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# The surveillance programme for avian influenza (AI) in poultry in Norway 2024

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## Authors

Silje Granstad, Johanna Hol Fosse and Johan Åkerstedt

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Merete Hofshagen, Director of Animal Health, Animal Welfare and Food Safety, Norwegian Veterinary Institute

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# Content

# Summary

Active surveillance based on serological investigations to monitor avian influenza viruses (AIVs) in poultry in 2024 did not detect infection in poultry kept for commercial purposes in Norway. This surveillance is routinely and systematically conducted, independent of the health status of the flocks. Two outbreaks of highly pathogenic avian influenza (HPAI) were detected in domestic birds in 2024: one in a commercial poultry holding and one in a backyard flock. Both outbreaks were identified through passive surveillance and sampling initiated due to clinical suspicion.

# Introduction

In Norway, active surveillance, based on serological investigations of poultry, has been conducted since 2006. The surveillance programme for avian influenza (AI) in poultry establishments, with the aim of detecting occurrences of AIVs, is conducted in accordance with Commission Delegated Regulation (EU) 2020/689 (1). HPAI and infections with low pathogenic avian influenza viruses (LPAIVs) subtypes H5 and H7 in poultry are classified as list 1 diseases in Norway and Category A in the EU, and are notifiable to the World Organisation for Animal Health (WOAH). The Norwegian Food Safety Authority is responsible for the surveillance programme. The Norwegian Veterinary Institute manages the planning, laboratory analyses, and reporting components of the programme.

Avian influenza is a highly contagious disease that affects poultry and other birds. It is caused by infection with numerous subtypes and strains of influenza A viruses. Current knowledge indicates that the health risks associated with LPAIVs are generally lower than those posed by highly pathogenic avian influenza viruses (HPAIVs). While the majority of LPAIV infections typically result in mild disease in poultry, HPAIVs can cause severe illness, often leading to mortality rates exceeding 90% (2).

While domestic poultry populations in Europe generally are free from AIVs, wild waterfowl serve as the primary reservoir for LPAIVs. Infected waterfowl can shed large amounts of the virus upon infection (2). Transmission of LPAIVs from the wild bird reservoir to poultry can occur without poultry demonstrating visible clinical signs. Rarely, LPAIVs may mutate to HPAIVs in this context.

In Norway, HPAI outbreaks occurred in two commercial poultry flocks each year in 2021 and 2022. In 2023, three outbreaks were reported in two backyard poultry flocks and one bird park (3).

# Aims

The surveillance programme for AI in poultry aims to document that Norwegian poultry populations are free of influenza A virus of subtypes H5 and H7, and to support the maintenance of this status. The surveillance is conducted in accordance with Commission Delegated Regulation (EU) 2020/689.

# Materials and methods

## Flock selection and sampling

The 2024 programme consisted of serological screening of blood samples from poultry. As outlined in the Commission Delegated Regulation (EU) 2020/689, risk-based surveillance complementary to passive surveillance in poultry should apply to poultry species that generally do not show significant clinical signs (ducks and geese), turkeys and laying hens including those kept free-range (1). The poultry flock selection in 2024 included all breeding flocks (chickens, turkeys, ducks and geese), fattening ducks, fattening geese, fattening turkeys and a selection of layer flocks including all organic free-range and some conventional flocks.

Annual blood samples were collected from ten birds within *Galliformes* flocks and 50 birds within *Anseriformes* flocks for serological screening. Furthermore, annual blood samples were obtained from ten birds within all organic, free-range layer flocks with more than 100 birds, as well as samples from a selection of flocks with conventional laying hens. At slaughter, ten birds were sampled from each fattening turkey flock, while 50 birds were sampled from all fattening duck and geese flocks. In cases where the flock size fell short of the required number of samples, all birds were sampled. If multiple sheds existed within the holding, samples were collected from all sheds.

## Laboratory analyses

A multispecies competitive ELISA kit from IDvet (ID Screen® Influenza A Antibody Competition Multi-species) was used to screen serum samples for antibodies against influenza A virus. The test detects antibodies to all influenza A subtypes and antigenic variants by measuring their ability to compete with a monoclonal antibody against a highly conserved epitope of the influenza A virus nucleoprotein.

Samples with positive or inconclusive results in the initial ELISA screening were retested in duplicates. Samples were concluded to be negative if retesting produced negative results.

In samples with inconclusive results from ELISA retesting, or in cases of individual positive samples within an otherwise negative batch, the subtype specificity was investigated by a haemagglutination inhibition (HI) test as described in the WOAH diagnostic manual (4) and by the European Reference Laboratory for Avian Influenza and Newcastle disease (EURL) (5). As recommended in Commission Delegated Regulation (EU) 2020/689 (1), the antigens used in the HI test listed in EU Commission Decision 2010/367/EC (6) have been adapted to match currently circulating strains, according to yearly participation in the EURL proficiency test. The EURL and the Animal and Plant Health Agency (Weybridge, United Kingdom) supplied Norway with the primary antigens A/turkey/Italy/VIR9520-32021/21 (H5N1), A/teal/England/7894/06 (H5N3) and A/turkey/England/647/77 (H7N7), and the secondary antigens A/duck/England/14 (H5N8) (primary in ducks and geese) and A/African starling/983/79 (H7N1). Samples were concluded to be negative for subtypes H5 and H7 if the HI test results were negative. If any samples in the surveillance programme test positive for H5 or H7 in the HI test, this will give rise to a suspicion of infection, and the Norwegian Food Safety Authority will be notified accordingly.

# Results and Discussion

Of 3,119 samples selected for AIV surveillance, 60 were not suitable for analysis, leaving 3,059 samples from 273 poultry flocks. Of these samples, 3,040 were negative, nine were inconclusive, and eight samples (0.26%) were positive during the initial screening for antibodies to influenza A virus. Upon retesting in duplicates, all positive samples and eight of the nine inconclusive samples were found to be negative for antibodies.

The remaining sample with an inconclusive result also produced inconclusive outcomes when retested in duplicate using the ELISA. Due to poor sample quality, the sample was not considered suitable for the HI test. No clinical signs were reported in the flock of origin. Thirty additional samples from the flock were tested for AIV antibodies, all of which tested negative in the ELISA. Based on these results, the flock was concluded to be negative for antibodies against influenza A virus.

In conclusion, all poultry flocks tested in the surveillance programme for avian influenza were negative for antibodies to influenza A virus subtypes H5 and H7. Table 1 shows the number of flocks and birds tested in 2024.

Table 1. Number of breeding flocks, commercial flocks, and birds tested in the surveillance programme for AI in poultry in Norway in 2024.

| Species | Breeding flocks | | Commercial flocks (laying hens and fattening turkeys/ducks/geese) | | Total | |
|---|---|---|---|---|---|---|
| | Flocks | Birds | Flocks | Birds | Flocks | Birds |
| Chicken | 81 | 818 | 122 | 932 | 203 | 1 750 |
| Turkey | 5 | 50 | 51 | 558 | 56 | 608 |
| Duck | 3 | 148 | 10 | 504 | 13 | 652 |
| Goose | 0 | 0 | 1 | 49 | 1 | 49 |
| Total | 89 | 1 016 | 184 | 2 043 | 273 | 3 059 |

In February 2024, a HPAI outbreak was detected in a broiler parent flock in Lund municipality, Rogaland county. A second outbreak was confirmed in November 2024 in a backyard poultry flock in Frøya municipality, Trøndelag county. Birds from both flocks showed clinical signs consistent with HPAI and were sampled based on suspicion. PCR analysis of tracheal and cloacal swabs confirmed the presence of HPAIV subtypes H5N1 and H5N5, respectively.

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Norwegian Veterinary Institute

Ås ▪ Sandnes ▪ Bergen ▪ Trondheim ▪ Harstad ▪ Tromsø

postmottak@vetinst.no

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