



National Institute for Public Health  
and the Environment  
*Ministry of Health, Welfare and Sport*

# *RIVM Centre for Infectious Disease Control*

*Strategy 2016-2021*





# RIVM Centre for Infectious Disease Control

Strategy 2016-2021

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## Synopsis

### **National Institute for Public Health and the Environment (RIVM) Centre for Infectious Disease Control Strategy 2016-2021**

This strategy describes the ambitions of the Centre for Infectious Disease Control (CIb) for the coming years. It concerns the changes that the CIb considers to be necessary, rather than a summary of activities.

Thanks to the efforts made by prevention and vaccination programmes, in the Netherlands there is relatively little disease and death as a result of infectious disease. However, there continue to be some important challenges. The rise of resistance to antibiotics is worrying and calls for an integral and coordinated plan of action. In addition, the success of the National Immunisation Programme (NIP) is not guaranteed: in order to maintain sustainable support from parents and professionals, it is necessary to continually invest in the programme and in communication with professionals and the public.

Furthermore, it is important to gain insight into zoonotic threats (i.e. diseases that can be transferred from animals to humans). The number of people with sexually transmitted diseases in high risk groups such as prostitutes and drug users has also risen and it is very important that efforts to prevent these are continued. In order to control infectious diseases properly, it is also important to have insight into national and international trends and changes in this area.

In terms of organisation, the aim is to further improve the structure within which infectious diseases are managed. In conclusion, good interaction between the national and international activities of the CIb is very important.

#### Keywords:

Strategy, RIVM-CIb, infectious disease control, 2016-2021

## Publiekssamenvatting

### **RIVM-Centrum Infectieziektebestrijding Strategie 2016-2021**

In deze strategie staan de ambities van het Centrum Infectieziektebestrijding (CIb) voor de komende jaren beschreven. Het gaat hierbij om de veranderingen die het CIb noodzakelijk acht; het is niet zozeer een opsomming van activiteiten.

Dankzij inspanningen voor preventie- en vaccinatieprogramma's is er in Nederland relatief weinig ziekte en sterfte als gevolg van infectieziekten. Wel zijn er belangrijke uitdagingen. De opkomst van antibioticaresistentie is zorgwekkend en vraagt om een integrale en gecoördineerde aanpak. Daarnaast is het succes van het rijksvaccinatieprogramma (RVP) niet vanzelfsprekend: om het brede draagvlak onder ouders en professionals te behouden is het noodzakelijk dat om voortdurend te blijven investeren in het programma en de communicatie met professionals en het publiek.

Verder is het belangrijk inzicht te hebben in zoönotische bedreigingen (ziekten die van dier op mens overgaan). Ook is het aantal mensen met een seksueel overdraagbare aandoeningen bij 'hoogrisicogroepen', zoals prostituees en drugsgebruikers, gestegen waardoor inspanningen om ze te voorkomen belangrijk blijven. Om infectieziekten goed te kunnen bestrijden is het bovendien van belang inzicht te hebben in nationale en internationale trends en veranderingen op dit gebied.

In organisatorisch opzicht gaat het om een verdere verbetering van de structuur waarmee infectieziekten worden bestreden. Ten slotte is een goede wisselwerking van belang tussen de nationale en internationale activiteiten van het CIb.

#### Kernwoorden:

Strategie, RIVM-CIb, infectieziektebestrijding, 2016-2021



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# Preface

RIVM's Centre for Infectious Disease Control (CIb) celebrated its tenth anniversary in 2015. These were eventful years, not just for us, but for everyone working to control infectious diseases. In addition to unique challenges such as Q-Fever and the Mexican flu was the daily routine, including care for a safe and effective National Immunisation Programme (NIP), providing daily support for professionals throughout the country, and conducting scientific research to further improve control of infectious diseases.

The CIb is in good health. The combined expertise in the fields of disease control, epidemiology, microbiology and immunology enables a multidisciplinary approach to tackling problems in an integrated manner. Research conducted by the Ministry of Health, Welfare and Sport has shown that the national infrastructure combined with the supervisory role of the CIb are key elements in the ability to respond adequately to new threats posed by infectious diseases. The present disease prevention policies have resulted in significant health gains<sup>1</sup>.

Infectious diseases result in illness, death and associated costs, such as the costs of hospital admission. The infectious diseases burden in the Netherlands is relatively limited. This is due to the major efforts and successes of the prevention and immunisation programmes. Yet there are also worrying developments despite these successes. Growing antimicrobial resistance is considered one of the major threats to public health and modern medicine. Diseases such as pertussis, measles and mumps still occur, despite high immunisation rates. The flu remains an important cause of disease and death. In addition to seasonal influenza, the threat of an outbreak with a new, more serious strain remains. The number of patients with Lyme disease has grown explosively, as has the number of patients with a STI. The Q fever outbreak also demonstrates the need to remain alert for potential new problems developing in the Netherlands. The Ebola epidemic in West Africa illustrates the effects of globalisation.

Finally, the Salmonella outbreak caused by eating contaminated salmon shows how outbreaks get out of hand quickly and unexpectedly. In short: despite all of the health gains made in recent years, there is still enough work to be done. It should be noted that at the time of writing, the Netherlands is receiving a large number of asylum seekers. The stream of migrants and asylum seekers, and interventions aimed at diagnosing and preventing tuberculosis, contribute significantly to the epidemiology of certain diseases in the Netherlands.

We have identified a number of significant challenges for the near future. The rise of antimicrobial resistance is worrying and calls for an integral and coordinated action plan. In addition, the success of the NIP is not guaranteed: in order to maintain sustainable support from parents and professionals, it is necessary to continually invest in the programme and in communication with professionals and the public. In addition to providing support during outbreaks, preparing for future outbreaks is crucial. We do not do this alone, but in cooperation with other care professionals and organisations.

This plan describes the ambitions of the CIb for the period 2016-2021. It does not describe all of the activities during this period, but instead focuses on the required changes.

The RIVM strategy, the [RIVM2020 Road map](#), provides an overview of the overall mission and near-future plans of RIVM. This strategy also applies to the CIb, as part of RIVM.

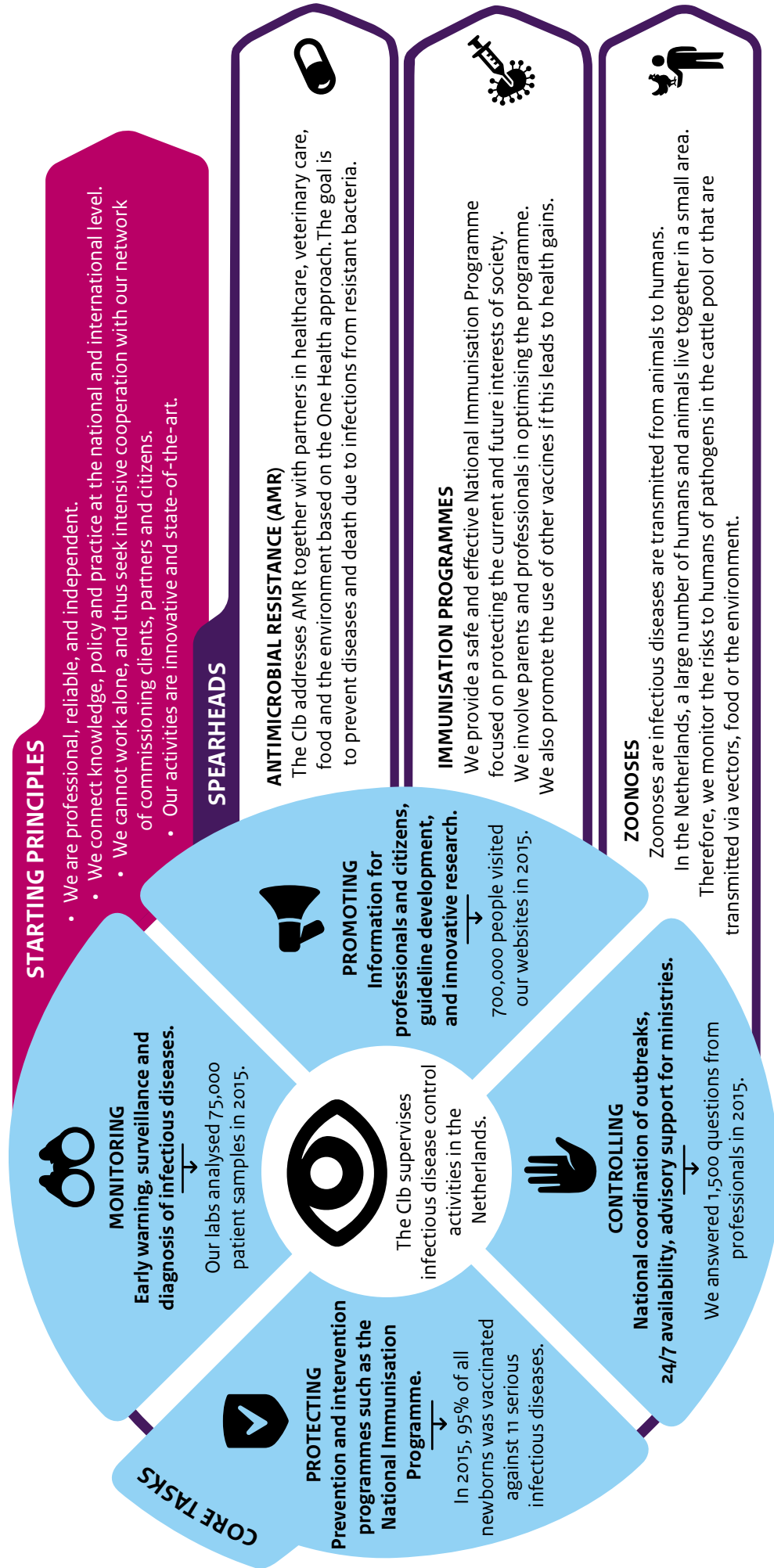
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<sup>1</sup> Van der Kemp, Linssen and Hollander. Disease prevention policy review. Panteia 2015.



# Centre for Infectious Disease Control (CIb) Strategy 2016-2021





1

# Working together on infectious disease



Monitoring, protecting, promotion and controlling: these are our core tasks. Infectious disease control is primarily executed within the regular health care system and by Municipal Public Health Services (GGD). The Clb supports and coordinates infectious disease control from a national and international perspective. In doing so, we contribute to reducing health problems due to infectious diseases.

Many parties are involved in the control of infectious diseases. We see ourselves as the linchpin in this network. We nurture strong relationships with commissioning clients, professional partners and the public.

### Our core values

Our expertise is our strength. In order to safeguard the quality of our work, we have carefully assessed what expertise will be required on the road to 2021. In order to answer the questions of our commissioning clients and society, we cooperate (internationally) with other knowledge institutions, attract new experts, and publish in peer-reviewed scientific journals.

We expect our researchers to be careful, reliable, verifiable, unbiased and independent in their work.

Independence is crucial for us. Our commissioning clients have no influence on the research methods and results of our studies. We report our research results publicly. In the event of a crisis, we assemble the Outbreak Management Team, which advises the Minister for Health, Welfare and Sport on necessary measures independently of political or governmental interests.

The Clb is a trusted advisor. This means that in addition to **expertise, reliability and independence**, we also strive to be **vigilant, aware of the environment, create connections, be entrepreneurial and serve the greater good**.

## 1.1 Together with our commissioning clients

We connect knowledge, policy and practice. The Ministry of Health, Welfare and Sport owns RIVM and is our most important commissioning client. It is our task to supply the Ministry with trusted, high-quality and timely advice. We thus make an important contribution to national policy.

We also work for the Ministries of Infrastructure and the Environment, Economic Affairs, Social Affairs and

Employment, Foreign Affairs, and Security and Justice. We also contribute to national and international research programmes and cooperate with international organisations such as the European Centre for Disease Prevention and Control (ECDC), the European Food Safety Authority (EFSA) and the World Health Organisation (WHO).

## 1.2 Together with professional partners

In order to remain effective in future, close cooperation with professionals such as general practitioners, hospitals and nursing homes will continue to be essential. Additionally, existing cooperation with institutions such as Municipal Public Health Services (GGD), laboratories and the veterinary field needs to be strengthened further.

### Municipal Public Health Services

A study by the IGZ in 2015 found that infectious disease control performed by Municipal Public Health Services is 'in order, but vulnerable'. The capacity for crisis management in the long-term was under particular threat. The staffing available to Municipal Public Health Services was often too limited to adequately fulfil all core tasks. The decentralisation of the social medicine field also resulted in Municipal Public Health Services taking on additional tasks, such as youth care. Combating antimicrobial resistance also requires additional efforts and expertise from Municipal Public Health Services. A follow-up study by the IGZ conducted in 2016 found this vulnerability had been greatly reduced. Reasons include improved cooperation within Municipal Public Health Services, and also with other Municipal Public Health Services and network partners. However, the IGZ concluded that additional tasks that are not legally mandated but do require time and effort, such as addressing antimicrobial resistance and current developments surrounding zoonoses, may result in new vulnerabilities. Thus, they expect Municipal Public Health Services will continue to call on us for support.

Municipal Public Health Services are increasingly making use of the public communication support provided by the Clb. Municipal Public Health Services websites often refer to the RIVM website. Curing crisis situations, communication with involved parties is often coordinated by the Clb. We are in constant dialogue with them and the Ministry of Health, Welfare and Sport in order to coordinate roles (at all levels) and tailor our methods to suit the situation.

### Goals

- In 2021, the Regional Physician Consultants (RPC) framework has been strengthened, with specific focus on antimicrobial resistance (AMR) and tuberculosis control (TB). RPCs ensure close cooperation between regions and with the Clb. They are employed by both Municipal Public



Health Services (GGD) and RIVM. They can be deployed to address specific themes, to implement interventions, and are available during crisis situations.

- In late 2016, a method was developed for mapping the Municipal Public Health Services need for communication materials, and is now fully implemented.

### The care sector

The borders between curative, long-term and public health care are blurring. Care institutions and medical specialists increasingly ask for our support, for example regarding risk assessment or crisis coordination. Network development and chain care is the political and professional motto for the future. In order to provide professional coordination and support, we strengthen the ties with the health care sector by appointing working clinicians as part-time employees within the Clb: internists with a specialty in infectious diseases, medical microbiologists, geriatrists, infection prevention experts, paediatricians and general practitioners. We do so in consultation with the professional organisations. We also work closely with advisory bodies, such as the Working Party on Infection Prevention (WIP) and the Dutch Working Party on Antibiotic Policy (SWAB) in order to harmonise control policies across various care domains.

### Goal

- In 2021, the Clb has sufficient in-house clinical expertise and capacity to provide added value and act as an authority in the event of infectious disease issues that threaten to disrupt health care systems. To do so, the Clb enters into cooperative agreements with professionals in all relevant areas of expertise (internal medicine, medical microbiology, occupational medicine, paediatrics, geriatrics, primary care and veterinary medicine). When recruiting new employees, we look for people with experience in curative or long-term care, where possible and relevant. In 2021, five dual positions will have been filled in addition to the five dual positions that already exist. We also provide training positions for residents specialising in Social and Health Medicine (Infectious Disease Control and Free Direction) and internships for residents in microbiology and internal medicine infectious disease specialists.

### Medical microbiology laboratories

Surveillance and control of most infectious diseases and antimicrobial resistance largely depends on diagnostic testing by medical microbiology laboratories (MML) The diagnostic testing by laboratories for patients in curative care used to be sufficiently broad to serve public health goals. However, the number of diagnostic tests has decreased. Due to the importance of diagnostic testing, the Clb supports a strong laboratory function in the domain of public health for laboratories in the field. The Public

Medical Microbiology Consultants (COM) is one of the frameworks that provides said support: medical microbiologists who work within laboratories with part-time appointment with the Clb. This helps us ensure knowledge transfer and contact between laboratories and the Clb.

In order to maintain efficiency, laboratories are merged and tasks are distributed to ensure concentration. This also occurs at the international level, with countries dividing reference tasks amongst themselves. The Clb strives to maintain and strengthen national and international reference tasks in the domain of infectious diseases. To this end, we continuously work to improve cooperation between laboratories, both within the Netherlands and abroad. We work to create a diagnostic network with full coverage. Laboratories in the field can make use of Clb laboratories for specialised diagnostic testing they cannot perform themselves. Additionally, specific reference tasks are assigned to other laboratories, the NRLs (National Reference Laboratories). The network is evaluated periodically. Assignment of reference tasks is done in a transparent manner.

The Clb laboratories are essential to our work, to address emergencies as well as perform routine work such as surveillance, monitoring and research. RIVM has formulated a **strategy** in cooperation with its commissioning clients that ensures the laboratories are retained, and agreements on sustainable funding are in place. The strategy includes elaborated plans to make more efficient use of the laboratories through more flexible deployment of staff and implementation of new technologies. The laboratories are also preparing for RIVM's relocation to the Uithof in Utrecht.

Clb has access to extensive and valuable biobanks, created over the course of many years. The Clb ensures the availability of material for research purposes, for example evaluation and improvement of vaccination programmes. The biobanks also allow us to participate in large national and international research consortia.

Developments in the field of biotechnology are very rapid, and their potential applications in the field of infectious disease control are legion. This will require investment in our laboratories, ICT and analytical capacity. We expect a great deal from next generation sequencing and bioinformatics with regard to elucidating transmission patterns, bioattribution and risk analysis. Furthermore, we must contribute to innovation by participating in national and European research projects.

### Goals

- The Clb provides a full-coverage network of laboratories for the benefit of public health.

- By late 2018, the laboratory reference network / tasks have been evaluated and adjusted as required.
- By late 2017, the national COM framework has been evaluated.
- A vision on next generation sequencing and bioinformatics has been formulated in 2017.

### Subsidy relationships

The Clb supports the activities of organisations that play an important role in infectious disease control and the promotion of sexual health via subsidies: Soa Aids Nederland, Rutgers, Stichting HIV Monitoring, HIV Vereniging Nederland, KNCV Tuberculosefonds, SWAB and WIP. Evaluation of subsidy policy found that organisations are generally satisfied with cooperation with the Clb. It also found that Clb should use subsidies to steer partner strategy and stimulate new initiatives.

#### Goal

- The Clb provides subsidies for achieving goals as formulated in this Strategy 2016-2021, with specific attention for antimicrobial resistance, sexual health, tuberculosis and hepatitis.

### One Health

The approach to complex issues such as antimicrobial resistance and preventing and controlling zoonoses requires broad cooperation between parties in human and veterinary health care, food and environment (One Health). The Clb is an associate member of the Netherlands Centre for One Health (NCOH).

#### Goal

- The Clb facilitates national and European networks of One Health professionals.

(→ see also chapter 4, ‘Zoonoses’)

### Universities and other knowledge institutions

Research is the foundation for all of our activities, both within priority areas and the Clb regular operations. The Clb conducts applied research. There is a greater focus on social sciences research, always attempting to build on existing expertise within various universities. We ensure our knowledge and expertise remain up-to-date by conducting research projects in cooperation with universities and other knowledge institutions. This allows us to make optimal use of the knowledge, experience and expertise of our partners, while safeguarding the quality of our own work. Our research is conducted independently of commercial or scientific interests. We conduct research in the interest of public health, driven by questions raised in the field and by policy.

#### Goal

- We work closely with leading universities and knowledge institutes in the areas important to us. This is reflected by the doubling of the number of Clb staff who have dual positions as university lecturers or professors, and the (research) projects we carry out together with universities.

### Occupational medicine

Occupational physicians and hygienists play a central role in prevention policy and raising awareness of infectious diseases in the workplace. However, employers are still insufficiently willing to invest in the expertise of these occupational health experts, and are often looking for information for their employees; this was illustrated during the Ebola epidemic and the recent rise in asylum seeker numbers.

#### Goal

- In 2021, there is a network of occupational health consultants for infection prevention and education. These consultants advise occupational health professionals and employees, particularly in the child care sector, schools, the agricultural sector, care institutions and companies who outsource their staff (abroad).

### Caribbean Netherlands and Caribbean provinces.

Since 2010, Bonaire, Saba and Sint Eustatius have been given the status of special municipalities of the Netherlands. Curaçao and Sint Maarten and Aruba are autonomous countries within the Kingdom of the Netherlands. The Clb supports infectious disease control on all islands, and has been in charge of coordinating international, cross-border infectious disease threats since 2015. The appointment of a RPC in the Caribbean Netherlands has made a significant contribution towards improving the quality of infectious disease control. A new generic testing method is being developed in cooperation with local Municipal Public Health Services, doctors and laboratories, which will allow infectious disease testing to be performed locally. Additionally, the Clb supports improving vector control and advising on improving water quality.

#### Goals

- The quality of infectious disease control in the Caribbean Netherlands and Caribbean provinces has improved thanks to close cooperation between the Clb and local Municipal Public Health Services, doctors and laboratories. This will enable the islands to meet the International Health Regulations (IHR) standards for quality and organisation of infectious disease control.
- The Serious Health Threats in the Caribbean Region protocol is implemented.
- In 2021, vector control is modernised and strengthened in a durable manner.

### 1.3 Relationship with the public

Communication with the public is a core task of the Clb. The messages and means of communications must be tailored to the target group(s) needs. In addition to sending information, communication is increasingly about dialogue with target groups, either directly or via the media. The Clb strives for an optimal online presence (monitoring and webcare) and accessibility. Additionally, we want to tailor our message for specific target groups. We also increasingly make use of serious games, apps, infographics, animations and short films in order to share our message more effectively, and have greater attention for international communication.

The work we do together with our partners, we do for citizens. We want to involve our target groups in our activities even more (citizen science). The effect of this approach is positive, as demonstrated by our communications about the NIP, where target groups are involved in order to improve the information provided.

The media knows to contact us in the event of an emergency. However, there are a large number of other subjects that deserve wider attention. We also want regular communication about the risks of infections in general, and

on specific topics such as diseases that can be prevented through vaccination, antimicrobial resistance, and zoonoses. We will deploy public awareness raising and scientific communication to achieve this.

#### Goals

- Our information and messages are clear, timely, reliable and easily found. We share information via our website, (social) media or by participating in meetings with target groups, and by publishing scientific articles.
- In addition to professionals, we involve citizens and/or patients in our activities.
- We publish at least ten articles in scientific supplements of newspapers or in (popular) science magazines.

### 1.4 Travel health advice

It is important that travellers receive clear information about infectious diseases risks abroad and vaccinations.

#### Goal

- We coordinate our recommendations with those of the Ministry of Foreign Affairs and other organisations, such as the National Center for Travel Advice (LCR).

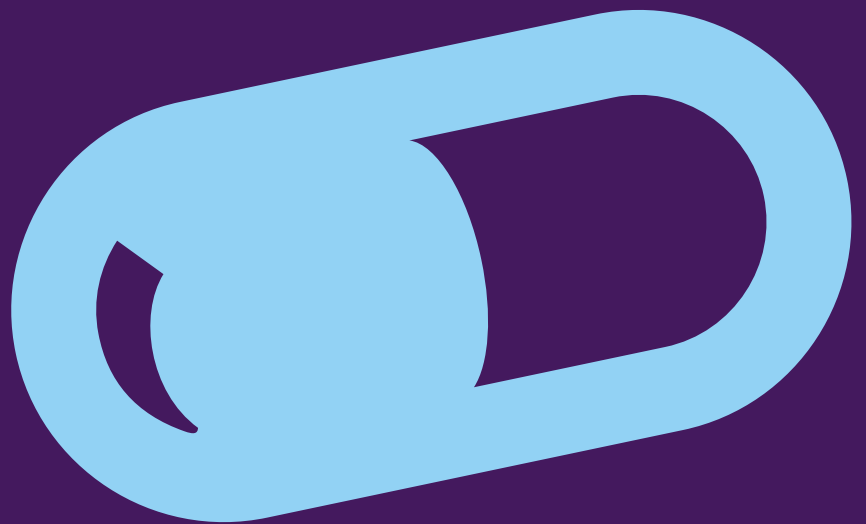
#### All goals pertaining to cooperation on infectious disease control

- The Ministry of Health, Welfare and Sport scores the Clb's activities with at least an 8 out of 10. (all years)
- In 2021, the RPC framework has been strengthened, with specific focus on AMR and TB.
- In 2021, ten working clinicians are appointed to the Clb part-time.
- By late 2018, the laboratory reference tasks have been evaluated and adjusted as required.
- By late 2017, the national COM framework has been evaluated. Based on this evaluation, an Action Plan is drafted in 2018/2019 in order to strengthen the COM structure.
- A vision on next generation sequencing and bioinformatics has been formulated in 2017.
- The Clb grants subsidies to achieve goals outlined in this Strategy 2016-2021 report and goals from the thematic national plans. (all years)
- The Clb facilitates One Health networks. (all years)
- In 2021, there is a network of occupational health consultants.
- In 2021, the number Clb staff with a position as a university lecturer or professor has doubled.
- The Caribbean islands meet IHR requirements. The Serious Health Threats in the Caribbean Region protocol is implemented. (all years)
- Our information and messages are clear, timely, reliable and easily found. We employ various resources to achieve this. (all years)
- In addition to professionals, we involve citizens in our activities. (all years)
- We publish at least ten articles in scientific supplements of newspapers or in (popular) science magazines. (all years)
- Our travel health advice is coordinated with advice issued by other organisations. (all years)



2

# Antimicrobial resistance



Growing numbers of bacteria are developing resistance to antimicrobials. This means some infections are difficult or impossible to treat. Therefore, antimicrobial resistance (AMR) is a worrying problem. In 2015, the cabinet presented a plan for an integrated approach to antimicrobial resistance. The goal is to prevent health damage and death due to infections with resistant bacteria wherever possible. To achieve this, the development and spread of (multi-drug) resistance must be strictly controlled, to ensure effective treatment of infections with antimicrobials remains possible in the future. The Minister for Health, Welfare and Sport, together with her counterpart at the Ministry of Economic Affairs, formulated goals for 2019 on preventing the spread of resistance, reducing healthcare associated infections, and minimising incorrect use of antimicrobials in human health care and cattle farming.

We consider it our task to coordinate the public health efforts in the Netherlands, in order to ensure a coherent, effective approach to the problem. The Clb cooperates with parties such as SWAB on improving AMR surveillance, improving infection prevention, and facilitating cooperation between institutions at the regional level. This requires organisational and financial agreements with partners in the field, investment in better ICT systems, and directed expertise development.

The underlying principle in prevention and reduction of AMR is the One Health principle: an integrated, national and international approach encompassing human, veterinary, food and environmental domains. Because antimicrobial resistance requires an international approach, we work closely with the ECDC, EFSA, sister organisations in other countries and the WHO. We share our expertise internationally, thus gaining insights that can be applied to improving the Dutch approach.

#### Goals

- The Clb safeguards the ability of parties involved in the public domain to contribute to the national approach to controlling AMR and facilitates decision-making at the administrative level.
- The Clb increases and integrates expertise on AMR, healthcare associated infections and antimicrobial use by offer medical specialists/experts (temporary) part-time appointments.
- The Clb provides improved multidisciplinary surveillance, guidelines and diagnostic testing for antimicrobial resistant micro-organisms that are indicative for the national situation.

## 2.1 Healthcare

The Netherlands performs relatively well where prevention of infections and antimicrobial stewardship are concerned. However, there is still room for improvement. A clear decision-making structure focusing specifically on AMR must be created. Regional care networks are being created that aim to improve cooperation between public healthcare and curative health care. Regional care networks are part of the national early warning and response structure.

#### Goal

- The Clb supports the organisation of regional care networks and creation of a national decision-making structure for AMR. This national structure must dovetail with existing decision-making structures in public healthcare.

## 2.2 Guidelines

Guidelines are an essential part of effective AMR policy. They guide the actions of care providers and professionals involved in AMR. Researcher by the Working Party on Guidelines appointed by the Ministry of Health, Welfare and Sport has indicated that hospitals and primary care have adequate guidelines in place on infection prevention, infectious disease testing and antimicrobial prophylaxis and therapy, which take controlling antimicrobial resistance into account.

However, guidelines on how to control outbreaks of multi-drug resistant organisms (MDROs) in specific intramural and extramural care institutions and for antibiotic stewardship outside of the hospital are still lacking. Under the guidance of the Clb, a multidisciplinary working party has drafted a MDRO guideline for long-term care institutions, home care organisations, handicapped care, (medical) day care organisations, and other public healthcare domains. This working party began development of a manual for controlling outbreaks of multi-drug resistant organisms in public healthcare in 2016.

## 2.3 Surveillance

Control of infectious diseases requires insights into who, where, when and why people become ill, and how an infection spreads. The Working Party of Surveillance, appointed by the Ministry of Health, Welfare and Sport, has drafted the outlines for a national surveillance system designed to map developments related to MDROs, healthcare associated infections and antimicrobial use in a coherent manner, in order to allow directed action.



The development of carbapenem-resistant bacteria (CPEs) will be mapped out first. Furthermore, agreements are in place about the participation of long-term care facilities in RIVM's national Early Warning meeting.

The NethMap/MARAN report provides an annual overview of antimicrobial use and antimicrobial resistance in humans and animals. Recent figures show that antimicrobial resistance has remained stable over the past years, but that so-called last-resort antimicrobials are being used slightly more often. Data from NethMap/MARAN will be used to determine how to achieve further improvements.

#### Goals

- The Clb coordinates the national (laboratory) surveillance network. The most valid and (cost-)effective method for using surveillance data for policy development and infection control is coordinated within this network: continuous national data extractions, regional and/or sentinel networks, and/or periodic surveys are used.
- In 2017, the newest point prevalence data for MDROs, healthcare associated infections and/or antimicrobial use in the general population, hospitals and nursing homes will be available.

## 2.4 One Health

In addition to the spread of AMR in and between care institutions, farm animals, pets, food and the environment play a role. The magnitude of this contribute to the burden of disease infections with MDROs in humans is currently unknown.

With respect to AMR, the Clb has access to a unique combination of knowledge about healthcare associated infections, infections and carriage in the general population on the one hand, and information about risks of transmission of resistance to humans from animals, food and the environment on the other. Integrated research will result in addressing knowledge gaps about transmission of resistance organisms. For example, a number of projects are examining the occurrence of AMR in humans who work and live in close proximity to animals. The effects of eating meat on carriage of AMR bacteria and potential sources, such as manure in waste water, are also examined.

#### Goals

- The Clb investigates the sources of and relative contribution these sources have to disease in humans caused by resistance pathogens.

## 2.5 International

AMR is a global problem. Because the Netherlands has a firm handle on its approach to AMR, it may play an important role in knowledge transfer to countries where it is a bigger problem. In order to effectively shape our efforts on the international stage, it is important to contribute to projects that fit our specific strengths wherever possible: surveillance of resistance and a One Health approach. For example, the current European surveillance networks ERAS-Net and CAESAR were both developed by the Clb. The Clb collaborates with the WHO as a Collaborating Centre for Antimicrobial Resistance Epidemiology and Surveillance and a Collaborating Centre for Risk Assessment of Pathogens in Food and Water. From these positions, we contribute to the WHO Global Antimicrobial Resistance Surveillance System (GLASS), CAESAR, the Tailoring Antibiotic Stewardship Programs and the WHO Global Action Plan on AMR in the domain of food and water.

During the period 2016–2021, existing bilateral cooperative agreements in the domain of AMR with China, Russia and India will be developed further. In 2016, the Clb made content-level contributions during the Dutch presidency of the European Union. The United States (USA) have taken the initiative for creating a common AMR policy with the Global Health Security Agenda (GHS). The Clb organised the first coordination meeting between institutes for public health across the globe for this initiative.

#### Goals

- Improving the international approach to antimicrobial resistance in cooperation with other countries. Expansion of activities in this domain will first be checked for alignment with existing activities and whether they meet the requirements defined for cooperation.
- The Clb's international activities are focused on the epidemiology and surveillance of AMR within the framework of One Health. The Clb shares knowledge through supranational, European and bilateral cooperation, thus contributing to achieving the Sustainable Development Goals.

### **All goals pertaining to antimicrobial resistance**

- In 2017, the national decision-making structure for AMR is in operation.
- In 2018, there is a manual for controlling MDRO outbreaks in public healthcare. In 2017, surveillance for CPE has been optimised.
- In 2017, the long-term care sector participates in the national Early Warning meeting.
- In 2017, new prevalence measures for MDROs, healthcare associated infections and antimicrobial use are available.
- The Clb investigates the sources of and relative contribution these sources have to disease in humans caused by resistance pathogens from a One Health perspective. (all years)
- The international efforts of the Clb focus on promoting surveillance and cooperation with professionals in human and veterinary healthcare. (all years)

3

# Vaccine-preventable diseases



### 3.1 National immunisation programme

The National Immunisation Programme (NIP) is an important pillar of the infectious disease control system in the Netherlands. The programme is extremely effective; most infectious diseases that can be vaccinated against have been reduced entirely or almost entirely. The Clb coordinates the implementation of the programme, monitors its safety and efficacy, and conducts research into new vaccines and improvement of the existing vaccination programme. The Immunisation and Prevention Programme Unit (DVP) provides the vaccines, programme registration and regional coordination and support for the implementation of the NIP. Within the context of the review of the Exceptional Medical Expenses (AWBZ) Act, the responsibility for the implementation of the NIP will shift from the national government to municipal governments as of 1 January 2018. The Clb and DVP will support municipalities, youth health service organisations and municipal healthcare organisations through this transition.

The vaccination coverage among the Dutch population is high, as is the willingness of parents to have their children vaccinated. However, it is important to continue working on public support. Because infectious diseases that can be vaccinated against have largely disappeared from the Netherlands, parents are no longer familiar with the diseases and are unaware of how serious they can be. This places a spotlight on the side effects and possible disadvantages of vaccinating. In order to maintain support for vaccination, clear, trusted and nuanced information provision is important, both via the media and during personal conversations between parents and those responsible for implementing the programme. The Clb aims to support the people having the conversations with parents who have questions about the usefulness and necessity for (some) vaccinations in the NIP.

#### Goals

- Intensifying cooperation, among other things via a stronger NIP meeting with all parties involved in the NIP, such as youth health services, paediatricians, parents, people who reject (some) vaccinations, Municipal Public Health Services, municipalities, and by organising vaccination consultations for parents with youth health services. The Clb aims to support this in a number of ways: responding to (incorrect) reports in the media via the website in a timely and adequate manner, more explicitly (using images and personal stories) drawing attention to the diseases the vaccines aim to prevent, and by indicating the health benefits obtained by vaccination.

### 3.2 Vaccination care and lifetime sustainability

There are vaccines available in the Netherlands in 2016 that have not been included in public immunisation programmes, but that may be useful for specific high-risk groups, such as rota virus vaccinations for infants and shingles vaccinations for the elderly. The Minister for Health, Welfare and Sport has decided use of these vaccines should be promoted. The Health Council of the Netherlands and the National Health Care Institute (ZiN) are working together to advise the Minister of whether or not to include individual vaccinations in public immunisation programmes or to have them covered by basic health insurance. The Clb will contribute relevant research and experience to this effort.

The NIP is executed by Municipal Public Health Services and Mother and Child Care clinics. Expertise about vaccinations among GPs, paediatricians and other medical specialists is relatively limited. Therefore, the Clb has drafted vaccination guidelines that are available from the NIP website. The Clb can also be contacted by professionals who have questions. The Clb provides information for the public.

#### Goals

- The Clb provides up-to-date information on available vaccines and their implemented, tailored to the professional groups.
- The Clb also provides information to citizens, with special attention for high-risk groups.
- The Clb monitors attitudes and vaccination willingness among professionals and the general public.

### 3.3 Research for improving the NIP

We conduct research in order to further improve the NIP and vaccinations for (future) target groups such as the elderly, pregnant women, (premature) infants and adolescents. For example, we examine how the programme can be implemented with the smallest possible number of injections and injection moments. We research vaccine failure in later life in order to obtain answers about how infectious diseases can sometimes occur in vaccinated individuals. We give special attention to vulnerable groups in our research. This research provides better insights into the function of the immune system during the course of a lifetime and in specific groups (such as the elderly or pregnant women). This research will allow us to protect them even better. In order to tailor research for vulnerable groups in particular, we focus on technological innovation

in order to allow more tests to be performed with smaller blood volumes. We also invest in the development of research methods designed to provide a better answer to the question of how well and how long a person is protected for. We also conduct research into specific effects of vaccination based on the question: 'What else does a vaccine do with the immune system other than what it was intended to do?' In a time when defence against infectious diseases depends on vaccination, not on natural contact with the pathogen and contracting the disease, immunity after vaccination can fade over time, and booster vaccinations may be required. We attempt to predict what may happen with immunity and infectious diseases in the future, and what interventions may be able to prevent diseases using modelling. In addition to the research conducted within the NIP, which is focused primarily on children at this time, research is also conducted into flu vaccination against circulating viruses, development of immunity, disease symptoms and the effect of vaccination.

The Health Council and ZiN are working together to advise the minister on which vaccines can be used in what way. In order to accelerate the advisory process, the Clb has taken on the task of providing the Health Council with the most recent scientific information. This information is publicly accessible. The Clb is actively involved in national and international congresses on vaccines, and actively participates in the WHO, ECDC and other national and international (research) consortia. In some cases, the Clb participates in public-private partnerships, following careful assessment. We cooperate nationally and internationally with universities and other knowledge institutions. The Clb organises an annual NIP research day about the current studies being conducted within the Clb, and the 'VastePrikdag', a continuing education day for people who execute the NIP. Vaccination research is funded by the Ministry of Health, Welfare and Sport, the Netherlands Organisation for Health Research and Development (ZonMW) and with international or European funding.

#### Goals

- The Clb conducts surveillance and research in order to optimise the NIP and vaccination in vulnerable groups such as the elderly.
- The Clb cooperates nationally and internationally with universities and other knowledge institutions.
- The Clb will support the Health Council and ZiN in advising the Minister.

### 3.4 The immunisation status of the population of the Netherlands

In 2016, the large-scale PIENTER project was launched for the third time (previous instalments took place in 1995 and 2005). PIENTER 3 is a study examining the immunisation status and susceptibility to infections in more than 8,000 people throughout the country. What's new in the third PIENTER project is examination of the incidence of bacteria (the human microbiome) and the occurrence of AMR in the general population. The results are important for providing timely insights into new developments and for identification of known and new vulnerable groups. An adjusted PIENTER project will be launched for the inhabitants of the Caribbean Netherlands and Caribbean provinces, and among asylum seekers in the Netherlands, aimed at examining protective antibodies and microorganisms with antimicrobial resistance.

### 3.5 Tuberculosis

Tuberculosis is well-controlled in the Netherlands, thanks to an excellent prevention and treatment programme. The goal for the next five years is to reduce the number of tuberculosis patients by 25 percent, and in doing so contribute to reducing transmission of tuberculosis. The most important new intervention for achieving this goal is screening immigrants and asylum seekers who enter the Netherlands for a latent tuberculosis infection and, if an infection is detected, treating as many as possible. The National Tuberculosis Control Plan 2016-2020 outlines the measures that will be required in the next five years to further improve tuberculosis control in the Netherlands. The plan has been drafted by the Clb in collaboration with the KNCV Tuberculosis Fund and organisations involved in tuberculosis control. The plan contributes to achieving the WHO goal of reducing the number of people with tuberculosis worldwide by 90 percent by 2035. This goal is part of the Global End TB Strategy of the WHO, to which the Netherlands agreed in 2014.

### **All goals pertaining to diseases that can be prevented with vaccination**

- In 2017, a strengthened NIP Meeting is in place. In 2019, advice provided to parents about their child's participation in the NIP has improved.
- The Clb responds to reports in the news media, the Internet and social media in a timely and adequate manner. (all years)
- In 2017, the responsibility for executing the NIP transitions smoothly to municipal governments.
- In 2018, we provide professionals and the general public information about all relevant vaccines.
- We organise an annual NIP research day and the 'VastePrikdag'. (all years)
- In 2017, collection of human study materials for PIENTER 3 is completed. The NIP can be optimised based on these results.
- The National Tuberculosis Control Plan 2016-2020 is executed, and the goals formulated therein are achieved.



4

# Zoonoses



In the Netherlands, a large number of humans and animals live together in a relatively small area. Furthermore, the Netherlands is an important agricultural trade and transit centre. This means we must keep a close watch on pathogens that are found in cattle farming and pose a threat to human health. Additionally, there is the risk of pathogens that may be transmitted from wild animals via vectors such as ticks and mosquitoes, via food, or the environment. This includes known pathogens responsible for a significant burden of disease every year, such as Salmonella, Campylobacter and Toxoplasma. It also includes new infectious diseases for which animals are an important source of contamination. In recent years, the rise of Q fever, cattle MRSA, bird flu and hepatitis E in the Netherlands has followed this pattern. New threats in Europe are expected to come from wildlife and via vectors. For example, exotic mosquitoes that enter the country via international transportation are a risk for the introduction of new infectious diseases to the Netherlands. Cattle farming is also an important reservoir due to the very high population and cattle density in our country. Therefore, zoonoses are one of our spearheads.

#### 4.1 One Health

The issues surrounding zoonoses require an integrated approach, involving partners in veterinary medicine, food, the environment and nature. This cooperation is the foundation for the national structure for early warning and controlling (emerging) zoonoses, and is conducted under the auspices of the Clb. There is a monthly zoonoses Early Warning meeting (SO-Z) with Municipal Public Health Services, animal health services (GD), Wageningen Bioveterinary Research (WBVR), the faculty of veterinary medicine of Utrecht University, the Dutch Wildlife Health Centre and the Netherlands Food and Consumer Products Safety Authority (NVWA). The Clb also contributes to various international projects in the field of zoonoses, including cooperation with the ECDC, EFSA, WHO, World Organization for Animal Health (OIE) and the Food Agricultural Organization (FAO). The Clb participates in international and regional One Health networks and in scientific and societal One Health initiatives.

##### Goal

- The Clb strengthens cooperation with national and international knowledge partners in the veterinary, food, nature and environmental domains, among other things by taking the lead in the development of a Horizon 2020 European Joint Program in the field of One Health. The Clb is responsible for setting the strategic research agenda, which is drafted in cooperation with public and veterinary health institutes in sixteen European countries.

#### 4.2 Pathogen surveillance and source attribution - new technologies

Whole genome sequences (WGS) will shortly replace many methods for pathogen typing. This is a growing international trend the Clb intends to follow in order to modernise and further improve pathogen surveillance. WGS offers new possibilities for surveillance, determining the relative importance of reservoirs, detection of (diffuse) outbreaks, source identification and risk analysis. The Clb will invest in knowledge development for the processing, analysis and interpretation of WGS data using bioinformatics. Additionally, the Clb will facilitate improving ICT capacity for data storage and data management. The Clb has already developed platforms for sharing molecular and epidemiological data (NoroNet, HAVNET) for a number of pathogens (norovirus, hepatitis A and E virus) and is currently developing a platform for psittacosis that allows data sharing between human and veterinary medicine. A real-time surveillance system based on WGS will be deployed for, among others, Salmonella, Listeria and STEC. We will work together with NVWA, WBVR and regional laboratories, and further strengthen our international cooperation with the ECDC and EFSA.

##### Goal

- The Clb implements real-time WGS-based pathogen surveillance with a link to food and veterinary fields.

#### 4.3 Infectious disease risks from nature

Three quarters of new infectious diseases threats have zoonotic origins, and new infectious disease threats in Europe are expected to come primarily from wildlife and via vectors. In recent years, the Clb has invested in the creation of surveillance systems for wild animal populations, such as rodents and carnivores, vectors, and exotic animal species that occur in the wild or are kept as household pets. Recently, a risk assessment was performed in cooperation with WBVR and NVWA for live imported exotic animals that are kept as pets. The recent increase in zoonoses related to wild animals or vectors, such as tularaemia and leptospirosis, has also raised new ecological questions. Answering these questions requires cooperation with parties in the field of nature and wildlife management. We are conducting research into ticks and tick-borne diseases in cooperation with nature and landscape managers, and this cooperation will be expanded to include other field parties. The burden of disease and societal cost of tick bites and Lyme disease were recently mapped. The focus is on (clinical) research into the incidence and causes of long-term Lyme-related symptoms and improvement of laboratory testing, in order to enable the development of

new prevention and treatment strategies. The role of co-infections and other tick-borne diseases is also being examined.

#### Goals

- We are conducting research into the relationship between nature-related infectious diseases risks and nature management and policy, and involve disease-ecological research in wildlife-related infectious diseases issues.
- The Clb is focused on reducing the burden of disease of Lyme disease. This is achieved through (clinical) research into, among other things, the incidence and causes of long-term Lyme-related symptoms, in order to enable the development of new prevention and treatment strategies. The role of co-infections and other tick-borne diseases is also being examined.

### 4.4 Infection risks from cattle farming

An ongoing pathogen surveillance programme commissioned by and conducted in cooperation with the NVWA is focused on zoonotic pathogens in cattle farms. Additionally, since 2014, the Cattle Farming and Health of Local Residents (VGO) project has been studying health complaints of local residents and exposure to pathogens and substances released into the air from cattle farms.

#### Goal

- The Clb conducts research into the risks of infectious diseases in cattle farming that can be used to formulate policy.

### 4.5 Infection risks from food

Food-related pathogens, including *Campylobacter*, *Salmonella* and *Toxoplasma*, cause a significant burden of disease each year. Measures must be taken to reduce the burden of disease. For example, the Clb calculates the effect introduction of hygiene protocol in the poultry industry would have on the presence of *Campylobacter* in the meat, and the costs associated with such a protocol. For *Toxoplasma*, the Clb is examining intervention measures and is conducting a societal cost-benefit analysis. Based on the rise in the number of hepatitis E infections in the Netherlands, the Clb is conducting research in order to identify sources and transmission routes, and molecular data are studied in order to determine clustering.

#### Goal

- The Clb conducts research into cost-effective intervention measures to reduce the burden of disease caused by food-related pathogens.

### 4.6 Environmental changes

Changes to the environment and nature can affect the burden of disease caused by zoonoses. Population growth, urbanisation, climate change, cattle farming, globalisation, innovation or human intervention in our environment can all have an effect.

#### Goal

- The Clb develops methods for quantitative assessment of the consequences of environmental change for the burden of disease due to zoonotic infectious diseases, and provides instruments to policy makers and citizens, such as the water quality check for sustainable innovations in urban areas, and the Q fever based transmission model for pathogens in the environment.
- The Clb conducts research into the possibilities for prevention and intervention measures for exposure to manure and waste water, and advises (local) policy makers and citizens.

### 4.7 Risk assessment

Zoonotic risks are charted based on quantitative risk assessments. Options for interventions are translated into DALYs (Disability Adjusted Life Years) using QMRA (Quantitative microbial risk assessment), which can be used as input for societal cost-benefit analyses and uncertainty analyses. QMRA will also be used to fine-tune source attribution for estimation of the burden of disease due to food-borne infections. In addition to the calculated risk, the perceived risk in society plays an important role when assessing risk.

#### Goal

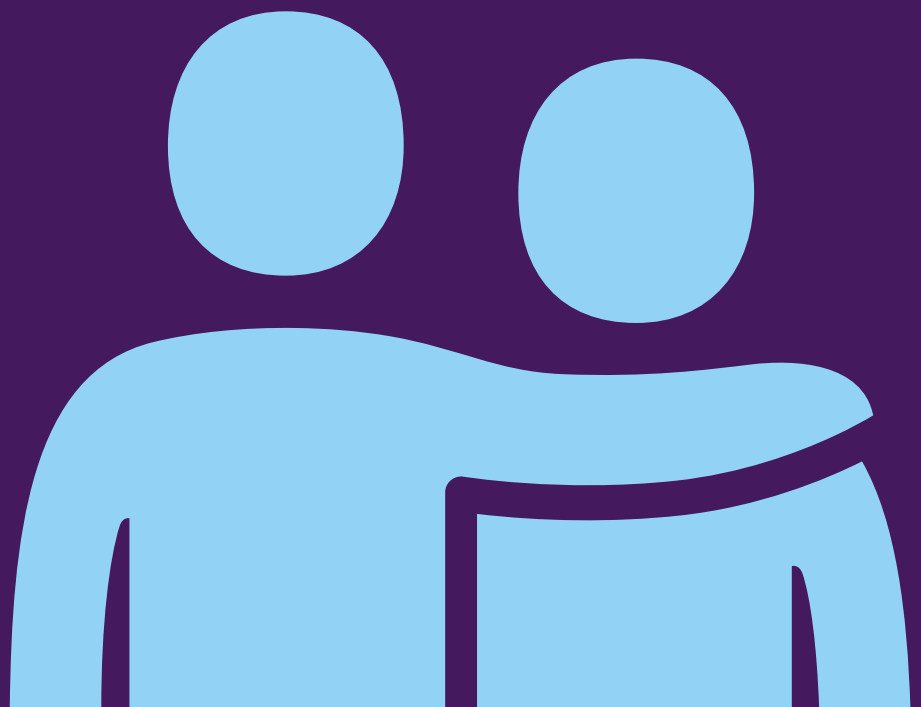
- We improve our risk assessments by providing options for risk management, societal cost-benefit analyses and uncertainty analyses. Additionally, where possible, the risk estimate is combined with gaining insight into risk perception.

### **All goals pertaining to zoonoses**

- We strengthen the One Health network at regional, national and international levels and assume a leading role in the European Joint Program in the field of One Health.
- We invest in WGS and the associated bioinformatics capacity.
- We involve parties involved in nature management and policy-making in our activities.
- We strive to reduce the burden of disease of Lyme disease.
- We increase insight into the health risks of intensive cattle farming and the possibilities for reducing them.
- We look for cost-effective measures for further reducing the burden of disease caused by food-related infections.
- We conduct research into the effects of environmental changes and the options for reducing the associated negative effects.
- We increase the usability of our analyses by expanding them to include cost-benefit analyses, uncertainty analyses, and insight into risk perception.

5

# STI/HIV and sexual health



The Dutch population is in relatively good sexual health. The approach to sexual rights, sexual freedom and the resources available in the Netherlands are highly regarded internationally. Despite this, STIs and HIV among so-called high-risk groups (ethnic minorities from countries where HIV is endemic, men who have sex with men (MSM), prostitutes and drug users) still cause a significant burden of disease. A new STI/HIV and sexual health policy plan is a translation of, among other things, the goals set by the WHO for 2030 for the Dutch situation. The policy plan helps us coordinate the activities of all involved parties and improve prevention. It includes improving coherence between public health and the curative sector, and supporting primary care.

We have a clear picture of the prevalence of STIs and HIV among high-risk groups. However, we are still uncertain of how often STIs occur in the rest of the population. We hope to gain a better view of this by conducting periodic cross-sectional studies and use of big data, for example from laboratories and insurance companies. We also conduct research into interventions and the cost-effectiveness thereof. Timely insight into trends and outbreaks is

essential for prevention and control. The threat of resistance development, particularly for gonorrhoea, is cause for continuous alertness. Integrated surveillance in the form of the Gonococcal Resistance to Antibiotics Surveillance (GRAS) is essential to this effort.

As the coordinating party, we work closely with our subsidy partners (Soa Aids Nederland, Rutgers, Stichting Hiv Monitoring and Hiv Vereniging Nederland) and other parties (particularly in informal care, primary care and secondary care) in order to optimise control of STIs and HIV and promote sexual health. We do so among other things by organising peer quality visitations at the Sexual Health Centres (CSG) of the Municipal Public Health Services. We also stimulate the CSGs to look for innovative and cost-saving methods. Various e-health interventions are currently being studied in pilot programmes and implemented nationally. Quality indicators are being developed in collaboration with professional groups in order to ensure the quality of these interventions. Growing decentralisation means Municipal Public Health Services need to generate attention for the subject of sexual health. We support Municipal Public Health Services in this effort.

## Goals

- In 2018, a new national sexual health plan is ready. This plan is the guiding document for granting subsidies to subsidy partners.
- In 2018, a cross-section study has provided insight into the prevalence of STI and HIV in the general population.
- In 2019, we have access to anonymised data from laboratories and insurance companies in order to gain better insight into the prevalence and incidence of STI/HIV.
- We organise peer quality visitations for CSGs at Municipal Public Health Services. (all years)
- In 2021, various e-health interventions have been studied in pilot programmes and implemented nationally. Quality indicators for these interventions have also been developed.



# 6

## Preparedness and response



Infectious diseases can be unpredictable. Therefore, it is important to be prepared for all kinds of situations and have the ability to respond swiftly. The outbreaks and threats in recent years (such as measles, MERS and Ebola) have shown that the structure for disease control is largely in good shape, but that there is always room for improvement. Municipal Public Health Services are in charge of day-to-day control activities. They work together with professionals within the region (medical microbiologists, general practitioners and hospitals). The Clb is in charge of national coordinating, and applies guidelines on how to deal with a patient with an infectious disease, advises on how to control an outbreak, and provides information to the public and professionals. National manuals have also been drafted that may be revised following the evaluation of every outbreak, as required.

## 6.1 Preparedness in the curative sector

The results of the multi-year study of indicators for effective preparedness will be included in our plans and manuals. Additionally, we continue to research bottlenecks in the field. Research results are used to draft new or improved manuals and facilitate exercises.

A new future direction is coordination with preparedness in curative care. We gain insight into the intramural crisis management structure and analyse the curative preparedness and response network. We identify the stakeholders for a number of crisis situations, and identify potential connecting points with public health.

### Goals

- The Clb strives for uniform preparedness for infectious disease outbreaks and threats among Municipal Public Health Services and care institutions. In 2021, all bottlenecks at the national and regional level will be identified and translated into exercise that will be conducted and evaluated.
- Generic preparedness will be strengthened through connection with the curative preparedness network. In 2021, the manual for, among other things, group A diseases with a national impact will be revised based on experiences with MERS-CoV and Ebola. In 2021, we will have developed a model for improving the speed of responses to emergencies under major time pressure by directly being able to contact all involved organisations.

## 6.2 Real-time monitoring of contacts for A-diseases.

The situations surrounding MERS-CoV and Ebola have made it clear there is no existing information structure available for monitoring patient contacts and generating a real-time overview of the health situation of patient contacts. The Clb shall develop an improved computer application for this, coordinating its efforts with municipal health services. This improved information exchange between Clb and Municipal Public Health Services can also be used for verifying warning signs from e.g. the media, from a Municipal Public Health Service or from abroad.

### Goal

- In 2021, a real-time monitoring overview for group A disease contacts is available. Warning signs can be verified faster and better by connecting with existing Municipal Public Health Service registration systems.

## 6.3 Information exchange within the Clb and with the field

Sharing information within the Clb is critical for effective outbreak investigations and a rapid response. The outbreak of Salmonella Thompson in salmon showed that response can be improved through better internal data links between Clb centres. Limitations to data links will be identified and resolved where possible.

### Goal

- In 2021, an information exchange programme is in place between microbiological laboratories, Municipal Public Health Services and the Clb for outbreak investigations and monitoring the effect of the response.

## 6.4 Real-time social media monitoring

Insight into the public's risk perception in the event of (a risk of) infectious disease is critical to the Clb's efforts to correctly time adequate educational information. Good monitoring of opinions and (social) media trends is necessary to achieve this.

### Goal

- In 2021, (social) media will be monitored adequately in real-time in order to gauge the information needs of the general public where infectious disease threats or outbreaks are concerned. A strategy has also been developed for crisis communication.

## 6.5 Multidisciplinary guidelines

Guideline development is increasingly a multidisciplinary process. This means contents are tailored to the needs of clinicians and patient organisation representatives. Additionally, there will be greater attention for guideline implementation, as there are still gains to be made in this area and new technologies are becoming available for this purpose. Finally, guidelines will be supplemented with patient experiences.

### Goal

- In 2021, all Clb guidelines will be developed in a multidisciplinary manner with structural attention for guideline implementation.

## 6.6 International

In the Netherlands, we have developed a system where content-level risk assessment by experts during a crisis is performed independently from political and administrative decisions about measures to be taken. In this model, aspects related to medical content are first assessed

separately, which allows a rapid response and decisions to be made based on factual information. We strive to implement this approach within the European Community.

The WHO has asked the Clb for assistance in reviewing the IHR Monitoring & Evaluation (M&E) system in Europe. The Clb is exploring the possibilities for creating a Collaborating Centre Preparedness together with the WHO Europe. There is a greater focus on evaluating the functionality of early warning and evaluation structures for infectious diseases. Evaluations will be performed within the context of the JEE (Joint External Evaluation) using an instrument consisting of the GHSA tool (Global Health Security Agenda) and the IHR core capacities tool (International Health Regulations). Evaluations will be performed by international experts, and be made public. The Clb participates with experts in these international evaluations.

### Goal

- In 2021, the Clb support the WHO as Collaborating Centre Preparedness in the review of IHR M&E procedures, the development of the JEE (Joint External Evaluation) tool and the application thereof in international evaluations.

### All goals pertaining to preparedness and response

- We are improving our own preparedness and facilitate the improvement of preparedness of municipal health services and curative care.
- We are developing an application to support the follow-up of contacts of people with a serious infectious disease during crisis situations.
- A system will be created for information exchange between Municipal Public Health Services, microbiological laboratories and the Clb to support outbreak investigations and monitor the effects of measures.
- We will monitor (social) media and the public's information needs to better address information needs.
- In 2021, guidelines will be developed in a multidisciplinary manner an implementation will be improved.
- We support the implementation of IHR as a WHO Collaborating Centre.



# 7

## Early warning and surveillance



Good insight into trends and changes in the incidence of infectious diseases and timely identification of outbreaks is essential for the control of infectious diseases. The purpose of (early) identification and surveillance is to understand and (visually) present (changes to) transmission and risks as quickly and adequately as possible to allow measures to be taken and (new) interventions to be developed, deployed and evaluated. For example, we observed elevated mortality during the flu season in recent years, a rise in hepatitis E infections, a drop in rota virus infections, pertussis outbreaks and syphilis clusters. We also promote the importance of early identification for public health by providing education to medical professionals in training. In 2012, in addition to the central weekly early warning meeting (SO) and the monthly Zoonoses early warning meeting (SO-Z), a monthly Healthcare Associated Infections and Antimicrobial Resistance early warning meeting (SO-ZI/AMR) was created. Dual appointments for working clinicians and researchers in human and veterinary institutions provide a multidisciplinary perspective and analysis of data. Insight is required into the risks of infectious diseases due to increasing use of medication such as statins, antacids and immune suppressants.

Knowledge development is needed regarding the relationship between infectious diseases and chronic diseases, and calculation of the potential health gains of infection prevention or interventions such as microbiome modulation. Additionally, we are working towards harmonised outcome measures for burden of disease. This will allow the burden of disease for various infections to be measured in the same manner, and provides insights into where the greatest avoidable burden may be found. A uniform burden of disease calculation facilitates (comparative) cost-benefit analyses for interventions designed to reduce burden of disease. We are developing new analysis and visualisation methods in order to interpret and make increasingly complex big data more accessible. This allows us to connect epidemiological, molecular and clinical data in existing surveillance systems. To this end, we will collaborate more closely with organisations such as the Statistics Netherlands (CBS) and Nivel (Netherlands institute for health services research), which collect and process relevant data, and make agreements about data sharing and analysis. We strive to ensure an open data policy where possible. Data are used to support choices by professionals and individuals, for example based on risk profiles.

## Goals

- Share data more rapidly in order to improve early warning and surveillance of infectious diseases and risk factors.
- Strengthening the existing early warning meetings through targeted evaluations, while seeking to further improve cooperation with professionals in the field.
- In order to improve rational decision-making, we focus on independent analysis of costs and effects of interventions and the development of comparable outcomes for burden of disease.
- In 2021, legally mandated surveillance tasks are embedded more strongly in the Public Health Act, while safeguarding the need for transparency and data accessibility as well as the protection of citizens' and institutions' privacy. This legal embedding is of major importance for more efficient, timely data linking between municipal health services, general practitioners, hospitals, long-term care institutions and laboratories.
- In 2021, the digital Infectious Diseases Atlas includes interactive maps for all infectious diseases under surveillance about incidence and prevalence of these infections in The Netherlands.

# 8

## International cooperation



The quality of public health is not the same everywhere. Situations in other countries can represent a threat to the health of Dutch citizens. Therefore, it is important that we keep apprised of developments in other countries and make our expertise available. Furthermore, Dutch membership in the European Union (EU) and the United Nations (UN) entails obligations. We contribute to the Dutch interpretation of these agreements.

We are the focal point for the WHO and ECDC, and participate in the EU-wide Early Warning and Response System. In doing so, we contribute to international infectious disease control efforts. We collaborate with international partners in various research programmes and are members of various expertise networks. This provides us with access to the experience and expertise of international partners against which we can measure our own knowledge and skills. International cooperation and coordination are prerequisites for the success of our work.

However, the international playing field is large and we cannot do everything alone. We need to make choices. These choices are guided by two questions:

1. How can our international activities bolster our national commitment and mission?
2. Considering the national mission and commitment, where does the international world need our contribution, participation and expertise?

We choose to concentrate our international efforts in areas that also hold our interest at the national level, namely antimicrobial resistance, vaccine-preventable diseases and emerging diseases/zoonoses. In terms of knowledge exchange and joint research, we primarily work with British, German, Belgian, French and Scandinavian sister institutions and with European countries and European partners, such as the ECDC, the EFSA, the European Commission and WHO Europe. Additionally, we conduct activities within the context of existing bilateral agreements between the Dutch government and China, India and Russia. We want to further develop our global health activities. The Netherlands has a 'development relationship' with the Caribbean nations, Suriname, South Africa and Indonesia, making these partners the obvious choice for developing our activities. Our existing cooperative venture with Ethiopia and Gambia will also be continued.

We realise that the possibilities for international activities are also strongly driven by the (changing) priorities of our national and international commissioning clients. Therefore, flexibility remains crucial in order to continue addressing problem and opportunities as they present themselves. A current [overview](#) of our international project is available on our website.

## Goals

- We strengthen our European network in the areas of antimicrobial resistance, vaccinations and emerging diseases/zoonoses via working visits to sister institutions and shared research projects designed to exchange knowledge and expertise.
- We provide the Dutch implementation and contribution to international obligations, such as the IHR and agreements on infectious disease control on an international and European level.
- We maintain good, functional relationships with sister institutions and European authorities.
- Our international activities are focused on priority areas and priority partners.
- Among other things, we strive to implement twinning projects, among other things through our involvement with the Ministry of Foreign Affairs' international agenda.



# List of abbreviations

AMR	Antimicrobial resistance
AWBZ	Dutch Exceptional Medical Expenses Act
CAESAR	Central Asian and Eastern European Surveillance of Antimicrobial Resistance
CBS	Statistics Netherlands
CIb	Centre for Infectious Disease Control
COM	Public Medical Microbiology Consultants
CPE	Carbapenemase Producing Enterobacteriaceae
CSG	Centre for Sexual Health
DALY	Disability-Adjusted Life-Year
DVP	Immunisation and Prevention Programme Unit
EARS-Net	European Antimicrobial Resistance Surveillance Network
ECDC	European Centre for Disease Prevention and Control
EFSA	European Food Safety Authority
EU	European Union
FAO	Food Agricultural Organization
FD/UU	Faculty of Veterinary Medicine/Utrecht University
GD	Veterinary Health Service
GGD	Municipal Public Health Services
GHSA	Global Health Security Agenda
GLASS	Global Antimicrobial Resistance Surveillance System
GR	Health Council of The Netherlands
GRAS project	Gonococcal Resistance to Antimicrobial Surveillance
IGZ	Health Care Inspectorate
IHR	International Health Regulations
JGZ	Child and Youth Health Services
LCR	National travel health advice centre
M&E system	Monitoring & Evaluation system
MDRO	Multidrug-Resistant Microorganisms
MERS-CoV	Middle East Respiratory Syndrome-coronavirus
MML	medical microbiology laboratories
MSM	men who have sex with men
NIP	National immunisation programme
NIVEL	Netherlands institute for health services research
NVWA	Netherlands Food and Consumer Products Safety Authority
OIE	World Organization for Animal Health
PIENTER project	Survey of Vaccination Effect in the Netherlands for the Assessment of the National Immunisation Programme
QMRA	Quantitative microbial risk assessment
RIVM	National Institute for Public Health and the Environment
RPC	Regional Physician Consultants
SO-Z	Zoonoses early warning meeting
SO-ZI/AMR	Healthcare Associated Infections and Antimicrobial Resistance early warning meeting
SWAB	Dutch Working Party on Antibiotic Policy
TB	Tuberculosis
UN	United Nations
USA	United States of America
VGO project	Animal husbandry and Health of Local Residents
WBVR	Wageningen Bioveterinary Research
WGS	Whole genome sequencing

WHO  
WIP  
ZiN

World Health Organization  
Working Party on Infection Prevention  
National Health Care Institute

# Erratum

'RIVM Centre for Infectious Disease Control Strategy 2016-2021',  
rapportnummer 2017-0104.

The report incorrectly lists drug users as high risk group for sexually transmitted diseases on pages 4 and 32. Furthermore, MSM is a high risk group, but is mistakenly not reported on page 4.

In addition, the report contains a consistent translation error. 'Cattle' should be read as 'livestock'.

Voor akkoord, 12 oktober 2017

Prof.dr. J.T. van Dissel  
*Directeur Centrum Infectieziektebestrijding*



.....  
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