

## The surveillance and control programme for avian influenza (AI) in poultry in Norway

*Bruce David*

*Jorun Tharaldsen*

*Chiek Er*



*Scientific editors Hege Hellberg and Ståle Sviland  
National Veterinary Institute*



*The 2008 surveillance of avian influenza in poultry and birds in Norway detected one instance of infection with influenza A virus.*

## Introduction

The Norwegian Food Safety Authority is responsible for implementing the surveillance programme for avian influenza (AI) in poultry. The programme, which was started in 2006, is based on serological investigations of poultry. The National Veterinary Institute is responsible for planning, laboratory investigations and reporting components of the programmes.

AI is a serious, highly contagious disease of poultry and other captive birds caused by many different subtypes of influenza type A viruses. The level of risks posed by the different subtypes for animal and public health is very variable due to rapid virus mutation and possible re-assortment of the genetic material between different subtypes.

Current knowledge indicates that the health risks posed by the so-called Low Pathogenic AI (LPAI) viruses are lower than that posed by Highly Pathogenic AI (HPAI) viruses. The HPAI viruses originate from a mutation of LPAI viruses of either H5 or H7 subtype. HPAI can cause disease in poultry resulting in mortality rate exceeding 90 %.

In general, domestic poultry populations are free from AI viruses. However, wild waterfowls are the natural reservoirs for all influenza A virus subtypes. Infected birds do not usually develop clinical disease, but may shed large amounts of virus upon infection (1). The national surveillance and control programme for AI in poultry was started in 2006 and modelled on EU's Council Directive 2005/94/EC.

AI has until now never been reported or diagnosed in poultry in Norway.

## Aims

The aim of the national surveillance and control programme for AI in poultry is to document that the various poultry populations in Norway are free of influenza A virus of sub-types H5 and H7 and to contribute to the maintenance of this status.

## Materials and methods

The programme in 2008 consisted of serological screening of blood samples from poultry. Poultry deemed at risk for exposure to influenza type A were preferentially sampled as outlined in EU's AI Directive Annex I. The basis for sample selection was based upon a risk assessment published by the National Veterinary Institute in February 2006 (2). The sample selection included chickens, turkeys and ducks.

In addition to the samples taken from farms on the basis of the risk assessment (2), samples from breeding flocks were also tested for AI.

Blood samples were collected from at least 10 birds per holding. An exception to this was duck flocks, from which 50 samples were collected. If there were more than one shed on the holding, all sheds were sampled. In those instances where the flock size was less than the number required, all birds in the flock were sampled.

The samples taken from chickens were tested for the presence of antibodies against Influenza A virus. Due to the limitations on the species spectrum of the ELISA for influenza A virus, samples from turkeys and ducks were tested for influenza A virus subtype H5 and subtype H7.

## Influenza A

An ELISA kit produced by IDEXX was used for the testing of antibodies against influenza A virus. The test has been demonstrated to detect antibody reactivity to 20 different subtypes of avian influenza including 14 hemagglutinin glycoproteins and the H5N1 subtype.

This test is only validated for use in chickens. If tests were positive, samples were examined further for presence of H5 or H7 with the haemagglutination inhibition test, see below.

## H5/H7

All serum samples from species other than chicken were tested for specific antibodies against both H5 and H7 with the haemagglutination inhibition test described in the OIE diagnostic manual (3).

## Results

Table 1 shows the number of flocks and birds tested in 2008. Eleven chicken flocks - 6 breeder, 4 commercial and 1 hobby; and 2 turkey flocks - gave positive or inconclusive results when tested for antibodies against Influenza A virus. Subsequent testing of these samples with haemagglutination inhibition tests showed no sign of antibodies against either H5 or H7 with the exception of one flock was positive for LPAI H7. The N-subtype could not be determined.

A number of samples taken for the purposes of diagnosing disease, production problems and the control of imported animals were also screened for antibodies against Influenza A virus or H5/H7. All were negative.

Table 1. Number of certified breeder flocks, commercial flocks, hobby flocks and birds tested in the surveillance and control programme for AI in poultry in 2008

Species	Certified breeder flocks		Commercial flocks		Hobby flocks		Total
	Flocks	Animals	Flocks	Animals	Flocks	Animals	Animals
Chicken	130	1290	52	529	4	34	1853
Turkey	4	41	57	591	-	-	632
Duck	1	50	8	360	-	-	410
Goose	-	-	-	-	-	-	-
Quail	-	-	-	-	-	-	-
<b>Total</b>	<b>135</b>	<b>1381</b>	<b>117</b>	<b>1380</b>	<b>4</b>	<b>34</b>	<b>2895</b>

<sup>1</sup> Not tested as a part of surveillance program, \* zoo animals

## Discussion

An adequate number of flocks were sampled with respect to Norwegian population of commercial poultry.

Only 4 hobby flocks were sampled in the programme. In general, conclusions with respect to the adequacy of the sampling of hobby poultry are difficult, as the true population numbers are unknown. It should be noted that the numbers sampled as a part of the programme do not represent the true sampling of such flocks, as a number of hobby poultry tested for the purpose of diagnosing disease were not included in the programme.

## References

1. Webster RG, Bean WJ, Gorman OT, Chambers TM, Kawaoka Y. Evolution and ecology of influenza A viruses. *Microbiol Rev* 1992; 56: 152-79.
2. Gjevne A-G, Handeland K, Jansen PA, Lyngstad TM, Ytrehus B. Risiko for smitte med høypatogen aviær influenza (HPAI) H5N1 fra ville fugler til fjørfe i Norge [Risk... engelsk oversettelse av tittel mangler, No]. Special report 2006. Oslo: National Veterinary Institute; 2006.
3. Office International des Epizooties. Manual of standards for diagnostic tests and vaccines for terrestrial animals (mammals, birds and bees). Vol 1. 5th ed. Paris: Office International des Epizooties; 2004. Updated version for AI from May 2005: [http://www.oie.int/eng/normes/mmanual/A\\_00037.htm](http://www.oie.int/eng/normes/mmanual/A_00037.htm)

The National Veterinary Institute (NVI) is a nation-wide research institute in the fields of animal health, fish health, and food safety. The primary mission of the NVI is to give research-based independent advisory support to ministries and governing authorities. Preparedness, diagnostics, surveillance, reference functions, risk assessments, and advisory and educational functions are the most important areas of operation.

The National Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

[www.vetinst.no](http://www.vetinst.no)



**Veterinærinstituttet**  
*National Veterinary Institute*

The Norwegian Food Safety Authority (NFSA) is a governmental body whose aim is to ensure through regulations and controls that food and drinking water are as safe and healthy as possible for consumers and to promote plant, fish and animal health and ethical farming of fish and animals. We encourage environmentally friendly production and we also regulate and control cosmetics, veterinary medicines and animal health personnel. The NFSA drafts and provides information on legislation, performs risk-based inspections, monitors food safety, plant, fish and animal health, draws up contingency plans and provides updates on developments in our field of competence.

The NFSA comprises three administrative levels, and has some 1300 employees.

The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Fisheries and Coastal Affairs and the Ministry of Health and Care Services.

[www.mattilsynet.no](http://www.mattilsynet.no)

