

## Administrative agreements on antibiotic resistance in healthcare

### Introduction

Antibiotics are primarily needed to control bacterial infections. Additionally, antibiotics are indispensable for safety in daily medical procedures such as surgery, dialysis, organ transplants and chemotherapy. Antibiotic resistance is considered one of the greatest threats to public health. In the Netherlands, where physicians generally exercise care and restraint in antibiotic prescription, the number of resistant bacteria also is increasing. More and more, the emergence of antibiotic resistance within and outside of the Netherlands is giving rise to infections for which treatment is becoming increasingly difficult or in some cases even impossible<sup>1</sup>. This impacts patients directly, but also has severe consequences for public health.

Bacteria with multiple antibiotic resistance will spread (unnoticed). Exposure does not always lead to infectious disease, but people may become carriers and contaminate others unnoticed, setting off a snowball effect. Carriership is identified only as a result of active screening. Spread may lead to a permanent presence of the bacteria in, for example, healthcare institutions. This has a negative impact as these institutions accommodate large vulnerable groups and vulnerable people have the highest risk of developing infectious diseases.

It is therefore vital to prevent antibiotic resistance (ABR) and to contain it when it emerges. Essentially, the ABR approach is based on three principles: (1) preventing the emergence of resistance (by effective health education and prevention of infectious diseases by the public, prudent use of current antibiotics and measures such as antibiotic stewardship), (2) timely and reliable detection of resistant bacteria, and (3) preventing the spread of (resistant) bacteria.

To prevent spread at an early stage, resistant bacteria should be identified at an early stage (real-time surveillance). As soon as resistant bacteria are identified, measures can be taken to contain the spread where possible, thereby preventing permanent establishment. Measures will depend on the setting in which carriers or infected patients are situated. People can be nursed or cared for in isolation, protective clothing can be worn in home care situations, and non-urgent surgery could be postponed. Information to and involvement of the public/patients is essential in this respect. The public are currently still largely unaware of this problem and the impact of infection. The level of information to the public will need to be improved.

Infection prevention and antibiotic policy have long been a focus in healthcare. This is particularly true in institutions. The reports of the Healthcare Inspectorate (IGZ) on hospitals and nursing homes indicate the situation must and can be improved. Some institutions have active and effective policies in place for infection prevention and containing the spread of resistant bacteria. Others, however, are as yet too passive. Additionally, new threats are now imminent. Infections caused by carbapenem-resistant bacteria can no longer be treated. The prevalence of these bacteria is relatively high in many countries worldwide. Repatriates from a foreign hospital unknowingly carry the resistant bacteria with them, thereby continually increasing the risk of introduction in Dutch healthcare institutions. Furthermore, HRMO may spread not only within, but also between institutions. It is essential that patients with resistant bacteria be followed between the various healthcare domains and healthcare institutions.

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<sup>1</sup> In other countries, such as Germany and Belgium, HRMO infections are becoming notably more frequent ([www.ars.de](http://www.ars.de)). The German federal state North-Rhine Westphalia, with a population size similar to the Netherlands, annually reports well over 1100 cases of MRSA blood infections, whereas there are less than 40 such infections in the Netherlands. Another comparison involves *Clostridium difficile*. This pathogen is currently associated with an annual mortality of 30,000 people in the US. Based on extrapolation to the Dutch situation, this would come to some 1600 deaths, whereas estimates do not exceed 120.

An issue is that the level of cooperation between institutions and between the various sectors in healthcare is not yet such that containment of resistance can be guaranteed in the future. As a basic precondition for successful protection against infections of individuals and populations, all stakeholders contributing to patient care must cooperate seamlessly in a way that transcends individual institutions. Hospitals, nursing homes, rehabilitation clinics and other care providers, such as GPs, home care, Municipal Health Services (GGDs) in a region among whom patients are moved relatively frequently, will have to collaborate in a network as one unified whole. Only this will enable effective containment of the spread of infectious diseases and ABR.

Steps must also be taken in the field of surveillance. The effective control of infectious diseases requires timely and adequate knowledge as to who is sick where, when and why, and how the underlying infections spread. Adequate and correct diagnostics are essential. Such structured understanding requires integrated real-time surveillance, and has been designated as an essential priority in the WHO Global Action Plan. The information on risks to health and healthcare from the existing surveillance systems in the Netherlands is currently provided too late and too fragmented to serve as a basis for effective proactive policies, both on a national and regional level.

(Financial) considerations between public interest in general on the one hand and the interests of individual carriers/patients and healthcare institutions on the other are also relevant. There should be a focus on the optimal collection, standardisation and interpretation of information; information which in part is already being collected at various locations. Centralised coordination is indispensable in this respect in order to transcend the current fragmentation.

Actors in healthcare recognise and confirm the problems and urgency, and have confirmed their willingness to work together on finding solutions that encompass the entire scope of the healthcare system. This has resulted in a joint mission and six goals. Actors emphasise the importance of adequate policy-making in other domains, such as food, animals, environment and water and the interrelation with healthcare and healthcare abroad.

The government also recognises this importance, which is why a broad antibiotic resistance containment strategy was opted for.

In the veterinary sector, for all species, there will be a focus on (1) a reduction of all antibiotic use, (2) a total ban on the most critical antibiotics: the "last resort antibiotics", (3) an aggressive strategy to contain carbapenem resistance in cattle farming (precautionary measure from a health perspective) and (4) the development of additional policy.

The transmission of antibiotic resistance in food-borne bacteria is associated with various factors, including antibiotic use in animal farming. Studies are being initiated of the transmission of antibiotic resistance in food-borne pathogens to humans. In view of the international nature of the food industry, measures in the field of slaughter hygiene, more stringent monitoring, but also the formulation of standards for e.g. carbapenem resistance, will be formalised at a European level also. These items are put on the agenda of the various European and global committees. In conclusion, there will be an action plan to formulate containment measures, both in terms of spread from human healthcare to the environment and spread from cattle farming to the environment.

To achieve the mission and goals for public health and healthcare, a joint multi-annual agenda has been drawn up. The multi-annual agenda including concrete agreements has been attached to this document.

Stakeholders have the ambition to pursue the mission, goals and resulting multi-annual agreements. However, if in time it becomes evident that achieving one or several of these goals is unrealistic, or if the various working parties provide timely indication that a course adjustment is needed, it may be justified to deviate from these agreements. The Ministry of Health, Welfare and Sport, in consultation with the stakeholders, will make the needed adjustments.

Stakeholders<sup>2</sup> will focus on the following mission and goals:

**Joint mission:**

*"Avoidable harm and mortality among patients due to infections caused by resistant bacteria must be prevented wherever possible. To this end, the further development and spread of (multi)resistance must be controlled as completely as possible, in order to ensure that effective treatment of infections with antibiotics remains possible in future."*

**Goals**

Stakeholders agree to the following goals:

- 1) A significant further reduction in the emergence and spread of multiresistant bacteria in healthcare becomes visible during the next five years. Developments abroad (e.g. Germany and Belgium) will serve as a frame of reference. A relevant benchmark will be developed to this end<sup>3</sup>. This applies to both carriers of and infections with resistant bacteria.
- 2) Early detection of and swift response to resistant bacteria and other infectious threats ensure that the number of carriers<sup>4</sup> of resistant bacteria and the number of infections and deaths due to antibiotic resistance in the Netherlands will remain at the current level or decrease (demonstrably).
- 3) During the next five years, international cooperation with other EU countries regarding ABR will be promoted, in order to realise an infrastructure that allows for the joint control of the development and spread of antibiotic resistance.
- 4) The number of avoidable healthcare-associated infections<sup>5</sup> will be reduced by 50% in five years across the entire healthcare chain, relative to a baseline determined with the stakeholders. Differences between healthcare domains and practice variation within each domain will be taken into account.
- 5) The possibilities for effective treatment of patients with infections caused by resistant bacteria will not diminish further during the next five years.
- 6) During the next five years, a reduction of at least 50% in the use of incorrectly prescribed antibiotics across the entire healthcare chain will be the objective, relative to a baseline determined with the stakeholders. Differences between healthcare domains and practice variation within one domain will be taken into account. Further agreements between the stakeholders will be based on the baseline assessment. It is important to consider agreements about prescription behaviour within the context of care quality; both overtreatment with antibiotics and undertreatment will be taken into consideration.

**Multi-annual agreements**

In order to realise the above goals, activities must be initiated at various levels and agreements made on responsibilities and coordination:

- At a national level
- At the level of regional cooperation
- At the level of individual healthcare institutions and care providers (e.g. home care and GPs)

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<sup>2</sup> All stakeholders have indicated they agree with the formulated mission and goals, although a number of stakeholders can only formally give administrative approval to the implementation of the administrative agreements after the summer.

<sup>3</sup> <http://www.efsa.europa.eu/en/efsajournal/doc/4006.pdf>

<sup>4</sup> **Carriership:** not all carriers of resistant bacteria will develop an infection.

<sup>5</sup> A **healthcare-associated infection** (formerly: hospital infection) is an infection that develops during a hospital stay or treatment in a care institution (hospital, nursing home, independent treatment centre). [source: <http://www.nationaalkompas.nl/gezondheid-en-ziekte/ziekten-en-aandoeningen/infectieziekten-en-parasitaire-ziekten/zorginfecties/wat-zijn-zorginfecties-en-welke-factoren-beinvloeden-de-kans-op-zorginfecties/>]

To this end, stakeholders have formulated a 'Multi-annual agenda for antibiotic resistance in healthcare', containing clear agreements. This agenda emphatically focuses on improving collaboration between public healthcare and primary, secondary, and long-term care. It also contains sector agreements. The multisector themes focus on:

1. Organisation and collaboration in the healthcare chain
2. Guideline development
3. Monitoring
4. Inspection
5. Funding
6. Involvement of the public

### **Financing**

It is currently difficult to say which financial means are required to realise the programme's mission and goals. Working parties will formulate proposals for the desired approach, including corresponding budgets. The Ministry of Health, Welfare and Sport will consider working party proposals and ensure the availability of sufficient financial resources. The Ministry of Health, Welfare and Sport assumes that other stakeholders are also willing to invest in this programme.

### **Organisation**

Working parties have already started their activities in various areas (see attachment 2 for content and initiators). The Ministry of Health, Welfare and Sport will ensure good connectivity, effectively aligning the various themes and activities.

Working party progress will be reviewed periodically in consultations with all relevant stakeholders under the direction of the Ministry of Health, Welfare and Sport. Additionally, progress will be discussed and final decisions made in administrator consultations which will be held about 3 times each year.

The main responsibilities of these working parties are as follows.

- ❖ The network structure working party:
  - Defines the network performance profile: (1) the tasks of the network, (2) who has which responsibility, (3) which are public tasks and which tasks belong to the curative domain, (4) and which data are required in order to have insight into a fully patient-following system.
  - Prepares an inventory of agreements to be made on the implementation of infection-preventing measures (who, what, how, where, when)
  - Develops a set of measures for adequate infection prevention
  - Facilitates the implementation of these measures in the field
  - Ensures alignment of guidelines and surveillance with the needs and possibilities of stakeholders in the field.
  
- ❖ The guideline working party:
  - Delivers an action plan in 2015 on formulating broadly accepted multidisciplinary and evidence-based guidelines, including their organisational and financial feasibility. This will include the roles and programmes of existing organisations developing guidelines, such as the infection prevention working party WIP, the antibiotic policy working party SWAB, and the Dutch College of General Practitioners NHG. Provides an overview of sector standards and guidelines that have priority for amendment or revision, and indicates where new guidelines are needed.
  - Starting 2017, updates the guidelines on the basis of surveillance and other data.

- Ensures alignment of guidelines with the needs and possibilities in the field by alignment with the network structure working party.
- ❖ The surveillance working party:
  - Carries out the baseline measurements referred to in the goals.
  - Reports the results of a feasibility study of a national interactive surveillance system for antibiotic resistance and use in 2016.
  - On the basis of the feasibility study and progress in current systems, submits proposals for next steps, including legal and technical aspects involved, in 2016.
  - Formulates a proposal for the monitoring of antibiotic stewardship.
  - In the meantime, promotes the use of current surveillance systems to pursue the above goals.
  - Ensures that surveillance is aligned with the needs and possibilities in the field by alignment with the network structure working party [and also the veterinary sector].

For the other working parties (funding, inspection, public involvement), detailed agreements will still need to be formulated. The Ministry of Health, Welfare and Sport will take the initiative for this.

### **Need for governance**

The need to contain antibiotic resistance brings professionals and institutions with various roles and responsibilities together. It is important that participants from knowledge(science?), surveillance, policy and healthcare, which for a large part are self-regulating, continue to interact. Confusion about who interacts with whom and why, causes delays and is inadvisable in view of the urgency of the problem at hand. It is therefore important to strive for an effective governance model in which stakeholders understand each other and jointly reach effective decisions. Knowledge (e.g. of the prevention of highly resistant microorganisms [HRMO], risk factors), the joint implementation of measures addressing cost considerations, the current healthcare system, and awareness of stakeholders, and inspection play a logical and important role in this. The Ministry of Health, Welfare and Sport will draft a governance model proposal in 2015 and align this with stakeholders.

### **Administrative burden**

In the entire process, the administrative burden involved in certain measures will be considered, and efforts will be made to limit this burden as much as possible.