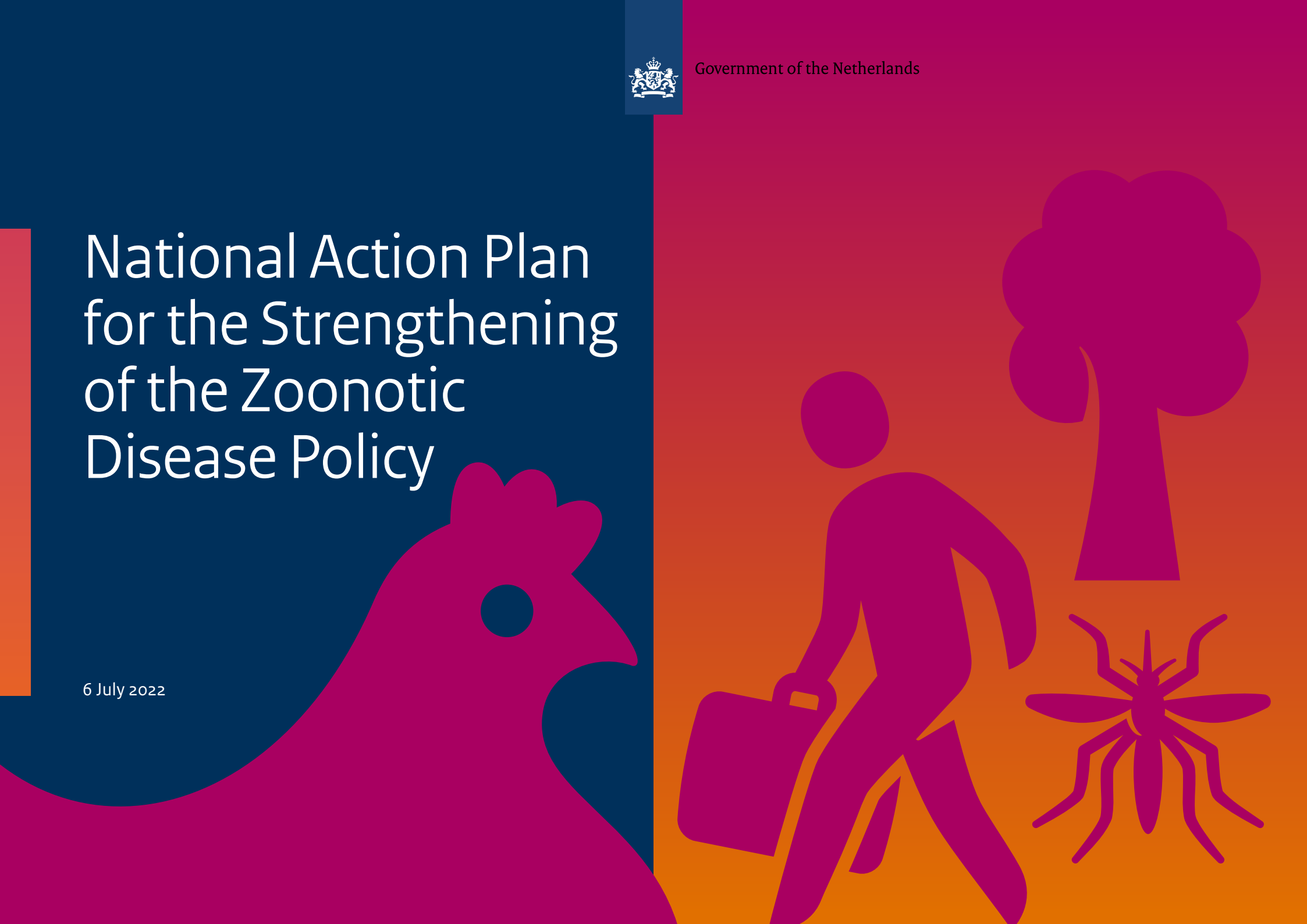
Government of the Netherlands

National Action Plan for the Strengthening of the Zoonotic Disease Policy

6 July 2022



Contents

1 Summary

The COVID-19 pandemic has shown that a zoonotic disease can cause worldwide disruption. The Dutch government is therefore committed to invest in efforts to avoid this type of situation in the future. In this National action plan, the Dutch government describes how it will further strengthen its policy on zoonoses over the next four years. The action plan extends across the full spectrum of One Health (environment, animals and humans), at national and international level, and focuses on prevention, detection and response. The aim of the action plan is to further reduce the risk of zoonotic diseases emerging and spreading in the future, and to ensure that we are prepared for possible outbreaks.
The efforts of the Netherlands are to be regarded within the international context. Experts indicate that the next zoonotic disease outbreak with pandemic potential is most likely to start abroad. International collaboration is therefore crucial to combat cross-border health threats. For this reason the action plan has a strong focus on the international agenda and initiatives. This presents a considerable challenge, as international agreements are reached in negotiation with many countries and organisations. The action plan is linked to the Dutch government's Pandemic Preparedness Policy Agenda, as the strengthening of zoonotic disease policy helps to tackle potential pandemics at the source.

Development of the action plan

Several advisory reports have been used in formulating the action plan. First and foremost, the report *Zoönosen in het vizier* by the Zoonotic Disease Expert Group led by Mr Bekedam. But also the evaluation of the SARS-CoV-2 outbreak in minks and several advisory reports issued by the Expert Panel Consultation Zoonoses have been used. The government consulted stakeholders and used their advice to develop this action plan. The actions in this plan have been formulated on the basis of: the aforementioned advice *Zoönosen in het vizier*, the input from parties involved, an analysis and weighing of existing policy efforts and, based on this, a more detailed prioritisation and phasing. The action plan is dynamic and will develop over time. Where necessary, the actions will be revised and adjusted in the next few years based on developments and progress, such as research results.

The strengthening measures

The action plan consists of three pillars for tackling zoonotic diseases: 1) prevention, 2) detection and 3) response. The chapters describe efforts in relation to these aspects in this order. The plan also addresses two cross-cutting themes: international efforts and research.

Prevention

The main focus of the action plan is prevention. Efforts to combat climate change and changing land use are inevitably continued. The government is also developing guidelines to support municipalities and provinces in taking zoonotic risks into account in rural and urban planning. Efforts are being made in the livestock farming sector to increase biosecurity at farms and the vaccination of poultry against bird flu. In addition, the subject of zoonotic diseases was mentioned in the preliminary memorandum for the National Programme for Rural Areas (*Nationaal Programma Landelijk Gebied*, NPLG) as

a 'linking opportunity' in the integrated area-specific approach to reduce the risk of outbreaks and the spread (zoonotic) pathogens in livestock farming.

When it comes to companion animals and other (wild) animals, more intensive supervision of animal fairs is planned and it is being examined whether additional efforts are needed to detect and monitor both the legal and illegal trade in animals and meat. Finally, measures are being taken to raise awareness of zoonotic diseases among the general public and professionals through additional target group-oriented communication: the Zoonotic Disease Expert Group has introduced the phrase 'zoonotic literacy' for this purpose. Preventive measures are being taken in the context of influenza for the benefit of human health.

Detection

Timely detection of a potential zoonotic disease is vital to early mitigation of the effects. The Netherlands has a well-functioning Zoonoses Structure. In the context of the action plan, the parties involved explore whether all relevant zoonotic signals are in scope. The Centre for the Monitoring of Vectors (part of the Netherlands Food and Consumer Product Safety Authority, NVWA) is expanding its capacity to improve the monitoring of vectors (for example ticks) and is working with the National Institute for Public Health and the Environment (*Rijksinstituut voor Volksgezondheid en Milieu*, RIVM) and other parties involved to develop a knowledge platform for vector-borne infectious diseases. In addition, investments will be will be made to expand the monitoring of zoonotic diseases, for example in the environment. Human surveillance and its strengthening are part of the One Health surveillance. Signals of zoonotic diseases identified in the human health surveillance will be linked to zoonotic signals from animals and the living environment. Finally, an integrated One Health surveillance will be developed with the possibility of a data exchange platform for monitoring and surveillance data. This is an ambitious task. Given the complexity of this challenge, the approach will be step-by-step aiming for an operational platform in 2026.

Response

Strengthening measures are also being introduced in the context of response. The consistency of existing contingency plans will be improved. The government is drawing up a national crisis plan for infectious diseases that will also cover zoonotic diseases. Finally, a One Health simulation exercise will be organised.

International effort

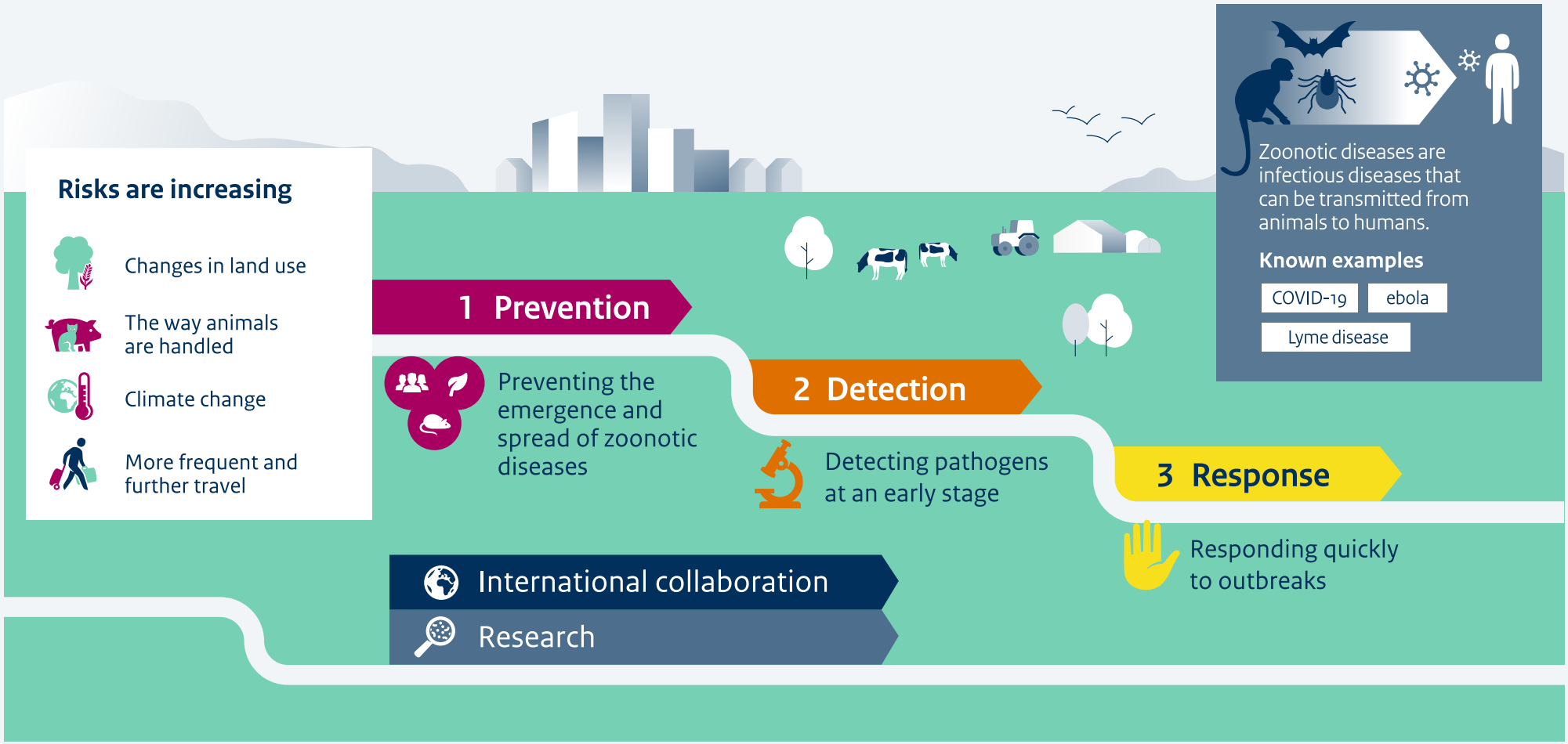
The Netherlands has established international priorities that will be discussed in various forums. International efforts will focus on prevention, detection and response as well. Items on this agenda include sharing knowledge about the Dutch Zoonoses Structure, raising awareness of the importance of national action plans, combating global deforestation, reducing illegal trade in animals, improving biosecurity, zoonotic risks in trade and transport of wild and domestic animals, and international efforts in the areas of monitoring, surveillance and data exchange. The new World Health Organization (WHO) instrument on pandemic prevention is also important in this context.

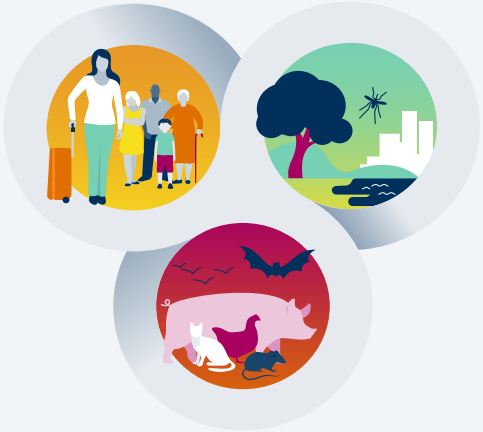
Research

In the next years, investments will be allocated for pandemic preparedness in long-term research programmes on zoonotic diseases. In addition to regular research into zoonotic diseases, ZonMw (the Netherlands Organisation for Health Research and Development) is launching a research programme into infectious diseases based on a One Health approach. Wageningen University & Research (WUR) has also set up the ERRAZE@ WUR (Early Recognition and Rapid Action in Zoonotic Emergencies) research and investment programme, in which researchers from various disciplines work together on the scientific basis required to avoid future pandemics and limit their impact. On top of this, the research institutes take part in and work within a wide range of relevant international research programmes.

More focus on zoonotic diseases

National Action Plan for the Strengthening of Zoonotic Disease Policy 2022-2026





National Action Plan for the Strengthening of Zoonotic Disease Policy

Key action points 2022-2026

Prevention

- Combat deforestation, loss of biodiversity and climate change
- Set up a knowledge platform for vector-borne infectious diseases for research, advice and more intensive monitoring
- Guidelines for provinces and municipalities about zoonotic risks, when planning rural and urban environments
- Include risks of zoonotic and other pathogens in the Dutch National Programme on rural areas (nitrogen)
- Biosecurity plans for livestock farms
- Vaccinate poultry against bird flu as soon as possible, in a responsible way
- Intensify supervision of animal fairs in the Netherlands
- Target group-oriented communication to increase the knowledge of zoonotic diseases among the general public and professionals

Detection

- Analyse whether all signals of zoonotic diseases are detected at an early stage, for example in the case of insect farming
- Expand monitoring of zoonotic diseases in humans
- Improve animal-human data exchange, in order to detect sources.

Response

- Improve consistency between contingency plans for zoonotic outbreaks
- Contingency plan for outbreaks involving companion animals
- Guidelines on the procedures to follow on finding sick and dead wild birds and other animals
- Crisis simulations with all parties involved
- Draw up of a national crisis plan for infectious diseases, including zoonotic diseases

International collaboration

- Share information on the Dutch Zoonoses Structure and encourage other countries to also develop an action plan
- International awareness of the risks associated with wet markets, bushmeat and the trade in wild animals
- Increase monitoring and data exchange between countries

Research

- Knowledge agenda on the spread of zoonotic diseases and improved detection methods
- Co-financing of long-term research programmes on zoonotic risks
- International partnerships

Implementation

The government is responsible for setting policy goals and the implementation of the action plan. The plan cannot be implemented without the commitment of parties in the field. Therefore this action plan will be implemented in close consultation with the parties involved over the next few years.

Finally

In this National Action Plan for the Strengthening of Zoonotic Disease Policy, the government presents its strategy for further reducing the risk of zoonotic diseases emerging and spreading in the future, and to ensure that we are prepared for outbreaks. This action plan will be implemented in the period from 2022 to 2026. Annual reports will be issued on the progress of the actions.

2 Introduction

General

Zoonotic diseases are infectious diseases that can be transmitted from animals to humans. Humans can become ill, sometimes resulting in life-long health problems or death. Scientists assume that 60–75% of infectious diseases in humans originate in animals. The COVID-19 pandemic has shown that a zoonotic disease can cause worldwide disruption and underlines the necessity of the strengthening of current policy on zoonotic diseases. It is impossible to completely exclude the risk of zoonotic diseases[1].

The Ministry of Health, Welfare and Sport (VWS) and the Ministry of Agriculture, Nature and Food Quality (LNV) have been working together on zoonotic disease policy and management for many years. This action plan has been drawn up in close collaboration, led by the Ministry of VWS. The action plan is linked to the government's Pandemic Preparedness Policy Agenda. Zoonotic diseases are an important part of the Pandemic Preparedness Policy Agenda in the context of 'prevention at the source'.

The Netherlands has a sound basis for its policy on zoonotic diseases, which will be further strengthened by this action plan. The current Zoonoses Structure, which ensures effective collaboration between the organisations in the domains of human and veterinary health, including the Ministries of VWS and LNV, has been in place since 2011. The structure focuses on the detection, assessment and control of zoonotic diseases and is permanently active, even in the absence of any threats. The Zoonoses Structure brings together the disciplines in the One Health areas (environment, animals and humans). This structure is led by the Minister of VWS. The Ministers of VWS and LNV jointly take the decisions, whereby public health interests are always paramount.

Aim

The aim of this action plan is to reduce the risk of zoonotic diseases emerging and spreading, and to ensure that we are prepared for any outbreaks. Its focus is on zoonotic diseases that potentially have a major impact on individuals (significant burden of disease) or society (many ill people). Unknown pathogens are also considered. It is impossible to eliminate the risk of zoonotic diseases entirely. When selecting measures, it is important to make proportionate trade-offs between the different policy goals relating to aspects such as climate, biodiversity, animal and human health.

Experts indicate that the next zoonotic disease outbreak with pandemic potential is most likely to start abroad. The action plan therefore places a strong focus on the international playing field. The action plan covers non-food borne zoonotic diseases[2] (food-borne zoonotic diseases[3] and antibiotic resistance are not part of this

[1] Zoonotic risk is defined as the likelihood of a zoonotic disease emerging or spreading combined with the effects of a zoonotic disease.

[2] Non-food borne zoonotic diseases are zoonotic diseases that are transmitted from animals to humans outside the food chain.

[3] Food-borne zoonotic diseases are zoonotic diseases that are transmitted from animals to humans via the food chain

action plan). This plan does not focus on improvement measures implemented in the medical sector (including public healthcare funding), or the financing of veterinary medicine.

Development and structure of the action plan

For the action plan, the government relied primarily on the recommendations made in the report *Zoönosen in het vizier*[4] by the Zoonotic Disease Expert Group (led by Mr Bekedam). Other input included the evaluation of the SARS-CoV-2 outbreak in minks, advisory reports issued by the Expert Panel Consultation Zoonoses, the contributions of many parties involved and, of course, all current activities relating to zoonotic diseases. The Zoonotic Disease Expert Group provided a thorough description of the factors that contribute towards zoonotic risks, drew up 74 recommendations and broadly reviewed these recommendations, resulting in 23 key recommendations. The expert group did not have resources to analyse all its recommendations in relation to existing zoonotic disease policy instruments (in the Netherlands and worldwide).

The actions in this plan have been formulated based on the aforementioned advice, the input from parties involved, and an analysis and weighing of existing policy efforts. Further prioritisation and phasing were then carried out based on the outcomes.

Many parties were consulted, also about specific elements of the plan. These were parties from the fields of human and veterinary medicine, and from the environment (researchers, authorities, the sectoral parties and NGOs). For each theme, kick-off sessions were held with the parties involved on the strengthening of zoonotic disease policy. Many parties were consulted, including about specific elements of the plan. Finally, many parties from the One Health domains were consulted in a joint stakeholder meeting.

The action plan is built on the following areas: prevention, detection and response. The plan further includes national and international efforts in these three areas and finally a research agenda. Each section lists the relevant current activities for each theme followed by strengthening measures and the corresponding actions. Several actions are already being implemented. Other actions are still in progress or require further discussion with parties. Some actions require preliminary research. As soon as new knowledge and information becomes available, the next action can be implemented and will result in further adjustment of the action plan. Many parties were consulted, also about specific elements of the plan.

This English version of the National Action Plan for the Strengthening of the Zoonotic Disease Policy is a translation of the original in Dutch written *Nationaal actieplan versterken zoönosenbeleid*[5]. In case of ambiguities about the text, reference is made to the original Dutch version of the action plan.

Implementation

The government is responsible for setting policy goals and choices, and implements the action plan. This means that the government makes choices about the actions to be taken. It is important that sufficient resources are available across the full spectrum of prevention, detection and response. The plan cannot be implemented without relevant stakeholders. All parties have a role and responsibility to further strengthen efforts to combat zoonotic diseases. This action plan will be implemented in close consultation with all parties involved over the next few years.

The National Action Plan for the Strengthening of Zoonotic Disease Policy covers the period 2022 to 2026. Annual reports will be issued on the progress of the actions.

4 Letter to parliament, 25 295, No. 1357

5 Nationaal actieplan versterken zoönosenbeleid | Rapport | Rijksoverheid.nl

3

Prevention

3.1 Introduction

The first part of this action plan focuses on preventing the transmission of zoonotic pathogens. Prevention can limit illness caused by zoonotic diseases, as well as economic damage. Humans can become infected through various routes of transmission, including direct contact with animals or animal material (for example through manure), through the environment such as soil, water and air, or through vectors[6], like ticks or mosquitoes. Therefore the main focus of this action plan is prevention. This chapter therefore contains a broad range of actions to prevent the emergence of zoonotic diseases through these routes of transmission. The following elements are addressed in this order: environment, livestock farming, wild animals and companion animals, human health prevention and zoonotic literacy.

[6] A vector is a disease carrier such as a mosquito or a tick

3.2

Environment and vectors

Current activities

Introduction

To sustain a healthy and liveable environment for humans, it is essential to achieve the right balance between healthy nature, good water quality and good soil quality. Nature and the environment play a valuable role in people's health and well-being. However, potential risks posed by zoonotic diseases must be taken into consideration. Changes in biodiversity, land use and climate have a global impact on the zoonotic risk. Where people encounter animals living in the wild, these animals can infect humans with known and yet unknown zoonotic diseases. The reverse is also true - humans can infect animals. Loss of habitat can lead to increased contact between humans and animals. Expanding and connecting habitats is an important measure designed to improve the nature in the Netherlands. This improves the possibility for plants and animals to spread and relocate, but also has a potential impact on vector-borne and other infectious diseases, which may affect the zoonotic risk.

As a densely populated country, the Netherlands faces major challenges in the areas of environment, ecosystems and climate. Growing numbers of animal and plant species are disappearing and the natural environment is diminishing. Rising temperatures and other changes in the environment can cause an increase in certain vectors, leading in turn to an increase in vector-borne and environmentally transmitted infectious diseases. National and international efforts to combat climate change and deforestation are essential for several reasons, including for the prevention of zoonotic diseases.

Climate change mitigation and adaptation

The government is taking measures to protect the Netherlands against the effects of climate change and to reduce greenhouse gas emissions. National and international targets have been agreed to this end. At global level, the Netherlands has agreed with other countries to limit the rise in the average global temperature to a maximum of 1.5 degrees Celsius in 2050. Experts claim that climate change can increase the likelihood of zoonotic diseases. In temperate regions such as the Netherlands, climate change can make zoonotic diseases more likely because of growing mosquito and tick populations and the introduction of new vectors and new pathogens. It is difficult to predict how climate change will impact the complex interaction between animal hosts, pathogens, vectors and humans. Various factors play a role, such as the changing biology of vectors at higher temperatures and changing animal and human behaviour. When taking measures to combat the effects of climate change as effectively as possible, it is important to prevent the emergence of vector hotspots that might result from it. Innovative water concepts[7] designed to combat the impact of climate change can reduce or increase zoonotic risks.

As a densely populated country, the Netherlands faces major challenges in the areas of environment, ecosystems and climate.

The main climate risks for the Netherlands and measures to address these risks are described in the National Climate Adaptation Strategy (NAS): the overarching climate adaptation strategy in the Netherlands. Climate adaptation measures can be implemented in anticipation of changes due to rising temperatures, drought and rewetting. The NAS also addresses the impact of these measures on zoonotic diseases. Based on the NAS, municipalities and provinces are expected to take health and climate-proofing into consideration when reaching decisions on the environment. One element of this is zoonotic risk, including vector control. The NAS is currently under review. The government expects to update the Parliament on the next steps in the NAS in autumn 2022. The LIFE-IP Climate Adaptation

[7] www.rivm.nl/publicaties/waterkwaliteitscheck-voor-nieuwe-enbestaande-stedelijk-waterconcepten-belang-van

(2022–2027) programme coordinated by the Ministry of Infrastructure and Water Management (IenW) and RIVM includes measures to accelerate the implementation of climate adaptation measures in the Netherlands in the areas of climate and health, and focuses in part on reducing zoonotic risks.

Change in land use

Changes in land use are one of the principal global drivers behind the emergence of zoonotic diseases. Deforestation and loss of biodiversity in tropical regions can be beneficial for reservoir[8] or vector populations (including pathogen transmission) and can ultimately lead to increased contact between humans and vectors, reservoirs, wild and domestic animals. Whereas deforestation can result in zoonotic risks, as well as more nature and water. More and more space is made available in Dutch cities for nature and water, which has an impact on biodiversity in the city and the zoonotic risk.

Around the world, deforestation is reducing the habitat of certain animal species, causing animals from these habitats come closer to humans. The Netherlands is committed to halting global deforestation by 2030, in line with United Nations (UN) Sustainable Development Goal 15. The expansion of agricultural areas, particularly for the production of beef, soya, palm oil and wood, is the main driver for deforestation. One of the key elements of international forest policy is therefore to make these agricultural supply chains deforestation-free. Partly at the instigation of the Netherlands, the European Commission (EC) tabled a legislative proposal in November 2021 aimed at banning products and animals from the European market that do not contribute towards the ambition of becoming deforestation-free, starting with palm oil, cocoa, wood, soya, coffee, cattle and beef. The Netherlands is also working on other ways of halting global deforestation, for example through diplomacy and public-private cooperation programmes.

In the context of the UN Convention on Biodiversity (CBD) and negotiations on the post-2020 Global Biodiversity Framework, the Netherlands is committed to halting the loss of biodiversity and promoting the recovery of biodiversity in 2030 as interim steps on the way to a global society in harmony with nature in 2050. Within this Framework, alongside all ambitions to improve biodiversity, negotiations are also taking place on an action plan for biodiversity and health. Steps are also being taken at European level to restore nature and improve biodiversity, for example with the birds and habitats directives (Natura 2000) and the European biodiversity strategy.

Vectors

In the Netherlands, RIVM is responsible for monitoring, issuing advice on, and responding to vector-borne infectious diseases such as Lyme disease, tick-borne encephalitis and tropical infectious diseases such as dengue and chikungunya. This is done in conjunction with the monitoring of native and exotic vectors by the Centre for the Monitoring of Vectors (CMV) within the Netherlands Food and Consumer Product Safety Authority (NVWA). The NVWA also issues advice on combating vectors. Surveillance and combating of exotic mosquitoes are carried out by the NVWA. The NVWA is responsible for supervision and enforcement on the import of high-risk products (such as lucky bamboo), to ensure that invasive exotic mosquitoes do not enter the Netherlands along with these products. The Dutch Commodities Act (*Warenwet*) and the Public Health Act (*Wet publieke gezondheid*, Wpg) are the legal framework that applies to these exotic mosquitoes (for example the tiger mosquito) with the aim of limiting the introduction and spread of these mosquitoes in the Netherlands.

RIVM is the project leader of the European network for medical and veterinary entomology, VectorNet, which was established on behalf of the European Centre for Disease Prevention and Control (ECDC) and the European Food Safety Authority (EFSA). VectorNet brings together data on vectors and pathogens. The One Health approach is improving the level of preparedness for, and the response to, vector-borne infectious diseases in the European Union (EU). The CMV is also a member of this VectorNet.

[8] A reservoir population is a population in which pathogens can accumulate and spread.

RIVM supports parties such as the municipal health services (GGDs) and occupational health and safety services in the prevention of vector-borne diseases. These parties also keep the public up to date about their activities in this area. For many years, RIVM and other institutes raise awareness through online media and social media (such as Twitter, Facebook, Instagram and YouTube) and through traditional media (such as newspapers, radio and television) of the risks of tick bites and the prevention of tick bites and tick bite diseases. Alterra (Wageningen Environmental Research) has developed a guide to risk management for nuisance from mosquitoes and midges (*Leidraad Risicomanagement Overlast Steekmuggen en Knutten*). When drafting redevelopment plans for wetland nature areas, this guide can be used to identify the impact on nuisance caused by mosquitoes and midges. The guide also provides guidance on how to avoid nuisance through redesign or management. A research project on the management of West Nile virus was launched in 2021 with the aim of developing a management approach.

Water, soil and air

Zoonotic diseases can also be transmitted from the environment. These water-borne, soil-borne and air-borne infectious diseases from animals include Q-fever and gastrointestinal symptoms caused by Campylobacter. Other zoonotic diseases that can be transmitted from animals to humans through the environment are the disease leptospirosis spread by rats and the disease tularaemia spread by hares. Further information on these diseases can be found in section 3.4 of the chapter on wild animals and companion animals.

The Netherlands also sets targets in the areas of water and health. Examples include Sustainable Development Goal 6 (SDG6) for clean water and proper hygiene, which helps to reduce water-borne zoonotic diseases. The Netherlands has also ratified the UNECE/WHO Protocol on Water and Health. In this context, the Ministry of Infrastructure en Water Management presides over the work area of risk assessment and risk management for good water quality also in relation to climate change.

Strengthening measures

Efforts to combat climate change and changing land use

Experts indicate that the next zoonotic disease outbreak with pandemic potential is most likely to start abroad. This prediction warrants close international cooperation and efforts in areas such as combating climate change, deforestation and the conservation and restoration of biodiversity. As described under current activities, the Netherlands already plays a very active role. This focus is also important in terms of reducing the risk of zoonotic diseases. The Netherlands remains committed to tackling climate change and limiting its impact in an international context.

The EC and the European Environment Agency (EEA) and other relevant European organisations have entered a partnership and have set up the European Climate and Health Observatory. This observatory brings together the knowledge, expertise and instruments of various organisations and countries in relation to the impact of climate change and climate adaptation on human health. The EC has also drawn up a strategy for European climate adaptation, which includes ambitions to tackle the effects of new infectious diseases.

Realisation of the National Programme for Rural Areas

In the National Programme for Rural Areas (NPLG), the government sets out the area-specific tasks and measures for nature, nitrogen, agriculture, water, soil and climate. The guiding principle for the NPLG is EU legislation: the Birds and Habitats Directives, the Water Framework Directive (WFD) and, among others, the European Climate Law for greenhouse gas emissions. Section 3.3 of the chapter on livestock farming and farm animals provides further information on the NPLG in relation to zoonotic and other pathogens.

Guides on taking zoonotic diseases into account in rural and urban planning

In addition to making the most of the positive effects of greenery and water, the challenge is to also monitor any direct and indirect public health risks. Regional authorities must have easy access to information on zoonotic risks. Guides are being drawn up for this purpose, which regional authorities can use when making policy decisions. Guides to taking zoonotic risks into account have already been published in some areas, such as the guide to livestock farming and health of local residents (*Handreiking Veehouderij en gezondheid omwonenden* – see section 3.3 for more information). These guides are not yet available across the full spectrum of the environment.

The guides enable parties to take zoonotic risks into consideration when making policy decisions on rural and urban planning together with the legal instruments used for that purpose. This includes the consideration of zoonotic risks in relation to developments in livestock farming, urban design and the natural environment. All knowledge must be brought together. The Environment and Planning Act (*Omgevingswet*) is expected to enter into force in 2023. Under the Act, municipalities and other competent authorities are responsible to consider a healthy environment.

The knowledge and guidelines can be used by regional authorities and other parties such as environmental services, site management organisations and nature organisations. Regional authorities have a key role to play in integrating infectious disease control with green space and water management and environmental planning advice. These guides are designed to be usable in the practical situations faced by these organisations.

Strengthened approach to vectors

Climate change can result in the increasing presence of certain types of vectors, which can in turn lead to a rise in vector-borne infectious diseases. Rising temperatures and the introduction of exotic vectors by human activities are examples of factors that can change the occurrence of some native and exotic vectors and the pathogens they carry in the Netherlands. These changes require a continued focus on vectors. That is why RIVM and the CMV are setting up a platform for vector-borne infectious diseases in collaboration with other relevant institutes. The platform will deal with monitoring, knowledge dissemination and the provision of advice on current knowledge of vectors and their pathogens to national, regional and local parties and the general public. Knowledge about the zoonotic risks posed by vectors (such as mosquitoes and ticks) and the impact of climate change will be developed, combined and put into practice. A special focus will be placed on relevant knowledge development on new sustainable and effective methods for the control of vectors and vector-borne zoonotic diseases. The control strategy will be adjusted on this basis. Chapter 5, section 5.2 elaborates further on the scaling up of vector monitoring and control.

The number of cases of Lyme disease in humans (through bites from infected ticks) has tripled in the last fifteen years. The average tick season has become longer, and the areas in the Netherlands that offers a suitable habitat for ticks have become larger because of climate change. In connection with the spread of, and risks associated with, ticks, the Ministry of VWS developed a strategy in 2019 that encompasses various aspects to get all parties in the field (such as municipalities, provinces, site managers and ecologists) involved in the prevention of Lyme disease through the avoidance of tick bites. This strategy will be implemented over the coming years.

The most common species of mosquito in the Netherlands is the common house mosquito. This mosquito is a vector for diseases including West Nile virus, which causes West Nile fever. The incidence and spread of West Nile fever has grown in Europe over the last fifteen years. In 2021, RIVM launched a large-scale surveillance and research programme on West Nile virus. The programme involves extensive surveillance of a range of animal species, including mosquitoes, horses and birds, and surveillance in humans. The programme also focuses on developing a joint management strategy (including communication) by the CMV and RIVM. West Nile virus is not the only pathogen transmitted by native mosquito species. A contingency plan for combating native mosquitoes is being drawn up for a number of native mosquito species, partly on the basis of the abovementioned research.

Action 1: Efforts to combat climate change and changing land use

Action	Description	When
1.1 International efforts to combat climate change (also to reduce zoonotic risks)	The Netherlands has high ambitions when it comes to climate change and is committed to achieving them at an international level. Climate change and zoonotic diseases are specific focus areas for the European Climate Observatory.	2022 and beyond
1.2 International efforts to halt deforestation (also to reduce zoonotic risks)	The Netherlands is committed to combating global deforestation. One of the key elements of international forest policy is to make agricultural supply chains deforestation-free.	2022 and beyond
1.3 Implementation of the UN Biodiversity Convention and post- 2020 Global Biodiversity Framework (also to reduce zoonotic risks)	The Netherlands supports (the implementation of) the UN Biodiversity Convention. Part of the post-2020 Global Biodiversity Framework is the negotiations on the Action Plan for Biodiversity and Health.	2022 and beyond

Action 2: Realisation of the National Programme for Rural Areas

Action	Description	When
2.1 Set up and implement the National Programme for Rural Areas	Achieve the tasks relating to nature, nitrogen, climate and water through an area-specific approach. See section 3.3 for further details of the consideration of zoonotic diseases in the National Programme for Rural Areas.	2022 and beyond

Action 3: Guidelines on taking zoonotic diseases into account in rural and urban planning

Action	Description	When
3.1 Guidelines for taking zoonotic risks into account in rural and urban developments	Guidelines are being developed to help regional authorities take zoonotic risks into account in environmental planning. Local parties can use the guidelines to take zoonotic risks into consideration in environmental planning decisions.	2023, 2024 and 2025

Action 4: Strengthened approach to vectors

Action	Description	When
4.1 Set up a knowledge platform for vector-borne infectious diseases	RIVM and the CMV are to work with other institutions involved to set up a knowledge platform for vector-borne infectious diseases. This centre will be involved in monitoring, generating knowledge, and disseminating knowledge to parties and the general public, as well as issuing management and other advice.	2023
4.2 Develop knowledge on vectors (such as mosquitoes and ticks) and the associated zoonotic risks	The knowledge platform for vector-borne infectious diseases will carry out research into topics such as mosquitoes and ticks and the associated zoonotic risks. This will include examining the impact of changes in the environment, climate change and climate adaptation measures.	2023 and beyond
4.3 Change the approach to mosquitoes and ticks and their pathogens	Additional knowledge results in a more effective approach to mosquitoes and ticks and their pathogens.	2023 and beyond
4.4 Implement tick strategy, in connection with Lyme disease	Due to the increased number of cases of Lyme disease, the strategy developed in 2019 by the Ministry of VWS to combat this disease will be implemented.	2022 and beyond
4.5 West Nile virus research programme, for a joint communication and management strategy	A surveillance and research programme focusing on West Nile virus has recently been launched. The aim of this programme is to detect West Nile infections and develop a joint communication and management strategy. This programme is being carried out under the direction of RIVM with Royal GD (GD), Erasmus MC, the Dutch Wildlife Health Centre (DWHC) and the CMV.	2022 and 2023
4.6 Contingency plan for combating native mosquitoes	Based on previously developed knowledge, RIVM and the CMV will start in 2023 to develop a contingency plan for combating native mosquitoes in conjunction with international expert knowledge.	2024 and 2025

3.3
Livestock farming and farm animals

Current activities

Introduction

The Netherlands has an intensive livestock sector with many animals and farms within a relatively small area. As a result, the Netherlands is vulnerable to animal diseases including zoonotic diseases. When an infection occurs, zoonotic and other pathogens can spread to other farms. This can pose a risk to animal health or human health. Many measures are taken to prevent animal diseases, including zoonotic diseases, such as biosecurity measures guaranteed in private quality systems and legislation. In addition, the veterinarian plays a key advisory role in animal health management. Nevertheless, there is scope for further strengthening.

Promoting animal health

Animal owners have primary responsibility for the health of their animals. Animal owners ensure that their animals do not get sick, for instance by providing them with proper care, and do this in consultation with a veterinarian. The Netherlands is leading the way in reducing antibiotic use (in which animal health is a key factor) and is commissioning research into vaccines and vaccination strategies for certain animal diseases. Animal health is also a component of projects linked to animal welfare in livestock farming and circular agriculture.

It is important to adopt an integrated approach to themes that affect and have an impact on each other (such as animal health and animal welfare). Obligations are enshrined in law to safeguard animal and public health as much as possible.

Biosecurity

In the case of farm animals, livestock farmers take biosecurity measures to prevent infections with animal diseases, including zoonotic diseases. Some of these biosecurity measures are incorporated into the rules under the private Integrated Chain Management (ICM) systems in the various sectors. Compliance with these rules is guaranteed by an independent certification body. Examples include the presence of a hygiene barrier, showers and dedicated boots and overalls for visitors. Some of the biosecurity measures are set out in regulations, such as the rules regarding the cleaning and disinfection of cattle trucks. A focus on biosecurity at livestock farms reduces the introduction of zoonotic and other pathogens.

Trade and transport of farm animals

The European regulations include health requirements[9] for the intracommunity and international trade (import from third countries) in live animals. The aim is to prevent the spread of animal diseases, including zoonotic diseases, in farm animals and other animals. The World Organization for Animal Health (WOAH, previously the OIE) develops standards in relation to animal health and international trade. These standards are binding under the World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). The NVWA monitors compliance with these rules and takes enforcement action where application of the rules is absent or lacking. In addition, the Netherlands has an extensive range of national 'prevention' rules aimed at preventing the spread of pathogens from farm to farm. These rules are incorporated in the regulations under the Animals Act (*Wet dieren*).

Livestock farming and health of local residents

Studies commissioned by the government into the effects of livestock farming on the health of local residents have been carried out since 2009 (Intensive livestock farming and health [*Intensieve veehouderij en gezondheid*, IVG] and Livestock farming and health of local residents [*Veehouderij en gezondheid omwonenden*, VGO] I, II, III). The final results of VGO III are expected at the end of 2024. Residing in the vicinity of livestock farms has been shown to have potential health effects. For example, there is a higher incidence of lung infections in people who live near goat farms. The cause of these lung infections is unclear and is the subject of ongoing research. Possible explanations include a specific pathogen that originates from animals or greater sensitivity to lung infections due to exposure to substances released by livestock farms, such as particulate matter, endotoxins (parts of microorganisms) and ammonia.

[9] The amended Animal Health Regulation (AHR, [EU] 2016/429) entered into force on 21 April 2021.

Regional authorities are the competent authority (permit under the Environment and Planning Act, supervision and enforcement) for the granting of permits for the new construction and extension of facilities such as livestock farms. Provinces, municipalities and environmental services have questions such as what options are available to them within the existing laws and regulations to take into account potential health risks posed by livestock farms for local residents. This prompted the Knowledge Centre InfoMil to draw up a guideline to livestock farming and health of local residents (*Handreiking veehouderij en gezondheid omwonenden*)[10]. The aim of this guideline is to support the competent authority in reaching decisions on livestock farms in relation to the health of local residents. The guideline shows what regional authorities can do to take potential health risks of livestock farms into consideration in the decision-making process. The guideline provides a number of broad step-by-step plans for the consideration of health risks in zoning plans. The competent authority itself assesses whether and how it applies the legal instruments and measures in practical situations and local policy. In cases where there may be an increased risk to public health, the GGD can be asked to advise. Precautionary measures available to provinces include imposing a moratorium on new construction or the extension of stables. Such decisions must be well-substantiated. Nine provinces have an active moratorium on the extension of goat farms due to the increased risk of lung infections. In addition, the Ministry of LNV has asked the other provinces to consider introducing a moratorium on the extension or new establishment of goat farms. See the chapter on the environment, section 3.2, for further information on the drafting of guides relating to zoonotic diseases for regional authorities.

Strengthening measures

Reducing the risk of outbreaks of zoonotic and other pathogens

The government is committed to reducing the risk of outbreaks and the spread of zoonotic and other pathogens. Experts assert that, for numerous of animal disease and zoonotic disease epidemics that have occurred in the past thirty years, it has been shown that the outbreaks have been difficult or impossible to prevent. For this reason, efforts have been made to identify factors that influence the zoonotic risk. Based on the findings, actions will be formulated that help to reduce the risk of outbreaks and the spread of zoonotic and other pathogens.

The preliminary memorandum for the National Programme for Rural Areas (NPLG), an important element of the integrated area-specific approach, was published in June 2022. The memorandum contains guiding decisions and targets. Further structuring decisions and the further regionalisation of the targets for water, climate and nature are to follow by October 2022. The area programmes must be adopted on 1 July 2023. The nitrogen and nature targets must be elaborated and laid down in a compulsory and imperative spatial plan by this date. The preliminary memorandum for the NPLG describes the subject of zoonotic diseases as a 'linking opportunity'. Based on the future perspective on agriculture, the types of agricultural businesses that are possible within the area targets will be identified in consultation with provinces and the agricultural parties involved, taking into account the limitation of zoonotic risks in areas such as those with a high livestock density and wetland areas. The aim is to reduce the risk of outbreaks and the spread of zoonotic and other pathogens.

One of the elements on which the NPLG's approach to zoonotic and other pathogens is based is a risk assessment for avian influenza virus infection and an analysis of existing epidemiological models and existing knowledge on the transmission of zoonotic pathogens (*Preventie van efficiënte transmissie van zoönotische ziekteverwekkers tussen veehouderijbedrijven*, Prevention of efficient transmission of zoonotic pathogens between livestock farms). In the latter analysis, human and veterinary medicine experts in the field of epidemiology and infectious disease modelling bring together existing models and knowledge of previous animal disease and zoonotic disease outbreaks both in the Netherlands and abroad. This takes place under the direction of the chair of the Netherlands Centre for One Health (NCOH). The analysis looks at aspects that affect the level of transmission of pathogens between farms, such as farm size, farm density and biosecurity. The results of this analysis are expected in summer 2022, after which they will be discussed with the sectors involved. Partly on the basis of these findings a practical approach will be determined regarding the handling and importance of zoonotic pathogens within the area-specific approach.

[10] www.infomil.nl/onderwerpen/landbouw/gezondheid/handreiking

A bird flu risk analysis will also be used to give substance to the area-specific approach. In recent years, poultry farms in wetland areas have appeared to be at greater risk of bird flu infection. In addition to the location of the poultry farm, other factors also play an important role in determining the risk of bird flu, such as farm type (including poultry species). Wageningen Bioveterinary Research was asked to identify these factors and will report on its findings in summer 2022. Taking risk factors into account in spatial planning and plans for new establishments can potentially reduce these risks. Regional authorities have the power to grant permits.

Instruments are being developed that can be used in the area-specific approach to reduce the risk of outbreaks of zoonotic and other pathogens.

Biosecurity plan for livestock farming sectors

A strong focus is placed on biosecurity in Dutch livestock farming, by farmers, veterinarians, chain parties and other consultants. Proper biosecurity is essential in order to prevent infections with animal diseases, including zoonotic diseases. It is important to adopt a critical approach to biosecurity and to continue to optimise this approach. The approach can be maintained by means of a biosecurity plan.

The 'hygiene scan' is a measure introduced in the poultry sector in the context of the ICM regulations. The hygiene scan forms the basis for the farm-specific biosecurity plan, which is the subject of a pilot project being launched in 2022. The hygiene scan gathers information about biosecurity at a selection of farms. The results of the pilot project will be used to draft and implement regulations that require poultry farms to include a biosecurity plan in the existing farm health plan required by law. The biosecurity plan must be practically applicable, to ensure a sustained focus on biosecurity in everyday practice. Following an evaluation of the pilot project for the farm-specific biosecurity plan in the poultry sector, the roll-out of biosecurity plans will continue in other livestock farming sectors. This will take place in consultation with sector parties.

Zoonotic disease quality mark for farms with a public function

At farms that have a public function, contact between humans and animals is a regular occurrence. As a result, these farms are generally guaranteed to place a focus on biosecurity. Royal GD (hereinafter referred to as GD) has developed the Zoonotic Disease Quality Mark (*Keurmerk Zoönosen*)[11]: a zoonotic disease checklist that the animal owner and their veterinarian complete and discuss on an annual basis. Where necessary, actions are linked to this discussion to reduce the risk of zoonotic diseases spreading at these farms (for instance proper hand washing facilities for use after petting animals). The checklist is used by many animal owners and is a compulsory requirement imposed by certain umbrella organisations on affiliated farms. Communication on the quality mark directed at livestock farmers and veterinarians is to be intensified due to the importance of raising awareness of zoonotic risks. Tailored discussions, such as those that can be held between livestock farmers and veterinarians, allow targeted actions for each individual farm.

Vaccination to limit the spread of bird flu

Vaccination is an important preventive instrument for the control of animal diseases, including zoonotic diseases. The aim is to prevent animals from contracting diseases and to restrict the spread of a disease. Vaccination is used on a large scale in animal husbandry (both voluntary and compulsory vaccinations). The vaccination of animals is the subject of debate in the Netherlands and the EU. There is currently a specific focus on the vaccination of poultry against bird flu.

The aim is to be able to vaccinate poultry against bird flu responsibly and as rapidly as possible in connection with the large number of outbreaks of highly pathogenic avian influenza (HPAI) in recent years. HPAI viruses appear to be present in wild bird populations year round. The possibility of vaccinating domesticated birds in the next few years is therefore being explored as an additional bird flu control measure. Vaccination can help to prevent outbreaks in the face of a continuous risk of infection from wild bird populations. A number of candidate vaccines are being tested for efficacy, particularly in relation to preventing the spread of the virus. This is an important criterion to establish before vaccination can be rolled out on a large scale. In connection with this, efforts are being made to identify the most effective vaccination strategies and ways of monitoring the

[11] Zoonotic Disease Quality Mark (gddiergezondheid.nl)

bird flu situation. The Netherlands is collaborating intensively with other countries within the EU to this end. A phased vaccination plan is being drawn up with the sector parties, which also includes trade aspects. In addition, the Netherlands is helping to develop a European phased plan for the vaccination of poultry against bird flu, and has provided input for the EC's application to EFSA for a scientific opinion on vaccination against bird flu.

Reducing long-distance transport of farm animals

It is important to prevent the undetected spread of animal diseases, including zoonotic diseases, through the transport of live farm animals. As previously stated, the EU has recently revised and adopted requirements for the transport of farm animals. These requirements are designed to prevent the introduction and transmission of animal diseases, including zoonotic diseases, in farm animals. The WOAH international trade standards, which cover transport, are also updated on an annual basis with a view to animal health (including zoonotic diseases). From an animal welfare perspective, the Netherlands is committed to reducing the long-distance transport of farm animals. For the upcoming amendment of the European transport directive, the Netherlands and a number of like-minded Member States advocate a ban on long-distance transport of animals such as young calves destined for veal farming. A reduction in the transport and mass gathering of animals is being encouraged through national pilot projects that focus on systemic changes.

Pilot project on influenza viruses in pig farming

The pig is known in scientific literature as a potential 'mixing vessel' for influenza viruses from various animal species. A study is being launched (a pilot project on the surveillance of influenza viruses among kept pigs, coordinated by RIVM) to gain more insight into which influenza strains are circulating in Dutch pig farms in order to assess the risks. It is not known whether and how often pigs are infected with diseases such as influenza viruses by humans or birds and whether this occurs more frequently at certain pig farms (for example mixed farms or farms with outdoor access). The pilot project will specifically focus on these farms. The results of this pilot project will be one of the factors used to determine the organisation of influenza surveillance in pigs.

Animal welfare in livestock farming, in balance with public health

In the coalition agreement, the government set out its ambition to achieve animal welfare in livestock farming, in balance with public health. This was in response to the views put forward by the Council on Animal Affairs (RDA). The agreement process is being drawn up and discussions will commence in autumn 2022. The outcomes of the agreement will help to form the basis for legislation that will be ready in the present government's term of office. Zoonotic risks are also taken into account when working towards animal welfare in livestock farming.

Action 5: Reduce the risk of outbreaks of zoonotic and other pathogens

Action	Description	When
5.1 Research into the transmission of zoonotic pathogens	Under the direction of the chair of the Netherlands Centre for One Health (NCOH), One Health experts bring together and analyse existing models and knowledge of previous animal disease and zoonotic disease outbreaks.	Summer 2022
5.2 Research into risk factors that apply to poultry farms in relation to bird flu	Quantitative research (knowledge desk) by Wageningen Bioveterinary Research (WBVR) into risk factors that apply to poultry farms in relation to bird flu (including wetland areas).	Summer 2022
5.3 Preparation and drafting of NPLG structuring decisions	Based on previous studies, NPLG structuring decisions will be prepared and drafted for the purpose of reducing risks of outbreaks of zoonotic and other pathogens. This process will be completed by October 2022. Instruments that can be used in the area-specific approach are in the process of being developed.	2022
5.4 Adoption of area programmes	The nitrogen and nature targets will be elaborated and laid down in a compulsory and imperative spatial plan in July 2023. Zoonotic diseases fall within the scope of the NPLG and are described as a 'linking opportunity'. The aim is to reduce the risk of outbreaks and the spread of zoonotic and other pathogens.	2023

Action 6: Biosecurity plan for livestock farming sectors

Action	Description	When
6.1 Develop a farm-specific biosecurity plan for the poultry sector	The hygiene scan in the poultry sector forms the basis for the farm-specific biosecurity plan.	2022
6.2 Pilot project for farm-specific biosecurity plan for the poultry sector	A number of selected farms will work with their veterinarians to draw up a biosecurity plan consisting of the independent analysis and description of biosecurity at the farm.	Autumn 2022
6.3 Expand the biosecurity plan to all poultry farms	The results of the pilot project will be used to draft and implement regulations that require poultry farms to include a biosecurity plan in the existing farm health plan required by law.	2023
6.4 Expand the biosecurity plan to other livestock farming sectors	Following an evaluation of the pilot project on biosecurity plans in the poultry sector (and the safeguarding thereof), a decision will be reached in consultation with other sectors as to how this approach will be rolled out to other livestock farming sectors.	2024 and beyond

Action 7: Zoonotic disease quality mark for farms with a public function

Action	Description	When
7.1 Communication on GD Zoonotic Disease Quality Mark	Expand communication on the Zoonotic Disease Quality Mark in consultation with the sectors involved.	2022 and beyond

Action 8: Vaccination to limit the spread of HPAI

Action	Description	When
8.1 Research into the effectiveness of vaccinating poultry against bird flu (HPAI)	A number of scientists at various research institutions are investigating the effectiveness of HPAI vaccines. Projects include a trial under controlled conditions. Research will also be carried out under field conditions. The Netherlands is collaborating intensively with other Member States within the EU.	2022 and beyond
8.2 Draft a phased plan for the vaccination of poultry against bird flu (HPAI)	The Ministry of LNV and sector parties are drawing up a phased vaccination plan with the aim of being able to vaccinate poultry against bird flu responsibly as rapidly as possible. This phased plan also takes into account international trade aspects.	2022
8.3 Aim to be able to vaccinate poultry against bird flu (HPAI) responsibly as rapidly as possible	Due to the large number of outbreaks of highly pathogenic avian influenza (HPAI), efforts are being made to ensure that birds can be vaccinated responsibly as soon as possible.	As soon as possible
8.4 Participate within the EU in the development of a phased plan for the vaccination of poultry against bird flu (HPAI)	The Netherlands is helping to develop a phased vaccination plan, initiated by France. The Netherlands has also provided input for an EC application to EFSA for a scientific opinion on vaccination.	As soon as possible

Action 9: Reduce long-distance transport of farm animals

Action	Description	When
9.1 Reduce zoonotic risks by reducing the transport of animals	The Ministry of LNV will make efforts at EU level to reduce the long-distance transport of farm animals.	2022 and beyond

Action 10: Pilot project on influenza viruses in pig farming

Action	Description	When
10.1 Research to gain more insight into the influenza strains circulating in pig farms	A pilot project on the surveillance of influenza viruses among kept pigs (coordinated by RIVM) to gather information about influenza viruses in pig farming. There will also be a focus on different types of farms.	2022 and 2023
10.2 Introduce influenza surveillance in pigs	The results of this pilot project will be one of the factors used to determine the organisation of influenza surveillance in pigs.	2024 and beyond

Action 11: Animal welfare in livestock farming, in balance with public health

Action	Description	When
11.1 Carry out a process to develop an agreement on animal welfare in livestock farming, in balance with public health (including zoonotic diseases). Also adopt legislation partly on this basis	The outcomes of the agreement on animal welfare in livestock farming (in balance with public health) will help to form the basis for legislation that will be ready in the present government's term of office. Zoonotic risks are taken into account when working towards animal welfare in livestock farming.	2022-2025

3.4
Wild animals and companion animals

Current activities

Introduction

Many animals are kept as companion animals in the Netherlands[12], including dogs, cats and reptiles. The majority of these are bred in captivity. Keeping these animals involves zoonotic risks, just like keeping wild animals[13]. In the case of certain companion animals (such as dogs, cats and rabbits), these risks are often known and more specific advice can be provided (for instance advice on preventing toxoplasma infection in pregnant women). In the case of less common companion animals, particularly animals that have been caught in the wild, the risks are considerably less well known. A wide variety of animal species are traded, bred and exhibited at fairs both nationally and internationally. Owners of these animals have primary responsibility for the health of their animals. Trade, exhibition and breeding on a large scale can pose risks in relation to the transmission of animal diseases, including zoonotic diseases. Regulations have been drawn up to mitigate these risks. One way of protecting companion animal owners from contracting zoonotic diseases from their own animals is to raise awareness of zoonotic diseases among these owners. Section 3.5 looks at zoonotic literacy. It specifies how to handle animals and what people can do to limit the zoonotic risks.

European regulations

European regulations lay down requirements to prevent the introduction and transmission of zoonotic and other animal diseases during the transport of companion animals from outside the EU and between Member States. A European directive[14] has been drawn up for the monitoring of zoonotic diseases, which lists specific diseases for which Member States must carry out surveillance depending on the epidemiological situation. New zoonotic diseases can be added to this directive.

Animal fairs

The NVWA carries out risk-based inspections of Dutch fairs involving live animals. This includes ensuring the origin of protected animal species and animal welfare. All animal fairs must be reported in advance to the NVWA and a private veterinarian must be in attendance to perform veterinary checks.

Detection

The Netherlands takes a range of measures to combat illegal international trade in protected animal species. One example of this is the annual 'Thunder' operation led by Interpol since 2017, in which government organisations in 118 countries work together to detect 'Wildlife crime'. In the Netherlands, this campaign resulted in the seizure by customs and the NVWA of 145 reptiles and 454 live birds in 2021. Crimestoppers NL has a 'wildlife crime' campaign that is promoted at events such as animal fairs. Reports are jointly followed up by various organisations (NVWA, the police service and customs).

Strengthening measures

Reducing the legal and illegal trade in live wild and domestic animals and bushmeat

The Netherlands is a key global transit port for goods, which unfortunately also includes illegal wild and domestic animals and bushmeat. Customs and the NVWA inspect animals and animal products on import at the point of entry. Bushmeat or meat of unknown origin is immediately destroyed. In the past few years, there have been occasional reports of the discovery of parts of wild or domestic animals. Earlier research has shown that it is difficult to gain insight into illegality. However, this is essential in order to assess the risk and identify effective measures to reduce it. A risk assessment is therefore being carried out into the extent of illegal trade in animals, including aspects such as offers on the internet. Detection and enforcement measures will be taken based on the outcome, to reduce the illegal

[12] The term 'companion animals' refers to: mammals, birds, fish, reptiles or amphibians, intended to be kept as a pastime or for companionship (Art. 1.1 Animal Keepers Decree).

[13] In this action plan, the term 'wild animals' refers to: all animals that originate in the wild or belong to species or categories of animal that naturally live in the wild, with the exception of a number of animal species listed in the Animal Keepers Decree (Art. 4.1 Animal Keepers Decree). Under the current definition, this term does not refer to animals that are bred or farmed in this action plan.

[14] Directive (EC) 99/2003

trade in wild and domestic animals and bushmeat. This requires close collaboration with enforcement authorities in other countries and a focus on sufficient capacity. Methods are being developed for the determination of species and pathogens to make it easier to identify the animal species in the case of unknown animal products, as well as to determine which pathogens the products may contain. The aim is to support enforcement efforts in relation to products such as bushmeat. Finally, the Netherlands is raising the international profile of efforts to combat the legal and illegal trade and transport of live wild and domestic animals and bushmeat within the relevant international organisations such as the Food and Agriculture Organization (FAO) and the United Nations Environment Programme (UNEP).

Raising awareness of the risks associated with wet markets

Wet markets can be a place where the transmission of zoonotic pathogens occurs. Live wild and domestic animals are also supplied to these wet markets for the purpose of slaughter and sale for consumption. EU regulations prevent the organisation of these types of markets in the European Union. Outside the EU, it is an important issue to address due to the associated zoonotic risks. The Netherlands recognises the importance of markets where live animals are sold for consumption in order to provide food supply in many countries. At the same time, the Netherlands wants to limit the risks posed by these types of markets. The WHO, WOAH and UNEP issued a joint recommendation in 2021 on reducing risks at wet markets. The Netherlands had this issue put on the agenda at the World Health Assembly (WHA) and asked the WHO to help countries implement the recommendation along with the FAO, WOAH and UNEP. The Netherlands will support the WHO and the international organisations in the further implementation of the recommendation.

International focus on biosecurity

Biosecurity is a key tool for combating the spread of zoonotic and other pathogens. An adequate focus on biosecurity at markets, fairs and during hunting can help protect people and animals against the transmission of potential zoonotic and other pathogens. Attention is being drawn to the importance of biosecurity at international level, also with regard to the handling of wild and domestic animals and vectors.

More intensive supervision of animal fairs in the Netherlands and additional zoonotic disease measures

Animal fairs ranging from bird fairs to reptile fairs take place in the Netherlands. These events bring together animals of different origin, making them a potential opportunity for pathogens to spread. Research is being carried out to identify the specific risks presented by fairs. Research into the zoonotic risks associated with reptile fairs is currently in progress. The focus will then shift to bird fairs and fairs for mammals. Other aspects covered by this research will include animal health and animal welfare. The findings from these analyses of animal fairs will be used to take any necessary measures. In addition, supervision and enforcement at fairs will be intensified, with a focus on sufficient capacity. In 2022, the NVWA will invite fair organisers to attend a meeting prior to the fair and inspections will be carried out at animal fairs.

Development of a list of suitable companion animals, taking into account zoonotic risks

The Netherlands is drawing up a list of companion and hobby animals (for mammals) that identifies animals that are suitable to be kept as companion animals. The advisory report on this list is to be published in 2022. The list will then be elaborated further. Alongside other criteria, zoonotic risks are taken into consideration when assessing animal species that are suitable to be kept. In an EU context, Cyprus has called for the drafting of a European list of companion and hobby animals, with the support of the Netherlands. Producing this list, which will also take into account zoonotic risks, will ensure that animals captured in the wild outside the EU cannot simply be imported and kept in the EU. Currently, when a companion animal is purchased the seller must already provide the buyer with general information on how to take care of the animal. The National Information Centre for Companion Animals (*Landelijk Informatiecentrum voor Gezelschapsdieren*, LICG) provides online companion animal information leaflets for this purpose.

Reduction of risks in the event of large-scale gatherings of companion animals

Where companion animals are brought together in larger numbers (such as in the context breeding or trading), there is a greater risk of zoonotic diseases spreading. Other examples include the transport of companion animals from countries where certain zoonotic diseases are endemic. Since too little is known about parts of this trade, initial steps are being taken to identify rodent species that are kept, traded and transported in larger numbers. Following this assessment, it will be determined whether measures are needed to reduce the zoonotic risk in certain situations and whether additional research into other animal species is desirable.

Sustainable and effective pest management

Pests (such as mice and rats) are controlled in order to combat nuisance. As well as causing public nuisance, these animals can also transmit zoonotic pathogens. The Ministries of VWS, LNV, IenW, the Ministry of the Interior and Kingdom Relations (BZK) and various authorities including municipalities work together within the 'Sustainable and effective pest management' programme to ensure that the nuisance caused by pests in and outside of cities does not become worse and is contained. This is done according to the Integrated Pest Management method. The focus lies on the prevention of pest nuisance, exclusion and control by non-chemical means. This approach reduces the public nuisance caused by pests and therefore the zoonotic risks, and is achieved through collaboration between authorities, information campaigns, the training of pest controllers, and monitoring and research. The result is sustainable and effective pest management. The programme focuses on the brown rat, the black rat and the house mouse. Pest control measures according to the Integrated Pest Management method will be continued and must be applied by all pest controllers from January 2023.

Action 12: Reduce the legal and illegal trade in live wild and domestic animals and bushmeat

Action	Description	When
12.1 Risk assessment of the illegal trade in wild and domestic animals and bushmeat	A risk assessment will be carried out to examine how the illegal trade in wild and domestic animals and bushmeat is taking place.	2023
12.2 Intensify targeted detection and enforcement measures in relation to the illegal trade in wild and domestic animals and bushmeat	If the risk assessment gives cause to do so, the detection and enforcement of the illegal trade in wild and domestic animals and bushmeat will be intensified. This will include a focus on sufficient capacity.	2023 and beyond
12.3 Develop methods to determine the origin of animal products	To facilitate proper enforcement, it must be possible to rapidly identify the animal species from which an encountered animal product originated. Wageningen University Research is developing methods for this purpose.	2023 and beyond
12.4 International focus on zoonotic risks in the trade of wild and domestic animals	The Netherlands is raising awareness within the relevant forums of the zoonotic risks associated with the international trade of and transport in wild and domestic animals.	2023, 2024 and 2025

Action 13: Raise awareness of the risks associated with wet markets

Action	Description	When
13.1 Raise international awareness of the risks associated with wet markets	At international level, the Netherlands supports efforts to raise awareness of the zoonotic risks associated with markets where live animals are sold for consumption.	2022 and beyond

Action 14: International focus on biosecurity

Action	Description	When
14.1 Raise international awareness of the importance of biosecurity	At international level, the Netherlands highlights the importance of biosecurity at markets, fairs and during hunting.	2022 and beyond

Action 15: More intensive supervision of animal fairs in the Netherlands and additional zoonotic disease measures

Action	Description	When
15.1 More intensive inspections and enforcement at animal fairs	The NVWA and the LID take a risk-based approach to animal fair inspections. Active enforcement takes place, with a focus on sufficient capacity.	2022 and beyond
15.2 Research into zoonotic risks at reptile fairs	Research by WUR into risks to animal health, welfare and zoonotic diseases that occur at reptile fairs.	2022
15.3 Measures in relation to zoonotic diseases at reptile fairs	Assess what measures are needed to reduce zoonotic risks at reptile fairs, then implement these measures.	2023
15.4 Research into the zoonotic risks associated with bird fairs and fairs for common mammals in that order	Research into the risks to animal health, welfare and zoonotic diseases that occur at bird fairs and fairs for common mammals.	2023 to 2025
15.5 Measures in relation to zoonotic diseases at bird fairs and fairs for common mammals	Assess what measures are needed to reduce zoonotic risks at bird fairs and fairs for common mammals.	2024 to 2026

Action 16: Develop a list of suitable companion animals, taking into account zoonotic risks

Action	Description	When
16.1 Develop a companion and hobby animal list of animals that can be kept	The Ministry of LNV is in the process of developing a companion and hobby animal list (of mammals that are suitable to be kept as companion animals). Alongside other criteria, zoonotic risks are taken into consideration when assessing animal species that can be kept. An advisory report on this list will be published in 2022, following which the list will be further implemented.	2022
16.2 Develop a European list of companion and hobby animals	*In a EU context, Cyprus has called for the drafting of a European list of companion and hobby animals, with the support of the Netherlands. The list also limits the possibility of importing and keeping animals that have been caught in the wild outside the EU.*	2022 and beyond

Action 17: Reduce risks in the event of large-scale gatherings of companion animals

Action	Description	When
17.1 Assess the zoonotic risks associated with the large-scale keeping, trade and transport of companion animals	The Netherlands Enterprise Agency (RVO) will provide insight into which rodents are kept, traded and transported in larger numbers. Depending on the results, it will be determined whether additional research into other animal species is desirable.	2023
17.2 Measures to reduce risks of zoonotic diseases in the event of the large-scale keeping, trade and transport of companion animals	Following this assessment, it will be determined whether additional measures are needed to reduce the zoonotic risk in certain situations.	2024 and beyond

Action 18: Sustainable and effective pest management

Action	Description	When
18.1 Coordinated approach to pests	Pest control measures according to the Integrated Pest Management method will be continued. These measures must be implemented by all pest controllers from January 2023.	2023

3.5
Human health prevention and zoonotic literacy

Current activities

Introduction

Everyone has some degree of contact with wild and domestic animals and vectors. This can lead to zoonotic risks. Improving knowledge and raising awareness of the risks of zoonotic diseases and the potential scope for action to avoid infection can help to ensure that fewer people become infected with zoonotic pathogens. It is therefore important that the general public and professionals know about zoonotic risks and what they can do to prevent and identify zoonotic diseases, as well as how to respond to an infection. The Zoonotic Disease Expert Group has introduced the phrase 'zoonotic literacy' in this context.

Through its policy, the Ministry of VWS endeavours to promote a healthy and active lifestyle for everyone. This improves quality of life, prevents lifestyle-related burden of diseases, and limits the need for curative care services that are already under pressure. The COVID-19 pandemic has demonstrated the importance of a healthy lifestyle. A healthy lifestyle (healthy diet, sufficient exercise, sleep and relaxation, no smoking and moderate alcohol consumption) supports a healthy immune system. A better immune system also gives us greater confidence in our ability to ward off new threats to our health, including zoonotic diseases.

Zoonotic literacy among the general public

RIVM provides information on zoonotic infectious diseases in various animals and groups of animals on its website[15]. The website also provides factsheets on zoonotic diseases (for instance '*Weet jouw huisarts dat je (van) vogels houdt*' [Does your GP know that you keep birds]). RIVM also develops leaflets that are distributed and presented to specific target groups (such as '*Veilig in verwachting*'[16] [Staying safe when you're expecting]). The LICG website[17] provides general information about zoonotic diseases and additional information for each animal species (for example on Seoul virus in rats). The LICG has also developed companion animal information leaflets. Finally, municipalities and housing associations provide information on what the general public can do to prevent rats and mice from nesting and finding food in and around their home.

Ticks can be found throughout the Netherlands: in woodland, parks, moorland, sand dunes and gardens. Recent years research has been done into ticks and the prevention of tick bites. The research shows that, in order to reduce the number of tick bites, the general public also needs to be aware of the risks posed by ticks and what to do to avoid tick bites. Many organisations, such as RIVM[18], therefore issue advice on the measures individuals can take to avoid tick bites. There are numerous initiatives to improve knowledge and raise awareness of the transmission of zoonotic pathogens through vectors (such as ticks, mosquitoes and rats). Examples include 'The week of the Tick', the LICG talk box and World Mosquito Day.

In its advisory report on the public health risks posed by avian influenza, the Expert Panel Consultation Zoonoses (*Deskundigenberaad zoönosen*, EPC-Z) stated on 26 April 2022 that public communication is essential to limit the exposure risk posed by bird flu. The NVWA and central government websites feature information aimed at the general public about the exposure risk. The advice includes avoiding contact with sick or dead wild or domestic birds.

Zoonotic literacy among professionals

Professionals (such as healthcare employees, veterinarians and livestock farmers) generally have a good level of knowledge about zoonotic diseases, the associated risks and the risk mitigation measures they can take. Professionals involved in the field receive a monthly newsletter with updates on relevant warning signs shared by the Signalling Forum Zoonoses (*Signaleringsoverleg Zoönosen*, SOZ). At Utrecht University (UU), the Veterinary Medicine study programme deals with zoonotic diseases and the role of the veterinarian in veterinary public health. There are also various initiatives, such as One Health refresher courses for veterinarians, symposia, knowledge networks and

[15] Ziek door dier (Diseases transmitted by animals) | RIVM
[16] Veilig in verwachting brochure (leaflet on staying safe when you're expecting) 2017 | RIVM
[17] licg.nl - *Zoönosen* (Zoonotic diseases)
[18] Voorkomen van tekenbeten (Avoiding tick bites) | RIVM

messaging services dedicated to infectious diseases (such as Vetinf@ct). Information for professionals can be found on websites such as that of RIVM[19]. The Medicine study programme also devotes attention to zoonotic diseases.

The vademecum on zoonotic diseases is a practical online guide to help medical and veterinary professional groups with daily challenges relating to the early detection and control of zoonotic diseases. The vademecum acts as a systematic reference for both agreements reached between parties involved in the domains of human and veterinary medicine on detection, reporting and response, and for preventive and containment measures to prevent spread.

Antiviral drugs for high-risk groups

Municipal health services advise people who have been involved in the care or culling of infected birds or poultry with highly pathogenic avian influenza to be alert to flu-like symptoms for a period of ten days. If these symptoms occur, the advice is to report them to the municipal health service or GP. If a bird flu virus is found to cause serious symptoms in animals, preventive virus inhibitors (antiviral drugs) may be offered to people who are in close contact with infected animals. These medicines reduce the risk of humans contracting bird flu.

[19] www.onehealth.nl

Strengthening measures

Targeted improvement of zoonotic literacy among the general public and professionals

Zoonotic literacy refers to a combination of knowledge of, and alertness to, zoonotic diseases. There is room for improvement regarding the zoonotic literacy of the general public and professionals. It is important here to achieve a balance between the zoonotic risk and the level of information provided. The content and format of the communication must be tailored effectively to the specific target group. For this reason, the first step must be to assess current communication activities and to carry out market research.

The government is working with the parties involved to develop targeted communication to improve knowledge and alertness among the general public and professionals, resulting in behavioural change. People need to know which hygiene measures are generally effective in preventing illness caused by zoonotic diseases. In addition, targeted actions can prevent infection in the case of a number of zoonotic diseases.

Before new specific communication activities are deployed, an assessment will be carried out to identify zoonotic diseases and target groups for which additional communication, from the government and other parties, is useful. Target groups for such communication include: animal owners, doctors, veterinarians, international travellers and vulnerable groups (children, the elderly, pregnant women and the immunocompromised).

An assessment will also be carried out of the knowledge that these target groups in general and each specific target group should have. In addition, the existing education and information will be identified and updated where necessary. Market research will be carried out for the citizen target groups to examine the level of knowledge and perception of the different target groups of zoonotic diseases. These activities will provide insight into the knowledge and needs of the identified target groups. Based on this insight, ways to improve the knowledge of the groups identified will be explored. A communication plan will be drawn up for this purpose, which will result in the development and dissemination of additional communication tools.

Provision of information on Seoul virus and necessary hygiene measures

Information is to be provided on Seoul virus on the recommendation of the EPC-Z. All available knowledge and tools currently used by parties such as the municipal health services, RIVM and professional groups will be utilised. Ongoing awareness-raising activities and plans to this end will of course be continued. RIVM is working on guidance material to inform rat owners and breeders about general hygiene measures to avoid risk of infection by diseases such as Seoul virus through rats. Commercial rat owners and breeders will also be notified of their obligation to register. Veterinarians and municipal health services will receive information through channels including reports on Vetinf@ct and Inf@ct.

Promotion of One Health in study and training programmes

Study and training programmes aimed at doctors, veterinarians, animal owners and other related professional groups deal with zoonotic diseases. But there may be room for improvement. For instance, when making a diagnosis GPs do not always ask whether patients are in contact with animals and veterinary medicine study programmes could potentially place a stronger focus on zoonotic diseases. It will therefore be examined in consultation with the study and training programmes for doctors, veterinarians, animal owners and other related professional groups whether and how these study and training programmes can place a stronger focus on zoonotic diseases and One Health. Following this assessment, study and training programmes aimed at the professional groups in question will be encouraged to provide additional knowledge about zoonotic diseases. The aim is to achieve heightened vigilance for zoonotic diseases among these professional groups, to ensure a stronger focus on this topic in daily practice and to help pick up signs of zoonotic infections.

One initiative in the context of zoonotic literacy is the One Health game, commissioned by the Royal Dutch Society for Veterinary Medicine (*Koninklijke Nederlandse Maatschappij voor Diergeneeskunde*, KNMvD) to mark the organisation's 150 year anniversary. This serious game teaches trainee and qualified professionals to work together in a simulated crisis situation and to share warning signs in order to effectively resolve the crisis. An updated version of the game will be introduced to make it more accessible. This game is to be publicised among relevant target groups.

Standards, guidelines and information for GPs and patients

For years, the standards and guidelines of the Dutch College of General Practitioners (*Nederlands Huisartsen Genootschap*, NHG) have formed the basis for quality policy for GPs. These rules ensure that care providers and patients have knowledge that is up to date and well defined. Where applicable, this includes information on zoonotic diseases. The NHG has an e-learning module on zoonotic diseases for GPs dating from 2019. An easy-to-understand version of the information from guidelines for GPs, medical specialists and RIVM is available to the general public on the website Thuisarts.nl. The Ministry of VWS will discuss with the NHG to determine whether action is required to raise awareness of zoonotic diseases among GPs and patients and, if so, what kind of action.

Influenza prevention among specific professional groups

Specific professional groups will be encouraged to get vaccinated through a communication campaign. They include livestock farmers, veterinarians and others who work with animals that may be infected with influenza. In addition to individual and workforce health protection, the aim is to reduce the likelihood of the recombination of influenza viruses from humans, pigs and birds. The parties involved are being consulted to determine how this can be organised and implemented in a way that is accessible and takes into account each party's responsibilities.

In its advisory report of 26 April 2022, the Expert Panel Consultation Zoonoses noted that there are many questions surrounding the provision of antiviral drugs. There are questions about the efficiency and proportionality of the use of these drugs, the assessment parameters and treatment compliance. RIVM has been asked to set up a working group tasked with ensuring that chemoprophylaxis provision becomes an integral part of the occupational health and safety system and to provide information on this subject. The NVWA will take part in this process.

How can you prevent zoonotic diseases?

Zoonotic diseases: diseases that can be transmitted from animals to humans

Companion animals and livestock

- Wash your hands after contact with animals

If you are ill
- Tell your GP you have been in contact with animals

Ticks

- Check your body for ticks after spending time in nature or your garden

Have you been bitten?
- Remove the tick as soon as possible
- Report the bite at tekenradar.nl
- Keep a close eye on the bite
- Consult your GP if you have symptoms

Mosquitoes

- Prevent mosquitoes from laying eggs in stagnant water. For example in flower pots, buckets, watering cans or bird baths
- Make sure that rainwater barrels are properly closed
- Wear protective clothing in the tropics and use insect repellents

Wild animals

- Maintain a distance from wild animals, do not touch any sick or dead animals.

Have you been bitten?
- Consult your GP

Action 19: Targeted improvement of zoonotic literacy among the general public and professionals

Action	Description	When
19.1 Identify zoonotic diseases and target groups for which additional communication on zoonotic diseases from the government and other parties is useful	RIVM will assess: • for which zoonotic diseases and target groups additional communication from the government and other parties is useful • what general knowledge target groups need to have • what specific knowledge and information target groups need to have. The existing education and information will be examined and updated where necessary.	2022
19.2 Market research into the level of knowledge and the perception of various zoonotic diseases among target groups	RIVM will commission market research into the level of knowledge and the perception of various zoonotic diseases among target groups. The findings of this research will be used to establish priorities in additional communication on zoonotic diseases.	2023
19.3 Communication plan for the targeted improvement of zoonotic literacy	RIVM will draw up a targeted communication plan to improve zoonotic literacy. This will be done based on the insight obtained into knowledge and perception among the various target groups.	2023 and 2024
19.4 Develop and disseminate additional communication tools to improve zoonotic literacy	Additional communication tools will be developed and disseminated in order to implement the communication plan. The goal of these activities is the targeted improvement of zoonotic literacy.	2023 and 2024
19.5 Agreements with parties in the field on targeted communication about zoonotic diseases	Depending on the outcome of the assessment, agreements will be reached with the relevant parties in the field in order to organise and implement targeted communication on zoonotic diseases.	2023 and beyond

Action 20: Provide information on Seoul virus and necessary hygiene measures

Action	Description	When
20.1 Inform rat owners and breeders about general hygiene measures to avoid risk of infection by diseases such as Seoul virus	RIVM provides information about general hygiene measures to avoid risk of infection by diseases such as Seoul virus in consultation with sector organisations, associations and information platforms for rat owners and breeders.	2023 and beyond
20.2 Improve the registration of commercial rat owners	Commercial owners of companion animals are required to register the location where the animals are kept. The registration of commercial rat owners needs to be improved, for instance by including the obligation to register in the aforementioned communication activities.	2023

Action 21: Promote One Health in study and training programmes

Action	Description	When
21.1 Check whether and what additional knowledge about zoonotic diseases and One Health is needed in specific training programmes for professionals	The study and training programmes for doctors, veterinarians, livestock farmers and other related professional groups will be consulted to determine whether and how study and training programmes and refresher courses can place a stronger focus on zoonotic diseases and One Health.	2022
21.2 Encourage the provision of additional knowledge about zoonotic diseases and One Health in the relevant professional training and study programmes	Following the assessment, study and training programmes and refresher courses aimed at professional groups such as doctors, veterinarians, livestock farmers and other related professional groups will be encouraged to provide additional knowledge about zoonotic diseases.	2023 and beyond
21.3 New version of One Health Game	The Ministries of VWS and LNV are facilitating an updated version of the One Health Game.	2023

Action 22: Standards, guidelines and information for GPs and patients

Action	Description	When
22.1 Standards, guidelines and information for GPs and patients about zoonotic diseases	The Ministry of VWS will discuss with the NHG whether action is required to raise awareness of zoonotic diseases among GPs and patients and, if so, what kind of action.	2022 and beyond

Action 23: Influenza prevention among specific target groups

Action	Description	When
23.1 Prepare a communication campaign to promote influenza vaccination among specific professional target groups	The Ministry of VWS is working in liaison with the sector and other parties involved on a communication campaign to encourage professional groups to get vaccinated. They include livestock farmers, veterinarians and others who work with animals that may be infected with influenza.	2023
23.2 Implement annual communication campaign to encourage professional groups to get vaccinated	The campaign will be implemented on an annual basis with the aim, in addition to protecting the health of individuals and the workforce, of reducing the likelihood of the recombination of influenza viruses from humans, pigs and birds.	2023 and beyond
23.3 Working group on antiviral drugs for high-risk groups	RIVM will set up a working group of experts to investigate the use of antiviral drugs and the possibility of embedding the provision of these drugs in the occupational health and safety system.	2023
23.4 Strategy on antiviral drugs for high-risk groups	Based on an advisory report to be drawn up by the working group, a strategy for the provision of antiviral drugs to high-risk groups will be proposed and put into practice.	2023 and 2024

4

Detection

4.1 Introduction

Veterinarians, doctors, GPs and other practitioners are the 'eyes and ears' in the field when it comes to picking up signs of zoonotic diseases. In the interest of controlling such diseases, these warning signs must be reported to the national registration wherever possible. The RIVM Centre for Infectious Disease Control (CIb) is in charge of the national surveillance of infectious diseases in close collaboration with partners in the field. These are the authorities that carry out monitoring and surveillance in the human domain: medical microbiological laboratories, GPs (NIVEL monitoring stations), hospitals, RIVM and municipal health services. In the veterinary domain and in our environment, warning signs of potential zoonotic diseases are picked up through monitoring and surveillance. Data from livestock farming is gathered by organisations such as the NVWA and GD. An extensive monitoring system (basic and specific monitoring) has been set up in collaboration with the livestock farming sectors and is aimed at the rapid detection of animal diseases, including zoonotic diseases, in livestock farming. Data on wild animals is provided by the Dutch Wildlife Health Centre (DWHC). Data on the spread of vectors is supplied by the CMV, while RIVM monitors zoonotic diseases in wild animals and in vectors. Companion animals are monitored by the Faculty of Veterinary Medicine at Utrecht University as part of a project on monitoring zoonotic diseases in companion animals and antibiotic resistance. A system has also been set up for horses. RIVM publishes an annual list of zoonotic diseases that occur in the Netherlands and their status in '*Staat van Zoönosen*' (State of Zoonotic Diseases).

This chapter also deals with the Zoonoses Structure. The Zoonoses Structure is not limited to detection, however the decision was taken to address the Zoonoses Structure in this chapter. The following topics are then discussed: detection, monitoring and surveillance for zoonotic diseases from the environment, animals and humans. The final topic addressed is actions to improve information and data exchange between the One Health domains.

4.2
The Zoonoses Structure

Current activities

Introduction

The current integrated human-animal risk analysis structure in the Netherlands, the Zoonoses Structure in short, has been in place since 2011[20] and functions effectively. The structure focuses on the detection, assessment and control of zoonotic diseases and is permanently active, even in the absence of any threats (figure 1). The Zoonoses Structure ensures collaboration between organisations in the domain of human and veterinary health, including the Ministries of VWS and LNV. In the case of zoonotic diseases, administrative responsibility lies with the Minister of VWS. The chairs of all sections of the Zoonoses Structure come from the public health sector. The two ministries reach joint decisions regarding measures based on their own responsibility for the policy area and the legislation in force. For VWS, this is the Public Health Act, while for LNV it is the Animals Act.

Method of the Zoonoses Structure

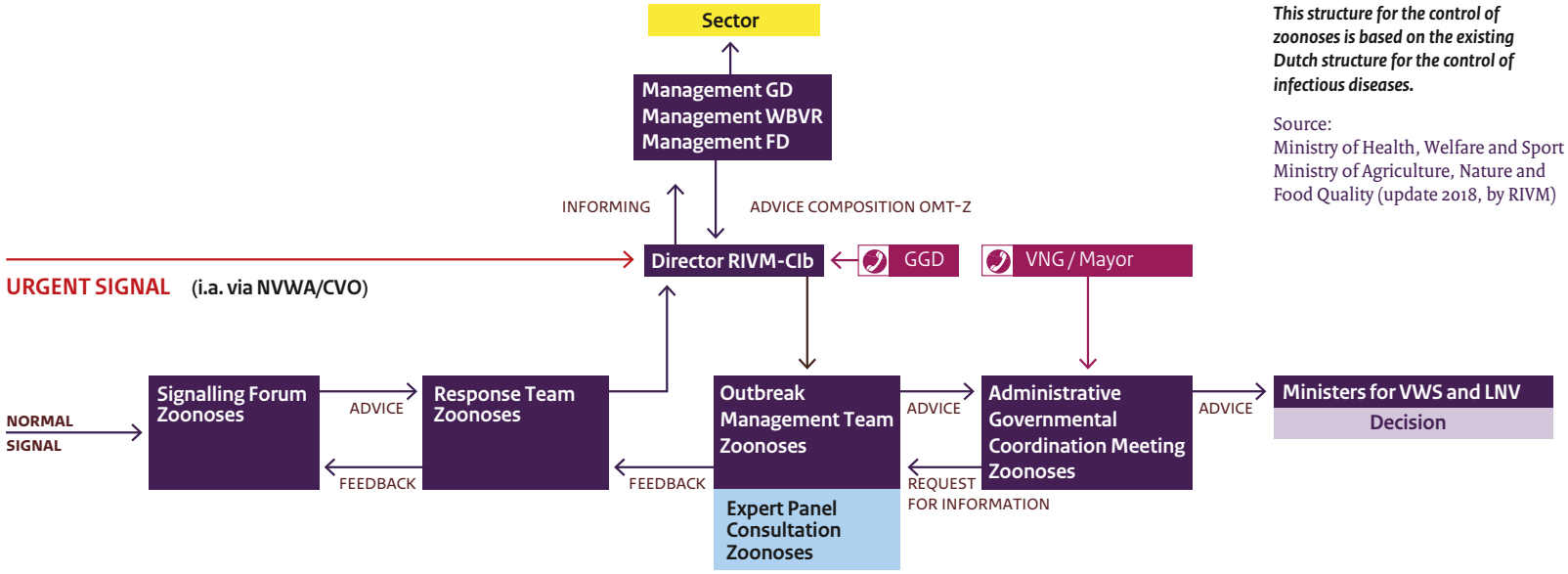
A Signalling Forum Zoonoses (*Signaleringsoverleg Zoönosen*, SOZ) has been set up within the Zoonoses Structure. In these monthly consultations chaired by RIVM, One Health experts carry out a structured assessment of regional, national and international signs of a potentially zoonotic nature. Involved professionals from the field receive a monthly newsletter with updates on relevant warning signs shared by the SOZ. The SOZ is made up of RIVM, the municipal health services, GD, WBVR, FD, DWHC and the NVWA. Depending on the severity of the warning sign, the next steps in the assessment take place within the Response Team Zoonoses (RT-Z), the Outbreak Management Team Zoonoses (OMT-Z) or the Expert Panel Consultation Zoonoses (EPC-Z). The initial joint assessment takes place within the SOZ. Further steps in the assessment take place depending on the severity of the warning sign. In urgent situations, this may be in an RT-Z followed by an OMT-Z. In non-urgent situations, the decision may be taken to convene experts in a somewhat similar composition as the OMT-Z to share knowledge and make possible recommendations for risk management. This is the EPC-Z. The RT-Z, OMT-Z and EPC-Z fall under the responsibility of the CIb.

The RT-Z is organised by the CIb if there are grounds to do so based on the warning signs, on the recommendation of the SOZ. Examples of such grounds include the occurrence of a higher number of cases or more severe cases than usual, gaps in treatment or preventive measures, or warning signs that may lead to social unrest. The RT-Z assesses the sign from the SOZ and issues advice on matters such as containing the spread, possible interventions, diagnosis and treatment, and communication. A decision is reached within the RT-Z as to whether a meeting of the OMT-Z is required in the short term and, if desired, questions are formulated for the OMT-Z. The OMT-Z gathers scientific knowledge on the risks for public health, animal health, and any entomological and ecological knowledge. The OMT-Z draws up a written advisory report for the Directors-General of VWS and LNV. The advisory report looks at the risk involved, the scale of this risk, the possibilities to reduce the risk and the order of magnitude of the results to be achieved. The report also gives an estimate of the degree of certainty or uncertainty with regard to the risk and the proposed measures. In the event of a complex problem that does not constitute an acute threat, the EPC-Z may be convened. The EPC-Z issues scientific advice to the Directors-General of VWS and LNV on a number of predefined questions from the two ministries, or at the initiative of the CIb.

The Zoonoses Structure ensures a good level of cooperation between organisations in the domain of human and veterinary health

[20] Zoonoses Structure | One Health

Zoonotic diseases, from detection to decision-making



This structure for the control of zoonoses is based on the existing Dutch structure for the control of infectious diseases.

Source:
Ministry of Health, Welfare and Sport
Ministry of Agriculture, Nature and Food Quality (update 2018, by RIVM)

- *Signalling Forum Zoonoses (SOZ)*: Signalling and first assessment of (potentially) zoonotic infections
- *Response Team Zoonoses (RT-Z)*: response including upscaling. Full assessment of signal and advice on strategy to control spreading, possible interventions, diagnostics and treatment, communication.
- *Outbreak Management Team Zoonoses (OMT-Z)*: formed in case of an outbreak for which guidelines on outbreak control do not exist, or do not cover the specific outbreak situation. Experts assess the signal in depth and advice the AGCM-Z about the risk and appropriate control measures.
- *Administrative Governmental Coordination Meeting Zoonoses (AGCM-Z)*: administrative organisations involved in the control of the outbreak judge advised measurements of the OMT-Z on governmental feasibility and desirability. Conclusively, decision-making on control measures takes place at the governmental level.
- *Expert Panel Consultation Zoonoses (EPC-Z)*: an expert consultation can be organised in less urgent cases, which extensively inventorises existing evidence and knowledge gaps. Recommendations are made about control strategy as well as on research strategy in order to obtain the relevant knowledge for risk assessment and/ or control measures.

CVO	Chief Veterinary Officer
FD	Faculty of Veterinary Medicine, Utrecht University
GD	GD Animal Health, Deventer
GGD	Municipal Public Health Service
LNV	Ministry of Agriculture, Nature and Food Quality
NVWA	Netherlands Food and Consumer Product Safety Authority
RIVM-CIb	RIVM Centre for Infectious Disease Control
VNG	Association of Dutch Municipalities
VWS	Ministry of Health Welfare and Sport
WBVR	Wageningen Bioveterinary Research

Figure 1: Zoonoses Structure

Depending on the advice issued by the OMT-Z or EPC-Z, an Administrative Governmental Coordination Meeting Zoonoses (AGCM-Z) may be set up. The BAO-Z is tasked with assessing the advice on administrative feasibility and desirability in the event of an actual or potential outbreak of a zoonotic disease that poses a risk to public health, and advising the Ministers of VWS and LNV accordingly.

The SOZ is subject to a regular performance review by the participants, under the direction of RIVM. The review addresses how the effectiveness of the collaboration, the scope of detection and the involvement of the relevant parties. The Zoonoses Structure underwent an external review following the outbreak of SARS-CoV-2 in minks.

An example of how the Zoonoses Structure works

In April 2022 the Expert Panel Consultation Zoonoses, on the initiative of the CIb, issued an advisory report on the public health risks posed by avian influenza. The report included both advice on tackling the current outbreak and advice applicable to the long-term approach regarding bird flu. This action plan follows up on the long-term recommendations made.

Strengthening measures

International knowledge sharing within a Zoonoses Structure and national zoonotic disease action plans

The Dutch experience with the Zoonoses Structure approach has been positive and serves as an example of effective collaboration between the various One Health disciplines (environment, animal and human). At international level, too, efforts are being made to improve integration in the collaboration between the three One Health domains. The Netherlands is focusing on propagating the experience and knowledge gained through the One Health approach worldwide: working within a Zoonoses Structure and promoting the importance of the exchange of data on zoonotic diseases by the One Health disciplines. This expertise and experience is shared in relevant international forums, and the Netherlands collaborates with and learns from other countries. Within the European Joint Programme One Health (EJP-OH), a European exchange programme, under the direction of RIVM, the Zoonoses Structure has already been brought to the attention of knowledge institutes and those responsible for policy in other EU Member States, and a blueprint has been developed for the set-up of a One Health risk analysis system for zoonotic diseases. The Netherlands will continue this knowledge sharing in the period ahead.

The National Action Plan for the Strengthening of the Zoonotic Disease Policy can serve as an example for other countries in the EU and worldwide to improve their own zoonotic disease policies. The added value of drawing up national action plans is therefore emphasised, to ensure that other countries also invest in the prevention and detection of, and the response to, zoonotic diseases. Potentially by also drawing up their own national action plans.

Blind spot analysis of the SOZ monitoring function

As chair of the SOZ, RIVM is tasked with determining whether the SOZ has sufficient insight into all relevant warning signs and whether additional monitoring activities or monitoring data from other sources are necessary. This includes checking whether the current system has adequate insight into warning signs from, and risks posed by, new animal sectors (such as insect farming), new animal husbandry systems or new technologies, and whether the right parties are involved. The SOZ will specifically be asked how signs of infectious diseases from Dutch citizens, examined in foreign laboratories, can be passed on to the SOZ and how innovative monitoring methods (such as social media and the use of citizen science) can help.

In response to factors such as the recommendations made by the Zoonotic Disease Expert Group, depending on the situation, the risk and the purpose, the Animal Disease Expert Group[21], the EPC-Z or experts can also be asked for advice on other issues. Examples include: (blind spots in) the monitoring of wild and domesticated animals, sampling of vectors

[21] deskundigengroepdierziekten.nl

and hosts (possibly at the same time), zoonotic pathogens in common companion animals and the use of information on sick and dead animals in narture.

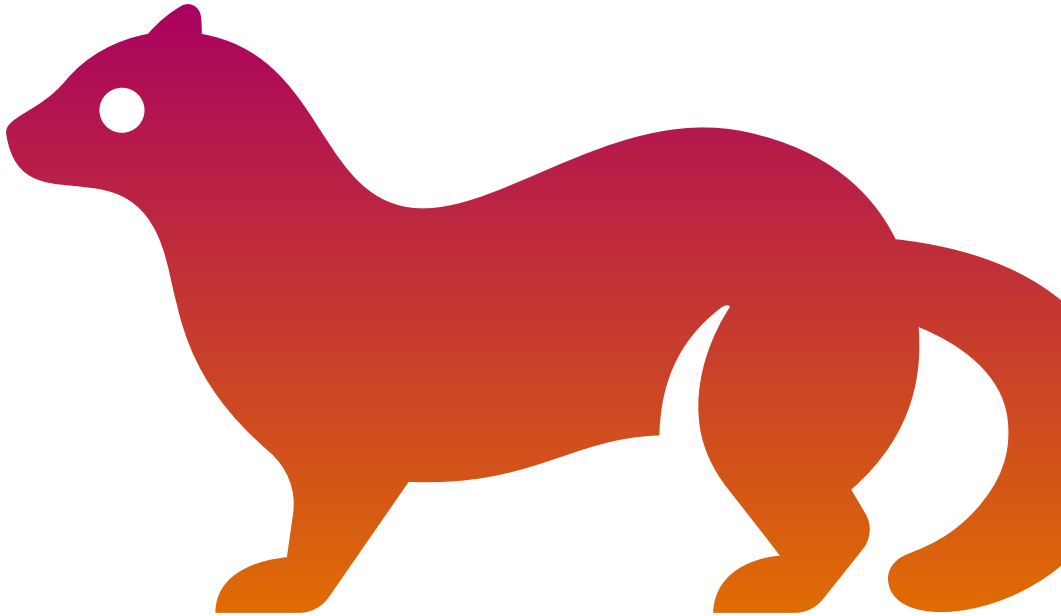
Implementation of recommendations on the Zoonoses Structure from the evaluation of the SARS-CoV-2 outbreak in minks

The SARS-CoV-2 outbreak in minks in 2020 prompted the first completion of the Zoonoses Structure approach. The approach to this outbreak was evaluated and the performance of the Zoonoses Structure and aspects such as collaboration between the two ministries were examined. The evaluation was used in the drafting of this action plan.

The evaluation was carried out by the Institute for Security and Crisis Management (COT)[22]. The COT indicated that the structure as conceived on paper was largely adhered to in practice.
The structure offered advantages in terms of:

- Bringing together human and veterinary expertise
- Efficient collaboration by a clear structure with short lines of communication
- The structure to make it possible to collectively think ahead and to take well-considered measures. The measures could be assessed and continuously adjusted as the crisis progressed.

The evaluation shows that the Zoonoses Structure worked and that the two ministries and other parties involved collaborated successfully. There is room to improve the approach in a number of areas. These recommendations relate mainly to the focus of the phrasing of questions submitted to the OMT-Z, further improving the exchange of information between the parties involved in the Zoonoses Structure by offering feedback about the decisions to the advising parties, and monitoring the impact of, and compliance with, measures taken. The recommendations made following the evaluation of SARS-CoV-2 in minks are being implemented within the current Zoonoses Structure.



[22] Parliamentary Paper 25295, no. 1711

Action 24: International knowledge sharing within a Zoonoses Structure and national zoonotic disease action plans

Action	Description	When
24.1 Promote the Dutch Zoonoses Structure approach and added value of national action plans at international level	The Dutch government and knowledge institutes promote the Zoonoses Structure approach in their international collaborations. The added value of a national action plan for the strengthening of zoonotic disease policy is promoted.	2022 and beyond

Action 25: Blind spot analysis of the SOZ monitoring function

Action	Description	When
25.1 Blind spot analysis of the SOZ monitoring function	As chair of the SOZ, RIVM is tasked with determining whether the SOZ has sufficient insight into all relevant warning signs and whether additional monitoring activities or monitoring data from other sources are necessary. This includes checking whether the current system has adequate insight into warning signs from, and risks posed by, new animal sectors, new animal husbandry systems or new technologies, and whether the right parties are involved.	2022 and 2023
25.2 Change the approach to the monitoring of zoonotic diseases	Based on the 2022 assessment, RIVM, in liaison with the parties involved, recommends changing the approach to, and the scope of, monitoring by the signalling forum.	2023 and 2024

Action 26: Implement recommendations on the Zoonoses Structure from the evaluation of the SARS-CoV-2 outbreak in minks

Action	Description	When
26.1 Follow up the recommendations made in the evaluation of SARS-CoV-2 in minks	The recommendations made following the evaluation of SARS-CoV-2 in minks are being implemented within the current Zoonoses Structure.	2022

4.3

Monitoring and detection in the environment and in animals

Current activities

Introduction

Monitoring and detection form the basis for zoonotic disease policy. Targeted, systematic monitoring is carried out in a number of wild and domesticated animal species and vectors. Relevant warning signs identified through monitoring are discussed within the Zoonoses Structure.

Environment

The quality of wildlife areas is monitored in the context of Natura 2000 and the National Ecological Network. This involves looking at the status of the natural environment and monitoring numbers and species of animals and plants at population level. This data is combined in the National Flora and Fauna Database (NDFF). Data on plant and animal species in all regions of the Netherlands is useful for the interpretation of some zoonotic risks in the regions.

Vectors

The CMV was set up in 2009 with the task of minimising the impact of vectors on the health of humans and animals. The CMV focuses on detecting exotic vectors and on monitoring native vectors. The main aim of detecting exotic vectors is to combat the settlement of exotic mosquito species. The CMV carries out a series of targeted passive (through reports) and active surveillance operations to detect the introduction of invasive exotic mosquitoes at the earliest possible stage and to take control measures. In addition, the CMV monitors the introduction of exotic vectors such as the hyalomma tick. The primary aim of monitoring native vectors is to gather information about the spread and activity pattern of vectors that are native to the Netherlands. This monitoring thus contributes towards the integrated surveillance of vector-borne diseases in humans and animals.

Livestock farming

A monitoring system has been set up in collaboration with the livestock farming sectors for the rapid detection of known and new animal diseases, including zoonotic diseases, in farm animals. This is known as basic monitoring and is carried out by GD. The system has been in place for more than twenty years. Data on the health status of animals kept in the Netherlands is gathered for each sector. The results and warning signs arising from this data are discussed by monitoring committees each quarter and follow-up actions are agreed upon if necessary. Potential warning signs of zoonotic diseases are also discussed in the monthly SOZ. GD publishes an annual report on basic monitoring[23].

In the context of the previously mentioned European directive on specific zoonotic diseases, RIVM works with the NVWA and Wageningen Food Safety Research (WFSR) in the Netherlands to gather information on the prevention of and trends in zoonotic agents in humans, animals and animal-derived products. The RIVM surveillance programme in farm animals focuses on a different sector each year.

Wild animals

The DWHC (in collaboration with RIVM, WUR and Erasmus MC) carries out generic and targeted surveillance of wild animals. In the case of generic research, it is not known in advance which health problems will be examined in which animal species. This depends on the disease and mortality issues affecting wild animals at that particular point in time (real time). It also depends on the animals that are found, reported and submitted. In addition to generic research, targeted disease surveillance focuses on specific pathogens and host species. This type of surveillance can be used to gather information on the prevalence of an infectious disease, the age and gender distribution of the infected species or the geographical occurrence of a pathogen. Every year, the DWHC carries out pathological examinations of around five hundred wild animals. The animals examined are mainly birds and mammals, but also some amphibians. Examples of notable research in wild animals include research into bird flu in various wild birds and in mammals. In addition to this monitoring, bird flu is also monitored in live wild birds.

Another example of monitoring is the rat monitor. This is an online tool managed by RIVM, where pest control companies can report rat control activities that have

[23] www.gddiergezondheid.nl/nl/Diergezondheid/Monitoring

been carried out. All reports are analysed anonymously at district level to determine spreads and changes in the spread of rat populations. The data gathered can be used by municipalities, pest control companies and research institutes. The tool was set up in 2019, but is not yet used by all municipalities. A number of municipalities have their own reporting and monitoring systems. Pest control activities help to prevent zoonotic risks.

Companion animals

Signs of zoonotic diseases in companion animals (such as dogs, cats, guinea pigs and rabbits) are analysed by the FD on behalf of LNV and VWS. Warning signs are received through the telephone reporting help desk, and information from routine diagnostic testing carried out by the Veterinary Microbiological Diagnostic Centre (VMDC) is used. The goal is to monitor trends and pick up on unusual signs in relation to zoonotic diseases and antimicrobial resistance in companion animals.

Strengthening measures

European compliance with surveillance programmes for the detection of new and existing diseases

Under the EU's animal health regulation, Member States are required to have surveillance programmes for the rapid detection of new and existing diseases. Such programmes also facilitate active intervention where diseases are introduced. The Netherlands has met this requirement by introducing the previously mentioned veterinary monitoring programme. The Netherlands will ask the EC to promote the implementation of, and compliance with, the regulation in this area.

Update EmZoo list with high-risk zoonotic pathogens for targeted monitoring

Extensive and professional risk-based monitoring and detection takes place in animals and vectors. Any gaps are noted by the Signalling Forum Zoonoses and assessed within the Zoonoses Structure. For more information, see section 4.2 on the Zoonoses Structure. A surveillance operation focusing on influenza in pig farming is set up, as advised by the SOZ and EPC-Z, to gather information on the influenza strains circulating in the pig farming sector and the extent to which exchange between human and avian strains takes place. For further information, see section 3.3 of the chapter on prevention in farm animals. A regularly updated EmZoo (emerging zoonotic diseases) list with priority zoonotic pathogens helps to support targeted monitoring and surveillance in humans and animals. RIVM updates this list in coordination with the relevant One Health authorities. This can serve as a tool to support targeted monitoring, surveillance and diagnostic testing.

Intensify monitoring of vectors and vector-borne pathogens

Climate change, climate adaptation and changes in the environment can result in the increased presence of certain vectors in nature, thus leading to an increase in vector-borne infectious diseases. Monitoring capacity is to be expanded in response to the update of the EmZoo list. This is in line with the future platform for vector-borne infectious diseases (section 3.2). Developments in the natural environment and climate change demand more intensive monitoring of vectors and vector-borne pathogens. It is for this reason that the CMV is gathering vectors and RIVM and WBVR laboratories are working to detect vector-borne pathogens. This requires close and continuous collaboration between the institutions involved, meaning that monitoring can be scaled up rapidly and effectively if necessary.

Detection of zoonotic diseases in wild animals

Monitoring in wild animals can be improved by, in addition to signs in dead wild animals, also identifying signs in live wild animals. At present, this data is largely lacking as samples are not collected from sick wild animals while they are still alive. Where clinical signs from sick wild animals are available, it may be possible to identify evidence of outbreaks at an earlier stage. If large numbers of sick animals are reported, the cause and the need for additional measures can be investigated. This means that a potential zoonotic pathogen can be detected at an earlier stage. The development of a central database makes it possible to gather more accurate information on trends and developments in live wild animals. Where there are grounds to do so, signs are discussed by the Signalling Forum Zoonoses.

Set up an insect farming monitoring programme

Insects are increasingly used for human consumption and animal feed. There are currently no ongoing research programmes into zoonotic and other pathogens in insects. Data and knowledge first need to be gathered by means of a pilot study. If necessary, a long-term programme can then be set up.

More intensive European surveillance of zoonotic pathogens in animals and in the environment

The EC has authorised EFSA to set up a coordinated surveillance system in collaboration with the ECDC based on the One Health approach. The system will focus on surveillance of cross-border pathogens in animals and in the environment. Authorities in the Member States will be asked to take part, with the EU co-funding the set-up of the system in the individual countries. The Netherlands will be joining this initiative. EFSA commenced preparations in 2022 and the project will continue up to and including 2026.

Action 27: European compliance with surveillance programmes for the detection of new and existing diseases

Action	Description	When
27.1 Member State compliance with the European requirement for surveillance programmes for the rapid detection of new and existing diseases	The Netherlands will ask the EC to promote the implementation of, and compliance with, the requirement under the European animal health regulation for surveillance programmes for the rapid detection of new and existing animal diseases.	2022

Action 28: Update EmZoo list with high-risk zoonotic pathogens for targeted monitoring

Action	Description	When
28.1 Update EmZoo (emerging zoonotic diseases) list	RIVM is in the process of updating the EmZoo list, in coordination with the relevant One Health authorities. This can serve as a tool to support targeted monitoring, surveillance and diagnostic testing.	2025

Action 29: More intensive monitoring of vectors and vector-borne pathogens

Action	Description	When
29.1 Expand the capacity of the Centre for the Monitoring of Vectors	The CMV is expanding its capacity to ensure the broader and more effective monitoring of vectors and, in collaboration with RIVM, to keep a closer eye on the pathogens that are being spread via the vectors. This is in line with the future platform for vector-borne infectious diseases (section 3.2).	2023 and beyond
29.2 Expand the capacity for the monitoring of vector-borne pathogens	Monitoring capacity is to be expanded in response to the update of the EmZoo list, in line with the future platform for vector-borne infectious diseases.	2023 and beyond

Action 30: Detect zoonotic diseases in wild animals

Action	Description	When
30.1 Centralise data from wild animal rescue centres	The development of a database for the central recording of clinical data from live sick wild animals will provide a better understanding of trends and developments in these animals. As a result, outbreaks of zoonotic and other diseases will be detected earlier.	2023 and 2024

Action 31: Set up an insect farming monitoring programme

Action	Description	When
31.1 Pilot project for research into insect farming	In order to set up a monitoring programme in the insect farming sector, it is essential to first identify the relevant pathogens. No research has yet been carried out in this area. Data and knowledge therefore need to be gathered by means of a pilot study.	2023 and 2024
31.2 Monitoring programme for zoonotic pathogens in insect farming	If necessary, a long-term programme will then be set up.	2025 and beyond

Action 32: More intensive European surveillance of zoonotic pathogens in animals and in the environment

Action	Description	When
32.1 EFSA surveillance in animals and in the environment	EFSA is working with the ECDC to set up a coordinated surveillance system for zoonotic pathogens in animals and in the environment.	2022-2026

4.4

Monitoring and detection in human healthcare

Current activities

Introduction

RIVM carries out the national surveillance of zoonotic infections in humans. This national surveillance uses data from a number of sources. The data in question relates to notifiable infectious diseases reported to RIVM by doctors or laboratories through municipal health services, data from medical laboratories and data from germ surveillance in which pathogen isolates are sent to RIVM for typing. In addition, syndrome surveillance data from GP monitoring stations (NIVEL), hospitals (Dutch Hospital Data) and the *Infectieradar* platform are used on an ad hoc basis. During the COVID-19 pandemic, wastewater surveillance proved to be of added value in the surveillance chain. This surveillance data is used to identify clusters and outbreaks of infectious diseases in humans.

RIVM is responsible for ensuring an effective national surveillance infrastructure, plus (reference)diagnostics for pathogens that are hazardous to humans, including zoonotic diseases. In the event of a new emerging infectious disease 'X', this broad network forms a sound basis for the rapid implementation of specialist research and confirmatory diagnostics based on the specific characteristics of the pathogen (for example a bacterium, virus or fungus). At European level, the Ministry of VWS and RIVM work in close collaboration with the ECDC, and exchange knowledge and experience of surveillance, research and policy, including zoonotic disease policy, through the ECDC.

Human surveillance

In the context of the current task of ensuring pandemic preparedness, steps have already been taken towards the broad intensification of human surveillance. Wastewater surveillance has been considerably expanded during the COVID-19 pandemic. GPs provide RIVM with surveillance data through the NIVEL monitoring stations. The number of NIVEL monitoring stations is set to rise from 40 to around 140. A transfer system is also being developed to make it possible to collect surveillance data from hospitals at national level. This data will therefore provide early insight into potential outbreaks of infectious diseases (including zoonotic diseases). Human surveillance and its strengthening are part of efforts to further intensify One Health surveillance, where warning signs in humans are linked to warning signs from the veterinary domain and the environment. This One Health surveillance for zoonotic diseases involving data exchange is essential to the timely detection of zoonotic diseases and the response to any outbreaks.

Detection, supervision and source tracing in humans

Under the Health Act, the NVWA and the Health and Youth Care Inspectorate (IGJ) are responsible for state supervision of public health. On this basis, the NVWA has the power to carry out source tracing when zoonotic diseases are identified in humans. In response to one or more human cases, municipal health services, and in certain situations also RIVM, can ask the NVWA to carry out source tracing if the suspected source is an animal or a food product, whether or not of animal origin. The NVWA reaches a decision on whether source

tracing is appropriate based on a joint risk assessment and the possibility of sample collection. Source tracing is important to identify and eliminate the cause of the human infection, thus preventing further infections in humans. It can also prompt a risk assessment and, where appropriate, provide a basis for the imposition of preventive measures.

The supervision carried out by the IGJ focuses on providers within public healthcare and other areas of healthcare that play a role in the detection, prevention and control of infectious diseases. The IGJ oversees and encourages these parties in the chain in the proper performance of their duties in relation to all aspects of infectious disease control, as well as collaboration within the chain in the interests of public health. By doing so, the Inspectorate helps to reduce health damage caused by infectious diseases, including those classed as zoonotic diseases. The IGJ coordinates its supervisory activities with the NVWA and acts in conjunction with the NVWA where necessary.

Strengthening measures

Strengthening of human surveillance

In the context of the current task of ensuring pandemic preparedness, the organisation of human monitoring and surveillance is currently under review. RIVM will issue an advisory report before the end of 2022, which will build on measures that have already been set in motion in the context of the broad strengthening of human surveillance. The results of this analysis will lead to further decisions on the deployment of the available human surveillance tools and how they can be organised efficiently (automated). The deployment of medical microbiological laboratories will also be considered.

To help improve the availability of data in the EU, the Netherlands is an active participant in the various European cooperation programmes such as the EU Joint Action Union and National Capacity Building 4 IntegraTED Surveillance (UNITED4Surveillance), which aims to support Member States in implementing an EU-wide digital, integrated surveillance system. RIVM is coordinating this European project and leading the subproject on the exchange of animal and human health data. The project will run from 2023 to 2025 inclusive. WBVR contributes to the One Health work package as an animal health institute.

Intensification of One Health surveillance

Efforts to further intensify One Health surveillance include human surveillance and its strengthening. Warning signs of zoonotic diseases identified through human surveillance must be linked to warning signs from the veterinary domain and the environment. This One Health surveillance for zoonotic diseases with surveillance from the environment, veterinary medicine and human medicine, and the exchange of data from such surveillance, are essential to the timely detection of zoonotic diseases and to the response to any outbreaks. RIVM is in the process of assessing the current human surveillance systems that pick up signs of zoonotic diseases. Once human surveillance has been assessed, a plan for targeted One Health surveillance will be set up and implemented.

Detection of zoonotic diseases in the primary healthcare setting

GPs can be first to pick up possible known or unknown signs and alert the regional health service. They are the ‘eyes and ears’ for the detection of zoonotic disease infections in humans. Warning signs can then be passed on to RIVM and assessed within the Zoonoses Structure. It is vital that GPs are aware that they can report a zoonotic disease to the municipal health service. GPs and infectious disease control specialists employed by the regional municipal health services must be familiar with the reporting structures and the Zoonoses Structure, and always report relevant warning signs. It is questionable whether GPs are always well informed as to how signs of infectious diseases can be reported to the national registration systems. In the coming period, the Ministry of VWS will work with RIVM and the municipal health services to raise awareness of the reporting structures for notifiable and other infectious diseases.

Action 33: Intensify human surveillance

Action	Description	When
33.1 Analyse the available tools for human surveillance	RIVM is to issue an advisory report on the human surveillance landscape for infectious diseases, including zoonotic diseases.	2022
33.2 Implement changes to the human surveillance system	Based on the findings in RIVM's advisory report, it will be assessed what changes are appropriate in the human surveillance system. These changes will be implemented in practice.	2023 and beyond
33.3 EU Joint Action Union and National Capacity Building 4 IntegraTED Surveillance (UNITED4Surveillance)	RIVM is coordinating this European 'joint surveillance' project and leading the subproject on the exchange of animal and human health data.	2022 and beyond

Action 34: Intensify One Health surveillance

Action	Description	When
34.1 Assess One Health surveillance for zoonotic diseases	RIVM will carry out an assessment of One Health surveillance for zoonotic diseases.	2022
34.2 Strengthen One Health surveillance	Based on the results of the assessment, RIVM will draw up a plan for targeted One Health surveillance and the plan will be implemented.	2023 and beyond

Action 35: Detect zoonotic diseases in the primary healthcare setting

Action	Description	When
35.1 GPs identify zoonotic risks	The Ministry of VWS will ask GPs to focus explicitly on the detection of zoonotic diseases and to report any signs of these diseases in the national registration systems.	2022 and beyond

4.5
Information and data exchange

Current activities

Introduction

Within the One Health approach, it is essential that warning signs of zoonotic diseases from the environment and the veterinary domain are exchanged with experts in human medicine as soon as possible, and vice versa. Monitoring and surveillance data can be gathered for various purposes: for disease control, regular monitoring and scientific research.

One Health data exchange

The rapid exchange of monitoring and surveillance data from the various domains is essential to a rapid, targeted approach in the event of outbreaks. Data is generated on a daily basis in the context of regular monitoring and surveillance. Warning signs are shared via the SOZ in the Zoonoses Structure. Notifiable signs of zoonotic diseases are shared between the relevant authorities for the purpose of carrying out the necessary source and contact tracing, and to combat or manage the zoonotic disease where appropriate. During the SARS-CoV-2 outbreak in minks, the exchange of human research data with RIVM and the veterinary research institutes proved in some cases to be an obstacle. The sharing of privacy-sensitive and other research data was a problem during this crisis that hindered research into the course of the disease and its routes of transmission. The aim is therefore to improve the structure and timely exchange of monitoring and surveillance data for the purpose of detection and as support in combating zoonotic diseases. It must be possible to share data securely and without obstacles.

One-off projects have been launched to professionalise the exchange of data. The goal was to achieve efficient digital exchange of monitoring data for proper source and contract tracing. One example is the ZonMw (Netherlands Organisation for Health Research and Development) project on the exchange of data on the infectious disease psittacosis. This project was launched in 2014 with the aim of jointly analysing animal and human health data in a single platform for source and contract tracing. Permission for joint sharing was not granted until 2019, and only retrospective data could be analysed in the data platform. One of the reasons for this was that the project kept being overtaken by changing legislation, resulting in new legal obstacles.

The Dutch universities and research institutions involved in research into animal diseases and zoonotic diseases are already working together. It is fairly common for institutions that carry out research into certain zoonotic diseases to exchange information and data with each other. A case in point is the NCOH, which serves as an open innovation network with the ability to take joint responsibility for finding answers to the One Health challenges.

Animal and human health information and knowledge sharing

It is important that, in daily practice, experts from the veterinary domain (such as veterinarians) and the human domain (such as GPs and municipal health services) know where to find each other and have sufficient knowledge to pick up signs of zoonotic risks and share this information with one another. After all, GPs, municipal health services and veterinarians are the 'eyes and ears' in the field. A number of initiatives have been launched in recent years to this end. Examples include the Central Netherlands Zoonotic Disease knowledge network and the SaMeDi (Partnership of Medical Professionals and Veterinarians) project, in which GPs, veterinarians and municipal health services share knowledge about zoonotic risks. These knowledge networks facilitate the knowledge, detection and exchange of information about zoonotic risks. The SaMeDi project was picked up by the Southern Agricultural and Horticultural Organisation (ZLTO) with funding from the Ministry of VWS, and has resulted in around 20 knowledge networks by the end of 2019.

Cooperation between Regional Veterinary and Physician Advisers

It is important for the institutions involved in the veterinary and human domain to cooperate effectively and keep each other up to date regarding developments in relation to zoonotic diseases, particularly in the event of incidents, but also at other times. The institutions responsible for the regional control and prevention of zoonotic diseases are the Regional Veterinary Advisers (*Regionaal Veterinair Consulenten*, RVCs) and the Regional Physician Advisers (*Regionaal Arts Consulenten*, RACs). RVCs

are supervisory veterinarians who have been trained as specialists in animal health and are employed by the NVWA. Together with RACs (employed by RIVM and municipal health services), they serve as backup in the regional liaison between the municipal health service and the NVWA and help to strengthen regional cooperation in relation to zoonotic diseases.

Strengthening measures

Analysis of current data exchange possibilities

The exchange of data on zoonotic diseases between veterinary and human research institutes can be improved through the exchange of isolates and sequences and the sharing of results produced by microbiological laboratories that carry out diagnostic testing in the veterinary sector, the institutes that perform measurements in the environment, and primary, secondary and tertiary medicine. The goal is to ensure that data is exchanged in a faster, more transparent and more harmonised manner.

RIVM is gathering information on the existing data exchange flows and identifying for which zoonotic diseases this is relevant. It will also assess the legal and other obstacles to the adequate exchange of data between human and veterinary medicine and, finally, draw up functional requirements for a future data exchange system. The outcome will be a proposal for improvement with the aim of overhauling One Health data exchange for the surveillance of zoonotic diseases. To ensure the optimal functioning of the data exchange, it will be assessed whether changes to the Public Health Act, the Animals Act and/or the General Data Protection Regulation (GDPR) can help create more opportunities for the exchange of data from monitoring and surveillance in humans and animals.

Data exchange pilot project on swine influenza viruses

There are plans to introduce an animal-human monitoring system for swine influenza with the aim of improving data exchange. A pilot project was launched in 2022. This project will serve as an example of how this type of system can also be set up for other pathogens and other animal populations in the future. For more information on the pilot project on influenza viruses in pig farming, see section 3.3 of the chapter on livestock farming.

Guidance for data exchange

Depending on the purpose for which data is used (research, monitoring and surveillance or disease control), it is necessary for individual data or more aggregated data to be shared. For this reason, it is important to clarify what level of data sharing is possible and desirable. At present there is a degree of ambiguity when it comes to the current possibilities for data exchange, which can lead to a lack of clarity and different approaches to the exchange of information by the parties involved.

The above-mentioned RIVM analysis of the current data exchange options provides insight into the data that can be shared. This insight has been laid down in the form of practical guidance, which can be used by everyone in the field and which provides clear information about what monitoring and surveillance data can be shared. The information shows the aggregation level at which data can be shared, broken down according to the purpose for which the data is being shared.

One Health zoonotic disease data exchange platform

The ultimate goal of improving monitoring and surveillance data is an integrated One Health data exchange platform. This is no easy task. Given the complexity of this challenge, a step-by-step approach is being adopted with the goal of rolling out the platform by 2026. There are a number of relevant aspects:

- right of ownership: what data belongs to who, and who is entitled to report the data in publications
- interoperability: ICT systems must be able to communicate with each other
- logistics: sample flows must be compatible with each other
- privacy: what data can be shared for what purposes and with which parties.

In order to achieve this challenging task, RIVM needs to quantify the current situation for zoonotic diseases for which data exchange with human surveillance is required. The possibilities for improved data exchange will be proposed within the practical, legal and budgetary frameworks.

International data exchange

Improved data exchange is a task that is on the agenda at both national and international level. A recent study by the European Parliament identified a number of issues,

including gaps in the monitoring of specific zoonotic diseases, the interoperability (exchange) of human health data collected by the ECDC and animal health data collected by the EFSA. In animal and human health sectors, there are no regulations governing the exchange of things like biological samples and data. Adequate communication between early warning systems and laboratories is not possible.

A need to improve data exchange from animal-human surveillance has therefore been observed not only in the Netherlands but also at European level. The Netherlands will therefore actively seek to improve the exchange of data within the relevant EU initiatives. Monitoring and surveillance are key cornerstones of national zoonotic disease policy. That is why the Netherlands aims to actively focus on areas such as improving and ensuring better alignment between European monitoring and early warning systems, reference laboratory networks, and cooperation in risk assessment for zoonotic diseases[24].

The same applies to the reporting and exchange of data from laboratories outside the Netherlands.

At global level, the Netherlands also supports the importance of the rapid exchange of samples and sequences in international agreements. Examples include the International Health Regulations (IHR) and the

instrument on pandemic prevention (see also chapter 6, International efforts).

Animal-human information and knowledge sharing

A continuous dialogue on potential zoonotic risks between GPs, municipal health services and veterinarians is essential to ensure that information can be adapted rapidly and efficiently when warning signs emerge. The Ministries of VWS and LNV will continue to promote this dialogue in the years to come. As the municipal health services act as an effective intermediary in this interaction, ways of continuing and, where possible, intensifying this approach in future will be explored in consultation with these services. Examples include dialogue through knowledge networks or the use of modern digital resources for the exchange of information. Digital resources can remove potential barriers to a dialogue between the professionals.

The regional collaboration between the RVCs employed by the NVWA and RACs employed by both the regional health services and RIVM is vital. In the event of emerging signs of zoonotic diseases, they must be able to seek one another out quickly and know what action is needed. This approach and collaboration will be examined in more detail as part of a broader project commissioned by the Ministry of VWS. RIVM has been tasked with drawing up a regional plan to strengthen the approach that takes into account the role of, and collaboration between, RACs and RVCs.

[24] See also: European Parliament, The relation between different zoonotic pandemics and the livestock sector, Luxembourg, November 2021pp. 61-64.

Action 36: Analyse current data exchange possibilities

Action	Description	When
36.1 Analyse current environment-animal-human data exchange possibilities	RIVM is gathering information on the existing data exchange flows and identifying zoonotic diseases for which this is relevant, legal and other aspects that still obstruct the exchange of data, and the functional requirements for a future data exchange system.	2022 and 2023

Action 37: Data exchange pilot project on swine influenza viruses

Action	Description	When
37.1 Pilot project on monitoring and data exchange in relation to swine influenza viruses	There are plans to introduce an animal-human monitoring system for swine influenza with the aim of improving data exchange. A pilot project will be launched in 2022 for an animal-human monitoring system for swine influenza with the aim of improving data exchange.	2022 and 2023

Action 38: Guidance for data exchange

Action	Description	When
38.1 Guidance for environment-animal-human data exchange	Guidance for environment-animal-human data exchange will be drawn up on the basis of the abovementioned advice and results of the data exchange pilot project on swine influenza viruses.	2024 and 2025

Action 39: One Health zoonotic disease data exchange platform

Action	Description	When
39.1 Develop a One Health data exchange platform for zoonotic diseases	RIVM is working in consultation with other relevant One Health parties on a data exchange strategy and is implementing this strategy in practice.	2024 and beyond

Action 40: International data exchange

Action	Description	When
40.1 Improve One Health data exchange at international level	The Netherlands is committed to improving the exchange of data within the relevant initiatives in the EU and worldwide.	2022 and beyond

Action 41: Animal-human information and knowledge sharing

Action	Description	When
41.1 Animal-human knowledge networks	The Ministry of VWS is working with relevant parties to encourage collaboration between veterinarians, GPs and municipal health services, including by means of dialogue through knowledge networks and the use of modern digital resources for the exchange of information.	2022 and beyond
41.2 Regional cooperation in relation to zoonotic diseases	RIVM's 'strengthening regional function' project will look at cooperation between RACs and RVCs in the area of zoonotic diseases. The results of this project may lead to proposals to adapt and intensify this cooperation.	2023 and beyond

5

Response

5.1
Introduction

This section of the action plan addresses the response to zoonotic outbreaks. It looks at the existing response structures and scope for improving the approach to outbreaks that involve a zoonotic risk. The relevant people within this response structure must be able to rapidly find each other when necessary. Simulations at a regular basis are an essential part of a well-functioning response structure. It is vital to inform and involve the key national and international stakeholders properly whenever reaching decisions on measures. In this chapter, the following topics are addressed consecutively: animal disease control, zoonotic diseases in animals and vectors, and response in human healthcare.

5.2

Response to animal diseases and vector-borne diseases

Current activities

Introduction

An outbreak of an infectious animal disease in the livestock farming sector can have serious consequences for the animals, the livestock farmer, the animal sector and, in the case of a zoonotic disease, public health. A number of specific animal diseases are subject to mandatory control within the EU (such as foot-and-mouth disease). Many preventive measures are taken against the introduction of pathogens from this category. Nevertheless, there is always a risk that farms will be affected by this type of animal disease. In addition to these 'Category A' diseases, there are also Category B diseases such as rabies and bovine tuberculosis that need to be managed. It is standard procedure to review the approach in the wake of an outbreak.

Contingency plans

The various authorities involved in the Zoonoses Structure have contingency plans in place. The plans set out responsibilities, measures and information exchange in the event of a potential outbreak. Several contingency plans and guidelines relating to a range of infectious diseases, including zoonotic diseases, are available on the RIVM website (generic contingency plan, guidelines issued by the National Coordinator for Infectious Disease Control [LCI guidelines]) and the NVWA website. The various relevant units within the NVWA (such as the CMV or the NVWA Incident and Crisis Centre [NVIC]) also operate on the basis of implementation contingency plans in the area of animal health.

In addition, the Ministry of LNV has ministerial policy contingency plans for various animal diseases and a generic animal disease contingency plan that provides more general information on crisis response organisation, crisis communication and the various European and national measures. There is also a joint policy contingency plan for VWS and LNV that focuses specifically on an outbreak of a zoonotic disease. This plan addresses interministerial collaboration between the Ministry of VWS and the Ministry of LNV[25].

Reporting

In many cases, the identification of an animal disease that is subject to mandatory control starts with a report by an animal owner, veterinarian or laboratory. These parties are required to make a report if they are aware of, or suspect, the presence of an animal disease that is subject to mandatory control. The report is submitted to the NVIC. As soon as a report is received, the NVIC investigates the report and, where necessary, deploys a specialist team[26] to assess the situation on site and collect samples for laboratory testing. If the samples collected by the specialist team test positive for a mandatorily controlled disease, the necessary measures are taken. If an animal disease has a zoonotic aspect, the relevant parties in the domain of public health are involved.

A number of specific animal diseases are subject to mandatory control within the EU

Education, training and simulations

Employees of government organisations and private parties who are deployed in the event of an animal disease crisis are regularly offered education, training and simulations. Examples include training programmes run by the NVWA for animal disease experts, the NVWA front teams and the departmental heads of the NVWA Regional Crisis Centre. The programmes include training in clinical diagnosis, epidemiological research (tracing and monitoring) and procedures for suspected and infected locations. Regularly, crisis simulations are held for policy officers at the NVWA, LNV and VWS, as also required by the relevant European legislation.

[25] This contingency plan can be found here

[26] A team consisting of the practising veterinarian, a GD veterinarian and an NVWA veterinarian.

Culling and removal of infected animals

The culling and removal of infected animals can be a drastic but necessary measure in the context of animal disease control. LNV and the NVWA have concluded contracts with specialist parties that are able to provide these services. Examples include agreements with companies that supply the materials to carry out culling and contracts with Rendac for the rapid and safe processing of carcasses from infected and culled farms.

In the case of dead wild animals, the owner or manager of the land is responsible in the first instance responsible for the disposal of animals on their grounds. In addition to the responsibility of owners or managers, the disposal of dead wild animals infected with a mandatorily controlled animal disease is also a responsibility of the government. The NVWA has published a manual for the disposal of dead wild birds and mammals with bird flu[27], as well as a guide to responsibilities for the disposal of dead birds[28].

Exotic vectors

Exotic vectors occasionally enter the Netherlands. The introduction of these vectors, such as the tiger mosquito, must be delayed as long as possible, since they have the potential to transmit a vector-borne infectious disease and cause an outbreak. The policy of the Ministry of VWS focuses on the eradication of these vectors. Under the Public Health Act, the Minister of VWS is responsible for the prevention and control of certain exotic species of mosquitoes. Where these mosquito species are detected through surveillance activities, the NVWA introduces control measures.

Strengthening measures

Improving consistency between response contingency plans

Different contingency plans are available from the various national and regional parties involved in the response to animal and zoonotic diseases. These contingency plans are not always consistent, which can result in a lack of clarity when they are put into practice. Where necessary, the contingency plans of the different authorities must provide clarity on when certain parties are involved and what the associated division of roles and responsibilities is. To achieve this, the zoonotic disease contingency plans have been analysed to identify the areas in which regional and national contingency plans are consistent, and which ones are insufficiently consistent or inconsistent. This analysis will be used to adapt and update the contingency plans to create a coherent system.

Contingency plan for zoonotic disease scenarios involving companion animals

Companion animals (or pets) can play a role in the spread of zoonotic diseases, as in the case of psittacosis. At present, these known zoonotic diseases can usually be controlled with less drastic measures such as vaccination and biosecurity. In the case of an unknown zoonotic disease, a rapidly spreading zoonotic disease, or a zoonotic disease with serious consequences, more radical measures may be required. Such measures include isolation or even the culling of infected animals. The owners of these animals often have an emotional bond with their animals, which makes the implementation of these types of measures more complex. A scenario in which companion animals play a role in a zoonotic outbreak must be taken into account. A separate contingency plan will be drawn up on this subject.

Integrated One Health simulation

Employees who are involved in a crisis must take part in simulations regularly to ensure that they are able to get into contact with each other rapidly and take action. An integrated One Health simulation exercise is to be carried out with the relevant parties in order to practise the response to a zoonotic incident. The purpose of the simulation is to ensure that, based on planning and contingency plans, all parties involved are adequately prepared for a zoonotic outbreak. This will be done by organising an integrated simulation exercise on the tackling of zoonotic diseases. LNV and VWS will work with all parties involved to analyse and understand the existing

[27] *Handleiding voor het opruimen van dood gevonden wilde (water)vogels* (Guide to the disposal of wild birds and water fowl found dead) | Regulations | NVWA; *Handleiding voor het opruimen van dood gevonden wilde zoogdieren (vlees- en aaseter) verdacht van een besmetting met hoog pathogene vogelgriep* (Guide to the disposal of wild mammals [carnivores and scavengers] found dead that are suspected to be infected with highly pathogenic avian influenza) | Regulations | NVWA

[28] *Handreiking voor het opruimen van dode wilde vogels en de omgang met levende zieke vogels* (Guide to the disposal of dead wild birds and how to deal with live sick birds) | Regulations | NVWA

planning and contingency plans in preparation for the exercise. The simulation will involve the ministries and affiliated authorities, as well as regional implementing and other parties such as the provinces, municipal health services and security regions. The emphasis lies on collaboration between all parties. Following detailed analysis and preparation, a potential outbreak will therefore be simulated as part of an integrated One Health exercise involving all parties. The process will enable parties to practise their response to outbreaks and learn how to contact each other rapidly rapidly in the event of an actual zoonotic outbreak.

Central guide for wild birds and animals found dead

In collaboration with the province of Friesland and other regional authorities a central guidance for the disposal of dead wild birds infected with bird flu is currently in development. The experience of local authorities will be combined with existing protocols to develop a single document that can serve as a guidance for private parties and local authorities. The document will also address the role of hunters and other parties that may play a role. As soon as this guidance is available, this approach will, where possible, be transformed into steps for dealing with dead mammals in the event of an outbreak of a zoonotic infectious disease not limited to birds.

Scaling up the vector control strategy

As part of pandemic preparedness, research needs to be carried out into sustainable, effective and cost efficient methods of controlling vectors and vector-borne zoonotic diseases. One area to be explored is what materials are needed for vector control and how they can be obtained. Traps in particular are not always available, and it is necessary to consider what types of traps are needed to control vectors.

In addition, control strategies for mosquitoes need to be better regulated and more insight is required into the larger-scale deployment of control methods, biocides or other alternatives. As part of the West Nile virus research project (mentioned in section 3.2), there are plans to carry out an initial exploration of the current limitations of the control options for this vector-borne infectious disease. Based on the knowledge gathered, the CMV will work with RIVM to develop a plan for scaling up the monitoring and control of vectors and will implement this plan in practice.

Action 42: Improve consistency between response contingency plans

Action	Description	When
42.1 Analyse response contingency plans	Commissioned by the Ministries of LNV and VWS, the contingency plans of the authorities involved in tackling and controlling zoonotic diseases will be analysed: analysis of 'blind spots' and consistency between contingency plans.	2022
42.2 Adapt various contingency plans relating to the control of zoonotic diseases	Following the analysis, the contingency plans of the various organisations involved in tackling zoonotic infectious diseases will be adapted where necessary.	2023 and 2024

Action 43: Contingency plan for zoonotic disease scenarios involving companion animals

Action	Description	When
43.1 Contingency plan for zoonotic disease outbreak scenario involving companion animals	A scenario in which companion animals play a role in a zoonotic outbreak must be taken into account. In case of an unknown zoonotic disease, a rapidly spreading zoonotic disease, or a zoonotic disease with serious consequences, more radical measures may be required. Such measures include isolation or even the culling of infected animals. The owners of these animals often have an emotional bond with their animals, which makes the implementation of these types of measures more complex. A contingency plan will be drawn up for these situations.	2023 and 2024

Action 44: Integrated One Health simulation

Action	Description	When
44.1 Simulate a potential outbreak in an integrated One Health simulation exercise	This exercise will enable parties in the One Health domains to practise their response to outbreaks and learn how to rapidly get into contact with each other in the event of a zoonotic outbreak.	2023

Action 45: Central guidelines for wild birds and animals found dead

Action	Description	When
45.1 Central guidelines to the finding and sending in of dead wild birds (due to possible bird flu)	A guidelines is to be developed for central and regional government organisations that describes the process for dealing with dead and/or wounded wild birds, and for sending in these birds for further examination where necessary. Existing protocols will be integrated to create a single document on this subject.	2022
45.2 Expand guidelines on how to deal with dead mammals	As soon as the guidelines is available, this approach will be expanded, where possible, to include situations in which dead mammals need to be disposed of due to an outbreak of a zoonotic infectious disease.	2023

Action 46: Scaling up the vector control strategy

Action	Description	When
46.1 Plan for scaling up the monitoring and combating of vectors	The CMV will work with RIVM to develop a plan for scaling up the monitoring of vectors, including adapted control strategies.	2023 and 2024
46.2 Implement scaling up of the monitoring and combating of vectors	The CMV will implement the plan for scaling up the monitoring of vectors in practice, including adapted control strategies.	2024 and beyond

5.3
Response in human healthcare

Current activities

Introduction

In the human domain, zoonotic disease control falls under the auspices of the municipal health services, RIVM and the Ministry of VWS. Agreements regarding procedures to follow in the event of an outbreak of an infectious disease are set out in contingency plans and regulations. Such agreements also define the link between responsible parties in the veterinary domain, the environment and human expertise. After all, experts in these professional fields must be able to seek one another out and know what they need to do in the event of a zoonotic outbreak.

Infectious disease control contingency plans

The Ministry of VWS works with an infectious disease policy contingency plan. It also has a joint contingency plan with LNV for dealing with the outbreak of a zoonotic disease (see section 5.2). On top of this, a national infectious diseases plan was published in 2014. In the event of larger outbreaks of infectious diseases, the generic LCI-RIVM contingency plan is relevant to the municipal health services and RIVM. This plan also deals with zoonotic diseases. In order to be well prepared, contingency plans must be kept up to date and regular simulation exercises are crucial.

Guidelines for the prevention and control of infectious diseases/zoonotic diseases

Within RIVM, the LCI is working with infectious disease control experts to develop guidelines for the prevention and control of infectious diseases (including zoonotic diseases). Where an infectious disease (potentially a zoonotic disease) is identified, there must always be a source, to which multiple people may have been exposed. In some cases, the disease can be transmitted further, from this group to others. Guidelines help to ensure that meaningful action is taken quickly. The guidelines are designed to provide support in areas such as the daily practice of municipal health services. A guideline covers all aspects of infectious disease control, including epidemiology, research, prevention and control. LCI guidelines provide a systematic overview of the following for each infectious disease:

- the latest knowledge about the infectious disease (zoonotic disease)
- national agreements on disease control measures
- the role of the municipal health services and other professionals involved in disease control. Details of measures to control a specific infectious disease in the Dutch situation are particularly important. The guideline must be applicable in the professional's everyday practice.

Strengthening measures

National crisis plan for infectious disease control

There are a number of lessons to learn from the COVID-19 pandemic. This has, together with other develoments, prompted the drafting of a new national crisis plan for infectious disease control. This crisis plan will build on the existing infectious disease control contingency plan and benefit from all the lessons learned from the COVID-19 pandemic. It will also take into account the experience gained from the control of SARS-CoV-2 in minks. In 2022, the Ministry of VWS and the Ministry of Justice and Security (JenV) has started, in collaboration with the security regions, the ministries and other relevant crisis partners, to develop the National Crisis Plan for Infectious Disease Control (LCP-I) to replace the 2014 national plan. The new crisis plan will also cover the control of zoonotic diseases. In addition, RIVM will revise the generic contingency plan as part of its regional plan to strengthen the approach.

Updating of LCI guidelines

RIVM periodically updates the LCI guidelines. In the coming years, the LCI guidelines on zoonotic diseases will be reviewed and updated in liaison with the other authorities in the veterinary domain and the environment (including GD, WBVR and the NVWA).

Action 47: National crisis plan for infectious disease control

Action	Description	When
47.1 National crisis plan for infectious disease control	The Ministry of VWS is working on a national crisis plan for infectious diseases, which is to include zoonotic diseases.	2022 and beyond

Action 48: Update LCI guidelines

Action	Description	When
48.1 Amend LCI guidelines on zoonotic diseases	The LCI guidelines on zoonotic diseases will be updated in collaboration with the other authorities in the veterinary domain and the environment.	2023 and beyond

6

International policy

6.1 Introduction

Experts indicate that the next zoonotic disease outbreak with pandemic potential is most likely to start abroad and recommend joining international efforts based on the One Health approach to zoonotic diseases. As a supporter of these efforts, the Netherlands takes part in European and international initiatives of the Quadripartite (partnership between the WHO, FAO, UNEP and WOAH)[29] that aim to prevent the emergence and spread of zoonotic diseases at the global level. International efforts should also focus on prevention, detection and response. International commitment to combating zoonotic diseases is a cross-cutting theme in this action plan. The main objectives are greater international collaboration and stronger bilateral and multilateral relations. The international agenda of the National Action Plan for the Strengthening of Zoonotic Disease Policy features many themes from the three priority areas of the previous chapters on prevention, detection and response. These themes and international efforts in relation to these themes have been addressed in the previous chapters. This chapter looks at the Netherlands' priorities at the international level and the Netherlands' commitment to international development and collaboration.

[29] Memorandum of Understanding between FAO and OIE and WHO and UNEP regarding cooperation to combat health risks at the animal-human-ecosystems interface in the context of the 'One Health' approach and including antimicrobial resistance

Current activities

Also at the international level efforts are being made to collaborate and exchange information on zoonotic diseases from the environment, veterinary and human sectors. The Netherlands is focusing on the worldwide promulgation of specific experience and knowledge gained through the One Health approach, such as working within a Zoonoses Structure. This includes promoting the importance of zoonotic disease policy and the exchange of data on zoonotic diseases. This expertise and experience is shared and collaboration takes place in relevant international forums. And, vice versa, the Netherlands learns from the experience and knowledge of other countries.

In 2021, the WHO, FAO, UNEP and WOAH jointly launched a One Health High Level Expert Panel (OHHLEP). The panel advises these organisations on the development of a global long-term plan to prevent the emergence and spread of zoonotic outbreaks.

Strengthening measures

International priorities for the strengthening of zoonotic disease policy

As discussed in previous chapters, an international focus is being placed on a number of topics with the aim of strengthening the zoonotic disease policy.
Key areas include:

- International efforts to combat climate change with the secondary objective of reducing zoonotic risks (section 3.2)
- International efforts to halt deforestation, with the secondary objective of reducing zoonotic risks (section 3.2)
- Implementation of the UN Biodiversity Convention and post-2020 Global Biodiversity Framework (section 3.2)
- Promotion of the Zoonoses Structure approach (section 4.2)
- Emphasising the added value of national action plans on zoonotic diseases, to ensure that other countries in the EU and worldwide also invest in the prevention and detection of, and the response to, zoonotic diseases, possibly also in the form of a national action plan and the use of a detection and response structure like the Dutch Zoonoses Structure (section 4.2)
- EU-wide efforts to vaccinate poultry against bird flu (section 3.3)
- EU-wide efforts to reduce the long-distance transport of farm animals (section 3.3)
- An international focus on zoonotic risks associated with the trade in live wild and domestic animals and bushmeat (section 3.4)
- Raising international awareness of the risks of wet markets (section 3.4)
- Raising international awareness of the importance of biosecurity (sections 3.3 and 3.4)
- Support in the drafting of a European list of companion and hobby animals (section 3.4)
- EU-wide efforts to improve the coordinated surveillance by Member States of cross-border pathogens and the exchange of this data (section 4.4).

The Netherlands takes a proactive approach to various global developments. The experience gained through the current pandemic will be shared to ensure that countries are better prepared and are able to learn from one another.

In the next two to three years there will be two large and important initiatives at WHO level in which the Netherlands will play a major role. These projects involve the potential updating and strengthening of the 2005 IHR. Work is also in progress on a new WHO pandemic instrument, in which agreements will be reached on global surveillance, detection and information exchange in the event of serious health threats (including zoonotic diseases). The Netherlands is involved in the preparations for this pandemic instrument, including as co-chair of the International Negotiation Body (INB) set up for this purpose.

The Quadripartite (WHO, FAO, UNEP and WOAH) is developing a One Health Joint Plan of Action for the period 2022–2026. The four organisations are working together to help countries implement One Health policy. Zoonotic diseases are a theme within this plan. The Netherlands supports the initiative and its further implementation, and emphasises the added value of national action plans for zoonotic disease policy.

Promulgation of Dutch expertise

The Dutch Zoonoses Structure is in line with international developments in the area of pandemic preparedness and One Health, such as the initiatives of the EC,

WHO and other UN and international organisations. Greater international collaboration and stronger bilateral relations fit in with international developments in the field of zoonotic diseases. The Netherlands is actively contributing expertise in this context and is able to learn from other countries and authorities.

The Netherlands shares its expertise by taking part in European and international networks and working groups. Through secondments to relevant EU institutions and international organisations (such as the Quadripartite), the Netherlands can contribute directly to the strengthening of a number of European and international projects relating to One Health and zoonotic diseases. Such activities can also help to strengthen international infrastructure, including veterinary infrastructure, as well as contributing towards the effective control of outbreaks around the world.

Multilateral and bilateral cooperation

The Netherlands takes part in multilateral initiatives and networks such as the Global Health Security Agenda (GHSA). This is an international initiative of more than seventy countries, international organisations and private parties, aimed at the prevention, detection and control of infectious diseases, particularly zoonotic diseases. The GHSA facilitates international cooperation and the sharing of best practices, knowledge and expertise at international level.

Bilateral cooperation is being explored by entering into collaborations with countries with which the Netherlands has a special relationship. This includes countries with which the Netherlands has economic, geopolitical or historical ties, or countries with which the Netherlands has entered into a Memorandum of Understanding (MoU) in the areas of health, agriculture or the environment. The MoUs provide practical support for a dialogue, for coordination in consultations on zoonotic diseases within intergovernmental forums, or for the practical implementation of joint projects. A special focus is placed on countries where emerging zoonotic risks require attention, such as India, China and Indonesia.

Action 49: International priorities for the strengthening of zoonotic disease policy

Action	Description	When
49.1 International priorities for zoonotic diseases, for the purpose of European and global meetings	Topics and positions of the international priorities are introduced in EU and global meetings: • International efforts to combat climate change, also to reduce zoonotic risks • International efforts to halt deforestation, also to reduce zoonotic risks • Implementation of the UN Biodiversity Convention and post-2020 Global Biodiversity Framework • Promotion of the Zoonoses Structure approach • Emphasising the added value of national action plans on zoonotic diseases, to ensure that other countries in the EU and worldwide also invest in the prevention and detection of, and the response to, zoonotic diseases, possibly also in the form of a national action plan and the use of a detection and response structure like the Dutch Zoonoses Structure • EU-wide efforts to vaccinate poultry against bird flu • EU-wide efforts to reduce the long-distance transport of farm animals • An international focus on zoonotic risks associated with the trade in live wild and domestic animals and bushmeat • Raising international awareness of the risks associated with wet markets • Raising international awareness of the importance of biosecurity • Support in the drafting of a European list of companion and hobby animals • EU-wide efforts to improve the coordinated surveillance by Member States of cross-border pathogens and the exchange of this data.	2022 and beyond
49.2 Zoonotic diseases in the global pandemic instrument and IHR	The Netherlands is committed to ensuring that zoonotic diseases feature higher on the international political agenda during the amendment of the International Health Regulations and the development of a pandemic instrument	2022, 2023 and 2024
49.3 One Health Joint Plan of Action. The Netherlands supports this initiative by the Quadripartite	The Netherlands is actively involved in the development and implementation of this initiative by the Quadripartite. Dutch expertise is utilised by taking part in networks and expert groups within the Quadripartite organisations.	2022 and beyond

Action 50: Use Dutch expertise

Action	Description	When
50.1 Dutch involvement in EU institutions, including through secondments	Active and coordinated Dutch involvement in EU consultation structures, networks, expert groups and initiatives, within existing and new partnerships. Deployment of Dutch experts through secondments to EU institutions in the area of zoonotic diseases, such as bird flu vaccination.	2022 and beyond
50.2 Dutch involvement at global level, including through secondments	Contribution of Dutch expertise within consultation structures, networks, expert groups and secondments to international organisations, such as the WHO, FAO, UNEP and WOAH.	2022 and beyond

Action 51: Multilateral and bilateral cooperation

Action	Description	When
51.1 Multilateral cooperation	The Netherlands takes part in multilateral forums and activities. One example is the Global Health Security Agenda: an international initiative by seventy countries.	2022, 2023 and 2024
51.2 Bilateral cooperation	The Ministries of LNV and VWS are exploring cooperative arrangements in the area of zoonotic diseases with other countries in the world and making strategic decisions to strengthen their collaboration with certain countries.	2022 and beyond

7

Research

7.1 Introduction

Another cross-cutting theme of the action plan is research. Developing knowledge on zoonotic diseases, routes of transmission and applicable diagnostics helps to ensure that zoonotic diseases are detected early so that action can be taken where necessary. The development of scientific and other knowledge in the Netherlands is stimulated through investment in research programmes and research projects. This knowledge can be applied to international and national zoonotic disease policy. The Netherlands has a great deal of experience in tackling zoonotic disease threats and wants to share this knowledge at international level through international knowledge programmes and by working with research institutes in other countries as part of these programmes. The knowledge agenda in this chapter ties in with the themes of previous chapters. At several points in the action plan reference is made to research that is directly applicable to the relevant actions.

Current activities

At national level

In the Netherlands, scientific research into zoonotic diseases is mainly carried out by RIVM, UU, GD, Erasmus MC, Amsterdam UMC, Leiden UMC and WUR. The NCOH brings together a number of academic centres in the Netherlands to tackle One Health challenges. In addition, many other parties such as the higher agricultural schools are involved in knowledge development and applied research in the area of zoonotic diseases. As many parties are active in this field of research, it is important to avoid fragmentation of this research as much as possible and to ensure that parties work together effectively, for instance through coherent research programmes that can bring together the expertise of research institutes.

In the Netherlands, a lot of research is carried out into zoonotic diseases in domesticated animals. This research is carried out by institutes such as WUR, for instance through the Statutory Research Tasks on infectious animal diseases (*Wettelijke Onderzoekstaken besmettelijke dierziekten*, WOT BD[30]), but also by other university institutions, such as Erasmus MC, UU, RIVM and GD. As a result, a large amount of knowledge is generated on themes including the presence and prevention of the transmission of pathogens.

The Netherlands Organisation for Health Research and Development (ZonMw) plans to carry out a number of scientific research programmes on public health. ZonMw has ongoing research programmes on infectious disease control (IDC), Climate and Health, antimicrobial resistance (AMR) and COVID-19. The IDC research programme follows a One Health approach. The programme also encompasses research into zoonotic diseases.

At international level

In an international context, the importance of proper monitoring, surveillance and effective data exchange based on warning signs in animals and humans is acknowledged and promoted in collaborations with other research institutions. Where relevant, efforts are made to harmonise approaches and methods. The Netherlands is involved in a large number of European and international research initiatives and partnerships. Intensive collaboration has taken place between institutions in the Netherlands for many years based on the One Health approach, for example within the NCOH. The Netherlands promotes this collaboration within the Zoonoses Structure, for instance within European partnerships such as the EJP-OH. The EJP-OH, in which RIVM and WBVR take part, is scheduled to end in 2022.

The purpose of the MedVetNet association, which is made up of 21 public health and veterinary institutions in fourteen EU Member States, including RIVM and WBVR, is to continue the One Health network function in Europe. The association is a network of public and academic institutions, which focuses on combating zoonotic diseases and AMR through a One Health approach.

The Ministry of LNV co-finances the European International Coordination of Research on Infectious Animal Diseases (ERAnet ICRAD) research network in the context of Horizon 2020. The second call, for which proposals will be reviewed in 2022, aims to identify multidisciplinary research and innovation with a One Health approach in order to better understand zoonotic diseases by focusing on the interaction between environment, animals and humans.

Knowledge development

Current scientific research by the above institutes focuses on several aspects of One Health. Current research topics include: biodiversity and climate change (in which the link to animal diseases, including zoonotic diseases, is also studied), effective interventions to prevent the transmission and spread of zoonotic diseases from animals to humans, plus transmission modelling and development of molecular techniques such as Whole Genome Sequencing (WGS) (which uses pathogen typing to identify routes of transmission). A number of institutes also carry out microbiological and epidemiological research into various microorganisms.

Strengthening measures

Knowledge themes for the strengthening of zoonotic disease policy

Setting up and putting into practice scientific research based on the One Health ideology helps to strengthen zoonotic disease policy. It is important that research also pays sufficient attention to the socioeconomic and cultural considerations that apply to the One Health approach. Studies that are carried out must be in line with policy and

[30] www.wur.nl/nl/onderzoek-resultaten/wettelijke-onderzoekstaken.htm

implementation, to ensure that measures can be taken or actions initiated based on the research. To this end, it is important that commissioning parties and research partners (academic centres and parties in the field) share requirements and ideas with one another at an early stage. Research can also help to strengthen international zoonotic disease policy by sharing the knowledge generated in studies at international level and through the Netherlands' active participation in international research initiatives.

Experts recommend efforts to increase scientific knowledge on a number of topics. The coming period decisions will be made on investments in research that meet the demands of zoonotic disease policy. Based on the priorities set by various research programmes, the following relevant research topics may be explored:

- Preventive measures to prevent the emergence of zoonotic diseases in the Netherlands and abroad;
- Effective and socially acceptable intervention strategies across the spectrum of One Health to prevent the spread of zoonotic diseases;
- The impact of climate and landscape change and other human activities on zoonotic risks (particularly through vector-borne risks);
- Development of diagnostics for zoonotic diseases for monitoring and surveillance purposes, for example the further development of WGS, and method development to allow the use of various measurements in the environment, animal products and by-products (such as effluent, milk, textiles, manure and tank milk) in zoonotic disease monitoring and early warning systems;
- Development of innovative surveillance methods, such as the use of citizen science and social media;
- Zoonotic risk communication: development of effective strategies to start a dialogue with various groups of citizens and to ensure optimum information provision. Instruments that are the most useful for risk communication (such as education, platforms, games, decision-making support and trials) will be identified and developed;
- Assessment of zoonotic risks in the livestock farming sector;
- Development of veterinary vaccines against infectious diseases, including zoonotic diseases;
- International research into wild animal populations, the pathogens carried by these animals and transmission within ecological networks (among which through vectors);
- Development of human and animal risk models that can predict the emergence and spread of zoonotic diseases;
- Increased surveillance and research into zoonotic diseases that currently pose the highest risk.

ZonMw and ERRAZE long-term research programmes

The coming years, the government will be investing a portion of the available funding for pandemic preparedness in long-term research programmes on zoonotic diseases. The long-term research programme organised by ZonMw addresses several aspects of the One Health approach. The programme includes research into environmental and climate effects on the spread of zoonotic infectious diseases by air, soil, water, vectors, wild and domesticated animals. Measures are designed to achieve goals such as improving the environment. Research will be carried out into the environmental transmission of zoonotic pathogens. To increase knowledge and expertise on pandemic preparedness, part of the scientific programme will be set up under ZonMw's Pandemic Preparedness research programme. A component of the research will focus specifically on zoonotic diseases. The knowledge developed will be used to support measures and policy in relation to the prevention, detection and control of zoonotic diseases. The programme focuses on future pandemics of known and unknown pathogens.

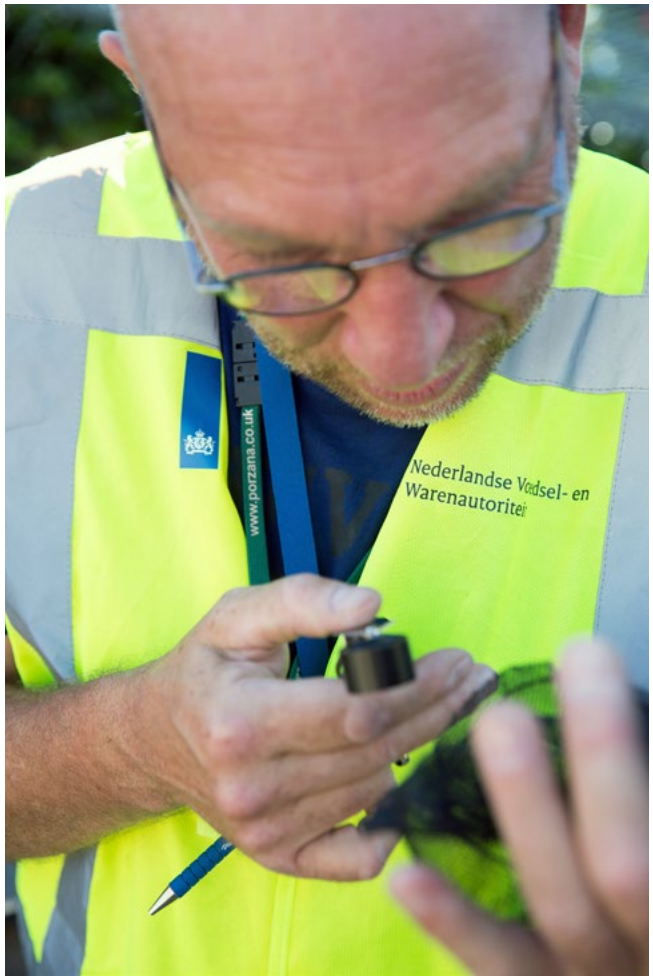
In the ERRAZE@ WUR research and investment programme, researchers from various disciplines are working together on the scientific foundation required to avoid future pandemics as much as possible and to limit their impact. The programme encourages interdisciplinary One Health collaboration both within WUR and with external parties. A key objective is the further development of directly applicable knowledge, as well as policy tools and other tools that provide a specific basis and support for policy.

International consortia and partnerships

Dutch research institutes take part in a number of European and global initiatives and partnerships. It is important for the Netherlands to share its knowledge of zoonotic diseases and to learn from research partners in other countries. Participation in the ERAnet ICRAD will continue in the next few years in the context of the

second call for proposals, which will focus on the One Health approach.

Research partnerships will be set up within the new Horizon Europe programme. Examples include the



Animal Health and Welfare (PAHW) partnership, which is a follow-up to the ERAnet ICRAD and the One Health European Joint Programme, and which is being prepared for a launch in 2023. The aim of this partnership is to generate knowledge, innovative methods, instruments and products to help to limit the socioeconomic and environmental impact of infectious animal diseases and zoonotic diseases, and to improve animal welfare in livestock farming and aquaculture. Efforts will be made to reduce the risks associated with zoonotic diseases by improving collaboration from a One Health perspective and ensuring that all stakeholders are better prepared. The EU will co-fund the partnership.

Another relevant partnership on the horizon is the EU Partnership on pandemic preparedness: a new European research and innovation alliance. A preparatory project is developing a strategic research and innovation agenda that will become the basis for the future pandemic preparedness partnership. RIVM and ZonMw are taking part in this project, in which One Health is a cross-cutting theme. The Netherlands aims to play an active role in the partnership. Another partnership is being set up in the domain of One Health and AMR, which will address issues such as restricting the use of antibiotics to further reduce antibiotic resistance.

The MedVetNet Association will receive further support with the aim of continuing the One Health network in Europe. RIVM and WBVR are involved in the MedVetNet Association.

PREZODE (PREventing ZOonotic Disease Emergence) is an international initiative in which various countries and research institutes work together to address the challenges facing zoonotic disease strategy. The goals of the PREZODE initiative include sharing knowledge, building capacity, carrying out research into the prevention, surveillance and detection of, and the response to, zoonotic diseases, and setting up a joint research agenda. WUR and RIVM take part in this initiative. The initiative was launched by France in January 2021 and is supported by the EC and FAO. Through this knowledge network, the Netherlands aims to actively contribute to and participate in international collaboration on the One Health approach to zoonotic diseases.

Action 52: Knowledge themes for the strengthening of zoonotic disease policy

Action	Description	When
52.1 Knowledge development priorities	Increase scientific knowledge on a number of relevant research topics. A number of institutes are involved in the implementation of this action. • Preventive measures to prevent the emergence of zoonotic diseases in the Netherlands and abroad • Effective and socially acceptable intervention strategies across the spectrum of One Health to prevent the spread of zoonotic diseases • The impact of climate and landscape change and other human activities on zoonotic risks (particularly through vector-borne risks) • Development of diagnostics for zoonotic diseases for monitoring and surveillance purposes, for example the further development of WGS, and method development to allow the use of various measurements in the environment, animal products and by-products (such as effluent, milk, textiles, manure and tank milk) in zoonotic disease monitoring and early warning systems • Development of innovative surveillance methods, such as the use of citizen science and social media • Zoonotic risk communication: development of effective strategies to start a dialogue with various groups of citizens and to ensure optimum information provision. Instruments that are the most useful for risk communication (such as education, platforms, games, decision-making support and trials) will be identified and developed • Assessment of zoonotic risks in the livestock farming sector • Development of veterinary vaccines against infectious diseases, including zoonotic diseases • International research into wild animal populations, the pathogens carried by these animals and transmission within ecological networks (among which vectors) • Development of human and animal risk models that can predict the emergence and spread of zoonotic diseases • Increased surveillance and research into zoonotic diseases that currently pose the highest risk.	2022 and beyond

Action 53: ZonMw and ERRAZE long-term research programmes

Action	Description	When
53.1 Continue the ZonMw Infectious Disease Control programme	The long-term Infectious Disease Control knowledge programme will continue in the next few years. One Health research into zoonotic diseases is a key element of this knowledge programme.	2023 and beyond
53.2 A long-term scientific research programme by ZonMW into infectious diseases based on a One Health approach	ZonMw is in the process of launching the Pandemic Preparedness research programme, including research into zoonotic diseases. The focus lies on method development, detection and prediction of zoonotic diseases and zoonotic risk communication.	2022 and beyond
53.3 Co-fund the ERRAZE long-term research programme	WUR's ERRAZE research programme contributes towards the substantive ambitions of this action plan. Funding will be provided for the ERRAZE research programme under this action plan.	2021 and beyond

Action 54: International partnerships

Action	Description	When
54.1 Participation of Dutch research institutes in international partnerships	Dutch research institutes take part in initiatives whose themes include One Health and zoonotic diseases: • ERAnet ICRAD (European collaboration under Horizon 2020) • EU partnership on Animal Health and Welfare (Horizon Europe) • EU partnership on pandemic preparedness • MedVetNet association • PREZODE	2022 and beyond

Appendix

List of abbreviations

AGCM-Z – Administrative Governmental Coordination Meeting Zoonoses
AMR – Antimicrobial resistance
BZK – Ministry of the Interior and Kingdom Relations
CBD – Convention on Biodiversity
CIb – Centre for Infectious Disease Control (part of RIVM)
CMV – Centre for the Monitoring of Vectors (part of the NVWA)
COT – Institute for Safety, Security and Crisis Management
COVID-19 – Coronavirus disease
DWHC – Dutch Wildlife Health Centre
EC – European Commission
ECDC – European Centre for Disease Prevention and Control
EEA – European Commission and European Environment Agency
EFSA – European Food Safety Authority
EJP-OH – European Joint Programme One Health
EPC-Z – Expert Panel Consultation Zoonoses
EU – European Union
FAO – Food and Agriculture Organization
FD – Faculty of Veterinary Medicine
GD – Royal GD
GDPR – General Data Protection Regulation
GGD – Municipal Health Service
GHSA – Global Health Security Agenda
GP – General Practitioner
HPAI – Highly Pathogenic Avian Influenza
ICRAD – International Coordination of Research on Infectious Animal Diseases
IenW – Ministry of Infrastructure and Water Management
IHR – International Health Regulations
ICM – Integrated Chain Management
INB – International Negotiation Body
IVG – Intensive livestock farming and health
IDC – infectious disease control
JenV – Ministry of Justice and Security
KNMvD – Royal Dutch Society for Veterinary Medicine
LCI – National Coordinator for Infectious Disease Control
LCP-I – National Crisis Plan for Infectious Disease Control
LICG – National Information Centre for Companion Animals
LID – Inspectorate of the Dutch Society for the Protection of Animals
LNV – Ministry of Agriculture, Nature and Food Quality
MoU – Memorandum of Understanding
NAS – National Climate Adaptation Strategy
NCOH – Netherlands Centre for One Health
NDFF – National Flora and Fauna Database
NPLG – National Programme for Rural Areas
NVIC – NVWA Incident and Crisis Centre
NVWA – Netherlands Food and Consumer Product Safety Authority
OHHLEP – One Health High Level Expert Panel
OMT–Z – Outbreak Management Team Zoonoses
PREZODE – PREventing ZOonotic Disease Emergence
RAC – Regional Physician Advisers
RDA – Council on Animal Affairs
RIVM – National Institute for Public Health and the Environment
RT–Z –Response Team Zoonoses
RVC – Regional Veterinary Advisers
RVO – Netherlands Enterprise Agency
SaMeDi – Partnership of Medical Professionals and Veterinarians
SPS – Sanitary and phytosanitary measures
SO–Z – Signalling Forum Zoonoses
SRT – Statutory Research Tasks
UNEP – United Nations Environment Programme
UN – United Nations
UNITED4Surveillance – EU Joint Action Union and National Capacity Building 4 IntegraTED Surveillance
UU – Utrecht University
VGO – Livestock farming and health of local residents
VMDC – Veterinary Microbiological Diagnostic Centre
VWS – Ministry of Health, Welfare and Sport
WBVR – Wageningen Bioveterinary Research
WFD – Water Framework Directive
WFSR – Wageningen Food Safety Research
WGS – Whole Genome Sequencing
WHA – World Health Assembly
WHO – World Health Organization
WOAH – World Organisation for Animal Health
Wpg – Public Health Act
WUR – Wageningen University & Research
ZLTO – Southern Agricultural and Horticultural Organisation

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