

~~鳥インフルエンザウイルスの存在を排除するため、試料採集を開始するものとする。~~

iii) ~~野外株と非相同の NA を含有する不活化全粒子ウイルスワクチンのワクチン接種を受けた場合には、野外株の NA 又は NSP に対する抗体の存在が感染を示すことになる。ウイルス分離又はウイルス特異的ゲノム基質若しくはタンパク質の検出のいずれかによって、鳥インフルエンザウイルスの存在を排除するため、試料採集を開始するものとする。~~

b) ~~血球凝集素表現形に基づくワクチンは、野外ウイルスの HA と相同の HA タンパク質又は遺伝子を含有している。前項までに規定されるおとり鳥が、鳥インフルエンザ感染の検出に使用可能である。ワクチン接種鳥又はおとり鳥では、NP/M、NSP 又は野外株の NA に対する抗体の存在が感染を示している。ウイルス分離又はウイルス特異的ゲノム基質若しくはタンパク質の検出のいずれかによって、鳥インフルエンザウイルスの存在を排除するため、試料採集を開始するものとする。~~

2. 鳥インフルエンザウイルスの感染を示唆する検査結果の取り扱い

~~ワクチン非接種家畜で、鳥インフルエンザウイルス感染を示唆する抗体が検出された場合には、当該感染が低病原性鳥インフルエンザウイルスのよるものなのか高病原性鳥インフルエンザによるものなのかを決定するため、疫学的及びウイルス学的調査を開始するものとする。~~

~~ウイルス学的検査は、すべての抗体陽性個体群及び高リスク個体群に対し、開始されるものとする。当該試料は、ウイルス分離及び同定又はインフルエンザ A 型特異タンパク質若しくは核酸の検出によって、鳥インフルエンザウイルスの存在が評価されるものとする(図 2)。ウイルス分離は、鳥インフルエンザウイルスの感染を検出するゴールドスタンダードである。すべてのインフルエンザウイルス A 型分離株は、HA 及び NA 亜型を決定するための検査を受け、高病原性若しくは低病原性の鳥インフルエンザウイルス又はその他のインフルエンザ A 型ウイルスとして分類を決定するため、鶏での生体内検査を受ける又は H5 及び H7 亜型の HA タンパク質分解酵素切断部位の配列を決定するものとする。その代替法として、核酸検出試験が開発され、実証されている。これらの試験は、ウイルス分離の感受性を有するが、数時間以内に結果が提供されるという利点がある。核酸検出法によって H5 及び H7 亜型を検出するための試料は、ウイルス分離、同定及び鶏での生体内検査、又はタンパク質分解酵素切断部位を決定する核酸配列を定めることにより、高病原性又は低病原性の鳥インフルエンザウイルスであることの確認を受けるものとする。抗原検出システムの使用は、感受性が低いことから、NP/M タンパク質を期待するインフルエンザ A 型ウイルス感染の臨床野外症例のスクリーニングに限定されるものとする。NP/M 陽性試料は、ウイルス分離、同定及び病原性決定による確認を受けるものとする。~~

~~検査施設での結果は、疫学的状況に照らして考察されるものとする。血清学的調査を補完し、ウイルス循環の可能性を評価するのに必要な付随情報には、以下の各号のものが含まれるが、これらに限定されるものではない。~~

- ~~a) 既存の生産システムの特性説明~~
- ~~b) 疑症例及びそのコホートの臨床サバイランス結果~~
- ~~c) 汚染地で実施されたワクチン接種の定量化~~
- ~~d) 汚染飼育施設の衛生プロトコル及び病歴~~
- ~~e) 動物個体識別及び移動の管理~~
- ~~f) 歴史的に有名な鳥インフルエンザ伝搬において地域的に重要であったその他のパラメータ~~

~~全調査プロセスは、疫学的サバイランスプログラムの標準作業手順として詳細に記述されるものとする。~~

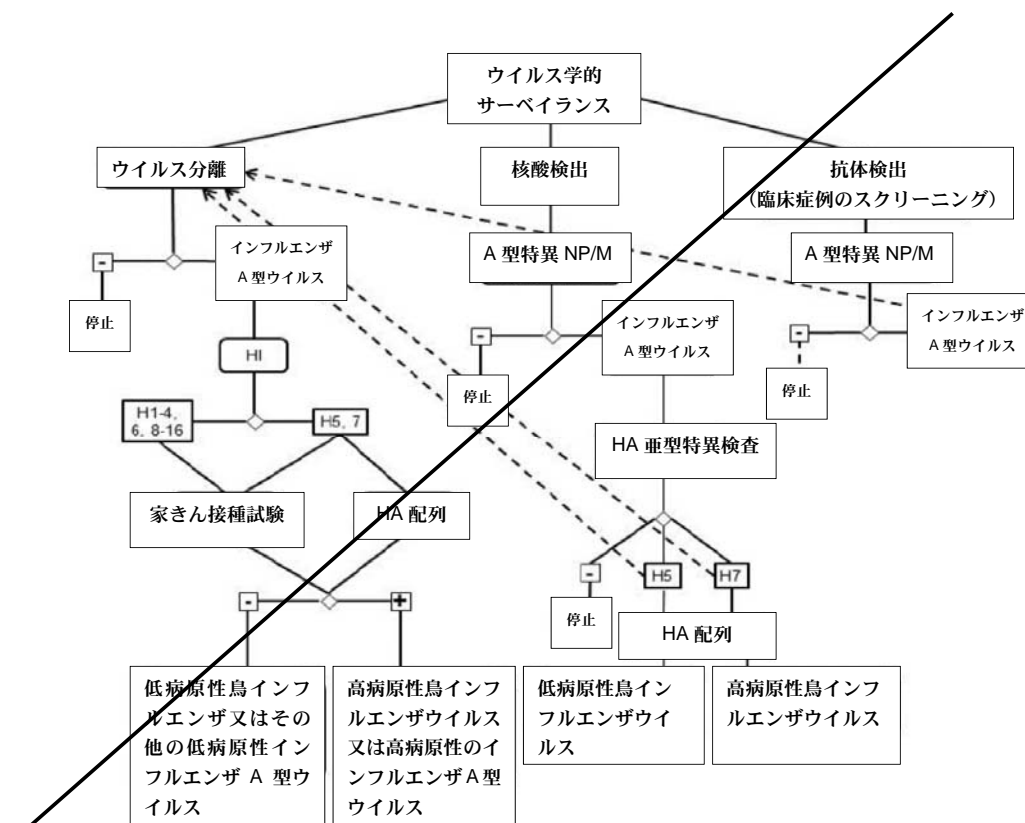
~~図 1 及び図 2 は、家畜インフラックの調査での使用が勧告される検査法を示す。~~

省略形及び頭字語	
ACID	ゲル内洗降反応
DIVA	ワクチン接種動物と感染動物との鑑別
ELISA	酵素結合免疫吸着測定法
HA	血球凝集素
HI	血球凝集抑制
NA	ノイラミニダーゼ
NP/M	核タンパク質及び基質タンパク質
NSP	非構造タンパク質
S	鳥インフルエンザウイルスの証拠がないこと

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## CHAPTER 10.4.

INFECTION WITH HIGH PATHOGENICITY  
AVIAN INFLUENZA VIRUSES

## Article 10.4.1.

## General provisions

- 1) The objective of this chapter is to mitigate animal and public health risks posed by avian influenza viruses, and prevent their international spread. The chapter focuses on high pathogenicity avian influenza viruses, which cause the listed disease of concern. However, since they have the ability to mutate into high pathogenicity viruses, low pathogenicity avian influenza viruses of H5 and H7 subtypes should be included in any surveillance and control programmes for high pathogenicity viruses. This chapter deals not only with the occurrence of clinical signs caused by avian influenza, but also with the presence of infection with avian influenza viruses in the absence of clinical signs.

For the purposes of the *Terrestrial Code*, avian influenza is defined as an *infection of poultry* caused by any influenza A virus of the H5 or H7 subtypes or by any influenza A virus with an intravenous pathogenicity index (IVPI) greater than 1.2 (or as an alternative at least 75% mortality) as described below. These viruses are divided into high pathogenicity avian influenza viruses and low pathogenicity avian influenza viruses:

- a) high pathogenicity avian influenza viruses have an IVPI in six-week-old chickens greater than 1.2 or, as an alternative, cause at least 75% mortality in four to eight-week-old chickens infected intravenously. H5 and H7 viruses which do not have an IVPI of greater than 1.2 or cause less than 75% mortality in an intravenous lethality test should be sequenced to determine whether multiple basic amino acids are present at the cleavage site of the haemagglutinin molecule (HA0); if the amino acid motif is similar to that observed for other high pathogenicity avian influenza isolates, the isolate being tested should be considered as high pathogenicity avian influenza virus;
- b) low pathogenicity avian influenza viruses are all influenza A viruses of H5 and H7 subtypes that are not high pathogenicity avian influenza viruses.
- 2) For the purposes of the *Terrestrial Code*:
- a) High pathogenicity avian influenza means an infection of poultry by any influenza A virus with an intravenous pathogenicity index (IVPI):
- = in six-week-old chickens greater than 1.2 or, as an alternative, causes at least 75% mortality in four to eight-week-old chickens infected intravenously. Viruses of H5 and H7 subtypes that do not have an IVPI of greater than 1.2 or cause less than 75% mortality in an intravenous lethality test should be sequenced to determine whether multiple basic amino acids are present at the cleavage site of the haemagglutinin molecule (HA0); if the amino acid motif is similar to that observed for other high pathogenicity avian influenza isolates, the isolate being tested should be considered as a high pathogenicity avian influenza virus.
- b) The following defines the occurrence of infection with a high pathogenicity avian influenza virus: the virus has been isolated and identified as such or specific viral ribonucleic acid has been detected in one or more samples from poultry or a product derived from poultry.
- 3) Poultry is defined as 'all domesticated birds, including backyard poultry, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose'.

Annex 19 (contd)

Birds that are kept in captivity for any reason other than those reasons referred to in the preceding paragraph, including those that are kept for shows, races, exhibitions, competitions or for breeding or selling these categories of birds as well as pet birds, are not considered to be *poultry*.

- c) Poultry means all domesticated birds used for the production of meat or eggs for consumption, for the production of other commercial products, or for breeding these categories of birds, as well as fighting cocks used for any purpose. All birds used for restocking supplies of game are considered poultry. If birds are kept in a single household and their products are only used in the same household, these birds are not considered poultry.

Birds that are kept in captivity for any reason other than those referred to in the preceding paragraph, including those that are kept for shows, races, exhibitions, competitions or for breeding or selling these categories of birds as well as pet birds, are not considered poultry.

- d) the incubation period at the flock level for high pathogenicity avian influenza shall be 14 days.

- 3) In accordance with Chapter 1.1., a sudden and unexpected change in the distribution, host range, or increase in incidence or virulence of, or morbidity or mortality caused by avian influenza viruses is notifiable to the OIE, as well as zoonotic avian influenza viruses. Occurrences of influenza A viruses of high pathogenicity in birds other than poultry, including wild birds, are notifiable. Six-monthly reports on the presence of avian influenza viruses in a country or zone should include low pathogenicity viruses of H5 and H7 subtypes.

A notification of infection with influenza A viruses of high pathogenicity in birds other than poultry, including wild birds, or of low pathogenicity avian influenza viruses in poultry does not affect the status of the country or zone. A Member Country should not impose bans on the trade in poultry and poultry commodities in response to such notification, or to other information on the presence of any influenza A virus in birds other than poultry, including wild birds.

For the purposes of the *Terrestrial Code*, the incubation period for avian influenza shall be 21 days.

- 5) This chapter deals not only with the occurrence of clinical signs caused by avian influenza, but also with the presence of infection with avian influenza viruses in the absence of clinical signs.
- 6) Antibodies against H5 or H7 subtype, which have been detected in poultry and are not a consequence of vaccination, should be immediately investigated. In the case of isolated serological positive results, infection with avian influenza viruses may be ruled out on the basis of a thorough epidemiological and laboratory investigation that does not demonstrate further evidence of such an infection.
- 7) For the purposes of the *Terrestrial Code*, 'avian influenza free establishment' means an establishment in which the poultry have shown no evidence of infection with avian influenza viruses, based on surveillance in accordance with Articles 10.4.27. to 10.4.33.
- 8) Infection with influenza A viruses of high pathogenicity in birds other than poultry, including wild birds, should be notified according to Article 1.1.3. However, a Member Country should not impose bans on the trade in poultry and poultry commodities in response to such a notification, or other information on the presence of any influenza A virus in birds other than poultry, including wild birds.
- 4) The use of vaccination against high pathogenicity avian influenza in poultry may be recommended under specified conditions, while not affecting the status of a free country or zone if the vaccine complies with the standards in the *Terrestrial Manual*. Vaccination is an effective complementary control tool that can be used when a stamping-out policy alone is not sufficient. The decision whether to vaccinate or not is to be made by the Veterinary Authorities based on the avian influenza situation as well as the ability of the Veterinary Services to execute the proper vaccination strategy, as described in Chapter 4.17. Any vaccine used should comply with the standards described in the *Terrestrial Manual*.

Annex 19 (contd)

59) Standards for diagnostic tests and vaccines, including pathogenicity testing, are described in the *Terrestrial Manual*. Any vaccine used should comply with the standards described in the *Terrestrial Manual*.

#### Article 10.4.1bis.

#### Safe commodities

When authorising import or transit of the following commodities, Veterinary Authorities should not require any avian influenza related conditions, regardless of the avian influenza status of the exporting country or zone:

- 1) heat-treated poultry meat in a hermetically sealed container with a F-value of 3.00 or above;
- 2) extruded dry pet food and poultry-based coated ingredients after extrusion;
- 3) rendered meat and bone meal, blood meal, feather meal, and poultry oil;
- 4) feathers and down from poultry and other birds processed by washing and steam-drying.

Other commodities of poultry and other birds can be traded safely if in accordance with the relevant articles of this chapter.

#### Article 10.4.2.

#### Determination of the avian influenza status of a country, zone or compartment

The avian influenza status of a country, a zone or a compartment can be determined on the basis of the following criteria:

- 1) avian influenza is notifiable in the whole country, an ongoing avian influenza awareness programme is in place, and all notified suspect occurrences of avian influenza are subjected to field and, where applicable, laboratory investigations;
- 2) appropriate surveillance is in place to demonstrate the presence of infection in the absence of clinical signs in poultry, and the risk posed by birds other than poultry; this may be achieved through an avian influenza surveillance programme in accordance with Articles 10.4.27. to 10.4.33.;
- 3) consideration of all epidemiological factors for avian influenza occurrence and their historical perspective.

#### Article 10.4.3.

#### Country, zone or compartment free from avian influenza

A country, zone or compartment may be considered free from avian influenza when it has been shown that infection with avian influenza viruses in poultry has not been present in the country, zone or compartment for the past 12 months, based on surveillance in accordance with Articles 10.4.27. to 10.4.33.

If infection has occurred in poultry in a previously free country, zone or compartment, avian influenza free status can be regained:

- 1) In the case of infections with high pathogenicity avian influenza viruses, three months after a stamping-out policy (including disinfection of all affected establishments) is applied, providing that surveillance in accordance with Articles 10.4.27. to 10.4.33. has been carried out during that three-month period.
- 2) In the case of infections with low pathogenicity avian influenza viruses, poultry may be kept for slaughter for human consumption subject to conditions specified in Article 10.4.19. or a stamping-out policy may be applied; in either case, three months after the disinfection of all affected establishments, providing that surveillance in accordance with Articles 10.4.27. to 10.4.33. has been carried out during that three-month period.

#### Annex 19 (contd)

#### Article 10.4.34.

#### Country, or zone or compartment free from infection with high pathogenicity avian influenza viruses in poultry

A country, or zone or compartment may be considered free from infection with high pathogenicity avian influenza viruses in poultry when:

- = infection with high pathogenicity avian influenza viruses in poultry is a notifiable disease in the entire country;
- = an ongoing avian influenza surveillance is implemented to monitor the general situation of H5 and H7 low pathogenicity avian influenza viruses in poultry and an awareness programme is in place related to biosecurity and management of H5 and H7 low pathogenicity avian influenza viruses;
- = 1) based on surveillance in accordance with Chapter 1.4. and Articles 10.4.27. to 10.4.33., it has been shown demonstrated that infection with high pathogenicity avian influenza viruses in poultry as defined in Article 10.4.1. has not been present occurred in the country, or zone or compartment for the past 12 months; Although its status with respect to low pathogenicity avian influenza viruses may be unknown; or
- = bird commodities are imported in accordance with Articles 10.4.5. to 10.4.23.

The surveillance should may need to be adapted to parts of the country or existing zones or compartment depending on historical or geographical factors, industry structure, population data, or proximity to recent outbreaks or the use of vaccination.

If infection has occurred in poultry in a previously free country, zone or compartment, the free status can be regained three months after a stamping-out policy (including disinfection of all affected establishments) is applied, providing that surveillance in accordance with Articles 10.4.27. to 10.4.33. has been carried out during that three-month period.

#### Article 10.4.3bis.

#### Compartment free from high pathogenicity avian influenza

The establishment of a compartment free from high pathogenicity avian influenza should follow the relevant requirements of this chapter and the principles in Chapters 4.3. and 4.4.

#### Article 10.4.3ter.

#### Establishment of a containment zone within a country or zone free from high pathogenicity avian influenza

In the event of outbreaks of high pathogenicity avian influenza within a previously free country or zone, a containment zone, which includes all epidemiologically linked outbreaks, may be established for the purposes of minimising the impact on the rest of the country or zone.

In addition to the requirements for the establishment of a containment zone outlined in Article 4.3.7., the surveillance programme should take into account the density of poultry production, types of poultry, local management practices (including inter-premise movement pattern of poultry, people and equipment), relevant biosecurity and presence and potential role of birds other than poultry, including wild birds and the proximity of poultry establishments to perennial and seasonal water bodies.

The free status of the areas outside the containment zone is suspended while the containment zone is being established. It may be reinstated irrespective of the provisions of Article 10.4.3quater, once the containment zone is clearly established. It should be demonstrated that commodities for international trade either have originated outside the containment zone or comply with the relevant articles of this chapter.

## Annex 19 (contd)

~~Article 10.4.3quater.~~**Recovery of free status**

If infection has occurred in poultry in a previously free country or zone, the free status can be regained after a minimum period of 28 days after a stamping-out policy has been completed, provided that surveillance in accordance with Articles 10.4.27. to 10.4.33., in particular point 3) of Article 10.4.30., has been carried out during that period and has demonstrated the absence of infection.

If a stamping-out policy is not implemented, Article 10.4.3. applies.

## Article 10.4.5.

**Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenza**

For live poultry (other than day-old poultry)

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *poultry* showed no clinical signs of avian influenza on the day of shipment;
- 2) a) the poultry were kept in originated from an avian influenza free a country, zone or compartment free from high pathogenicity avian influenza since they were hatched or for at least the past 21 days;  
  
b) the poultry originated from a flock free from infection with any H5 or H7 influenza A viruses;
- 3) the *poultry* are transported in new or appropriately sanitized containers.

If the *poultry* have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be ~~attached to mentioned in~~ mentioned in the *international veterinary certificate*.

## Article 10.4.6.

**Recommendations for the importation of live birds other than poultry**

Regardless of the ~~avian influenza~~ status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) on the day of shipment, the birds showed no clinical signs of *infection* with a virus which would be considered avian influenza in *poultry*;
- 2) the birds were kept in isolation approved by the *Veterinary Services* since they were hatched or for at least 24 28 days prior to shipment and showed no clinical signs of *infection* with a virus which would be considered avian influenza in *poultry* during the isolation period;
- 3) a statistically valid sample of the birds, selected in accordance with the provisions of Article 10.4.29., was subjected to a diagnostic test for influenza A viruses within 14 days prior to shipment, with negative results for H5 and H7 to demonstrate freedom from ~~infection with a virus which would be considered avian influenza in poultry;~~
- 4) the birds are transported in new or appropriately sanitized containers.

If the birds have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be ~~attached to mentioned in~~ mentioned in the *international veterinary certificate*.

## Annex 19 (contd)

~~Article 10.4.7.~~**~~Recommendations for importation from a country, zone or compartment free from avian influenza~~**For day-old live poultry

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *poultry* were kept in an avian influenza free country, zone or compartment since they were hatched;
- 2) the *poultry* were derived from parent flocks which had been kept in an avian influenza free country, zone or compartment for at least 21 days prior to and at the time of the collection of the eggs;
- 3) the *poultry* are transported in new or appropriately sanitized containers.

If the *poultry* or the parent flocks have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be attached to the *certificate*.

## Article 10.4.8.

**Recommendations for importation from a country, zone or compartment free from infection with high pathogenicity avian influenza viruses in poultry**For day-old live poultry

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *poultry* were kept in a country, zone or compartment free from ~~infection with~~ high pathogenicity avian influenza since they were hatched;
- 2) a) the poultry were derived from parent flocks free from infection with any H5 or H7 influenza A viruses which had been kept in an avian influenza free establishment for at least 21 days prior to and at the time of the collection of the eggs from which the day-old poultry hatched; or  
  
b) the day-old live poultry that hatched from eggs that have had their surfaces sanitized in accordance with point 4 d) of Article 6.5.5.;
- 23) the *poultry* are transported in new or appropriately sanitized containers.

If the *poultry* or the parent flocks have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be ~~attached to mentioned in~~ mentioned in the *international veterinary certificate*.

## Article 10.4.9.

**Recommendations for the importation of day-old live birds other than poultry**

Regardless of the ~~avian influenza~~ status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) on the day of shipment, the birds showed no clinical signs of *infection* with a virus which would be considered avian influenza in *poultry*;
- 2) the birds were hatched and kept in isolation approved by the *Veterinary Services*;
- 3) the parent flock birds were subjected to a diagnostic test for influenza A viruses at the time of the collection of the eggs, with negative results for H5 and H7 to demonstrate freedom from ~~infection with a virus which would be considered avian influenza in poultry;~~
- 4) the birds are transported in new or appropriately sanitized containers.

## Annex 19 (contd)

If the birds or parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be attached to mentioned in the international veterinary certificate.

~~Article 10.4.10.~~

~~Recommendations for importation from a country, zone or compartment free from avian influenza~~

For hatching eggs of poultry

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the eggs came from an avian influenza free country, ~~zone or compartment~~;
- 2) the eggs were derived from parent *flocks* which had been kept in an avian influenza free country, ~~zone or compartment~~ for at least 21 days prior to and at the time of the collection of the eggs;
- 3) the eggs are transported in new or appropriately sanitized packaging materials.

If the parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be attached to the *certificate*.

## Article 10.4.11.

~~Recommendations for importation from a country, zone or compartment free from infection with high pathogenicity avian influenza viruses in poultry~~

For hatching eggs of poultry

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the eggs came from a country, *zone or compartment* free from ~~infection with high pathogenicity avian influenza viruses in poultry~~;
- 2) a) the eggs were derived from parent *flocks* free from infection with any H5 or H7 influenza A viruses which had been kept in an avian influenza free establishment for at least 21 days prior to and at the time of the collection of the eggs; or
- b) the eggs have had their surfaces sanitized (in accordance with Chapter 6.5. point 4 d) of Article 6.5.5.);
- 3) the eggs are transported in new or appropriately sanitized packaging materials.

If the parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be attached to mentioned in the international veterinary certificate.

## Article 10.4.12.

~~Recommendations for the importation of hatching eggs from birds other than poultry~~

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) a statistically valid sample of birds from the parent *flock* birds were was subjected to a diagnostic test for influenza A viruses seven 14 days prior to and at the time of the collection of the eggs, with negative results for H5 and H7 to demonstrate freedom from *infection* with a virus which would be considered avian influenza in poultry;
- 2) the eggs have had their surfaces sanitized (in accordance with point 4 d) of Article 6.5.5, Chapter 6.5.;

## Annex 19 (contd)

- 3) the eggs are transported in new or appropriately sanitized packaging materials.

If the parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of vaccination should be attached to mentioned in the international veterinary certificate.

~~Article 10.4.13.~~

~~Recommendations for importation from a country, zone or compartment free from avian influenza~~

For eggs for human consumption

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the eggs were produced and packed in an avian influenza free country, ~~zone or compartment~~;
- 2) the eggs are transported in new or appropriately sanitized packaging materials.

## Article 10.4.14.

~~Recommendations for importation from a country, zone or compartment free from infection with high pathogenicity avian influenza viruses in poultry~~

For eggs for human consumption

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the eggs were produced and packed in a country, *zone or compartment* free from ~~infection with high pathogenicity avian influenza viruses in poultry~~;
- 2) the eggs have had their surfaces sanitized (in accordance with Chapter 6.5.);
- 3) the eggs are transported in new or appropriately sanitized packaging materials.

## Article 10.4.15.

~~Recommendations for importation of egg products of poultry~~

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *commodity* is derived from eggs which meet the requirements of Articles 40.4.13. or 10.4.14. or
- 2) the *commodity* has been processed to ensure the ~~destruction~~ inactivation of high pathogenicity avian influenza virus in accordance with Article 10.4.25.;

AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza virus.

~~Article 10.4.16.~~

~~Recommendations for importation from a country, zone or compartment free from avian influenza~~

For poultry semen

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the donor poultry:

Annex 19 (contd)

- 1) ~~showed no clinical sign of avian influenza on the day of semen collection;~~
- 2) ~~were kept in an avian influenza-free country, zone or compartment for at least 21 days prior to and at the time of semen collection.~~

## Article 10.4.17.

**Recommendations for the importation from a country, zone or compartment free from ~~infection with high pathogenicity avian influenza viruses in poultry~~**

For poultry semen

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the donor *poultry*:

- 1) showed no clinical signs of ~~infection with high pathogenicity avian influenza viruses in poultry~~ on the day of semen collection;
- 2) were kept in a country, *zone or compartment* free from ~~infection with high pathogenicity avian influenza viruses in poultry~~ for at least 21 days prior to and at the time of semen collection.

## Article 10.4.18.

**Recommendations for the importation of semen of birds other than poultry**

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the donor birds:

- 1) were kept in isolation approved by the *Veterinary Services* for at least 24 ~~28~~ days prior to semen collection;
- 2) showed no clinical signs of *infection* with a virus which would be considered avian influenza in *poultry* during the isolation period;
- 3) were tested within 14 days prior to semen collection and shown to be free from *infection* with a virus which would be considered avian influenza in *poultry*.

## Article 10.4.19.

**Recommendations for importation from a country, zone or compartment ~~free from avian influenza or free from infection with high pathogenicity avian influenza viruses in poultry~~**

For fresh meat of poultry

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *fresh meat* comes from *poultry*:

- 1) ~~which have been kept in~~ originated from a country, *zone or compartment* free from ~~infection with high pathogenicity avian influenza viruses in poultry since they were hatched or for at least the past 21 days;~~
- 2) which have been slaughtered in an approved *abattoir* in a country, *zone or compartment* free from ~~infection with high pathogenicity avian influenza viruses in poultry~~ and have been subjected to ante- and post-mortem inspections in accordance with Chapter 6.3. and ~~have been found free of any signs suggestive of avian influenza with favorable results.~~

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## Article 10.4.20.

**Recommendations for the importation of meat products of poultry**

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *commodity* is derived from *fresh meat* which meets the requirements of Article 10.4.19.; or
- 2) the *commodity* has been processed to ensure the ~~destruction~~ inactivation of high pathogenicity avian influenza virus in accordance with Article 10.4.26.;

## AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza virus.

Article 10.4.21.

**Recommendations for the importation of poultry products not listed in Article 10.4.1bis and intended for use in animal feeding, or for agricultural or industrial use**

Regardless of the status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) these commodities were processed in a country, *zone or compartment* free from high pathogenicity avian influenza and from *poultry* which originated in a country, *zone or compartment* free from high pathogenicity avian influenza; or
- 2) these commodities have been processed to ensure the inactivation of high pathogenicity avian influenza virus using:
  - a) moist heat treatment for 30 minutes at 56 °C; or
  - b) heat treatment where the internal temperature throughout the product reaches at least 74 °C; or
  - c) any equivalent treatment that has been demonstrated to inactivate avian influenza virus;

AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza virus.

Article 10.4.21.

**Recommendations for the importation of products of poultry origin, other than feather meal and poultry meal, intended for use in animal feeding, or for agricultural or industrial use**

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) ~~these commodities were processed in an avian influenza-free country, *zone or compartment* from *poultry* which were kept in an avian influenza-free country, *zone or compartment* from the time they were hatched until the time of slaughter or for at least the 21 days preceding slaughter; or~~
- 2) ~~these commodities have been processed to ensure the destruction of avian influenza virus using:~~
  - a) ~~moist heat treatment for 30 minutes at 56°C; or~~

- b) any equivalent treatment which has been demonstrated to inactivate avian influenza virus;

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AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of avian influenza virus.

Article 10.4.22.

**Recommendations for the importation of feathers and down of poultry not listed in Article 10.4.1bis.**

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) these *commodities* originated from *poultry* as described in Article 10.4.19. and were processed in an avian influenza-free a country, zone or compartment free from high pathogenicity avian influenza; or
- 2) these *commodities* have been processed to ensure the inactivation of high pathogenicity avian influenza virus using one of the following:
  - a) washed and steam dried at 100°C for 30 minutes;
  - b) fumigation with formalin (10% formaldehyde) for 8 hours;
  - ~~b~~e) irradiation with a dose of 20 kGy;
  - ~~c~~d) any equivalent treatment which has been demonstrated to inactivate avian influenza virus;

AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza virus.

Article 10.4.23.

**Recommendations for the importation of feathers and down of birds other than poultry**

Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) these *commodities* have been processed to ensure the ~~destruction~~ inactivation of any virus which would be considered high pathogenicity avian influenza in *poultry* using one of the following:
  - a) washed and steam dried at 100°C for 30 minutes;
  - b) fumigation with formalin (10% formaldehyde) for 8 hours;
  - ~~b~~e) irradiation with a dose of 20 kGy;
  - ~~c~~d) any equivalent treatment which has been demonstrated to inactivate avian influenza virus;
- 2) the necessary precautions were taken to avoid contact of the *commodity* with any source of viruses which would be considered high pathogenicity avian influenza in *poultry*.

~~Article 10.4.24.~~

~~Recommendations for the importation of feather meal and poultry meal~~

~~Regardless of the avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:~~

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- 4) ~~these *commodities* were processed in an avian influenza-free country, zone or compartment from poultry which were kept in an avian influenza-free country, zone or compartment from the time they were hatched until the time of slaughter or for at least the 21 days preceding slaughter; or~~
- 2) ~~these *commodities* have been processed either:~~
  - a) with moist heat at a minimum temperature of 118°C for minimum of 40 minutes; or
  - b) with a continuous hydrolysing process under at least 3.79 bar of pressure with steam at a minimum temperature of 122°C for a minimum of 15 minutes; or
  - c) with an alternative rendering process that ensures that the internal temperature throughout the product reaches at least 74°C;

AND

- 3) ~~the necessary precautions were taken to avoid contact of the *commodity* with any source of avian influenza viruses.~~

Article 10.4.25.

**Procedures for the inactivation of high pathogenicity avian influenza viruses in eggs and egg products**

The following times for industry standard temperatures are suitable for the inactivation of high pathogenicity avian influenza viruses present in eggs and egg products:

	Core temperature (°C)	Time
Whole egg	60	188 seconds
Whole egg blends	60	188 seconds
Whole egg blends	61.1	94 seconds
Liquid egg white	55.6	870 seconds
Liquid egg white	56.7	232 seconds
Plain or pure egg yolk	60	288 seconds
10% salted yolk	62.2	138 seconds
Dried egg white	67	20 hours
Dried egg white	54.4	50.4 hours
Dried egg white	51.7	73.2 hours

The listed temperatures are indicative of a range that achieves a 7-log kill of avian influenza virus. These are listed as examples in a variety of egg products, but when scientifically documented, variances from these times and temperatures and for additional egg products may also be suitable when they achieve equivalent inactivation of the virus.

Article 10.4.26.

**Procedures for the inactivation of high pathogenicity avian influenza viruses in meat**



The following times for industry standard temperatures are suitable for the inactivation of high pathogenicity avian influenza viruses.

	Core temperature (°C)	Time
Poultry meat	60.0	507 seconds
	65.0	42 seconds
	70.0	3.5 seconds
	73.9	0.51 second

The listed temperatures are indicative of a range that achieves a 7-log kill. Where scientifically documented, variances from these times and temperatures may also be suitable when they achieve the inactivation of the virus.

Article 10.4.26bis.

Procedures for the inactivation of high pathogenicity avian influenza viruses in scientific specimens and skins and trophies

For the inactivation of high pathogenicity avian influenza virus in scientific specimens and skins and trophies, one of the following procedures should be used:

- 1) boiling in water for an appropriate time so as to ensure that any matter other than bone, claws or beaks is removed; or
- 2) soaking, with agitation, in a 4% (w/v) solution of washing soda (sodium carbonate- $\text{Na}_2\text{CO}_3$ ) maintained at pH 11.5 or above for at least 48 hours; or
- 3) soaking, with agitation, in a formic acid solution (100 kg salt [NaCl] and 12 kg formic acid per 1,000 litres water) maintained below pH 3.0 for at least 48 hours; wetting and dressing agents may be added; or
- 4) in the case of raw hides, treating for at least 28 days with salt (NaCl) containing 2% washing soda (sodium carbonate- $\text{Na}_2\text{CO}_3$ ); or
- 5) treatment with 1% formalin for a minimum of six days;
- 6) any equivalent treatment which has been demonstrated to inactivate the virus.

Article 10.4.27.

**Introduction to surveillance of high pathogenicity avian influenza**

Articles 10.4.27. to 10.4.33. define the principles and provide a guide on the *surveillance* for avian influenza complementary to Chapter 1.4., applicable to Member Countries seeking to determine their high pathogenicity avian influenza status. Surveillance is also necessary to support vaccination programmes, to monitor general situation of H5 and H7 low pathogenicity avian influenza viruses in poultry and for monitoring avian influenza in wild birds. This may be for the entire country, *zone* or *compartment*. Guidance for Member Countries seeking free status following an *outbreak* and for the maintenance of avian influenza status is also provided.

The presence of influenza A viruses in *wild birds* creates a particular problem. In essence, no Member Country can declare itself free from influenza A in *wild birds*. However, the definition of avian influenza in this chapter refers to the *infection in poultry* only, and Articles 10.4.27. to 10.4.33. were developed under this definition.

The impact and epidemiology of avian influenza differ widely in different regions of the world and therefore it is impossible to provide specific detailed recommendations for all situations. Surveillance strategies employed for demonstrating freedom from avian influenza at an acceptable level of confidence should be adapted to the local situation. Variables such as the frequency of contacts of *poultry* with *wild birds*, different biosecurity levels and production systems and the commingling of different susceptible species including domestic waterfowl require specific *surveillance* strategies to address each specific situation. It is incumbent upon the Member Country to provide scientific data that explains the epidemiology of avian influenza in the region concerned and also demonstrates how all the risk factors are managed. There is therefore considerable latitude available to Member Countries to provide a well-reasoned argument to prove that absence of infection with avian influenza viruses is assured at an acceptable level of confidence. Surveillance of H5 and H7 low pathogenicity avian influenza viruses in poultry is relevant as they might mutate into high pathogenicity viruses. There is currently no scientific evidence

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to predict if and when mutation might occur. Outbreaks of low pathogenicity viruses can be managed at establishment level, however spread to other poultry establishments increases the risk of virus mutation, in particular if it is not detected and managed. Therefore, a surveillance system should be in place to detect clusters of infected poultry establishments where H5 and H7 low pathogenicity viruses spread between poultry establishments.

Surveillance for avian influenza should be in the form of a continuing programme designed to establish that the country, zone or compartment, for which application is made, is free from infection with avian influenza viruses.

In cases where potential public health implications are suspected, reporting to the appropriate public health authorities is essential.

Article 10.4.28.

**General conditions and methods for surveillance** ~~Surveillance for early warning of high pathogenicity avian influenza~~

- 1) Surveillance for avian influenza should be in the form of a continuing programme designed to detect the presence of infection with high pathogenicity avian influenza viruses in the country or zone in a timely manner. A surveillance system in accordance with Chapter 1.4. should be under the responsibility of the Veterinary Authority. In particular:
  - a) ~~a formal and ongoing system for detecting and investigating outbreaks of disease or infection with avian influenza viruses should be in place;~~
  - b) ~~a procedure should be in place for the rapid collection and transport of samples from suspect cases of avian influenza to a laboratory for avian influenza diagnosis;~~
  - c) ~~a system for recording, managing and analysing diagnostic and surveillance data should be in place.~~
- 2) The high pathogenicity avian influenza surveillance programme should:
  - a) include an early warning system in accordance with Article 1.4.5, throughout the production, marketing and processing chain for reporting suspicious suspected cases. Farmers and workers, who have day-to-day contact with *poultry*, as well as diagnosticians, should report promptly any suspicion of high pathogenicity avian influenza to the *Veterinary Authority*. They should be supported directly or indirectly (e.g. through private veterinarians or veterinary para-professionals) by government information programmes and the *Veterinary Authority*. All suspected cases of high pathogenicity avian influenza should be investigated immediately. As suspicion cannot always be resolved by epidemiological and clinical investigation alone, samples should be taken and submitted to a *laboratory* for appropriate tests. This requires that sampling kits and other equipment are available for those responsible for *surveillance*. Personnel responsible for *surveillance* should be able to call for assistance from a team with expertise in avian influenza diagnosis and control. In cases where potential public health implications are suspected, notification to the appropriate public health authorities is essential;
  - b) implement, when as relevant, regular and frequent clinical inspection, and or serological and virological testing of high-risk groups of *animals*, such as those adjacent to an high pathogenicity avian influenza infected country or zone, places where birds and *poultry* of different origins are mixed, such as live bird markets, *poultry* in close proximity to waterfowl or other potential sources of influenza A viruses. This activity is particularly applicable to domestic waterfowl where detection of high pathogenicity avian influenza via clinical suspicion can be of low sensitivity;
  - c) ensure that antibodies against influenza A viruses, which have been detected in poultry and are not a consequence of vaccination, be immediately investigated. In the case of isolated serological positive results, infection with high pathogenicity avian influenza viruses may be ruled out on the basis of a thorough epidemiological and laboratory investigation that does not demonstrate further evidence of such an infection.

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An effective *surveillance* system will periodically identify suspicious cases that require follow-up and investigation to confirm or exclude that the cause of the condition is influenza A viruses. The rate at which such suspicious cases are likely to occur will differ between epidemiological situations and cannot therefore be predicted reliably. Documentation for freedom from infection with avian influenza viruses should, in consequence, provide details of the occurrence of suspicious cases and how they were investigated and dealt with. This should include the results of *laboratory* testing and the control measures to which the *animals* concerned were subjected during the investigation (quarantine, movement stand-still orders, etc.).

Article 10.4.29.

**Surveillance strategies**

4. Introduction

The target population for *surveillance* aimed at identification of *disease* and *infection* should cover all the susceptible *poultry* species within the country, zone or compartment. Active and passive *surveillance* for avian influenza should be ongoing with the frequency of active *surveillance* being appropriate to the epidemiological situation in the country. *Surveillance* should be composed of random and targeted approaches using molecular, virological, serological and clinical methods.

The strategy employed may be based on randomised sampling requiring *surveillance* consistent with demonstrating the absence of infection with avian influenza viruses at an acceptable level of confidence. Random *surveillance* is conducted using serological tests. Positive serological results should be followed up with molecular or virological methods.

Targeted *surveillance* (e.g. based on the increased likelihood of infection in particular localities or species) may be an appropriate strategy. Virological and serological methods should be used concurrently to define the avian influenza status of high risk populations.

A Member Country should justify the *surveillance* strategy chosen as adequate to detect the presence of infection with avian influenza viruses in accordance with Chapter 1.4. and the prevailing epidemiological situation, including cases of high pathogenicity influenza A detected in any birds. It may, for example, be appropriate to target clinical *surveillance* at particular species likely to exhibit clear clinical signs (e.g. chickens). Similarly, virological and serological testing could be targeted to species that may not show clinical signs (e.g. ducks).

If a Member Country wishes to declare freedom from infection with avian influenza viruses in a specific zone or compartment, the design of the survey and the basis for the sampling process would need to be aimed at the population within the zone or compartment.

For random surveys, the design of the sampling strategy should incorporate epidemiologically appropriate design prevalence. The sample size selected for testing should be large enough to detect infection if it were to occur at a predetermined minimum rate. The sample size and expected *disease* prevalence determine the level of confidence in the results of the survey. The Member Country should justify the choice of design prevalence and confidence level based on the objectives of *surveillance* and the epidemiological situation, in accordance with Chapter 1.4. Selection of the design prevalence in particular should be clearly based on the prevailing or historical epidemiological situation.

Irrespective of the survey approach selected, the sensitivity and specificity of the diagnostic tests employed are key factors in the design, sample size determination and interpretation of the results obtained. Ideally, the sensitivity and specificity of the tests used should be validated for the vaccination and infection history and the different species in the target population.

Irrespective of the testing system employed, *surveillance* system design should anticipate the occurrence of false positive reactions. If the characteristics of the testing system are known, the rate at which these false positives are likely to occur can be calculated in advance. There should be an effective procedure for following up positives to ultimately determine with a high level of confidence, whether they are indicative of infection or not. This should involve both supplementary tests and follow-up investigation to collect diagnostic material from the original sampling unit as well as flocks which may be epidemiologically linked to it.

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The principles involved in *surveillance for disease and infection* are technically well defined. The design of *surveillance* programmes to prove the absence of *infection* with, or circulation of, avian influenza viruses should be carefully followed to avoid producing results that are either insufficiently reliable, or excessively costly and logistically complicated. The design of any *surveillance* programme, therefore, requires inputs from professionals competent and experienced in this field.

2. Clinical surveillance

Clinical *surveillance* aims at the detection of clinical signs of avian influenza at the *flock* level. Whereas significant emphasis is placed on the diagnostic value of mass serological screening, *surveillance* based on clinical inspection should not be underrated. Monitoring of production parameters, such as increased mortality, reduced feed and water consumption, presence of clinical signs of a respiratory disease or a drop in egg production, is important for the early detection of *infection* with avian influenza viruses. In some cases, the only indication of *infection* with low pathogenicity avian influenza virus may be a drop in feed consumption or egg production.

Clinical *surveillance* and laboratory testing should always be applied in series to clarify the status of avian influenza suspects detected by either of these complementary diagnostic approaches. Laboratory testing may confirm clinical suspicion, while clinical *surveillance* may contribute to confirmation of positive serology. Any sampling unit within which suspicious animals are detected should have restrictions imposed upon it until avian influenza *infection* is ruled out.

Identification of suspect *flocks* is vital to the identification of sources of avian influenza viruses and to enable the molecular, antigenic and other biological characteristics of the virus to be determined. It is essential that avian influenza virus isolates are sent regularly to the regional Reference Laboratory for genetic and antigenic characterisation.

3. Virological surveillance

Virological *surveillance* should be conducted:

- a) to monitor at risk populations;
- b) to confirm clinically suspect cases;
- c) to follow up positive serological results;
- d) to test 'normal' daily mortality, to ensure early detection of *infection* in the face of vaccination or in establishments epidemiologically linked to an outbreak.

4. Serological surveillance

Serological *surveillance* aims at the detection of antibodies against avian influenza virus. Positive avian influenza viruses antibody test results can have four possible causes:

- a) natural *infection* with avian influenza viruses;
- b) vaccination against avian influenza;
- c) maternal antibodies derived from a vaccinated or infected parent *flock* are usually found in the yolk and can persist in progeny for up to four weeks;
- d) lack of specificity of the test.

It may be possible to use serum collected for other survey purposes for avian influenza *surveillance*. However, the principles of survey design described in these recommendations and the requirement for a statistically valid survey for the presence of avian influenza viruses should not be compromised.

The discovery of clusters of seropositive *flocks* may reflect any of a series of events, including but not limited to the demographics of the population sampled, vaccinal exposure or *infection*. As clustering may signal *infection*, the investigation of all instances should be incorporated in the survey design. Clustering of positive *flocks* is always epidemiologically significant and therefore should be investigated.

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If vaccination cannot be excluded as the cause of positive serological reactions, diagnostic methods to differentiate antibodies due to *infection* or *vaccination* should be employed.

The results of random or targeted serological surveys are important in providing reliable evidence that no *infection* with avian influenza viruses is present in a country, *zone* or *compartment*. It is therefore essential that the survey be thoroughly documented.

5. Virological and serological surveillance in vaccinated populations

The *surveillance* strategy is dependent on the type of vaccine used. The protection against influenza A virus is haemagglutinin subtype specific. Therefore, two broad vaccination strategies exist: 1) inactivated whole viruses, and 2) haemagglutinin expression based vaccines.

In the case of vaccinated populations, the *surveillance* strategy should be based on virological or serological methods and clinical *surveillance*. It may be appropriate to use sentinel birds for this purpose. These birds should be unvaccinated, virus antibody free birds and clearly and permanently identified. Sentinel birds should be used only if no appropriate laboratory procedures are available. The interpretation of serological results in the presence of vaccination is described in Article 10.4.33.

Article 10.4.30.

~~Surveillance for demonstrating Documentation of freedom from avian influenza or freedom from infection with high pathogenicity avian influenza viruses in poultry~~

1. Additional surveillance requirements for Member Countries declaring freedom of the country, zone or compartment from avian influenza or from infection with high pathogenicity avian influenza viruses in poultry

In addition to the general conditions described in above mentioned articles, a A Member Country declaring freedom of the entire country, or a *zone* or a *compartment* from avian influenza or from *infection* with high pathogenicity avian influenza viruses in *poultry* should provide evidence for the existence of an effective *surveillance* programme.

The strategy and design of the *surveillance* programme depend on the prevailing epidemiological circumstances and should be planned and implemented according to general conditions and methods described in this chapter and in Article 1.4.6, to demonstrate absence of *infection* with avian influenza viruses or with high pathogenicity avian influenza viruses, during the preceding 12 months in susceptible *poultry* populations (vaccinated and non-vaccinated). This requires the availability of demographic data on the *poultry* population and the support of a laboratory able to undertake identification of *infection* with avian influenza viruses through virus detection and antibody tests. This *surveillance* may be targeted to *poultry* population at specific risks linked to the types of production, possible direct or indirect contact with *wild* birds, multi-age *flocks*, local trade patterns including live bird markets, use of possibly contaminated surface water, and the presence of more than one species on the holding *establishment* and poor biosecurity measures in place. It should include the monitoring of high pathogenicity avian influenza virus in *wild* birds and of H5 and H7 low pathogenicity avian influenza virus in *poultry*, in order to adapt the biosecurity and possible control measures.

Documentation for freedom from *infection* with high pathogenicity avian influenza should provide details of the *poultry* population, the occurrence of suspected cases and how they were investigated and dealt with. This should include the results of laboratory testing and the biosecurity and control measures to which the animals concerned were subjected during the investigation.

2. Additional requirements for countries, zones or compartments that practice vaccination

Vaccination to prevent the transmission of high pathogenicity avian influenza virus may be part of a disease control programme. The level of *flock* immunity required to prevent transmission depends on the *flock* size, composition (e.g. species) and density of the susceptible *poultry* population. It is therefore impossible to be prescriptive. Based on the epidemiology of avian influenza in the country, *zone* or *compartment*, it may be that a decision is reached to vaccinate only certain species or other *poultry* subpopulations.

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In all vaccinated *flocks* there is a need to perform virological and serological tests to ensure the absence of virus circulation. The use of sentinel *poultry* may provide further confidence of the absence of virus circulation. The tests have to be repeated at least every six months or at shorter intervals according to the risk in the country, *zone* or *compartment*.

Evidence to show the effectiveness of the *vaccination* programme should also be provided.

Member Countries seeking the demonstration of freedom from high pathogenicity avian influenza in vaccinated population should refer to Chapter 2.3.4. paragraph C 4 of the *Terrestrial Manual*.

3. Additional requirements for recovery of free status

In addition to the conditions described in the point above, a Member Country declaring that it has regained country, *zone* or *compartment* freedom after an *outbreak* of high pathogenicity avian influenza in *poultry* should show evidence of an active *surveillance* programme depending on the epidemiological circumstances of the *outbreak* to demonstrate the absence of the *infection*. This will require *surveillance* incorporating virus detection and antibody tests. The use of sentinel birds may facilitate the interpretation of *surveillance* results. The Member Country should report the results of an active *surveillance* programme in which the susceptible *poultry* population undergoes regular clinical examination and active *surveillance* planned and implemented according to the general conditions and methods described in these recommendations. The *surveillance* samples should be representative of *poultry* populations at risk.

Populations under this *surveillance* programme should include:

- 1) *establishments* in the proximity of the *outbreaks*;
- 2) *establishments* epidemiologically linked to the *outbreaks*;
- 3) *animals* moved from or used to re-populate affected *establishments*;
- 4) *any establishments* where contiguous culling has been carried out;

Article 10.4.30bis.Surveillance of wild bird populations

The presence of high pathogenicity avian influenza viruses in *wild birds* creates a particular problem. In essence, no Member Country can declare itself free from influenza A viruses in *wild birds*. However, the definition of high pathogenicity avian influenza in this chapter refers to the *infection* in *poultry* only, and Articles 10.4.27, to 10.4.33, were developed under this definition.

Passive *surveillance* (i.e. sampling of birds found dead) is an appropriate method of *surveillance* in *wild birds* as *infection* with high pathogenicity avian influenza is usually associated with mortality. Mortality events, or clusters of birds found dead should be reported to the local *Veterinary Authorities* and investigated.

Active *surveillance* in *wild birds* usually has lower sensitivity for detection of high pathogenicity avian influenza, but may be necessary for detection of some strains of high pathogenicity avian influenza virus that produce *infection* without mortality in *wild birds*.

*Surveillance* in *wild birds* should be targeted towards species, locations and times of year in which *infection* is more likely.

*Surveillance* in *wild birds* should be enhanced by awareness raising and active searching and monitoring for dead or moribund *wild birds* when high pathogenicity avian influenza has been detected in the region. The movements of migratory water birds, in particular ducks, geese and swans, should be taken into account as a potential pathway for introduction of virus to uninfected areas.

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Article 10.4.30ter.Monitoring of H5 and H7 low pathogenicity avian influenza in poultry populations

*Monitoring* the presence of H5 and H7 low pathogenicity avian influenza viruses can be achieved through the combination of clinical investigations where *infection* is suspected through changes in production indicators such as reductions in egg production or feed and water intake and active serological and virological *surveillance*.

Serological *monitoring* should aim at detecting clusters of infected *flocks* to identify spread between *establishments*. Epidemiological follow-up (tracing forward and back) of serologically positive *flocks* should be carried out to determine if there is clustering of infected *flocks* regardless of whether the seropositive birds are still present on the *establishment* or whether active virus *infection* has been detected.

Article 10.4.31.

~~Additional surveillance requirements for countries, zones or compartments declaring that they have regained freedom from avian influenza or from infection with high pathogenicity avian influenza viruses in poultry following an outbreak~~

~~In addition to the general conditions described in the above-mentioned articles, a Member Country declaring that it has regained country, zone or compartment freedom from avian influenza or from infection with high pathogenicity avian influenza viruses in poultry should show evidence of an active surveillance programme depending on the epidemiological circumstances of the outbreak to demonstrate the absence of the infection. This will require surveillance incorporating virus detection and antibody tests. The use of sentinel birds may facilitate the interpretation of surveillance results.~~

~~A Member Country declaring freedom of country, zone or compartment after an outbreak of avian influenza should report the results of an active surveillance programme in which the susceptible poultry population undergoes regular clinical examination and active surveillance planned and implemented according to the general conditions and methods described in these recommendations. The surveillance should at least give the confidence that can be given by a randomised representative sample of the populations at risk.~~

Article 10.4.32.Additional surveillance requirements for the avian influenza free establishments

The declaration of avian influenza free *establishments* requires the demonstration of absence of *infection* with avian influenza viruses. Birds in these *establishments* should be randomly tested using virus detection or isolation tests, and serological methods, following the general conditions of these recommendations. The frequency of testing should be based on the risk of *infection* and at a maximum interval of 24 28 days.

Article 10.4.33.The use and interpretation of serological and virus detection tests

*Poultry* infected with avian influenza virus produce antibodies against haemagglutinin (HA), neuraminidase (NA), nonstructural proteins (NSPs), nucleoprotein/matrix (NP/M) and the polymerase complex proteins. Detection of antibodies against the polymerase complex proteins is not covered in this chapter. Tests for NP/M antibodies include direct and blocking ELISA, and agar gel immunodiffusion (AGID) tests. Tests for antibodies against NA include the neuraminidase inhibition (NI), indirect fluorescent antibody and direct and blocking ELISA tests. For the HA, antibodies are detected in haemagglutination inhibition (HI), ELISA and neutralisation (SN) tests. The HI test is reliable in avian species but not in mammals. The SN test can be used to detect subtype specific antibodies against the haemagglutinin and is the preferred test for mammals and some avian species. The AGID test is reliable for detection of NP/M antibodies in chickens and turkeys, but not in other avian species. As an alternative, blocking ELISA tests have been developed to detect NP/M antibodies in all avian species.

The HI and NI tests can be used to subtype influenza A viruses into 16 haemagglutinin and 9 neuraminidase subtypes. Such information is helpful for epidemiological investigations and in categorization of influenza A viruses.

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*Poultry* can be vaccinated with a variety of influenza A vaccines including inactivated whole virus vaccines, and haemagglutinin expression-based vaccines. Antibodies against the haemagglutinin confer subtype specific protection. Various strategies can be used to differentiate vaccinated from infected birds including serosurveillance in unvaccinated sentinel birds or specific serological tests in the vaccinated birds.

Influenza A virus infection of unvaccinated birds including sentinels is detected by antibodies against the NP/M, subtype specific HA or NA proteins, or NSP. *Poultry* vaccinated with inactivated whole virus vaccines containing a virus of the same H sub-type but with a different neuraminidase may be tested for field exposure by applying serological tests directed to the detection of antibodies against the NA of the field virus. For example, birds vaccinated with H7N3 in the face of a H7N1 epidemic may be differentiated from infected birds (DIVA) by detection of subtype specific NA antibodies of the N1 protein of the field virus. Alternatively, in the absence of DIVA, inactivated vaccines may induce low titres of antibodies against NSP and the titre in infected birds would be markedly higher. Encouraging results have been obtained experimentally with this system, but it has not yet been validated in the field. In *poultry* vaccinated with haemagglutinin expression-based vaccines, antibodies are detected against the specific HA, but not any of the other viral proteins. Infection is evident by antibodies against the NP/M or NSP, or the specific NA protein of the field virus.

All flocks with seropositive results should be investigated. Epidemiological and supplementary laboratory investigation results should document the status of avian influenza infection for each positive flock.

A confirmatory test should have a higher specificity than the screening test and sensitivity at least equivalent than that of the screening test.

Information should be provided on the performance characteristics and validation of tests used.

#### 1. Procedure in case of positive test results if vaccination is used

In case of vaccinated populations, one has to exclude the likelihood that positive test results are indicative of virus circulation. To this end, the following procedure should be followed in the investigation of positive serological test results derived from surveillance conducted on vaccinated *poultry*. The investigation should examine all evidence that might confirm or refute the hypothesis that the positive results to the serological tests employed in the initial survey were not due to virus circulation. All the epidemiological information should be substantiated, and the results should be collated in the final report.

Knowledge of the type of vaccine used is crucial in developing a serological-based strategy to differentiate infected from vaccinated animals.

- a) Inactivated whole virus vaccines can use either homologous or heterologous neuraminidase subtypes between the vaccine and field strains. If *poultry* in the population have antibodies against NP/M and were vaccinated with inactivated whole virus vaccine, the following strategies should be applied:
  - i) sentinel birds should remain NP/M antibody negative. If positive for NP/M antibodies, indicating influenza A virus infection, specific HI tests should be performed to identify H5 or H7 virus infection;
  - ii) if vaccinated with inactivated whole virus vaccine containing homologous NA to field virus, the presence of antibodies against NSP could be indicative of infection. Sampling should be initiated to exclude the presence of avian influenza virus by either virus isolation or detection of virus specific genomic material or proteins;
  - iii) if vaccinated with inactivated whole virus vaccine containing heterologous NA to field virus, presence of antibodies against the field virus NA or NSP would be indicative of infection. Sampling should be initiated to exclude the presence of avian influenza virus by either virus isolation or detection of virus specific genomic material or proteins.
- b) Haemagglutinin expression-based vaccines contain the HA protein or gene homologous to the HA of the field virus. Sentinel birds as described above can be used to detect avian influenza infection. In vaccinated or sentinel birds, the presence of antibodies against NP/M, NSP or field virus NA is indicative of infection. Sampling should be initiated to exclude the presence of avian influenza virus by either virus isolation or detection of virus specific genomic material or proteins.

#### 2. Procedure in case of test results indicative of infection with avian influenza viruses

The detection of antibodies indicative of an infection with avian influenza virus in unvaccinated *poultry* should result in the initiation of epidemiological and virological investigations to determine if the infections are due to low and high pathogenicity viruses.

Virological testing should be initiated in all antibody-positive and at risk populations. The samples should be evaluated for the presence of avian influenza virus, by virus isolation and identification, or detection of influenza A specific proteins or nucleic acids (Figure 2). Virus isolation is the gold standard for detecting infection by avian influenza virus. All influenza A virus isolates should be tested to determine HA and NA subtypes, and *in vivo* tested in chickens or sequencing of HA proteolytic cleavage site of H5 and H7 subtypes for determination of classification as high or low pathogenicity avian influenza viruses or other influenza A viruses. As an alternative, nucleic acid detection tests have been developed and validated; these tests have the sensitivity of virus isolation, but with the advantage of providing results within a few hours. Samples with detection of H5 and H7 HA subtypes by nucleic acid detection methods should either be submitted for virus isolation, identification, and *in vivo* testing in chickens, or sequencing of nucleic acids for determination of proteolytic cleavage site as high or low pathogenicity avian influenza viruses. The use of antigen detection systems, because of low sensitivity, should be limited to screening clinical field cases for infection by influenza A virus looking for NP/M proteins. NP/M positive samples should be submitted for virus isolation, identification and pathogenicity determination.

Laboratory results should be examined in the context of the epidemiological situation. Corollary information needed to complement the serological survey and assess the possibility of viral circulation includes but is not limited to:

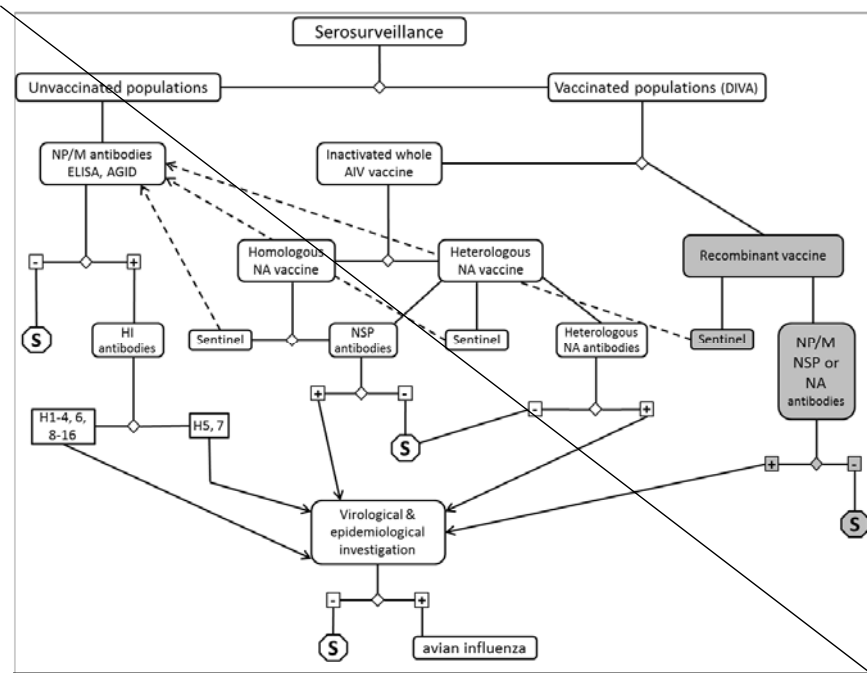
- a) characterisation of the existing production systems;
- b) results of clinical surveillance of the suspects and their cohorts;
- c) quantification of vaccinations performed on the affected sites;
- d) sanitary protocol and history of the affected establishments;
- e) control of animal identification and movements;
- f) other parameters of regional significance in historic avian influenza virus transmission.

The entire investigative process should be documented as standard operating procedure within the epidemiological surveillance programme.

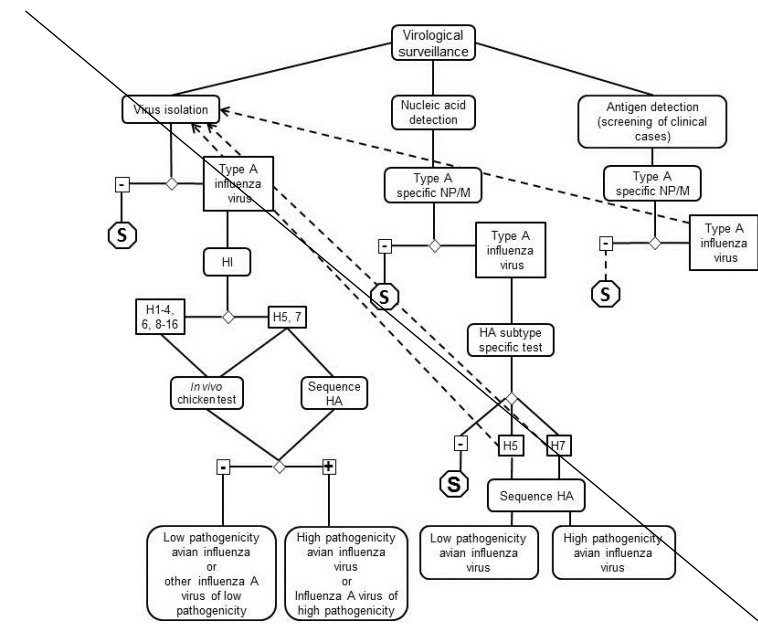
Figures 1 and 2 indicate the tests which are recommended for use in the investigation of *poultry* flocks.

Key abbreviations and acronyms:	
AGID	Agar gel-immunodiffusion
DIVA	Differentiating infected from vaccinated animals
ELISA	Enzyme-linked immunosorbent assay
HA	Haemagglutinin
HI	Haemagglutination inhibition
NA	Neuraminidase
NP/M	Nucleoprotein and matrix protein
NSP	Nonstructural protein
S	No evidence of avian influenza virus

**Fig. 1.** Schematic representation of laboratory tests for determining evidence of avian influenza infection through or following serological surveys



**Fig. 2.** Schematic representation of laboratory tests for determining evidence of avian influenza infection using virological methods



※本資料は参考仮訳ですので、最終的な確認は原文をご参照ください。

## 参考資料 5

## 第 8.14 章

### 狂犬病ウイルス感染症

#### 第 8.14.1 条

#### 総則

狂犬病は好神経性ウイルスである、モノネガウイルス目ラブドウイルス科のリッサウイルスを原因とする疾病であり、本病は全ての哺乳類に伝播し得る。

狂犬病ウイルスは、分類学上はリッサウイルス属の種であるが、かつては“狂犬病ウイルス遺伝子型 1”と呼ばれ、世界中世界の多くの地域で確認されている。動物及びヒトにおける狂犬病報告事例のほとんどがこのウイルスによるものである。ヒトが狂犬病ウイルスに曝露される際の最も一般的な曝露源は犬である。

他のリッサウイルスの分布は地理的にも宿主的にも限られている。多くはコウモリから分離され、公衆衛生上及び家畜衛生上の影響は限定的である。

本章は、公衆衛生及び動物衛生における狂犬病ウイルスの感染のリスクを緩和するとともに、狂犬病ウイルスの世界的な拡大を防ぐことを目的とする。

吸血コウモリや、野生の食肉目動物に由来する狂犬病のみが発生している国であっても、本病の経済的、公衆衛生的な影響を軽減するための公的管理計画を備えることを推奨する。

狂犬病の潜伏期間には、ウイルス、宿主及び感染部位によってかなりの幅があるが、感染動物の多くの場合は 6 か月以内に発症する。

ウイルス排泄期間にも幅があり、臨床症状を示す以前にウイルス排泄を開始し得る。犬、猫及びフェレットでは、臨床症状を呈する前 10 日以内にウイルスの排泄を開始し、これが死に至るまで続く。

吸血コウモリや、野生の食肉目動物に由来する狂犬病のみが発生している国であっても、本病の経済的、公衆衛生的な影響を軽減するための公的管理計画を備えることを推奨する。

本章は、ヒト及び動物における狂犬病の発生リスクを緩和するとともに、狂犬病ウイルスの世界的な拡大を防ぐことを目的とする。

本章の目的を達成するため、

1) 狂犬病は、リッサウイルス(Lyssa virus) 属の一種である狂犬病ウイルス(Rabies virus) (正式には、古典的狂犬病ウイルス遺伝子型 1) によって引き起こされる疾病である。すべての哺乳類が感染に感受性がある。

二 すべての動物における狂犬病ウイルス感染を本病の発生とする。

三 他のレゼルボア動物種から独立したイヌ群 (Canis familiaris) で保持されてきたウイルスによる感染をイヌ由来狂犬病と定義する。これは疫学調査により決定される。

四 狂犬病ウイルス感染の潜伏期間は 6 か月とする。

人の最も一般的な狂犬病ウイルス暴露源は、世界的に、犬である。その他の哺乳類、とりわけ食肉目及び翼手目の動物にもリスクがある。

本章の目的は、狂犬病の人及び動物の健康に対するリスクを軽減し、当該疾病の国際的なまん延を予防することである。

陸生コードにおいては、第 8.13.3 条の条件を満たさない国は、狂犬病に汚染されているとみなされる。

診断検査及びワクチンの基準は、陸生マニュアルに規定される。

#### 第 8.14.2 条

#### 犬における狂犬病の管理

獣医当局は、狂犬病による公衆衛生上のリスクを最小限に抑え、最終的には犬における狂犬病を撲滅するため、以下の各号を実施するものとする。

- 1) 狂犬病は、当該国全域において通報対象であるものとし、疫学的状況又は関連事象のいかなる変化も、第 1.1 章に従い報告されるものとする。
- 2) 動物における狂犬病疑似症例の調査及び報告を確保するための継続的早期発見プログラムを最低限の条件とする第 1.4 章に従う有効な疾病サーベイランスシステムが、運用されているものとする。
- 3) ワクチン接種、個体識別並びに犬、猫及びフェレットの輸入のための有効な手続等、狂犬病の予防及び管理のための特定規制措置が、陸生コードの勧告と整合して実施されるものとする。
- 4) 第 7.7 章と整合する野犬個体群の管理のためのプログラムが実施され、維持されているものとする。

#### 第 8.14.2a 条

#### 狂犬病ウイルス感染清浄国又は地域

1) 国または地域は、以下の各号の場合には、狂犬病ウイルス感染がないとみなすことができる。

a) 狂犬病ウイルス感染は、国全体において通報対象疾病であり、疫学的状況又は関連事象のいかなる変化も、第 1.1 章に従い報告されている。

b) 狂犬病を疑う臨床症状を示すすべての事例について、適切な現地調査及び実験室における検査の対象となっていること。

c) 狂犬病ウイルス感染を疑う疑似動物の調査及び報告を確保するための継続的早期発見プログラム通報システムを最低限の条件とする、第 1.4 章及び 8.14.9 条に従う有効な疾病サーベイランスシステムが、過去 2 年間 24 か月間、運用実施されている。

d) 狂犬病ウイルス感染の予防及び管理のための規制措置（動物の輸入を含む）が、8.14.4 条から 8.14.7 条を含む関連の陸生コードの勧告と整合して実施されている。

e) 過去 2 年 24 か月間、在来性の狂犬病ウイルス感染の症例が、確認されていないこと。

f) 過去 6 か月間、食肉日又は翼手日の輸入症例が、動物検疫所外では確認されていないこと。

g) 輸入症例が動物検疫所の外で確認された場合、続発例の可能性が疫学調査により除外されていること。

2) 高リスク動物への予防的ワクチン接種は、狂犬病の清浄ステータスに影響を与えない。

3) 人の狂犬病の輸入症例は、狂犬病の清浄ステータスに影響を与えない。

#### 第 8.14.2 の bis 条

#### 狂犬病ウイルス感染国又は地域

8.14.2 条の要件を満たさない国または地域は、狂犬病ウイルスに感染しているとみなす。

#### 第 8.14.2 の ter 条

#### イヌ由来狂犬病ウイルス清浄国又は地域

1) 国または地域は、以下の各号の条件を満たす場合、イヌ由来狂犬病がないとみなすことができる。

a) 国全体においてイヌ由来狂犬病が通報対象疾病とされており、疫学的状況又は関連事象のいかなる変化も、第 1.1 章に従い報告されている。

b) 狂犬病ウイルス感染を疑う動物の管理、調査及び報告を確保するための継続的早期通報システムを最低限の条件とする第 1.4 章及び 8.14.9 条に従う有効なサーベイランスシステムが過去 24 か月間実施されている。

c) 狂犬病ウイルス感染の予防及び管理のための規制措置が、第 8.14.4 条から第 8.14.7 条を含む陸生コードの勧告と整合して実施されている。

d) 過去 24 か月間、在来性のイヌ由来狂犬病ウイルス感染の症例が、確認されていないこと。

e) 第 7.7 章と整合した犬個体群管理野良犬管理プログラムが実施及び維持されている。

2) 以下の事項は狂犬病のステータスに影響を与えない。

- 予防的ワクチン接種

- 野生動物における狂犬病ウイルスの存在

- 人の狂犬病の輸入症例

#### 第 8.14.3 条

家畜及び飼育野生哺乳類における狂犬病ウイルス感染清浄国又は地域からの輸入に関する勧告

#### 家畜及び飼育野生哺乳類の輸入

獣医当局は、当該動物が以下の各号を満たす旨証明する国際動物衛生証明書の提示を義務付けるものとする。

1) 発送日の前日又は当日に狂犬病の臨床症状を呈していなかったこと。

2) 以下の各号のいずれかを満たすこと。

a) 誕生以来又は発送前少なくとも 6 か月間、清浄国又は地域で飼育されていたこと。

b) 第 8.13.65 条、第 8.13.76 条又は第 8.13.87 条又は第 8.13.9 条に規定される規則に従い輸入されたこと。

#### 第 8.14.4 条

狂犬病ウイルス感染清浄国又は地域からの野生及び野生化した哺乳類の輸入に関する勧告

#### 野生哺乳類の輸入

獣医当局は、当該動物が以下の各号を満たす旨証明する国際動物衛生証明書の提示を義務付けるものとする。

1) 発送日の前日又は当日に狂犬病の臨床症状を呈していなかったこと。

2) 以下の各号のいずれかを満たすこと。



- a) 汚染国又は地域の動物とのいかなる接触も排除する距離で捕獲されたこと。当該距離は、行動圏、長距離移動等、輸出される動物種の生物学に従い、定められるものとする。
- b) 発送前 6 ヶ月間、狂犬病ウイルス感染清浄国又は地域で監禁状態に置かれていたこと。

## 第 8.14.5 条

### 狂犬病ウイルス感染に汚染されているとみなされる清浄国又は地域からの犬、猫及びフェレットの輸入に関する勧告

獣医当局は、当該動物が以下の第 1 号及び第 2 号、並びに第 3 号及び第 4 号、又は第 5 号を満たす旨証明する、第 5.11 章の様式を遵守した国際動物衛生証明書の提示を義務付けるものとする。

- 1) 発送日の前日又は当日に狂犬病の臨床症状を呈していなかったこと。
- 2) 永続的に個体識別されており、その個体識別番号が証明書に記載されていること。
- 3) 以下の各号のいずれかを満たすこと。
  - a) 陸生マニュアルに従い製造及び使用された当該ワクチンを、ものとする。製造業者の勧告に従い、発送前の 12 ヶ月以内にワクチン接種又はワクチン再接種を受けたこと。発送日前最後のワクチン接種後 12 ヶ月以上 12 ヶ月以内の間に、陸生マニュアルに規定される抗体価検査を受けて、少なくとも 0.5IU/ml の陽性結果であったこと。
  - b) 輸出前 6 ヶ月間、動物検疫所で飼育されていたこと。

## 第 8.14.6 条

### 狂犬病ウイルス感染に汚染されているとみなされる国又は地域からのその他の食肉目及び翼手目動物感受性動物家畜の反芻動物、馬科動物、ラクダ科動物及びイヌイタ科動物の輸入に関する勧告

獣医当局は、当該動物が以下の各号を満たす旨証明する国際動物衛生証明書の提示を義務付けるものとする。

- 1) 発送日の前日又は当日に狂犬病の臨床症状を呈していなかったこと。
- 2) 永続的に個体識別されており、その個体識別番号が証明書に記載されていること。
- 2) 以下の各号のいずれかを満たすこと。
  - a) 発送前少なくとも 12 ヶ月間、狂犬病の症例がない飼育施設で、その他の感受性動物から隔離された状態で、発送前 6 ヶ月間、飼育されていたこと。

- b) 製造業者の勧告に従い、ワクチン接種又はワクチン再接種を受けたこと。当該ワクチンは、陸生マニュアルに従い製造及び使用されたものとする。
- 3) 家畜が永続的に個体識別されている場合は、その個体識別番号が証明書に記載されていること。

## 第 8.14.7 条

### 狂犬病ウイルスに汚染されているとみなされる感染国又は地域からの感受性実験動物の輸入に関する勧告

#### 生物学的に安全な施設で生まれ、肥育されたげっ歯目及びウサギ目の輸入

獣医当局は、当該動物が以下の各号を満たす旨証明する国際動物衛生証明書の提示を義務付けるものとする。

- 1) 発送日又はそれ以前に狂犬病の臨床症状を呈していなかったこと。
- 2) 発送前少なくとも 12 ヶ月間、狂犬病の症例がいなかった、第 1.1.1 条陸生マニュアルの「獣医学的診断施設の管理」に規定される生物学的に安全な施設で誕生し、以来飼育されていたこと。

## 第 8.14.8 条

### イス由来狂犬病の OIE 認定公的管理計画

本プログラムの目的は、加盟国がイス由来狂犬病の環境を漸次改善し、最終的に第 1.6 章の規定に基づく自己清浄化宣言を行うことができるようになることである。特定の対策が一部の群のみを対象としていたとしても、公的管理計画は国全体に適用されるべきである。

加盟国は、自主的な取組として、各国が本条に沿った対策を開始した際には公的管理計画の認定を申請することができる。

イス由来狂犬病の公的管理計画の OIE 認定を受ける際、加盟国は以下の取組を実施しなければならない。

- 1) 第 1.1 章の規定に沿った、定期的かつ迅速な動物疾病の報告記録があること。
- 2) イス由来狂犬病の管理を行う能力を獣医組織が持つことの証拠（関連法を含む）を文書により提出すること。この証拠には OIE の PVS 評価によりまとめられたデータを用いることができる可能性がある。
- 3) 以下の各号の内容を含む、国又は地域におけるイス由来狂犬病の管理及び最終的な撲滅のための計画の詳細を提出すること。
  - a) 取組期間

- b) 導入予定の、管理計画の効果を評価する評価指標
- c) イヌ由来狂犬病が通報疾病であること及びイヌ由来狂犬病の公的管理計画が国全体に適用されていることを示す文書
- 4) 以下の内容を記載した、国内のイヌ由来狂犬病の状況を示す文書の提出。
- a) 最新の知見、知識格差及びイヌ由来狂犬病対策の進捗に焦点を当てた、国内の疫学的状況の概要。
- b) 感染予防のための対策。
- bbis) 発生を減少させ、少なくとも1つの地域で伝播をなくすための早期摘発及び対応措置
- c) 第 7.7 章を踏まえた犬個体群野良犬管理プログラムを含むイヌの頭数の管理。
- d) 公衆衛生や野生動物及び野生化動物の担当部局などとの協力合意あるいは計画
- 5) イヌ由来狂犬病のサーベイランスが実施されていることの証拠の提出
- a) 第 1.4 章及び第 8.14.9 条を考慮したものであること。
- b) 診断能力及び手順が示されていること。これには疫学調査のための診断期間への定期的なサンプルの提出を含む。
- 6) 公的管理プログラムの一貫としてワクチン接種を実施している場合は以下を提出すること
- a) ワクチン接種が義務的に行われており、また、陸生マニュアルに沿ってワクチン製造が行われていることの証拠
- b) ワクチンキャンペーンの詳細。特に以下の項目について。
- i) 対象数
- ii) ワクチンカバー率のモニタリング
- iii) 使用ワクチンの仕様、取り締まり手続きの詳細
- 7) 危機管理計画、発生に備えた対策の提出

OIE が認定した加盟国のイヌ由来狂犬病公的管理計画は、1.6.Xbis 条に基づき、提出された証拠に沿った対策を含む。公的管理計画を維持するためのリストには、毎年、進捗状況の更新や、上記項目に関する大きな変更に係る情報が含まれる。疫学的な状況の変化その他の大きな影響を持ちうる出来事については、第 1.1 章の規定に基づき OIE に報告されなければならない。

OIE は以下の何れかの証拠があった場合は認定を取り消す可能性がある

- 計画の実施期間や計画の評価指標に関する遵法義務違反

- 獣医組織の活動に係る重大な問題

- 当該計画によって説明できず、また、収束させることのできないイヌ由来狂犬病の発生数の増加

#### 第 8.14.9 条

#### 狂犬病に汚染されているとみなされる国からの野生生物の輸入に関する報告

獣医当局は、当該動物が以下の各号を満たす旨証明する国際動物衛生証明書の提示を義務付けるものとする。

- 1) 発送日の前日又は当日に狂犬病の臨床症状を呈していなかったこと。
- 2) 感受性動物からの隔離が維持され、発送前少なくとも 12 ヶ月間、狂犬病の症例がいなかった飼育施設で、発送前 6 ヶ月間、飼育されていたこと。

#### 第 8.14.9 条

#### サーベイランスの一般規定

- 1) 加盟国は 1.4 章の規定に沿って選択されたサーベイランス戦略が、流行状況を踏まえ、感染を発見するため適切なものであることを示さなければならない。また、サーベイランスは獣医当局の責任の下で実施されなければならない。

狂犬病サーベイランスの目的において、疑い症例とは、10 日以内の死亡を伴う行動の変容又は流涎、麻痺、無気力、通常とは異なる攻撃性、通常とは異なる鳴き声の何れか1つ以上を示す感受性動物とする。

特に、加盟国は下記を実施しなければならない。

- a) 疑い事例の摘発及び調査を行うための公的な稼働中のシステム
- b) 疑い事例に由来するサンプルを迅速に採取し、診断施設に送付するための手続き
- c) 診断及びサーベイランスのデータを記録、運用及び分析するためのシステム

狂犬病サーベイランスは、狂犬病管理計画及び狂犬病ウイルス清浄国又は地域の維持の効率を示唆するデータを提供する。

- 2) 1.4 章に示す事項の他、以下の事項が狂犬病サーベイランスを実施する上で重要である。
- a) 一般の関心

獣医組織は一般市民の関心を高めるための取組を実施すべきである。この対象には、いかなる疑い事例の確認時にも迅速な通報が求められる獣医補助職、獣医師及び診断技術者も含む。

b) 臨床サーベイランス

臨床サーベイランスは狂犬病サーベイランスの重要な要素であり、疑い事例を発見する上で不可欠である。従って、その方法について定められているべきである。それは疑い事例の特定と調査のためであり、また同時に、疑いが否定できない場合の診断に必要なサンプル採取のためでもある。死亡動物(特に食肉目及びコウモリ)は、狂犬病サーベイランスにおける重要な情報元であり、臨床サーベイランスの一部とされなくてはならない。

実験室における検査は、陸生マニュアルで推奨されているサンプリング方法、サンプルの種類及び検査法に従い行うべきである。

c) サンプリング

サーベイランス(サンプリングの誤りか)は疑い事例を対象として行うべきである。一定の確率でサンプリングを行う方法は常に有用とは限らない。その例として、健康動物を対象としたサンプリングで有用なサーベイランスデータが得られることは希である。

d) 疫学調査

全ての国において、特に自己清浄宣言を検討している国又は地域にあつては、ヒト及び動物の発生事例を対象とした継続的な疫学調査と分離ウイルスの分子免疫学的分離が推奨される。このような調査により、感染経路、原因ウイルスの地理的起源及び疫学的重要性が明らかとなる。



第 8.14.10 条

他の機関との協力

獣医当局は、公衆衛生及び他の関係機関と適時協力するとともに、ヒト及び動物における曝露を管理するための意思決定過程において、情報を共有しなければならない。

すべての地域において、近隣諸国の獣医当局は、イヌ由来狂犬病の管理に協力すべきである。

## CHAPTER 8.14.

## INFECTION WITH RABIES VIRUS

## Article 8.14.1.

## General provisions

Rabies is a disease caused by neurotropic viruses of the genus *Lyssavirus* in the family *Rhabdoviridae* of the order *Mononegavirales* and is transmissible to all mammals. Members of the orders *Carnivora* and *Chiroptera* are considered to be the main reservoir hosts.

Rabies virus, the taxonomic prototype species in the *Lyssavirus* genus, formerly referred to as 'classical rabies virus, genotype-1', is found worldwide in most parts of the world, and is responsible for the vast majority of reported animal and human rabies cases. The most common source of exposure of humans to rabies virus is the dog.

Other *Lyssavirus* species have more restricted geographical and host range, with the majority having been isolated from bats, with limited public and animal health implications.

The aim of this chapter is to mitigate the risk of infection with rabies virus to the public and animal health and to prevent the international spread of rabies virus.

Official control programmes to reduce the economic and public health burden of rabies are recommended, even in those countries where only haematophagous bat-mediated rabies or wild carnivore-mediated rabies are present.

The incubation period for rabies is highly variable depending on viruses, hosts and sites of entry, and the majority of cases infected animals will develop disease within six months of exposure.

The infective period for rabies virus is variable and can start before the onset of clinical signs. In dogs, cats and ferrets virus shedding can start up to 10 days before the onset of the first clinical signs and through last until death.

Official control programmes to reduce the economic and public health burden of the disease are recommended even in those countries where only haematophagous bat mediated rabies or wild carnivore mediated rabies are present.

The aim of this chapter is to mitigate the risk of rabies to human and animal health and to prevent the international spread of rabies virus.

For the purposes of the *Terrestrial Code*:

- 1) rabies is a disease caused by one member of the *Lyssavirus* genus: the *Rabies virus* (formerly referred to as classical rabies virus, genotype-1); all mammals are susceptible to infection;
- = a case is any animal infected with the rabies virus species;
- = dog-mediated rabies is defined as any infection with case caused by rabies virus maintained in the dog population (*Canis familiaris*) independently of other animal reservoir species, as determined by epidemiological studies;
- = the incubation period of infection with rabies virus shall be six months.

Globally, the most common source of exposure of humans to rabies virus is the dog. Other mammals, particularly members of the Orders *Carnivora* and *Chiroptera*, also present a risk.

Annex 11 (contd)

The aim of this chapter is to mitigate the risk of rabies to human and animal health and to prevent the international spread of the disease.

For the purposes of the *Terrestrial Code*, a country that does not fulfil the requirements in Article 8.14.3. is considered to be infected with Rabies virus.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

## Article 8.14.2.

## Control of rabies in dogs

In order to minimise public health risks due to rabies, and eventually eradicate rabies in dogs, Veterinary Authorities should implement the following:

- 1) rabies should be notifiable in the whole country and any change in the epidemiological situation or relevant events should be reported in accordance with Chapter 1.1.;
- 2) an effective system of disease surveillance in accordance with Chapter 1.4. should be in operation, with a minimum requirement being an ongoing early detection programme to ensure investigation and reporting of suspected cases of rabies in animals;
- 3) specific regulatory measures for the prevention and control of rabies should be implemented consistent with the recommendations in the *Terrestrial Code*, including vaccination, identification and effective procedures for the importation of dogs, cats and ferrets;
- 4) a programme for the management of stray dog populations consistent with Chapter 7.7. should be implemented and maintained.

## Article 8.14.23.

## Rabies-free Country or zone free from infection with rabies virus

- 1) A country or zone may be considered free from infection with rabies virus when:
  - a) the disease infection with rabies virus is a notifiable disease in the entire country and any change in the epidemiological situation or relevant events are reported in accordance with Chapter 1.1.;
  - b) all susceptible animals showing clinical signs suggestive of rabies are subjected to appropriate field and laboratory investigations;
  - c) an ongoing system of disease surveillance in accordance with Chapter 1.4. and Article 8.14.9, has been in operation place for the past two years 24 months, with a minimum requirement being an ongoing early warning system detection programme to ensure investigation and reporting of animals suspected of being infected rabies-suspect animals;
  - d) regulatory measures for the prevention of infection with rabies virus are implemented consistent in accordance with the relevant recommendations in the *Terrestrial Code* including Articles 8.14.4. to 8.14.7., including for the importation of animal;
  - e) no case of indigenously acquired infection with rabies virus infection has been confirmed during the past two years 24 months;
  - 5) no imported case in the Orders *Carnivora* or *Chiroptera* has been confirmed outside a quarantine station for the past six months.
  - f) if an imported case is confirmed outside a quarantine station, epidemiological investigations have ruled out the possibility of secondary cases.

Annex 11 (contd)

- 2) Preventive vaccination of at-risk animals does not affect the rabies free status.
- 3) An imported human case of rabies does not affect the rabies free status.

Article 8.14.2bis.

Country or zone infected with rabies virus

A country or zone that does not fulfil the requirements of Article 8.14.2. is considered to be infected with rabies virus.

Article 8.14.2ter.

Country or zone free from dog-mediated rabies

- 1) A country or zone may be considered free from dog-mediated rabies when:
- a) dog-mediated rabies is a notifiable disease in the entire country and any change in the epidemiological situation or relevant events are reported in accordance with Chapter 1.1.;
  - b) an ongoing system of surveillance in accordance with Chapter 1.4. and Article 8.14.9. has been in place for the past 24 months, with a minimum requirement being an early warning system to ensure control; investigation and reporting of animals suspected of infection with rabies virus;
  - c) regulatory measures for the prevention of infection with rabies virus are implemented in accordance with the relevant recommendations in the Terrestrial Code and including Articles 8.14.94. to 8.14.7.;
  - d) no case of indigenously acquired dog-mediated rabies has occurred during the past 24 months;
  - e) a dog population control programme for the management of stray dog populations is has been implemented and maintained in accordance with Chapter 7.7.
- 2) The following do not affect the status of a country or zone free from dog-mediated rabies:
- preventive vaccination;
  - presence of rabies virus in wildlife animals;
  - imported human cases of rabies.

Article 8.14.34.

Recommendations for importation of domestic and captive wild mammals from countries or zones free from infection with rabies virus free countries

For domestic mammals, and captive wild mammals

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the animals:

- 1) showed no clinical sign of rabies the day prior to or on the day of shipment;
- 2) and either:
  - a) were kept since birth or at least six months prior to shipment in a free country or zone; or
  - b) were imported in accordance with the regulations stipulated in Articles 8.14.56., 8.14.67., or 8.14.78. or 8.14.9.

Annex 11 (contd)

Article 8.14.45.

Recommendations for importation of wild and feral mammals from rabies-free countries or zones free from infection with rabies virus

For wild mammals

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the animals:

- 1) showed no clinical sign of rabies the day prior to or on the day of shipment;
- 2) and either:
  - a) have been captured at a distance that precludes any contact with animals in an infected country or zone. The distance should be defined in accordance with the biology of the species exported, including home range and long distance movements; or
  - b) have been kept in captivity for the six months prior to shipment in a country or zone free from infection with rabies virus free country.

Article 8.14.56.

Recommendations for importation of dogs, cats and ferrets from countries or zones considered infected with rabies virus

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* complying with the model of Chapter 5.11. attesting that the animals:

- 1) showed no clinical sign of rabies the day prior to or on the day of shipment;
  - 2) were permanently identified and their identification number stated in the *certificate*;
  - 3) and either:
    - a) were vaccinated or revaccinated not more than 12 months prior to shipment in accordance with the recommendations of the manufacturer. The with a vaccine should have been that was produced and used in accordance with the Terrestrial Manual, and They were subjected not less than 1 3 one months and not more than 12 months prior to shipment after the last vaccination to an antibody titration test as prescribed in the *Terrestrial Manual* with a positive result of at least 0.5IU/ml;
- OR
- b) were kept in a *quarantine station* for six months prior to export.

Article 8.14.67.

Recommendations for importation of other susceptible animals domestic ruminants, equids, camelids and suids members of the order Carnivora and of members of the order Chiroptera from countries or zones considered infected with rabies virus

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the animals:

- 1) showed no clinical sign of rabies on the day prior to or on the day of shipment;

Annex 11 (contd)

- 2) were permanently identified and the identification number stated in the *certificate*;

23) either EITHER



a) were kept for the 6 months prior to shipment in an *establishment* where separation from susceptible animals was maintained and where there has been no case of rabies for at least 12 months prior to shipment;

OR

b) were vaccinated or revaccinated in accordance with the recommendations of the manufacturer. The vaccine was produced and used in accordance with the *Terrestrial Manual*;

3) if domestic animals, were permanently identified and the identification number stated in the certificate.

Article 8.14.7g.

Recommendations for importation of susceptible laboratory animals from countries or zones considered infected with rabies virus

For rodents and lagomorphs – born and reared in a biosecure facility

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the animals:

- 1) showed no clinical sign of rabies the day prior to or on the day of shipment;
- 2) were born and kept since birth in a biosecure facility as described in the *Terrestrial Manual* Chapter 4.1.4 on Management of veterinary diagnostic laboratories, and where there has been no case of rabies for at least 12 months prior to shipment.

Article 8.14.8.

#### OIE endorsed official control programme for dog-mediated rabies

The overall objective of an OIE endorsed *official control programme* for dog-mediated rabies is for Member Countries to progressively improve their dog-mediated rabies situation and eventually be able to make a self-declaration in accordance with Chapter 1.6. as a country free from dog-mediated rabies. The *official control programme* should be applicable to the entire country even if certain measures are directed towards defined subpopulations only.

Member Countries may, on a voluntary basis, apply for endorsement of their *official control programme* for dog-mediated rabies when they have implemented measures in accordance with this article.

For its *official control programme* for dog-mediated rabies to be endorsed by the OIE, the Member Country should:

- 1) have a record of regular and prompt animal disease reporting in accordance with Chapter 1.1.;
- 2) submit documented evidence (including relevant legislation) of the capacity of the *Veterinary Services* to control dog-mediated rabies. This evidence may be provided using data generated by the OIE PVS Pathway;
- 3) submit a detailed plan of the programme to control and eventually eradicate dog-mediated rabies in the country or zone including:

#### Annex 11 (contd)

- a) the timeline;
- b) the performance indicators for assessing the effectiveness of the control measures to be implemented;
- c) documentation indicating that dog-mediated rabies is a notifiable disease and that the official control programme for dog-mediated rabies is applicable to the entire country;
- 4) submit a dossier on dog-mediated rabies in the country describing the following:
  - a) the general epidemiology in the country highlighting the current knowledge and gaps in knowledge and the progress that has been made in controlling dog-mediated rabies;
  - b) the measures implemented to prevent introduction of infection;
  - bis) the rapid detection of, and response to, dog-mediated rabies cases, to reduce the incidence and to eliminate transmission in at least one zone in the country;
  - c) dog population management including stray dog control programme in accordance with Chapter 7.7.;
  - d) collaboration agreements or programmes with other Competent Authorities such as those responsible for public health and management of wild and feral animals;
- 5) submit evidence that surveillance of dog-mediated rabies is in place:
  - a) by taking into account provisions in Chapter 1.4. and Article 8.14.9.;
  - b) by having diagnostic capability and procedures, including regular submission of samples to a laboratory that carries out diagnosis to support epidemiological investigation;
- 6) where vaccination is practised as part of the official control programme for dog-mediated rabies, provide:
  - a) evidence (such as copies of legislation) that vaccination of selected populations is compulsory and the vaccines are produced in accordance with the *Terrestrial Manual*;
  - b) detailed information on vaccination campaigns, in particular on:
    - i) target populations;
    - ii) monitoring of vaccination coverage;
    - iii) technical specifications of the vaccines used and description of the regulatory procedures in place;
- 7) provide preparedness and contingency plans.

The Member Country's *official control programme* for dog-mediated rabies will be included in the list of programmes endorsed by the OIE only after the submitted evidence, based on the provisions of Article 1.6.Xbis, has been accepted by the OIE. Retention on the list requires an annual update on the progress of the *official control programme* and information on significant changes concerning the points above. Changes in the epidemiological situation and other significant events should be reported to the OIE in accordance with Chapter 1.1.

The OIE may withdraw the endorsement of the *official control programme* if there is evidence of:

- = non-compliance with the timelines or performance indicators of the programme; or
- = significant problems with the performance of the *Veterinary Services*; or
- = an increase in the incidence of dog-mediated rabies that cannot be explained or addressed by the programme.

## Annex 11 (contd)

~~Article 8.14.9.~~~~Recommendations for importation of wildlife from countries considered infected with rabies~~

~~Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the animals:~~

- ~~1) showed no clinical sign of rabies the day prior to or on the day of shipment;~~
- ~~2) were kept for the six months prior to shipment in an establishment where separation from susceptible animals was maintained and where there has been no case of rabies for at least 12 months prior to shipment.~~

Article 8.14.9.General principles of surveillance

- 1) A Member Country should justify the surveillance strategy chosen in accordance with Chapter 1.4., as being adequate to detect the presence of infection with rabies virus, given the prevailing epidemiological situation. Surveillance should be under the responsibility of the Veterinary Authority.

For the purposes of rabies surveillance a suspected case is a susceptible animal that shows any change in behaviour followed by death within 10 days or that displays any of the following clinical signs: hypersalivation, paralysis, lethargy, abnormal aggression, abnormal vocalisation.

In particular, Member Countries should have in place:

- a) a formal and ongoing system for detecting and investigating suspected cases;
- b) a procedure for the rapid collection and transport of samples from suspected cases to a laboratory for diagnosis;
- c) a system for recording, managing and analysing diagnostic and surveillance data.

Rabies surveillance provides data that are indicators of the effectiveness of a rabies control programme and of the maintenance of freedom of infection with rabies virus in a country or zone.

- 2) In addition to principles in Chapter 1.4. the following are critical for rabies surveillance:

- a) Public awareness

The Veterinary Services should implement programmes to raise awareness among the public, as well as veterinary paraprofessionals, veterinarians and diagnosticians, who should report promptly any cases or suspected cases.

- b) Clinical surveillance

Clinical surveillance is a critical component of rabies surveillance and essential for detecting suspected cases. Therefore, a process should be in place and documented for the identification and investigation of suspected cases as well as for sample collection for laboratory diagnosis when rabies cannot be ruled out. Animals (especially carnivores and bats) found dead are recognised as an important source of information for rabies surveillance and should be part of the clinical surveillance.

Laboratory testing should use the recommended sampling techniques, types of samples and tests described in the Terrestrial Manual.

## Annex 11 (contd)

c) Sampling

Surveillance should target suspected cases. Probability sampling strategies are not always useful, as sampling of healthy animals (e.g. not involved in human exposure) rarely returns useful surveillance data.

d) Epidemiological investigation

In all situations, especially in countries or zones considering self-declaration of freedom, routine epidemiological investigation of cases and molecular characterisation of virus isolates from human and animal cases is encouraged. Such an investigation allows identification of sources of infection, their geographic origin and their epidemiological significance.

8.1Article 8.14.10.Cooperation with other Competent Authorities

The Veterinary Authority should coordinate in a timely manner with public health and other Competent Authorities and share information to support the decision-making process for the management of human and animal exposure.

In all regions, Veterinary Authorities of neighbouring countries should cooperate in the control of dog-mediated rabies.

※本資料は参考仮訳ですので、最終的な確認は原文をご参照ください。

## 参考資料6

## 第7.2章(案)

### アニマルウェルフェアと採卵鶏生産システム

#### 第7.2.1条

##### 定義

本章の目的上、

**採卵鶏 (雌鶏)**：人の消費用の卵の商用生産を目的として飼養されている、性的に成熟した雌の *Gallus gallus domesticus* 種の鳥。村落又は裏庭の群れで飼育されている採卵鶏は除く、種鶏は除く。

**採卵終期の雌鶏**：生産期の終期の採卵鶏。

**採卵若雌鶏 (若雌鶏)**：商用採卵鶏生産を目的として、孵化から性的成熟の開始まで飼養されている、雌の *Gallus gallus domesticus* 種の鳥。

#### 第7.2.2条

##### 適用範囲

本章は、商用採卵鶏生産システムのウェルフェアを扱う。初生雛が育成農場に到着してから、採卵終期の雌鶏を採卵鶏生産施設から移動するまでの生産期間を対象とする。村落又は裏庭で飼育され個人消費の用に供されている採卵鶏は除く。

商用生産システムには、若雌鶏及び雌鶏の収容、バイオセキュリティの適用及び卵又は若鶏の取引を含む。これらの勧告は、屋内又は屋外であって、ケージ又はケージ以外のシステムで飼養されている若雌鶏又は採卵雌鶏を対象とする。

商用若雌鶏又は雌鶏の生産システムには以下のものがある。

##### 1. 屋内型システム

若雌鶏又は雌鶏は、機械的な環境管理がある又はない形で、屋外専用の区域がなく、完全に鶏舎に収容される。

##### 2. 屋外型システム

若雌鶏又は雌鶏は、機械的な環境管理がある又はない形で、指定された屋外の地域に接続するを含む施設で飼養される。

本章は、第6.5章、第7.1章、第7.2章、第7.3章、第7.4章、第7.5章及び第7.6章と併せて読むものとする。

#### 第7.2.3条

##### 若雌鶏又は及び雌鶏のウェルフェアの基準または測定指標

若雌鶏及び又は雌鶏のウェルフェアは、結果に基づく測定指標、特に動物の状態に基づく指標を用いて評価するものとする。提供されたリソース資源及びシステムの設計もまた考慮するものとする。結果に基づく測定指標、とりわけ動物の状態に基づく測定指標は、アニマルウェルフェアの実用的な指標になり得るものである。本指標及びその適切な閾値の使用は、雌若鶏又は雌鶏が管理されるさまざまな状態に合わせて、利用されている遺伝的性質当該鶏の系統も考慮した上で、適合されるものとする。

システムの設計及び管理とともに、提供されたリソースもまた考慮されるものとする。動物の状態に基づく基準はこれらの要素のモニターと改善の道具として考慮されう。

農場環境で測定できる基準には、遺伝的性質や環境などの他の因子とともに、行動、体及び羽の状態、卵殻の状態、死亡率及び罹病率、骨と趾の問題が含まれるなどがある。これらの基準の異常が観察された齢は、その潜在的な問題の原因を決定するのに役立つかもしれない。その他の状態(骨及び趾の状態、疾病、感染又は寄生等)はまた、間引きの時又は日常のサンプリングの間に評価することができる。ウェルフェアの測定指標の値は、国、部門又は地域の若雌鶏又は雌鶏の適切な基準を参照して決定することが奨励される。

骨及び趾の問題、疾病、感染又は寄生などの状態は、日常的もしくはターゲットとされたサンプリングの間又は間引きの時に評価することができる。ウェルフェアの測定指標の目標値又は閾値は、直近の科学的知見や国、部門又は地域の若雌鶏又は雌鶏の適切な基準を参照して決定することが推奨される。

以下の結果に基づく基準及び測定指標は、若雌鶏又は雌鶏のウェルフェアの有用な指標であるになりうる。

##### 1. 行動

鶏の特定の行動の有無は、良いアニマルウェルフェア又はアニマルウェルフェア上の問題(恐怖、苦痛又は病気等)のいづれかを示している場合がある。さらに、鶏は、行うことを非常に動機づけられる行動を徐々に発展させ、鶏同士の社会的な接触[Estevez et al.,

2007; Rodriguez-Aurrekoetxea, A. and Estevez, I., 2014]を含む通常の鶏の行動



~~をよく理解~~ [Nicol, 2015] する必要がある。いくつかの行動は、問題の1つのタイプを一般的に示さないこともあり、さまざまな原因により現れていることもある。家畜化された家禽は、行うことを高度に動機づけられる行動を徐々に発展させており、鶏同士の社会的な接触 [Estevez et al., 2007; Rodriguez-Aurrekoetxea, A. and Estevez, I., 2014] を含む鶏の通常の行動をよく理解すること [Nicol, 2015] は、適切な管理の決定を行うために必要である。これらの行動の発現の機会身体的及び社会環境によって影響される [Widowski et al., 2016; Lav et al. 2011; O'Connor et al. 2011]。

## a) 砂浴び

砂浴びは、複雑な身体維持行動である。砂浴びの間、若雌鶏及び雌鶏鳥は、砂浴び中に、敷料等のほぐれた材料を羽の間に通して活用する。砂浴びは、余分な脂質 [Van Lier and Bokma, 1987] ~~ニミ~~や寄生生物 [Martin and Mullen, 2012] を取り除くことを助け、羽の状態を保つのに役立ち、そのことが、体温を維持し、皮膚の損傷を防ぐのにも役立っている。当該群れの砂浴び行動の減少が、敷料又は地面が濡れている、若しくは砕けにくくなっている等、敷料又は飼育場所の質の問題を示している場合がある [Olson and Keeling, 2005; Van Lier and Bokma, 1987]。完全な一連の砂浴びが示されることは、よいウェルフェアを示していることもある [Widowski and Duncan, 2000]。

## b) 恐怖行動

おびえた若雌鶏及び雌鶏鳥は、さまざまな刺激に高い反応性を示す [Jones R. B., 1987; Zeltner and Hirt, 2008]。恐怖は外傷性の損傷や、若雌鶏及び雌鶏鳥がお互いに積み重なっている時には窒息、につながる場合もある。おびえた若雌鶏及び雌鶏鳥は、生産性が低いことがある [Barnett J. et al., 1992] また、羽つき行動で傷つける傾向が高い [Hass et al. 2014]。例えば、家畜飼養管理者が鶏舎又は若雌鶏及び雌鶏鳥のいる場所を歩いて歩く時間に恐怖を評価する方法が開発されている [Jones, 1996; Forkman, 2007]。

## c) 採餌及び飲水行動

採餌又は飲水行動の減少変化が、不適切な給餌若しくは給水空間又は場所、栄養の偏り、飼料や水の質の悪化、飼料汚染等の管理上の問題を指し示すことがある [Garne et al., 2012; Thogerson et al., 2009a; Thogerson et al., 2009b]。採餌及び飲水は、鳥が病気の時にしばしば減少する。摂食量も、暑熱ストレス [Lara L. J. & Rostagno M. H., 2013; Lin H. et al., 2006] や寒冷ストレス [Alves et al., 2012] の期間に変化減少し、寒冷ストレスの間には増加することがある [Garner et al., 2012; Thogerson et al., 2009a; Thogerson et al., 2009b]。

## d) ついばみ活動

ついばみは、食餌を探す行動であり、典型的なものは、歩いて敷料の床層を突つきまたは剥がすことである。ついばみ活動の減少がある場合には、敷料床層の品質問題または若雌鶏及び雌鶏鳥の動きを減少させる状態の存在が示唆され得る[Appleby *et al.*, 2004; Lay *et al.*, 2011; Weeks and Nicol, 2006]。適切な床層が提供された場合、エサが容易に入手できる場合であっても、雌鶏はほとんどの時間をついばみに費やす[Weeks and Nicol, 2006]。頻繁なついばみ行動はよいウェルフェアを示したり[Dawkins, 1989; Duncan and Hughes, 1972]、羽つきで傷つけることを減らすこともある[Blokhuys, 1989]。

## e) 有害な羽つき及び共食い

有害な羽つきは、重大な羽の損失につながることもあり、共食いに至る場合もある。共食いは、他の鳥の生身を引き裂くことであり、深刻な怪我や死につながることもある。これらの行動は、多様な要因を原因としていることがある[Hartcher, 2016; Estevez, 2015; Nicol *et al.*, 2013; Rodenburg, 2013; Lambton, 2013; Newberry, 2004]。

## f) 運動及び快適な行動

運動及び快適な行動は、若雌鶏及び雌鶏の健康にとって重要であり、骨格、体及び羽の発展及び維持を可能にする。これらの行動は、歩く、走る、跳ねる、回転する、肢や翼を広げる、羽ばたく、羽を逆立てる、尾を振る、羽繕い等が含まれる場合がある[Dawkins and Hardie, 2007; Shipovほか, 2010; Norgaard, 1990]。

これらの行動を示す機会は、舎飼のシステム及び空間によって影響される[Widowski *et al.*, 2016; Lay, 2011]。

## g) 営巣

営巣は、自然で高く動機づけられた行動であり、巣の場所の選択、巣の形成及び産卵を含む[Cooper and Albentosa, 2003; Weeks and Nicol, 2006; Cronin *et al.*, 2012; Yue and Duncan, 2003]。不規則な巣箱の使用及び巣外での産卵は、環境または社会行動の要因の問題を示している場合がある[Cronin *et al.*, 2012; Cooper and Appleby, 1996; Gunnarsson *et al.*, 1999]。

## h) 止まり

(木に)止まることは、自然で高く動機づけられた行動である。若雌鶏及び雌鶏は、昼間、小高いところを探す。小高いところを探す動機付けは、特に、若雌鶏及び雌鶏が休息または睡眠のための場所を選ぶ夜に強い[EFSA, 2015]。群れの止まる行動の減少は、環境的な要因、損傷及び若雌鶏育成の経験の問題を示している場合がある[Janczak and Riber, 2015; Gunnarsson *et al.*, 1999]。

## i) 休息及び睡眠

ノンレム睡眠とレム睡眠の状態を含む睡眠は若雌鶏及び雌鶏にとって自然な行動であ

る[Blokhuys, 1983]。睡眠は動物が日々のストレスからの回復し、エネルギーを温存し、記憶を強化するための適応状態である[Siegel, 2009]。若雌鶏及び雌鶏は高度にシンクロ(同調)した休息と睡眠行動を示し、それは光強度、光周期、環境又は社会的要因によって中断されうる[Malleauほか, 2007; Alvinoほか, 2009]

#### jk) 社会的行動

若雌鶏及び雌鶏は、シンクロ(同調)した行動に参加する、非常に社会的な種である[Olsson *et al.*, 2002; Olsson and Keeling, 2005]。利益としては、社会的学習、捕食者からの保護[Newberry *et al.*, 2001]、体温調節の助け及び羽の維持がある。社会的行動は社会的な環境の特性に応じて異なることがある(Estevezほか, 2002; 2007)。社会的行動の問題は、攻撃や資源の競争の程度を測定する採点システムを用いることによって評価することができる[Estevez, 2002]。

#### kl) 空間分布

鳥の不均衡な空間的分布が、温度に対する不快又は照明、食餌、水、避難場所、巣、快適な休息場所の供給や使用の不均衡を示している場合がある[Rodríguez-Aurrekoetxea and Estevez, 2016; Cornetto and Estevez, 2001; Bright and Johnson, 2011]。

#### le) 体温調節行動

長引く又は過剰な浅速呼吸及び翼を広げる行動は、暑熱ストレスの間に観察される[Mack, 2013; Lara and Rostagno, 2013]。寒冷ストレスを示す指標には、羽を逆立てる、硬直した姿勢、震える、寄り合う、お互いの上に積み重なる及び苦痛の鳴き声がある。

#### lm) 鳴き声

鳴き声は、好悪両方の感情の状態を示す場合がある。群れの鳴き声の良好な理解は、良好な動物の管理に役立つ[Zimmerman *et al.*, 2000; Bright, 2008; Koshiba *et al.*, 2013]。

## 2. 体型(ボディコンディション)

劣った(不十分な)ボディコンディションは、個々の鳥の粗悪なアニマルウェルフェアの成果問題を反映する。群れのレベルでは、不均衡なボディコンディションは、潜在的な劣ったアニマルウェルフェアの問題を示す場合がある。ボディコンディションは、体重又は体型の点数(ボディコンディションスコア)のための農場でのサンプリング方法を用いることによって評価できる[Gregory and Robins, 1998; Craig and Muir, 1996, Elson and Croxall,

2006; Keeling *et al.*, 2003]。サンプリングの方法の選択は、実際のボディコンディションは羽毛によって覆われることを考慮すべきである。

## 3. 目の状態

結膜炎が、病気や粉塵、アンモニア等の刺激物の存在を示す場合がある。高濃度のアンモニアが、角膜の炎症、最終的には失明につながる場合がある。目の発育異常が、低照度と関連している場合がある[Jenkins *et al.*, 1979; Lewis and Gous, 2009; Prescott *et al.*, 2003]。

## 4. 趾の問題

角化症、及び趾りゅう症、過剰な爪の発育、損傷した爪、つま先のけがは、不適切な床、不十分なデザインの止まり木、不十分な管理の敷料に関連する痛みを伴う状態である

[EFSA, 2005; Lay *et al.*, 2001; Abrahamsson and Tauson, 1995; Abrahamsson and Tauson, 1997]。

~~過剰な爪の発育、壊れた爪及びつま先の損傷は、運動に影響し、痛みを伴う場合がある~~  
[EFSA, 2005]。

接触性皮膚炎は、濡れた敷料、糞尿又は濡れた床面に長期間接触した皮膚表面に影響する。

趾の問題は、通常、黒化した皮膚として現れ、趾蹠の底面及び膝節の裏側の糜爛及び繊維化へと進行する。重篤な場合には、趾及び膝の病変が跛行の原因となり、二次感染を引き起こすことがある。趾の問題に有効な採点システムが開発されている[Blatchford *et al.*, 2016]。

## 5. 疾病、感染、代謝異常及び外部寄生虫感染の発生

健康障害は、原因にかかわらず、ウェルフェア上の懸念であり、不十分な環境又は飼養管理によってさらに悪化することがある。

## 6. 損傷率及び重症度

損傷は痛みと感染の危険性に関連している。損傷の割合と重症度は、生産の間の群れの健康とウェルフェアの問題を示す場合がある。損傷には、他の鳥の行動によるもの（例えば、引っかかり、羽の喪失又は傷）、管理（例えば、栄養）、環境条件によるもの（例えば、骨折及び竜骨の変形）及びもしくは人の介入によるもの（例えば、取扱いや捕鳥の間）により結果としてなる場合がある。

## 7. 死亡率、淘汰率及び罹病率

一日当たり、一週当たり及び累積の死亡率、淘汰率及び罹病率は、予期される範囲内であるものとする。これらの割合に不測の増加がある場合には、それがアニマルウェルフェア上の問題を反映していることがある。

## 8. 生産成績

一日当たり、一週当たり及び累積の生産成績は、予期される範囲内であるものとする。これらの割合に不測の減少がある場合には、それが個々の鳥又は群れのウェルフェアの状態を反映していることがある。

- a) 若雌鶏の成長率は、群れの平均的な若雌鶏及び群れの均一の日当たりの平均増大量を測定する。
- b) 若雌鶏の飼料要求率は、一群が消費する飼料の量を生産された全生体重量と比較して測定し、体重の一単位当たり消費する飼料重量として表される。
- c) 雌鶏の飼料要求率は、一群が消費する飼料の量を卵生産の単位と比較して測定する。
- d) 卵生産は、例えば、舎飼されている雌鶏当たりの卵の数で測定される
- e) 卵の質や格落ちは、例えば、格付の割合、卵殻の強度及び、ハウユニット（卵黄の盛り上がり）、異常及び巢外や床の卵で測定される

## 9. 羽の状態

~~若雌鶏及び雌鶏の羽の状態を評価することは、ウェルフェア上有益な情報を提供する。羽の損失及び損傷は、有害な羽つき行動、栄養の問題、外部寄生虫及び設備舎飼システムの過失によるすり傷によって生ずることがある~~[Rodriguez-Aurrekoetxea and Estevez, 2016; Drake *et al.*, 2010]。羽の汚れは、病気、環境の状態及びもしくは生産システムに関連することがある。羽の採点システムが、これらの目的のため開発されている[Blokhuis, 2007]。

## 10. 水及び飼料の摂取

周辺温度、相対湿度その他関連要因を考慮した上で、毎日の水及び飼料の摂取量を監視することは、温度ストレス、疾病、感染又は外寄生及びその他ウェルフェアの状態を示すことができ、有益なツールである。~~水又は飼料の質及び供給の問題は摂食量の変化、給餌器や給水器の混雑、濡れた敷料、下痢、皮膚炎、脱水又は卵の質、生産及び体型の変化につながる場合がある。水もしくは飼料の質や供給の問題と関係していることがある。~~

## 第7.2.4条

## 勧告

若雌鶏及び雌鶏の良いウェルフェアを確実にするかは、システムの設計、環境的及び動物の管理技術（責任ある取扱いや適切な世話の提供を含む）を含むいくつかの管理要素次第である。これらのうち1つ以上の要因が欠けている場合、どのようなシステムであっても深刻な問題が起こりうる。

第7.2.5条から第7.2.29条は、若雌鶏及び雌鶏に適用される措置に係る勧告が示されてい

る。

第7.7.5条から第7.7.29条のそれぞれの勧告は、第7.7.3条由来の一連の関連する動物の状態に基づく基準と測定指標を含む。これは適宜使用されるその他の基準及び測定指標を排除するものではない。これらの基準や測定指標の適用は若雌鶏及び雌鶏の飼養されているシステムによって決められる。

~~各勧告には、第7.7.3条から得られる結果に基づく測定指標が含まれている。これは、適宜使用されるその他の測定指標を排除するものではない。~~

#### 第7.7.5条

#### 施設の場所、設計、構造及び設備

若雌鶏及び雌鶏の施設の場所は、実行可能な範囲で、火事及び洪水その他自然災害の影響から安全であるように選択されるものとする。さらに、施設は疾病のリスク、若雌鶏及び雌鶏の化学的及び物理的汚染物質の暴露、騒音及び不利な気候条件を避ける又は最小限にするように位置する又は設計されるものとする。

若雌鶏及び雌鶏の鶏舎、屋外地域及び鳥がアクセスする設備は、良いアニマルウェルフェアを促進するために若雌鶏及び雌鶏に高く動機付けされた行動（例えば、止まりや営巣）を行う機会鳥の行動を考慮した上で設計され、鳥の損傷又は不快苦痛を避けるように維持されるものとする。

若雌鶏及び雌鶏の鶏舎は、火事及びその他の災害のリスクが最小限となる材料、電気設備及び燃料設備で建設されるものとする。

生産者は、全ての設備の維持管理プログラム、その故障が若雌鶏及び雌鶏鳥のウェルフェアを危険に曝すおそれのある設備に対し、の緊急時計画を整備するものとする。

動物の状態結果に基づく測定指標：淘汰及び死亡率、恐怖行動、採餌及び~~飲水行動、~~つ  
いばみ活動、趾の問題、疾病、感染及び外寄生の発生、損傷率及び深刻度、運動及び快適な  
行動、死亡率、生産成績、羽の状態、休息と睡眠、社会的行動及び空間分布、体温調節行動、  
鳴き声

#### 第7.7.6条

#### 鳥と舎飼い及び生産システムの調和

特定の場所、舎飼及び生産システムに適したシステムを選択する場合には、ウェルフェア及び健康への配慮が生産成績の決定と釣り合うものとする。若雌鶏の育成システムでは、意図された採卵鶏生産システムのために鳥が用意予め適応されるものとする。

動物の状態結果に基づく測定指標：砂浴び、採餌、飲水、つ~~いばみ活動、~~疾病の発生、有害な羽つつき及び共食い、損傷率及び深刻度、運動及び快適な行動、死亡率、営巣、~~外寄生、~~止まり、生産成績、羽の状態、休息と睡眠、社会的行動、空間分布

#### 第7.7.7条

#### 飼育密度空間的ゆとり

若雌鶏及び雌鶏が、リソースへの適切なアクセスを有し、運動及び快適な行動をとることができるような空間的ゆとり飼育密度で舎飼いされるものとする。以下の要素が考慮されるものとする。

- － 管理能力
- － 周辺環境
- － 舎飼い~~システム~~の設計
- － 利用可能空間
- － 生産システム
- － 敷料の質
- － 換気
- － バイオセキュリティ方針
- － 遺伝的性質~~系統~~
- － 齢及び鳥の体重

動物の状態結果に基づく測定指標：砂浴び、採餌と飲水行動、つ~~いばみ活動、採餌、~~疾病、感染及び外寄生の発生、損傷率及び深刻度、運動及び快適な行動、死亡率、営巣、止まり、生産成績、羽の状態、休息と睡眠、社会的行動、空間分布

#### 第7.7.8条

#### 栄養

若雌鶏及び雌鶏は、その日齢、生産段階及び遺伝的性質~~系統~~に適しており、良好な健康及びウェルフェアに必要な要件を満たす適切な栄養が含まれる飼料を常に与えられるものとする。

飼料及び水の形及び質は、鳥にとって受け入れられるものであり、鳥の健康に有害な汚染物質、破片及び微生物を含まないものとする。

給餌及び給水システムは、有害な微生物の増殖を予防するため、定期的に点検され、必要な



場合に定期的に清掃されるものとする。

鳥若雌鶏及び雌鶏は、飼料の適切なアクセスが毎日与えられるものとする。水は、獣医学的助言のもとでの場合を除き、継続的に入手可能であるものとする。新たにふ化した若齢鶏に対しては、適切な飼料及び水が入手できるよう特別な提供が行われるものとする。

動物の状態結果に基づく測定指標：~~攻撃~~、ボディコンディション、生産成績（卵質）、水及び飼料の摂取、ついで活動、疾病、~~感染及び外寄生~~の発生、有害な羽つき、損傷率及び深刻度、代謝異常、死亡率、生産成績、羽の状態及び鳴き声

#### 第7.7.9条

### 床

鳥のための床は、清掃及び消毒が容易で、鳥への害や損傷を生じないものとする。

床の傾斜率、設計と建設は、若雌鶏及び雌鶏鳥が正常な運動及び快適な行動をとることを可能にするものとする。床は、鳥を適切に支えを提供し、損傷や挟み込みを予防し、健康を確保し、糞が他の鳥若雌鶏及び雌鶏を汚染しないことを確保するものとする。若雌鶏から採卵鶏舎への床の種類の変化は避けるものとする。床は掃除及び消毒が容易で、傷害の原因とならないものとする。

若雌鶏及び雌鶏の砂浴び及びついで活動を促すためには、ほぐれて束ねていない乾燥した敷料材が提供されることが望ましい。敷料を提供する場合は、ウェルフェア及び健康に対する有害な影響を最小限に抑えるよう管理されるものとする。敷料は、乾いていて砕けるように管理され、疾病、~~感染及び外寄生~~の予防及びウェルフェアに対するいかなる悪影響も最小限にするために必要な場合には、交換され、又は適切に処理され又は交換されるものとする。

動物の状態結果に基づく測定指標：快適な行動、砂浴び、趾の問題、ついで、疾病、~~感染及び外寄生~~の発生、損傷率及び深刻度、運動、生産成績、羽の状態、休息と睡眠

#### 第7.7.10条

### 砂浴びの区域

砕けやすく、乾燥した敷料素材の提供は、若雌鶏及び雌鶏にとって砂浴びを促すのに望ましい。

砂浴びの区域を設ける場合は、適切な砕けやすい材料が提供され、砂浴びを促すように設計及び配置され、シンクロ（同調）した行動を可能とし、過度な競争を防ぎ、被害又は損傷を生じないものとする。砂浴びの区域は、検査及び維持管理清掃が容易なものであるものとする

[Lentfer *et al.*, 2011; Weeks and Nicol, 2006]。

動物の状態結果に基づく測定指標：砂浴び、損傷率及び深刻度、羽の状態、空間分布

#### 第7.7.11条

### ついで活動の区域

砕けやすく、乾燥した敷料素材の提供は、若雌鶏及び雌鶏にとってついで活動を促すのに望ましい。

ついで活動の区域を設ける場合は、適切な材料が提供され、ついで活動を促すように設計及び配置され、シンクロ（同調）した行動を可能とし、過度な競争を防ぎ、被害又は損傷を生じないものとする。ついで活動の区域は、検査及び維持管理清掃が容易なものであるものとする。

動物の状態結果に基づく測定指標：ついで活動、有害な羽つき及び共食い、損傷率及び深刻度、空間分布

## 第7. Z. 12条

## 営巣の区域

営巣の区域は備えられるものとしを設ける場合は、適切な材料で造られ、営巣を促すように設計及び配置され、過度な競争を防ぎ、被害又は損傷を生じないものとする。営巣の区域は、検査、清掃及び維持管理消毒が容易なものであるものとする。

動物の状態結果に基づく測定指標：有害な羽つき及び共食い、損傷率及び深刻度、営巣、生産成績（巣外又は床の卵）、空間分布

## 第7. Z. 13条

## 止まり木

止まり木は備えられるものとしを設ける場合は、適切な材料で造られ、全ての若雌鶏及び雌鶏にとって止まりを促すように設計され、高さが及び配置され、竜骨の変形、又は趾の問題や他の損傷を防ぎ、鳥が止まっている間は鳥の安定を維持するものとする。設計された止まり木が無い場合、若雌鶏及び雌鶏鳥によって高いと認識され、被害又は損傷を生じない台、格子及びすのこは適切な代替物となる場合がある。止まり木又はその代替物は、清掃及び維持管理消毒が容易なものであるものとし、糞便による汚染を最小限にするものとする [Hester, 2014; EFSA, 2015]。

止まり木を高くすることは、有害な羽つき、共食い、竜骨の変形及び骨折を最小限に抑えるために注意深く考慮するものとする。

動物の状態結果に基づく測定指標：肢の問題、有害な羽つき及び共食い、損傷率及び深刻度、止まり、羽の状態、休息と睡眠、空間分布

## 第7. Z. 14条

## 屋外区域

若雌鶏及び雌鶏は、十分な羽毛に覆われ、安全に歩き回れる齡に達したらすみやかに時は屋外区域への出入が可能となる。鶏舎からの自由な出入りを可能にする十分に適切に設計された出入口、退避入区域が設けられるものとする。

屋外区域の管理が重要である。土地及び放牧地の管理措置は、鳥が病原体に感染する、寄生虫に寄生される、又は損傷するリスクを低減するためにとられるものとする。これには、飼育密度の制限又はいくつかの土地区画の順番で連続的な使用が含まれる場合がある。

屋外区域は、水はけの良い土地に設置され、湿った環境たまり水及びぬかるみを最小限に抑えるように管理されるものとする。屋外区域は、若雌鶏及び雌鶏鳥を収容し、逃げないようにな

っているものとする。屋外区域は、捕食及び疾病のリスクを最小限に抑えつつ、若雌鶏及び雌鶏が屋外で安全と感じることを可能にし、区域を最大限に活用することを奨励されるものとする。

[Gilani *et al.*, 2014; Hegelund *et al.*, 2005; Nagle and Glatz, 2012]。雌鶏は屋外区

域に早く慣らされるべきである[Rodriguez- Aurrekoetxea and Estevez, 2016]。屋外区域には、鳥の避難場所が設けられ、毒性有害植物及び汚染物質が含まれていないものとする。

動物の状態結果に基づく測定指標：恐怖行動、趾の問題、ついでに活動、疾病の発生、損傷率及び深刻度、運動及び快適な行動、罹病率、死亡率、外寄生、生産成績、羽の状態、社会的行動、空間分布、体温調節行動、鳴き声

## 第7. Z. 15条

## 温度環境

若雌鶏及び雌鶏の温度状況は、その発育段階にとってふさわしい範囲に維持管理されものであり、極端な高温、湿度及び寒冷は避けられるものとする。発育期には、多様な温度、気流速度及び相対湿度のレベルの中で、熱指数が、若雌鶏及び雌鶏にとっての温度快適範囲を同定するのに役立つ場合がある[Xin and Harmon, 1998]。

環境状況がそのような範囲から外れた場合には、若雌鶏及び雌鶏鳥に対する悪影響を緩和するための方策がとられるものとする。これには、風速の調整、熱の供給、又は気化熱式冷却が含まれる場合がある[Yahav, 2009]。

温度環境の管理は、当該システムの不具合が、ウェルフェア上の問題を引き起こす前に発見され、修正されるに十分な頻度で点検されるものとする。

動物の状態結果に基づく測定指標：罹病率、死亡率、生産成績、空間分布、体温調節行動、水及び飼料の摂取

## 第7. Z. 16条

## 空気の性状

換気、鶏舎及び糞の管理は空気の性状に影響することがある。環境中からの二酸化炭素、アンモニア等の有害廃ガス、粉塵及び過剰な湿気を取り除いたり、緩和したりすることを含む、空気の性状を常時維持するための取組が必要である。

アンモニア濃度は、鳥の高さで日常的に25 ppm を超えないものとする[David *et al.*, 2015;

Milles *et al.*, 2006; Olanrewaiu, 2007]。

粉塵の水準は、最低限に維持されるものとする[David, 2015]。鳥の健康及びウェルフェアが人工換気システムに依存している場合には、適切な予備電源及び警報システムが備えられているものとする。

動物の状態結果に基づく測定指標:目の状態、呼吸器系疾病の発生、羽の状態、生産成績

#### 第7.7.17条

##### 照明

適切な継続した明期が設けられるものとする。

明期の照度は、鳥の正常な発育を促し、飼料及び水を探すこと、活動を刺激すること、産卵開始を刺激すること、羽つき及び共食いの可能性を最小限に抑えること、適切な検査を可能にするのに十分なものとし、均等に分布されるものとする[Prescott *et al.*, 2003; Prescott and Wathes, 1999; Green *et al.*, 2000]。

各24時間サイクルの間に、若雌鶏及び雌鶏鳥が休息することを可能にし、ストレスを低減し、及びサーカディアン(概日)リズムを促すために、適切な明期と暗期もまた設けられるものとする[Malleau *et al.*, 2007]。

照明の変化が必要な場合は、迅速な照明の調整が考慮されるが望ましい誘導換羽(実施されている場合)の間を除き、段階的に行うものとする。

動物の状態結果に基づく測定指標:目の状態、有害な羽つき及び共食い、損傷率及び深刻度、運動、営巣、止まり、生産成績、羽の状態、休息と睡眠、空間分布

#### 第7.7.18条

##### 騒音

若雌鶏及び雌鶏は、様々な程度及び種類の騒音に順応可能である。~~ただし~~、ストレス及びお互いの上に積み重なる等の恐怖反応を予防するため、~~可能な場合には~~、なじみのない騒音(特に突然又は大きな騒音)に若雌鶏及び雌鶏鳥を曝すことを最小限に抑えるものとする[Bright and Johnson, 2001]。換気扇、機械その他の舎内又は舎外の設備は、それが発生させる騒音の量を可能な限り最小限に抑えるような方法で建設、配置、運用及び維持されるものとする[Chloupek *et al.*, 2009]。

施設の場所は、可能な場合には、地域に存在する騒音源を考慮するものとする。鳥を状況に

慣らすための戦略がとられるものとする[Candland *et al.*, 1963; Morris, 2009]。

動物の状態結果に基づく測定指標:恐怖行動、損傷率及び深刻度、死亡率、生産成績、休息と睡眠、鳴き声

#### 第7.7.19条

##### 有害な羽つき及び共食いの予防及び管理

有害な羽つき及び共食いは、若雌鶏及び雌鶏生産の課題である。

発生のリスクを低減しうる管理方法には以下のものがある。

- 育成及び産卵期における照明の管理[Nicol *et al.*, 2013;van Niekerc *et al.*, 2013]
- 有害な羽つきの傾向の低い遺伝的性質系統の選択[Craig and Muir, 1996; Kjaer and Hocking, 2004]
- 産卵開始時期の影響[Green *et al.*, 2010]
- 育成及び産卵期におけるつばみもしくは他の扱うことのできる材料の提供[Huber-Eicher and Wechsler, 1998;de Jong, 2010; Daigle *et al.*, 2014]
- 育成及び産卵期における食餌及び飼料の形態の適応[Lambton *et al.*, 2010]
- ~~飼育密度の低減~~[Zimmerman *et al.*, 2006]
- 育成及び産卵期における群のサイズの減少[Bilcik and Keeling, 1999]
- 育成及び産卵期における高い止まり木の提供[Green *et al.*, 2010]
- 若齡鶏のぐちばしの処理[Gentle and Hughes, 1997]、特に開発中の新たな非侵襲的ぐちばしの処理の利用
- 恐怖に関連した刺激の低減



雄鶏の導入[Bestman and Wagenaar, 2003]

上記のリストを含む発生の管理方法は、上記のリストと、該当する場合には、影響を受けた若雌鶏及び雌鶏を速やかに養護区域に移すこと又は安楽死を含む。

これらの管理方法が失敗した場合、治療的な断嘴の処置は最終手段として考慮される場合がある。

動物の状態結果に基づく測定指標: 有害な羽つつき及び共食い、損傷率及び深刻度、死亡率及び淘汰率、羽の状態、鳴き声

## 第7.2.20条

## 換羽

よく管理されない場合は、誘導換羽はアニマルウェルフェアの問題となりうる。誘導換羽が実施される場合、断餌を伴わない、第7.2.8条に沿った技術が使われるものとする。雌鶏は常に照明と水にアクセスできるようにするものとする。良好なボディコンディションで健康な雌鶏のみを換羽するものとする。換羽期間中は、その後の採卵期間も含め、体重の減少が雌鶏のウェルフェアを損なうべきではない。換羽中の死亡鶏数率及び淘汰率の合計が通常の群死亡数率及び淘汰率の変動を超えるべきではない。

動物の状態結果に基づく測定指標: ボディコンディション、採餌、飲水、ついでに活動[Biggs *et al.*, 2004; Saiozkan *et al.*, 2016; Petek and Alpay, 2008]、有害な羽つつき及び共食い、損傷率及び深刻度、罹病率、死亡率及び淘汰率、生産成績、羽の状態、社会的行動

## 第7.2.21条

## 痛みを伴う処置

断嘴の処理等の痛みを伴う処置は、絶対に必要な場合を除いて行われるべきではなく、痛みを低減する処置が使われるものとする。成熟した年齢における断嘴は慢性的な痛みの原因となる場合がある。その他の切除(例えば、爪切り及び断冠)は、若雌鶏及び雌鶏には行うべきではない。痛みのない代替法が支持されるものとするが望ましい。予防的な断嘴の処置が必要な場合には、可能な限り若齢の時に、訓練を受けた熟練した者が実施し、痛みを最小限に抑え、出血を抑制する方法を用いて、必要最小限の量の嘴を取り除くよう注意が払われるものとする。現在の方法には、赤外線処置又は熱い刃による切断がある。有害な羽つつきや共食いをコントロールする戦略的な管理が失敗した場合、治療的な嘴の処置は最終的な手段として考慮される[Gentle *et al.*, 1991; Marchand-Forde *et al.*, 2008; Marchand-Forde *et*

*al.*, 2010; McKeegan and Philbey, 2012; Freire *et al.*, 2011; Glatz *et al.*, 1998]。

その他の切除(例えば断冠やつま先切り)は若雌鶏及び雌鶏に行うべきではない。

成熟した齢での断嘴は、慢性的な痛みを起こすことがある。治療的断嘴が必要な場合は、可能な限り若齢の時にどの齢であっても、訓練を受けた熟練した者が可能な限り若い齢で実施し、痛みを最小限に抑え、出血を抑制する方法を用いて、必要最小限の量の嘴を取り除くよう注意が払われるものとする。

動物の状態結果に基づく測定指標: 採餌及び飲水行動、ついでに活動、採餌、有害な羽つつき及び共食い、運動及び快適な行動、死亡率、罹病率、生産成績、羽の状態、鳴き声

## 第7.2.22条

## 動物健康管理、予防的投薬及び獣医学的処理

若雌鶏及び雌鶏の世話に責任を有する家畜飼養管理者は、若雌鶏及び雌鶏の通常の行動について知識があり、飼料及び水の摂取量の変化、生産の減少、行動の変化、異常な羽の状態や糞便その他身体的特長の外観等、体調不良又は苦悩の徴候を検知できるように認知するものとする。

もし家畜飼養管理者が、疾病、体調不良又は苦悩の原因を特定できない若しくはこれらを改善できない場合又は報告すべき疾病の存在が疑われる場合には、獣医師又はその他の資格を有する助言者に助言を求めるものとする。獣医学的治療は、獣医師によって処方されるものとする。

獣医サービスが適宜定めたプログラムに準拠した疾病の予防及び治療のための効果的なプログラムがあるものとする。

ワクチン接種及び治療は、手技に熟練した者によって、若雌鶏及び雌鶏のウェルフェアに配慮し、行われるものとする。

病気又は怪我をした若雌鶏及び雌鶏は、可能な限り速やかに、観察及び治療のために養護区域に移される、又は第7.6章に従って人道的に殺処分されるものとする。

動物の状態結果に基づく測定指標: ボディコンディション、疾病の発生、損傷率及び深刻度、代謝異常及び外寄生、罹病率、死亡率、生産成績

## 第7.2.23条

## バイオセキュリティ

バイオセキュリティプランは、若雌鶏及び雌鶏の各疫学的グループに特有の可能な限り最良の鳥の健康状態及び現在の疾病リスク(国内及び海外又は越境性の感染症)に見合うとともに、陸生コードの関連する勧告に従い、設計され、実施されるものとする。

当該バイオセキュリティプランは、感染及び外寄生に係る以下の主な感染経路の管理に対処するものとする。

- － 他の家きん、家畜化した動物及び野生動物並びに人からの直接伝播
- － 器具、設備、自動車等の媒介物
- － ベクター(例えば、節足動物やげっ歯類)
- － エアロゾル
- － 水の供給
- － 飼料
- － 大災害又は不十分な群配置のための鶏舎の部分的補充(バックフィリング)は、バイオセキュリティへの考慮と群の混合を防止する方法でのみ行われるべきである。

動物の状態結果に基づく測定指標: 疾病の発生、~~外寄生~~、罹病率、死亡率、淘汰率及び罹病率、生産成績

## 第7.2.24条

## 個々の鳥又は群れの人道的殺処分

個々の病気もしくは損傷しており安楽死が必要な若雌鶏又は雌鶏はできるだけ早く人道的殺処分を行われるものとする。安楽死、診断的目的、採卵終期の群れの間引き又は疾病管理目的から個々の鳥又は群れの若雌鶏又は雌鶏が殺処分される場合は、第7.6章に従い、用いられる技術は人道的な方法で行われるものとする。

## 第7.2.25条

## 若雌鶏及び採卵鶏施設における間引き

本章はいかなる理由であっても、施設から若雌鶏及び採卵鶏を移動するときに言及されるものであり、第7.2.24条とともに読まれるものとする。

若雌鶏及び雌鶏は、予定されている間引きの前に過剰に長い間絶食されるべきではない [Webster, 2003]。

水は間引き時まで利用可能であるものとする。

病気又は損傷のために積載又は輸送に適さない若雌鶏及び雌鶏は、人道的に殺処分するものとする。

捕鳥は、第7.2.28条の状態に従って能力のある家畜飼養管理者によって行われるものとし、各試みはストレス、恐怖反応及び損傷を最小限に抑えるように努めるものとする。若雌鶏又は雌鶏が捕鳥の間に損傷した場合には、人道的に殺処分するものとする。

若雌鶏及び雌鶏は、第7.3章第7.2.14条に従い、取り扱われ、輸送コンテナに入れられるものとする。

捕鳥は、若雌鶏及び雌鶏を静めるため、薄暗い又は青い照明の下でなるべく行われるものとする。

捕鳥は、捕鳥、輸送及び保管の間の気候的なストレスだけでなく輸送時間も最小限に抑えるように予定が立てられるものとする。

輸送コンテナの中の動物の密度は、第7.2章、第7.3章及び第7.4章に従うものとする。

動物の状態結果に基づく測定指標: 恐怖行動、損傷率及び深刻度、~~間引き時及び目的地の到着時の~~死亡率、空間分布、鳴き声

## 第7.2.26条

## 緊急時計画

若雌鶏及び雌鶏の生産者は、自然災害、疾病の発生及び機械設備の故障の影響を最小限に抑え、緩和するための緊急時計画を有するものとする。計画立案は防火計画が含まれるものとし、関連する場合には、不具合を発見するための安全警報装置の設置、維持管理及び試験、予備発電装置、維持管理者への接続、代替加温又は冷却の準備、農場用水の貯留能力、水運搬業者への接続、農場内の適切な飼料備蓄及び代替飼料供給、防火計画並びに空調緊急管理計画が含まれるものとする場合がある。

緊急時計画は、獣医サービスが策定した又は推奨した国家プログラムと整合しているものとする。人道的緊急殺処分手順は第7.6章に推奨される方法に従い計画の一部とする。

動物の状態結果に基づく測定指標: 淘汰率、罹病率及び死亡率

## 第7.2.27条

## 職員の適性

若雌鶏及び雌鶏に責任を有するすべての家畜飼養管理者は、適切な訓練を受けている又はその責任を遂行する能力を有することを立証できるものとし、若雌鶏及び雌鶏の行動、取扱い技術、緊急殺処分の手順、バイオセキュリティ、疾病の一般的徴候並びに粗悪なアニマルウェルフェアの指標及びそれを緩和する手順に関し、十分な知識を有しているものとする。

動物の状態結果に基づく測定指標：恐怖行動、疾病の発生、運動及び快適な行動、生産成績、~~罹病率~~、死亡率、淘汰率と罹病率、空間分布、鳴き声

## 第7.2.28条

## 検査及び取扱い

若雌鶏及び雌鶏、施設及び施設内の設備は、少なくとも毎日検査されるものとする。検査には以下の二つの主な目的がある。すなわち、治療又は淘汰のために病気又は損傷した鳥を確認すること、当該群れの中のウェルフェア又は健康上の問題を発見し、改善すること、並びに死亡した鳥を取り除くことである。

－ 病気または損傷をした若雌鶏及び雌鶏を確認し、治療または淘汰するため

－ 死んだ若雌鶏及び雌鶏を取り除くため

－ 群れの中のウェルフェアもしくは健康上の問題を発見し、改善するため

－ 設備や他の設備の問題の不具合を発見し、改善するため

検査は、家畜飼養管理者が群れの中を静かにゆっくりと動くなど、若雌鶏及び雌鶏鳥を不必要に混乱させることがないような方法で行われるものとする。

若雌鶏及び雌鶏を取り扱う場合（特に鶏舎に入れる又は取り出す場合）には、損傷を与えられず、恐れやストレスを最小限にするような姿勢に保たれるものとするたり、不必要に驚かせたり、ストレスを与えないものとする（例えば、まっすぐ立った姿勢で保定するものとする） [Gregory

and Wilkins, 1989; Gross and Siegel, 2007; Kannan and Mench, 1996]。若雌鶏及び雌鶏が運ばれる距離は最小となるようにする。適切に取り扱われない場合、採卵鶏は骨折する傾向にある。

動物の状態結果に基づく測定指標：恐怖行動、損傷率及び深刻度、罹病率、死亡率、淘汰率及び罹病率、生産成績、空間分布、鳴き声

## 第7.2.29条

## 捕食動物からの保護

若雌鶏及び雌鶏は、屋内と屋外では、捕食動物から保護されるものとする。全ての生産システムにおいて捕食動物と野鳥による接触を防止するようにデザインされ、維持管理されるものとする。

動物の状態結果に基づく測定指標：恐怖行動、~~死亡率~~、損傷率及び深刻度、運動及び快適な行動、~~死亡率~~、淘汰率及び罹病率、生産成績、空間分布、鳴き声



## Annex 16

## CHAPTER 7.Z.

ANIMAL WELFARE AND LAYING HEN  
PRODUCTION SYSTEMS

## Article 7.Z.1.

## Definitions

For the purposes of this chapter:

**Laying hens (hens):** means sexually mature female birds of the species *Gallus gallus domesticus* kept for the commercial production of eggs for human consumption. Laying hens kept in village or backyard flocks are excluded. Breeding hens are excluded.

**End-of-lay hens:** means laying hens at the end of their productive lives.

**Layer pullets (pullets):** means female birds of the species *Gallus gallus domesticus* raised for commercial layer production purposes from hatch until the onset of sexual maturity.

## Article 7.Z.2.

## Scope

This chapter addresses the welfare aspects of commercial laying hen production systems. This chapter covers the production period from the arrival of day-old birds on the pullet-rearing farm to the removal of end-of-lay hens from the laying production facilities. Laying hens kept in village or backyard flocks and used for personal consumption are excluded.

Commercial production systems involve the confinement of pullets and hensbirds, the application of *biosecurity* and trade in the eggs or pullets. These recommendations cover pullets or laying hens kept in cage or non-cage systems, whether indoors or outdoors.

Commercial pullet or hen production systems include:

## 1. Indoor systems

Pullets or hens are completely confined in a poultry house, with or without mechanical environmental control and with no designated outdoor area.

## 2. Outdoor systems

Pullets or hens are kept in premises with or without mechanical environmental control but have access to that include a designated outdoor area.

This chapter should be read in conjunction with Chapters 6.5., 7.1., 7.2., 7.3., 7.4., 7.5. and 7.6.

## Article 7.Z.3.

Criteria (or measurables) for the welfare of pullets and ~~or~~ hens

The welfare of pullets and ~~or~~ hens should be assessed using outcome-based measurables, specifically animal-based measurables. Consideration should also be given to the resources provided and the design of the system. Outcome-based measurables, specifically animal-based measurables, can be useful indicators of animal welfare. The use of these measurables indicators and the appropriate thresholds should be adapted to the different situations where hens are managed, also taking into account the genetics used strain of bird concerned.

## Annex 16 (contd)

Consideration should also be given to the resources provided as well as the design and management of the system. Animal-based criteria can be considered as tools to monitor and refine these factors.

Criteria that can be measured in the farm setting include behaviour, body and plumage condition, egg shell condition, mortality and morbidity rates, bone and foot problems, etc. together with other factors such as genetics and environment. The age at which abnormalities of these criteria are observed can help to determine the origin causation of potential problems. Other conditions such as bone and foot problems, disease, infection or infestation can also be assessed at depopulation or during routine sampling. It is recommended that values for welfare measurables be determined with reference to appropriate national, sectorial or regional standards for pullets or hens.

Conditions such as bone and foot problems, disease, infection or infestation can be assessed during routine or targeted sampling and at depopulation. It is recommended that target values or thresholds for welfare measurables be determined with reference to current scientific knowledge and appropriate national, sectorial or regional standards for pullets or hens.

The following outcome-based criteria and measurables are can be useful indicators of pullet or hen welfare:

## 1. Behaviour

The presence or absence of certain chicken behaviours could indicate either good animal welfare or an animal welfare problem, such as including fear, pain or sickness. In addition, chickens have evolved behaviours that they are highly motivated to perform and a good understanding of normal chicken behaviour [Nicol, 2015], including their social interactions [Estevez et al., 2007; Rodríguez-Aurrekoetxea, A. and Estevez, I., 2014], is required. Some behaviours may not be uniquely indicative of one type of problem; they may be exhibited for a variety of reasons. The domestic fowl have evolved behaviours that they are highly motivated to perform and a good understanding of their normal behaviour [Nicol, 2015], including their social interactions [Estevez et al., 2007; Rodríguez-Aurrekoetxea, A. and Estevez, I., 2014], is required for appropriate management decision making. Opportunities to display these behaviours are influenced by the physical and social environment [Widowski et al., 2016; Lay et al. 2011; O'Connor et al. 2011].

## a) Dust bathing

Dust bathing is an intricate body maintenance behaviour. During dust bathing, pullets and hensbirds work loose material, such as litter, through their feathers. This behaviour helps remove stale lipids dirt [Van Lier and Bokma, 1987] and parasites [Martin and Mullen, 2012], which contributes to maintaining plumage condition, which in turn helps to maintain body temperature and to protect against skin injury. Reduced dust bathing behaviour in the flock may indicate problems with litter or range quality, such as the litter or ground being wet or not friable [Olson and Keeling, 2005; Van Lier and Bokma, 1987]. The presence of complete sequences of dust bathing may indicate good welfare [Widowski and Duncan, 2000].

## b) Fear behaviour

Fearful pullets and hens show high reactivity to various stimuli [Jones R. B., 1987; Zeltner and Hirt, 2008]. Fearfulness can lead to traumatic injuries, and suffocation when the pullets and hensbirds pile on top of, and sometimes suffocate one another. Fearful pullets and hensbirds may be less productive [Barnett J. et al., 1992] and more prone to injurious feather pecking behaviour [Hass et al., 2014]. Methods have been developed for evaluating fearfulness, for example when while animal handlers walk through the poultry house or pullets and hensbird area [Jones, 1996; Forkman et al., 2007].

## c) Feeding and drinking behaviour

Reduced Changes in feeding or drinking behaviour canmay indicate management problems, including inadequate spaces for, or inappropriate placement of, feeders or drinkers, dietary imbalances, poor feed or water quality, or feed contamination [Garner et al., 2012; Thogerson et al., 2009a; Thogerson et al., 2009b]. Feeding and drinking are often depressed when birds are ill, and intake may also be reduced change during periods of heat [Lara L. J. & Rostagno M. H., 2013; Lin H. et al., 2006] stress and increased or during cold stress [Alves et al., 2012] [Garner et al., 2012; Thogerson et al., 2009a; Thogerson et al., 2009b].

## Annex 16 (contd)

## d) Foraging activity

Foraging is the act of searching for food, typically by walking and pecking or scratching the litter substrate. Reduced foraging activity could suggest problems with litter substrate quality or the presence of conditions that decrease pullets and hens' movement [Appleby *et al.*, 2004; Lay *et al.*, 2011; Weeks and Nicol, 2006]. When in the presence of an adequate substrate, laying hens spend a large amount of time foraging even when food is readily accessible [Weeks and Nicol, 2006]. Frequent foraging bouts may indicate good welfare [Dawkins, 1989; Duncan and Hughes, 1972] and reduce the incidence of injurious feather pecking [Blokhuys, 1989].

## e) Injurious feather pecking and cannibalism

Injurious feather pecking can result in significant feather loss and may lead to cannibalism. Cannibalism is the tearing of the flesh of another bird, and can result in severe injury or death. These behaviours can have multifactorial causes [Hartcher, 2016; Estevez, 2015; Nicol *et al.*, 2013; Rodenburg, 2013; Lambton, 2013; Newberry, 2004].

## f) Locomotion and comfort behaviours

Locomotion and comfort behaviours are important for the health of the pullets and hens, allowing for skeletal body and plumage development and their maintenance. These behaviours may include walking, running, leaping, turning, stretching legs and wings, wing flapping, feather ruffling and tail wagging and preening [Dawkins and Hardie, 2007; Shipov *et al.*, 2010; Norgaard, 1990].

Opportunities to display these behaviours are influenced by housing system and space [Widowski *et al.*, 2016; Lay *et al.*, 2011].

## g) Nesting

Nesting is a natural and highly motivated behaviour that includes nest site selection, nest formation and egg laying [Cooper and Albentosa, 2003; Weeks and Nicol, 2006; Cronin *et al.*, 2012; Yue and Duncan, 2003]. Uneven nest box utilisation and egg laying outside the nests may be indicative of problems with environmental or social behavioural factors [Cronin *et al.*, 2012; Cooper and Appleby, 1996; Gunnarsson *et al.*, 1999].

## h) Perching

Perching is a natural and highly motivated behaviour. Birds pullets and hens seek elevation during the day; the motivation to seek elevation is particularly strong at night when pullets and hens select a site for resting or sleeping [EFSA, 2015]. Reduced perching behaviour in the flock may indicate problems with environmental factors, injuries and pullet rearing experience [Janczak and Riber, 2015; Gunnarsson *et al.*, 1999].

## i) Resting and sleeping

Sleeping is a natural behaviour in pullets and hens, including slow-wave and fast-wave sleep states [Blokhuys, 1983]. Sleep is an adaptive state that allows animals to recover from daily stress, conserve energy and consolidate memory [Siegel, 2009]. Pullets and hens display highly synchronized resting and sleeping behaviours, which can be disrupted by light intensity, photoperiod, environmental or social factors [Malveau *et al.*, 2007; Alvino *et al.*, 2009].

## ii) Social behaviour

Pullets and hens are a highly social species, engaging in synchronised behaviour [Olsson *et al.*, 2002; Olsson and Keeling, 2005]. Benefits include social learning, protection from predators [Newberry *et al.*, 2001], aiding help in thermoregulation and plumage maintenance. Social behaviour may differ according to the characteristics of the social environment [Estevez *et al.*, 2002; 2007]. Problems in social behaviour can be assessed using scoring systems for measuring the degree of aggression damage and competition for resources [Estevez *et al.*, 2002].

## Annex 16 (contd)

## jk) Spatial distribution

Uneven spatial distribution of the birds may indicate thermal discomfort or uneven availability or use of resources, such as light, food or water, shelter, nesting area and comfortable resting locations. [Rodríguez-Aurrekoetxea and Estevez, 2016; Gornette and Estevez, 2004; Bright and Johnson, 2011].

## kl) Thermoregulatory behaviour

Prolonged or excessive panting and wing spreading are observed during heat stress [Mack, 2013; Lara and Rostagno, 2013]. Indicators of cold stress include feather ruffling, rigid posture, trembling, huddling and piling on top of each other and distress vocalisations.

## lm) Vocalisation

Vocalisation can indicate emotional states, both positive and negative. A good understanding of flock vocalisations is useful for good animal care [Zimmerman *et al.*, 2000; Bright, 2008; Koshiba *et al.*, 2013].

## 2. Body condition

Poor body condition is reflective of poor animal welfare outcomes problems for individual birds. At flock level, uneven body condition may be an indicator of potential poor animal welfare problems. Body condition can be evaluated using on-farm sampling methods for body weight or body condition scores [Gregory and Robins, 1998; Craig and Muir, 1996; Elson and Croxall, 2006; Keeling *et al.*, 2003]. The choice of sampling methods should take into account feather cover that can mask actual body condition.

## 3. Eye conditions

Conjunctivitis can indicate disease or the presence of irritants such as dust and ammonia. High ammonia levels can also cause corneal burns and eventual blindness. Abnormal eye development can may be associated with low light intensity [Jenkins *et al.*, 1979; Lewis and Gous, 2009; Prescott *et al.*, 2003].

## 4. Foot problems

Hyperkeratosis, and bumblefoot, excessive claw growth, broken claws and toe injuries are painful conditions associated with inappropriate flooring, poorly designed perches or poorly maintained litter [EFSA, 2005; Lay *et al.*, 2001; Abrahamsson and Tauson, 1995; Abrahamsson and Tauson, 1997].

Excessive claw growth, broken claws and toe injuries affect locomotion and may be associated with pain [EFSA, 2005].

Contact dermatitis affects skin surfaces that have prolonged contact with wet litter, manure or other wet flooring surfaces [Tauson and Abrahamson, 1996].

Foot problems are usually manifested as blackened skin progressing to erosion and fibrosis on the lower surface of the footpads and at the back of the hocks. If severe, the foot and hock lesions may contribute to locomotion problems and lead to secondary infections. Scoring systems for foot problems have been developed [Blatchford *et al.*, 2016].

## 5. Incidence of diseases, infections, metabolic disorders and infestations

Ill-health, regardless of the cause, is a welfare concern, and may be exacerbated by poor environmental or husbandry management.

## 6. Injury rate and severity

Injuries are associated with pain and risk of infection. The rate and severity of injuries can indicate health and welfare problems in the flock during production. They can be a consequence of the actions of injuries include those caused by other birds (e.g. scratches, feather loss or wounding), management (e.g. nutrition) by environmental conditions; (e.g. fractures and keel bone deformation), and or by human intervention (e.g. during handling and catching).

## Annex 16 (contd)

7. Mortality, culling and morbidity rates

Daily, weekly and cumulative mortality, culling and morbidity rates should be within expected ranges. Any unforeseen increase in these rates could reflect an *animal welfare* problem.

8. Performance

Daily, weekly and cumulative performance should be within expected ranges. Any unforeseen reduction decreases in these rates could may be reflective of the welfare status of the individual birds or the *flocks*.

- Pullet growth rate measures average daily mass gain per average pullet and *flock* uniformity.
- Pullet feed conversion measures the quantity of feed consumed by a *flock* relative to the total live mass produced, expressed as the mass of feed consumed per unit of body mass.
- Hen feed conversion measures the mass of feed consumed by a *flock* relative to the unit of egg production.
- Egg production, ~~such as when~~ measured by e.g. the number of eggs per hen housed.
- Egg quality and downgrades, such as when measured by e.g. grade percentage, shell strength and Haugh units, abnormalities and mis-laid or floor eggs.

9. Plumage condition

Evaluation of the plumage condition of ~~pullets and hens~~ provides useful information about aspects of welfare. Feather loss and damage can result from injurious feather pecking behaviour, nutritional problems, external parasites and abrasions resulting from faults in the equipment housing system [Rodríguez-Aurrekoetxea and Estevez, 2016; Drake *et al.*, 2010]. Plumage dirtiness may be associated with illness, the environmental conditions and or production system. Plumage scoring systems have been developed for these purposes [Blokhuys, 2007].

10. Water and feed consumption

Monitoring daily water and feed consumption is a useful tool to which may indicate thermal stress, disease, infection or infestation and other welfare conditions, taking into consideration ambient temperature, relative humidity and other related factors. ~~Problems with the water or feed quality and supply can result in~~ Changes in intake, crowding at feeders and drinkers and wet litter and diarrhoea, dermatitis, dehydration, changes in egg quality or quantity, production and body condition may be associated with problems with the water or feed quality and supply.

## Article 7.Z.4.

**Recommendations**

Ensuring good welfare of pullets and hens is contingent on several management factors, including system design, environmental and animal management practices which include responsible husbandry and provision of appropriate care. Serious problems can arise in any system if one or more of these elements are lacking.

Articles 7.Z.5. to 7.Z.29. provide recommendations for measures applied to pullets and hens.

Each recommendation in Article 7.Z.5. to 7.Z.29. includes a list of relevant animal-based criteria and measurables derived from Article 7.Z.3. This does not exclude other criteria and measurables being used where or when appropriate. The suitability of some of these criteria and measurables will be determined by the system in which the pullets and hens are housed.

Each recommendation includes a list of relevant outcome-based measurables derived from Article 7.Z.3. This does not exclude other measures being used when appropriate.

## Annex 16 (contd)

## Article 7.Z.5.

**Location, design, construction and equipment of establishments**

The location of pullets and hen *establishments* should be chosen to be safe from the effects of fires and floods and other natural disasters to the extent practicable. In addition, *establishments* should be located or designed to avoid or minimise disease risks, exposure of pullets and hens to chemical and physical contaminants, noise and adverse climatic conditions.

Pullet and layer houses, outdoor areas and accessible equipment should be designed, after consideration of bird the opportunities for pullets and hens to perform highly motivated behaviours (e.g. perching and nesting), to promote good animal welfare and be maintained to avoid injury or discomfort pain to the birds.

Pullet and layer houses should be constructed with materials and electrical and fuel installations that minimise the risk of fire and other hazards.

Producers should have a maintenance programme in place for all equipment and contingency plans in place to deal with the failures of which could jeopardise bird pullet and hen welfare.

~~Outcome~~Animal-based measurables include: culling and morbidity rates, fear behaviour, feeding, and drinking behaviour, and foraging activity, foot problems, incidence of diseases, infections and infestations, injury rates and severity, locomotion and comfort behaviours, mortality rates, performance, plumage condition, resting and sleeping, social behaviour and spatial distribution, thermoregulatory behaviour, vocalisations.

## Article 7.Z.6.

**Matching the birds and the housing and production system**

Welfare and health considerations should balance any decisions on performance when choosing a layer strain for a particular location, housing and production system. The pullet rearing system should pre-adapt ~~prepare~~ the bird for the intended layer production system [Aerni *et al.*, 2005].

~~Animal~~Outcome-based measurables include: dust bathing, feeding, and drinking behaviours, foraging activity, incidence of diseases, injurious feather pecking and cannibalism, injury rate and severity, locomotion and comfort behaviours, mortality rate, nesting, infestations, perching, performance, plumage condition, resting and sleeping, social behaviour, spatial distribution.

## Article 7.Z.7.

**Stocking density-Space allowance**

Pullets and hens should be housed with at a space allowance ~~stocking density~~ that allows them to have adequate access to resources and to express locomotion and comfort behaviours. The following factors should be taken into account:

- management capabilities,
- ambient conditions,
- housing design system
- usable space,
- production system,
- litter quality,
- ventilation,
- *biosecurity* strategy,
- genetics strain,
- age and bird mass.

## Annex 16 (contd)

Animal Outcome-based measurables include: dust bathing, feeding and drinking and foraging behaviour, foraging activity, feeding, incidence of diseases, infections and infestations, injury rate and severity, locomotoryien and comfort behaviours, mortality rate, nesting, perching, performance, plumage condition, resting and sleeping, social behaviour, spatial distribution.

## Article 7.Z.8.

**Nutrition**

Pullets and hens should always be fed a diet appropriate to their age, production stage and genetics strain, which contains adequate nutrients to meet their requirements for good health and welfare.

The form and quality of feed and water should be acceptable to the birds and free from contaminants, debris and microorganisms hazardous to bird health.

The feeding and watering systems should be inspected regularly and cleaned as needed regularly to prevent the growth of hazardous microorganisms.

Birds Pullets and hens should be provided with adequate access to feed on a daily basis. Water should be continuously available except under veterinary advice. Special provision should be made to enable newly hatched pullets chicks to access appropriate feed and water.

Animal Outcome-based measurables include: aggression, body condition, performance (egg quality), water and feed consumption, foraging activity behaviour, incidence of disease, infections and infestations, injurious feather pecking, injury rate and severity, metabolic disorders, mortality rate, performance, plumage condition, vocalisations.

## Article 7.Z.9.

**Flooring**

The flooring for the birds should be easy to clean and disinfect and not cause harm or damage to them.

The slope, and design and construction of the floor should allow birds pullets and hens to express normal locomotoryien and comfort behaviours. The floors should provide adequate support the birds adequately, prevent injuries, entrapments and ensure good health and that manure does not contaminate other birds pullets and hens. Changes of flooring types from pullet to layer housing should be avoided. The flooring should be easy to clean and disinfect and should not cause harm.

The provision of loose and dry litter material is desirable to encourage dust bathing and foraging by pullets and hens. When litter is provided it should be managed to minimise any detrimental effects on welfare and health. Litter should be managed to remain dry and friable, replaced or adequately treated or replaced when required to prevent diseases and minimise any detrimental effects on welfare, infections and infestations.

Animal Outcome-based measurables include: comfort behaviour, dust bathing, foot problems, foraging, incidence of diseases, infections and infestations, injury rates and severity, locomotoryien, performance, plumage condition, resting and sleeping.

## Article 7.Z.10.

**Dust bathing areas**

The provision of friable, dry litter material is desirable to encourage dust bathing by pullets and hens.

When ~~d~~ Dust bathing areas are offered, they should be provide suitable friable materials, designed and positioned to encourage dust bathing, allow synchronised behaviour, prevent undue competition and not cause damage or injuries. Dust bathing areas should be easy to inspect and maintain clean ~~[Lentfer et al., 2014] [Weeks and Nicol, 2006]~~.

Animal Outcome-based measurables include: dust bathing, injury rate and severity, plumage condition, spatial distribution.

## Annex 16 (contd)

## Article 7.Z.11.

**Foraging areas**

The provision of friable, dry litter material is desirable to encourage foraging activity by pullets and hens.

When ~~f~~ Foraging areas are offered, they should provide suitable materials, and be designed and positioned to encourage foraging activity, allow synchronised behaviour, prevent undue competition and not cause damage or injuries. Foraging areas should be easy to inspect and maintain clean.

Animal Outcome-based measurables include: foraging activity, injurious feather pecking and cannibalism, injury rate and severity, spatial distribution.

## Article 7.Z.12.

**Nesting areas**

When ~~n~~ Nesting areas should be provided are offered, they and should be built of suitable materials, designed and positioned to encourage nesting, prevent undue competition and not cause damage or injuries. Nesting areas should be easy to inspect, clean and maintain ~~disinfect~~.

Animal Outcome-based measurables include: injurious feather pecking and cannibalism, injury rate and severity, nesting, performance, (mis-laid or floor eggs), spatial distribution.

## Article 7.Z.13.

**Perches**

When ~~p~~ Perches should be provided are offered, they and should be built of suitable materials, designed, elevated and positioned to encourage perching for all pullets and hens, to prevent keel bone deformation or foot problems or other harms, and to maintain stability of the birds during perching. In the absence of designated perches, platforms, grids and slats that are perceived by the pullets and hens birds as elevated and that do not cause damage or injuries, may be a suitable alternative. Perches or their alternatives should be easy to clean and maintain ~~disinfect and positioned to minimise faecal fouling~~ [Hester, 2014; EFSA, 2015].

Perch elevation should be carefully considered to minimise injurious feather pecking, cannibalism, keel deformities and fractures.

Animal Outcome-based measurables include: foot problems, injurious feather pecking and cannibalism, injury rate and severity, perching, plumage condition, resting and sleeping, spatial distribution.

## Article 7.Z.14.

**Outdoor areas**

Pullets and hens can be given access to outdoor areas as seen as when they have sufficient feather cover and are old enough to can range safely. There should be sufficient appropriately designed exit areas openings to allow them to leave and re-enter the poultry house freely.

Management of outdoor areas is important. Land and pasture management measures should be taken to reduce the risk of birds becoming infected by pathogenic agents, infested by parasites or being injured. This might include limiting the stocking density or using several pieces of land consecutively in rotation.

Outdoor areas should be located on well-drained ground and managed to minimise swampy conditions standing water and mud. The outdoor area should be able to contain the Pullets and hens birds and prevent them escaping. Outdoor areas should allow pullets and hens to feel safe outdoors and be encouraged to optimise utilisation of the range, while mitigating predation and disease risks [Gilani et al., 2014; Hegelund et al., 2005; Nagle and Glatz, 2012]. Hens should be habituated early to the outdoor area [Rodríguez-Aurrekoetxea and Estevez, 2016]. Outdoor areas should provide shelter for the birds and be free from poisonous harmful plants and contaminants.



## Annex 16 (contd)

~~Animal Outcome~~-based measurables include: fear behaviour, foot problems, foraging activity, incidence of diseases, injury rate and severity, locomotion and comfort behaviours, morbidity rate, mortality rate, infestations, performance, plumage condition, social behaviour, spatial distribution, thermoregulatory behaviour, vocalisation.

Article 7.Z.15.

**Thermal environment**

Thermal conditions for pullets and hens should be maintained within a range that is appropriate for their stage of life, and extremes of heat, humidity and cold should be avoided. A heat index can assist in identifying the thermal comfort zones for the pullets and hens at varying temperature, air velocity and relative humidity levels, and can be found in management guidelines provided by primary laying hen genetics companies [Xin and Harmon, 1998].

When environmental conditions move outside of these zones, strategies should be used to mitigate the adverse effects on the pullets and hens birds. These may include adjusting air speed, provision of heat or evaporative cooling [Yahav, 2009].

Control of the thermal environment should be monitored frequently enough so that failure of the system will be ~~noticed~~ detected and corrected before it causes a welfare problem.

~~Animal Outcome~~-based measurables include: morbidity rate, mortality rate, performance, spatial distribution, thermoregulatory behaviours, water and feed consumption.

Article 7.Z.16.

**Air quality**

Ventilation, housing, and manure management can affect air quality. Actions are required to maintain air quality at all times, including the removal or mitigation of noxious of waste gases such as carbon dioxide and ammonia, dust and excess moisture ~~content from in~~ the environment.

The ~~a~~Ammonia concentration should not routinely exceed 25 ppm at bird level [David *et al.*, 2015; Milles *et al.*, 2006; Olanrewaiu, 2007].

Dust levels should be kept to a minimum [David, 2015]. ~~Where the health and welfare of birds depend on an artificial ventilation system, provision should be made for an appropriate back-up power and alarm system.~~

~~Animal Outcome~~-based measurables include: eye conditions, incidence of respiratory diseases, plumage condition, performance.

Article 7.Z.17.

**Lighting**

There should be an adequate period of continuous light.

The light intensity during the light period should be sufficient and homogeneously distributed to promote for normal development ~~of the birds~~, for finding feed and water, to stimulate activity, to stimulate onset of lay, minimise likelihood of feather pecking and cannibalism and to allow adequate inspection [Prescott *et al.*, 2003; Prescott and Wathes, 1999; Green *et al.*, 2000].

There should also be an adequate period of ~~light and~~ darkness during each 24-hour cycle to allow pullets and hens the birds to rest, to reduce stress and to promote circadian rhythms [Malleau *et al.*, 2007].

When changes in lighting are needed, they should be performed in a step-wise fashion, except during induced moulting (~~if practised~~) when rapid adjustments to lighting should be considered are desired.

~~Animal Outcome~~-based measurables include: eye conditions, injurious feather pecking and cannibalism, injury rate and severity, locomotion behaviours, nesting, perching, performance, plumage condition, resting and sleeping, spatial distribution.

## Annex 16 (contd)

Article 7.Z.18.

**Noise**

Pullets and hens are adaptable to different levels and types of noise. ~~However, Exposure of birds pullets and hens to~~ unfamiliar noises, particularly those that are sudden or loud, should be minimised ~~wherever possible~~ to prevent stress and fear reactions, such as piling up [Bright and Johnson, 2001]. Ventilation fans, machinery or other indoor or outdoor equipment should be constructed, placed, operated and maintained in such a way that it causes the least possible amount of noise [Chloupek *et al.*, 2009].

Location of establishments should, where possible, take into account existing local sources of noise. Strategies should be implemented to habituate the birds to the conditions [Candland *et al.*, 1963; Morris, 2009].

~~Animal Outcome~~-based measurables include: fear behaviours, injury rate and severity, mortality rate, performance, resting and sleeping, vocalisation.

Article 7.Z.19.

**Prevention and control of injurious feather pecking and cannibalism**

Injurious feather pecking and cannibalism are challenges in pullet and hen production.

Management methods that may reduce the risk of occurrence include:

- managing light in rearing and lay [Nicol *et al.*, 2013; van Niekirk *et al.*, 2013],
- choosing genetics strain with a low propensity to injurious feather pecking [Craig and Muir, 1996; Kjaer and Hocking, 2004],
- influencing age of onset of lay [Green *et al.*, 2010],
- providing foraging or other manipulable materials in rearing and lay [Huber-Eicher and Wechsler, 1998; de Jong *et al.*, 2010; Daigle *et al.*, 2014],
- adapting diet and form of feed in rearing and lay [Lambton *et al.*, 2010],
- reducing stocking density [Zimmerman *et al.*, 2006];
- reducing group size in rearing and lay [Bilcik and Keeling, 1999],
- providing elevated perches in rearing and lay [Green *et al.*, 2010],
- treating beaks in chicks [Gentle and Hughes, 1997], especially by using new non-invasive beak treatments that are being developed,
- minimising fear-related stimuli [Uitdehaag K. A. *et al.*, 2009],
- introducing males [Bestman and Wagenaar, 2003].

Management methods to control the occurrence include the above list, where applicable, and prompt removal of affected pullets and hens birds to a hospital area or euthanasia.

If these management strategies fail, therapeutic beak treatment ~~trimming is the last resort~~ may be considered as a final course of action.

~~Animal Outcome~~-based measurables include: injurious feather pecking and cannibalism, injury rate and severity, mortality and culling rate, plumage condition, vocalisation.

Article 7.Z.20.

**Moulting**

Induced moulting can lead to animal welfare problems if not well managed. When induced moulting is practised, techniques that do not involve withdrawal of feed ~~should be used and are consistent with Article 7.Z.8, should be used~~. Hens should have light and have access to water at all times. Only hens in good body condition and health should be moulted. During the moulting period, body mass loss should not compromise hen welfare, including welfare during the subsequent laying period. Total mortality and culling rate during the moult period should not exceed normal variations in flock mortality and culling rate.

## Annex 16 (contd)

~~Animal~~Outcome-based measurables include: body condition, feeding and drinking, foraging activity [Biggs *et al.*, 2004; Saiozkan *et al.*, 2016; Petek and Alpay, 2008], injurious feather pecking and cannibalism, injury rate and severity, morbidity rate, mortality and culling rate, performance, plumage condition, social behaviour.

Article 7.2.21.

## Painful interventions

Painful interventions, such as beak ~~treatment~~trimming, should not be practised unless absolutely necessary and pain mitigation interventions should be used. Beak trimming at a mature age can cause chronic pain. Other mutilations (e.g. dubbing and toe trimming) should not be performed in pullets and hens. Pain-free alternatives should be favoured are preferred. If preventive beak ~~treatment~~trimming is required, it should be carried out by trained and skilled personnel at the earliest age possible and care should be taken to remove the minimum amount of beak necessary using a method, which minimises pain and controls bleeding. Current methods include infrared treatment or hot blade cutting. Beak trimming at a mature age can cause chronic pain. If management strategies to control injurious feather pecking and cannibalism fail, therapeutic beak treatment may be considered as a final course of action [Gentile *et al.*, 1991; Marchand-Forde *et al.*, 2008; Marchand-Forde *et al.*, 2010; McKeegan and Philbey, 2012; Freire *et al.*, 2011; Glatz *et al.*, 1998]. Other mutilations (e.g. dubbing and toe trimming) should not be performed in pullets and hens.

Beak trimming at a mature age can cause chronic pain. If therapeutic beak trimming is required, at whatever age, it should be carried out by trained and skilled personnel and care should be taken to remove the minimum amount of beak necessary using a method which minimises pain and controls bleeding.

AnimalOutcome-based measurables include: feeding and drinking behaviour and foraging activity, feeding, injurious feather pecking and cannibalism, locomotory and comfort behaviours, mortality rate, morbidity rate, performance, plumage condition, vocalisations.

Article 7.2.22.

## Animal health management, preventive medicine and veterinary treatment

Animal handlers responsible for the care of pullets and hens should have be knowledge aware of normal pullet and hen behaviour, the and be able to detect signs of ill-health or distress, such as a change in feed and water intake, reduced production, changes in behaviour, abnormal plumage condition ~~appearance of feathers~~, faeces, or other physical features.

If they are not unable to identify the causes of disease, ill-health or distress, or unable to correct these, or if they suspect the presence of a notifiable disease, they should seek advice from veterinarians or other qualified advisers. Veterinary treatments should be prescribed by a veterinarian.

There should be an effective programme for the prevention and treatment of diseases consistent with the programmes established by Veterinary Services as appropriate.

Vaccinations and treatments should be administered by personnel skilled in the procedures and with consideration for the welfare of the pullets and hens.

Sick or injured pullets and hens should be placed in a hospital area for observation and treatment or humanely killed in accordance with Chapter 7.6. as soon as possible.

AnimalOutcome-based measurables include: body condition, incidence of diseases, injury rate and severity, metabolic disorders and infestations, morbidity rate, mortality rate, performance.

Article 7.2.23.

## Biosecurity

Biosecurity plans should be designed and implemented, commensurate with the best possible pullets and hensbirds health status and current disease risk (endemic and exotic or transboundary) that is specific to each epidemiological group of pullets and hens and in accordance with relevant recommendations in the Terrestrial Code.

## Annex 16 (contd)

These programmes should address the control of the major routes for *infection* and *infestation* such as:

- direct transmission from other *poultry*, domestic *animals* and *wildlife* and humans,
- fomites, such as equipment, facilities and vehicles,
- *vectors* (e.g. arthropods and rodents),
- aerosols,
- water supply,
- feed,
- the practice of partially restocking the house (back filling), due to catastrophe or incomplete *flock* placement, which should only be performed with due consideration to *biosecurity* and in a manner that prevents commingling of *flocks*.

AnimalOutcome-based measurables include: incidence of diseases, infestations, morbidity rate mortality rate, culling and morbidity rates, mortality rate, performance.

Article 7.2.24.

## Humane killing of individual birds or flocks

Individual sick or injured pullets or hens requiring euthanasia should be humanely killed as soon as possible. When an individual or groups of pullets or hens birds are killed for euthanasia, diagnostic purposes, depopulation of end-of-lay *flocks* or for purposes of disease control, the techniques used should be performed in a humane manner in accordance with Chapter 7.6.

Article 7.2.25.

Depopulation of pullet and layer hen facilities

This article refers to removal of pullets and laying hens from facilities for whatever reason and should be read in conjunction with Article 7.2.24.

Pullets and hens should not be subjected to an excessive period of feed withdrawal prior to the expected depopulation time [Webster, 2003].

Water should be available up to the time of depopulation.

Birds-Pullets and hens that are not fit for loading or transport because they are sick or injured should be humanely killed.

Catching should be carried out by competent *animal handlers* in accordance with the condition of Article 7.2.28, and every attempt should be made to minimise stress, fear reactions and injuries. If a pullet or henbird is injured during catching, it should be humanely killed.

Birds-Pullets and hens should be handled and placed into the transport *container* according to Chapter 7.3, Article 7.2.14.

Catching should preferably be carried out under dim or blue light to calm the birds-pullets and hens.

Catching should be scheduled to minimise the transport time as well as climatic stress during catching, transport and holding.

Stocking density in transport *containers* should comply with Chapters 7.2., 7.3. and 7.4.

AnimalOutcome-based measurables include: fear behaviour, injury rate and severity, mortality at depopulation and on arrival at the destination, spatial distribution, vocalisation.

## Annex 16 (contd)

## Article 7.Z.26.

**Emergency Contingency plans**

Pullet and hen producers should have emergency contingency plans to minimise and mitigate the consequences of natural disasters, disease *outbreaks* and the failure of mechanical equipment. Planning should include a fire safety plan and where relevant, may include the provision, maintenance and testing of fail-safe alarm devices to detect malfunctions, backup generators, access to maintenance providers, alternative heating or cooling arrangements, ability to store water on farm, access to water cartage services, adequate on-farm storage of feed and alternative feed supply, a fire safety plan and a plan for managing ventilation emergencies.

The emergency contingency plans should be consistent with national programmes established or recommended by *Veterinary Services*. Humane emergency *killing* procedures should be a part of the plan according to the methods recommended in Chapter 7.6.

Animal Outcome-based measurables include: culling, morbidity and mortality rates.

## Article 7.Z.27.

**Personnel competency**

All *animal handlers* responsible for the pullets and hens should have received appropriate training or be able to demonstrate that they are competent to carry out their responsibilities and should have sufficient knowledge of pullet and hen behaviour, handling techniques, emergency killing procedures, *biosecurity*, general signs of diseases, and indicators of poor *animal welfare* and procedures for their alleviation.

Animal Outcome-based measurables include: fear behaviour, incidence of diseases, locomotion and comfort behaviours, performance, morbidity rate, mortality, culling and morbidity rate, spatial distribution, vocalisation.

## Article 7.Z.28.

**Inspection and handling**

Pullets and hens and facilities and equipment within their premises should be inspected at least daily. Inspection should have the following three main objectives: to identify sick or injured birds to treat or cull them, to detect and correct any welfare or health problem in the flock and to pick up dead birds.

- = to identify sick or injured pullets and hens and to treat or cull them;
- = to pick up dead pullets and hens;
- = to detect and correct any welfare or health problem in the flock; and
- = to detect and correct malfunctioning equipment and other facility problems.

Inspection should be done in such a way that birds-pullets and hens are not unnecessarily disturbed, for example *animal handlers* should move quietly and slowly through the *flock*.

When pullets and hens are handled, particularly when birds are placed into or removed from the house, they should not be injured, and should be held in postures that minimise fear and stress unnecessarily frightened or stressed (e.g. should be restrained in an upright posture) [Gregory & Wilkins, 1989; Gross & Siegel, 2007; Kannan & Mench, 1996]. The distances pullets and hens are carried should be minimised. Laying hens are prone to bone fractures when not handled properly.

Animal Outcome-based measurables include: fear behaviour, injury rate and severity, morbidity rate, mortality, culling and morbidity rates, performance, spatial distribution, vocalisation.

## Annex 16 (contd)

## Article 7.Z.29.

**Protection from predators**

Pullets and hens should be protected from predators in indoor and outdoor areas. All production systems should be designed and maintained to prevent access by predators and wild birds.

Animal Outcome-based measurables include: fear behaviour, mortality, injury rate and severity, locomotion and comfort behaviours, mortality, culling and morbidity rates, performance, spatial distribution, vocalisation.

## Annex 16 (contd)

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※本資料は参考仮訳ですので、最終的な確認は原文をご参照ください。

## 参考資料 7

## 第 7. 1 章

## アニマルウェルフェアの勧告に係る序論

## 第 7. 1. 4 条

## アニマルウェルフェアを評価するための測定指標の使用の指導原則

5. 基準のユーザーは、基準で列挙されている動物の状態に基づく測定指標のうち、生産のシステム又は環境にとって最も適切なものを選択するものとする。成果は、飼育施設、輸送又はと畜場からのデータを使って、個別の動物又は動物群又はそれらの代表的なサンプルを評価することによって測定することができる。ユーザーを指導するため、担当当局は目標値を設定するために使うことができる全ての関連データを収集するものとする。

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## CHAPTER 7.1.

INTRODUCTION TO THE  
RECOMMENDATIONS FOR ANIMAL WELFARE

[...]

Article 7.1.4

Guiding principles for the use of measures to assess animal welfare

[...]

- 5) Users of the standard should select the most appropriate animal-based measures for their farming system or environment, from among those listed in the standard. Outcomes can be measured by an assessment of individuals or animal groups, or a representative sample of those, using data from *establishments*, transport or *slaughterhouses/abattoirs*. To guide users, Competent Authorities should collect all relevant data that can be used to set target values.

[...]

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※本資料は参考仮訳ですので、最終的な確認は原文をご参照ください。

## 参考資料 8

## 第 7.13 章

### アニマルウェルフェアと豚生産システム

#### 第 7.13.4 条

#### 豚のウェルフェアの基準（測定指標）

以下の結果に基づく基準（又は測定指標）、とりわけ豚の状態に基づく基準は、アニマルウェルフェアの実用的な指標になり得るものである。本指標及びその適切な閾値の使用は、豚が管理されるさまざまな状態（地域差、群衛生、豚の品種又は交雑種、及び気候等）に合わせて適合されるものとする。提供されたりソース及びシステムの設計にも配慮が払われるものとする。設計及び管理がアニマルウェルフェアに影響を与え得ることを考慮すると、これらの基準は両者の効果を監視する道具とみなすことができる。

#### 1. 行動

いくつかの行動（遊び及び特定の鳴き声等）は、豚の良好なアニマルウェルフェア及び健康の指標となるようである。

いくつかの他の行動は、アニマルウェルフェア及び健康上の問題を示している場合がある。これには、突然の静止、逃走の試み、飼料摂取量や飲水量の変化、運動行動又は姿勢の変化、横臥時間の変化、姿勢及びパターンの変化、呼吸数の変化、例えば呼吸、咳、ふるえ、身の寄せ合い、甲高い鳴き声及び鳴き声の割合の増加、反抗の増加（攻撃を含む）や、常同性の行動の増加、無関心な行動の増加、又はその他の異常な行動の増加がある。

常同性を誘発する環境はまた、通常、アニマルウェルフェアを低くする。常同性は一般的にウェルフェアの低さを示すとされるが、常同性とストレスの関連が乏しい場合がある。例えば、欲求不満によって誘発されたストレスは、行動自体が根本にある誘因を低減する場合には、多少矯正されることがある。このため、群の中では、常同性を示している個体は示していない個体よりもうまく対処することがある。それにもかかわらず、常同性は動物にとって現在の問題、又は解決された過去の問題のいずれかを示す。他の指標と同様に、常同性を他の指標から切り離してウェルフェアの測定指標として使う場合は、注意するものとする。

#### 第 7.X.15 条

#### 空気の性状

空気の良好な性状及び換気は、呼吸器の不快、疾病及び異常な行動のリスクを低減するため、豚のウェルフェア及び衛生上重要である。塵、毒素、微生物、有毒ガス（たとえば、動物のふん尿の腐敗によって生ずるアンモニア、硫化水素、メタン）は屋内型システムでは問題となる。

空気の性状は、舎飼型の管理及び畜舎設計に強く影響される。空気の組成は、動物の飼養密度、豚の体格、床、敷料、ふん尿の管理、畜舎設計及び換気システムに影響される。

乾燥のない、適切な換気は、特に若齢の豚にとって、豚の効果的な放熱、ふん尿の貯留システムからのものを含む畜舎内の流出ガス（たとえば、アンモニア及び硫化水素）及び塵芥の抑制のために重要である。非開放型畜舎内のアンモニア濃度は、25ppmを超えないものとする。有用な指標として、豚レベルの空気の性状が人にとって不快であれば、豚にとっても問題となる可能性が高い。

動物の状態に基づく基準（又は測定指標）：罹病率、死亡率及び淘汰率、外観（鼻又は目からの分泌物）、行動（とりわけ呼吸数、咳及び尾の噛みつき）、体重及び体型の減少

Annex 6

## CHAPTER 7.13.

**ANIMAL WELFARE AND  
PIG PRODUCTION SYSTEMS**

[...]

Article 7.13.4.

**Criteria (or measurables) for the welfare of pigs**

The following outcome-based criteria (or measurables), specifically animal-based criteria, can be useful indicators of *animal welfare*. The use of these indicators and their appropriate thresholds should be adapted to the different situations in which pigs are managed such as regional differences, *herd* health, pig breed or crossbreed, and climate. Consideration should also be given to the resources provided and the design of the systems. These criteria can be considered as tools to monitor the efficiency of design and management, given that they can affect *animal welfare*.

**1. Behaviour**

Certain behaviours appear to be indicators of good animal welfare and health in pigs such as play and specific vocalisations.

Certain other behaviours could indicate an *animal welfare* and health problem. These include sudden immobility, escape attempts, changes in *feed* and water intake, altered locomotory behaviour or posture, altered lying time, postures and patterns, altered respiratory rate and panting, coughing, shivering and huddling, high-pitched vocalisations and increased call rate, increased agonistic (including aggression), stereotypic, apathetic or other abnormal behaviours.

Environments that induce stereotypes typically also reduce animal welfare. Although stereotypes are generally held to indicate poor welfare, there are some instances where there is a poor association between stereotypes and stress. For example, frustration-induced stress may be somewhat rectified if the behaviour itself reduces the underlying motivation. Within a group, individuals that perform stereotypes may thus be coping more successfully than those that do not. Nevertheless, stereotypes indicate either a present problem for the animal or a past problem that has resolved. As with other indicators, caution should be used when using stereotypes as a welfare measure in isolation from other indicators.

[...]

Article 7.13.15.

**Air quality**

Good air quality and ventilation are important for the welfare and health of pigs and reduce the risk of respiratory discomfort, diseases and abnormal behaviour. Dust, toxins, microorganisms and noxious gases, including ammonia, hydrogen sulphide, and methane caused by decomposing animal waste, can be problematic in indoor systems.

Air quality is influenced strongly by management and building design in housed systems. Air composition is influenced by stocking density, the size of the pigs, flooring, bedding, waste management, building design and ventilation system.

Proper ventilation, without draughts, particularly for young pigs, is important for effective heat dissipation in pigs and to prevent the build-up of effluent gases (e.g. ammonia and hydrogen sulphide), including those from manure and dust in the housing unit. The ammonia concentration in enclosed housing should not exceed 25 ppm. A useful indicator is that if air quality at the level of the pigs is unpleasant for humans it is most likely a problem for pigs.

Annex 6 (contd)

Animal-based criteria (or measurables): morbidity, mortality and culling rates, physical appearance (discharges from nose or eyes), behaviour (especially respiratory rate, coughing and tail biting), change in body weight and body condition.

[...]

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2019年2月のコード委員会に向け、加盟国に意見照会されたコード改正案、報告書及び作業計画(2019年1月14日、OIEへの提出締切り)

項目 番号	参照付属書No. (コード委員会報告書のAnnex番号)	名称(英語)	名称(仮訳)	ポイント	コード委員会 報告書本文
【2019年5月に採択予定であり、コメント募集中】					
3.(c)	3	Infection with <i>Chlamydophila abortus</i> (Enzootic abortion of ewes, ovine Chlamydiosis)(Chalter 14.4)	流行性羊流産	○タイトル及び第14.4.1条 Chlamidophila abortusからChlamidia abortusに修正	p.4
4.3	4	The role of the Veterinary Services in food safety systems (Chapter 6.2.)	食品安全システムにおける獣医サービスの役割	○第6.2.4条 獣医サービスの役割と責任を明確化するため、“Veterinary Services”“Veterinary Authorities”“Competent Authorities”を正確に使い分けるための修正	p.5
4.4	5	Guiding principles for the use of measures to assess animal welfare(Article7.1.4)	アニマルウェルフェアを評価する測定指標の使用のための指導原則	○第7.1.4条 「所管当局は、目標値の設定に使用可能な全ての関連データを収集するものとする」を追加	p.6
4.5	6	Animal welfare and pig production systems	アニマルウェルフェアと豚生産システム	○第7.13.15条 空気の性状についての、動物の状態に基づく基準のうちの外観(physical appearance)の例示を「鼻及び眼からの分泌物」に修正	p.7
5.1	7	Glossary Part A	用語集A	○“early detection system”を削除し、“early warning system”を追加	p.7

項目 番号	参照付属書No. (コード委員会報 告書のAnnex番 号)	名称(英語)	名称(仮訳)	ポイント	コード委員会 報告書本文
5.2	8	Animal health surveillance(Chapter1.4.)	動物衛生サーベイランス	<p>○第1.4.1条「本章で定める一般的な勧告は国又は地域の状況に応じて最適化されることがある」を追加</p> <p>○第1.4.2条 採材単位の定義から“sampling frame”についての記載を削除</p> <p>○第1.4.3条 “Analytical methodologies”「数学的・統計学的分析は、サーベイランスの目的、野外データの入手可能性と質によって、それが妥当とされる場合に限り実施されることがある」と修文</p> <p>○第1.4.4条 “non-probability-based methods”を使用する場合の留意点を追加</p> <p>○第1.4.4条 “risk-based methods”はリスク評価に基づくべきである旨を追加</p> <p>○第1.4.4条 異なる検査機関由来のデータを分析する場合の妥当性について追加</p> <p>○第1.4.5条 通報性疾患又は新興疾病の通報の内容に関する具体的な例示を削除</p> <p>○第1.4.5条 早期警戒システムにおける疫学調査の目的を明記</p> <p>○第1.4.6条 ワクチン接種について、清浄宣言に当たっての前提条件とはせず、歴史的清浄を宣言する場合は過去10年間にわたってワクチン接種を行っていないことを追記。</p>	p.8
5.5	9	Draft new chapter on introduction to recommendations for disease prevention and control(Chapter 4.Z)	疾病の予防及び管理に関する勧告序論(新規章)	○文章の明確化を図る目的での軽微な修正及び追記	p.16
5.7	10(23)	<p>Draft new chapter on killing of reptiles for their skins,meat and other products(Chapter 7.Y)</p> <p>(参考:Report of ad hoc Group on Killing of reptiles for their skins,meat and other products(August 2018))</p>	<p>は虫類(皮、肉その他製品用)のと殺方法(新規章)</p> <p>(2018年8月アドホックグループ報告)</p>	<p>○第7.Y.4条 動物の入手源については、アニマルウェルフェアよりも環境や種の保存の観点から重要であることから、一般条件とは別の条で整理</p> <p>○第7.Y.5条 と殺の方法として、スタニング後のと殺と、直接と殺する方法があり、スタニングを使用する場合は意識がないうちに確実にと殺することを明記</p> <p>○第7.ZY.6条 爬虫類においては、心臓の動き単独では死亡の指標として使われるべきではないことを明記</p> <p>○その他、と殺方法ごとに、具体的な勧告を整理</p>	p.19

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5.8	11	Infection with rabies virus (Chapter 8.14.)	狂犬病ウイルス感染症	<p>○第8.14.2条 輸入症例が動物検疫所外で確認された場合の考え方を明記</p> <p>○第8.14.6条 狂犬病ウイルス汚染国又は地域からのイヌ、ネコ及びフェレットの輸入に係る勧告について、「発送日から12か月以内にワクチン接種又は再接種を受けていること」を追加するとともに、抗体検査の時期が「発送前1か月を超えて12か月以内」から、「最終ワクチン接種から1か月を超えて12か月以内」に変更</p> <p>○第8.14.9 死亡食肉目又はイノシシは、狂犬病サーベイランスにおいて重要な役割を果たしており、臨床学的サーベイランスの一部とすべきことを明記</p>	p.19
5.10	12	Infection with African swine fever virus(Article15.1.1bis,15.1.2,15.1.3,15.1.22)	アフリカ豚コレラ感染症	<p>○第15.1.3条 歴史的清浄、全ての豚における清浄、家畜及び飼育下の野生豚における清浄の3種類の清浄区分を明記。野生イノシシにおいてASFウイルス感染がある場合でも、サーベイランスやバイオセキュリティ等、一般要件を満たしていれば「家畜及び飼育下の野生豚における清浄」として認められうる追加。</p>	p.23
【加盟国からのコメントを受け付けるための文書】					
4.3 5.10 7.1g	13	Glossary partB	用語集B	<p>○各関連章における検討を踏まえ、“Competent Authority”、“Veterinary Authority”“Veterinary Services”“captive wild”“epidemiological unit”の定義を見直し</p>	p5 p23 p28
5.3	14	Procedure for self declaration for official recognition by the OIE(Chapter1.6)	自己清浄宣言とOIEによる公式ステータス認定のための手続き	<p>○自己清浄宣言のSOPについては、次回コード委員会の際に、第1.6章に移動するかどうか検討予定</p>	p.12
5.4	15	Draft new chapter on official control of listed and emerging diseases(Chapter4.Y)	リスト疾病及び新興疾病のコントロール(新規章)	<p>○第4.1.Y 公的コントロールプログラムの一般的な構成要素を追加</p> <p>○第4.Y.4条 早期警戒システムはemergency preparednessにとって不可欠な構成要素である旨を明記</p> <p>○第4.Y.5条 発生時に実施すべき措置として、「接触あるいは感染の可能性のある動物又は汚染された物品をトレースバック、トレースフォワードするための疫学調査」を追加</p> <p>○第4.Y.5条 発生時の感染の拡大を止めるための措置として「ベクターのコントロール」を追加</p> <p>○第4.Y.6条 “animal products”を“other commodities”に修正</p> <p>○第4.Y.6条 スタンピングアウト政策について、「関連するリスクの評価に基づき、野生動物において、個体数を減らすための殺処分と死体の処分が適用されることがある」を追加</p> <p>○第4.Y.6条 検査及び淘汰について、「疾病の有病率の変化に応じて、獣医サービスは検査・淘汰戦略を調整することがある」を追加</p> <p>○第4.Y.9条 ワクチン接種について、「ワクチンは、臨床症状又は経済的損失を減らすことにより感染の影響を最小とするために使うこともできる」を追加</p>	p.13

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5.6	16(22)	Draft new chapter on animal welfare and laying hen production systems(Chapter 7.Z.)  (参考: Report of ad hoc Group on Animal welfare and laying hen production systems(March2018))	アニマルウェルフェアと採卵鶏生産シ ステム(新規章)  (2018年3月 アドホックグループ報 告)	<ul style="list-style-type: none"> <li>○第7.Z.1j条 定義 繁殖用の雌鶏は本章の対象から除外される旨が追加</li> <li>○第7.Z.2条 本章の対象は商用の採卵鶏生産システムであり、個人的な消費を目的として集落や裏庭で飼養されている採卵鶏は対象外となる旨が追加</li> <li>○第7.Z.3条 若雌鶏または雌鶏のウェルフェアの基準(outcome-based criteria)のうちの「行動」に「睡眠・休息」を追加</li> <li>○第7.Z.3条 結果に基づく基準のうちの“foot problems”のうちの「接触性皮膚炎」について「糞尿」の影響を追加</li> <li>○第7.Z.12条 勧告の「営巣」について、「営巣の区域が供えられるものとし」と修正</li> <li>○第7.Z.13条 勧告の「止まり木」について、「止まり木は供えられているものとし」と修正</li> <li>○第7.Z.20条 勧告の「換羽」について、「よく管理されない場合は誘導換羽はアニマルウェルフェア上の問題となりうる」を追加。照明へのアクセスを追加</li> <li>○第7.Z.21条 勧告の「痛みを伴う処置」について、「断嘴は絶対に必要な場合を除いて行われるべきではない」から、「絶対に」を削除。他の管理方法が有効でなかった時に、治療的な断嘴が最終的な手段として考慮される旨が追加</li> <li>○第7.Z.26条 危機管理計画に防火計画を含める旨が追加</li> <li>○第7.Z.28条 「検査と取扱い」について、「若雌鶏や雌鶏の輸送距離は最小限とする」を追加</li> </ul>	p17
5.11	17	Infection with classical swine fever virus(Chapter 15.2)	豚コレラ感染症	<ul style="list-style-type: none"> <li>○第15.2.1条 潜伏期間を14日に変更、出生後にCSFVに曝露された豚の感染性期間を最大3か月と修正</li> <li>○第15.2.3条 「安全物品」を追加するとともに、「他の豚製品は本章関連上に従う場合安全に貿易することができる」を追加。これに伴い、第15.2.1条の「野生豚におけるCSFVが報告された場合にも家畜豚の物品は安全に貿易できる」を削除</li> <li>○第15.2.6条 清浄ステータスの回復時期を、「最終症例から3か月後」から、「最終症例の処分後3か月」に修正</li> </ul>	p24
6.2	18 (24)	Veterinary legislation(Chapter 3.4)  (参考: Report of the ad hoc Group on Veterinary legislation(January2018))	獣医法令  (2018年1月 アドホックグループ報 告)	<ul style="list-style-type: none"> <li>○第3.4.1条 獣医法令は生物学的脅威の低減に関する国際文書の関連規定にも遵守している必要がある旨を追加</li> <li>○第3.4.6条 獣医法令は法定獣医機関(veterinary statutory body)の設置及び、法定獣医機関による獣医師及びパラ獣医師の規制や、法定獣医機関によが取り扱う範囲(制定獣医師の権限、獣医教育、獣医療の関する活動の要件、免許等)を規定することを明記</li> <li>○第3.4.7条 獣医法令において研究施設における生物学的薬剤や製品の封じ込めと管理に関する規定を設けることを追加</li> <li>○第3.4.11 動物薬及び生物製剤の品質に関する要件を削除</li> <li>○第3.4.11 “human food production chain”について、と畜場における獣医学的な生前、生後検査の実施根拠が獣医法令に規定されることを追加</li> <li>○第3.4.13条 コード第2部のリスク評価、第5部の貿易措置、輸出入手続き、獣医衛生証明書の根拠が獣医法令に規定されることを追加</li> </ul>	p25



項目 番号	参照付属書No. (コード委員会報 告書のAnnex番 号)	名称(英語)	名称(仮訳)	ポイント	コード委員会 報告書本文
6.4	19 (25)	Infection with avian influenza viruses  (参考: Report of the ad hoc Group on Avian influenza(June2018))	鳥インフルエンザ感染症  (2018年6月 アドホックグループ報 告)	アドホックグループにおける検討、各国からのコメント提出を受けて、改正案が初めて提示 ○タイトルを「鳥インフルエンザウイルス感染症」から「高病原性鳥インフルエンザ感染症」に変更 ○第10.4.1条 本章はHPAIに焦点を当てるが、H5/H7LPAIについてもHPAIに変異し うることから、サーベイランス及びコントロールプログラムに含まれるべきことを明記 ○第10.4.1条 緊急通報の対象はHPAIとし、H5/H7LPAIは6か月定期報告に含まれ ることを明記。ただし、人畜共通の鳥インフルエンザウイルス及び分布や宿主域、病 変性の変化等については通報対象。また、野鳥における高病原性鳥インフルエンザ A型ウイルスの発生は通報対象 ○第10.4.1条 HPAIの群(flock)単位の潜伏期間は14日間 ○第10.4.1条 家きんの定義について、鳥が一世帯のみで使用され、その生産物が 同一世帯内で消費される場合は「家さん」とみなさないことを明記 ○第10.4.1bis 安全物品を規定 ○第10.4.1条 ワクチン接種は、スタンピングアウトのみでは十分有効でない場合に 使用できる、効果的な、補完的な管理手段である旨を記載 ○第10.4.3quarter 清浄ステータスの回復について、スタンピングアウト完了後3か 月から28日間に変更	p26
7.1b	20	Notification of diseases,infections and infestations, and provisionof epidemiological information(Chapter 1.1)	疾病の通報、感染と外寄生及び疫学 情報の提供	○第1.1.3条 獣医当局は「通報性疾病の病原体の撲滅された株(strain)の再発生」 についても緊急通報することを追加 ○第1.1.5条 汚染地域の清浄化や清浄回復の本部への報告については「通報」に 関する内容でないことから削除	p27
7.1	21	Work programme	ワークプログラム	(検討及び改正作業中の項目に関する現状を整理)	



# 2019年5月の総会で採択予定

用語解説(早期警報制度、衛生措置)

**動物衛生サーベイランス(第1.4章)**

疾病予防及び制御に関する勧告(新章:第4.Z章)

食品安全における獣医サービスの役割(第6.1章)

**アニマルウェルフェアの勧告の序論(第7.1章)**

**アニマルウェルフェアと豚生産システム(第7.13章)**

革、肉及びその他製品のための虫類のと殺(新章:第7.Y章)

**狂犬病ウイルス感染症(第8.14章)**

流行性羊流産菌感染症(流行性羊流産、羊クラミジア病)(第14.4章)

**アフリカ豚コレラウイルス感染症(第15.1章)**

※赤字: 今回の連絡協議会で取り上げる章

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## コメント聴取のみ

用語解説(所管当局、獣医当局、獣医サービス、飼育野生動物、疫学単位)

疾病、感染及び外寄生の通報並びに疫学情報の提供(第1.1章)

自己宣言及びOIE公式認定の手続き(第1.6章)

獣医法令(第3.4章)

リスト及び新興疾病の公式制御(新章:第4.Y章)

**アニマルウェルフェアと採卵鶏生産システム(新章:第7.Z章)**

**鳥インフルエンザウイルス感染症(第10.4章)**

**豚コレラウイルス感染症(第15.2章)**

※赤字: 今回の連絡協議会で取り上げる章