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
- 1. 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
- 1. 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
- g. 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, escavator 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 carcases must be covered with a layer of calcium hydroxide, and then with a layer of earth (at least 40 cm).

Rendering

Carcases to be rendered must be loaded onto suitable vehicles which must be completely leak-proof. Rendering must take place in establisments 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 carcases 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 carcases 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 \geq 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 \square	YES □		
INFOR	MATION	CONCERNING T	HE 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

Chickens		Meat	□ N°	Breeders	□ N°	. Layers \square N°
Turkeys		Meat	□ N°	Breeders	□ N°	
Guinea-fow	l 🗆	Meat	□ N°	Breeders	□ N°	
Ducks		Meat	□ N°	Breeders	□ N°	
Pigeons		Meat	□ N°	Breeders	□ N°	
Pheasants		Release	□ N°	Breeders	□ N°	
Geese		Meat	□ N°	Breeders	□ N°	
Ducks		Meat	□ N°	Breeders	□ N°	
Quail		Meat	□ N°	Breeders	□ N°	
Partridges		Release	□ N°	Breeders	□ N°	
Other						
Date of place	eing	/	/	Sex:		Age
		/	/	Sex:		Age
HATCHER						
Company H	latchery	Ν	10 🗆 ,	YES 🗆		
Company				Address		N
Municipality	/			. Province	Code	
Phone			Fax			
Debeaking	operatio	1S:	Date	//		
Performed b	y: 🗆 Fam	ily memb	oers 🗆 Emplo	oyed staff□ E	External staff	☐ Other
Remarks						

HOUSING SYSTEM

Sheds	NO □ YES □			N°
Tunnels	NO □ YES □			N°
Type of ventilation	on system:			
□ Natural			•••••	
☐ Natural with fa	ns		• • • • • • • • • • • • • • • • • • • •	
☐ Artificial				
Free-ranging syste	m NO YES		2	
Bird proof nets	1	NO 🗆	YES □	
Possibility of cont	act with wild	birds:		
NO 🗆 Y	ES 🗆		Spe	ecies
			•••	
			•••	
Other birds preso	ent on site (ca	aptive or free)		
NO □ Y	ES 🗆		Spe	ecies
Presence of ponds	or lakes:			
NO □ Y	ES □			
Other water reserv	oirs NO 🗆 🗅	YES □ (sp	pecify)	
Presence of pigs	NO □	YES □	N°	
Other animals		YES □		
Remarks			(1 3)	

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 bir	ds: information required		
a) Introduction of bi	rds from other establishr	ments/hatcheries/farms NO	YES □
(Twenty days before t	he onset of the first clinica	l signs)	
Date/ N°	Species	Farm	n □ Hatchery □
Name of Farm		Code Code	
Address			N
Municipality		I	Province
District			
	rds from exhibitions/mar	rkets/fairs NO □ YES □	
(Twenty days before t	he onset of the first clinica	l signs)	
Date/ N.	Spec	cies	
Origin:	Fair □	Market □	Exhibition
Municipality		Province	
District			
		nents/hatcheries/abattoirs	
(In the time span betw	veen 20 days before the ons	set of the first clinical signs and	the date the farm was put
under restriction)			
Date/ N.	Species	3	
Destination: Other fa	rm □ Hatchery □ Al	battoir Other	
Name of establishmen	nt	Code Code	
Address			N
Municipality	Provinc	ce	. District

d) Exit of birds/eggs to	other fairs/markets/exhibitions	NO □	YES □	
(In the time span between	n 20 days before the onset of the first cli	nical signs and th	e date the farm was put	
under restriction)				
Date/ N	Species			
Destination: Fair □ M	Market □ Exhibition □ Other			
Address			N	
	Province			
	OPLE: POSSIBLE MEANS OF INT			
INFECTION (In the tire	ne span between 20 days before the onse	et of the first clini	cal signs and the date	
the farm was put under re	estriction)			
	NO □ YES □			
Date/ Su	rname and first name			
☐ Veterinarian ☐ Tech	nician Vaccinating crew Debea	ker 🛮 Other far	mer □ Dealer □ Other	
(specify)				
Address			N	
Municipality	Province		District	
Phone number				
Previously visited farm:	Name			
	Province			

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	Vehicle plate tractor	Vehicle plate trailer	Transporter (Company)	Driver	Phone number

a) INDIRECT CONTACTS WITH OTHER POULTRY ESTABL	LISHMENTS NO □YES □
(Sharing of equipment, vehicles, feed, staff, etc. in the time span bet	ween 20 days before the onset
of the first clinical signs and the date the farm was put under restriction	on)
Date of contact/ Name of farm or establishment	
Code Address	
Municipality	
District	
Species farmed	number
□ shared vehicle □ shared feed □ shared equipment □ shared staff □ other (specify)	
b) OTHER FARMS OWNED BY THE SAME OWNER	NO □ YES □
Name of farm or establishment	
Code Address	
Municipality	
District	
Species farmed	number
Empty Full	
e) POULTRY FARMS LOCATED NEAR THE OUTBREAK NO □ YES □	
Name of farm or establishment.	
Code Code	
Address	
Municipality	Province
District Distance in metres	
Species farmed	number
Empty □ Full □	

ANAMNESTIC DATA

WEEKLY MORTALITY

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

		T			
Wı	EEK	NUMBER ANIMALS			
From	То	DEAD			
	I				
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 with mortality and morbility referring to the suspicion of AI

VACCINATION of birds

Vaccination of birds is	s practised:			NO □	YES □
Date of vaccination	Type of vaccine (1)	Commerci	al name	Administrat	ion route
/					
/					
/					
/					
/					
//					
(1) Live or inactivated					
VACCINATING STAFF:					
☐ Family ☐ Empl	loyees External	staff \square	Other		
Remarks					
ADMINISTRATION	N OF DRUGS/MEDI	CAMENT	S		
In the last 15 days:	NO □ YES	□ (specif	ỳ):		
STAFF WHO ADMINISTE	ERED THE MEDICAMEN	Т:			
☐ Family ☐ Empl	loyees External	staff \square	Other		
Remarks					

CLINICAL INVESTIGATION PER SPECIES

Species				
Depression				
Respiratory sign	s: mild			
	severe			
Drop or cessation of egg laying				
Oedema, cyanos	is or cutaneous haemo	orrhages		
Diarrhoea				
Nervous signs				
Other				
GROSS FINDI	NGS			
Rhinitis and sinu	usitis			
Tracheitis	catarrhal			
	haemorrhagic			
Aersacculitis				
Haemorrhages	epicardum			
C	endocardium			
	proventriculus			
	ovarian follicles			
Enteritis	catarrhal			
	haemorrhagic			
Pancreatitis				
Other:				
Remarks				
			s	ignature

AVIAN INFLUENZA Sample submission form

			District			
Date/	// Accession number					
Farm: MunicipalityProv						
Code or ic	Code or identification number					
Owner						
	SPECI	ES AND CATEGORY				
☐ Turkey breeders (*) N	I	☐ Meat turkeys (*)	N			
☐ Broiler breeders N	l	☐ Layer breeders	N			
□Layers N	I	☐ Broilers	N			
☐ Other species (specify)	/)	. N				
(*) Vaccinated against Al		NO □				
		YES□	\Rightarrow Number of vaccinations			
	COLLECTION	N OF SAMPLE FROM /	FOR			
 □ SUSPECT OUTBREAK → date of notification □ Confirmed outbreak □ Farm epidemiologically connected with outbreak → Name and farm code of outbreak 						
☐ Farm located in protection zone → Name and farm code of outbreak						
☐ Farm located in surveill	llance zone → Name a	and farm code of outbre	ak			
☐ Testing for the movemed ☐ Monitoring programme ☐ Other						

		ANAMNESTIC DA	TA			
Species and category	Onset of clinical signs	Symptoms		% mortality	From/to	
Species S	Samples collected	N° samples	for de Antibodies □	tection of Virus □		
		SAMPLE IDENTIFICATION	DN			
N° house or shed		Species		Samples collected		
1	'		Signature	<u> </u>		
	Jighature					