GLOBAL LEADERS GROUP
ON ANTIMICROBIAL RESISTANCE

Global Leaders Group
on AMR Report

TOWARDS SPECIFIC COMMITMENTS AND ACTION IN THE RESPONSE TO ANTIMICROBIAL RESISTANCE

Recommendations for consideration by UN Member States in the outcome document of the High-level Meeting on AMR in September 2024

March 2024

Table of Contents

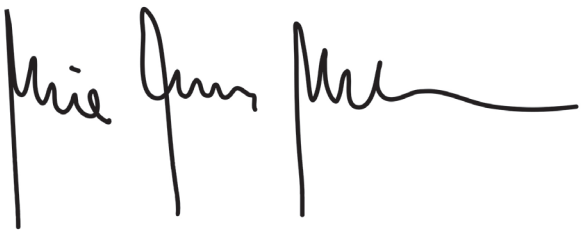
Foreword by the Chair

The crisis of antimicrobial resistance (AMR) threatens a century of progress in human medicine, and the health of animals, plants, and the environment, as well as our economies and livelihoods. As this report emphasizes, the impact of AMR is already staggering, and the world has been far too slow to act. We now have a narrow window of opportunity to mount a coordinated and multisectoral response to AMR at the scale and with the urgency it demands.

The commitment to tackling AMR must be personal, local, national and global. The High-level Meeting on AMR to be held by the United Nations General Assembly in September 2024 presents us with a unique opportunity for specific commitments and action.

Consistent with the request of the General Assembly, the Global Leaders Group (GLG) on AMR developed this report to support the process and inform the outcomes of this year's High-level Meeting. The recommendations in the report were developed after extensive discussions among GLG members and consultations with external experts. I am proud of the report and the work of the GLG and I thank all members of the GLG and their teams for their time, dedication and commitment.

I hope that this report and its recommendations contribute to the world charting a far more determined course in the response to AMR, and that my fellow heads of state and government will use this opportunity for greater effort and action against AMR at country level, where the impact and needs are greatest. By responding aggressively to the many threats posed by AMR, we will also help to build a safer, healthier, more prosperous and equitable world.



Mia Amor Mottley
Chair, Global Leaders Group on Antimicrobial Resistance
Prime Minister of Barbados

About the Global Leaders Group on Antimicrobial Resistance

The Global Leaders Group (GLG) on Antimicrobial Resistance (AMR) was established in 2020 following the recommendation of the Interagency Coordination Group on AMR (IACG) with the mission to advise on and advocate for political action for the mitigation of drug-resistant infections through responsible and sustainable access to and use of antimicrobials. Secretariat support for the GLG is provided by the Quadripartite Joint Secretariat (QJS) on Antimicrobial Resistance, a joint effort by the Quadripartite organizations (the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Health Organization (WHO), and the World Organisation for Animal Health (WOAH)).

The GLG is chaired by Her Excellency the Prime Minister of Barbados, Ms Mia Amor Mottley; the Vice Chair is the Honourable Dr Chris Fearne, Deputy Prime Minister of Malta. GLG members include government ministers, academics, and influential figures from the private sector and civil society, as well as the principals of the Quadripartite organizations.

The GLG has held eight official meetings and numerous technical and information sessions, and is implementing its rolling action plan in six priority areas: 1) Sustained political action on AMR; 2) Transforming human health, animal health, food, plant and environmental ecosystems with a focus on infection prevention and control and responsible use; 3) Advocacy for improved surveillance and monitoring of antimicrobial use and resistance across sectors, including to guide target-setting and interventions and assess their impacts; 4) Increased mobilization of internal and external financial resources, especially for national action plan implementation in low- and middle-income countries (LMICs); 5) Innovation across sectors to secure a sustainable pipeline of antimicrobials (particularly antibiotics), vaccines, diagnostics, waste management tools, and safe and effective alternatives to antimicrobials, and ensure equitable access to these products; and 6) Advocating for evidence-based action to address environmental aspects of AMR.

The GLG has helped to shape policy and advocacy in the response to AMR by publishing information notes, calls to action and position statements on key issues. It has also held events and promoted dialogue in major international and development fora to raise political commitment to addressing the challenges of AMR. GLG publications and reports from GLG events are available on the GLG website.

The resolution of the United Nations General Assembly on 29 March 2022 establishing a High-level Meeting on AMR in 2024 requested that the GLG support preparations for that meeting.

RECOMMENDATIONS FOR CONSIDERATION BY MEMBER STATES IN THE OUTCOME DOCUMENT OF THE HIGH-LEVEL MEETING ON AMR IN 2024

1. Request the Secretary-General to urgently establish, in consultation with relevant stakeholders, an ad hoc group composed of governments, development banks, multilateral organizations, civil society and the private sector including philanthropy representatives, to define approaches and concrete measures needed for adequate, dedicated, predictable, and sustainable financing from domestic and external sources to address AMR, including research and development.

2. Existing financing instruments (including of the World Bank, Global Fund, AMR Multi-partner Trust Fund, Green Climate Fund, Pandemic Fund, Climate Health Fund, Global Environment Facility, Nature4Health, Global Biodiversity Framework Fund) should expand their scope to include AMR and/or increase investments to support implementation of multisectoral National Action Plans on AMR, especially in LMICs.

3. Request the Secretary-General, in close collaboration with the Quadripartite and other relevant stakeholders, to convene an Independent Panel on Evidence for Action against Antimicrobial Resistance by 2025, in a One Health context to monitor and provide Member States with regular reports on the science and evidence related to AMR, its impacts and future risks, and to recommend options for adaptation and mitigation.

4. The Quadripartite organizations should urgently update the 2015 Global Action Plan on AMR to ensure a robust, multisectoral One Health response and drive greater impact against AMR.

5. All countries should establish a national core multisectoral coordinating body for AMR with appropriate human and financial resources and mandate to engage relevant ministries with accountability, monitoring and reporting mechanisms.

6. Member States should formalize the standing Quadripartite Joint Secretariat on AMR as a key coordinating mechanism of the global One Health response to AMR, drawing on the mandates and roles of the Quadripartite and other relevant organizations in each sector.

7. All countries should strengthen human resources, diagnostic, laboratory, and other infrastructure capacity to support sustainable sector-specific and integrated surveillance systems and the use of data for action and, by 2030, report quality-assured AMR and AMU surveillance data through global surveillance systems (GLASS, ANIMUSE and InFARM).

8. By 2030, all countries should develop and have in place national plans and adopt measures to prevent contamination of the environment with antimicrobials and their metabolites, including from manufacturing, and integrate environmental dimensions into multisectoral National Action Plans on AMR.

9. By 2030, all countries should implement strategies in all sectors to prevent infections and reduce the need for antimicrobials across sectors, including infection prevention and control; water, sanitation and hygiene (WASH); vaccination, biosecurity and good animal husbandry practices; pollution control, waste and wastewater management; and ensuring equitable access to diagnostics and antimicrobials, and the development of alternatives to antimicrobials.

10. The GLG proposes the following **global targets** to catalyze action at national level:

    - **Deaths caused by bacterial AMR:** By 2030, reduce global deaths caused by bacterial AMR by 10%.
    - **Antibiotic stewardship and responsible use in humans:** By 2030, ACCESS group antibiotics comprise at least 80% of overall human antibiotic consumption.
    - **Antimicrobial use in agri-food systems:**
        - > By 2030, reduce the quantity of antimicrobials used in the agri-food system globally by at least 30-50% from the current level;
        - > By 2030, eliminate the use of medically important antimicrobials for human medicine in animals for non-veterinary medical purposes, or in crop production and agri-food systems for non-phytosanitary purposes.

    Based on these global targets, the GLG recommends that all countries should develop national, outcome-oriented, sector-specific targets with clear goals and timelines, and follow up on their implementation.

1 Context for this report

This report aims to inform preparations for and outcomes of the 2024 United Nations General Assembly High-level Meeting on AMR. The meeting is a critical opportunity to help move the world from rhetoric to specific commitments and action.

The 2016 political declaration of the first High-level Meeting of the United Nations General Assembly (UNGA) on AMR was a milestone in the world's commitment to tackling AMR, and called for greater urgency and action in the response. Although some of the political declaration's commitments yielded tangible results, the declaration had several major gaps, such as clearly identified mechanisms for financing the AMR response, outcome-oriented actions, and accountable governance mechanisms for multisectoral action.

In March 2022, as part of its resolution on elevating pandemic prevention, preparedness and response to the highest levels of political leadership, the UNGA - recognizing the threat posed by AMR to pandemic prevention, preparedness and response - agreed to hold a second High-level Meeting on AMR in 2024. The UNGA requested that the President of the General Assembly (PGA) appoint two co-facilitators to present options and modalities for the conduct of such a meeting, including potential deliverables, in collaboration with the Quadripartite organizations and with the support of the GLG. The PGA has appointed the Permanent Representatives of Barbados and Malta as the co-facilitators of the High-level Meeting.

With this report, the GLG aims to support and inform preparations and outcomes for the 2024 High-level Meeting on AMR, which is a critical opportunity to help move the world to more specific commitments and action for an urgent, sustained, and multisectoral response to the growing AMR crisis.

The report draws on new data and resources

The report and the recommendations included in it are the result of discussions and deliberations by the GLG over the last year. These discussions were informed by:

- **Building the economic case for AMR investment:** The GLG requested building the economic case for AMR investment at its meeting in August 2021. Over the last two years, the Quadripartite Joint Secretariat on AMR has undertaken this work to estimate the costs of AMR and the associated benefits of the AMR response across different sectors. The aim of this work is to inform global, regional, and country action in response to AMR and help to mobilize sustainable resources. Technical support for the work was provided by the OECD, World Bank and other partners. The Quadripartite Technical Group on the Economics of AMR provided external strategic advice and inputs. The GLG provided direction and regular inputs including through information sessions and at its meeting in June 2023. High-level data points from this study are included in sections 2.1, 2.5 and 3.1 of this report;
- **Recommendations to address the antibiotic pipeline and access crisis in human health** (Global Leaders Group on AMR, February 2024): At its sixth meeting in February 2023, the GLG began in-depth discussions on how the world is entangled in an antibiotic pipeline and access crisis. This is characterized by the diminishing effectiveness of current antibiotics, limited global access to new and old antibiotics, and insufficiency in the research and development (R&D) pipeline for innovative antibiotics needed to treat drug-resistant infections. The process of developing the report included extensive interviews with GLG members and external experts;
- **Facilitated discussions among GLG members** and their technical teams to develop the recommendations and targets proposed in this report; and
- **Other recent work**, including GLG position statements and information notes; work undertaken by the three GLG task forces on the WHO pandemic accord (CA+), integrated surveillance, and financing; recommendations by the Interagency Coordination Group (IACG) on AMR (2019); reports on the AMR response published by the Quadripartite organizations; and the UNEP report *Bracing for Superbugs: Strengthening environmental action in the One Health response to antimicrobial resistance* (UNEP, 2023).

2 The escalating impact of AMR

The world is only beginning to wake up to the impending calamity of AMR. Its human and economic impacts are already staggering and will grow exponentially - particularly in LMICs -without a much more robust global response.

2.1 Impact on human health

Low- and middle-income countries bear the brunt of AMR, and children are particularly vulnerable

A study on the global burden of AMR, published in 2022, showed that AMR is a leading cause of death globally, with the greatest impact occurring in low-income settings. The study reported that drug-resistant bacterial infections contributed to nearly 5 million deaths globally in 2019, of which nearly 1.3 million deaths were directly caused by bacterial AMR across 88 pathogen–drug combinations and 204 countries and territories.

Compared with all underlying causes of death in the 2019 Global Burden of Disease, AMR would have been the third leading cause of death that year, behind ischaemic heart disease and stroke.

Seven drug-resistant bacteria (*S. aureus, E.coli, K. pneumoniae, S. pneumoniae, A. baumannii, M. tuberculosis, and P. aeruginosa*) were reported as the deadliest, each contributing to more than 80,000 deaths in 2019. Vaccines are only available for two of these, highlighting the urgency of vaccine research and development.

Sub-Saharan Africa faces the highest burden of AMR globally and in 2019 experienced a particularly high number of deaths from vaccine-preventable bacterial disease (*S. pneumoniae*).

The study also showed that AMR disproportionately affects young children: in 2019, 1 in 5 deaths directly caused by AMR occurred in children under the age of five, frequently from infections that were previously treatable. AMR is increasing the risk of deaths from hospital-acquired infections and higher-income countries also face high levels of AMR.

AMR will reduce life expectancy globally by 1.8 years over the next decade without proper action

Data from the study on the economic case for AMR investment requested by the GLG show that at the current level of action on AMR there would be an average loss of 1.8 years of life expectancy globally due to AMR by 2035. Some low- and low-middle income countries, for example in the Eastern Mediterranean region, would see life expectancy fall by 2.5 years in that period.

2.2 Impact on animal health, and food safety and security

AMR will have a dramatic impact on animal health and global food production without bolder action

Antimicrobials are important tools for the prevention, control, and treatment of infectious diseases in food-producing animals, companion animals and wildlife. Loss of effectiveness of antimicrobials has a negative impact on both animal health and welfare, as well as a significant impact on livestock production and the global food chain, compromising food security. This is particularly the case in LMICs, where the burden of animal diseases is higher, and access to preventative measures such as vaccines is limited, leading to an overdependency on antimicrobials to control disease. The spread of resistant strains of bacteria in terrestrial and aquatic animals leads inexorably to an increase in animal morbidity and mortality. With more than 1.3 billion people relying on livestock for their livelihoods, and over 20 million people depending on aquaculture, there is an urgent need to prioritize actions and policies targeting AMR in animals.

Strong actions and policies targeting AMR in animal health are urgently needed

There is an overall lack of robust, global evidence on the burden of AMR-related morbidity and mortality in animals, and the surveillance programmes that do exist rarely include companion animals and wildlife. There are an estimated 1 billion companion animals worldwide, and AMR has been observed in both sick and healthy companion animals. There is also growing evidence that AMR can be transmitted between companion animals and humans in the community and in veterinary practice. Evidence related to AMR in wildlife is very limited, despite the potential for these animals to act as reservoirs of drug-resistant pathogens and the possibility of resistant pathogens to be transmitted among different species and in the environment.

2.3

AMR and the triple planetary crisis of climate, biodiversity loss, and pollution and waste

While global attention to AMR has often focused on human and animal health and the agri-food sector, there is growing evidence that the environment plays a key role in the development, transmission and spread of AMR

As outlined in UNEP's landmark report in 2023, AMR is closely linked to the triple planetary crisis of climate change, biodiversity and nature loss, and pollution and waste, all of which are driven by human activity with unsustainable consumption and production patterns.

The main sources of biological and chemical pollutants in the environment that contribute to AMR are poor sanitation, sewage and waste effluent in communities; effluent from pharmaceutical manufacturing; effluent and waste from healthcare facilities; use of antimicrobials and manure in intensive crop production; and releases, effluent and waste in terrestrial and aquatic animal production. These may contain resistant micro-organisms, as well as antimicrobials, pharmaceuticals, microplastics, metals and other chemicals, which all increase the risk of AMR in the environment. Other contributing factors to transmission and spread of AMR in the environment include wildlife, international movements of people and goods, companion animals, airborne transmission, rapid urbanization, and climate change.

Links between the climate crisis and AMR need more attention

There is now sufficient knowledge to ensure that the environment sector is closely engaged in the AMR response and that measures are implemented to prevent and limit the development and spread of AMR in the environment.

As noted in the GLG information note published in 2021, evidence suggests that changes occurring in the natural environment due to the climate crisis are increasing the spread of infectious disease, potentially including drug-resistant infections. However, the links between AMR and the climate crisis require significantly more attention to jointly address these converging threats and their common drivers and potential solutions, including in multisectoral National Action Plans on AMR and in approaches to mitigating the impact of climate change.

2.4

The antibiotic pipeline and access crisis

There is a serious crisis in funding the R&D pipeline for new antimicrobials and other innovations needed to tackle AMR

The clinical pipeline for antimicrobials targeting priority pathogens is fragile and insufficient to meet the global challenge of AMR. The antibiotic pipeline and access crisis requires more and predictable multi-decade funding to incentivize innovation, sustain action, and achieve results. However, funding alone is not enough. Stimulating R&D and safeguarding access to antibiotics demand a cooperative, multi-entity approach, blending the capacities of public and private sectors to maneuver through the challenges and construct resilient, equitable and sustainable access to antibiotics globally. Efforts to support the development of, and access to, diagnostics are also critical to ensuring appropriate access to antibiotics and should be considered as part of a holistic approach.

Tackling the antibiotic pipeline crisis involves addressing the current market failure and increasing investments in antimicrobials (including antibiotics), vaccines, diagnostics, waste management tools and alternatives to antimicrobials as global public goods. To address the antibiotic pipeline and access crisis, the GLG has published six recommendations for global action across a range of mutually reinforcing financial and nonfinancial solutions:

Working with governments, industry and other key stakeholders, WHO should lead the establishment of global, shared R&D targets for antibiotics and diagnostics with implementation roadmaps and target product profiles (TPPs);

Public and private funders/donors should increase funding for push incentives that support the development of antibiotics and diagnostics;

The G7 and G20 should each play their role in establishing pull incentives to support R&D and enable access to antibiotics and diagnostics;

National and regional regulatory bodies should adopt regulatory frameworks to facilitate development and regulatory approval of antibiotics as part of their efforts to achieve a regulatory system maturity commensurate with a stable, well-functioning and integrated regulatory system for medicines and diagnostics (WHO maturity level 3);

National governments, WHO, partners and donors should significantly expand efforts to increase access to essential antibiotics while ensuring their appropriate use; and

Strengthen global coordination across the R&D and access continuum, building on existing fora and partnerships.

2.5 Economic impact

Without a more robust response, AMR will have a catastrophic effect on the global economy, including huge increases in health expenditure and lost productivity

The economic impact of uncontrolled AMR would be catastrophic. Findings of the above-mentioned economic study indicate that with current levels of action, AMR is expected to impose much greater health expenditures, with total expenses to treat resistant bacterial infections alone reaching US$ 412 billion annually up to 2035. Increased morbidity and mortality from these infections will lead to lower workforce participation and productivity losses of US$ 443 billion per year.

3 Recommendations for consideration by Member States in the outcome document of the High-level Meeting on AMR in 2024

3.1 Financing for implementation of multisectoral National Action Plans on AMR and for research and development

KEY RECOMMENDATIONS

1. **Request the Secretary-General to urgently establish, in consultation with relevant stakeholders, an ad hoc group composed of governments, development banks, civil society and the private sector including philanthropy representatives to define approaches and concrete measures needed for adequate, dedicated, predictable, and sustainable financing from domestic and external sources to address AMR, including research and development.**

2. **Existing financing instruments (including of the World Bank, Global Fund, AMR Multi-partner Trust Fund, Green Climate Fund, Pandemic Fund, Climate Health Fund, Global Environment Facility, Nature4Health, Global Biodiversity Framework Fund) should expand their scope to include AMR and/or increase investments to support implementation of multisectoral National Action Plans on AMR, especially in LMICs.**

New evidence confirms that investment in the AMR response would yield significant benefits

According to the above-mentioned economic study, a package of AMR interventions across sectors – encompassing research and development, awareness raising, surveillance, optimizing antimicrobial use in human and animal health, and infection prevention– would not only prevent massive health and mortality burden due to AMR, but also lead to significant returns on the investments made. If implemented globally, the package of AMR interventions across sectors set out in the study is expected to cost an average of US$ 46 billion per year and bring a return of between US$7 and US$13 for every US$1 spent by 2050[1]. The new data and the investment case for AMR support the need for defined approaches and concrete measures for adequate, dedicated, predictable, and sustainable financing from domestic and external sources. The establishment of a group with the mandate to define such approaches and measures will ensure progress and action at national and global levels.

Existing financing mechanisms should be leveraged for AMR

More attention is needed to mainstream the response to AMR through existing development financing mechanisms. Specific opportunities exist in the areas of pandemic prevention, preparedness and response; disease-specific programming; water, sanitation and hygiene; the environment; and responses to the climate crisis. Opportunities should also be sought to strategically redirect existing investments and subsidies and to establish innovative financing approaches. Small amounts of catalytic funding also remain important to foster cross-sectoral collaboration and support incorporation of AMR into national budgets and development plans.

1 Estimates vary according to the discount rate that is assumed, as well as the relative distribution of intervention costs over the timeframe.

3.2

Accountable, effective and functional multisectoral governance

KEY RECOMMENDATIONS

3. **Request the Secretary-General, in close collaboration with the Quadripartite and other relevant stakeholders, to convene an Independent Panel on Evidence for Action against Antimicrobial Resistance by 2025, in a One Health context to monitor and provide Member States with regular reports on the science and evidence related to antimicrobial resistance, its impacts and future risks, and to recommend options for adaptation and mitigation.**

4. **The Quadripartite organizations should urgently update the 2015 Global Action Plan on AMR to ensure a robust, multisectoral One Health response and drive greater impact against AMR.**

5. **All countries should establish a national core multisectoral coordinating body for AMR with appropriate human and financial resources and mandate to engage relevant ministries with accountability, monitoring and reporting mechanisms.**

6. **Member States should formalize the standing Quadripartite Joint Secretariat on AMR as a key coordinating mechanism of the global One Health response to AMR drawing on the mandates and roles of the Quadripartite and other relevant organizations in each sector.**

An independent panel on evidence for action on AMR must be urgently established

The IACG's recommendation in 2019 that the UN Secretary-General convene an independent panel on evidence for action on AMR, potentially modelled on the Intergovernmental Panel on Climate Change, has considerable resource implications and has not been followed up. Because data on AMR across sectors remain fragmented and better One Health evidence is needed to inform advocacy and action, the independent panel needs to be established as a matter of high priority.

A new global action plan on AMR is urgently needed to drive a more robust, multisectoral response

Even as the immediate crisis of AMR continues to escalate, there is a need to better frame AMR as a longer-term, multidimensional systems and development challenge. This can be achieved by embedding AMR in health, development, economic and trade policy and regulatory frameworks at global and national levels, including those that relate to pandemic prevention, preparedness, prevention and response; human, animal and plant health; R&D; and climate, pollution, biodiversity loss and the environment. As a first and urgent step, it is essential that the Quadripartite organizations update the 2015 Global Action Plan on AMR in light of recent knowledge and experience, ensuring that key gaps in the plan are addressed and driving a more robust, multisectoral response.

Global governance is critical for a coordinated response to AMR across sectors

Global governance for AMR entails sustained global leadership, advocacy and accountability among stakeholders. Binding and non-binding instruments are also considered tools to govern the AMR response. The Quadripartite Joint Secretariat (QJS) on AMR is an innovative model that facilitates strong inter-agency coordination and collaboration among the Quadripartite organizations without creating a new entity. For nearly five years, the QJS has demonstrated that the four organizations can effectively work together around a shared vision and mission by leveraging existing mechanisms and resources (QJS, 2024). Formalization of the QJS as a key coordination mechanism for the One Health response to AMR will consolidate its role, facilitate collaborative and coordinated action, and ensure that its impact is sustained with resources and the commitment of the Quadripartite organizations.

In the wake of the COVID-19 pandemic, WHO member states have been negotiating a convention on pandemic prevention, preparedness and response since 2022. The GLG has made a clear case that such an instrument should address all pathogens with pandemic potential, whether they are novel, treatable, or drug resistant, and that there are clear benefits to addressing AMR as part of pandemic prevention, preparedness and response. If the final WHO instrument does not do so adequately, further efforts will be needed to strengthen global governance and accountability in the AMR response, particularly to ensure sustained commitment and action at the country level. The GLG supports the outcome of the High-level Meeting to consider the development of an international instrument that positions AMR as a major global challenge and monitors its impacts.

Countries have developed multisectoral National Action Plans on AMR, but lack of robust coordination limits implementation

TrACSS data show that in 2023, more than 90% of countries had developed multisectoral National Action Plans on AMR, but the scope and quality of these plans vary widely, and only around a quarter of countries had costed and budgeted for the plan and had an effective monitoring system in place. Only half the countries responding to TrACSS in 2023 had an effective multisectoral coordinating mechanism in place to provide guidance and oversight to implementation. Moreover, in many countries there is still inadequate engagement of animal and plant health, food production and environmental sectors in these mechanisms.

National multisectoral coordinating bodies are needed to ensure strong and effective collaboration across sectors and ministries and for coordination and synergy among stakeholders. A national coordinating body for AMR should have clear terms of reference, with important areas of responsibility including governance and coordination at national and sub-national levels, resource mobilizations, capacity building, coherence of communication about AMR and ensuring the involvement of key stakeholders across sectors.

3.3 Surveillance and monitoring for action on AMR

KEY RECOMMENDATIONS

7 All countries should strengthen human resources, diagnostic, laboratory, and other infrastructure capacity to support sustainable, sector-specific, and integrated surveillance systems and the use of data for action and, by 2030, report quality-assured AMR and AMU surveillance data through global surveillance systems (GLASS, ANIMUSE and InFARM).

Sector-specific surveillance systems for AMR and AMU are crucial for action

The Quadripartite organizations have undertaken important work to strengthen surveillance and monitoring of the AMR response in their respective sectors. WHO collects and reports national AMR data for selected pathogens in human health through the GLASS system, which includes routine and focused surveillance, surveys and special studies of priority pathogens. WOAH publishes an annual report on antimicrobial use in animals through the ANIMUSE database; 157 countries reported data for the 2022 report. FAO is in near-final stages of establishing the InFARM system to systematically gather, analyze, and disseminate AMR data from food and agriculture, and antimicrobial use data in crops. There is currently very limited surveillance on AMR in the environment and no global guidelines or indicators to support it.

There is greater global attention to the need for integrated surveillance

The quality of data on antimicrobial resistance and use varies widely in countries and across sectors due to lack of financing and capacity constraints. Data on antimicrobial resistance are most available in the human health sector, but much more limited in the animal, plant and environment sectors. Overall, increased financing, infrastructure and technical capacity are required, and significantly more effort is needed across sectors to support data analysis, translate findings into action, and coordinate and align collection, sharing and reporting of data across sectors. The currently limited resources available for surveillance and disparities between sectors in surveillance systems and available data mean that there are significant gaps in data that limit a comprehensive One Health response.

While there are two AMR indicators for human health included in the monitoring framework of the Sustainable Development Goals (SDGs), there is no global indicator to monitor AMR across sectors. Monitoring of indicators requires human resources, diagnostic, laboratory, and other infrastructure capacity. To facilitate countries to establish integrated surveillance systems, the Quadripartite organizations are developing technical guidance which will include a purpose-led definition of integrated surveillance of AMR and AMU across sectors, priority metrics and indicators, resource needs and other requirements.

3.4

Evidence-based action to address the environmental aspects of AMR and strengthen prevention across sectors

KEY RECOMMENDATIONS

8 **By 2030, all countries should develop and have in place national plans and adopt measures to prevent contamination of the environment with antimicrobials and their metabolites, including from manufacturing, and integrate environmental dimensions into multisectoral National Action Plans on AMR.**

9 **By 2030, all countries should implement strategies in all sectors to prevent infections and reduce the need for antimicrobials across sectors, including infection prevention and control; water, sanitation and hygiene (WASH); vaccination, biosecurity and good animal husbandry practices; pollution control, waste and wastewater management; and ensuring equitable access to diagnostics and antimicrobials, and the development of alternatives to antimicrobials.**

There is growing recognition and understanding of the environmental dimensions of AMR, but more knowledge and action are needed

In 2022, UNEP joined the Tripartite collaboration, formalizing several years of close engagement on AMR, including full participation in the Tripartite and UNEP Joint Secretariat on AMR since 2019 (which later became the Quadripartite Joint Secretariat). In 2023, UNEP published a landmark report, "Bracing for Superbugs: Strengthening environmental action in the One Health response to antimicrobial resistance", which offers a comprehensive overview of scientific findings in this area. Despite increased recognition of the environmental dimensions of AMR and closer engagement of environmental stakeholders in the response at the global level, the environmental dimensions of AMR are still not well understood and there is a need for a more coordinated, robust, prioritized and financed action and research agenda in this area.

Priority action is needed to prevent and address key pollution sources from poor sanitation, sewage, community and municipal waste, healthcare services, pharmaceutical manufacturing, intensive crop production and terrestrial and aquatic animal production. This includes enhancing environmental planning and governance; mainstreaming AMR into the environment and vice versa; creating robust legal and regulatory frameworks, with international standards for effluent discharge; adequate national regulatory systems, with further industry and private sector engagement; identifying and targeting priority AMR relevant pollutants and addressing key sectors with a prevention focus; improving reporting, surveillance and monitoring; and prioritizing financing, innovation and capacity development.

Overall, greater effort is needed to implement comprehensive and coordinated environmental action in the One Health response to AMR, which will help reduce the risk and burden of AMR on societies while also helping to address the triple planetary crisis.

Up to 90% of antibiotics administered to livestock are excreted, entering directly into the soil and nearby surface and groundwater. Antimicrobials are also used as pesticides to treat and control plant diseases caused by bacteria and fungi. Current wastewater treatment systems are not capable of eliminating antibiotic residues and antibiotic-resistant bacteria, which are released into the environment through wastewater and sludge, contaminating the surrounding environment. More research is urgently needed to better understand the relationship between AMR and plant and environmental health.

Stronger measures are needed to monitor and manage waste and wastewater

Ministries of environment and relevant environmental agencies need to be more closely involved in developing and implementing multisectoral National Action Plans on AMR with environmental dimensions. Environmental regulations related to antimicrobial manufacturing, water, sanitation and hygiene standards, agricultural standards, solid waste management and infrastructure are also important. Furthermore, industry engagement and compliance through appropriate certification schemes could prevent contamination of the environment with antimicrobials and their metabolites. The GLG recommends that all countries should implement wastewater and waste management measures, including safe disposal of unused antimicrobials from households, farms, healthcare facilities and manufacturing plants.

Prevention should underpin the AMR response across sectors

Preventing infections and thereby reducing the need for antimicrobials must be a cornerstone of the response to AMR. Human and animal health systems should prioritize interventions such as infection prevention and control, WASH, biosecurity, vaccination and waste management across human and animal health and food, plant and environmental ecosystems in order to mitigate infectious disease risk and AMR. COVID-19 has amplified the need for many of these preventive interventions and the Quadripartite organizations have supported them as part of national action plans on AMR.

Robust animal health systems are key to preventing AMR in the agri-food sector and achieving targets

Stronger animal health systems are particularly important to prevent AMR in the agri-food sector. There is very little R&D related to AMR in plants and the environment and major gaps in knowledge about how pesticide and fungicide use in crops contributes to AMR in humans and animals. As noted in the GLG information note on animal health and welfare and antimicrobial resistance, robust animal health systems, including resilient biosecurity, prevention, infection control measures and good husbandry practices are fundamental prerequisites to maintain and improve animal health and welfare. Prioritization of vaccination programs and the development of alternatives to antimicrobials are key, in addition to coordinated interventions around pharmacovigilance, education and regulations. *The GLG recommends that all countries develop and implement defined animal vaccination strategies based on the WOAH priority list, and a funded implementation plan, by 2030*. Furthermore, a global R&D roadmap should be developed in the animal health sector to address the antimicrobial pipeline and ensure increased access to essential antibiotics while ensuring their appropriate use.

3.5 Outcome-oriented targets to accelerate progress

Targets are needed to raise the level of ambition and action in the global response to AMR and will catalyze the transformation of systems

KEY RECOMMENDATIONS

10 The GLG proposes the following **global targets** to catalyze action at national level:

- **Deaths caused by bacterial AMR:** By 2030, reduce global deaths caused by bacterial AMR by 10%.
- **Antibiotic stewardship and responsible use in humans:** By 2030, ACCESS group antibiotics comprise at least 80% of overall human antibiotic consumption.
- **Antimicrobial use in agri-food systems:**
  - > By 2030, reduce the quantity of antimicrobials used in the agri-food system globally by at least 30-50% from the current level;
  - > By 2030, eliminate the use of medically important antimicrobials for human medicine in animals for non-veterinary medical purposes, or in crop production and agri-food systems for non-phytosanitary purposes.

Based on these global targets, the GLG recommends that all countries should develop national, outcome-oriented, sector-specific targets with clear goals and timelines, and follow up on their implementation.

Effective, sustainable and transformed human health, agri-food, animal health and environmental systems are essential so that the use of antimicrobials is reduced and antimicrobial pollution and waste in the environment are prevented. The Third Ministerial Meeting on AMR was held in Muscat, Oman in November 2022. The Muscat Manifesto, currently endorsed by 47 countries, included, for the first time, targets on antimicrobial use in agri-food systems, animal health and human health sectors. These targets now require robust global endorsement by UN member states, followed by adaptation at the national level based on country context. Implementation of these global targets could also facilitate and inspire the scale-up of preventive measures.

4 Conclusion: 2024 is a critical opportunity for specific commitments and action

The world now has a limited and critical window of opportunity to respond at the scale and with the urgency proportionate to the rapidly increasing threats posed by AMR. Unless it does so, it will face an unprecedented health and economic catastrophe. It is therefore crucial that the outcome document of the 2024 High-level Meeting on AMR reflects urgency, makes specific commitments, and promotes greater accountability for action in the response to the ongoing pandemic of AMR. The GLG recommends the UNGA to establish a mechanism to periodically monitor and discuss progress on implementation of the 2024 political declaration and supports a mandate for a third High-level Meeting on AMR not later than 2029.

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