Ministry of Food, Agriculture and Fisheries of Denmark
Danish Veterinary and Food Administration

The Danish Veterinary and Food Administration

National Action Plan Against Antimicrobial Resistance in Animals and Food

2024–2027

Contents

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Danish Veterinary and Food Administration • Stationsparken 31-33 • DK-2600 Glostrup
Tel +45 72 27 69 00 • Fax +45 72 27 65 01 • CVR 62534516 • EAN 5798000986008 • email@fvst.dk • www.fvst.dk

1 Introduction

Antimicrobial resistance (AMR) is a growing global problem, that threatens the health of both humans and animals and affects the environment. Therefore, AMR should be addressed from a 'One Health' perspective across the veterinary, human and environmental sectors.

This action plan continues the efforts against AMR in animals and in food along the whole chain from farm to fork in the period 2024–2027. The plan covers both the use of antibiotics in livestock, legislation on biosecurity in livestock housing facilities and the monitoring of antibiotic resistance in livestock and in food.

This is the third national action plan from the Danish Veterinary and Food Administration (DVFA); the first plan was launched in 2017 at the same time as Denmark's national One Health Strategy Against Antibiotic Resistance. All objectives in the DVFA's second action plan (2021) have either been achieved or are continued in this plan.
The DVFA continuously monitors implementation of the measures in the action plan.

2 Background

In order to limit the development of resistance to antibiotics, the use of antibiotics must be reduced as the use of antibiotics develops, promotes and maintains antibiotic resistance.

Since the 1970s, the DVFA and the agricultural industry have focused on producing healthy livestock and have initiated disease control programmes leading to the eradication of a number of diseases in livestock production such as Infectious Bovine Rhinotracheitis and Bovine Viral Diarrhoea. The current PRRS reduction plan is a similar example. Since the 1990s, focus has also been on the risk of developing antibiotic-resistant bacteria. Since 2010, the DVFA has intensified its efforts against AMR through, among other things, a joint antibiotic and resistance action plan, a 2015 action plan to combat livestock-associated MRSA, Political Veterinary Agreement II and III, and Political Food Agreement 4.

The importance of national action plans against AMR is also key in the World Health Organization's (WHO) 'Global Action Plan on Antimicrobial Resistance'; in the World Organization for Animal Health's (WOAH) 'Strategy on Antimicrobial Resistance and the Prudent Use of Antimicrobials'; and the EU action plan, 'A European One Health Action Plan against Antimicrobial Resistance (AMR)'. The EU action plan is a pan-European implementation of the "Global Action Plan on Antimicrobial Resistance". Denmark's national 'One Health Strategy Against Antibiotic Resistance' was developed in collaboration between the health, food, and veterinary authorities.
The implementation of this One Health strategy by the DVFA is described both in the two previous national action plans against AMR and in this third action plan.

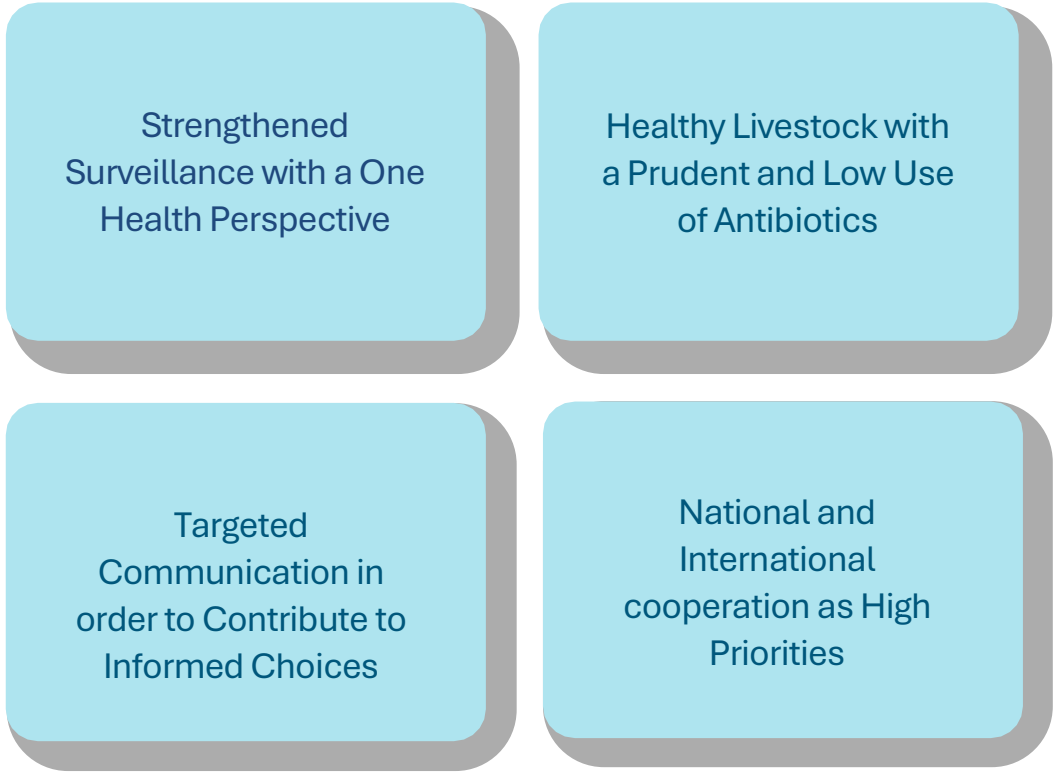
Most recently, on June 11 2024, the Danish Parliament unanimously entered into a Food and Veterinary Agreement that provides direction for the efforts to combat AMR in the period 2024 to 2027. The DVFA will continue initiatives aimed at reducing, regulating, and monitoring antibiotic consumption and resistance, promote biosecurity and hygiene measures and demonstration projects aimed at initiatives to reduce antibiotic consumption. In addition, focus is on healthy animals, and both known and novel alternatives to antibiotics, including their effect and how they can be promoted.

3 Vision for the action plan

The Danish Veterinary and Food Administration's vision for this action plan is to prevent the occurrence of resistant microorganisms in animals and food in order to ensure effective treatment of microbial infections in humans and animals.

4 Focus Areas in the action plan

The action plan pinpoints four overall focus areas:



Each of these overall focus areas will be described in more detail below

5.1

Strengthened Surveillance with a One Health Perspective

The Danish Veterinary and Food Administration will strengthen the surveillance of use of antibiotics and resistance levels in both animals and food in order to support both current and future initiatives, and to assess their impact. Surveillance should be seen in an overall perspective, and it is important to have valid data in order to make informed decisions about future efforts and to manage legislation in the best possible way.

Objectives for a strengthened surveillance:

- To maintain the comprehensive surveillance of AMR in food and livestock with an increased focus on the use of whole genome sequencing (WGS).
- To maintain or, if possible, reduce the low occurence of resistant bacteria in food with a focus on bacteria resistant to critically important antibiotics for human treatment.
- To improve/optimise the surveillance of antibiotic use and improve data quality so that data can be targeted for use by decision-makers and national controls.
- To increase the availability of data on use of antibiotics for use in research.
- To increase insight into the level of resistance in pathogenic bacteria in animals.

5.1.1
Maintain comprehensive surveillance of resistance in food

The DVFA will continue to follow up on surveillance results with measures to maintain the low prevalence of antibiotic resistance and to keep up with new trends.

The prevalence of resistant bacteria in livestock and food is monitored continuously. EU regulation provides for a harmonised monitoring of resistance in livestock and food in the EU. Denmark supplements this monitoring to ensure that relevant livestock and foods are monitored yearly. In addition, during the current surveillance period, the EU will conduct a number of baseline studies: for example, of livestock-associated MRSA in pigs and resistance in aquaculture animals. The results of the surveillance initiatives and the baseline studies will provide us with knowledge of the general situation in the EU and Denmark, so appropriate measures can be initiated.

5.1.2
Continued reporting of data to DANMAP

The DVFA will continue to contribute data to the overall reporting on antibiotic use and resistance in livestock, food and diagnostic samples in Denmark reported in DANMAP. This work is carried out in cooperation with the Technical University of Denmark (DTU) and Statens Serum Institut (SSI).

The DVFA uses the integrated surveillance in DANMAP to identify future focus areas and risk-based surveillance. DANMAP plays a key role in terms of following and capturing trends, and comparing the development of resistance and consumption in animals and food with the development in humans. The DANMAP report is published annually on: www.danmap.org

5.1.3
Optimising surveillance of antibiotic use and resistance

The DVFA will work to optimise and complement the current surveillance of antibiotic use and resistance with the following actions in 2024–2027:

Better data at animal species level

The DVFA will support the work on the new requirement to notify the EU of the use of antimicrobial medicines for animals at species level. This enables a more detailed comparison of the Danish veterinary use of antibiotics with countries which Denmark is commonly compared to.

Since January 2022, EU countries have been required to monitor the use of antibiotics for livestock at species and herd level. From 2027 onwards, antibiotic use data for horses must also be reported to the EU. Thus, from January 2026, veterinarians are required to report data on this use to VetStat. The DVFA will also begin the work of preparing for the collection of data for dogs and cats in order for this data to be reported to the EU from 2029.

Increased use of WGS in resistance monitoring in Denmark and the EU

The DVFA will work towards making it possible to use DNA-based methods to an even greater extent than today in the EU – through a revision of the EU Implementing Decision 2020/1729/EU. Increased use of DNA-based methods in resistance surveillance both in Denmark and in the EU will provide a more detailed data basis for decision making. In addition, Denmark is a pioneer when it comes to using DNA-based analysis methods for surveillance, and will continue to investigate how this can be strengthened and improved.

Calculation in doses as a supplement to kilograms

In the future, the DVFA will ensure that the calculation of used antibiotics for pigs is supplemented by a calculation of use in doses, so it can be related to the population, and thus provide insight into the development of treatment intensity.

Antibiotic use has so far been calculated as the total amount of kilos of active substance per animal species. Calculations by animal species must be differentiated in relation to age groups in order to provide a more complete overview of how antibiotics are used in herds. Given that the greatest share of total use is registered for pigs, there is a special focus on development in this area.

5.1.4
Continued surveillance of antibiotic use in VetStat

The DVFA will continue to use VetStat as a basis for further development of initiatives to monitor and regulate the use of antibiotics in livestock production, focusing particularly on herd treatment and antibiotics that are critically important for the treatment of humans.

Since 2000, the VetStat database has facilitated real-time surveillance of the use of medicines for animals in Denmark, providing insight at both herd and animal species level. VetStat also forms the basis for Denmark's duty to report the use of antimicrobial drugs for animals to the EU, and the veterinary use of antibiotics in the DANMAP report.

5.1.5
Research-based surveillance of AMR in food and animals

Surveillance of livestock-associated MRSA in production animals

The DVFA continues surveillance on livestock-associated MRSA according to national legislation. The surveillance is planned in a way that allows all relevant categories of production animals to be examined over a four-year period. Knowledge about the prevalence of livestock-associated MRSA is important for protecting humans, as the bacteria can lead to incurable blood infections. Surveillance enables the health care system to provide guidance on protection against livestock-associated MRSA to relevant citizens: e.g. individuals regularly in contact with a livestock species with a high prevalence of the bacterium. Likewise, hospital-acquired infection infections can be reduced if animal contact and MRSA status are known. Surveillance of the occurrence of livestock-associated MRSA in each animal species can also form the basis for management in animals, if necessary.

Monitoring AMR in livestock pathogens

The DVFA, in collaboration with the University of Copenhagen and Statens Serum Institut (SSI), will develop and optimise the existing monitoring programme for antimicrobial resistance in livestock pathogens. This can form the basis for assessing and managing the risk of development and spread of resistance to ensure effective treatment and low antibiotic use.

As part of the monitoring, targeted sample collection from selected animal species and WGS is used on selected clinical strains. The monitoring includes, among other things, resistance in bacteria from milk samples collected for mastitis testing, as well as resistance data for the most common pathogens in pigs.

Risk assessment tool for the discovering of critical resistance in food

The DVFA has a special focus on resistance to antibiotics which are critically important for the treatment of humans and will during the period between 2024- 2027, work to update, refine, and implement the model, that the Technical University of Denmark developed for the DVFA in 2020. The model can assess the risk of critical resistance found in food and ensure the uniform handling of any findings.

Research into 'Pen-side diagnostics'

As part of their public sector services, the DVFA will ask the University of Copenhagen and SSI to carry out a number of projects to develop and elucidate improved methods for the diagnosis of infectious diseases in pigs.

5.2

Healthy Livestock with a Prudent and Low Use of Antibiotics

The DVFA will continue its focus on healthy livestock with a prudent and low use of antibiotics – for the sake of animal welfare, to ensure sustainable Danish agriculture and to safeguard human health. In this work, veterinary practitioners play a key role as primary advisors to the Danish farmers.

Since the end of the 18th century, there has been a focus on eradicating specific infectious livestock diseases. In 1999, Danish farmers succeeded in phasing out antibiotic growth promoters by focusing on animal health, preventing infections and a robust production.

Objectives for a and prudent and low use of antibiotics:

- To reduce the consumption of antibiotics in pigs by the end of 2027, to the politically set target in the Food and Veterinary Agreement of an 8% reduction, based on the 2018 level
- For production animals, to maintain the low use of antibiotics that are critically important for treating humans (2023 level).

5.2.1
Further development of the supervision of veterinarians

The DVFA will focus on developing the supervision of veterinarians by expanding the use of data in VetStat: e.g., for benchmarking veterinarians' use of antibiotics, as well as identifying prescription patterns in the use of certain antimicrobial drugs and metaphylaxis. These topics can be included in the professional dialogue between the DVFA and veterinarians as part of the supervision through knowledge sharing and nudging.

The technical development that can enable benchmarking of veterinarians will require separate funding and it has been decided in the political Food and Veterinary Agreement that a feasibility study will be initiated, during period of the agreement, to estimate the costs involved in this development.

5.2.2
Improvement of the biosecurity out of and into livestock herds

The DVFA will initiate a project on biosecurity, which, amongst other things, will review legislation in the area and make knowledge more accessible to everyone. This will apply both internally in the DVFA and externally for advisors (e.g. veterinarians) and for operators responsible for biosecurity in a company, whether it is a herd, a slaughterhouse or an owner of a companion animal (e.g. a dog or a cat).

5.2.3
Evaluation of the rules on veterinary advisory service contracts for pigs and cattle

As part of an evaluation of the rules for veterinary advisory service contracts, the DVFA will examine whether the rules can be revised in order for them to support a more prudent use of antibiotics.

The advisory service contracts provide herd managers with a number of options to treat their animals with antibiotics themselves. When prescribing medicine for herd treatment the veterinarian must prepare an action plan together with the herd manager on how to lower medicine use in the future.

5.2.4
Investigation of the possibility of increased tax on antibiotics

With the help of external partners, the DVFA will investigate the possibility of increasing the taxes imposed on the use of antibiotics, or creating a further differentiation of the tax structure to support the responsible use of antibiotics for animals.

For a number of years, there has been a greater tax on the use of antibiotics than other veterinary medicine. There is also a differentiation, making it more expensive to use antibiotics that are critically important for the treatment of humans.

5.2.5
Medication control in herds with a targeted effort in relation to guidance

In 2024, the DVFA will carry out a prioritised medicine control for pig, cattle and poultry herds with high antibiotic use. This control effort is planned to be expanded in 2025–2027, combined with targeted information on antibiotics and resistance development for herd/flock owners and veterinarians.

The control focuses on the correct use, handling, and administration of antibiotics in relation to instructions, regulations, and herd/flock diagnoses prepared by veterinary practitioners. The aim is to promote the prudent use of antibiotics in herds/flocks and, if possible, reduce use. The control will provide general guidance on the responsible use of antibiotics in relation to hygiene, efficacy in relation to dose, routes of administration and development of resistance. On the basis of control in herds/flocks, veterinarians who prescribe medicine for herds/flocks could be designated for control. The focus of this veterinary control will be medication and health advice based on observations and findings in herds/flocks, focusing on antibiotic use and antibiotic treatment regimes.

5.2.6
Continuing active cooperation with The Danish Advisory Committee on Veterinary Medicine

The DVFA will continue to work actively with The Danish Advisory Committee on Veterinary Medicine to qualify and develop new measures and, as far as possible, translate them into action. As stipulated in the political Food and Veterinary Agreement, this will include the possibility of adjusting the 'Yellow Card'.

The work of the advisory committee is to contribute to the DVFA continuously development and refinement of methods to reduce antibiotic use. The DVFA provides administrative services for the Advisory committee, which has come up with a number of recommendations for reducing the consumption of antibiotics and for handling of livestock-associated MRSA in various animal categories where the incidence has been above 10% at herd level.

5.2.7
Strengthened dialogue with the industry on management

The DVFA will strengthen the ongoing dialogue with the industry on methods in production that can help reduce the use of antibiotics – partly through existing dialogue forums and partly through independent initiatives.

It is well known that good livestock management, including employees' awareness of their own behaviour, is an essential parameter for biosecurity in herds. Effective biosecurity can reduce the use of antibiotics, since fewer diseases mean less need for treatment.

5.2.8
Support further reduction of antibiotic use for production animals

In accordance with the political Food and Veterinary Agreement, the DVFA will initiate efforts to support a further reduction of antibiotic use towards 2027. This includes a lowering of the threshold values in the Yellow Card scheme, with special priority on piglets, updating the DVFA's antibiotic guidelines, and investigating alternatives to antibiotics.

5.3

Targeted Communication in order to Contribute to Informed Choices

The DVFA will strengthen communication with consumers, stakeholders, and producers on existing and new measures to reduce AMR. This will enable veterinarians and farmers to make informed choices when treating their animals, and provide consumers with an informed basis for choosing meat at retail.

Objectives for targeted communication:

- To strengthen the level of knowledge about the use of antibiotics and on resistance.
- To enable veterinarians and farmers to make informed choices when treating their animals, and to provide consumers with an informed basis for choosing meat at retail.

5.3.1
Update of guidelines on antibiotics for pigs and cattle

The DVFA will update guidelines using the latest knowledge about antibiotic treatment for infectious diseases in pigs and cattle. The guidelines are based on an evaluation of effect and risks, and must be prepared on the basis of assessments from experts in the field. Important stakeholders, such as the Danish Veterinary Association, will be consulted to ensure anchoring in the industry, and the DVFA will disseminate knowledge of the guidelines through dialogue and cooperation with the industry.

The guidelines will be targeted at veterinary practitioners. The update is intended to ensure that veterinary practitioners have the best possible basis for making decisions about effective antibiotic treatment while at the same time counteracting the risk of developing resistance.

5.3.2
Update of information on antibiotic resistance on FVST.dk

The DVFA will review, update and further develop current information on AMR on its website fvst.dk in 2024-2027 to boost the level of information.

5.3.3.
Continuation of the livestock-associated MRSA Advisory Service

In accordance with the political Food and Veterinary Agreement, the DVFA will continue the livestock-associated MRSA Advisory Service, which has existed since mid-2014, to guide, advice and educate both healthcare personnel, citizens and professionals associated with pig production about livestock-associated MRSA.

5.3.4
Continuation of the livestock-associated MRSA hygiene course

The DVFA will continue the livestock-associated MRSA hygiene course to ensure that persons handling live pigs are aware of biosecurity in relation to livestock-associated MRSA, so that livestock-associated MRSA does not spread to the surrounding community.

5.4

National and International Cooperation as High Priorities

The DVFA prioritises to disseminate the Danish experiences with other authorities and organisations, while also learning from other countries that have found good solutions in the fight against AMR. Denmark actively participates in international forums on AMR in production animals and food.

International cooperation objectives:

- To disseminate the Danish experiences and ensure Danish influence when important decisions are made internationally.

5.4.1
Increased cross-agency cooperation in Denmark

The DVFA will work actively to formalise and structure Danish cooperation in the area of resistance among other things, by establishing an Intersectoral Coordinating Mechanism.

In order to ensure effective, coordinated action against AMR in a One Health perspective, it is important for all relevant sectors to exchange experiences in an established, formal cooperation. This is underlined by the WHO's Global Action Plan Against AMR and in the recommendation of the Council of the European Union to intensify EU efforts to combat AMR with a One Health approach.

5.4.2
Securing Denmark's interests in international research

Horizon Europe partnership

The DVFA will continue to participate as a partner in Horizon Europe's EU Partnership for Animal Health and Welfare (EUP AHW), together with approximately 90 other organisations, and represent Denmark in the Governing Board together with The Innovation Fund Denmark.
The first year's work programme includes, among other things, a large internal project for monitoring resistance in animal pathogens in terrestrial and aquatic animals for both domestic and wild animals. The project is co-financed by framework agreements.

EU-JAMRAI-II

The DVFA will continue to participate in various work packages under the EU project JAMRAI-II (The European Union Joint Action on Antimicrobial Resistance and Healthcare-Associated Infections), which works with national action plans for AMR, "antimicrobial stewardship", and surveillance systems. JAMRAI-II aims to support individual member states in developing, updating and implementing their national action plans against AMR. The project under EU4Health continues until 2027.

5.4.3
Securing Denmark's interests in an international context

Nordic co-operation under the Nordic Council

The DVFA will continue to contribute to the work of the expert group for One Health AMR collaboration under the auspices of the Nordic Council, where Denmark contributes at both expert and strategy group level. This forum facilitates the exchange of experience and cooperation based on the Nordic White Paper – a guide prepared by the Nordic Council. Hosting of the annual meetings of the Nordic expert group alternates between the Nordic countries. Denmark will host in 2026.

Active participation in EU cooperation on AMR

The DVFA will continue to prioritise participation in the EU's One Health AMR network group. The DVFA will work to ensure that AMR becomes one of the focus areas during the Danish EU presidency with a strong One Health perspective from planning to execution. This must be ensured through close contact with health and environmental authorities both in the run-up to, and during, the presidency. The EU network group meets twice a year virtually and physically. Denmark will hold the presidency in the second half of 2025. The group works to reduce resistance at European level, given that this is the first step towards reducing AMR globally.

Contribution to international surveillance of use

The DVFA will continue to provide VetStat data to the EU as well as to WOAH. This is Denmark's contribution to international surveillance of antimicrobial use.

5.4.4
Knowledge sharing and sharing of Danish experiences

Strategic sector cooperation projects (SSC)

The DVFA will continue to bring Danish experiences of prudent antibiotic use for animals and of the surveillance of antibiotic use and resistance into play in the SSC projects of Ministry of Foreign Affairs of Denmark. Hereby, the DVFA will assist cooperating authorities in the global fight against AMR.

Baltic One Health One Plan (BALTOHOP)

The DVFA will continue to support the implementation of the Baltic countries' national action plans for AMR. Together with Sweden and Norway, Denmark (the DVFA and SSI) is participating in a capacity-building project in the Baltic countries to promote responsible use of antimicrobials (antimicrobial stewardship). The project is led by Sweden and funded by NordForsk under the Nordic Council of Ministers. The project runs from 2023-2025.

5.4.5
Strengthened cooperation between DVFA and ICARS

The DVFA will continue to support the International Centre for Antimicrobial Resistance Solutions (ICARS). This includes continued dialogue and cooperation, especially in relation to authority cooperation of various natures with third countries, including SSC projects and the ministry's representatives. ICARS was established on a Danish initiative, set up with the mission of collaborating with low- and middle-income countries in their efforts to reduce antibiotic-resistant infections. ICARS develops bespoke solutions together with governments and researchers, who then implement them on-site with the use of ICARS funding and expertise.