World Organisation for Animal Health

CASE STUDY

Implementing One Health: Country experiences and lessons learnt

One Health in Action:
Signalling and responding to zoonotic disease threats using a One Health approach: the Zoonotic disease structure in the Netherlands

Issue Overview and One Health Context

The Netherlands has faced major zoonotic disease outbreaks with grave consequences for both public and animal health. In 2003, an outbreak of avian influenza in poultry led to the culling of millions of birds [1]. The virus infected hundreds of people involved in the poultry handling operations and one veterinarian died as a result [2]. Between 2007 and 2010, a Q fever outbreak caused over 4,000 confirmed human cases and led to the death of at least 116 people [3]. These crises highlighted the need for a coordinated, multisectoral approach, leading to the establishment of an Integrated Human-Veterinary Risk Analysis Structure for Zoonotic Diseases (hereafter, the Structure). The aim of the Structure is to signal, assess and control emerging zoonoses that may pose a risk to public health in an integrated One Health approach that unites human, animal and environmental health expertise [4].

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Solution and Mitigation Strategies

The zoonotic disease structure aligns with the infectious disease control system in the Netherlands (see **Figure 2**). A key component is the Signalling Forum Zoonoses (SO-Z), which meets monthly under the leadership of the National Institute for Public Health and Environment (RIVM). During these meetings, One Health experts conduct a structured assessment of regional, national and international signals that may indicate zoonotic disease threats.

If relevant signals are identified during the joint assessment, stakeholders are informed, and professionals in the field receive a monthly newsletter. In cases where issues arise and depending on the severity of the warning signs, further assessment may proceed through various steps (**Figure 1**).

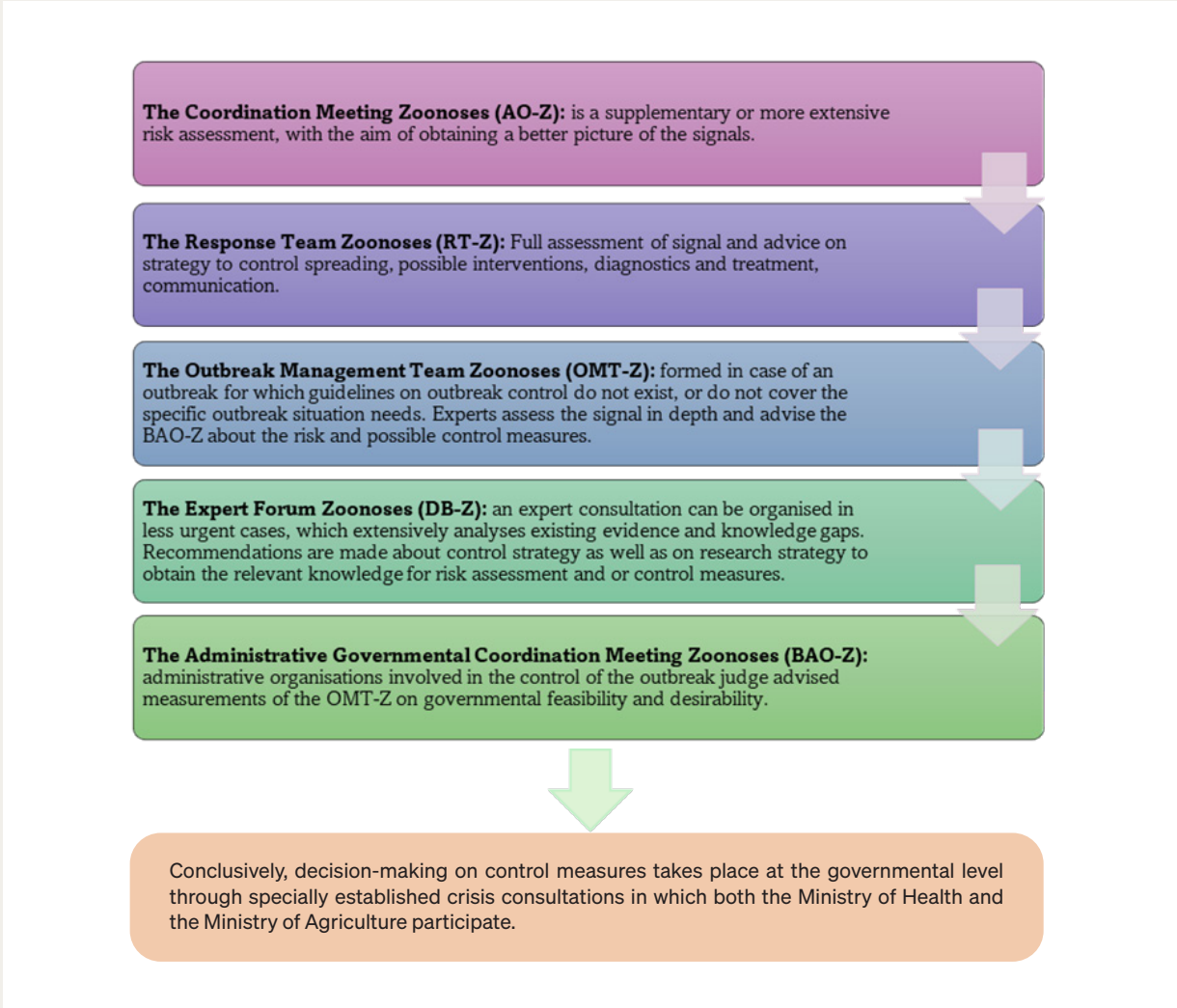

Figure 1. The upscaling steps of the zoonotic disease Structure in the Netherlands

SARS-CoV-2 in Mink Case

The complete risk assessment and management structure was first fully activated during the SARS-CoV-2 outbreak in farmed mink. The virus was introduced to mink by infected humans working on those farms [5]. Following the first reports in May 2020, the Ministry of Agriculture immediately imposed a notification obligation, as the minks posed a potential risk of spreading the virus. Additional measures were included such as a ban on the transport of minks and their manure.

All mink farms in the Netherlands were screened for SARS-CoV-2 antibodies. An early warning system was established, in which minks that died naturally were sent weekly to Royal Gezondheidsdienst voor Dieren (GD) for PCR testing. Veterinarians were informed through several 'Vetinf@cts messages', a communication service by the Structure, about control measures for SARS-CoV-2 in minks.

Despite these efforts, farm-to-farm transmission continued. Based on the advice of the Outbreak Management Team Zoonoses (OMT-Z) and the Administrative Governmental Coordination Meeting Zoonoses (BAO-Z), the Ministry of Health and the Ministry of Agriculture decided in June 2020 that all minks on infected farms had to be culled. This decision was based on extensive investigations at the initial infected farms and on extensive risk assessment in the Structure. On August 2020, the Dutch government announced that all mink farms had to cease production before the next season.

This decision followed OMT-Z advice further, as additional restrictive measures had failed to stop the virus's spread. In addition, it was decided to bring forward the decision that had already been taken, which was originally introduced for animal welfare and ethical reasons, thereby banning the commercial keeping of animals, including mink, for fur production from 2023 onwards. As of 8 January 2021, it is prohibited in the Netherlands to keep mink for fur production. All mink farms were permanently closed.

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Stakeholders Involved

The Zoonotic disease Structure includes representatives from central and local government agencies, academic institutions, and both public and private organisations. **Figure 2** lists the core stakeholders involved.

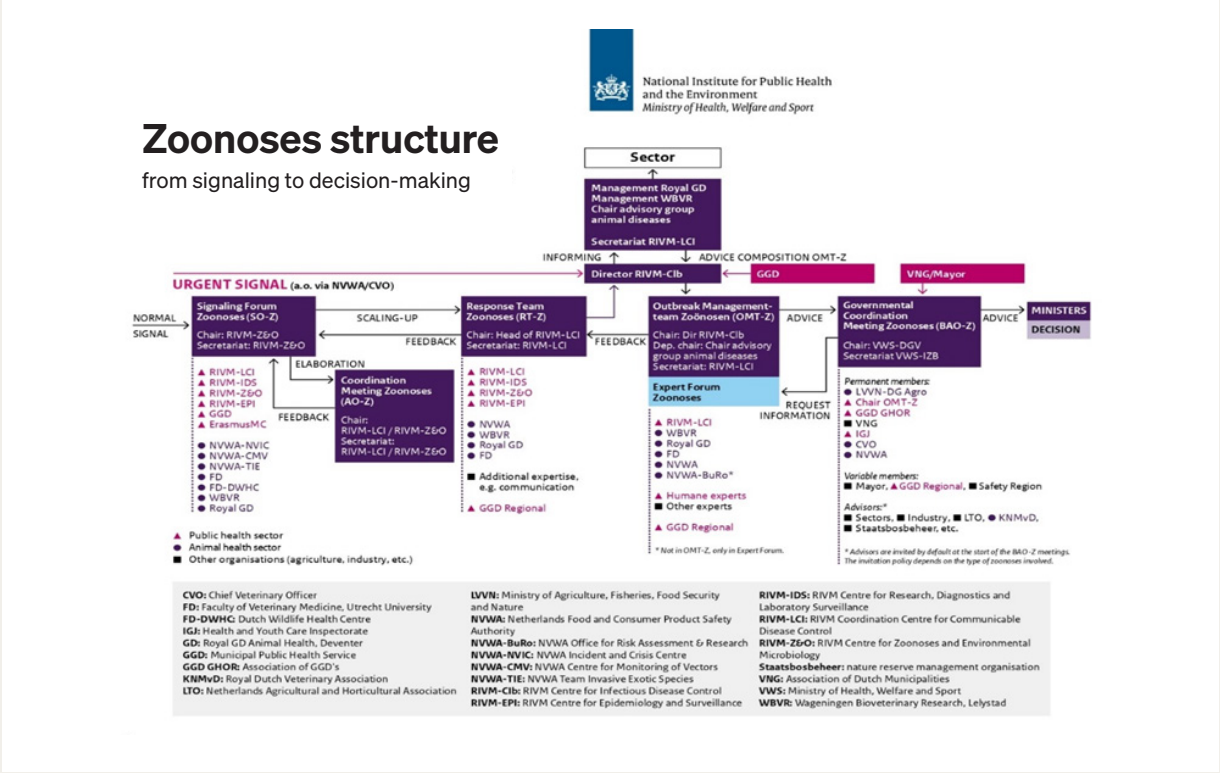

Figure 2. The zoonotic disease Structure in the Netherlands, (Rijksintituut voor de Volksgezondheid en Milieu (RIVM), 2025)

Impact and Outcomes

Case-related evaluations and exercises have shown evidence of the effectiveness of the Structure to respond to zoonotic threats. Moreover, following the SARS-CoV-2 outbreak in mink, the Structure was reviewed by the Institute for Safety and Crisis Management [6]. The review confirmed that the Structure largely functioned as designed, offering benefits such as bringing together human and veterinary expertise, efficient collaboration through clear communication lines and the ability to anticipate and adapt measures throughout the crisis. The evaluation showed effective cooperation between ministries and stakeholders.

Beyond immediate crisis response, the Structure has proven its worth in ongoing monitoring and prevention. For example, it revealed a gap in swine influenza monitoring, highlighting potential risks to human health prompting preventive research and interventions [7]. Additionally, joint research on *Chlamydia psittaci* has been conducted in a One Health context to reduce disease burden [8].

Improvements were recommended, including refining the focus of questions posed to the OMT-Z, enhancing exchange of information by reporting decisions back to advisory bodies and better monitoring of the impact and compliance with measures. These are being addressed within the current Structure.

Implementation Challenges

Several challenges have affected the effectiveness of the Structure:

Trust and collaboration: Trust is essential for effective collaboration and requires time and team building.

One Health representation: Although recent reforms have improved stakeholder diversity, the structure still prioritises biomedical perspectives. As a result, key One Health dimensions like ethical (van Herten, 2020) and environmental aspects remain marginalised.

Process clarity: Earlier ambiguities in roles and responsibilities have been addressed but require continued attention.

Legal and regulatory limitations: Certain legislation was inadequate for effective risk reduction in some minor outbreaks and is currently under review.

While the Structure is funded by the Ministries of Health and Agriculture, it lacks strong legal anchoring. This legal foundation has improved, but it may need reinforcement to prevent negative policy shifts.

Data-sharing barriers: Technical and legal challenges have hindered data sharing, negatively affecting prediction, prevention and outbreak control. Legal reforms and tools like metadata anonymisation have helped address some of these issues.

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Kittens infected with highly pathogenic bird flu H5N1 in the Netherlands

On November 19, 2025, sample material from two kittens, approximately 2 months old, tested positive for highly pathogenic avian influenza (HPAI), H5N1. This is the first known case of an HPAI H5N1 infection in cats in the Netherlands. Infections of HPAI in cats have been reported in several other countries previously.

Lessons Learnt

- The Structure has strengthened cross-sector communication and response to confidential signals. Permanent representatives in the SO-Z foster trust among experts, which is vital due to differing urgency perceptions, especially when signals emerge only in animals or humans and require immediate coordination. The standard use of a One Health rapid risk assessment tool could help evaluations.
- Since 2011, the collaboration agreement has been updated twice to clarify roles and include more organisations, expanding the scope to foodborne diseases, environmental factors and antimicrobial resistance. Clear documentation is key to effective cooperation.
- The Dutch zoonotic disease Structure was established after zoonotic disease crises as was the case with the UK's Human Animal Infections and Risk Surveillance (HAIRS) group (Q fever and **Bovine Spongiform Encephalopathy** -BSE-). However, since building trust takes time, these structures should be done in peacetime to ensure crisis readiness.
- It is important to take into account that both formal and informal routes for sharing information are key to signaling potential risks.
- A joint European strategy and a legally established European framework would enhance long-term sustainability and cross-country collaboration.

Relevance to the One Health Joint Plan of Action (OH JPA)

The Netherlands' approach to zoonotic disease control is based on a structured, multi-sectoral risk management framework. This framework exempli-fies the implementation of Pathway 2: institutional coordination, through the One Health General Promotion Division and multi-sectoral partnerships. Its foundational mechanism, the Signalling Forum Zoonotic Diseases (SO-Z), directly operationalises Action Track 2: reducing the risks from emerging and re-emerging zoonotic epidemics and pandemics.

The tiered response, culminating in the OMT-Z and coordinated action by the Ministries of Health and Agriculture, demonstrates a functional model for rapid, multisectoral intervention.

This institutional collaboration provides a concrete example of the integrated governance and response capacity the OH JPA aims to achieve globally.

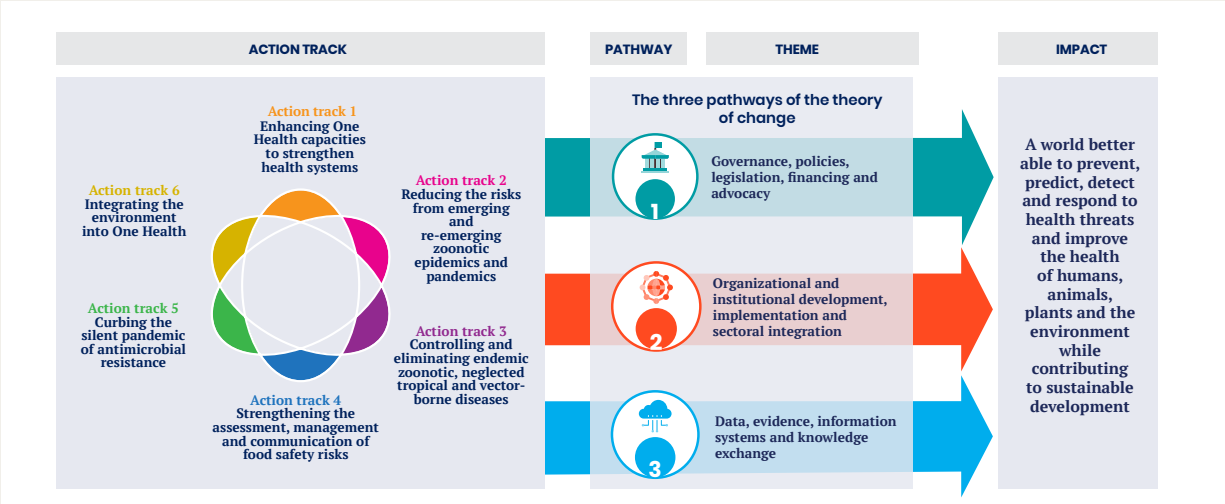

Figure 3. Pathways of Change and Action Tracks of the One Health Joint Plan of Action (OH JPA)

Conclusion

The zoonotic disease Structure in the Netherlands has shown to be of added value in the early warning, risk assessment and control of emerging zoonoses. Critical success factors include sustainable relationships and trust between professionals in the involved domains facilitating the exchange of necessary information to tackle zoonotic threats, a clear description of tasks and responsibilities, as well as governmental support. Continuous improvement and integration of underrepresented One Health dimensions, combined with stronger legal frameworks, will further strengthen the system's resilience.

> *The aim of the Zoonoses Structure is to signal, assess and control emerging zoonoses that may pose a risk to animal and/or human health in an integrated One Health approach [9].*

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Additional resources

9. Van der Giessen J, et al. Signalling and responding to zoonotic threats using a One Health approach: a decade of the zoonoses structure in the Netherlands, 2011 to 2021. Eurosurveillance. 2022;27(31):2200039. https://doi.org/10.2807/1560-7917.ES.2022.27.31.2200039.
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Implementing One Health Case Studies is an initiative of the One Health team at the World Organisation for Animal Health (WOAH) Headquarters, under the leadership of **Dr Chadia Wannous**, WOAH OH Global Coordinator, with the support of **Kurmanzhan Dastanbek**, WOAH OH Project Manager.

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