Strengthening preparedness and collaboration in cross-border zoonotic pathogen surveillance through OH4Surveillance project

Paula Kurittu[1], Jussa-Pekka Virtanen[1], Meeri Ylänen[1], Tiina Autio[1], Tarja Pohjanvirta[1], Laura London[1], Tuija Gadd[1], Jaana Vuolle[1], Taru Lienemann[1], Ari Kauppinen[1], Kimmo Kivivirta[1], Mia Biström[1], Jaana Seppänen[1], Saara Raulo[2], Liina Voutilainen[3], Ruska Rimhanen-Finne[3], Riikka Holopainen[1]

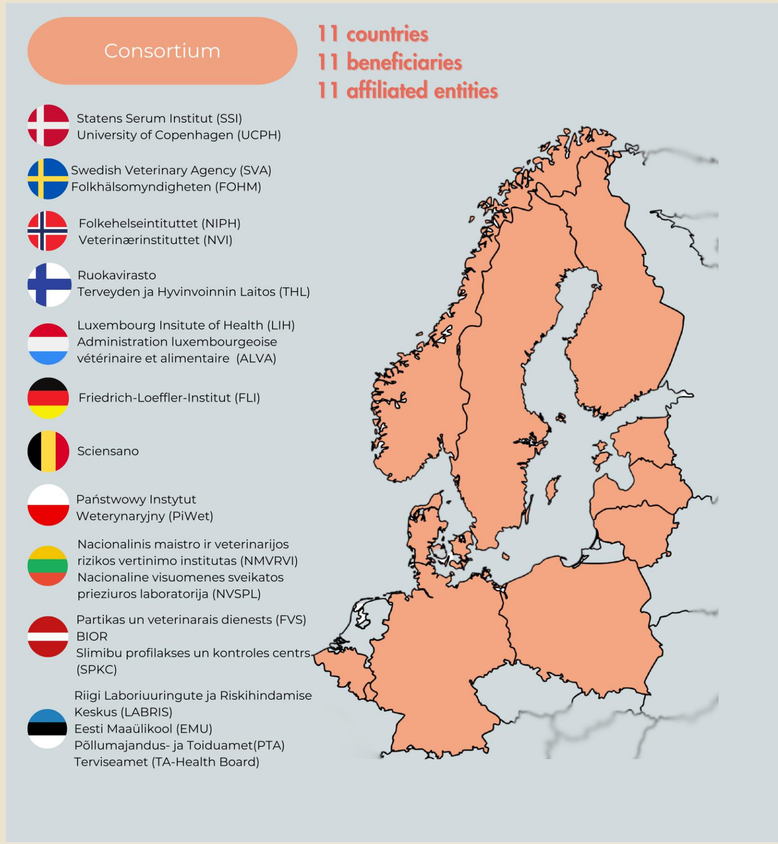
Affiliations: [1] Finnish Food Authority, Animal Health Diagnostic Unit, Finland, [2] Zoonosis Centre, Finland, [3] Finnish Institute for Health and Welfare, Finland

Aims of the OH4Surveillance project

- Establishing a coordinated disease surveillance system utilizing the One Health approach
- Supporting participating countries in setting up and scaling up One Health surveillance for emerging or re-emerging zoonotic pathogens in animals and the environment
- Improving early detection and preparedness for zoonotic diseases to safeguard public health

Altogether 11 European countries are partaking in the project, which is coordinated by Statens Serum Institute (SSI, Denmark). The project runs from 2024 to 2026.

In Finland, the project is undertaken by the Finnish Food Authority and the Finnish Institute for Health and Welfare. The chosen priority cross-border zoonoses to be surveilled in Finland include Q fever, tick-borne encephalitis (TBE), and 'Disease Y'.



Studied cross-border pathogens

TBE

Testing antibodies against TBEV in ruminants helps determine if these animals can serve as sentinels for predicting TBE risk areas for humans. Serum samples from grazing cattle and sheep are collected at slaughterhouses, covering geographically a large part of Finland, including Åland. In addition to ELISA testing, virus microneutralization is performed to confirm results. Data is analyzed together with known human TBE incidence data and risk factors incorporated in the MOOD platform (https://mood-h2020.eu/).

Q fever

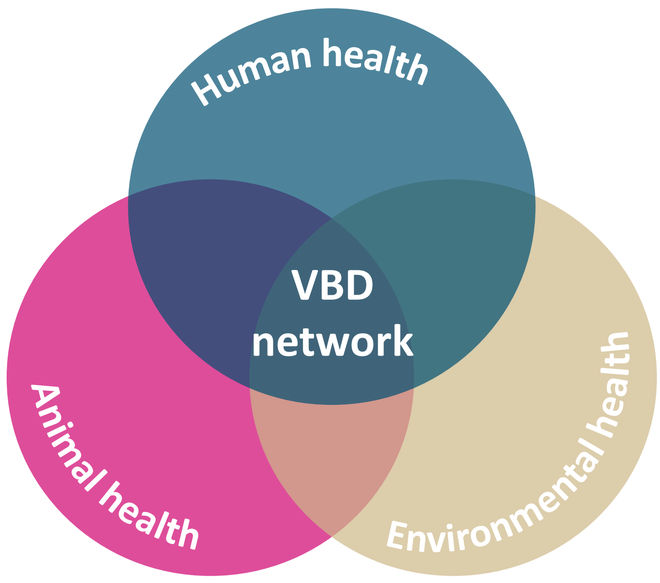
Domestic ruminants are considered the main reservoir for human Q fever infections, although it can also be considered a vector-borne disease, with ticks playing a potential role in transmission. Within the project, aborted ruminant fetuses are tested for *Coxiella burnetii*, the causative agent of Q fever. Bulk tank milk samples from dairy herds with health records indicating reduced infertility and individual milk samples from aborted female ruminants are serologically tested to detect antibodies against *C. burnetii*.

Disease Y

Aborted ruminant fetus samples showing gross or histological lesions indicative of an infectious disease, but yielding no detectable pathogens through conventional bacteriological and virological methods, are subjected to metagenomic sequencing to potentially identify previously unrecognized infectious agents causing disease, termed 'Disease Y'. Notably, the causative agent of Disease Y may possess zoonotic potential, with the capacity to cause illness in humans.

National VBD network

Building a national, long-term network for vector species and vector-borne disease (VBD) experts in different sectors (human, animal, environmental health, social sciences) is undertaken as part of the project. The goal is to enhance data management, information sharing, surveillance and risk preparedness of vector-borne diseases in Finland. Climate change drives the introduction of new vector species and the spread of potential vector-borne diseases in Finland, highlighting the importance of preparedness and expert network building nationally.



More information on the project:

https://www.ruokavirasto.fi/oh4surveillance

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Zoonoosikeskus

One4Health SURVEILLANCE