapidly through poultry flocks, causes disease affecting multiple internal organs, and has a mortality that can approach 100%, often within 48 hours.

- **Which viruses cause highly pathogenic disease?**

Influenza A viruses¹ have 16 H subtypes and 9 N subtypes². Only viruses of the H5 and H7 subtypes are known to cause the highly pathogenic form of the disease. However, not all viruses of the H5 and H7 subtypes are highly pathogenic and not all will cause severe disease in poultry.

On present understanding, H5 and H7 viruses are introduced to poultry flocks in their low pathogenic form. When allowed to circulate in poultry populations, the viruses can mutate, usually within a few months, into the highly pathogenic form. This is why the presence of an H5 or H7 virus in poultry is always cause for concern, even when the initial signs of infection are mild.

- **Do migratory birds spread highly pathogenic avian influenza viruses?**

The role of migratory birds in the spread of highly pathogenic AI is not fully understood. Wild waterfowl are considered the natural reservoir of all influenza A viruses. They have probably carried influenza viruses, with no apparent harm, for centuries. They are known to carry viruses of the H5 and H7 subtypes, but usually in the low pathogenic form. Considerable circumstantial evidence suggests that migratory birds can introduce low pathogenic H5 and H7 viruses to poultry flocks, which then mutate to the highly pathogenic form.

In the past, highly pathogenic viruses have been isolated from migratory birds on very rare occasions involving a few birds, usually found dead within the flight range of a poultry outbreak. This finding suggested that wild waterfowl are not agents for the onward transmission of these viruses.

Recent events make it likely that some migratory birds are now directly spreading the H5N1 virus in its highly pathogenic form. Further spread to new areas is expected.

- **How do people become infected?**

Direct contact with infected poultry, or surfaces and objects contaminated by their faeces, is presently considered the main route of human infection. To date, most human cases have occurred in rural or periurban areas where many households keep small poultry flocks, which often roam freely, sometimes entering homes or sharing outdoor areas where children play. As infected birds shed large quantities of virus in their faeces, opportunities for exposure to infected droppings or to environments contaminated by the virus are abundant under such conditions. Moreover, because many households in Asia depend on poultry for income and food, many families sell or slaughter and consume birds when signs of illness appear in a flock, and this practice has proved difficult to change. Exposure is considered most likely during slaughter, defeathering, butchering, and preparation of poultry for cooking.

- **Is it safe to eat poultry and poultry products?**

Yes, though certain precautions should be followed in countries currently experiencing outbreaks. In areas free of the disease, poultry and poultry products can be prepared and consumed as usual (following good hygienic practices and proper cooking), with no fear of acquiring infection with the H5N1 virus.

In areas experiencing outbreaks, poultry and poultry products can also be safely consumed provided these items are properly cooked and properly handled during food preparation. The H5N1 virus is sensitive to heat. Normal temperatures used for cooking (70°C in all parts of the food) will kill the virus. Consumers need to be sure that all parts of the poultry are fully cooked (no "pink" parts) and that eggs, too, are properly cooked (no "runny" yolks).

Consumers should also be aware of the risk of cross-contamination. Juices from raw poultry and poultry products should never be allowed, during food preparation, to touch or mix with items eaten raw. When handling raw poultry or raw poultry products, persons involved in food preparation should wash their hands thoroughly and clean and disinfect surfaces in contact with the poultry products. Soap and hot water are sufficient for this purpose.

In areas experiencing outbreaks in poultry, raw eggs should not be used in foods that will not be further heat-treated as, for example by cooking or baking.

AI is not transmitted through cooked food. To date, no evidence indicates that anyone has become infected following the consumption of properly

cooked poultry or poultry products, even when these foods were contaminated with the H5N1 virus.

- **Does the virus spread easily from birds to humans?**

No. Though more than 100 human cases have occurred in the current outbreak, this is a small number compared with the huge number of birds affected and the numerous associated opportunities for human exposure, especially in areas where backyard flocks are common. It is not presently understood why some people, and not others, become infected following similar exposures.

Source : WHO website

http://www.who.int/csr/disease/Avian_influenza/avian_faqs/en/

- **Why our domestic birds only are being culled? What about the crows and other birds? Can not they carry the virus?**

Yes, other birds can also carry the virus but since the domesticated poultry and ducks are present in close proximity with the keepers/ household members, the chances of transmission of the virus is high.

- **Is the virus so educated that it will not go across the 3/5 Km radius the Government has marked as eradication zone?**

Normally the virus cannot travel distances on their own. They are either may be carried through birds and through contaminated clothing, equipment, vehicle etc. carried by humans. Based on scientific study the area of 3 to 5 Km area has been found to be most probable distance that the virus can be carried and pose high risk.

- **There are no mortalities in this village. Then why is culling required?**

Even if there are no mortalities in the village but if the village comes in the risk/ culling zone, chances are high that the infection may arrive. It is better to depopulate the village of all poultry other wise infection can pose human risk.

- **Our ducks appear healthy and not a single case of mortality or for that matter they are not even sick. Why should we give them up?**

Domestic ducks move around in virus-contaminated water bodies and can excrete large quantities of highly pathogenic virus without showing signs of illness, and are now acting as a "silent" reservoir of the virus, perpetuating transmission to other birds. This adds yet another layer of complexity to control efforts and removes the warning signal for humans to avoid risky behaviors.

- **Can the virus not carry through air and cannot flies and mosquitoes carry them?**

Virus cannot be carried through air unless it is carried by some fomite like feather/ faeces particle etc.

- **When can I start keeping birds? Who will give me the birds after the three months?**

The birds can be restocked after completion of POSP and no sample found positive in it. Normally, it takes three months for completion of POSP. After declaration of freedom by GOI, one can purchase DOC from government / private hatcheries as per choice.

- **Can we eat the birds/ eggs after proper cooking/ boiling?**

Cooking and boiling destroys the virus. However, preparation of chicken / eggs etc requires handling of dressed chicken or sometimes contaminated eggs where virus may be present. Hence, one should not eat the birds/ eggs in the affected zone. All of these should be destroyed.

- **So far how many people have died from bird flu? More people die of other reasons here. Then why is it so dangerous?**

Even if the number of persons presently affected/died is a few hundred, would we like wait until it kills a few thousands or millions. The virus has the capability of causing worldwide havoc.

The widespread persistence of H5N1 in poultry populations poses two main risks for human health.

The first is the risk of direct infection when the virus passes from poultry to humans, resulting in very severe disease. Of the few AI viruses that have crossed the species barrier to infect humans, H5N1 has caused the largest number of cases of severe disease and death in humans.

A second risk, of even greater concern, is that the virus – if given enough opportunities – will change into a form that is highly infectious for humans and spreads easily from person to person. Such a change could mark the start of a global outbreak (a pandemic).

- **Why big farms are spared and their products are sold (elsewhere) whereas our birds are culled?**

Policy for control and containment procedures are followed as per a defined Action Plan irrespective of whether it is a big farm or small / backyard farm and

procedures of various operations may vary to ensure complete depopulation, sanitation and disinfection as per the type/ system of farm/ farming.

- **Is it safe to take the drug (Tamiflu) for so long?**

It is recommended that the Tamiflu can be taken continuously for six weeks. All the RRT members are briefed & cautioned about the ill effects of Tamiflu and they should report the same immediately to Medical Officers. (To be answered better by Human Health)

- **Why cannot I go out for work during the quarantine period?**

Quarantine is done to ensure that the virus, if at all carried by you may not be transmitted to other places and your family and friends are protected. So also immediate medical help can be extended in case you became sick. (To be answered better by Human Health)

- **Is not there any other way (humane) to kill the birds?**

There are some other ways but in the present condition, the neck dislocation method adopted is suited best for humane as well as speedy depopulation.

List of animal species known to be affected by Avian Influenza (H5N1)

No	Name	Common Name
I	Order: Anseriformes	
1.	<i>Aix sponsa</i>	Wood duck
2.	<i>Amazonetta brasiliensis</i>	Brazilian teal
3.	<i>Anas acuta</i>	Northern pintail
4.	<i>Anas bahamensis</i>	Bahama pintail
5.	<i>Anas castanea</i>	Chestnut-breasted teal
6.	<i>Anas crecca</i>	Blue-winged teal
7.	<i>Anas penelope</i>	Eurasian wigeon
8.	<i>Anas platalea</i>	Argentine shoveller
9.	<i>Anas platyrhynchos</i>	Domestic duck/Mallard
10.	<i>Anas sibilatrix</i>	Chiloe wigeon
11.	<i>Anas strepera</i>	Gadwall
12.	<i>Anas versicolor</i>	Puna teal
13.	<i>Anser albifrons</i>	Greater white-fronted goose
14.	<i>Anser anser</i>	Greylag goose
15.	<i>Anser anser domesticus</i>	Domestic goose
16.	<i>Anser indicus</i>	Bar-headed goose
17.	<i>Aythya marila</i>	Greater scaup
18.	<i>Aythya americana</i>	Redhead
19.	<i>Aythya ferina</i>	Common pochard
20.	<i>Aythya fuligula</i>	Tufted duck
21.	<i>Branta bernicla</i>	Brent goose
22.	<i>Branta canadensis</i>	Canada goose
23.	<i>Branta hutchinsii</i>	Cackling goose
24.	<i>Branta leucopsis</i>	Barnacle goose
25.	<i>Branta ruficollis</i>	Red-breasted goose
26.	<i>Cairina moschata</i>	Muscovy duck
27.	<i>Callonetta leucophrys</i>	Ringed teal
28.	<i>Chenonetta jubata</i>	Manned wood-duck
29.	<i>Coscoroba coscoroba</i>	Coscoroba swan
30.	<i>Cygnus atratus</i>	Black swan
31.	<i>Cygnus buccinator</i>	Trumpeter swan
32.	<i>Cygnus cygnus</i>	Whooper Swan
33.	<i>Cygnus melanocoryphus</i>	Black-necked swan
34.	<i>Cygnus olor</i>	Mute swan
35.	<i>Dendrocygna viduata</i>	White-faced whistling-duck
36.	<i>Mergus albellus</i>	Smew
37.	<i>Mergus merganser</i>	Goosander/Common merganser
38.	<i>Nesochen sandvicensis</i>	Hawaiian goose
39.	<i>Netta peposaca</i>	Rosybill pochard duck
40.	<i>Netta rufina</i>	Red-crested pochard
41.	<i>Tadorna ferruginea</i>	Ruddy shelduck
II	Order: Charadriiformes	
1.	<i>Larus argentatus</i>	Herring gull
2.	<i>Larus atricilla</i>	Laughing gull
3.	<i>Larus brunnicephalus</i>	Brown-headed gull
4.	<i>Larus ichthyæetus</i>	Great black-headed gull
5.	<i>Larus ridibundus</i>	Black-headed gull
6.	<i>Larus schistisagus</i>	Slaty-backed gull
7.	<i>Tringa ochropus</i>	Green sandpiper
III	Order: Ciconiiformes	

1.	Anastomus oscitans	Asian open-billed stork
2.	Ardea cinerea	Grey heron
3.	Ardea herodias (?)	Great blue heron
4.	Ardeola bacchus	Chinese pond heron
5.	Ciconia ciconia	White stork
6.	Egretta garzetta	Little egret
7.	Nycticorax nycticorax	Black-crowned night heron
IV	Order: Columbiformes	
1	Columba livia	Feral pigeon
2	Macropygia ruficeps?	Little cuckoo dove
3	Streptopelia tranquebarica	Red-collared dove
V	Order: Falconiformes	
1	Accipiter gentilis	Northern goshawk
2	Accipiter trivirgatus	Crested goshawk
3	Buteo buteo	Buzzard
4	Buteo lagopus	Rough-legged buzzard
5	Falco cherrug	Saker falcon
6	Falco peregrinus	Peregrine falcon
7	Falco tinnunculus	Common kestrel
8	Gyps sp?	"wild vulture"
9	Ichthyophaga ichthyaetus	Grey-headed fish-eagle
10	Milvus sp.	Kite
11	Spilornis cheela?	Serpent eagle
12	Spizaetus nipalensis	Crested hawk-eagle
13	Spizaetus nipalensis orientalis	Mountain/Hodgson's hawk eagle
VI	Order: Galliformes	
1	Alectoris chukar	Chukar partridge
2	Colinus virginianus	Bobwhite quail
3	Corurnix coturnix japonicus	Japanese quail
4	Gallus domesticus	Domestic chicken
5	Lophura leucomelanos	Kalij pheasant
6	Meleagris gallopavo	Turkey
7	Numida meleagris	Pearl guinea fowl
8	Pavo cristatus	Peacock
9	Pavo cristatus albus	White Indian peafowl
10	Phasianus colchicus	Ring-necked pheasant
VII	Order: Gruiformes	
1	Amaurionis akool?	Brown (red-legged) crane
2	Fulica atra	Coot
3	Gallinula chloropus	Common moorhen
4	Porphyrio porphyrio	Sultan (Purple swamphen)
VIII	Class: Mammalia	
1	Bos taurus	Cow
2	Canis lupus familiaris	Dog
3	Chrotogale owstoni	Owston's Palm Civet
4	Felis domestica	Domestic cat/feral cat
5	Macaca fascicularis	Cynomolgus macques
6	Martes foina	Stone marten
7	Martes foina	Stone (beech) marten
8	Mus musculus	House mouse
9	Mustela putorius furo	Ferret
10	Oryctolagus cuniculus	New Zealand white rabbit
11	Panthera pardus	Leopard
12	Panthera tigris	Tiger
13	Rattus norvegicus	Rat
14	Sus domesticus	Pig
IX	Order: Passeriformes	

1	<i>Acridotheres cristatellus</i>	Crested mynah
2	<i>Carpodacus mexicanus</i>	House finch
3	<i>Copsychus saularis</i>	Oriental magpie robin
4	<i>Corvus cornix</i>	Hooded crow
5	<i>Corvus frugilegsu</i>	Rook
6	<i>Corvus macrorhynchos</i>	Jungle or Large billed crow
7	<i>Corvus monedula</i>	Jackdaw
8	<i>Corvus splendens</i>	House crow
9	<i>Dicrurus macrocercus</i>	Black drongo
10	<i>Gracula religiosa</i>	Hill mynah
11	<i>Lanius schach</i>	Long-tailed shrike
12	<i>Leiothrix argentauris</i>	Silver-eared mesia
13	<i>Leiothrix lutea</i>	Red-billed leiothrix
14	<i>Lonchura atricapilla</i>	Chestnut munia
15	<i>Lonchura punctulata</i>	Scaly-breasted munia
16	<i>Lonchura sp.</i>	Munia
17	<i>Lonchura striata</i>	White-rumped munia
18	<i>Oriolus chinensis chinensis</i>	Black-naped oriole
19	<i>Passer domesticus</i>	House sparrow
20	<i>Passer montanus</i>	Eurasian tree-sparrow
21	<i>Pica pica sericea</i>	Korean magpie
22	<i>Sturnus sericeus</i>	Red-billed starling
23	<i>Sturnus sturninus</i>	Daurian starling
24	<i>Sturnus vulgaris</i>	European starling
25	<i>Taeniopygia guttata</i>	Zebra finch
26	<i>Turdus merula</i>	Blackbird
27	<i>Urocissa erythrorhyncha</i>	Blue magpie
28	<i>Zosterops japonicus</i>	Japanese white-eye
X	Order: Pelecaniformes	
1	<i>Pelicanus sp.</i>	Pelican
2	<i>Phalacrocorax carbo</i>	Great cormorant
3	<i>Phalacrocorax niger</i>	Little cormorant
XI	Order: Phoenicopteriformes	
1	<i>Phoenicopterus ruber</i>	Greater flamingo
XII	Order: Strigiformes	
1	<i>Bubo nipalensis</i>	Spot-bellied eagle-owl
2	<i>Ketupa ketupu</i>	Buffy fish-owl
3	<i>Ketupa zeylonensis</i>	Brown fish-owl
4	<i>Strix uralensis</i>	Spotted wood-owl
XIII	Order: Struthioniformes	
1	<i>Dromaius novaehollandiae</i>	Emu
2	<i>Struthio camelus</i>	Ostrich
XIV	Order: Psittaciformes	
1	<i>Melopsittacus undulatus</i>	Budgerigar
XV	Order: Podicipediformes	
1	<i>Podiceps cristatus</i>	Great crested grebe
2	<i>Podiceps nigricollis</i>	Black-necked Grebe
3	<i>Tachybaptus ruficollis</i>	Little grebe
XVI	Order: Diptera	
1	<i>Aldrichina grahami</i>	Blow fly
2	<i>Calliphora nigribarbis</i>	Blow fly
3	<i>Culex tritaeniorhynchus</i>	Mosquito

Addendum to NAP-AI-2015

Guidelines for Zoological Parks

General Precautions:

1. There should be no import of any animal or bird without observing quarantine for a minimum of 21 days. A well equipped quarantine animal house/ birding place to be created, if not already existing. Only after the imported animal is found free of any infection, should it then be allowed to mix with resident animals or birds.
2. No visitor should be allowed to take food from outside for the animals/ birds, nor be allowed to throw feed or any object inside the cage/housing/shed.
 - a. Staff movement, visitors, laborers and delivery boys as well as researchers including volunteers and students should always follow a protocol before entering the premises for normal work purposes because they may have contact with other pets / farm animals / birds in their homes. Humans can transmit diseases either mechanically, through fomites or as a result of anthroozoonosis.
 - b. Caretakers/ attendants/ sweepers/ Persons should enter the animal cages/ animal houses/ inside the fencings only with change of clothes and gum boots/ shoes separately for each cage; such provisions may be made at the entry to the animal housings. They should also be provided with caps that cover their hair completely. Entry points should be provided with disinfectants in a tray and every attendant/ vet/caretaker should take necessary precautions while entering.
 - c. Every person entering/exiting zoo animal pen should be encouraged to wash their hands often. Therefore outside the door and inside the house there is a need to provide wash basins with disinfectant solution.
 - d. Place informational signage at the entrance to all bird areas identifying them as a site for biosecurity precautions.
 - e. Instruct employees not to come to work and to call their supervisors if they have a bird at home that is sick or has died.
 - f. Include employee education efforts such as the following measures: 1) Hold general employee biosecurity briefings at multiple times during the course of the outbreak. 2) Bring in regulatory officials to provide outreach presentations. 3) Create and distribute summary publications to all employees. 4) Create and

distribute documents listing biosecurity measures to employees. 5) Distribute information letters to all employees describing the disease outbreak and precautions that they could take as individuals. 6) Discourage employees from visiting other bird or bird product facilities (e.g. pet stores, feed stores, etc).

3. All the animals / birds should be observed at least twice in a day, any one showing signs of sickness should be immediately investigated and attended by a qualified veterinarian. On suspicion of a possible involvement of a contagious disease, the ailing animal /bird should be segregated in isolation room/premises where visitors' and other animals'/ birds' entry is banned.
4. All the animals /birds should be provided with diet that is healthy and certified safe. It is not considered a good practice to utilize the leftover feed from one cage/house to be added in another one.
5. The practice of offering feed to migratory birds has been noticed in some zoo establishments. Technically it is to be discouraged, however, if it has to be continued in the public interest for attracting more migratory birds for public viewing, the feed should be offered at a distance away from the area of captive birds and water bodies.
6. They should be regularly vaccinated as specified by zoo authorities in consultation with DADF as per their schedule. For the ectoparasites and endoparasites scrupulous control programs should be strictly followed at stipulated intervals.
7. The management should make a note of following points regarding cool, clean and safe potable water that should be available *ad-lib* in clean utensils.
 - Need to check the source of water supply-
 - a. The overhead or ground level tanks – Must be covered.
 - b. Supply line to individual rooms/sheds/pens-should ensure no leakage and away from drainage.
 - c. Water troughs/buckets/pots- should not be allowed to share by peri-domestic birds like sparrows, crows, pigeons etc. Ideally the feed/water troughs should be kept at a place that has a net covering so that other birds would not have access for feed /water.
 - Safe source of food supply – In addition to a balanced ration with adequate fiber contents and nutrition for the zoo animals/birds, the management should also ensure the feed storage place free of rodents, insects or dog/cats so that safe and uncontaminated feed is reached to cages/houses.

- Scientific method of waste management – Sanitation and hygiene is to be followed; disposal should not attract the birds, predators or scavenger animals, flies and other insects or other animals.
8. Disease status and proximity to animals in the surrounding area – Captive birds/animals in zoo should not have sharing boundary with other animal /bird enclosures /presence of wildlife and pest species. Similarly the management must have alertness towards any infectious disease in the area/locality being reported frequently or zoonotic disease potential of any newer infection.
 9. Vehicles, machinery, tools and other equipment moving into the zoo are likely to carry infectious agents.
 - a. Materials used as bedding, (straw, litter, sand and gravel), equipment as for carrying animals/birds like hay, crates, boxes or crates, egg trays, empty medicines boxes and containers and other veterinary instruments need to be brought in a separate room, first cleaned, disinfected by spraying or fumigation and then allowed to enter in animal premises.
 - b. The vehicles/ trucks entering in should pass through slowly via a long trench that is filled with disinfection solution in such a way that at least 50 per cent tyres are dipped at a time and when the vehicle rolls though the trench, the wheels should complete at least two rounds (4 half circles) so that the tyres are adequately dipped in the solution.
 - c. Animal waste products of transferred animals in the vehicle it had carried should be disposed off properly.
 - d. The driver of the vehicle should also be treated as visitor and should have all restrictions in place for his movements.
 10. In case in any cage/open space an animal/bird is found dead, immediately it has to be taken out in a leak-proof container/trolley and the area where the animal /bird was lying should be got covered with disinfected. It is always a good practice to vacate that premises completely for sterilization/disinfection.

Specific Biosecurity for Avian Influenza:

Active disease surveillance for Avian Influenza has been well explained for domestic poultry in NAP-AI 2015, however, for zoological parks and other water bodies, different strategy has to be adopted as it includes migratory and wild species of birds that may be carriers of

Avian influenza viruses (AIV) either highly pathogenic or low pathogenic, but may not show clinical disease or mortality. The pathogenic AIV may not kill them but may be transmitted to local ducks/goose/chicken that's where the risk is involved.

1. **Testing of captive birds:** Every zoo must get the cloacal and oro-pharyngeal swab and sera samples from captive birds tested at the start and end of migratory bird season. In case of mortality, the bird carcass should be tested for avian influenza.
2. **Segregation of birds:** Birds need to be segregated species wise and the sick birds need to quarantine under strict monitoring and symptomatic treatment.
3. **Disinfection of premises:** Disinfection of the premises may be carried out in consultation with environmentalist using chemicals or other methods keeping in view of the fragile ecology of the zoos.

During suspected /confirmed AIV (H5 or H7 subtype) outbreaks:

1. If mortality is reported in significant number in any species of birds, quick actions irrespective of protocols need to be taken to avoid losses.
 - a. The sick/dead birds from that site are to be quickly removed, qualified veterinarian be called for investigation and conducting postmortem examination in an isolated closed room.
 - b. The movement of the persons at that site be reduced to minimum and disinfection of the place be properly carried out.
 - c. The testing lab should be alerted on phone and a representative sample/freshly died birds (whole carcass properly packaged as per standard protocol) should be sent by maintaining cold chain with special messenger with complete history. Similarly, DADF and the state Govt AHD as well as State Dept. of Health services should be informed about this suspicious disease.
2. As soon as the disease is confirmed as H5 or H7 Avian Influenza, the actions to be initiated as per NAP-AI-2015, however derogations may be granted for wild /endangered/ precious captive birds not to be killed. Visitors' entry needs to be stopped forthwith.
3. The dead birds should be collected with proper labeling in a strong leak-proof carry bags and kept ready for sanitary disposal.

4. The movement of the persons/vets/laborers should be restricted and in no case they should move from infected pens to healthy pens. The management of the healthy sheds should be done by separate team.
5. Include employee education efforts such as the following measures: 1) Hold general employee biosecurity briefings at multiple times during the course of the outbreak. 2) Bring in regulatory officials to provide outreach presentations. 3) Create and distribute summary publications to all employees. 4) Create and distribute documents listing biosecurity measures to employees. 5) Distribute information letters to all employees describing the disease outbreak and precautions that they could take as individuals. 6) Discourage employees from visiting other bird or bird product facilities (e.g. pet stores, feed stores, etc).
6. All precautions of disinfection and hygienic maintenance of the premises should be observed.
7. The feed and water from the infected sheds should not be allowed to be mixed in common stocks/drainage, should be sterilized if at all needed to be re-used.
8. Even in the absence of mortality in wild/ migratory birds, their movements in the free range/water bodies/ swimming places be stopped and all the birds should be confined in the close premises as far as possible.
9. Since the infection is air-borne, air sanitizers, fogging with disinfectants on the roads/sheds, free spaces should be undertaken.
10. In any case, no vaccinations are to be allowed in the premises, even if the date is due.
11. Cloacal and oro-pharyngeal swabs from all the birds, irrespective of their disease status should be collected, labeled and sent *on-ice* to the reference laboratory to know the involvement of the birds, because many wild bird species do not show the clinical signs or mortality but may be excreting the virus. While collecting samples, movement of the persons should be from healthy pen to infected pen.

Response and Surveillance after Outbreak (RSAO)

1. Emergency risk assessment and formulation of biosecurity plan need to be carried out by a committee comprising of Zoo authority, Environmentalist, Public health professional, Biosecurity expert and Disease experts.
2. As per NAP AI 2015, one km radius zone is an area, where there is complete culling of poultry. Thereafter 10 km zone is for active surveillance. Irrespective of whether the

birds in 1 km epicenter have been culled or otherwise, the 4 locations on North, South, East and west are to be identified and representative samples are to be screened as per NAP AI 2015.

3. In case of wild/ migratory birds, since they may be high value birds/extinct species and not trade subjects, culling is not recommended. Even for captive birds, as they may be precious or extinct species, culling is to be avoided. Only the birds that are seriously ill need to be euthanized.
4. Maximum possible number of birds is to be sampled, while sampling on a water body, birds arriving at different locations be taken into consideration, it should be ensured that different species are proportionately represented.
5. Fresh fecal droppings and wherever possible, cloacal swab/oro-pharyngeal swabs are to be collected with wild/ migratory bird with species identification, (If spot identification is not possible, then a photo of the bird be captured and the same is to be tagged with sample number) are to be collected, labeled properly and sent to the lab as per the sample collection and transport guidelines.
6. In addition to sampling of birds, environment samples like water, soil etc. are to be collected and sent for testing.
7. Sampling has to be repeated every 15 days for at least 4 times and if consecutive two samplings collected from the last positive result found negative then zoo opening may be considered by the competent authority.