

Istituto Zooprofilattico Sperimentale delle Venezie

**Veterinary Epidemiology Unit
(CREV)**

OIE Reference Laboratory for Newcastle Disease and Avian Influenza

**CONTINGENCY MANUAL FOR
AVIAN INFLUENZA**

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Introduction

This document represents a summary of the contingency manual for avian influenza (AI) which was prepared by the Centro Regionale per l'Epidemiologia Veterinaria (CREV) and by the Italian National Reference Laboratory for Avian Influenza, at the Istituto Zooprofilattico Sperimentale delle Venezie. It was prepared in order to provide the official veterinarian with practical information concerning the management of an AI outbreak.

1 Access to suspected infected premises

1.1 Suspicion

As soon as the suspicion of AI is reported, the official veterinarian (OV) identifies the person who has reported the suspicion, and if the latter is the farmer, the OV collects information concerning:

- a) location, characteristics and number of birds and other animals on the farm,
- b) presence of staff and vehicles,
- c) recent movement of people, equipment, vehicles and animals,
- d) the availability, on site of disinfectants and equipment for disinfecting premises.

Reporting the suspicion is also compulsory for the company veterinarian or private practitioner, who must support the OV in collecting information. If the suspicion is reported before the arrival of the OV, the company veterinarian or private practitioner must do everything in their power to prevent the infection from spreading. The vehicles of the OV and company/field veterinarian must be left outside the infected premises, and at a distance from the entrance of the farm.

The OV coordinates at the farm level, in order to avoid movement of people, animals, equipment and vehicles from the suspected premises and in the meantime:

- Informs the official laboratory of the suspicion of AI,
- Informs the head of the local veterinary office, and identifies the closest mobile disinfection unit, indicating the suspicion of AI,
- Provides himself with a "kit n° 1".

1.2 Access

Access to the premises must take place following a complete change in clothing. Disposable gear, including head caps and shoe covers must be worn by all staff entering the farm. A changing room must be identified, and it should contain large plastic bags, cardboard boxes, latex gloves and a sufficient quantity of disinfecting solution (see point 8). The remaining components of kit n° 1 are to be used inside the poultry house/shed.

The initial coordination tasks of the OV are to:

- Put the farm under restriction (written document),
- Obtain a written declaration from the personnel on the farm stating that they will not visit any establishment containing live birds for 3 days; the OV and any other veterinarian must also comply to this general rule,
- Identify locations on the farm where vehicles leaving the farm can be properly washed and disinfected, and organize washing and disinfection procedures,
- 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.

Washing and disinfecting of vehicles must take place internally and externally, and vehicles may leave the infected premises only if this is absolutely necessary. Care must be taken to avoid that contamination of natural or artificial water reservoirs may occur.

The laboratory veterinarian (LV), should reach the premises equipped with kit n° 2, accompanied by a driver, who must remain outside the premises and is responsible of the dispatch of the pathological samples to the laboratory. The LV must wear his protective gear in the changing room, and must leave the following items from kit n° 2 in the changing room:

- The leak-proof water resistant container,
- The thermic container for carrying samples,
- Two pairs of latex gloves,
- Five autoclavable plastic bags,
- Five black rubbish bags,
- Disinfecting solution.

The remaining components of kit n° 2 must be carried inside the house/shed.

2 Preliminary investigation

The OV and LV collect the following information:

- Preliminary identification of the productive unit and subunits (topography of the farm), and identification of the unit for which the suspicion has been reported,
- Identification of staff directly involved with that unit,
- Anamnestic data.

2.1 Clinical investigation

The aim of the clinical investigation is 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.

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.

2.2 Collection of pathological samples

In cases of suspected avian influenza the following pathological samples must be collected and sent to the laboratory:

- At least 5 moribund birds (for post mortem examination),
- Pooled tracheal and lung samples from at least 5 moribund birds,
- Pooled intestine samples from at least 5 moribund birds,
- Cloacal and tracheal swabs from healthy birds (also from waterfowl and ratites),
- At least 10 blood samples (acute sera).

Samples from different apparatuses must not be pooled. They must be packaged appropriately (in leak proof containers, wrapped in at least two plastic bags), to avoid dissemination of the infectious agent, and transported refrigerated to the laboratory. Sacrificed animals may be transported in a sealed autoclavable plastic bag, inserted inside a similar, sealed bag. All samples must be carried to

the laboratory inside a polystyrene box containing icepacks. The polystyrene box must be appropriately disinfected before leaving the premises.

The samples must be accompanied by the appropriate form (Annex 2).

The driver in charge of delivering the samples, must drive directly to the laboratory without any intermediate stops.

2.3 Epidemiological inquiry

The OV and LV are requested to carefully fill in the epidemiological inquiry form (Annex 1). With reference to the epidemiological inquiry, it is important that:

- Animal movements: animal movements should be recorded up to 20 days prior to the onset of the first clinical signs,
- People movements: all people (staff, relatives, servicing personnel, veterinarians) who had access to the farm must be recorded,
- Vehicle movements: all vehicles, regardless of their contact with animals, which have had access to the farm must be reported.

The epidemiological inquiry must be sent (possibly faxed) to the competent authorities as soon as it has been completed.

3 Exit

Following the clinical visit and the collection of samples the OV and LV, in the designated changing room, disinfect their protective gear 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, shoe-covers are put inside a plastic bag which is left on site.

4 Equipment

KIT n° 1 for the Official Veterinarian

- 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. electric torch
- i. active disinfectant solution
- j. 2 pens and a notepad
- k. 100 syringes 2,5 mls 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
- r. 5 frozen icepacks

At least two of these kits should be prepared and available at the OV headquarters at all times.

KIT n° 2 for the Laboratory Veterinarian

- a. 1 thermic container
- b. 4 pairs of forceps
- c. 2 pairs of surgical scissors
- d. 1 knife
- e. tape
- f. labels and pens
- g. 100 2.5 mls syringes with needle
- h. sterile swabs
- i. 50 test tubes containing virus transport media
- j. 10 leak proof containers
- k. 2 disposable suits
- l. 5 pairs of disposable shoe-covers
- m. 5 pairs of latex gloves
- n. disposable caps and face masks

- o. 10 black waste-bags
- p. 50 rubber bands
- q. disinfectant solution in a nebuliser
- r. cardboard container

5 Confirmation of AI

In case of confirmation of a primary outbreak of AI, all contingency procedures for the containment and eradication of AI are implemented.

The OV must:

- activate the mobile disinfection unit that must be positioned at the only point of entrance/exit to the infected premises,
- The number of vehicles and staff reduced to the minimum necessary to extinguish the outbreak. Any staff that has access to the infected premises may only leave the farm after a complete change in clothing and possibly a shower. 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,
- Contact the depopulation crews, excavator operators (if the birds can be buried) , vehicles for transportation of dead animals (if the birds can be rendered), disinfection crews.

6 Depopulation and disposal of dead birds

6.1 General concepts

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, in compliance with current legislation. 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. Generally speaking, where possible burial on site of infected birds is recommended, rather than burning or rendering. However this needs to be evaluated on the basis of where the outbreak has occurred.

6.2 Staff and equipment necessary for depopulation and disposal

- Wooden poles and plastic red-and white-tape to identify the infected premises and the entrance/exit to the farm
- Mobile disinfection units
- Night-time illumination devices
- At least one OV for each infected farm
- Sufficient staff (depopulation crews and other staff) to avoid overworking
- Calculation of the number of vehicles necessary for carrying the carcasses out of the farm
- Identification of the route the vehicles carrying the dead birds
- Policemen or other social security service to escort the trucks to the disposal area
- Gas, drugs or devices to contain, sedate, stun and depopulate flocks (in case of ostriches captive bullet revolvers may be used)
- Appropriate containers for disposing of infected material

6.3 Depopulation

In compliance with EU directive 93/119/EC, depopulation of infected flocks may take place using the following methods/drugs/systems:

- Electronarcosis by water dipping
- Decapitation and dislocation of the neck
- Gassing with carbon dioxide
- Vacuum tank
- Mechanical devices embryonated eggs and chicks

Other methods for depopulation of birds are listed below:

- Flocks consisting of a limited number of birds, intrapulmonary inoculation of drugs used for the euthanasia of pets may be used,
- Flocks consisting of considerable numbers of birds may be depopulated by gassing them inside sealed containers. The number of birds per m³ of gas should not exceed 150 (mean weight 1,8 kg).

Gases used for depopulation of birds are listed below:

- Carbon dioxide (CO₂) 17,5 kg/1000 m³: saturates the environment in 30 minutes, and death takes place in 15 minutes,
- Carbon monoxide (CO) 8 kg/1000 m³: saturates the environment in 30 minutes, and death takes place in 15 minutes,
- Hydrogen cyanide (HCN) 3 kg/1000 m³: saturates the environment in 30 minutes, and death takes place in 4 minutes **extremely toxic, to be handled by trained staff only.**

Drugs that may be used for depopulation of large flocks of birds:

- 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 mls), causes loss of consciousness in 4 hours, same recommendations as above.

6.4 Disposal of birds

Burial

In areas which allow burial as a means of disposal, a pit must be prepared as soon as the diagnosis is confirmed. The size of the pit must be at least two meters wide by two meters deep, and this enables disposal of 300 birds (medium weight 1.8 kg) per 1.3 meters of surface. The number of birds can be doubled, each metre deeper the pit is made (3-6 meters). 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).

Rendering

Carcasses to be rendered must be loaded onto suitable vehicles which must be completely leak-proof. Rendering must take place in establishments authorised for dealing with infectious material.

7. Disposal / destruction of infected materials

Waste, organic and all other non disinfectable material present on the farm must be destroyed, in particular the destruction of litter, eggs, egg products, hay, animal feedstuffs, feathers and egg-trays must be planned for.

Litter

Depending on the amounts present and on the characteristic of the farm, litter can be either buried in the pit with the animal carcasses or piled in heaps to ensure maturation. The heap must be covered with a resistant sheet of plastic see chapter “Sanitation of infected premises”. In all cases, infected litter should not be moved from the infected farm prior to maturation.

Eggs and egg products

May be buried in the pit with the animal carcasses or rendered.

Straw

Straw may be decontaminated by spraying its surface with an active disinfectant and covering up the stacks with a resistant sheet of plastic. Covered stacks must be left to decontaminate for at least 42 days. For time reasons, it could be more convenient to incinerate it.

Animal feed

Animal feed present on site must be decontaminated by fumigation and subsequently incinerated.

8 Disinfection of infected premises

A check-list and indications on the means of disinfecting infected premises is reported below:

- 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,
- 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,

- All equipment inside the house such as drinkers and food hoppers must be washed and treated with a disinfectant for at least 48 hours,
- Water reservoirs must also be emptied, washed and disinfected,
- Feed tanks (silos) need to be emptied, washed with a hot water-pressure pump and subsequently fumigated,
- After washing and disinfecting, all units must be fumigated twice with at least two weeks between fumigations.

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

1. Sodium hypochlorite: 2% active chlorine solution (disinfection of equipment)
2. Quaternary ammonium salts: 4% solution (treatment of walls, floors, ceilings and equipment)
3. Potassium peroxomonosulphate + sulphamic acid + sodium alkyl benzene sulphonate [as a ready-to use product] (treatment of floors, walls, ceilings and equipment)
4. Calcium Hydroxide: 3% solution (treatment of walls and floors)
5. Cresolic acid 2.2% solution: (treatment of floors)
6. Synthetic phenols 2% solution: (treatment of floors)
7. Formalin and permanganate: fumigation

9 Number of cloacal swabs to be collected in suspected infected farms

Cloacal swabs must be collected from at least 30 birds, this will allow the detection of infection with a confidence level of 95% if the prevalence of faecal excretors is ≥ 0.1 . Swabs must be collected ensuring that at least one gram of faecal material is actually on the swab, and must be subsequently immersed in virology transport medium.

**AVIAN INFLUENZA
EPIDEMIOLOGICAL INQUIRY FORM**

Date/...../.....

Dr. Phone number

Suspicion N.

Confirmation N.

Name of establishment

Address

Municipality Province..... Phone

District

Farm code or identification number

Owner

.....

Company

Address of the owner Phone

Information provided by

.....

Farm Veterinarian Dr. Present NO YES

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

HOUSING SYSTEM

Sheds NO
YES N°

Tunnels NO
YES N°

Type of ventilation system:

- Natural
- Natural with fans
- Artificial.....

Free-ranging system NO
YES m²

Bird proof nets NO YES

Possibility of contact with wild birds:

NO YES Species

.....

.....

Other birds present on site (captive or free)

NO YES Species

.....

.....

Presence of ponds or lakes :

NO YES

Other water reservoirs NO YES (specify)

Presence of pigs NO YES N°

Other animals NO YES (specify)

Remarks

.....

OTHER INFORMATION REQUIRED:

1. Topography of establishment

A map of the infected premises must be drawn, clearly indicating the productive units, the animals housed inside them, indicating the main routes of access to the premises.

Data on introduction/spread of infection: information necessary for the points a), b), c) etc., must be collected for all movements of animals/people and therefore may have to be repeated if necessary.

2. Movements of birds: information required

a) Introduction of birds from other establishments/hatcheries/farms NO YES

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

Date/...../..... N° Species Farm Hatchery

Name of Farm..... Code

Address.....N.

Municipality Province

District.....

b) Introduction of birds from exhibitions/markets/fairs NO YES

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

Date/...../..... N. Species

Origin: Fair Market Exhibition

Municipality..... Province

District

c) Exit of birds/eggs to other farms/establishments/hatcheries/abattoirs NO YES

(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/...../..... N.Species

Destination: Other farm Hatchery Abattoir Other

Name of establishment..... Code

Address..... N.

Municipality Province District.....

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

NO YES

(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/...../..... N. Species

Destination: Fair Market Exhibition Other

Address.....N.

Municipality Province District.....

3.MOVEMENT OF PEOPLE: POSSIBLE MEANS OF INTRODUCTION OR OF SPREAD OF

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

NO YES

Date/...../..... Surname and first name

Veterinarian Technician Vaccinating crew Debeaker Other farmer Dealer Other

(specify)

Address N.

Municipality Province District.....

Phone number

Previously visited farm: Name

Municipality Province District.....

a) INDIRECT CONTACTS WITH OTHER POULTRY ESTABLISHMENTS NO YES

(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.....

Code

Address

Municipality Province

District.....

Species farmed number

shared vehicle shared feed shared equipment shared staff collection/recycle of litter
other (specify)

b) OTHER FARMS OWNED BY THE SAME OWNER NO YES

Name of farm or establishment.....

Code

Address

Municipality Province

District.....

Species farmed number

Empty Full

c) POULTRY FARMS LOCATED NEAR THE OUTBREAK

NO YES

Name of farm or establishment.....

Code

Address

Municipality Province

District..... Distance in metres.....

Species farmed number

Empty Full

| 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 with mortality and morbidity referring to the suspicion of AI

VACCINATION of birds

Vaccination of birds is practised: NO YES

| Date of vaccination | Type of vaccine (1) | Commercial name | Administration route |
|---------------------|---------------------|-----------------|----------------------|
|/...../..... | | | |
|/...../..... | | | |
|/...../..... | | | |
|/...../..... | | | |
|/...../..... | | | |
|/...../..... | | | |

(1) Live or inactivated

VACCINATING STAFF:

Family Employees External staff Other

Remarks.....

ADMINISTRATION OF DRUGS/MEDICAMENTS

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

.....
.....
.....

STAFF WHO ADMINISTERED THE MEDICAMENT:

Family Employees External staff Other

Remarks.....

AVIAN INFLUENZA Sample submission form

| | | |
|-------------------|-----------------------|----------------|
| Region..... | Province | District |
| Veterinarian..... | | |
| Phone..... | Fax..... | |
| Date .../.../.... | Accession number..... | |

| | |
|--|-----------|
| Farm: Municipality | Prov..... |
| Code or identification number <input type="text"/> | |
| Owner | |
| Complete address | |

| SPECIES AND CATEGORY | | | |
|--|---------|--|---------|
| <input type="checkbox"/> Turkey breeders (*) | N | <input type="checkbox"/> Meat turkeys (*) | N |
| <input type="checkbox"/> Broiler breeders | N | <input type="checkbox"/> Layer breeders | N |
| <input type="checkbox"/> Layers | N | <input type="checkbox"/> Broilers | N |
| <input type="checkbox"/> Other species (specify) | | N..... | |
| (*) Vaccinated against AI | | NO <input type="checkbox"/> | |
| | | YES <input type="checkbox"/> ⇒ Number of vaccinations..... | |

| COLLECTION OF SAMPLE FROM / FOR | |
|---|--|
| <input type="checkbox"/> SUSPECT OUTBREAK | → date of notification |
| <input type="checkbox"/> Confirmed outbreak | |
| <input type="checkbox"/> Farm epidemiologically connected with outbreak | → Name and farm code of outbreak |
| <input type="checkbox"/> Farm located in protection zone | → Name and farm code of outbreak |
| <input type="checkbox"/> Farm located in surveillance zone | → Name and farm code of outbreak |
| <input type="checkbox"/> Testing for the movement of animals | |
| <input type="checkbox"/> Monitoring programme | |
| <input type="checkbox"/> Other | |

ANAMNESTIC DATA

| Species and category | Onset of clinical signs | Symptoms | % mortality | From/to |
|----------------------|-------------------------|----------------|-------------|---------|
| ----- | ----- | ----- ----- | ----- | ----- |
| ----- | ----- | ----- ----- | ----- | ----- |
| ----- | ----- | ----- ----- | ----- | ----- |

| Species | Samples collected | N° samples | for detection of | |
|---------|-------------------|------------|--------------------------|--------------------------|
| | | | Antibodies | Virus |
| ----- | ----- | ----- | <input type="checkbox"/> | <input type="checkbox"/> |
| ----- | ----- | ----- | <input type="checkbox"/> | <input type="checkbox"/> |
| ----- | ----- | ----- | <input type="checkbox"/> | <input type="checkbox"/> |
| ----- | ----- | ----- | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE IDENTIFICATION

| N° house or shed | Species | Samples collected |
|------------------|---------|-------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Signature

.....