



Public health response during an outbreak of HPAI H5N1 in farmed fur animals in Finland

Erika Lindh
erika.lindh@thl.fi

Finnish Institute for Health and Welfare

World Organisation for Animal Health (WOAH)
Workshop on Strengthening Preparedness and Response to Biological Threats in Europe
24 March 2026, Paris



Outline

- Description of the event
- Cross-sectoral outbreak management
- Public health actions
- Occupational health actions
- Challenges and opportunities

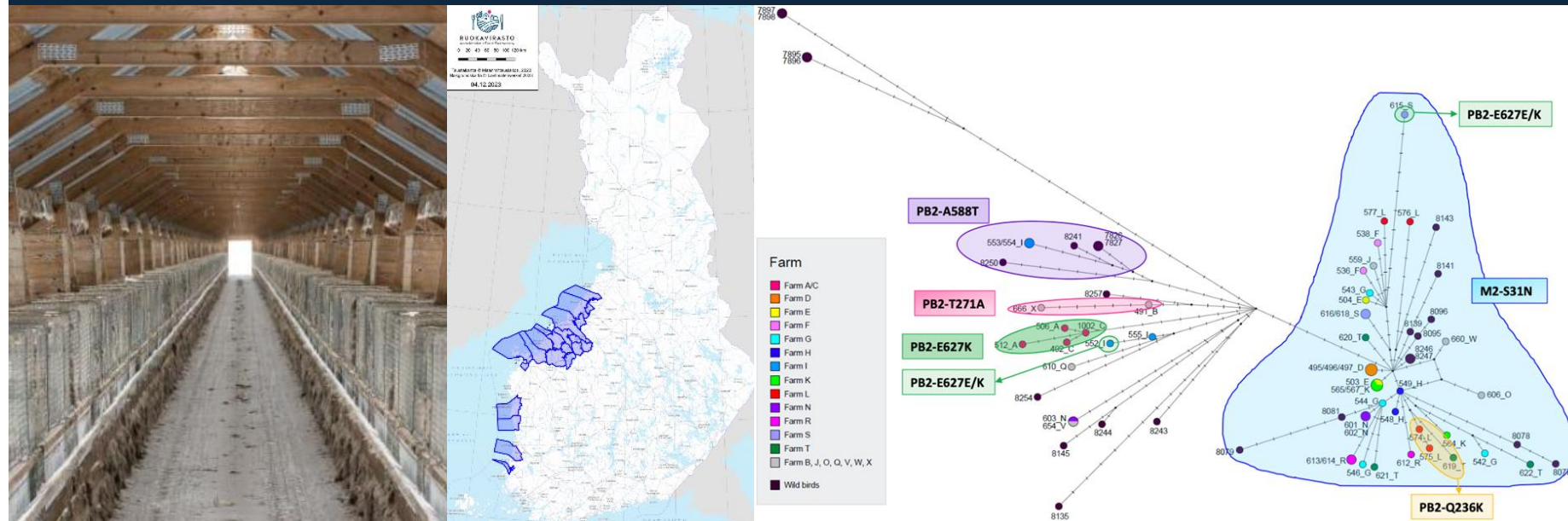


Image: Peacock and Barclay, PNAS 2023



HPAI H5N1 fur farm outbreak, 2023

- 71 positive (PCR or serology) fur farms
- Affected population: 0.5 M fur animals, mainly foxes and mink
- Affected area: 6 wellbeing services counties
- Several initial introductions of from wild birds / environment
- Diverse modes of transmission
- Active viral transmission lasted >3 months and the active phase of the outbreak management lasted 6 months
- Adaptative mutations were observed in all genomic segments



Lindh et al. Eurosurv. 2023
Kareinen et al. Eurosurv. 2024

Images: Yleisradio / Ruokavirasto
Network figure: Finnish Food Authority, EURL-IZSV

One Health outbreak management

– key actors in Finland with legal responsibilities

Ministry of Agriculture and Forestry, MAF

- **Finnish Food Authority, FFA**

- surveillance, prevention and control of infectious disease in domestic and wild animals
- coordination of control and mitigation actions
- issuing measures for eradicating infections
- providing guidance on biosecurity and other preventive measures

Ministry of Social Affairs and Health, MSAH

- **Finnish Institute for Health and Welfare, THL**

- overseeing testing
- responsible for communicable disease surveillance
- guidance for WSCs, health care and the public
- functions of the National Influenza Centre within GISRS
- provides scientific expertise to the MSHA on vaccinations

- **Finnish Institute of Occupational Health**

- safety guidance for occupational groups

- **Regional State Administrative Agencies, RSAA (supervisory authority)**

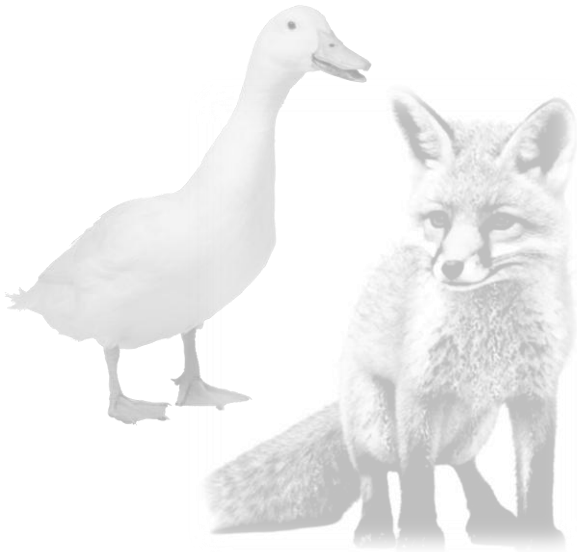
- supervision of mitigation actions and occupational health measures
- provincial veterinarians

- **Wellbeing services counties, WSCs (human health authority)**

- physicians responsible for communicable diseases
- monitoring of exposed persons

- **Municipalities**

- environmental health services





One health co-operation during HPAI outbreaks

- On the day of first confirmation of HPAI H5N1 in fur animals by Finnish Food Authority FFA, the relevant ministries, public health, occupational health and regional authorities were notified
- A multisectoral outbreak management team representing a wide range of capacities was established to manage the outbreak and to mitigate risks to animal human health:
 - Animal health: Finnish Food Authority (FFA) (Central authority + NRL)
 - Public health: Finnish Institute for Health and Welfare (THL)
 - Institute of Occupational Health (FIOH)
 - Ministries (Ministry of Agriculture and Forestry, MAF; Ministry of Social Affairs and Health, MSAH)
 - Regional health, animal health and environment authorities (RSAA)
- FFA chaired regular briefings and coordination meetings: information sharing, situation updates, ongoing/planned measures, agreeing on tasks and responsibilities, aligning communication
- Policy meetings between ministries (MSAH and MAF, supported by THL and FFA as experts)
- National Decrees to OH events: issued by MAF, informed by stakeholder consultations and statements
- FFA made several formal request for expert opinions from THL to support decision making



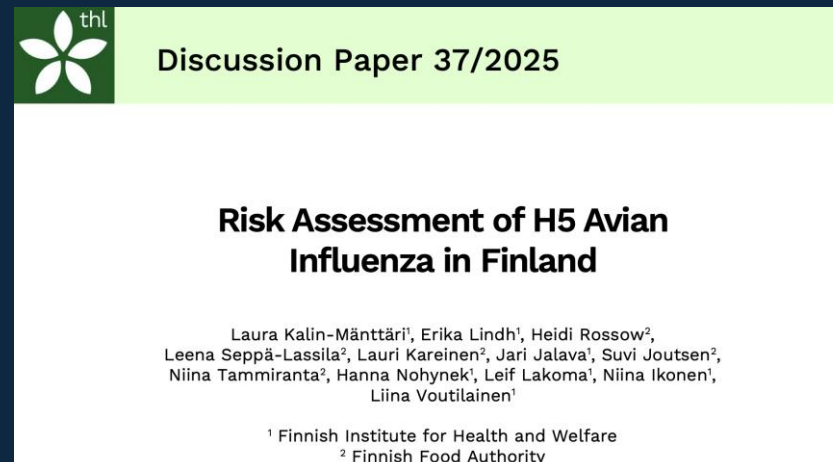
One health co-operation during HPAI outbreaks

- Sharing of information
 - HPAI workspace at the Extranet of FFA
 - access: THL, regional authorities, MAF
 - laboratory tests results of fur animals, information on positive farms, epidemiological investigations etc.
 - Regional authorities - THL: line-lists on exposed individuals
- Laboratory co-operation
 - FFA Lab provided reference materials to other laboratories in the country
 - THL lab supported the FFA lab upon need, e. g. in virus sequencing, SOPs, reagents
 - EURL AIV and WHO Influenza CC/Crick were invited to take part in the analyses of outbreak viruses. Results from genomic analyses were interpreted together



Communication

- Aligning messages to the public (press releases, web content)
- Tailored messages and guidelines to different audiences
- Adjusting guidelines according to need
- Explore ways to connect to hard-to-reach groups
- Joint risk assessments, scientific statements and other scientific papers to support decision making



Assessment of human health risk during the outbreak



Identification and testing of exposed people

- monitoring symptoms, detection of viral nucleic acids and neutralizing antibodies



Evaluation and communication of outbreak data

- information exchange between authorities
- provide information to support decision making
- recommendations for the public, health care and national & international stakeholders



Monitoring viral evolution

- monitoring mutations with possible impact on zoonotic potential
- providing laboratory support for sequencing



Vaccinations

- procurement of zoonotic vaccine A(H5N8) through HERA
 - recommendations and defining target groups
- attitudes towards the vaccine assessed through qualitative study



Monitoring human health

from the first
confirmation of a
case farm, until the
disposal of the last
animals

Active identification of exposed persons

- 500 exposure events were recorded by provincial veterinarians
 - exposures identified among
 - farmers and farm workers and their families
 - veterinarians
 - people working in culling and carcass disposal
 - laboratory workers
 - several events with prolonged exposure and/or consecutive exposure events identified
 - the exposed were interviewed by a communicable disease physician or nurse
- recommended to self monitor symptoms for 14 days

Enhanced laboratory testing frame

- including both symptomatic and asymptomatic persons
- > 400 influenza A(H5) specific RT-PCR tests were performed,
none were positive
- Serological assessment of infection in >100 exposed persons
resulted in no evidence of infection

Occupational safety during HPAI outbreak

- Employers are by Finnish law responsible for the occupational safety of their employees
- However, the occupational safety legislation does not apply to family entrepreneurs or to the self-employed
- Occupational health was an active partner in the multisectoral response
- Detailed worker safety instructions for fur farms, pelting centers and for culling practices were rapidly created
- Contents of the instructions:
 1. Employee protection
 2. Putting on the PPE
 3. Taking off the PPE
 4. Cleaning of PPE, work tools and equipment
 5. Work break
 6. Health status of employees

Successes and challenges for occupational health

- Guidelines were disseminated to target groups through FIOH web pages, occupational networks, authorities
- Guidelines were adapted to different circumstances upon need
- Availability of the necessary protective equipment in Finland was mapped
- Training on the use of PPE was organized for occupational groups
- No human cases were detected!
- Risk assessment is a responsibility of employers
- Procedures had to be adapted to varying conditions
- Mitigating human exposure was difficult due to:
 - challenges in early detection of infections in animals
 - challenging working conditions
 - prolonged exposure of people due to laborious culling practices
- Acceptability of mitigation measures and adherence to PPE
- Learning to use protective equipment at fur farms
- Finding a place for storing, proper donning and doffing of PPE in animal facilities

Legislative actions

- Decrees may be based on known issues. How well do they cover **unforeseen events**?

Multisectoral collaboration

- Agreeing on good practices for sharing of information and responsibilities
- Expect differences in perspectives and priorities between different authorities/actors
- **Joint risk assessments**

Improve cross-sectoral collaboration

- **Stakeholder involvement**
- Trust building

Protecting people

- Training of occupational groups in the use of PPE and biosecurity concepts
- Vaccinations
- **Actively identify opportunities to improve acceptability of mitigation efforts**

Communication



Identified opportunities for
strengthened One Health
responses



@HNo

Thank you!

Erika Lindh erika.lindh@thl.fi





Publications

Rapid communication describing the first phase of the outbreak

Lindh E, Lounela H, Ikonen N, Kantala T, Savolainen-Kopra C, Kauppinen A, et al. Highly pathogenic avian influenza A(H5N1) virus infection on multiple fur farms in the South and Central Ostrobothnia regions of Finland, July 2023. Euro Surveill. 2023;28(31)

Detailed outbreak description including pathological findings and genomics

Kareinen L, Tammiranta N, Kauppinen A, Zecchin B, Pastori A, Monne I, et al. Highly pathogenic avian influenza A(H5N1) virus infections on fur farms connected to mass mortalities of black-headed gulls, Finland, July to October 2023. Euro Surveill. 2024 Jun;29(25):2400063

Immunogenicity study on the Zoonotic influenza vaccine Seqirus

Liedes O, Reinholm A, Ekström N, Haveri A, Solastie A, Vara S, Rijnink WF, Bestebroer TM, Richard M, de Vries RD, Jalkanen P, Lindh E, Ikonen N, Grifoni A, Sette A, Laaksonen T, Holopainen R, Kakkola L, Lappalainen M, Syrjänen RK, Kolehmainen P, Julkunen I, Nohynek H, Melin M. Influenza A(H5N8) vaccine induces humoral and cell-mediated immunity against highly pathogenic avian influenza clade 2.3.4.4b A(H5N1) viruses in at-risk individuals. Nat Microbiol. 2026 Jan;11(1):155-168.

Description of testing and the operational management of the outbreak

Lindh E, Kalin-Mänttari L, Nohynek H, Lähteinen T, Mattila J, Laitinen S. et al. Securing human health through one health management of a highly pathogenic H5N1 avian influenza outbreak at Finnish fur farms. Submitted