Monitoring ANIMAL HEALTH

Poultry | January 2021

Clinical symptoms of HPAI-H5N8

Following the outbreak of highly pathogenic avian influenza (HPAI) of the H5N8 strain, we will provide a summary of the clinical signs observed.

Avian influenza was discovered in the Netherlands in October 2020, among wild birds and at a number of commercial poultry farms. This concerned highly pathogenic H5N8 strain. The Dutch government has implemented measures to prevent spread of the virus and to combat the risk of infection. There is a lock-up and segregation rule in place throughout the Netherlands for kept birds at risk, such as poultry, water birds and ratites, along with more stringent reporting criteria for ducks. Supplementary measures apply around the infected farms.

Clinical symptoms

Generally speaking, the clinical signs are very limited. Acute mortality is the most important indicator. Upon inspection, the affected flock is overly quiet and there are often many diseased birds and recent deaths. Diseased birds have ruffled feathers, are lethargic and have a watery full crop. Affected birds die within three hours of the first symptoms. The birds are in normal condition with oedema of the eyelids and slight cyanosis of the comb. The presentation can vary per affected farm and can be severely complicated by co-infections or underlying suffering.

Observations in layers

Necropsy of layers occasionally showed conjunctivitis, laryngitis and tracheitis, though the most important pathological observation was obstruction and haemorrhaging around the follicles. A number of cases also showed peracute peritonitis with a limited degree of fibrin and oedema.

Observations at the infected duck farm

The diseased ducks were in poor condition with clear symptoms of rickets, caused by something other than AI. In the duck house, they were quiet, huddled and there were clear neurological abnormalities: head convulsions and wry necks. A number of animals displayed paddling movements. They were shown to have meningitis, with histopathologic manifestations of AI. In terms of bacterial infection, the *Riemerella anatipestifer* bacteria was discovered in the brain.

Observations in the broiler flocks declared to be infected

The affected broiler flocks were shown to have pulmonary constricted or apathetic birds with conjunctivitis, tracheitis, swolen heads and cyanosis of the comb and feet. Necropsy showed damage to the respiratory system: sinusitis in the infraorbitalis above the beak, frothing and haemorrhaging in the trachea, congestion in the peritoneal fold, but also haemorrhaging in the proventriculus. It was not determined whether any co-infections were present. Torticollis was observed occasionally.

Photo 1. Cyanosis of comb

Photo 2. Cyanosis of foot skin

Photo 3. Oedema (fluid retention) in head skin

Information from WBVR

Monitoring of dead wild birds:

- Initially, particularly in the north
- Followed by spreading to the west
- Testing of nearly 400 dead birds
- Many geese, in 2016 ducks
- Approximately 70% tested positive
- Usually for the HPAI-H5N8 virus
- But occasionally, the H5N5 and H5N1 viruses were detected

Purple = commercial farm Red = wild birds Blue = backyard poultry

For the current map, please refer to: https://www.wur.nl/nl/Onderzoek-Resultaten/Onderzoeksinstituten/Bioveterinary-Research/Dierziekten/Virusziekten/Vogelgriep-1.htm

Conclusions of Working Group for Foot Problems

Foot problems have become apparent in white layers since 2016, associated with wounds on the feet. A joint working group comprising feed suppliers, vets, pullet organisations, egg traders and GD, has monitored developments regarding these problems and exchanged information. Various research pilots have been established to gather additional information on foot problems.

It has not been possible to establish a single cause of these problems. Various stress factors can result in foot problems arising. There are fewer problems if such stress factors are tackled swiftly. If no measures are taken, the problem can worsen, resulting in increased losses. Generally speaking, production does not suffer as a result of the foot problems. Various underlying stress factors have been identified, including intestinal issues and drinking problems due to poorly maintained beaks. It could not be ascertained whether the type of house lighting was a risk factor. Whether selective feed intake plays a role is still under investigation.

Solutions were sought in feed adjustment (extra vitamins and minerals, linseed oil), replacement of drinking nipples by cups, changes in management (regularity, slower start) and lighting adjustments (dimming, red light). Experiences vary from flock to flock. It is therefore important to determine which risk factors play a role per flock, and to make the necessary adjustments. This will prevent most of the damage.

Foot problems are currently still being diagnosed. However, we are seeing fewer cases of increased losses due to foot problems. Despite not having found a clear cause or solution, the working group has contributed to the knowledge and reduction of foot problems. The group's multidisciplinary approach was considered to be essential and was greatly appreciated by its members.

Mycoplasma synoviae analysis

Mycoplasma synoviae (Ms) is one of the pathogenic mycoplasma strains affecting poultry and is responsible for eggshell deformities and respiratory, joint and production problems in poultry. Ms is still a common occurrence at poultry farms in the Netherlands. Only the grandparent sector is free from Ms. Monitoring data was used to determine whether vaccination for Ms or hygiene measures could reduce the risk of Ms infection.

The infection risk at Ms-vaccinated broiler breeding farms was compared with the infection risk at non-vaccinated broiler breeding farms. Although an increased risk was determined at Ms-vaccinated farms in 2015-2017, the risk of Ms infection at vaccinated farms was approximately 60 percent lower versus non-vaccinated farms in 2018 and 2019. The risk of spread within Ms-vaccinated broiler breeding farms (from house to house) was at least 78 percent lower than at non-vaccinated farms. This is probably due to a longer-term effect regarding the reduction of the infection risk.

Specific hygiene measures were taken to prevent Ms infection at vaccinated and layer breeding farms. The risk of Ms infection at these farms was 65 percent and 71 percent lower respectively, versus non-Ms-vaccinated broiler breeding farms. No difference could be established in the infection risk within individual farms.

Research therefore shows that both hygiene measures and Ms-vaccination can contribute to a reduction of Ms in the breeding sector. A combination of (internal) hygiene measures and vaccination may also contribute to the Ms approach at multiple-age layer farms. More information about this research can be found in the GD *Poultry* magazine of December 2020 (see **https://www.gddiergezondheid.nl/gd-pluimvee**).

Animal health barometer for poultry 3rd quarter 2020

Veterinary diseases	Brief description	1st quarter 2020	2nd quarter 2020	3rd quarter 2020	4th quarter 2020	Trend (over 2 years)
Article 15 GWWD (Health & Welfare Act) diseases (diseases named in articles 3 and 7 of the 'Rules for prevention, control and monitoring of infectious animal diseases and zoonoses and TSEs')						
Avian influenza in the Netherlands (H5/H7) (Source: GD, WBVR, national government)	**HPAI (H5/H7):**	Not detected	Not detected	Not detected		-
	LPAI (H5/H7):	Not detected	Not detected	Not detected		-
	Serology (first detection in flock): *(Antibodies for H5/H7)*	2 flocks	Not detected	Not detected		-
Avian influenza in Europe (H5/H7) (Source: OIE)	**HPAI (H5/H7):**	**H5N8:** Various countries* **H5:** Ukraine	**H5N8:** Bulgaria and Hungary	**H5N8:** Russia **H5N5:** Russia		⬆
	LPAI (H5/H7):	**Denmark:** H5N1	**Italy:** H5N3 and H7N1	Not detected		-
ND in the Netherlands (Source: GD, OIE)	Commercial poultry	Not detected	Not detected	Not detected		-
ND in Europe (Source: GD, OIE)	Commercial poultry	No OIE reports	Macedonia: 1	No OIE reports		-
M. gallisepticum[A] (Source: GD)	**Serological monitoring by GD:**					
	Reproduction sector:	0 farms	0 farms	0 farms		-
	Layer pullets:	0 farms	0 farms	0 farms		-
	Layers:					
	- *not vaccinated and infected*:	3 farms	2 farms	0 farms		⬆
	- *vaccinated and infected*:	1 farm	5 farms	2 farms		⬇
	Turkeys:	0 farms	0 farms	0 farms		-
	Reports in EWS[C] based on positive serology and/or voluntary PCR testing:					
	Layers:	4 farms	7 farms	1 farm		-
	Backyard poultry	-	2 cases	-		-
M. synoviae[B] (Source: GD)	**Serological monitoring and/or dPCR by GD:**		**% of positive farms versus farms tested**			
	Grandparent stock (incl. pullets) (meat):	0%	0%	0%		-
	Broiler breeder pullets:	8%	2%	4%		-
	Broiler breeders:	26%	32%	29%		⬆
	Grandparent stock (incl. pullets) (layers):	0%	0%	0%		-
	Layer breeder pullets:	3%	6%	13%		-
	Layer breeders:	35%	15%	21%		⬆
	Layer pullets:	76%	71%	72%		-
	Layers:	10%	7%	24%		⬆
	Turkeys:					

⬆ Increase or strong increase
⬆ Limited increase
- Situation unchanged
⬇ Limited decrease
⬇ Decrease or strong decrease

** Bulgaria, Germany, Hungary, Poland, Romania, Slovakia, Czech Republic*

A Based on serological monitoring
B Based on serological monitoring and/or the DIVA M.s.-PCR
C Early Warning System

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Table continuation

Veterinary diseases	Brief description	1st quarter 2020	2nd quarter 2020	3rd quarter 2020	4th quarter 2020	Trend (over 2 years)
Salmonellosis (non-zoonotic salmonella) (Source: GD)						
Salmonella arizonae		N/A	N/A	N/A		N/A
Salmonella Gallinarum (SG)		Not detected	Not detected	Not detected		-
Salmonella Pullorum (SP)		Not detected	Layers: 1 farm	Not detected		-
Article 100 GWWD (Health & Welfare Act) diseases (diseases named in article 10 of the 'Rules for prevention, control and monitoring of infectious animal diseases, zoonoses and TSEs')						
Campylobacteriosis	No data available	-	-	-		N/A
Salmonellosis (zoonotic salmonella) (at the flock level) (Source: NVWA)						
S. Enteritidis	Reproduction: Layer pullets: Layers:	9 flocks 0 flocks 10 flocks	0 flocks 0 flocks 7 flocks	1 flock 0 flocks 6 flocks		⬆ - -
S. Typhimurium	Reproduction: Layer pullets: Layers:	1 flock 0 flocks 0 flocks	0 flocks 0 flocks 0 flocks	3 flocks 0 flocks 1 flock		- - -
Other salmonella serotypes (Hadar (S.H.), Infantis (S.I.), Java (S.J.), Virchow (S.V.)	Reproduction:	0 flocks	S.I.: 1 flock S.H.: 1 flock	S.I.: 5 flocks S.J.: 3 flocks		⬆
Other OIE-list poultry diseases in the Netherlands subject to compulsory notification						
Avian chlamydia (Source: GD)		Not detected by GD	Not detected by GD	Not detected by GD		-
Gumboro (IBD) (Source: GD; EWS)	**Reported in EWS[C]:** Broilers:	6 farms	7 farms	10 farms		-
Infectious bronchitis (IB) (Source: GD)	**Types most commonly detected by GD:** Broilers: Layers:	D388 4-91/D388/ D181	D388 4-91/D388/ D181	D388 D388/4-91		
Infectious laryngotracheitis (ILT) (Source: GD; EWS)	**Reported in EWS[C]:** Broiler breeders: Broilers: Layers: Backyard poultry:	2 farms 0 farms 1 farm 1 case	- 1 farm - -	- - - 1 case		- ⬇ - -
Turkey Rhinotracheitis (TRT) (Source: GD)	**Detected by GD:** Broilers:	1 farm	4 farms	4 farms		

⬆ Increase or strong increase
⬆ Limited increase
- Situation unchanged
⬇ Limited decrease
⬇ Decrease or strong decrease

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Table continuation

Veterinary diseases	Brief description	1st quarter 2020	2nd quarter 2020	3rd quarter 2020	4th quarter 2020	Trend (over 2 years)
Other poultry diseases						
Avibacterium paragallinarum (Source: GD; EWS)	**Reported in EWS[C]:**					
	Layers:	4 farms	4 farms	8 farms		↓
	Backyard poultry:	1 case	2 cases	3 cases		-
Erysipelas (*Erysipelothrix rhusiopathiae*) (Source: GD)	**Detected by GD: (new infections):**					
	Layers:	6 farms	2 farms			↓
Pasteurella multocida (Source: GD)	**Detected upon necropsy:**					
	Layers:	5 farms	4 farms	0 farms		-
	No reports to the NVWA					
Histomonosis (Source: GD)	**Detected by GD:**					
	Reproduction (meat sector):	2 farms	3 farms	5 farms		↓
	Reproduction (layer sector):	1 farm	-	-		-
	Layers:	1 farm	2 farms	3 farms		-

↑ Increase or strong increase
↑ Limited increase
- Situation unchanged
↓ Limited decrease
↓ Decrease or strong decrease

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B Based on serological monitoring and/or the DIVA M.s.-PCR
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Monitoring ANIMAL HEALTH

Animal health monitoring

Since 2002, Royal GD has been responsible for animal health monitoring in the Netherlands, in close collaboration with the veterinary sectors, the business community, the Ministry of Agriculture, Nature and Food Quality, vets and farmers. The information used for the surveillance programme is gathered in various ways, whereby the initiative comes in part from vets and farmers, and partly from Royal GD. This information is fully interpreted to achieve the objectives of the surveillance programme – rapid identification of health problems on the one hand and monitoring trends and developments on the other. Together, we team up for animal health, in the interests of animals, their owners and society at large.