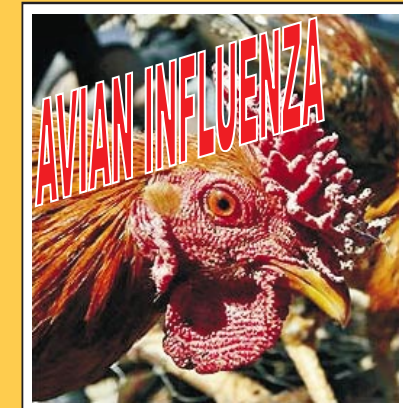


Contingency plan for management of human cases of Avian Influenza

Nodal Agency
National Institute of Communicable Diseases (NICD)
22 Sham Nath Marg, Delhi 110054



Directorate General of Health Services
Ministry of Health and Family Welfare
Govt. of India
Nirman Bhavan, New Delhi



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Directorate General of Health Services
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**CONTINGENCY PLAN FOR MANAGEMENT
OF
HUMAN CASES
OF
AVIAN INFLUENZA**

Directorate General of Health Services
Ministry of Health and Family Welfare
Nirman Bhawan
New Delhi

CONTENTS

	Page No.
1. Contingency plan for management of human cases of avian influenza	7
2. Annexure	
Annexure-I National Influenza Pandemic Committee	13
Annexure-II National Contingency Plan for Avian Influenza NICD Action Plan for Rapid Response	14
Annexure-III Action Plan for State Animal Husbandry Department in respect of Bird Flu	17
Annexure-IV National Rapid Response Team	45
Annexure-V Case definition of avian influenza in humans	46
Annexure-VI Guidelines for specimen collection from human cases of avian influenza	47
Annexure-VII Guidelines for cullers	52
Annexure-VIII List of identified hospital	53
Annexure-IX Chemoprophylaxis guidelines	55
Annexure-X Guidelines for case management for human cases of avian influenza H5N1	57
Annexure-XI List of identified biosafety laboratories in the country for processing human samples against “avian influenza”	59
Annexure-XII Personal protective equipment guidelines	60
Annexure-XIII Guidelines for quarantine for avian influenza	65
Annexure-XIV Do's and Don'ts for Community	68
Annexure-XV Frequently asked questions on avian influenza	69
Annexure-XVI Important Telephone Numbers	78

3. Standard Operating Procedures

I.	SOP for activation of the Plan	82
II.	SOP for rapid response	83
III.	SOP for collection of clinical samples and their transportation for laboratory investigation	86
IV.	SOP for infection control practices	87
V.	SOP for case reporting	91
VI.	SOP for materials & logistics	92

ACRONYMS

ABC	-	Airway, Breathing and Circulation
CDC	-	Centre for Disease Control & Prevention
CDDL	-	Central Disease Diagnostic Laboratories
CNS	-	Central Nervous System.
CVO	-	Chief Veterinary Officer
DAH	-	Department of Animal Husbandry
DAHO	-	District Animal Husbandry Officer
DADF	-	Department of Animal Husbandry, Dairying and Fisheries
Dept.	-	Department
DCMO	-	District Chief Medical Officer
DHS	-	Director of Health Services
DIO	-	Disease Investigation Officer
Dte.GHS	-	Directorate General of Health Services.
EMR	-	Emergency Medical Relief
FAQ's	-	Frequently asked Questions
HI	-	Haemagglutination Inhibition.
HPAI	-	Highly Pathogenic Avian Influenza
HSADL	-	High Security Animal Diseases Laboratory
IEC	-	Information, Education and Communication.
IHR	-	International Health Regulations
ICMR	-	Indian Council of Medical Research
IF	-	Indirect Fluorescent
MHA	-	Ministry of Home Affairs
MOHFW	-	Ministry of Health and Family Welfare
MHO	-	Medical Health Officer

Min.	-	Ministry
NP	-	Nasopharyngeal
NIPC	-	National Influenza Pandemic Committee.
OPD/IPD	-	Outdoor Patient Department/Indoor Patient Department
OP	-	Oropharyngeal
PHC	-	Primary Health Centre.
PCR	-	Polymerase Chain Reaction Test
PBS	-	Phosphate Buffer Saline.
PMO	-	Prime Minister Office
PPE	-	Personal Protection Equipment
QC	-	Quality Control.
RDDLs	-	Regional Disease Diagnostic Laboratories
RRT	-	Rapid Response Team
SOP	-	Standard Operating Procedures
VO	-	Veterinary Officer
VTM	-	Viral Transport Medium.
WHO	-	World Health Organisation.

CONTINGENCY PLAN FOR MANAGEMENT OF HUMAN CASES OF AVIAN INFLUENZA

INTRODUCTION

Influenza A viruses undergo major antigenic shift at unpredictable intervals causing worldwide epidemics (“pandemics”) with high morbidity and mortality. The present outbreak of H5N1 Avian Influenza in the south-east asian countries merits attention because of increasing evidence to suggest that the avian strains are getting more virulent, capable of causing severe disease. As of now, it has already caused illness in 137 humans with 70 deaths (as on 9.12.2005) in five countries namely Cambodia, Vietnam, Indonesia, China and Thailand. Even though small numbers of human cases have been reported to date, the situation has features of public health concern. Situation could change very quickly as the influenza viruses are genetically unstable and their behavior cannot be predicted.

From middle of this year the concern shifted to migratory birds as they were found to carry the virus to many countries in Europe, which included Kazakhstan, Romania, Turkey and Croatia. These migratory birds also frequent many parts of India.

Deptt. of Animal Husbandry in co-ordination with Ministry of Environment and Forests has developed contingency plans for surveillance and containment of cases among birds. Any entry of the Avian Influenza in India would be through infected birds, which will manifest as clustering of deaths amongst birds. In that scenario, it is possible that any human in contact with the infected birds may develop the disease. In the absence of human-to-human transmission, the number of such cases will be few and localized around the geographic area where the birds have been affected.

It is of paramount importance to contain the infection at this stage lest it provides an opportunity to the pathogen for re-assorting in humans/any other host and mutating into a new strain with potential of human-to-human transmission.

Objectives

- Surveillance of human cases of avian influenza where cases among birds have been reported.
- Early detection of human cases and their management.
- Containment of the transmission of infection.
- Decrease social disruption and economic loss.

Action plan:

1. Institutional Framework

- 1.1 The National Influenza Pandemic Committee would decide on the activation of contingency plan on reporting of unusual deaths among birds. The constitution of National Influenza Pandemic Committee is at **Annexure-I**.

(Action: Convener, National Influenza Pandemic Committee)

- 1.2 National Institute of Communicable Diseases (NICD) is the identified nodal agency for

managing human avian influenza whereas Department of Animal Husbandry is the nodal agency for managing bird and poultry cases. The Director, NICD would activate its action plan once suspected cases in birds/poultry is reported. **[Annexure-II]**.

(Action: Director, NICD)

2. Surveillance

2.1 The Department of Animal Husbandry would activate its action plan on receipt of any preliminary report regarding unusual sickness or above average mortality of poultry or wild/ migratory birds at a place either from veterinary officers or from any other source [Wildlife Warden etc.]. The Chief veterinary officer (CVO) / District Animal Husbandry Officer (DAHO), accompanied by a disease investigation Officer shall visit that place within 24 hours and personally ascertain the circumstances and facts of the case. A report on the investigations carried out should be sent to Dept. of Animal Husbandry [DAH]; Ministry of Health and Family Welfare (MOHFW), Director, NICD immediately. Action plan of DAH is at **Annexure-III**.

(Action: Dept. of Animal Husbandry/Min. of Environment and Forest)

2.2 The CVO/ DAHO would inform the district chief medical officer (CMO) / district health officer of its findings and also alert neighboring districts. The CVO/ DAHO would ensure collection of samples, culling and disinfections as per the action plan of the Department of Animal Husbandry.

(Action: CVO/DAHO)

2.3 NICD would depute a multi-disciplinary Rapid Response Team (RRT) to the affected area immediately, whenever a suspected case of avian influenza is reported in poultry/ wild/ migratory birds. The RRT will conduct clinico-epidemiological investigation and examine contacts/-exposed individuals for influenza illness and report the same to MOH&FW. Composition of the RRT is at **Annexure-IV**.

(Action: Director, NICD)

2.4 The NICD RRT would undertake surveillance activities (in and around the identified area from where deaths amongst birds have been reported) along with state RRT in coordination with Director of Health Services [DHS] of the concerned state to identify any human case as per **standard case definition (Annexure-V)**. The RRT would carry out field investigations and collect epidemiological data as well as clinical samples from the suspected cases. The guideline for collection and transportation of samples is at **Annexure-VI**.

(Action: Team leader, RRT, State health authorities)

2.5 The RRT will monitor the health status of the cullers on a regular basis at a decontamination zone near the culling facility which would be according to the DAH action plan (**Annexure-III**). The guidelines for monitoring of health status of cullers are at **Annexure-VII**. CVO/ DAHO will identify cullers. They will be isolated for this activity in a separate place away from human dwelling for 10 days after last culling. CVO/ DAHO will provide them PPE. The disposal of PPE and other procedures would be as per DAH action plan (**Annexure-III**). The RRT would provide chemoprophylaxis to the cullers. In the event of any suspected

case among cullers, the case would be treated in the nearest identified health facility **(Annexure-VIII)** or any other facility subsequently identified.

(Action: CVO/ DAHO and Team leader, RRT)

- 2.6 The RRT would send daily report to the Avian Influenza Monitoring Cell at NICD, which would provide necessary technical guidance to RRT. NICD would keep Dte.G.H.S. MOHFW and the National Influenza Pandemic Committee informed.

(Action: Team leader, RRT and Monitoring Cell)

- 2.7 The RRT would identify the high-risk groups for administration of chemoprophylaxis. The guidelines for chemoprophylaxis are at **Annexure-IX**.

(Action: Team leader, RRT and Monitoring Cell)

3. Clinical Management

- 3.1 The RRT/ State health authorities would identify any human case by using the standard case definition. The suspected case would be managed as per standard treatment protocol **(Annexure-X)**

(Action: State Health Authorities)

- 3.2 The District Collector would ensure transport of human cases from affected area to the designated hospital.

(Action: District/ State Health Authorities)

- 3.3 The cases would be managed in identified hospitals having isolation facilities that follow standard infection control practices. A state-wise list of such identified hospitals is at **Annexure-VIII**. The state may further identify hospitals with isolation facilities for such purpose.

(Action: State Health Authorities)

- 3.4 If required, all such identified hospitals would requisition for equipments for critical care support and drugs from the Central Govt. to further strengthen their case management facilities.

(Action: State Health Authorities)

- 3.5 Clinical samples would be sent to identify bio-safety laboratories. A list of such laboratories is at **Annexure-XI**.

(Action: State Health Authorities)

4. Public Health Measures

- 4.1 Department of Animal Husbandry would ensure that the bird handlers/cullers in the affected areas/source site, use personal protective equipments. The guideline for use of Personal Protective Equipments is placed at **Annexure-XII**.

(Action: Dept. of Animal Husbandry)

- 4.2 The RRT in association with local health authorities will ensure chemo prophylaxis of high-risk groups including contacts of human cases as per guidelines **(Annexure- IX)**.

(Action: Team leader, RRT and State Health Authorities)

- 4.3 The contact cases would be quarantined in-house. Quarantine of the village would be

considered on case-to-case basis. The guidelines for quarantine are at **Annexure-XIII**.

(Action: State Health Authorities/ MHO)

4.4 The CVO/ DAHO/ State Animal Husbandry authorities would follow the guidelines of Department of Animal Husbandry (**Annexure-III**) in disposing off dead birds/ culled birds.

(Action: State Animal Husbandry Authorities)

4.5 Intensive IEC campaign would be undertaken in the affected area. Generic IEC guidelines do's and don'ts and FAQs are at **Annexure-XIV and XV** respectively.

(Action: State Health Authorities)

5. Logistics and supplies

5.1 Suitable stocks of anti-viral drugs for treatment as well as chemoprophylaxis, personal protective equipment, and critical care equipment will be stockpiled at NICD. Initially, 100,000 courses of Oseltamivir and 10,000 PPE sets would be stockpiled at NICD. DAH will procure and stock PPE for their use. The necessary supplies will be rushed to the affected area immediately.

(Action: NICD/ State Health Authorities)

5.2 Mobilize additional resources in terms of manpower and material to affected areas.

(Action: Director, EMR, Dte.G.H.S.)

5.3 Ministry of Home Affairs will provide airlifting facilities to the RRT and other material logistics, if required. Director, EMR, Dte.G.H.S. will coordinate.

(Action: MHA/ Director, EMR, Dte.G.H.S.)

5.4 As per the provisions of revised IHR, any public health emergency of international concern would be reported to the WHO.

(Action: NICD; MOHFW)

6. Communications and Media Management

6.1 NICD, the nodal agency, would communicate to all concerned departments regarding the status and other information related to Avian Flu. NICD would maintain a web based interactive public information system.

(Action: NICD)

6.2 The Chairman, National Influenza Pandemic Committee or any other officer delegated by him/ her would address the media.

(Action: Chairman, NIPC)

6.3 The Department of Telecommunications would provide satellite phone to RRT team, if the geographic quarantine area has no landline or cellular connectivity.

(Action: Dept of Telecommunications)

7. Miscellaneous

The contingency plan would be circulated to all concerned. This would include contact numbers of all-important officers (**Annexure-XVI**).

(Action: Director, EMR, Dte.G.H.S.)

Annexure

NATIONAL INFLUENZA PANDEMIC COMMITTEE

Constitution

- | | |
|--|----------|
| 1. Secretary, Ministry of Health & F.W. | Chairman |
| 2. Secretary, Department Animal Husbandry & Dairying, | Member |
| 3. Director General of Health Services | Member |
| 4. Director General, Indian Council of Medical Research | Member |
| 5. Director, National Institute of Communicable Diseases | Member |
| 6. Animal Husbandry Commissioner,
Department of Animal Husbandry, Dairy & Fishery | Member |
| 7. Joint Secretary (DM), Ministry of Home Affairs | Member |
| 8. Additional Secretary (DG), MOHFW | Convener |

Term of Reference:

1. To establish institutionalized mechanism for policy development for Avian Human Influenza.
2. Inter-sectoral command and control
3. Coordination with international agencies
4. Formulating advisories on technical matters
5. Activate the contingency plan

NATIONAL CONTINGENCY PLAN FOR AVIAN INFLUENZA NICD ACTION PLAN FOR RAPID RESPONSE

1. When a case of bird flu in poultry/ birds is reported, the National Institute of Communicable Disease (NICD) shall investigate possible transmission of infection in humans in the area concerned.
2. As information from the District Health Officer / Chief Veterinary Officer-District Animal Husbandry Officer/ any health institution and media report is received, the NICD will investigate the same by sending the Rapid Response Team (equipped with PPE and antiviral drug) and report the findings to the Directorate General of Health Services, Ministry of Health & F.W. and National Influenza Pandemic Committee.
3. The team, accompanied by the District/ State veterinary persons and State RRT would investigate whether there is a possible case of Avian Influenza in the area in and around the site, where bird / poultry cases were reported from. For this the team would:
 - a. Review Early Warning Signal (increased number of cases and death) generated by the district health authority in various health facilities detected in the district by investigating unusual increase in fever cases, any unusual event and death with acute respiratory illness.
 - b. Review OPD/IPD data from local hospital/health facilities pattern for acute respiratory distress for possible cases of Influenza/ Avian Influenza.
 - c. Review acute respiratory distress syndromes and unexplained deaths due to acute respiratory illness in the community.
 - d. Review unexplained deaths due to acute respiratory illness in health care facilities of the area.
4. All possible cases are to be examined and a line list made with details of history of travel, occupational exposure; exposure to affected poultry; exposure to wild / domestic animals and exposure to possible human cases.
5. A case report form would be completed for every individual for whom a diagnosis of influenza A/H5 viral infection is being considered. A prototype of such a form is enclosed.
6. Clinical samples of all such cases would be collected and brought in for examination at the designated laboratories for confirmation of diagnosis as per the guidelines in

the National Contingency Plan. Along with laboratory results findings of each such investigation by RRT shall be reported to the National Influenza Pandemic Committee.

7. Cases of laboratory confirmed Avian Influenza Infection would be reported as:
 - a. First confirmed case of influenza A/H5 viral infection.
 - b. Cases with most recent dates of onset.
 - c. Cases residing in an area without reported HPAI outbreaks in the animal populations.
 - d. Cases in health care workers.
 - e. Cases with reported contact with a confirmed case and with no other reported risk or exposure.
 - f. Cases that are part of a cluster (two or more cases in an area).
 - g. Sporadic cases with no reported risk or exposure.
 - h. Cases among cullers.
8. All RRT investigations shall be conducted with a full-fledged state team accompanying, so that with time the state RRT can take over investigation of possible Influenza Infection episode.
9. Quarantine of team members.

Case Investigation Sheet

1. Name _____
2. Sex _____
3. Age in Years _____
4. Current contact details _____
5. Full address _____
6. Telephone _____
7. Nationality _____
8. Ethnicity _____

9. Signs and symptoms

- a. Date of onset of illness (dd/mm/yyyy) ____/____/____
 - b. Body temperature higher than 38°C Yes / No / Unknown
 - c. Cough Yes / No / Unknown
 - d. Sore throat Yes / No / Unknown
 - e. Shortness of breath Yes / No / Unknown
-
-

10. History of travel (during last 2 weeks)
11. History of occupational exposure (during last 2 weeks)
12. History of exposure to affected poultry (during last 2 weeks)
13. History of exposure to wild/domestic animals (during last 2 weeks)
14. History of exposure to possible human cases (during last 2 weeks)
15. Any antiviral taken (provide details)
16. Any influenza vaccine taken (provide details)
17. Lab. samples collected
18. Outcome: still ill/died/cured/not known

ACTION PLAN FOR STATE ANIMAL HUSBANDRY DEPARTMENT IN RESPECT OF BIRD FLU

Introduction

A system of taking random samples of blood of poultry from different parts of the state for the purpose of surveillance against bird flu has been in vogue for sometime. We have recently also initiated surveillance of migratory birds visiting sanctuaries. While thousands of samples have been tested so far, none has proved positive for highly pathogenic avian influenza (HPAI). This programme of surveillance will continue and we can be quite confident of the health of our poultry. The message should therefore go to the poultry farmers and consumers alike that there is no scope for any worry on this count. Prudence, however, demands that we should take all possible precautions in this regard and be prepared to face any eventuality. It is in this context that this Action Plan has been prepared for the guidance of the Animal Husbandry Departments of the State Governments. The Departments are strongly advised that the spirit of extreme caution in which this has been prepared should be fully appreciated and they must ensure that this does not in any way create any scare particularly among the producers and consumers of poultry. Special care should be taken to see that baseless rumours and suspicion are not allowed to spread and mislead the people. This Action Plan for the State Governments consists of three parts. Part I gives the Action Plan in case of any suspicion of occurrence of avian flu at any place. Part II describes the Action Plan in the unlikely event of the outbreak of the disease being confirmed by laboratory tests. Part III provides advice to persons who may be required to handle HPAI affected poultry.

It is clarified that poultry covers not only chickens, but other domesticated birds like ducks, geese, turkeys, guinea fowls, quails etc.

I. Steps to be taken in case of suspicion of outbreak of avian flu Need to be in a state of alertness and preparedness

- 1.1 The Chief Veterinary Officer (CVO) of the District, District Animal Husbandry Officer (DAHO), or by whatever designation he is known, and the entire machinery of the Animal Husbandry/Veterinary Department in every district should be in a state of full alertness and preparedness and be on the lookout for any untoward incident relating to the health of poultry. All Veterinary Officers in the district (government, semi-government or private) should be alerted to report to the CVO/DAHO on phone, fax or e-mail, in case they notice above average mortality or any unusual sickness which

cannot be readily diagnosed in poultry as well as wild and migratory birds. A system of reporting has to be developed in which the industry, poultry farmers and village level workers are encouraged to report any suspicion to the local veterinary authorities. If there are any sanctuaries for migratory and wild birds in the District, the CVO/DAHO should request the officials in charge of the same to report any such suspicion in relation to the birds in the sanctuary immediately.

- 1.2 The Director of Animal Husbandry should ensure that all the veterinary officers and disease investigation officers of the department are equipped with the essential kits indicated in Annexure I. The office of every CVO/DAHO should have at least five fogging machines and twenty sets of protective clothing and equipment (consisting of (a) protective clothing, preferably overalls plus an impermeable apron or surgical gowns with long cuffed sleeves plus an impermeable apron; (b) disposable examination gloves; (c) well-fitted surgical masks (d) goggles; (e) cap and (f) disposable shoe covers). Two or three fogging machines and a couple of protective equipment should be carried to all suspected or infected places.

CVO/DAHO to visit the site immediately on receipt of preliminary information

- 1.3 On receipt of any preliminary report regarding unusual sickness or above average mortality of poultry as well as wild and migratory birds at a place either from Veterinary Officers or from any other source, the CVO/DAHO, accompanied by a Disease Investigation Officer (DIO) shall visit that place within 24 hours and personally ascertain the circumstances and facts of the case. The DIO should be equipped with a 'kit' (indicated in Annexure I) so that he is in a position to conduct preliminary and clinical investigations and if necessary, collect required samples for dispatch for laboratory analysis. DIO and his assistants, as well as those who are required to visit places where birds are kept, should wear the protective clothing and equipment. It must be ensured that these protective clothing and equipment are discarded for disinfections in the suspected farm prior to departure.

Preliminary and clinical investigations by DIO

- 1.4 The DIO must wear his protective gear in the changing room, and must leave the following items from the kit in the changing room:
 - (i) Leak proof water resistant container;
 - (ii) Thermic container (icebox) for carrying samples;
 - (iii) Two pairs of latex gloves;
 - (iv) Five autoclavable plastic bags;

- (v) Five black rubbish bags;
- (vi) Disinfecting solution.

The remaining components of kit must be carried inside the house/shed.

1.5 The CVO/DAHO and DIO should collect the following information:

- (i) Preliminary identification of the production unit and subunits including topography of the farm and identification of the specific unit for which the suspicion has been reported;
- (ii) Number of birds and other animals on the farm;
- (iii) Identification of staff as well as vehicles directly involved with that unit;
- (iv) Recent movement of people, equipment, vehicles and animals/ birds;
- (v) Availability on site of disinfectants and equipment for disinfecting the premises;
- (vi) Anamnestic data (data relating to immune response).

1.6 The DIO should carry out a clinical investigation with the aim to establish the clinical situation on the farm, including ill and suspect birds. The clinical investigation must be performed on all susceptible species present on the farm, and it must begin from the most peripheral units. Particular attention must be paid to any vaccinations performed. All this information must be reported in the epidemiological inquiry report (Annexure II). While filling in the epidemiological inquiry form, it is important to ensure inter alia that:

- (i) Animal or poultry movements are recorded up to 20 days prior to the onset of the first clinical signs;
- (ii) Movement of all people (staff, relatives, servicing personnel, veterinarians etc.) who had access to the farm must be recorded;
- (iii) All vehicles, regardless of their contact with animals, which have had access to the farm, must be reported.

The epidemiological inquiry report must be sent (faxed or e-mailed) to the Director of Animal Husbandry as soon as it is completed. All the birds present PER SPECIES must be identified, and for each species identified, a report containing the date of onset of clinical signs, description of clinical signs and reported percentage mortality must be prepared.

1.7 If the preliminary and clinical investigations indicate that it is an unusual situation indicating suspicion of avian flu, then the CVO/DAHO has to ensure that steps as

indicated in the subsequent paragraphs are taken immediately. If the investigations show that avian influenza is not suspected, adequate local publicity should be given for the same so as to reassure the poultry farmers and general public.

Immediate report to Director, Animal Husbandry, District Collector and others

1.8 The CVO/DAHO shall immediately report by telephone, fax or e-mail the matter to the Director, Animal Husbandry and District Collector as well as to other officers of the Revenue Department like the Sub Divisional Officer, Tahsildars etc. and seek their assistance for enforcement of restrictions indicated below.

Identification of alert zone

1.9 An area with 10 km radius from the affected place should be identified as the alert zone. All villages and habitations within that area should be identified. The Panchayat authorities, civil and veterinary officials in those areas should be alerted about the possibility of avian flu and requested to strictly enforce the restrictions mentioned below.

Collection of samples and despatch for laboratory tests at HSADL, Bhopal

1.10 The following pathological samples must be collected to be sent to High Security Animal Diseases Laboratory (HSADL), Bhopal (till adequate capabilities in this regard are created in other laboratories like the CDDL and RDDs):

- (i) At least 5 diseased birds (either dead or acutely sick birds after killing them) for post mortem examination;
- (ii) Pooled tracheal and lung samples from at least 5 diseased birds;
- (iii) Pooled intestine samples from at least 5 diseased birds;
- (iv) Cloacal and tracheal swabs collected normally from 30 healthy birds and in any case not less than 10 birds. Swabs must be collected ensuring that at least one gram of faecal material is actually on the swab and must be subsequently immersed in viral transport medium (PBS or tissue culture medium);
- (v) At least 10 blood samples (acute sera).

Samples must be packaged appropriately (in leak proof containers, wrapped in at least two plastic bags), to avoid dissemination of the infectious agent, and transported in a cold chain to the laboratory inside a polystyrene box (ice box) containing icepacks. The polystyrene box must be appropriately disinfected before leaving the premises. The samples must be accompanied by the appropriate form (see Annexure III). Following collection of samples the DIO and his assistants should disinfect their protective gear in the designated changing room and collect all sterilizable equipment

in an autoclavable bag, which is sealed and inserted into a second bag, which is disinfected externally. All single use materials, sheets of paper, disposable gear and shoe-covers are to be put inside a plastic bag, which is left on site.

- 1.11 These samples must be collected and a special messenger should leave for Bhopal within 24 hours after the CVO/DAHO and DIO reach the spot. Regarding the despatch of the sample through a special messenger the CVO/DAHO may inform the Director of Animal Husbandry on phone. There should not be any need to get any written permission, as it has to be ensured that the samples reach Bhopal as early as possible. To cut short the delay the special messenger should be allowed to go by air, wherever necessary. HSADL, Bhopal has been requested to complete all tests at the earliest. In order to enable HSADL, Bhopal to receive the samples for carrying out the tests as soon as the samples reach there and also to arrange temporary stay of the special messenger, telephonic intimation regarding dispatch of sample should be given to them at the earliest. (Telephone no. Of HSADL, Bhopal is 0755 2759204 and fax no. is 0755 2758842). It should be possible to get test results within three to four days after the sample has left the suspected premises.

Restrictions to be enforced at the site and the alert zone pending receipt of test reports

- 1.12 Pending receipt of the test results, the entire suspected farm should be cordoned off and following restrictions should be immediately brought into effect in the alert zone:
- (i) No vehicles should be allowed to ply in and out of the affected farm premises. Personal vehicles should be left outside the farm premises.
 - (ii) No movement of poultry, eggs, dead carcass, manure, used litter, farm machinery, equipment or any such material should be allowed both within the alert zone and from and to outside the zone.
 - (iii) The farm personnel should wear protective clothing all the time inside the farm, including facemasks 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.
 - (iv) Movement of people to and from the suspected farm should be restricted to the barest minimum. No other animals 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, zoo etc.
 - (vi) Disinfection procedures 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 in consultation with the revenue authorities, particularly if more farms become suspect during this period.
- 1.13 The poultry farmer (farmers) at the suspected site should be informed of the restrictions and should be requested to comply with the same strictly. While these restrictions should be enforced strictly, it should be ensured that this does not create any scare; for this purpose help of Revenue, Panchayat and Municipal authorities and the media should be sought.
- 1.14 Pending receipt of the test results, the DAHO should arrange to record mortality or sickness of birds at the suspected site and the alert zone. During this period, he should also arrange to 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 3 kms and between 3-10 kms from suspected site).
- 1.15 The restrictions mentioned above should, of course, be abolished if the laboratory diagnosis proves to be negative for HPAI. However, if the above average mortality or disease situation continues, the cause of this should be got established through other necessary tests and appropriate remedial action taken.
- 1.16 In case the suspected site happens to be a bird sanctuary, the actions indicated in paragraphs 1.3 to 1.15 may be done in consultation with the official in charge of the sanctuary.

Naming a Veterinary Officer as the designated officer

- 1.17 Before leaving the place, the CVO/DAHO shall nominate a fairly senior and knowledgeable veterinary officer of the Department serving in the area as the designated officer who shall be responsible for carrying out all required steps as per this Action Plan.

II. Action Plan in case outbreak of HPAI is confirmed

Declaration of infected and surveillance areas

- 2.1 In case laboratory tests confirm the occurrence of highly pathogenic avian influenza (HPAI), the matter should be reported at once to the Director of Animal Husbandry and Secretary/Principal Secretary in charge of Animal Husbandry. An area of radius 3 kms around the infected site which should have been clearly identified with names of all villages and habitants within that area should be communicated with this to the above authorities so that the area can be notified as infected area. A signboard about

declaration of the area with 3 km radius from the infected site as infected with bird flu or Avian Influenza should be clearly and prominently displayed in the local language. The area between the radius of 3 kms and 10 kms around the infected site should be notified as surveillance area. The surveillance area should act as a buffer zone between infected area and disease-free area. In case vaccination is to be adopted, surveillance area will have to be targeted.

Reporting to be done by Secretary/Principal Secretary

2.2 The Secretary/Principal Secretary will obviously have to bring the matter to the notice of the highest authorities of the State Government for their guidance and appropriate intervention. The Secretary/Principal Secretary should also at once report the matter to the Animal Husbandry Commissioner and Joint Secretary in charge of Animal Health in the Department of Animal Husbandry, Dairying and Fisheries, Government of India. All the concerned agencies including local and other central authorities are to be notified about the infected area. It is, however, clarified that the international agencies are to be notified by only the Department of Animal Husbandry, Dairying and Fisheries, Government of India.

Designated Veterinary Officer and CVO/DAHO responsible for implementation of all contingency procedures

2.3 Once the occurrence of HPAI is confirmed through the laboratory tests; all contingency procedures for the containment and eradication of HPAI should be implemented at once. Many immediate steps will have to be taken as indicated in the succeeding paragraphs in addition to continuing and intensifying all the restrictions mentioned in para 1.12. The responsibility for this purpose shall vest with the Veterinary Officer designated for this purpose by the CVO/DAHO and of course, the CVO/DAHO as the supervisor officer. (In case the infected area happens to be a sanctuary of birds, the steps should be taken in consultation with the official in charge of the sanctuary. There will, however, be no need to provide any compensation as mentioned in paras 2.21 and 2.22 in respect of the birds in the sanctuary to be destroyed).

Absolute ban on movement of poultry or its products

2.4 Movement of poultry or its products should be completely banned from and to the infected area. Farm personnel in the infected area should not be allowed to visit any other poultry farm. All possible steps should be taken to ensure that wild and stray birds do not have access to sheds and water supplies in the infected area.

Closure of poultry and egg markets and shops

2.5 All poultry and egg markets/shops within the radius of 10 kms from the infected site

should be immediately got closed forthwith with the assistance of the Revenue and Municipal/Panchayat authorities.

Movement of vehicles and persons

2.6 The vehicles of the veterinarians and others visiting the infected premises must be left outside the premises at a distance of at least 500 metres from the entrance of the farm. The movement of people and equipment from the suspected premises should be restricted only to the requirements related to handling the disease. Proper disinfection procedures must be adopted even for this.

Access to the infected premises

2.7 Access to the premises must take place following a complete change in clothing. All staff entering the farm must wear disposable gear, including head caps and shoe covers. A changing room must be identified, and it should contain large plastic bags, cardboard boxes, latex gloves and a sufficient quantity of disinfecting solution. The remaining components of kit are to be used inside the poultry house/shed. The immediate tasks to be carried out by the designated Veterinary Officer will be to:

- (i) Categorically instruct the personnel in the farm that they should not visit any other establishment containing live birds for three days after they leave the infected farm; the VO and any other veterinarian must also comply to this general rule.
- (ii) Identify locations on the farm where vehicles leaving the farm can be properly washed and disinfected.
- (iii) 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 leave their disposable gear inside the changing room, wash and disinfect exposed body parts and shoes and agree to wash their clothing as soon as they return home.
- (iv) Vehicles are washed and disinfected internally and externally, and vehicles should be allowed to leave the infected premises only if it is absolutely necessary.
- (v) Care must be taken to avoid contamination of water reservoirs.

2.8 The number of vehicles and staff in the infected premises should be reduced to the minimum necessary to handle the outbreak. Any staff that has access to the infected premises may only leave the farm after a complete change in clothing and disinfection. Staff involved in the depopulation of the farm must not have any contacts with susceptible species, for at least three days after the last contact with the infected premises.

Depopulation procedure followed by burning at the farm premises

- 2.9 The entire stock of diseased and in-contact birds needs to be eliminated and destroyed in the presence of the designated Veterinary Officer and concerned local authorities like officials of the Revenue Department, Municipality, Panchayat etc. All the poultry products including meat, eggs and waste materials, like used litter and manure, must not be allowed to move out of the infected premises and should be destroyed at once including any material left over from the period before the disease was reported. The means of destroying the stock should be humane. The dead birds, along with both diseased and culled ones, should be burnt in pyre or buried and a certificate to be obtained from the local authority. It has to be ensured that the dead birds, eggs and other materials are not moved out of the infected site under any circumstances. The Government may designate any other appropriate authority for overseeing the culling and disposal of dead birds from the point of view of determining the compensation to be paid to the affected poultry farmers.
- 2.10 The depopulation and disposal of infected birds must be performed bearing in mind that this needs to be done in the quickest time span possible to prevent spread of infection. Furthermore, they need to be performed with the doors of the shed/house closed to prevent access of wild birds and other animals to infected organic material. Depopulation of infected flocks may be done by decapitation and dislocation of the neck.
- 2.11 The equipment necessary for depopulation and disposal are : Wooden poles and plastic red-and white-tape to identify the infected premises and the entrance/exit of the farm; Disinfectants; Gas, drugs or devices to contain, sedate, stun and depopulate flocks; Appropriate containers for disposing of infected material.
- 2.12 Drugs that may be used for depopulation of large flocks of birds are: Alfa chloralose, mixed to feed in concentration of 2%-6%, causes loss of consciousness, and death can be obtained by suffocating birds in plastic bags. Can be used only if the birds are clinically ill and do not exhibit any loss of appetite;
Sodium fenobarbital, dissolved in drinking water (80 mg in 55 ml), causes loss of consciousness in 4 hours; same recommendations as above.
- 2.13 Approximately 5 quintals of wood per 100 kg of dead birds would be required for burning. It should be ensured that carcasses are completely burnt. In areas where it is not at all practicable to dispose of the birds by burning, burial may be adopted. For this, a pit must be prepared as soon as the diagnosis is confirmed. The size of the pit must be at least two metres long, two metres wide and two metres deep, and this enables disposal of about 300 birds. The number of birds can be doubled, if it is made one metre deeper. All non-disinfectable, biodegradable material (wood, cardboard) must be buried with the animals. The carcasses must be covered with a layer of calcium hydroxide, and

then with a layer of earth (at least 40 cm deep). Burial should be such that rodents or stray animals cannot access it. The burial ground is to be suitably marked and should not be opened for at least five years.

Procedure for destruction of infected materials

2.14 For destruction of the infected materials, the following procedures should be adopted:

- (i) Waste, organic and all other non-disinfectable material present on the farm must be destroyed; in particular, destruction of litter, eggs, egg products, hay, animal feedstuffs, feathers and egg-trays must be ensured. (Depending on the quantity to be destroyed and characteristics of the farm, litter can be either buried in the pit with animal carcasses or burned. Water should not be allowed to accumulate in the farm premises or where litter has been buried. In any case, infected litter should not be moved from the infected farm.)
- (ii) Eggs and egg products may be buried in the pit with the animal carcasses or burnt.
- (iii) Straw may be more conveniently burnt.
- (iv) Animal feed present on site must be burnt.
- (v) The protective clothing used by the staff engaged in destruction of the birds should also be burnt.

Cleaning and disinfection of the premises and farm implements

2.15 The following procedure may be adopted for cleaning and disinfection of the premises and farm implements:

- (i) All units which are physically or functionally connected to the establishment (i.e. hatchery, egg storage rooms, packaging rooms, egg trolleys, egg product plants) must be properly disinfected. Vehicles, used for transporting live animals, eggs and animal feed must also be disinfected.
- (ii) Washing and disinfection of walls, floors and ceilings of the infected establishments must be performed aiming at the removal of all organic material; metal structures such as cages may be decontaminated by heat treatment.
- (iii) All equipment inside the house such as drinkers and food hoppers must be washed and treated with a disinfectant for at least 48 hours.
- (iv) Water reservoirs must also be emptied, washed and disinfected.
- (v) Feed tanks (silos) need to be emptied, washed with a hot water-pressure pump and subsequently fumigated.

(vi) After washing and disinfecting, all units must be fumigated twice with at least two weeks between fumigations.

2.16 A list of disinfectants which are active against avian influenza virus, their concentration and recommended use are mentioned below :

- (i) Rectified spirit or Savlon or Dettol (1 % solution) can be used for cleaning of hands, feet of farm workers and visiting officials.
- (ii) 2% solution of NaOH should be used at the entrance on foot mats to clean the shoes. This solution can also be used to scrub and clean gumboots and other items.
- (iii) Sodium hypochlorite: 2% active chlorine solution (disinfection of equipment)
- (iv) Quaternary ammonium salts: 4% solution (treatment of walls, floors, ceilings and equipment).
- (v) Calcium Hydroxide: 3% solution (treatment of walls and floors).
- (vi) Cresolic acid 2.2% solution: (treatment of floors).
- (vii) Synthetic phenols 2% solution: (treatment of floors).
- (viii) Vircon-S@ where available.
- (ix) Formalin and permanganate for fumigation.

Notification to health authorities

2.17 In view of the threat of human infection from particular strains of HPAI (H5N1), public health authorities are to be immediately notified to be vigilant against infection appearing in man. This should be done at the level of CVO/DAHO and the Director/Secretary, Animal Husbandry. The farm personnel handling birds or products should be subjected to special scrutiny. If human infection is suspected, the personnel involved in eradication or control should be adequately protected against exposure. Wearing of protective clothing and other protective equipment should be made compulsory.

Imposition of legislative measures

2.18 All the existing legislative powers associated with notification of a disease either vested with the municipality or with CVO/DAHO should be exercised. This is to be ensured by both the CVO/DAHO and the Director of Animal Husbandry.

Exchange of information with industry/farmers

2.19 Following notification of the disease, the Government at the level of the Director, Animal Husbandry and Secretary, 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 HPAI. Popular poultry and livestock journals and mass media should be encouraged to disseminate information about the Government's initiative on HPAI. The support of the industry should be sought for implementing the Government's decisions.

Media briefing by official spokesperson

2.20 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. The notification, instructions to be followed and information in terms of human consumption of poultry products should be announced through media. Unauthorized persons should be discouraged from voicing opinion in the media, which is best left to the experts identified by State Govt. for HPAI.

Compensation to be paid for forced culling

2.21 It is obvious that the programme of culling of all affected birds will succeed only if a system of adequately compensating the poultry farmers is put in place and activated immediately after the outbreak of HPAI is confirmed. It is unrealistic to expect the poultry farmers to cooperate with the culling programme unless they can hope to get fair compensation immediately. It must be realised that any expenditure incurred on this will be more than justified by way of bringing about effective control on the disease. The State Government will have to take an immediate decision on this. In order to ensure that compensation is paid expeditiously and that chances of its misuse are minimised, it will be advisable to associate the District Collectors with this. In order to have effective control on the expenditure incurred on payment of compensation, it will be necessary to collect data on the poultry population within a radius of 3 kms from the suspected site before receipt of test results, as mentioned in para 1.14. The question of grant of assistance, if any, to the States for this purpose will have to be decided separately.

Destruction of birds in the infected zone of 3 km radius outside the initially infected farm

2.22 For effective control of the diseases it will be necessary to stamp out all the birds within the infected zone even though the birds outside the initially infected farm may not be currently showing any symptoms of the disease. All such birds should also be destroyed. Compensation may be paid for such birds also.

Bio-security

2.23 The best way to control HPAI is to prevent exposure by imposing strict biosecurity measures. This can be achieved by adopting following means in all farms, even though they are not currently infected.

- (i) Contact of poultry flock with domestic poultry and wild birds should be avoided. The premises of poultry farming should not have water bodies to attract free-living, migratory and other wild birds.
- (ii) In poultry farm, uniform age-group policy should be adopted. Adopting 'all-in-all-out' production system best does this.
- (iii) In order to control human traffic, the farm personnel should wear protective clothing all the time inside the farm, including facemasks and gloves, gumboots etc. Inter-sectional movements of farm personnel should be banned. While leaving the farm premises, farm personnel should clean themselves thoroughly with disinfectants and change their clothing and shoes. They should not visit any other poultry farm, bird sanctuary etc. for at least three days.
- (iv) The entire farm premises including appliances, feeders, waterers, cages, etc., need to be thoroughly cleaned and disinfected at fortnightly intervals. Farm implements from other poultry farms should not be borrowed for use. If at all necessary, thorough disinfection before using and soon after the use should be carried out.

Vaccination

2.24 Vaccinated birds may get protected against the disease but continue to spread the infection. OIE recommends that in case of an outbreak of HPAI in a densely populated poultry area, vaccination can be one of the options to be adopted as a control policy. Since there are various subtypes of influenza viruses, it is difficult to predict involvement of a particular sub-type and keep stocks ready. However, mass-vaccination with the most commonly used strain in an inactivated vaccine in the entire surveillance zone as ring vaccination could be adopted. If it is desired that ring vaccination be carried out in the intensive surveillance zone (ie, 3 to 10 kms radius of infected site), the Department of Animal Husbandry, Dairying and Fisheries (DADF), Government of India may be contacted stating reasons for vaccination, no. of domestic avian species at risk, no. of doses required etc. If convinced, DADF may arrange to procure and dispatch appropriate vaccine to the concerned district authorities. Prior to receiving the vaccine, the district authorities should make all necessary arrangements for carrying out emergency vaccination including mobilisation of teams etc.

2.25 After a cooling off period of about three weeks, the poultry or products from the surveillance zone, which had undergone vaccination can be allowed to be traded outside the zone. It may be noted that vaccination is to be undertaken only during hours of crisis and not as a routine prophylaxis. It is emphasised that vaccination alone will not be sufficient to bring the outbreaks in poultry under control. It must be used in conjunction with comprehensive strategy, i.e., culling of affected birds, strict bio-security, quarantine and other measures to prevent further spread of the disease. If no vaccination is adopted, trading could be resumed four weeks after all birds within 3 kms are culled, provided no fresh case appeared in the surveillance zone between 3 to 10 kms.

Surveillance and freedom from disease

2.26 This is the most difficult part of a control programme, as it will have the direct impact on the poultry industry. Once the disease has been encountered in a geographical region, it will bring along with it associated trade restrictions. In order to resume normal trade practices, it is essential that freedom from the disease be achieved at the earliest. Intensive surveillance needs to be carried out in the surveillance zone. During the course of the outbreak, surveillance should determine extent of infection determined by clinical signs and virus isolation. After the outbreak is contained, the extent of infection needs to be determined by sero-surveillance. In the event of vaccination policy adopted to prevent spread of the disease, the extent of spread of infection needs to be ascertained by differential surveillance between infection and vaccination antibodies. To establish freedom from infection, repopulated flock in the infected area needs to be screened periodically. Random clinical, virological and serological investigations on the repopulated flock for a two months' period is recommended. Such sampling should be done at least once every fortnight to the extent of about 0.5% of the population introduced.

Public awareness

2.27 Awareness in the general public about the disease and its consequences should be made through printed and mass media campaigns based on scientific facts and figures. It must be emphasized that proper cooking at more than 70° temperature for 30 minutes eliminates the virus and it is absolutely safe to consume properly cooked poultry meat and eggs. It is, of course, necessary to encourage hygienic way of slaughtering, dressing and packing of chicken meat. It is important that details of negative results reported by the laboratory in respect of the surveillance samples are periodically furnished to the media. The journalists should also 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. The

minimum expenditure required for awareness campaigns can be met from the funds provided under the centrally sponsored scheme of “ASCAD” for the time being.

III. Advice to persons handling HPAI affected poultry

- 3.1 To evolve a public health policy in respect of influenza in humans due to involvement of HPAI virus is beyond the scope of this document and will be done by the Public Health authorities. It is, however, pointed out here that the health of farm hands, attending veterinary officer, and other staff engaged in culling and disinfection of infected premises should be under strict observation for a period of at least three weeks. All the persons entering a suspected farm should wear protective clothing. Sero-conversion in these in-contact persons should be monitored. Close contact with live infected poultry could be a source of human infection. Rapid destruction of affected poultry would reduce opportunities for further direct transmission to humans.

Recommendations for protection of persons involved in the mass slaughtering of birds potentially infected with highly pathogenic avian influenza viruses

- 3.2 Exposure to infected poultry and their faeces or dust/soil contaminated with faeces could result in human infection and therefore the following precautions should be taken by all those involved in the slaughtering of affected birds :
- (i) Cullers and transporters should be provided with appropriate personal protective equipment consisting of (a) protective clothing, preferably overalls plus an impermeable apron or surgical gowns with long cuffed sleeves plus an impermeable apron; (b) disposable examination gloves; (c) well-fitted surgical masks (d) goggles or face masks; (e) cap and (f) disposable shoe covers that can be disinfected.
 - (ii) All persons who have been in close contact with the infected animals should wash their hands frequently. Cullers and transporters should disinfect their hands after the operation.
 - (iii) Environmental clean up should be carried out in areas of culling, using the same protective measures as above.
 - (iv) All persons exposed to infected chickens or to farms under suspicion should be under close monitoring by local health authorities. It is recommended that persons at specific risk of inhaling possible infected material (e.g. cullers and farmers involved in mass culling at commercial farms) receive prophylaxis in consultation with health authorities. Health monitoring of chicken cullers, others involved in the process and their family members should be carried out. These individuals should report any relevant health problems (respiratory complaints, flu-like illnesses or eye infections) to a health care facility.

- (v) Serological surveillance of exposed animal workers and veterinarians is encouraged.
- (vi) In liaison with designated laboratories, full blood and post mortem specimens (intestinal contents, anal and oro-nasal swabs, trachea, lung, intestine, spleen, kidney, brain, liver and heart) of animals (including pigs) should be collected for investigation of new viral isolates.

Advice about contact with poultry in an area with HPAI

- 3.3 People in areas with confirmed HPAI should strictly follow the following instructions:
- (i) People should avoid contact with chickens, ducks or other poultry as much as possible. Children should not have contact with poultry or any other affected birds.
 - (ii) Avoid handling (live or dead) chickens, ducks or any other poultry while visiting friends or family, even if the birds are thought to be healthy.
 - (iii) Avoid contact with chicken farms, duck farms or any farm where birds have been sick, killed or are thought to have bird flu.
 - (iv) If a person comes into contact with an environment that has had sick/dead chickens, ducks and other poultry, he/she must wash hands well and monitor temperature for 4 days. If he/she develops a high temperature, consult doctor to see whether treatment is needed.
 - (v) If a person has had contact with any dead birds that have died from avian flu or had contact with the droppings of these birds, consult a doctor to see whether treatment is needed.

Raising poultry at home in an area affected with HPAI

- 3.4 It is necessary that the poultry farmers, particularly those who are engaged in backyard poultry, in areas affected with HPAI follow certain basic precautionary steps. These are described below:
- (i) If someone has any chickens, ducks or any other poultry at home, it is important that he/she knows what to do if and when they are killed or die. He/she should know how to dispose of them and clean up the yard/pen, etc.
 - (ii) Whenever a person has contact with poultry, the chicken shed/pen or anything with faeces on it, he/she must make sure he/she is protected by a mask, goggles, gown, rubber boots and gloves. If these items are not available, try to improvise as much as possible; for example use a cloth around the mouth and nose, plastic bags to cover the hands and shoes, overalls that can be washed etc. Wear this

protective apparel to slaughter the poultry, dispose of the bodies, clean up the area (see below for advice on how to clean up the area). Make sure that children are not involved.

- (iii) After the area has been cleaned, remove all the protective apparel and wash hands, clothes and if possible the body. A shower is the best option. If possible wash clothes in hot or warm soapy water, hang them in the sun to dry. Discard gloves, plastic bags and any other disposable materials. Clean all reusable items such as rubber boots and glasses/goggles. Always wash hands after handling these items.

Advice on how to decontaminate the yard/chicken pen

3.5 The following advice should be followed in respect of decontamination of the yard/chicken pen.

- (i) After the culling of the poultry, the area must be cleaned.
- (ii) Wear all the protective apparel outlined above before starting the cleaning process.
- (iii) Collect any faeces scattered around the yard into a pile to be buried. The faeces should be buried at a depth of at least 1 metre.
- (iv) Try to move droppings without raising too much dust causing dried droppings to possibly blow into the person's face/eyes/mouth.
- (v) Remove as much of the droppings as possible from the chicken coup/shed and bury as above.
- (vi) Clean all areas very well with detergent and water.
- (vii) Discard all disposable items used to protect the person such as gloves, plastic bags, masks, etc. Place reusable items into a bowl with detergent and water for washing.
- (viii) Wash hands very well in soap and water.
- (ix) Shower/wash body using soap and water and wash hair.
- (x) Taking care not to recontaminate the body, wash clothes worn during the cull/clean up; use detergent and hot or warm water.
- (xi) Dry clothes in the sun.
- (xii) Any item that may be used again such as rubber gloves or boots - should be washed very well in soap/detergent and water. To ensure the items are clean, wash twice.
- (xiii) Always wash hands after handling contaminated items.

KIT FOR THE VETERINARY OFFICER

- 1) Paper and pens
- 2) Epidemiological inquiry form
- 3) Equipment necessary for the clinical visit and sampling procedures:
 - (a) 2 disposable suits
 - (b) 5 pairs of disposable shoe-covers
 - (c) 2 pairs of rubber gloves and 5 pairs of latex gloves
 - (d) disposable caps and face masks
 - (e) paper tissues
 - (f) 5 leak proof containers
 - (g) 5 leak proof and water resistant plastic bags
 - (h) torch
 - (i) active disinfectant solution
 - (j) 2 pens and a notepad
 - (k) 100 syringes 2.5 ml with needle
 - (l) 100 thin, small plastic bags
 - (m) 2 pairs of surgical scissors
 - (n) 2 pairs of forceps
 - (o) tape
 - (p) 2 felt tip pens
 - (q) 1 thermic container (ice box)
 - (r) 5 frozen icepacks

At least 3 of these kits should be available at the District headquarters always.

KIT for the Disease Investigation Officer

1. The following equipment :
 - (a) 1 thermic container (ice box)
 - (b) 4 pairs of forceps
 - (c) 2 pairs of surgical scissors
 - (d) 1 knife
 - (e) tape
 - (f) labels and pens
 - (g) 100 syringes 2.5 ml with needle
 - (h) sterile swabs
 - (i) 50 test tubes containing virus transport media
 - (j) 10 leak proof containers
 - (k) 2 disposable suits/coverall
 - (l) 5 pairs of disposable shoe-covers
 - (m) 5 pairs of latex gloves
 - (n) disposable caps and face masks including goggles
 - (o) 10 black waste-bags
 - (p) 50 rubber bands
 - (q) disinfectant solution
 - (r) cardboard container
2. The samples should be placed in isotonic phosphate buffered saline (PBS), pH7.0-7.4 containing antibiotics.

AVIAN INFLUENZA EPIDEMIOLOGICAL INQUIRY FORM

Date :
 Dr :
 Phone number :
 Name and Address of farm :
 Phone :
 District :
 State :
 Farm code or identification number :
 Owner :
 Address of the owner :
 Phone :
 Information provided by :
 Farm Veterinarian Dr. :
 Present : YES/NO

INFORMATION CONCERNING THE FARM

TYPE OF ESTABLISHMENT : Industrial/Rural/Dealer/Retailer
 CATEGORY/PRODUCTION LINE : Table-egg layers/ Meat birds
 Type :
 Grandparents :
 Parents :
 Pullets :
 Meat-type (*broiler*) :
 Layers :

NUMBER OF BIRDS AND SPECIES PRESENT .

	No.	Date of placing	Sex	Age
Chickens Meat :				
Breeders :				

Layers :
Other :

HATCHERY OF ORIGIN

Company Hatchery : YES/NO
Company :
Address :
District : State
Phone : Fax
Debeaking operations - Date :
Performed by : Family members/Employed staff/External staff/Other
Remarks :

HOUSING SYSTEM

Deep litter : YES/NO
Cage system : YES/NO
Type of ventilation system : Natural/Natural with fans /Artificial
Bird proof nets : YES/NO
Possibility of contact with wild birds : YES/NO
Species :
Other birds present on site : YES/NO
(captive or free) Species :
Presence of ponds or lakes : YES/NO
Other water reservoirs : YES (specify)/NO
Presence of pigs : YES (specify)/NO
Other animals : YES (specify)/NO
Remarks :

2. INFORMATION CONCERNING MOVEMENTS OF BIRDS

a) Introduction of birds from other : YES/NO
establishments/ hatcheries/farms
(Twenty days before the onset
of the first clinical signs)

Date : No.
Species : Farm Hatchery
Name of Farm :
Address :
District :

b) Introduction of birds from : YES/NO
exhibitions/markets/fairs
(Twenty days before the onset
of the first clinical signs)

Date : No. Species
Origin : Fair/Market/Exhibition
District :

c) Exit of birds/eggs to other farms/establishments/hatcheries/abattoirs
(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

Date : No
Destination : Other farm/Hatchery/Abattoir/Other
Name of establishment :
Address :
District :
State :

d) Exit of birds/eggs to other fairs/markets/exhibitions
(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

Date :
Destination : Fair/Market/Exhibition/Other
Address :
District :

3. INFORMATION CONCERNING MOVEMENT OF PEOPLE:

(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

Date _____
Specify _____ Veterinarian/Technician/Vaccinating crew/
Debeaker/farmer/Dealer/Other
Address _____
District _____ State _____
Phone number _____
Previously visited farm _____ : _____
Name _____
District _____

4. INFORMATION CONCERNING MOVEMENT OF VEHICLES

(A) Transport of animals, (B) Transport of feed, (C) Transport of eggs, (D) Collection of dead animals, (E) Fuel/Gas, (Other) Specify

(In the time span between 20 days before the onset of the first clinical signs and the date the farm was put under restriction)

Date of entry Vehicle _____ : _____ (A/B/C/D/E/other)
Name of company _____ : _____
Fax/Phone number _____ : _____

5a) INDIRECT CONTACTS WITH OTHER POULTRY ESTABLISHMENTS

YES/NO

(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)

Date of contact _____ : _____
Name of farm or establishment _____ : _____
District _____ : _____
shared vehicle/shared feed/shared equipment/shared staff/collection/recycle of litter/other (specify)

5b) CONTACTS WITH OTHER FARMS OWNED BY THE SAME OWNER

YES/NO

Name of farm or establishment :
Address :
District :
Species farmed number Empty/Full

5c) CONTACTS WITH POULTRY FARMS LOCATED NEAR THE OUTBREAK

YES/NO

Name of farm or establishment :
Address :
District :
Distance in metres :
Species farmed :
Number : Empty/Full

ANAMNESTIC DATA (Vaccination carried out etc.)

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

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 :

NB: this information must refer to the data collected when the farm has been put under restriction after confirmation of HPAI

6. VACCINATION OF BIRDS AND ADMINISTRATION OF DRUGS

Vaccination of birds is practised : YES/NO

Date of vaccination

Type of vaccine

Commercial name

Administration route

Live or inactivated

Vaccinating staff :

Family / Employees / External staff / Other

Remarks

Administration of drugs/medicaments

In the last 15 days : YES/NO (specify) :

Staff who administered the medication:

Family / Employees / External staff / Other

Remarks

7. CLINICAL INVESTIGATION PER SPECIES

Species

Depression -

Respiratory signs : mild/severe

Drop or cessation of egg laying

Oedema, cyanosis or cutaneous haemorrhages

Diarrhoea

Nervous signs

Other

8. GROSS FINDINGS

Rhinitis and sinusitis

Tracheitis *catarrhal*

haemorrhagic –

Aerisacculitis

Haemorrhages *epicardium* –

endocardium
proventriculus –
ovarian follicles
Enteritis *catarrhal*
haemorrhagic –
Pancreatitis
Other:
Remarks

Signature

Date:

AVIAN INFLUENZA Sample submission form

(As per OIE Reference Laboratory)

State District

Veterinarian

Phone Fax

Date Accession number

Farm:

District State

Code or identification number

Owner

Complete address

Species and category

Broiler breeders No.

Layer breeders No.

Layers No.

Broilers No.

Other species (specify) No.

Collection of sample

From - Suspected outbreak/confirmed outbreak

Date of notification

Farm epidemiologically connected with outbreak

Name and code of farm of outbreak

Farm located in protection zone -

Name and farm code of outbreak

Farm located in surveillance zone -
Name and farm code of outbreak
Testing for the movement of animals
Monitoring programme
Other

Anamnestic data

Species and category
Onset of clinical signs
Symptoms
% mortality (from /to..... .)
Species Samples collected
No. samples for detection of Antibodies
No. samples for detection of Virus

Sample identification

Signature :

Date :

NATIONAL RAPID RESPONSE TEAM

Constitution

1. Epidemiologist (2) from NICD
2. Microbiologist from NICD
3. Virologist from NIV Pune/ other ICMR institutions
4. Clinician from central government hospital

Terms of Reference:

1. Surveillance for suspected human cases/health checkup of cullers/poultry worker.
2. Advice for case management, use of PPE and chemo prophylaxis.
3. Collection and transportation of samples from suspected case to designated laboratories.
4. Do's/Don'ts for patients, contacts, visitors, travelers and health care providers

CASE DEFINITION OF AVIAN INFLUENZA IN HUMANS

The WHO recommendation for standard case definition of Avian Influenza suggests adopting of definition according to country situation. The cases should be classified as below:

Suspected case

1. Fever (body temperature of 38° Celsius or higher); in addition to
2. One of the following symptoms – muscle ache, cough, abnormal breathing (unusual breathing difficulty), or suspected of pneumonia by physician, or influenza; in addition to
3. History of direct contact with infected/dead birds in the past 7 days or occurrence of unusual death of birds in the community within the past 14 days; or contact with a pneumonia patient or another patient suspected of avian influenza.

Probable case

The above mentioned symptoms of suspected case and:

- Preliminary test shows infection of influenza group A, but cannot yet be confirmed whether it is influenza from humans or birds.
- Respiratory failure
- Death

Confirmed case

Suspected/ probable case with final PCR test or virus isolation showing H5 strain of influenza group A, which is a bird strain.

Note: Diagnosis of suspected and probable cases can be changed if confirmation tests show that the patient's infection was caused by other factors.

GUIDELINES FOR SPECIMEN COLLECTION FROM HUMAN CASES OF AVIAN INFLUENZA

The following clinical samples need to be collected preferably within 72 hours of illness and sent to the laboratory within 24 hours of collection.

A. Nasopharyngeal Wash/Aspirate:

Have the patient seated with the head tilted slightly backward. Instill about 1-1.5 ml of VIRAL TRANSPORT MEDIA (**VTM**)/sterile normal saline into one nostril. Flush a plastic catheter or tubing with 2-3 ml of **VTM**/sterile normal saline. Insert the tubing into the nostril parallel to the palate and aspirate nasopharyngeal secretions. Repeat this procedure with the other nostril. Collect 1-2 ml of nasopharyngeal wash/aspirate in a sterile vial and transport in cold chain at 2-8° C. **This is supposed to be the ideal specimen.**

B. Nasopharyngeal (NP) swab/Oropharyngeal (OP) swab/Throat swab

Alternatively, collect one NP swabs and one OP swabs using absorbent cotton swabs on a non wooden shaft, i.e. dacron coated plastic swabs.

Collection of nasopharyngeal swab: Insert the swab into nostril parallel to the palate and leave in place for a few seconds to absorb secretions. Swab both the nostrils.

Collection of Oropharyngeal swab/Throat swab: Swab both the posterior pharynx and the tonsil area avoiding the tongue.

- Place **one NP swab and one OP swab** into the sterile vials containing 2 ml of viral transport medium (VTM). Transport in cold chain at 2-8° C.

C. Serum: (Paired samples one in acute and the other in convalescent phase to be collected at 15 days interval)

- Collect 2-3 ml of serum in a clean screw capped vial. Transport in cold chain at 2-8° C.

- **The samples have to be transported after proper packaging using the standard triple packaging system (WHO) and it should accompany with the clinical details as per preformed enclosed.**

Note: All the clinical samples must be collected and transported in sterile screw capped unbreakable containers under cold chain (2-8° C) in viral transport media (Hank's balanced salt solution/cell culture medium) supplemented with protein, such as bovine serum albumin

(BSA) or gelatin (as virus stabilizer), to a final concentration of 0.5% (w/v) to 1% (w/v) along with antibiotics to prevent microbial growth.

Samples for influenza should not be stored or shipped in dry ice (CO₂) unless the samples are sealed in glass and sealed container, taped in double plastic bag. CO₂ can rapidly inactivate influenza viruses if it gains access to the sample during shrinkage of tubes during freezing.

Specimens for direct detection of viral antigens by immunofluorescence staining of infected cells should be refrigerated and processed within 1-2 hours. Specimens for virus isolation should be refrigerated immediately after collection and inoculated into susceptible cell cultures as soon as possible. If specimens cannot be processed within 48-72 hours, they should be kept frozen at or below -70° C.

An acute-phase serum specimen (3-5 ml of whole blood) should be taken soon after onset of clinical symptoms and not later than 7 days after onset. A convalescent-phase serum specimen should be collected 14 days after the onset of symptoms. Where patients are near death, a second ante-mortem specimen should be collected.

Although single serum specimens may not provide conclusive evidence in support of an individual diagnosis, when taken more than 2 weeks after the onset of symptoms they can be useful for detecting antibodies against avian influenza viruses in a neutralization test.

General biosafety measures;

- Clinical samples should be collected by hospital staff and not by the laboratory staff.
- All clinical samples have to be collected under special care.
- While taking samples always use triple layer well fitted surgical facemasks. When available use of N95 masks is recommended.
- Use latex disposable gloves.
- Wear laboratory coat/disposable apron.
- Always cover your hairs with head cover.
- Use protective eye wear (goggles)/face shields if procedure is likely to generate aerosols; or splashes of secretions.
- All waste material while collecting specimen has to be handled with special precautions and properly disposed.
- The waste should be placed in an appropriate leak proof and autoclavable biohazard bags and autoclaved before disposal. Contaminated non-disposable material should be treated properly.

- The clinical samples should be processed only in designated laboratory having the appropriate containment facilities.
- All technical procedures should be performed in a way that minimizes the formation of aerosols and droplets.
- The use of hypodermic needles and syringes should be limited. They must not be used as substitutes for pipetting devices or for any purpose other than parenteral injection or aspiration of fluids from laboratory animals. Mouth pipetting must be strictly forbidden.
- Adequate and conveniently located biohazard containers should be available for disposal of contaminated materials.
- Work surfaces must be decontaminated after any spill of potentially dangerous material and at the end of the working day. Generally, 5% bleach solutions are appropriate for dealing with biohazardous spillage. More information on disinfections and sterilization is provided in the WHO laboratory biosafety manual.
- Personnel must wash their hands often – especially after handling infectious materials and animals, before leaving the laboratory working areas, and before eating.
- Personal protective equipment must be removed before leaving the laboratory.

INSTRUCTIONS FOR PACKAGING

Specimen should be carried on wet ice if shipped domestically.

PRIMARY PACKAGING

- ◆ Primary receptacle(s) must be water tight, e.g., if screw cap seal with parafilm or similar.
- ◆ Wrap each primary receptacle with enough absorbent material so as to absorb entire content of receptacle in case of damage or leakage.
- ◆ When determining the volume of diagnostic specimens being shipped, include the viral transport media.
- ◆ Primary receptacle(s) must not contain more than 500 ml or 500 g.

Primary receptacle is packed into secondary package.

SECONDARY PACKAGING

For transport on wet ice

- ◆ Secondary packaging must be watertight (eg. Sealed plastic bag) and must be kept on wet ice for local transport.

For transport on dry ice

- ◆ For transport of frozen material secondary package should be sturdy and must meet 1.2 meter drop test and placed in outer package which in turn is placed in a box containing dry ice.
- ◆ An item-wise list of contents must be enclosed between the secondary packaging and the outer packaging.

GENERAL BIOSAFETY MEASURES FOR POULTRY FARM WORKERS

- Wear protective clothing, preferable coveralls, apron or surgical gowns and gumboots
- Use of N 95 respirator masks is preferred. In the absence of N 95 masks, standard well-fitted surgical masks should be used.
- A person exposed to infected chickens or to poultry farms should be closely monitored.
- All the clinically suspected human cases should be promptly initiated with specific treatment as per guidelines.

DISPOSAL OF CARCASSES

1. Carcasses of suspected and confirmed cases should preferably be incinerated or buried deep using lime and soil in the ratio of 1:3.
2. The site where animals died is to be disinfected with 5% formaldehyde or 2% gluteraldehyde, after disposal of the carcasses.

Guidelines for waste disposal

- ✿ All the waste has to be treated as infectious waste and decontaminated as per standard procedures
- ✿ Articles like swabs/gauges etc are to be discarded in the **Yellow coloured autoclavable** biosafety bags after use, the bags are to be autoclaved followed by incineration of the contents of the bag.
- ✿ **Waste like used gloves, face masks and disposable syringes etc are to be discarded in blue/white** autoclavable biosafety bags which should be autoclaved/ microwaved before disposal
- ✿ **All hospitals and laboratory personnel** should follow the standard guidelines (**Biomedical waste management and handling rules, 1998**) for waste management

Form to accompany clinical samples for testing in laboratory

Patient's name: _____

Father's/mother's name _____

Age: _____ Sex: Male/Female _____

Patient's Residence _____

Date of onset of illness: _____

Date of hospitalization _____

Occupation: Poultry worker/Non poultry worker/Health Care worker

Sign and Symptoms: (with duration)

Temperature _____ Cough/Nasal catarrh _____

Shortness of breath/Difficulty in breathing: _____

Pneumonia _____ Other Symptoms _____

Chest X-ray findings _____

Exposure history

Contact with a confirmed case of influenza **A(H₅N₁)**: Yes/No

Recent visit to a poultry farm in an area known to have outbreaks of human pathogenic avian influenza (**HPAI**): Yes/No

Worked in a laboratory that is processing samples from person or animals that are suspected from **HPAI** infection: Yes/No

Specimens

Nasopharyngeal wash/aspirate Date of collection: _____

Nasopharyngeal/Oropharyngeal swabs Date of collection: _____

Serum

Acute Date of collection _____

Convalescent Date of collection _____

Additional specimens (Please Describe)

Date of collection _____

Name and Address of Sender

Note: All the clinical samples must be collected and transported in viral transport media under cold chain system (2-8° C)

GUIDELINES FOR CULLERS

- ◆ Animal Husbandry Department will identify cullers.
- ◆ Training to cullers will be provided by Animal Husbandry Department
- ◆ Animal Husbandry Deptt will provide them chemoprophylaxis and PPE.
- ◆ Once culled they will dispose off PPE as waste management guidelines (Annexure – III) in a designated area.
- ◆ They will take shower after each culled session.
- ◆ They will be isolated in a separate place away from human dwelling for 10 days after last culling.
- ◆ Regular health check-up of cullers for development of signs (including temperature charting twice daily) and symptoms of Influenza till 10 days after last culling would be done by RRT.
- ◆ In the event of any suspected case among cullers during the quarantine period, it would be treated in the nearest identified health facility.
- ◆ Infection control practices would be followed as per WHO Guidelines.

List of identified hospital

Sr. No.	State	Name of the identified hospital
1.	Delhi	<ul style="list-style-type: none"> ☼ Safdarjung Hospital ☼ Dr. RML Hospital ☼ LHMC & SSK Hospital ☼ AIIMS ☼ Infections Diseases Hospital ☼ Hindu Rao Hospital ☼ L.N. Hospital ☼ Deen Dayal Upadhyay Hospital
2.	Maharashtra	<ul style="list-style-type: none"> ☼ Kasturbha Infectious Diseases Hospital, Mumbai ☼ V.N. Desai Hospital, Mumbai ☼ Naidu Hospital, Pune
3.	West Bengal	<ul style="list-style-type: none"> ☼ Infectious Disease Hospital, Kolkata
4.	Tamil Nadu	<ul style="list-style-type: none"> ☼ Madras Medical College Hospital, Chennai ☼ Communicable Diseases Hospital, Tondiarpet, Chennai ☼ Coimbatore Medical College, Hospital ☼ Tuticorin Medical College Hospital, Tuticorin ☼ Trichy Medical College Hospital, Trichy
5.	Kerala	<ul style="list-style-type: none"> ☼ General hospital, Thiruvananthapuram ☼ Calicut Medical College Hospital ☼ General Hospital, Ernakulam
6.	Gujarat	<ul style="list-style-type: none"> ☼ New Civil Hospital, Ahmedabad ☼ V.S. General Hospital, Ahmedabad ☼ Government Hospital, Bhuj
7.	Karnataka	<ul style="list-style-type: none"> ☼ Epidemic Disease Hospital, Bangalore ☼ Rajiv Gandhi Institute of Chest Diseases ☼ District Government Wenloke Hospital, Mangalore
8.	Punjab	<ul style="list-style-type: none"> ☼ Guru Nanak Dev Hospital, Amritsar
9.	Goa	<ul style="list-style-type: none"> ☼ Goa Medical College, Panaji
10.	Rajasthan	<ul style="list-style-type: none"> ☼ SMS Medical College Hospital, Jaipur

Sr. No.	State	Name of the identified hospital
11.	Uttar Pradesh	<ul style="list-style-type: none"> ✿ Balrampur Hospital, Lucknow ✿ SSPG District Hospital, Varanasi ✿ Deen Dayal Hospital, Varanasi
12.	Bihar	<ul style="list-style-type: none"> ✿ Infectious Diseases Hospital, Gaya
13.	Assam	<ul style="list-style-type: none"> ✿ Guwahati Medical College Hospital, Guwahati
14.	Orissa	<ul style="list-style-type: none"> ✿ SCB Medical College Hospital, Cuttack
15.	Chandigarh	<ul style="list-style-type: none"> ✿ PGI, Chandiragh
16.	Pondichery	<ul style="list-style-type: none"> ✿ JIPMER, Pondichery
17.	Manipur	<ul style="list-style-type: none"> ✿ J.N. Hospital, Prompat ✿ Regional Institute of Medical Sciences, Imphal
18.	Sikkim	<ul style="list-style-type: none"> ✿ STNM Hospital, Gangtok
19.	J&K	<ul style="list-style-type: none"> ✿ Sher-i-Kashmir Hospital, Srinagar
20.	Himachal Pradesh	<ul style="list-style-type: none"> ✿ Zonal District Hospital, Kangra ✿ Zonal District Hospital Hamirpur ✿ Zonal District Hospital, Mandi ✿ Zonal District Hospital, Shimla

Note: State would be responsible for shifting the patient to the nearest identified isolation facility. If the State does not have such facility then the patient should be shifted to identify facility in the adjoining State.

CHEMOPROPHYLAXIS GUIDELINES

Four prescription medications with antiviral activity against influenza viruses are commercially available (amantadine, rimantadine, oseltamivir, zanamivir). The four drugs are classified into two categories, the adamantane derivatives and the neuraminidase inhibitors, on the basis of their chemical properties and activities against influenza viruses.

Controlled clinical trials have demonstrated the efficacy of all four antiviral medications in reducing symptom duration when used for treatment of influenza infections. Three of the antiviral drugs have been approved for use as chemoprophylaxis.

Chemoprophylaxis:

A. Neuraminidase Inhibitors

The neuraminidase inhibitors, zanamivir and oseltamivir, are chemically related drugs that have activity against both influenza A and B viruses.

Oseltamivir, but not zanamivir is approved for chemoprophylaxis of influenza. Oseltamivir is effective against all subtypes of influenza viruses A (including H5N1) indicated for both therapeutic and prophylactic use but is only advocated for persons 13 years and above. For prophylaxis purposes the dosage is:

- Close contacts: 75 mg once daily for at least 7 days.
 - Community contacts: 75 mg once daily upto 6 weeks
- (Protection lasts only during the period of chemoprophylaxis)

The only contraindication is in persons with known hypersensitivity to any of the components of the product.

Adverse reactions:

- ◆ Most frequent side effects in adults are nausea and vomiting. These are transient and generally occur with first dosing.
- ◆ In children, most frequently reported side effect is vomiting.
- ◆ Other reported events include abdominal pain, epistaxis, ear disorder and conjunctivitis.
- ◆ These events do not require discontinuation of treatment in a majority of cases.
- ◆ Should be used during pregnancy or lactation only if the potential benefit/justified the potential risk to the foetus or breast-fed baby.

B. Amantadine Derivatives

The amantadine derivatives, amantadine and rimantadine, are chemically related, orally administered drugs that are approved for treatment and chemoprophylaxis of influenza

A. Amantadine and rimantadine specifically inhibit replication of influenza A viruses, but not influenza B viruses. Both drugs are approved for chemoprophylaxis to prevent influenza A in people aged 1 year and older. It has to be administered 200 mg daily for 5 to 8 weeks.

When used for chemoprophylaxis, amantadine and rimantadine are approximately 70% - 90% effective in preventing symptoms of influenza A illness. The efficacy and effectiveness of amantadine and rimantadine to prevent complications of influenza A are unknown. Both drugs are effective when used for chemoprophylaxis during outbreaks of influenza A in institutions, such as nursing homes.

Side effects of the amantadine drugs:

Chemoprophylactic use of both drugs have been associated with

- ◆ Gastrointestinal and central nervous system (CNS) adverse effects in healthy adults and elderly persons.
- ◆ CNS toxicity includes such as lightheadedness, difficulty in concentrating, nervousness, insomnia, and seizures in patients with pre-existing seizure disorders. Rimantadine use has been associated with fewer CNS side effects than amantadine.
- ◆ Amantadine is teratogenic and embryo toxic in animals. Rimantadine has not been found to be mutagenic. The safety of amantadine and rimantadine when used during pregnancy has not been established.

Table 1: Recommended Daily Dosage of Influenza Antiviral Medications for Prophylaxis.

Age Groups (yrs.)					
Antiviral	1-6	7-9	10-12 Agent	13-64	>65
Prophylaxis Prophylaxis influenza A	5mg/kg/day up to 150 mg in two divided doses	5mg/kg/day up to 150 mg in two divided doses	100 mg twice daily	100mg twice daily	100 mg twice daily
Rimantadine Prophylaxis influenza A	5mg/kg/day up to 150 mg in two divided doses	5mg/kg/day up to 150 mg in two divided doses	100 mg twice daily	100mg twice daily	100 mg twice daily
Oseltamivir Prophylaxis, influenza A and B	NA	NA	NA	75mg/day	75mg/ day

GUIDELINES FOR CASE MANAGEMENT FOR HUMAN CASES OF AVIAN INFLUENZA H5N1

WHO Case Definition for Influenza A/H5

Suspected case

1. Fever (body temperature of 38⁰ celsius or higher); in addition to
2. One of the following symptoms – muscle ache, cough, abnormal breathing (unusual breathing difficulty), or suspected of pneumonia by physician, or influenza; in addition to
3. History of direct contact with infected/dead birds in the past 7 days or occurrence of unusual death of birds in the community within the past 14 days; or contact with a pneumonia patient or another patient suspected of avian influenza.

Probable case

The above mentioned symptoms of suspected case and:

- Preliminary test shows infection of influenza group A, but cannot yet be confirmed whether it is influenza from humans or birds.
- Respiratory failure
- Death

Confirmed case:

One of the following tests is positive:

- Positive viral culture for influenza A/H5
- Positive RT-PCR for influenza A/H5
- Positive IFA test using A/H5 monoclonal antibodies
- A 4 fold rise in Influenza A/H5 specific antibody titers

Principles of Management of Avian Influenza:

Management of human cases of avian influenza is based on the following principles:

- Management of a case with avian influenza does not differ from that of influenza due to a primary human influenza virus

- Patients should be isolated and universal precautions should be observed
- Good infection control practices in health settings
- Anti-viral drugs: H5N1 viruses have been reported to be resistant to amantadine and rimantadine, but susceptible to neuraminidase inhibitors like oseltamivir and zanamivir.

Management of Human Avian Influenza cases comprises of :

1. General and supportive treatment

- Hospitalize and isolate cases
- Monitor vital signs
- Maintain airway, breathing and circulation (ABC)
- Maintain hydration, electrolyte balance and nutrition
- Provide oxygen therapy, when indicated
- Manage fever symptomatically with paracetamol

2. Specific treatment

- Antiviral drugs: In adults, oseltamivir is to be given orally in the dose of 75 mg. BD for 5 days.
- Broad spectrum antibiotic should be added to cover secondary pulmonary infection

Do not use aspirin, ribavirin and corticosteroids

Discharge policy:

Infection control precautions should remain in place for seven days after resolution of fever. For children below 12 years, infection control measures should remain in place for 21 days after the onset of illness. Where this is not possible, the family of fully recovered patients discharged within 21 days of onset of illness should be educated on personal hygiene and infection control measures; children should not attend school during this period.

Public Health Measures:

Report to the Local Health Authorities and the Director (EMR), Directorate General of Health Services, Nirman Bhavan, New Delhi – 110011 (Telephone No.: 011-2306 1302 and Fax: 011- 2306 1457) all patients for whom the diagnosis of influenza (H5N1) virus infection is being considered. Identify the contacts and follow them for one week. They should be advised to check their temperature twice daily and report all health events.

LIST OF IDENTIFIED BIOSAFETY LABORATORIES IN THE COUNTRY FOR PROCESSING HUMAN SAMPLES AGAINST “AVIAN INFLUENZA”

1. NATIONAL REFERENCE CENTRE

National Institute of Virology (NIV), Pune

Proposed Responsibilities:

Will carryout H5N1 Bird-flu Serology/HI/IF, Typing, Virus culture, EM (when necessary), RT-PCR, Gene cloning (when necessary), Mutational studies, Gene sequencing & Genotyping. Will also ensure the phenotypic & genotypic quality of strains to be used for vaccine.

2. REGIONAL REFERENCE CENTRES

- | | |
|---|------------------|
| - National Institute of Communicable Diseases | NICD, Delhi |
| - King Institute of Preventive Medicine | KIPM, Chennai |
| - Virology Section, Deptt. Of Microbiology | AIIMS, New Delhi |
| - National Inst. of Cholera & Enteric Diseases (Virus Unit) | NICED, Kolkatta |

Proposed Responsibilities

Will carryout H5N1 Bird-flu Serology/HI/IF, Typing, Virus culture), RT-PCR, Gene sequencing & Genotyping. Will impart training and also monitor QC of 8 Regional laboratories.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES

Exposure to infected poultry

Exposure to infected poultry and their feces or dust-contaminated feces has been associated with human infection, however this is a rare occurrence. The CDC and the World Health Organization have developed the following recommendations based on the guidelines.

1. All persons who have been in close contact with the infected animals, contact with contaminated surfaces, or after removing gloves, should wash their hands frequently. Hand hygiene should consist of washing with soap and water for 15-20 seconds or the use of other standard hand-disinfection procedures as specified by state government, industry, or USDA outbreak-response guidelines.
2. All workers involved in the culling, transport, or disposal of avian influenza-infected poultry should be provided with appropriate personal protective equipment:
 - ◆ **Protective clothing** capable of being disinfected or disposed, preferably coveralls plus an impermeable apron or surgical gowns with long cuffed sleeves plus an impermeable apron.
 - ◆ **Gloves** capable of being disinfected or disposed; gloves should be carefully removed and discarded or disinfected and hands should be cleaned.
 - ◆ **Respirators:** the minimum recommendation is a disposable particulate respiratory mask (e.g. N95) used as part of a comprehensive respiratory protection program. Workers should be fit tested for the model and size respiratory mask they wear and be trained to fit-check for face piece to face seal.
 - ◆ **Goggles.**
 - ◆ **Boots or protective foot covers** that can be disinfected or disposed.
3. Environmental clean up should be carried out in areas of culling, using the same protective measures as above.
4. Workers should receive an influenza antiviral drug daily for the duration of time during which direct contact with infected poultry or contaminated surfaces occurs. The choice of antiviral drug should be based on sensitivity testing when ever possible. In the absence of sensitivity testing, a neuramindase inhibitor (oseltamavir) is the first choice since the likelihood is smaller that the virus will be resistant to this class of antiviral drugs than to amantadine or rimantadine.

5. Potentially exposed workers should monitor their health for the development of fever, respiratory symptoms and/or conjunctivitis (i.e., eye infections) for 1 week after last exposure to avian influenza-infected or exposed birds or to potentially avian influenza-contamination environmental surfaces.

Guidelines for Humans when infection is in humans

To prevent the transmission of all respiratory infections in healthcare settings, including influenza, the following infection control measures should be implemented at the first point of contact with a potentially infected person. They should be incorporated into infection control practices as one component of standard precautions.

1. Visual Alerts

Post visual alerts (in appropriate languages) at the entrance to outpatient facilities (e.g., emergency departments, physician offices, outpatient, clinics) instructing patients and persons who accompany them (e.g., family, friends) to inform healthcare personnel of symptoms of a respiratory infection when they first register or care and to **practice Respiratory Hygiene/Cough Etiquette**.

- ◆ Notice to patients to report Flu symptoms
Emphasizes covering coughs and sneezes and the cleaning of hands
- ◆ Cover Your Cough
Tips to prevent the spread of germs from coughing
- ◆ Information about Personal Protective Equipment
Demonstrates the sequences for donning and removing personal protective equipment.

2. Respiratory Hygiene/Cough Etiquette

The following measures to contain respiratory secretions are recommended for all individuals with signs and symptoms of a respiratory infection.

- ◆ Cover the nose/mouth when coughing or sneezing;
- ◆ Use tissues to contain respiratory secretions and dispose of them in the nearest waste receptacle after use;
- ◆ Perform hand hygiene (e.g., hand washing with non-antimicrobial soap and water, alcohol-based hand rub, or antiseptic hand wash) after having contact with respiratory secretions and contaminated objects/materials

Healthcare facilities should ensure the availability of materials for adhering to Respiratory Hygiene/Cough Etiquette in waiting areas for patients and visitors.

- ◆ Provide tissues and no-touch receptacles for used tissue disposal.
- ◆ Provide conveniently located dispensers of alcohol-based hand rub; where sinks are available, ensure that supplies for hand washing (i.e. soap, disposable towels) are consistently available)

3. Masking and Separation of Persons with Respiratory Symptoms

During periods of increased respiratory infection activity in the community (e.g., when there is increased absenteeism in schools and work settings and increased medical office visits by persons complaining of respiratory illness), offer masks to persons who are coughing. Either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties) may be used to contain respiratory secretions (respirators such as N-95 or above are not necessary for this purpose). When space and chair availability permit, encourage coughing persons to sit at least three feet away from others in common waiting areas. Some facilities may find it logistically easier to institute this recommendation year-round.

4. Droplet Precautions:

Advise healthcare personnel to observe Droplet Precautions (i.e., wearing a surgical or procedure masks for close contact), in addition to standard precautions, when examining a patient with symptoms of a respiratory infection, particularly if fever is present./ These precautions should be maintained until it is determined that the cause of symptoms is not an infectious agent that requires droplet precautions.

Guidelines on public health measures for avian human influenza (To be followed when first outbreak is reported)

Background

Outbreaks of avian influenza in poultry, when caused by highly pathogenic viruses of the H5 or H7 subtypes, are of great concern for the agricultural sector and can have considerable economic consequences. Such outbreaks are also of concern for human health. WHO therefore recommends, for certain avian influenza viruses, a series of protective measures aimed at preventing human infections in persons at high risk of exposures. These measures are particularly important during veterinary investigations and extensive and urgent culling operations.

The guidelines set out below is general and in tended for adaptation to specific situations, in line with national health and veterinary polices.

Recommended public health actions:

General advice

Coordination of services. Multisectoral procedures should be put in place to coordinate the work of agricultural, veterinary and public health services (and any other sectors deemed appropriate in a county context) and facilitate the exchange of laboratory and epidemiological data.

Protection of persons at risk of occupational exposure

Persons at risk of occupational exposure on affected or at-risk farms should be protected.

Personal protective equipment. : Those at risk of occupational exposure on affected or at-risk farms should wear personal protective equipment:

1. **Protective clothing**, preferably coveralls plus an impermeable apron or surgical gowns with long cuffed sleeves plus an impermeable apron;
2. **Heavy-duty rubber work gloves** that may be disinfected;
3. **Standard well-fitted surgical masks** should be used if high-efficiency N95 respiratory masks (NIOSH –certified N-95 or equivalent) are not available. Masks should be fit-tested and training in their use should be provided;
4. **Goggles**;
5. **Rubber or polyurethane boots** that can be disinfected or protective foot covers that can be discarded.

Pharmaceutical prophylaxis and treatment.

Those at risk of occupational exposure on affected or at-risk farms can be protected via antiviral prophylaxis or post-exposure prophylaxis (refer to annexure on chemoprophylaxis Annexure-IX). Antivirals should be readily available for the treatment of suspected and confirmed cases.

Health monitoring

Those at risk of occupational exposure should:

1. Be aware of the early clinical signs of H5N1 infection, but also understand that many other common diseases- of far less health concern- will show similar early symptoms.

Most patients infected with the H5N1 virus show initial symptoms of fever (38°C or higher) followed in influenza-like respiratory symptoms, including cough,

rhinorrhea, sore throat, and (less frequently) shortness of breathe.

Watery diarrhoea is often present in the early stages of illness, and may precede respiratory symptoms by up to one week. Gastrointestinal symptoms (abdominal pain, vomiting) may occur and headache has also been reported. To date, one report has described two patients who presented with an encephalopathic illness and diarrhoea without apparent respiratory symptoms.

2. Check for these signs (especially fever) each day during potential exposure and for 14 days after last exposure.
3. Communicate any symptoms to a designated local physician and provide background information on exposure history.

Suspected cases

1. Suspected cases should be placed in isolation and managed according to recommended procedures for infection control.
2. Suspected cases should be sampled accordingly to national guidelines and samples should be submitted to regional or national reference laboratories.
3. Samples and viruses may be shipped to designated laboratories for diagnosis and virus characterization in accordance with national guidelines.
4. If possible (for research aimed at identifying risk factors for infection), serum samples and epidemiological data should be collected from persons who have been exposed. Serological studies should utilize micro-neutralization tests only.

GUIDELINES FOR QUARANTINE FOR AVIAN INFLUENZA

Introduction:

Quarantine refers to separation and restriction of movement of persons or animals who, while not yet ill, have been exposed or are considered to be at high risk of exposure to a case of communicable disease during its period of communicability to prevent disease transmission during the incubation period if infection should occur. Thus, quarantine of exposed persons is a public health strategy that is intended to stop the spread of disease, and it is effective in protecting the general public from the disease. The World Health Organization (WHO) and the Centers for Disease Control & Prevention (CDC), USA have recommended social distancing and quarantine for persons who have been exposed to an infectious agent to prevent the spread of the disease in the community. These measures will built confidence in the community about the action being taken by the government to prevent the spread of infection from poultry-to-human and from human-to-human.

India, where there is no case of avian influenza either in human or in poultry/birds at present, needs to enforce quarantine as a public health tool for following reasons:

- In the event of infection in poultry, the risk of exposure/infection continues for the human population despite culling and/or restriction of poultry movement.
- As per the available scientific evidence, infection can travel from one area to another area through shoes, clothes etc.
- In case of any contact getting infected during the quarantine period, it would be easier to trace the individual and contain further transmission of infection, and also the treatment can be started at the earliest (treatment is effective if started early, as per the current knowledge).

The quarantine measures will depend on the disease pattern in the country and three situations have been identified along with measures for quarantine that need to be followed:

- (i) Where Avian Influenza is suspected in birds/poultry;
- (ii) Where one or more human cases of Avian Influenza (as per standard case definition of suspect case) have been reported; and
- (iii) Where human-to-human transmission has been established.

These recommendations on quarantine are based on the current available scientific knowledge and information on the subject; these will be reviewed periodically and may be modified as the information evolves.

Situation 1: Where Avian Influenza is suspected in birds/poultry

According to the Contingency Plan, on receiving report of unusual sickness or above average mortality of poultry or wild and migratory birds at a place either from veterinary officers or from any other source, the Chief Veterinary Officer (CVO) or District Animal Husbandry Officer (DAHO) accompanied by a Disease Investigation Officer shall visit the place within 24 hours and personally ascertain the circumstances and facts of the case. National Institute of Communicable Diseases (NICD), Delhi will be immediately informed. CVO/DAHO would inform the Chief Medical Officer of its findings, and also alert neighbouring districts. CVO/DAHO would ensure collection of samples, culling and disinfection as per the action plan of the Department of Animal Husbandry (DAH).

NICD would depute a multi-disciplinary Rapid Response Team (RRT) to the affected area immediately whenever a case of bird flu in birds or poultry is reported. The RRT would monitor the health status of cullers on a regular basis. For such purpose, the decontamination zone near the culling facility would be according to the DAH action plan. In such situation, following quarantine measures are recommended for human beings:

- i) Quarantine of the affected village and all villages within a radius of 3 kms whichever is more. This will apply to exposed individuals (poultry workers, community members, etc.) as well as other community members within the above-specified area. No one from the affected area will be allowed to move out of the community, nor will outsiders be allowed to enter the affected area. However, normal activities within the area will be allowed to continue. Medical care, food supply, social support, communication and psychological assistance for the people in the community under quarantine should be ensured. These recommendations were put in to practice in Romania recently, when avian flu was reported amongst birds there.
- ii) Those engaged in culling activities will be quarantined for a period of 10 days after the last culling.
- iii) The members of Rapid Response Team (RRT) visiting the affected area, would take necessary chemoprophylaxis before the visit. The team would be quarantined in the defined geographical area.
- iv) Extensive IEC activities should be undertaken for proper enforcement of above recommendations.

Situation 2: Where one or more human cases of Avian Influenza (as per standard case definition of suspect case) have been reported:

All actions as per the first situation should be undertaken in addition to the following additional measures:

- Cases should be confined in isolation ward of designated hospitals as per the

Contingency Plan.

- Chemo prophylaxis should be given to all contacts of the case and Health Care Workers attending on the case.
- Strict Infection Control Practices should be followed in the hospital.

Situation 3: Where human-to-human transmission has been established.

All actions as per the second situation should be undertaken in addition to the following additional measures:

- In the initial phase, where there is limited cluster(s) of cases:
 - Social distancing – This includes measures, such as closure of educational institutions/offices and prohibition of mass gatherings.
- In the later phase, where there is involvement of larger geographic areas:
 - Restriction of travel and trade (restricted to poultry or poultry products) to and from the affected areas may be considered and implemented according to the situation.

Additional precautions for Cullers

1. Cullers and transporters should be provided with appropriate PPE.
2. All persons who have been in close contact with the infected animals should wash their hands frequently with soap and water. Cullers and transporters should disinfect their hands after the operation.
3. Environmental clean up should be carried out in areas of culling, using the same protective measures as above.
4. All persons exposed to infected chickens or to farms under suspicion should be under close monitoring by local health authorities.
5. Chemo prophylaxis of cullers and bird handlers.
6. Additional health monitoring of chicken cullers, others involved in the process and their family members would be carried out. These individuals will report any relevant health problems (respiratory complaints, flu-like illnesses or eye infections) to the designated health care facility.

Dos and Don'ts for Community

DO's

- ◆ Minimize close contact with infectious cases.
- ◆ Use separate living, dining, bathing, laundry and toilet facilities for the infectious case.
- ◆ Minimize use or handling of items for surface in home that might be used/touched by infectious case.
- ◆ Wear masks if available or cover the nose and mouth with tissue paper or handkerchief while in close contact with infectious case (less than 3 meter) or while in a confined space.
- ◆ Always wash hands after having contact with respiratory secretions, with detergent or soap.
- ◆ Ask patient to use tissue paper/handkerchief to cover nose and mouth while coughing and sneezing.
- ◆ Ask patient to throw the tissue paper etc. always in a bin closed with a lid after its use.
- ◆ In the event of any case, quarantine of a case helps the health authority to investigate the case and prevent the spread of the disease.
- ◆ These guidelines are for contacts or patient, family members, visitors and members or community.

DON'Ts

- ◆ Do not handle secretions or paper, clothes used by patients with respiratory illness.
- ◆ Ask people to avoid contact with individual at risk.
- ◆ Avoid visiting the poultry area where cases of Avian flu has been detected.
- ◆ Do not throw away the tissue paper/mask/handkerchief after use.

FREQUENTLY ASKED QUESTIONS ON AVIAN INFLUENZA

1. What is avian influenza?

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

In domestic poultry, infection with avian influenza 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.

2. Which viruses cause highly pathogenic disease?

Influenza A viruses have 16 H subtypes and 9 N subtypes. 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.

3. Do migratory birds spread highly pathogenic avian influenza viruses?

The role of migratory birds in the spread of highly pathogenic avian influenza 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 long 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.

4. What is special about the current outbreaks in poultry?

The current outbreaks of highly pathogenic avian influenza, which began in South-east Asia in mid-2003, are the largest and most severe on record. Never before in the history of this disease have so many countries been simultaneously affected, resulting in the loss of so many birds.

The causative agent, the H5N1 virus, has proved to be especially tenacious. Despite the death or destruction of an estimated 150 million birds, the virus is now considered endemic in many parts of Indonesia and Viet Nam and in some parts of Cambodia, China, Thailand, and possibly also the Lao People's Democratic Republic. Control of the disease in poultry is expected to take several years.

The H5N1 virus is also of particular concern for human health, as explained below.

5. Which countries have been affected by outbreaks in poultry?

From mid-December 2003 through early February 2004, poultry outbreaks caused by the H5N1 virus were reported in eight Asian nations (listed in order of reporting): the Republic of Korea, Viet Nam, Japan, Thailand, Cambodia, Lao People's Democratic Republic, Indonesia, and China. Most of these countries had never before experienced an outbreak of highly pathogenic avian influenza in their histories.

In early August 2004, Malaysia reported its first outbreak of H5N1 in poultry, becoming the ninth Asian nation affected. Russia reported its first H5N1 outbreak in poultry in late July 2005, followed by reports of disease in adjacent parts of Kazakhstan in early August. Deaths of wild birds from highly pathogenic H5N1 were reported in both countries. Almost simultaneously, Mongolia reported the detection of H5N1 in dead migratory birds. In October 2005, H5N1 was confirmed in poultry in Turkey and Romania. Outbreaks in wild and domestic birds are under investigation elsewhere.

Japan, the Republic of Korea, and Malaysia have announced control of their poultry outbreaks and are now considered free of the disease. In the other affected areas, outbreaks are continuing with varying degrees of severity.

6. What are the implications for human health?

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 avian influenza 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. Unlike normal seasonal influenza, where infection causes only mild respiratory symptoms in most people, the disease caused by H5N1 follows an unusually aggressive clinical course, with rapid deterioration and high fatality. Primary viral pneumonia and multi-organ failure are common. In the present outbreak, more than half of those infected with the virus have died. Most cases have occurred in previously healthy children and young adults.

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).

7. Where have human cases occurred?

In the current outbreak, laboratory-confirmed human cases have been reported in four countries: Cambodia, Indonesia, Thailand, and Vietnam.

Hong Kong has experienced two outbreaks in the past. In 1997, in the first recorded instance of human infection with H5N1, the virus infected 18 people and killed 6 of them. In early 2003, the virus caused two infections, with one death, in a Hong Kong family with a recent travel history to southern China.

8. 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.

9. Is it safe to eat poultry and poultry products? NEW

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, 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.

Avian influenza 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.

10. Does the virus spread easily from birds to humans?

No. Though more than 100 human cases have occurred in the current outbreaks, 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.

11. What about the pandemic risk?

A pandemic can start when three conditions have been met: a new influenza virus subtype emerges; it infects humans, causing serious illness; and it spreads easily and sustainably among humans. The H5N1 virus amply meets the first two conditions: it is a new virus for humans (H5N1 viruses have never circulated widely among people), and it has infected more than 100 humans, killing over half of them. No one will have

immunity if an H5N1-like pandemic virus emerges.

All prerequisites for the start of a pandemic have therefore been met save one: the establishment of efficient and sustained human-to-human transmission of the virus. The risk that the H5N1 virus will acquire this ability will persist as long as opportunities for human infections occur. These opportunities, in turn, will persist as long as the virus continues to circulate in birds, and this situation could endure for some years to come.

12. What changes are needed for H5N1 to become a pandemic virus?

The virus can improve its transmissibility among humans via two principal mechanisms. The first is a “re-assortment” event, in which genetic material is exchanged between human and avian viruses during co-infection of a human or pig. Re-assortment could result in a fully transmissible pandemic virus, announced by a sudden surge of cases with explosive spread.

The second mechanism is a more gradual process of adaptive mutation, whereby the capability of the virus to bind to human cells increases during subsequent infections of humans. Adaptive mutation, expressed initially as small clusters of human cases with some evidence of human-to-human transmission, would probably give the world some time to take defensive action.

13. What is the significance of limited human-to-human transmission?

Though rare, instances of limited human-to-human transmission of H5N1 and other avian influenza viruses have occurred in association with outbreaks in poultry and should not be a cause for alarm. In no instance has the virus spread beyond a first generation of close contacts or caused illness in the general community. Data from these incidents suggest that transmission requires very close contact with an ill person. Such incidents must be thoroughly investigated – provided the investigation indicates that transmission from person to person is very limited – such incidents will not change the WHO overall assessment of the pandemic risk. There have been a number of instances of avian influenza infection occurring among close family members. It is often impossible to determine if human-to-human transmission has occurred since the family members are exposed to the same animal and environmental sources as well as to one another.

14. How serious is the current pandemic risk?

The risk of pandemic influenza is serious. With the H5N1 virus now firmly entrenched in large parts of Asia, the risk that more human cases will occur will persist. Each additional human case gives the virus an opportunity to improve its transmissibility in humans, and thus develop into a pandemic strain. The recent spread of the virus to poultry and wild birds

in new areas further broadens opportunities for human cases to occur. While neither the timing nor the severity of the next pandemic can be predicted, the probability that a pandemic will occur has increased.

15. Are there any other causes for concern?

Yes. Several.

- Domestic ducks can now 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 behaviours.
- While comparing with H5N1 viruses from 1997 to early 2004, H5N1 viruses now circulating are more lethal to experimentally infected mice and to ferrets (a mammalian model) and survive longer in the environment.
- H5N1 appears to have expanded its host range, infecting and killing mammalian species previously considered resistant to infection with avian influenza viruses.
- The behaviour of the virus in its natural reservoir, wild waterfowl, may be changing. The spring 2005 die-off of upwards of 6,000 migratory birds at a nature reserve in central China, caused by highly pathogenic H5N1, was highly unusual and probably unprecedented. In the past, only two large die-offs in migratory birds, caused by highly pathogenic viruses, are known to have occurred: in South Africa in 1961 (H5N3) and in Hong Kong in the winter of 2002–2003 (H5N1).

16. Why are pandemics such dreaded events?

Influenza pandemics are remarkable events that can rapidly infect virtually all countries. Once international spread begins, pandemics are considered unstoppable, caused by a virus that spreads very rapidly by coughing or sneezing. The fact that infected people can shed virus before symptoms appear adds to the risk of international spread via asymptomatic air travellers.

The severity of disease and the number of deaths caused by a pandemic virus vary greatly, and cannot be known prior to the emergence of the virus. During past pandemics, attack rates reached 25-35% of the total population. Under the best circumstances, assuming that the new virus causes mild disease, the world could still experience an estimated 2 million to 7.4 million deaths (projected from data obtained during the 1957 pandemic). Projections for a more virulent virus are much higher. The 1918 pandemic, which was exceptional, killed at least 40 million people. In the USA, the mortality rate during that pandemic was around 2.5%.

Pandemics can cause large surges in the numbers of people requiring or seeking medical or hospital treatment, temporarily overwhelming health services. High rates of worker absenteeism can also interrupt other essential services, such as law enforcement, transportation, and communications. Because populations will be fully susceptible to an H5N1-like virus, rates of illness could peak fairly rapidly within a given community. This means that local social and economic disruptions may be temporarily with held. They may, however, be amplified in today's closely interrelated and interdependent systems of trade and commerce. Based on past experience, a second wave of global spread should be anticipated within a year.

As all countries are likely to experience emergency conditions during a pandemic, opportunities for inter-country assistance, as seen during natural disasters or localized disease outbreaks, may be curtailed once international spread has begun and governments focus on protecting domestic populations.

17. What are the most important warning signals that a pandemic is about to start?

The most important warning signal comes when clusters of patients with clinical symptoms of influenza, closely related in time and place, are detected, as this suggests human-to-human transmission is taking place. For similar reasons, the detection of cases in health workers caring for H5N1 patients would suggest human-to-human transmission. Detection of such events should be followed by immediate field investigation of every possible case to confirm the diagnosis, identify the source, and determine whether human-to-human transmission is occurring.

Studies of viruses, conducted by specialized WHO reference laboratories, can corroborate field investigations by spotting genetic and other changes in the virus indicative of an improved ability to infect humans. This is why WHO repeatedly asks affected countries to share viruses with the international research community.

18. What is the status of vaccine development and production?

Vaccines effective against a pandemic virus are not yet available. Vaccines are produced each year for seasonal influenza but will not protect against pandemic influenza. Although a vaccine against the H5N1 virus is under development in several countries, no vaccine is ready for commercial production and no vaccines are expected to be widely available until several months after the start of a pandemic.

Some clinical trials are now under way to test whether experimental vaccines will be fully protective and to determine whether different formulations can economize on the amount of antigen required, thus boosting production capacity. Because the vaccine needs to closely match the pandemic virus, large-scale commercial production will not start until

the new virus has emerged and a pandemic has been declared. Current global production capacity falls far short of the demand expected during a pandemic.

19. What drugs are available for treatment?

Two drugs (in the neuraminidase inhibitors class), oseltamivir (commercially known as Tamiflu) and zanamivir (commercially known as Relenza) can reduce the severity and duration of illness caused by seasonal influenza. The efficacy of the neuraminidase inhibitors depends on their administration within 48 hours after symptom onset. For cases of human infection with H5N1, the drugs may improve prospects of survival, if administered early, but clinical data are limited. The H5N1 virus is expected to be susceptible to the neuraminidase inhibitors.

An older class of antiviral drugs, the M2 inhibitors amantadine and rimantadine, could potentially be used against pandemic influenza, but resistance to these drugs can develop rapidly and this could significantly limit their effectiveness against pandemic influenza. Some currently circulating H5N1 strains are fully resistant to these the M2 inhibitors. However, should a new virus emerge through reassortment, the M2 inhibitors might be effective.

For the neuraminidase inhibitors, the main constraints – which are substantial – involve limited production capacity and a price that is prohibitively high for many countries. At present manufacturing capacity, which has recently quadrupled, still it will take a decade to produce enough oseltamivir to treat 20% of the world's population. The manufacturing process for oseltamivir is complex and time-consuming, and is not easily transferred to other facilities.

So far, most fatal pneumonia seen in cases of H5N1 infection has resulted from the effects of the virus, and cannot be treated with antibiotics. Nonetheless, since influenza is often complicated by secondary bacterial infection of the lungs, antibiotics could be life saving in the case of late-onset pneumonia. WHO regards it as prudent for countries to ensure adequate supplies of antibiotics in advance?

20. Can a pandemic be prevented?

No one knows with certainty. The best way to prevent a pandemic would be to eliminate the virus from birds, but it has become increasingly doubtful if this can be achieved within the near future.

Following a donation by industry, WHO will have a stockpile of antiviral medications, sufficient for 3 million treatment courses, by early 2006. Recent studies, based on mathematical modeling, suggest that these drugs could be used prophylactically near the start of a pandemic to reduce the risk that a fully transmissible virus will emerge or at least

to delay its international spread, thus gaining time to augment vaccine supplies.

The success of this strategy, which has never been tested, depends on several assumptions about the early behaviour of a pandemic virus, which cannot be known in advance. Success also depends on excellent surveillance and logistics capacity in the initially affected areas, combined with an ability to enforce movement restrictions in and out of the affected area. To increase the likelihood that early intervention using the WHO rapid-intervention stockpile of antiviral drugs will be successful, surveillance in affected countries needs to improve, particularly concerning the capacity to detect clusters of cases closely related in time and place.

Important Telephone Numbers

S.No.	Name and Designation	Tele (Office)	Residence	Mobile
1.	Shri Prasanna Hota Secretary (H&FW)	23063221		
2.	Dr. R.K. Srivastava DGHS	23061348		
3.	Shir Deepak Gupta Addl. Secretary (Health)	23061887		
4.	Dr. Shiv Lal, Addl DG & Director, NICD	23913148		
5.	Sh. Vineet Chawdhry, Joint Secretary MOH&FW	23062579	26113750	9868828687
6.	Dr. Shashi Khare, Consultant (Micro.) & Incharge Monitoring Cell	23912836	27436070	9899900731
7.	Dr. A.C. Dhariwal, Joint Director, NICD	23913028	23944260	20535156
8.	Dr. P.Ravindran, Driector (EMR), DGHS	23061302	23073467	9868619799

Standard Operating Procedures

STANDARD OPERATING PROCEDURES

1. **SOP for activation of the Plan**
2. **SOP for rapid response**
3. **SOP for collection of clinical samples and their transportation for laboratory Investigation.**
4. **SOP for infection control practices**
5. **SOP for case reporting**
6. **SOP for materials & logistics**

SOP FOR ACTIVATION OF THE CONTINGENCY PLAN OF MINISTRY OF HEALTH AND FAMILY WELFARE, GOVT OF INDIA.

Deptt of animal husbandry would inform of any unusual sickness or above average mortality of poultry / wild/ migratory birds to Avian flu monitoring cell of NICD (23921401/ 23913028 [telefax]; Dr Shashi Khare, Consultant [Micro] , NICD; mobile 9899900731) and to Director, Emergency Medical Relief, Dte GHS (23061302 (office), 23073467 (R), 9868619799 (M)].

Avian flu monitoring cell/ Director (EMR), Dte GHS would inform Shri Vineet Chawdhry 23062579 (Office); 26113750 (Res) 9868828687 (mobile).

The above-mentioned officers of Directorate General of Health Services/ MOHFW would initiate within an hour to call an emergency meeting of the National influenza Pandemic Committee.

After review, the National influenza Pandemic committee would activate contingency plan for management of human cases of avian influenza.

The committee would direct NICD for activating its own plan and to mobilize the rapid response teams.

The chairman, National influenza Pandemic committee would also keep the Cabinet Secretary and PMO informed about the developments.

Director (EMR) would co-ordinate with Ministry of Home Affairs [Control Room 23092923/ 23093054 Shri Ashim Khurana, Joint Secretary 23092456; Mobile 9810093411] ministry of civil aviation, Shri M.S. Chopra 24610374 for arranging transportation of the rapid response teams.

SOP FOR RAPID RESPONSE

The multidisciplinary Rapid response team would depart within six hours of receiving the information from Director (EMR), Dte GHS subject to transportation facilities provided by Deptt of civil Aviation/ Ministry of home Affairs.

MOHFW would inform the state Government to activate its own state plan and rapid response teams to the incident site/ affected area.

The state Health Secretary would facilitate movement of the Central rapid response team within the state.

The rapid response team after reaching the site would co-ordinate/ advice/ guide the District Collector, District Chief Medical Officer & the District Animal Husbandry Officer and would conduct a rapid assessment of the situation.

The geographic perimeter of the affected area would be determined. Demography data of that area would be obtained.

Further line of action would depend on the current situation and evolving scenario and would be dealt under the following situations:

I. Avian influenza is suspected in birds/ Poultry

- The rapid response team of the state/ Centre would guide the District Collector to enforce quarantine guidelines.
- All movement [in and out of the affected area] would be restricted. Any relaxation to this affect on emergency grounds would be informed to the team leader of the RRT.
- The state would take adequate measures to monitor the health status for 10 days of such individuals who had been allowed to move out on emergency grounds.
- The state would identify the Health worker/s (Male and Female) of the nearest PHC / sub center in the affected area who would carry out house-to-house survey of the population for fever cases. Any case of fever reported would immediately be brought to the notice of the Medical Officer identified by the District authorities who would follow the SOP as mentioned in Part II.
- Such health workers would be sensitized by the RRT for identification of suspect case of avian flu.
- The health care worker/s would follow infection control practices as per SOP.
- The health workers would be given Chemoprophylaxis with Oseltamivir as per

chemoprophylaxis guidelines.

- The health status of the cullers would be monitored as per the SOP.

II. Where one or more cases of human avian influenza have been reported (as per standard case Definition).

- The Identified district officer in the affected area to whom a suspected case has been reported, would inform the state and the central RRTs.
- The state and Central RRT would visit the case/s and after review, the following measures would be instituted:
- The case would be isolated, provided personal protective equipments including N95 mask and transported in isolation to the identified health facility. The state health authorities would arrange this.
- The ambulance driver and the attendant would also be provided PPEs.
- After the case is isolated in the hospital, the ambulance staff would discard the PPE as per the standard waste management protocols. The ambulance would be disinfected as per SOP for infection control (SOP-IV).
- The household immediate contacts would be provided chemo prophylaxis and monitored for 10 days for any symptoms of avian flu.
- The household immediate contacts would be quarantined in house which the local police would ensure.
- The affected communities would be separated from the affected poultry and they would be informed to avoid contact with any poultry including healthy poultry. (in a scenario where culling is delayed).
- The cullers and the health care functionaries in contact with the contact cases would be provided PPEs and chemoprophylaxis.
- The state/ Central RRT would ensure that appropriate clinical samples from the affected cases would be collected as per SOP for collection and transportation of clinical samples for laboratory investigations (SOP-III).
- RRT would ensure that the standard treatment protocol is being followed. For such purpose the RRT would visit the hospital where the case has been kept in isolation.
- The house-to-house survey for the fever cases would continue for 10 days (from the last case reported).

III. Where human-to-human transmission has been established.

- The district authorities would strictly enforce the quarantine guidelines.
- All cases would be reviewed and transported in isolation to the identified hospital.
- All actions as cited in part II would be enforced.
- All the individuals in the affected area would be provided chemo prophylaxis by the Central RRT in co-ordination with district authorities..
- All individuals would be provided well-fitted triple layer surgical mask by the Central RRT.
- Additional PPE, if needed would be transported and would be co-coordinated by Director, EMR, Dte GHS
- The district health authorities would ensure that the community follows strict personal hygiene including frequent hand wash. RRT would monitor the same.

The RRT will review the situation. The RRT would report on daily basis / or more frequently if situation warrants/ to Avian Influenza Monitoring Cell of NICD.

SOP FOR COLLECTION OF CLINICAL SAMPLES AND THEIR TRANSPORTATION FOR LABORATORY INVESTIGATION

The rapid response team would assess the situation and decide on collection of clinical sample. The guidelines given in Annexure-VI of the contingency plan would be followed.

The central/state rapid response team would have stock of the following items;

1. Personal protection Equipments
2. Naso-pharyngeal Swab (ready to use kit with viral transport medium)
3. Throat swab for viral and bacterial culture (Ready to use kit)
4. Blood culture bottle (selenite broth)
5. Vacutainer / syringes and needle
6. 5 ml Sterile vials
7. Sample collection vials for RT-PCR (RNAs / DNAs free)
8. Glass slide for peripheral blood smear
9. Vaccine carrier with icepacks.
10. Bio- waste bags for waste handling
11. Alcohol rub for hand cleaning
12. Sodium hypochlorite Solution
13. Tissue Paper.

The microbiologist in the RRT team in consultation with clinician and epidemiologist would collect the sample following universal precaution.

The RRT would inform the avian influenza cell at NICD and Director, EMR, Dte GHS in advance for transportation of clinical samples.

The packing of clinical samples would conform to WHO bio-hazardous guideline and would also conform to safe transportation in civilian aircraft.

The sample would be accompanied by a microbiologist identified by the state authorities (Other than the RRT) and transported in cold chain 2-8 degree celcius. Each sample should be accompanied by the clinical details in the prescribed in the sample collection annexure. Director (EMR) would co-ordinate with Ministry of Home Affairs who would provide transportation facilities [if air transportation is needed].

The samples would be transported to NIV, Pune (Dr A.K.Mishra, Director, NIV 020-26137990; mobile 09370656961) and NICD (Control room 23921401). Director (EMR) would inform the laboratories in advance about the arrival of samples.

SOP FOR INFECTION CONTROL PRACTICES

Infection control precautions

Infection control for influenza A (H5N1) involves a two-level approach:

- Standard precautions, which apply to ALL patients at ALL times, including those who have influenza A (H5N1) infection and
- Additional precautions, which should include:
 - . Droplet precautions,
 - . Contact precautions, and
 - . Airborne precautions

A combination of these precautions will give the appropriate infection control. Strict adherence to these precautions is required to break the chain of infection transmission.

Hand hygiene is the single most important measure to reduce the risk of transmitting infectious organism from one person to other.

Hands should be washed frequently with soap and water / alcohol based hand rubs/ antiseptic hand wash and thoroughly dried preferably using disposable tissue/ paper/ towel.

- After contact with respiratory secretions or such contaminated surfaces.
- Any activity that involves hand to face contact such as eating/ normal grooming / smoking etc.

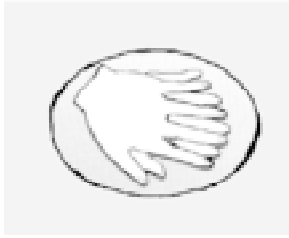
Respiratory Hygiene

People with respiratory infection should practice the following cough/ sneeze etiquettes whenever they are in the presence of another person.

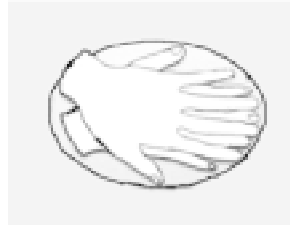
All symptomatic should:

- Avoid close contacts (less than one Meter) with other people.
- Cover their nose and mouth when coughing and sneezing
- Use disposable masks and dispose them as per waste disposal protocol.
- Immediately wash and dry their hands.

Steps of good hand washing



Step 1.
Wash palms and fingers.



Step 2.
Wash back of hands.



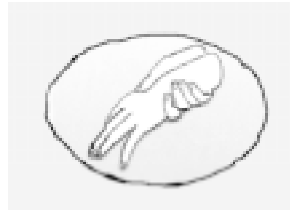
Step 3.
Wash fingers and knuckles.



Step 4.
Wash thumbs.



Step 5.
Wash fingertips.



Step 6.
Wash wrists.

Social distancing:

- Crowded places and large gatherings of people should be avoided.
- Distance between at least one meter should be maintained.

Personal Protection Equipments

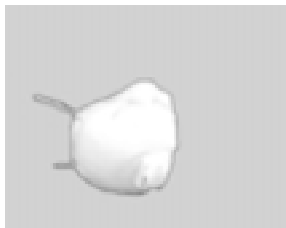
PPE reduces the risk of infection if used correctly. It includes:

- Gloves (nonsterile),
- Mask (high-efficiency mask),

- Long-sleeved cuffed gown,
- Protective eyewear (goggles/visors/face shields),
- Cap (may be used in high risk situations where there may be increased aerosols),
- Plastic apron if splashing of blood, body fluids, excretions and secretions is anticipated.



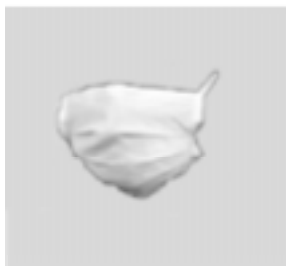
Goggles



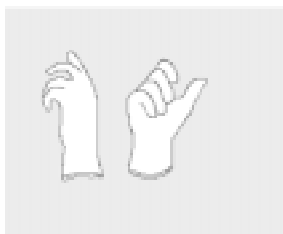
N-95 Mask
OR



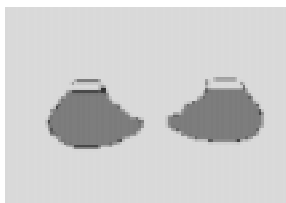
GOWN(MUST FOR LAB WORK)



TRIPLE LAYER MASK



Gloves



Shoe covers

THE PPE SHOULD BE USED IN SITUATIONS WERE REGULAR WORK PRACTICE REQUIRES UNAVOIDABLE, RELATIVELY CLOSED CONTACT WITH THE SUSPECTED HUMAN CASE/POULTRY.

CORRECT PROCEDURE FOR APPLYING PPE IN THE FOLLOWING ORDER:

1. FOLLOW THOROUGH HAND WASH
2. WEAR THE COVERALL.
3. WEAR THE GOGGLES/ SHOE COVER/AND HEAD COVER IN THAT ORDER.
4. WEAR N-95 MASKS
5. WEAR GLOVES

THE MASKS SHOULD BE CHANGED AFTER EVERY SIX TO EIGHT HOURS.

Remove PPE in the following order:

- ✿ Remove gown (place in rubbish bin).
- ✿ Remove gloves (peel from hand and discard into rubbish bin).
- ✿ Use alcohol-based hand-rub or wash hands with soap and water.
- ✿ Remove cap and face shield (place cap in bin and if reusable place face shield in container for decontamination).
- ✿ Remove mask - **by grasping elastic behind ears – do not touch front of mask.**
- ✿ Use alcohol-based hand-rub or wash hands with soap and water.
- ✿ Leave the room.
- ✿ Once outside room use alcohol hand-rub again or wash hands with soap and water.

Wash hands using plain soap, anti-microbial agent or waterless antiseptic agent such as an alcohol-based hand gel.

Used PPE should be handled as waste as per waste management protocol given in the guidelines. Repeat hand wash before leaving the infected area.

SOP FOR CASE REPORTING

- The Team leader of the RRT would report the 'suspected case' as per case definition.
- The probable case reporting would depend upon the preliminary laboratory test report of infection of influenza group-A as also respiratory failure or death among the suspect cases. The hospital treating the case would be the agency to confirm a probable case in hospital settings.
- DG, ICMR would be the nodal person to confirm laboratory finding for diagnosing the case as suspect case.
- In either case, the information would be communicated first to the state health Secretary, Union health Secretary and DGHS who would review the case parameters before declaring the probable case.
- The information of a case being probable would also be communicated to the Prime ministers Office, Cabinet Secretariat, Team leader of the rapid response team by the Joint Secretary/ Director, EMR.
- For confirmation of the probable case, DG, ICMR would ensure that NIV, Pune conducts the requisite PCR test/ viral culture and sent the samples to the WHO designated global laboratory at the earliest.
- Director (EMR) would co-ordinate with the Ministry of Home Affairs for airlifting of the samples as per standard procedure.
- The Ministry of Health would only declare the confirmed case after ascertaining from all concerned.

SOP FOR MATERIAL MANAGEMENT

Till such time the states have their own supply of drugs and PPEs, NICD would supply from its central stockpile.

The central RRT will carry 100 courses of Oseltamivir and 100 sets PPE, and sample collection kits for 10 cases.

The state would arrange boarding and lodging facilities for the rapid response teams.

The immediate requirements of the state rapid response teams would be met by the Central RRT (if state has no stockpile of PPE/ drugs).

The state health authority would provide 100 thermometers along with sufficient quantity of isopropyl alcohol [70%] other essential drugs (paracetamol, antibiotics, IV fluids etc) required for managing the patients.

The state's immediate need for ventilators, semi automated chemistry analyzer and PPE for the hospital, if required by the state, would be supplied from the central stockpile at NICD.

The state health authority would provide stationary for keeping records.

Ministry of Information Technology would provide facilities for sat telephones wherever the telephone connectivity is not available.

Director (EMR) would co-ordinate with the state for supply of additional PPE, drugs, and medical equipments.