Roadmap on antimicrobial resistance for the WHO European Region 2023–2030

Working document

Building on the Global Action Plan on Antimicrobial Resistance, the overall purpose of the proposed new roadmap on antimicrobial resistance for the WHO European Region 2023–2030 is to support countries to identify, prioritize, implement and monitor high-impact interventions to tackle antimicrobial resistance (AMR). The roadmap sets the direction of travel until 2030 and reflects innovations in AMR, including a greater focus on the environmental and social determinants, digital transformation and people-centredness. Its implementation is crucial not only to AMR but also to achieving universal health coverage, working towards the Sustainable Development Goals, strengthening primary health care and ensuring adequate pandemic preparedness and response.

The roadmap is organized around an AMR Compass that identifies five action areas and six enablers based on a combination of the best available evidence and expert opinion, for countries to adapt to their own national contexts. Each action area and enabler has a set of high-impact interventions and is intended as a practical and adaptable tool for countries to convene all relevant national AMR stakeholders, reach consensus on their priorities and inform the investment cases for action on AMR.

This working document, together with a supporting information document, and a draft decision are submitted to the WHO Regional Committee for Europe for endorsement at its 73rd session in October 2023.

Contents

INTRODUCTION

Rationale: the need for a renewed focus on antimicrobial resistance

1.   Termed "the silent pandemic", antimicrobial resistance (AMR) represents one of the 10 major global threats to humanity today. Drug-resistant microorganisms such as bacteria, viruses, fungi and parasites can spread between animal, human and plant populations and migrate through the environment, compromising our ability to survive infections. AMR is threatening the sustainability and resilience of our health systems, jeopardizing the ability to achieve universal health coverage and the Sustainable Development Goals (SDGs) and to strengthen primary health care and pandemic preparedness and response. Bacterial AMR in the WHO European Region was associated with over half a million deaths in 2019,[1] equivalent to the health burden of influenza, tuberculosis and HIV/AIDS combined.[2] The estimated annual cost attributed to AMR in the European Union is €1.5 billion in health care costs and productivity losses.[3]

2.   The European Strategic Action Plan on Antibiotic Resistance[4] expired in 2020, and the Global Action Plan on Antimicrobial Resistance has guided the AMR agenda in the Region since 2015. Despite increased global attention, the COVID-19 pandemic has shown that the AMR agenda remains unfinished business. Persistent challenges include difficulties in making AMR relatable and conveying a sense of urgency around the issue, due to its complexity, and a lack of leadership and buy-in and reliable data. Despite most Member States having developed national action plans on AMR, over 75% of plans lack funds for implementation. The pandemic has also affected implementation, with 90% of countries in the Region reporting redeployment of resources from AMR to the COVID-19 response. The climate emergency exacerbates this already dire situation, as the Intergovernmental Panel on Climate Change warns of an escalation of infectious diseases without swift action.[5]

3.   Correcting course to avoid an era of untreatable infections requires both accelerating progress on actions that are well established, such as infection prevention and control, and implementing more innovative solutions that reflect the complex and interconnected nature of AMR. Implementation of these solutions should include a greater focus on the environmental and social determinants, digital transformation, people-centredness and partnerships, including with the private sector.

4.   The purpose of the proposed new roadmap is to inspire, guide and support countries in the Region to identify, prioritize, implement and monitor high-impact interventions to tackle AMR.

Process for developing the roadmap and alignment with key initiatives

5.   The roadmap, developed under the leadership of the WHO Regional Office for Europe (WHO/Europe) Control of AMR programme and in close collaboration with the relevant technical leads and focal points, is aligned with relevant subregional, European and global strategies, including the Global Action Plan, the SDGs, the recently developed WHO People-centred framework for addressing antimicrobial resistance in the human health sector,[6] the three global targets set out by the Third Global High-level Ministerial Conference on Antimicrobial Resistance, the recently launched Regional Digital Health Action Plan of the WHO European Region 2023–2030, the three core priorities of the European Programme of Work, 2020–2025 – "United Action for Better Health in Europe", and the Thirteenth General Programme of Work, 2019–2025. In the

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[1] See: https://doi.org/10.1016/S2468-2667(22)00225-0.
[2] See: https://www.oecd.org/health/health-systems/AMR-Tackling-the-Burden-in-the-EU-OECD-ECDC-Briefing-Note-2019.pdf.
[3] See: https://ec.europa.eu/commission/presscorner/detail/en/fs_23_1848.
[4] See: https://apps.who.int/iris/handle/10665/335840.
[5] See: https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/.
[6] See: https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/people-centred-framework/draft-people-centred-framework-paper.pdf?sfvrsn=3d4b67ee_20.

context of ageing populations in the Region and the high incidence of infections in older people, strategic links will be built with initiatives on healthy ageing, cancer and long-term conditions.

VISION, OUTCOMES AND PRINCIPLES

6.   The vision for AMR in the Region is that by 2030, people and animals will be safer from hard-to-treat, resistant infections in healthier environments.

7.   Fig. 1 summarizes the roadmap, setting the direction for the Region, including the Region's vision for AMR, the outcomes expected in this document's time frame, and the action areas and enablers that will contribute to the achievement of these outcomes. The colour coding indicates which action areas contribute to which outcomes. In reality, many interventions within each action area are interlinked and may contribute to achieving multiple outcomes. This highlights the need for a holistic and integrated approach to mitigating the impact of AMR.

Fig. 1. The proposed AMR roadmap at a glance
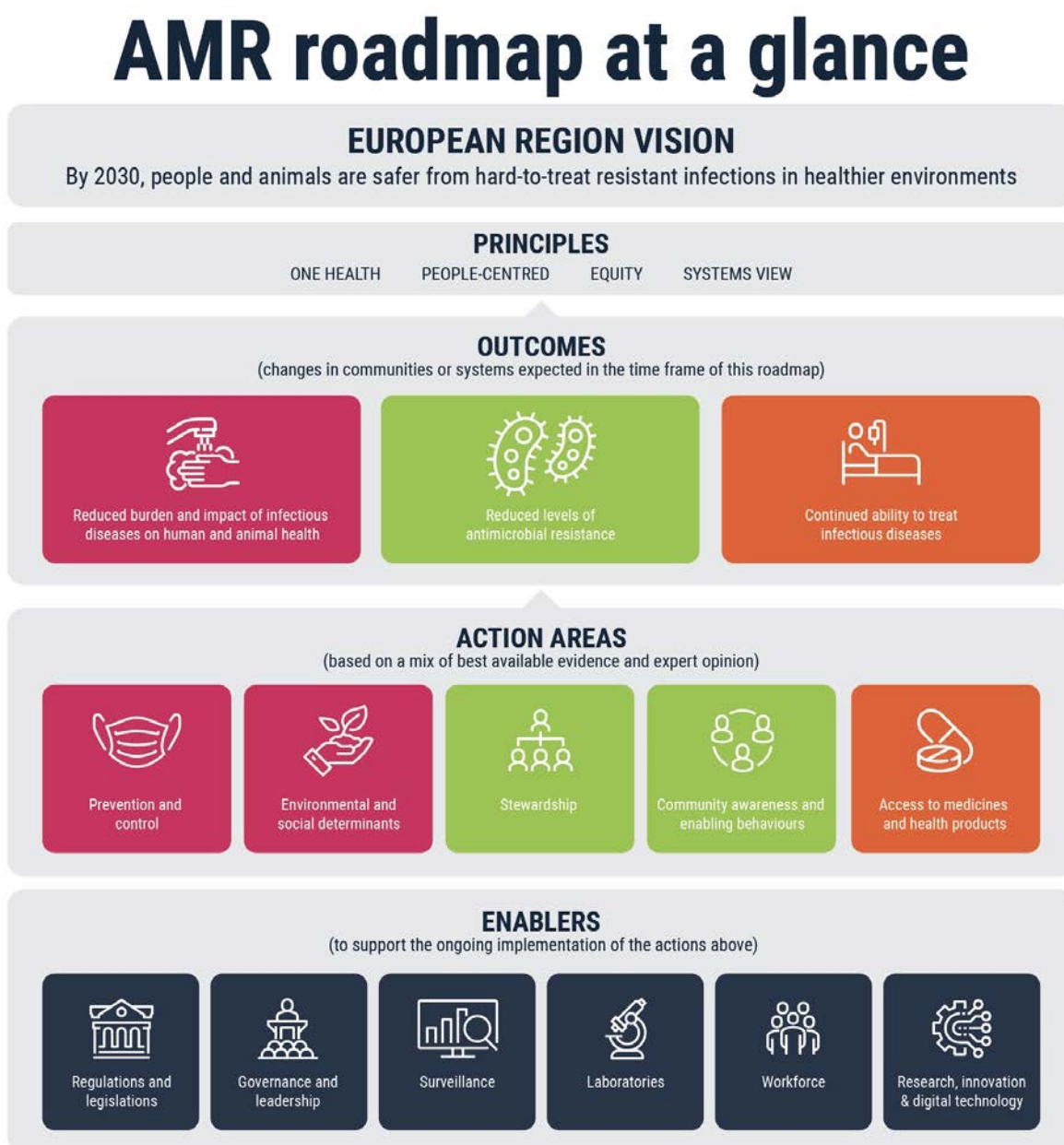
8.   The outcomes expected in the time frame of the proposed new roadmap on antimicrobial resistance for the WHO European Region 2023–2030 are as follows:

- reduced burden and impact of infectious diseases on human and animal health (prevent);

- reduced levels of AMR (control); and

- continued ability to treat infectious diseases (treat).

9.   As well as being based on the best available evidence, this roadmap is also innovative, as it recognizes the need to be bold and consider areas for which, despite gaps in evidence, the potential to leverage change is great. It is practical and adaptable in identifying the most impactful interventions for all countries in the Region, while allowing for the ability to tailor priorities and targets to local contexts and apply a stepwise approach to implementation. Wherever possible, this roadmap is based on existing reporting mechanisms to reduce the reporting burden on countries, for example, the annual Tracking AMR Country Self-assessment Survey (TrACSS) and the International Health Regulations (IHR) State Party Self-assessment Annual Reporting (SPAR).

10.   The following guiding principles underpin this roadmap:

- One Health approach – honouring the One Health approach through the inclusion of interventions that reflect the shared responsibility at country level across the different sectors – human, animal, plant, and environment – while adhering to the aim of protecting human health. This roadmap is underpinned by inclusiveness, fostering broad partnerships and alliances and striving for greater representation of a diverse set of stakeholders and perspectives. For One Health-specific plans, see the One Health Joint Plan of Action (2022–2026), and the FAO Action Plan on Antimicrobial Resistance 2021–2025 for agri-food systems. WHO/Europe is currently developing a One Health operational framework to be adopted in 2024.

- Systems view – AMR is threatening the sustainability and resilience of our health systems and compromising the full achievement of universal health care. This roadmap positions AMR in a broader context of health systems resilience and strengthening and pandemic preparedness efforts. Primary health care, with its emphasis on community engagement, addressing the social determinants of health and public health is central not just to universal health care and the SDGs, but also to an effective response to AMR.

- People-centred –this roadmap acknowledges that AMR is a major threat across people's life course, including their living and working conditions, as well as compromising quality of care across the continuum of care and patient safety. It recognizes and seeks to empower people as partners in tackling AMR through engagement and applying behavioural and cultural insights tools, while at the same time addressing the main AMR-related challenges that people face – both at structural and individual levels.

- Focus on equity, including gender – while men and women share many of the risks posed by AMR, there are biological, social and occupational factors that increase the risk of infection. This roadmap recognizes that gender intersects with other inequities. Interventions are tailored to address this, for example, ensuring data collected on AMR are disaggregated by sex, age and socioeconomic status.

CLOSING THE IMPLEMENTATION GAP – THE AMR COMPASS

11.   To navigate the complex AMR landscape and accelerate the achievement of the expected outcomes of the roadmap by 2030, the AMR Compass (Fig. 2) identifies five action areas and six enablers, based on a combination of the best available evidence and expert opinion, for countries to assess, prioritize, set targets, implement and measure according to their own national contexts, following a stepwise approach. For each action area and enabler a set of high-impact interventions is listed. Signposting to existing

guidance and tools to support implementation is also provided. The set of high-impact interventions under each action area and enabler has been selected to be comprehensive in scope, not exhaustive.

12.   The AMR Compass serves as a diagnostic tool to:

- allow national AMR stakeholders to jointly assess their country's needs, strengths and readiness to implement the action areas and enablers for AMR;

- facilitate conversations to reach consensus as to the priorities and areas of focus according to the national context;

- support national target-setting, in close alignment with the SDG targets wherever relevant;

- inform the investment cases for action on AMR; and

- enable countries to measure progress.

Fig. 2. The AMR Compass, comprised of three concentric circles, depicts three outcomes (middle ring) and the five related action areas (inner ring) and six enablers (outer ring) that support their implementation
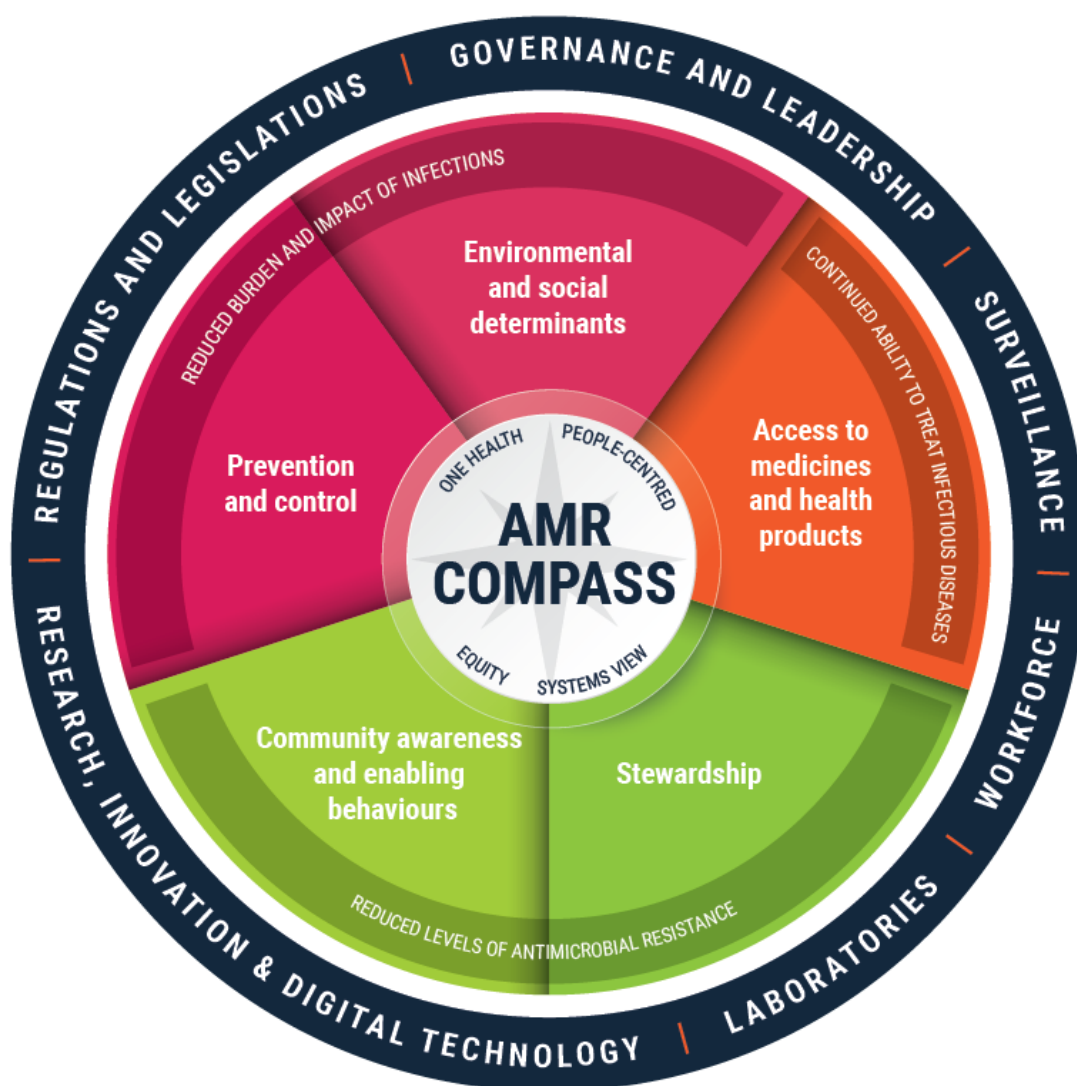
ACTION AREAS

Infection prevention and control and water, sanitation and hygiene

13.   High-impact interventions:

    1.   Infection prevention and control in health and care facilities – improving infection prevention and control, which is recognized as one of the most effective approaches to controlling the spread of AMR.[7]

    2.   Water, sanitation and hygiene (WASH) in health and care facilities – investing in WASH-related interventions, which is considered a best buy in reducing AMR in health care facilities.

    3.   WASH in communities – reducing transmission of pathogens, including resistant pathogens through the safe management of drinking-water supply and sanitation.

    4.   Vaccinations – preventing infections through vaccination to reduce the need for and use of antibiotics.

    5.   Food production systems – preventing infections through good animal husbandry, appropriate use of antimicrobials in food-producing animals, and sound management of waste and wastewater in livestock production.

Environmental and social determinants

14.   High-impact interventions:

    6.   Occupational conditions – strengthening controls of working conditions for people employed in agriculture, including food animal production, and meat-processing sectors (a high-risk group for AMR).

    7.   Collection, treatment and disposal of municipal wastewater and wastewater from production facilities – avoiding the spread of AMR in the environment through appropriate wastewater management.

    8.   Solid waste management – ensuring pharmaceutical waste is not released to the environment, thereby reducing the risk of AMR.

    9.   Housing conditions – improving housing conditions to decrease the risk of developing infectious diseases.

    10.   Financial protection – ensuring appropriate health insurance coverage to help people overcome barriers to access to health services, which in turn increases the number of infections diagnosed and treated.

    11.   Access to basic health services for refugees and migrants – ensuring equitable access to and appropriate use of antibiotics.

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[7] See: https://apps.who.int/iris/handle/10665/354489.

Stewardship

15.   High-impact interventions:

   12.   Antimicrobial stewardship programmes – optimizing the use of antibiotics as one of five interventions that the Organisation for Economic Co-operation and Development (OECD) has identified as having a significant positive impact on population health and on avoiding heavy costs,[8] including the adoption of the WHO Access, Watch and Reserve (AWaRe) classification of antibiotics.[9]

   13.   Surgical antibiotic prophylaxis measures – reducing surgical site infections.

   14.   Diagnostic stewardship – enabling the delivery of safe and quality care and ensuring accurate surveillance to inform treatment guidelines and AMR control strategies.

   15.   Clinical decision support systems to support antimicrobial stewardship – providing health and care professionals with the latest evidence-based guidelines for the use of antibiotics, with real-time feedback on their antibiotic prescribing practices, as well as monitoring at point of prescription.

Community awareness and enabling behaviours

16.   High-impact interventions:

   16.   Behavioural and cultural insights – identifying contextual and individual drivers and barriers to inform interventions.

   17.   Communication and awareness – public awareness campaigns are one of five interventions identified by OECD as having a significant positive impact on population health and on avoidance of heavy costs.

   18.   Engagement of non-State actors, such as civil society organizations, nongovernmental organizations and patient and professional organizations – recognizing the importance of wider engagement and partnerships.

   19.   Engagement of primary care and pharmacy teams in the community – raising awareness as the most common first point of contact with patients and advising on the appropriate use of antimicrobials.

Access to medicines and health products

17.   High-impact interventions:

   20.   Access to diagnostics – enabling appropriate diagnosis of infections.

   21.   Access to antimicrobial medicines and vaccines – enabling the prevention and treatment of infections.

   22.   Access to and prudent use of antimicrobials for animals and plants – ensuring the antimicrobials that are critical to human medicine are used prudently in veterinary and agricultural sectors.

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[8] See: https://www.oecd.org/health/health-systems/AMR-Tackling-the-Burden-in-the-EU-OECD-ECDC-Briefing-Note-2019.pdf.

[9] See: https://aware.essentialmeds.org/groups.

ENABLERS

Regulations and legislations

18. High-impact interventions:

    23. Food safety standards and controls – preventing foodborne diseases in humans.

    24. Antimicrobials for nontherapeutic use – implementing, by legislation, a ban on antimicrobials as growth promoters and for disease prevention in food-producing animals, and implementing enforcement activities.

    25. Antifungal use in agriculture – ensuring more appropriate use of antifungals in agriculture and encouraging collaboration between academia, industry and agricultural stakeholders to accelerate progress and avoid the development and use of antifungals for agriculture that are similar to those important to human health.

    26. Over-the-counter regulations – implementing enforcement activities to ensure antibiotics are not sold without prescription.

    27. Pharmaceutical promotion – banning face-to-face sales and promotional activities, promotional mailing and advertising directly to consumers in all settings to avoid influencing prescribing practices leading to unnecessary use of antimicrobials.

    28. Substandard and falsified antimicrobials – strengthening regulatory capacities to avoid the use of substandard antimicrobials that may increase the risk of AMR.

    29. Regulatory frameworks for digital health – supporting the implementation of digital solutions for AMR.

    30. Regulations and legislations for wastewater and WASH – ensuring the provision of safe WASH services and wastewater management to prevent and control AMR.

Governance and leadership

19. High-impact interventions:

    31. Political commitment – placing AMR on national agendas as a major threat to human health to secure the necessary leadership and buy-in at high level.

    32. One Health AMR coordination and participation – coordinating national efforts to tackle AMR through a governance mechanism composed of all relevant sectors and technical groups, informed by regular updates from surveillance, research and innovation.

    33. Resourcing for One Health AMR – ensuring adequate resources are available for national action plan implementation.

    34. Mainstreaming AMR across all One Health plans – extending and sustaining AMR-related efforts in broader health, agricultural and environmental action plans.

    35. AMR as part of national health security, preparedness and response plans – ensuring integrated efforts to avoid AMR becoming an aggravating factor during epidemic and pandemic crises.

    36. Private sector as allies – establishing dialogue with private sector health and care providers, national business associations and food companies along the protein production chain to include antimicrobial stewardship as part of their investment criteria.

Laboratories

20.   High-impact interventions:

37.   Sampling services – ensuring well-functioning diagnostics to inform treatment decisions.

38.   AMR reference laboratories – promoting and facilitating good laboratory practice and harmonization of methods and standards used in AMR national surveillance systems.

39.   AMR testing capacity and capability – ensuring universal access to high-quality laboratory diagnostic services that guide proper treatment for patients, detect changes in resistance and prevent the spread of AMR.

40.   Whole genome sequencing for AMR surveillance – increasing capacity to detect new threats, including through new laboratory techniques such as genomic sequencing, adding considerable value to AMR surveillance systems.

Workforce

21.   High-impact interventions:

41.   Workforce strategy and plan – developing and/or implementing a workforce strategy and plan that includes capacities for tackling AMR and fosters a One Health approach (for example, a national health and care workforce plan, as part of the national action plan).

42.   Continuous personal development and education for multidisciplinary teams – ensuring health and care workers and other professionals, such as veterinarians, who prescribe, dispense and administer antimicrobials develop appropriate expertise on AMR.

43.   Role of pharmacy teams and nurses – recognizing their value and enhancing their role as integral to stewardship teams in the community.

44.   Laboratory expertise – ensuring sufficient and skilled human resources for laboratories.

Research, innovation and digital technology

22.   High-impact interventions:

45.   Public incentives for public and private sector innovation – fostering collaboration to identify solutions to AMR challenges and ensure prevention, diagnostic and treatment options.

46.   Research – generating and promoting the use of evidence on AMR and its impacts.

47.   Implementation research – bridging the gaps between research and practice.

48.   Digital health technologies – implementing tools including electronic health records, e-prescribing platforms, mobile health apps, telemedicine, electronic surveillance systems, health analytics and artificial intelligence to support efforts to curb AMR.

Surveillance – data for action

23.   High-impact interventions:

49.   Surveillance of AMR and antimicrobial use (AMU) in humans – strengthening capacity to provide the necessary data for action, supporting multisectoral collaboration and enabling the monitoring of progress.

50.   Surveillance of WASH services – ensuring safe services as a core public health action.

51.   Environmental surveillance of wastewater and surface water – monitoring risks in the environment for early detection, assessing the magnitude of threats and informing public health actions.

52.   Surveillance of AMR and AMU in animals and plants – strengthening capacity to provide the necessary data for action, supporting multisectoral collaboration and enabling monitoring of progress in animal and plant sectors.

53.   Integrated surveillance – the One Health multisector coordination mechanism to regularly meet to discuss surveillance data from human, animal and plant and environment systems in a harmonized way and use the data to inform decision-making.
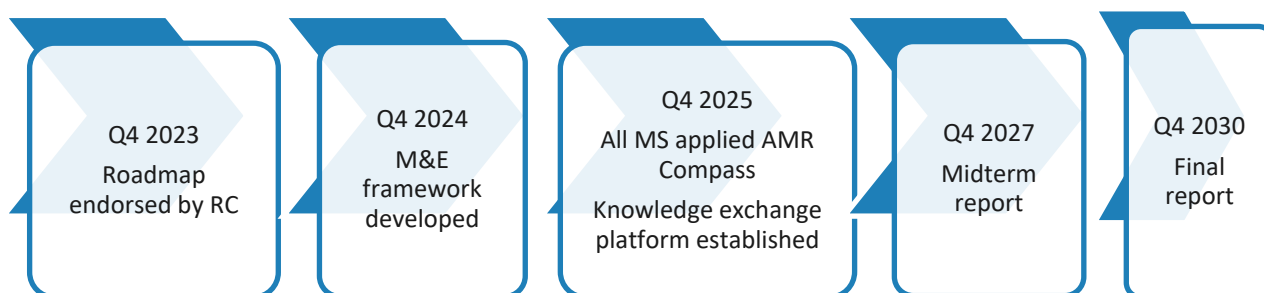
IMPLEMENTATION THROUGH PARTNERSHIPS

24.   Operationalizing the roadmap, sustaining previous gains while making progress against each action area and enabler, can only be accomplished through effective partnerships. WHO/Europe, as the leading health authority in the Region, is particularly well placed to support Member States in convening these partnerships. Actions include advocating for high-level political commitment to AMR, such as through cross-sectoral national policy dialogues; engaging non-State actors, including civil society and nongovernmental organizations from human, animal and environmental sectors to raise and maintain AMR as a high priority in the national agenda; mobilizing technical support through WHO's established networks of experts and collaborating centres; providing technical guidance (for example, through online and face-to-face trainings) on the AMR Compass to set the baseline, prioritize actions, define targets and monitor progress; providing technical support to develop national investment cases and mobilize resources for implementation; and providing technical support in developing a monitoring and evaluation framework for the roadmap.

25.   At regional level, WHO/Europe will help bridge the gap between research and policy by providing the latest evidence, tools and guidance on AMR. WHO/Europe will also contribute to ongoing innovations through the commissioning of policy papers and reviews, for example on developing a people-centred approach in controlling AMR and on AMR and digital transformation, which will be available at the end of 2023.

26.   WHO/Europe will establish a platform on learning from AMR actions – to facilitate exchange between Member States, WHO, regional organizations and key actors on best practices and evidence, promote peer-to-peer learning, and adapt actions based on evaluations and lessons identified. The platform will also include a repository for good practices and country case studies.

27.   WHO/Europe will analyse the landscape of stakeholders across sectors and disciplines to build innovative partnerships in the Region and convene an inclusive forum on a multiannual basis to encourage collective action. In addition, WHO/Europe will create and maintain a network of national AMR focal points to facilitate communication. WHO/Europe will work with research institutions and key partners such as the European Commission and its technical agencies, the World Bank and OECD, as well as through the regional Quadripartite and its One Health Coordination Mechanism for Europe and central Asia, to effectively make an investment case for AMR by demonstrating its human and economic impacts. Fig. 3 describes the timeline and main milestones for the roadmap.

Fig. 3. Timetable for the main milestones of the roadmap

Q4 2023
Roadmap endorsed by RC

Q4 2024
M&E framework developed

Q4 2025
All MS applied AMR Compass
Knowledge exchange platform established

Q4 2027
Midterm report

Q4 2030
Final report

AMR: antimicrobial resistance; M&E: monitoring and evaluation; MS: Member States; Q4: fourth quarter; RC: WHO Regional Committee for Europe.

MEASURING PROGRESS

28.   The proposed targets to measure progress at regional level are as follows:

- The Region reports an overall decrease per year in the proportion of bloodstream infections due to selected antimicrobial resistant organisms, median (%) (SDG indicator 3.d.2).

- The Region reports an overall increase per year in the proportion of the population with access to affordable medicines and vaccines on a sustainable basis (SDG indicator 3.b.1).

- All countries meet the target of at least 60% of total antibiotic consumption being Access group antibiotics (Thirteenth General Programme of Work, 2019–2025, Target 4 b) in the time frame of this roadmap.

29.   Drawing on these targets, a robust regional monitoring, evaluation and accountability framework will be developed, further refined in consultation with Member States and presented to the WHO Regional Committee for Europe at its 74th session in 2024.

30.   A midterm report will be presented to the Regional Committee at its 77th session in 2027 and a final report at its 80th session in 2030.

ACTION BY THE REGIONAL COMMITTEE

31.   This proposed roadmap is submitted to the Regional Committee at its 73rd session in 2023, together with a draft decision.

32.   An implementation resource guide is in preparation and, in this context, the Regional Committee is further invited to provide guidance on the following questions.

   (a)   How do you envision the implementation of the roadmap in your country?

   (b)   What can WHO/Europe do to support implementation of the roadmap?

   (c)   How can countries support one another during the implementation of the roadmap?

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