Report by the Director-General: Status of antimicrobial resistance national action plan implementation 2022–2023 and specific human health considerations ahead of the High-level Meeting on AMR to be held at the 79th session of the United Nations General Assembly

Antimicrobial resistance (AMR) is an urgent global health threat: the Global Burden of Diseases analysis estimates that in 2019, 1.27 million deaths were attributable to drug-resistant bacterial infections.[1] WHO is providing leadership, along with technical, policy and implementation support to countries in the following areas:

1. development, costing, implementation and monitoring of AMR national action plans (NAPs) and reporting progress through the Tracking AMR Country Self-assessment Surveys (TrACSS);
2. promotion of a people-centred approach including provision of a package of priority AMR interventions to be integrated at all levels of health systems;
3. improving the quality and coverage of AMR and antimicrobial use surveillance (including reporting to WHO's Global AMR and antimicrobial use surveillance system, GLASS), and building laboratory and diagnostic capacities;
4. antimicrobial stewardship and optimizing the use of medicines (including promoting the adoption of the AWaRe antibiotic framework);
5. prevention of infections, including improving infection prevention and control (IPC) in health-care facilities, immunization, and water, hygiene and sanitation (WASH) in health-care facilities and in the community;
6. awareness-raising, community and stakeholder engagement, advocacy and behavioural insights, communication and behaviour change;
7. generation of evidence to guide research and development, and public health action, such as priority pathogen lists and a priority research agenda.

An analysis of the responses from the TrACSS over the past seven years shows an overall trend of an increase in the number of countries reporting the status of their AMR national action plan implementation. In 2023, a record 177 countries, representing over 90% of the global population, participated in TrACSS providing valuable information.[2] Data from TrACSS was also used by WHO to publish the first quadripartite biennial report on implementing the global action plan on antimicrobial resistance 2020–2021.[3]

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[1] Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. The Lancet; 399: 629-655. https://doi.org/10.1016/S0140-6736(21)02724-0

[2] The survey was sent to 194 WHO Member States. FAO, WHO and WOAH country membership can differ. Based on precedent and for consistency, WHO Member States are used in the rest of this report.

[3] World Health Organization, Food and Agriculture Organization of the United Nations, United Nations Environment Programme & World Organisation for Animal Health. (2023). Implementing the global action plan on antimicrobial resistance: first quadripartite biennial report. World Health Organization. https://iris.who.int/handle/10665/375008.

I. Summary of analysis of TrACSS 2023

AMR national action plans: Data from TrACSS, and through information received from Member States, indicate that in 2023, 178 countries had developed and endorsed their multisectoral AMR national action plans. In addition, many countries were also in the process of developing the next version of their NAPs. Data from TrACSS 2023 suggest that while 68% (121 out of 177 respondents) of countries were implementing some elements of their plan, only 27% (49 of 177) had a fully costed and budgeted NAP that was being implemented and monitored effectively. Furthermore, only 20 of 177 (11%) countries have made financial provisions in their national budgets to support the implementation of their NAP. While the development and official endorsement of AMR NAPs indicate a level of political commitment across countries in all World Bank income groups, there remains an urgent need to address the gaps in implementation and financing.

Multisectoral AMR NAP implementation

Multisectoral coordination on AMR. As a multisectoral challenge, AMR requires a One Health approach with the engagement and close coordination of all sectors together with the effective implementation of sector-specific strategies. Countries with functional multisectoral coordination mechanisms are more likely to effectively implement their national action plans. Just over 92 countries (slightly more than half) reported having a functional AMR multisectoral coordination mechanism, characterized by technical working groups with clear terms of reference and funded activities. Almost 95% of countries (167 of 177) reported that the human health and terrestrial animal health sectors are the primary sectors participating in AMR multisectoral coordination, followed by food safety, environment and others. There is a need, however, to increase the engagement of aquatic animal health, food production and plant health sectors. WHO has developed and is organizing innovative workshops at country and regional levels to impart skills to enhance multisectoral coordination and collaboration among key national staff from various sectors.

Raising awareness of AMR. The proportion of countries with a national AMR awareness campaign has remained at about one third and has not increased substantially since 2018–2019. Only 69 countries (36%) have nationwide, government-supported antimicrobial resistance awareness-raising campaigns targeting all or most of the priority stakeholder groups. Human health and terrestrial animal health sectors are reported to be primarily involved in AMR awareness campaigns. Greater efforts are needed to engage youth, civil society, AMR survivors, the private sector and patient safety advocates.

Legislation on antimicrobial use. In the human health sector, 160 of 177 countries (90%) report having regulations in place on sales and prescriptions of antimicrobials for human use. However, TrACSS data indicate that only 85 countries (48%) report monitoring total sales of antibiotics for human use at national level. Enforcement of these regulations is essential to mitigate antimicrobial resistance. Data suggests that some countries have also adopted laws and regulations to guide antimicrobial use in terrestrial animal health (79%), aquatic animal health (60%) and plant health (66%).

AMR NAP implementation in the human health sector

AMR NAP integration with other national health sector plans. Seventy-six percent of countries (134 of 177) reported that their AMR NAPs were linked to other plans, most frequently One Health strategies and national health sector plans, followed by plans on health security and WASH. Establishing links with wider health sector plans reinforces the recognition of AMR as a cross-cutting challenge that impacts all aspects of health systems and health emergency preparedness and response, and enhances the sustainability of the AMR response. Furthermore, this also allows AMR interventions to be financed through budget lines under other well-established national health sector plans.

Training and professional education on AMR. Nearly 72% of countries (127 of 177) offered at least some training on AMR for health-care workers in human health but only about 11% (20 countries) were systematically incorporating AMR into curricula for health-care workers. An increasing number of countries offer at least some pre-service training, but while it is urgently needed, this has plateaued in recent years.

National surveillance for AMR in humans. In 2023, nearly 60% of countries (103 of 177) reported (through TrACSS) having standardized AMR surveillance systems with a designated national reference laboratory and a national coordinating centre. The trend over the years indicates a steady and consistent increase in the proportion of countries with standardized national AMR surveillance systems. WHO has begun piloting national prevalence surveys in countries to ensure the collection of nationally representative AMR data. These data will help calculate the national AMR burden, attributable mortality due to AMR, and additional health-care expenditure due to drug-resistant infections.

AMR SDG Indicator 3.d.2. GLASS collates the surveillance data that inform the Sustainable Development Goals (SDG) indicator for AMR (3.d.2) – the proportion of bloodstream infections due to *Escherichia coli* resistant to third generation cephalosporins and due to methicillin-resistant *Staphylococcus aureus* (MRSA). According to the GLASS 2022 report[4], the median proportions of third-generation cephalosporin-resistant *E. coli* and methicillin-resistant *S. aureus* (MRSA) causing bloodstream infections reported by 76 countries, territories and areas (CTAs) are 42% and 35%, respectively. These proportions were much lower in 19 CTAs that have better testing coverage (11% for third-generation cephalosporin-resistant E. coli and 7% for MRSA). Most low- and middle-income countries reported lower testing coverage for both SDG indicators compared to high-income CTAs.

Antimicrobial use in human health. In the TrACSS 2023, less than half of countries (85) responded that they monitored total sales of antimicrobials at national level, while 27% have no national plan or system for monitoring antimicrobial use. However, the number of countries with a national monitoring system for total antimicrobial sales has been increasing slightly over the years. There is an urgent need to scale up the collection, analysis and use of the data in countries to promote effective antimicrobial stewardship and increase the number of countries sharing antimicrobial consumption data globally through GLASS.

[4] World Health Organization. (2022). Global antimicrobial resistance and use surveillance system (GLASS) report: 2022. https://iris.who.int/handle/10665/364996.

Clinical laboratory services – bacteriology. More than half (65%) of the countries reported that one or more reference laboratories were performing antibiotic susceptibility testing (AST) for all pathogens listed in GLASS and another 32% were able to perform AST for some of the listed pathogens. More than half (56%) of the countries reported that all clinical laboratories and national reference laboratories were using standardized AST guidelines, while 34% reported that only some clinical laboratories and national reference laboratories were using standardized guidelines. However, while 46% of countries reported that external quality assurance (EQA) was being implemented in some laboratories in the public health system, only 32% of countries reported that EQA was compulsory and/or being implemented in all laboratories. Field missions by WHO also indicate that there is an urgent need to strengthen bacteriology laboratories in low- and middle-income countries, with training, equipment and an uninterrupted supply chain. In 2024, WHO launched the AMR Diagnostic Initiative to address this critical need in a comprehensive manner and ensure quality and timely diagnosis for clinical care and patient management.

National implementation of infection prevention and control (IPC) programmes. Less than 40% of countries reported implementing national IPC programmes nationwide that were in line with WHO IPC core components. A similar percentage reported that all health-care facilities in the country had a functional built environment (such as water and sanitation). These proportions increased only slightly among countries reporting to TrACSS over the last 7 years.

Optimizing antimicrobial use in human health. In 2023, 113 (64%) countries reported having national guidelines for appropriate antimicrobial use that were being implemented in some health-care facilities, with little variation over the past 7 years.

Adoption of AWaRe[5] (Aware, Watch, Reserve) classification of antibiotics into national Essential Medicines List (EML). WHO developed the AWaRe classification to assist antimicrobial stewardship policies and interventions at local, national and global levels. AWaRe breaks down antibiotics into 3 categories. *Access* are narrow-spectrum antibiotics that are often first or second choice for the treatment of most common infections *Watch* are broader-spectrum antibiotics that have a disproportionate impact on the emergence and spread of AMR, the use of which should be limited to specific indications. *Reserve* are antibiotics of last resort for the treatment of multidrug-resistant infections. WHO has a target that 60% of all antibiotics used in a country must come from the *Access* category – the group of antibiotics at lowest risk of contributing to the further emergence and spread of AMR resistance. In 2023, 79 countries (45%) reported adopting the AWaRe classification into their national essential medicines list. The trend over the past four years points to an increase in adoption of the framework. Over 90% of all antibiotics globally are used in the outpatient setting for infections that either do not need antibiotics (because they are of viral origin or self-limiting) or can be treated with *Access* antibiotics. WHO therefore proposes to increase the target of the use of *Access* group of antibiotics to 80% of national use to help preserve the effectiveness of antibiotics in the *Watch* and *Reserve* categories.

[5] Web Annex C. WHO AWaRe (access, watch, reserve) classification of antibiotics for evaluation and monitoring of use, 2023. In: The selection and use of essential medicines 2023: Executive summary of the report of the 24th WHO Expert Committee on the Selection and Use of Essential Medicines, 24 – 28 April 2023. Geneva: World Health Organization; 2023 (https://www.who.int/publications/i/item/WHO-MHP-HPS-EML-2023.04)

II. Adoption of the resolution on AMR by the WHA77 and WHO strategic and operational priorities, 2025-2035

At the Seventy-seventh World Health Assembly in 2024, resolution WHA77.6 to accelerate national and global responses on antimicrobial resistance (AMR) was adopted by the Member States[6], ahead of the second UN General Assembly (UNGA) High-Level Meeting (HLM) on AMR taking place in September 2024.

The resolution welcomes the **WHO strategic and operational priorities to address drug-resistant bacterial infections in the human health sector (2025–2035)[7]** that is under-pinned by the WHO people-centred approach to addressing AMR in human health.

The four strategic priorities are:

1. Prevention of infections;
2. Universal access to affordable, quality diagnosis and appropriate treatment of infections;
3. Strategic information, science and innovation; and
4. Effective governance and financing of the human health sector response to AMR.

The operational priorities for accelerated implementation are:

1. A people-centred approach and core package of country-level interventions;
2. Additional country and global actions on governance and financing and
3. Enabling actions to support Member States.

The strategic vision underlying the priorities is the control and reversal of the urgent public health and socioeconomic crisis due to drug-resistant infections in humans, as a crucial contribution to the global effort to build a healthier world for all. The aims are to slow the emergence and spread of drug-resistant bacterial infections and to preserve effective antibiotics, for the benefit of everyone, everywhere in current and future generations.

The resolution urges Member States to apply these priorities and implement the core package of country-level interventions through their AMR national action plans. Areas of focus include the governance, financing, implementation and monitoring of national action plans, and the development of a concise and action-oriented, consensus-based political declaration for adoption at the UNGA HLM on AMR.

[6] https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_R6-en.pdf
[7] https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_5-en.pdf

III. Human health priorities for the UNGA High-level Meeting on AMR

In preparation for the United Nations High-level Meeting on AMR to be held during the General Assembly of the United Nations, the WHO secretariat identified key messages and recommendations for consideration by the Member States in the High-level Meeting negotiation process. In summary:

Urgent action is needed to turn the tide of resistance to life-saving antimicrobial medicines. The UNGA High-level Meeting is a unique opportunity for world leaders to slow the emergence and spread of AMR – to save 2.5 million lives by 2035, protect the gains of modern medicine and ensure that present and future generations can access effective antimicrobials when needed.

While recognizing that AMR requires a comprehensive One Health response across human health, animal health, agri-food sectors and the environment, to accelerate progress in the human health sector the WHO secretariat proposes six recommendations for consideration by Member States:

1. **Leadership and governance**. Ensure effective, well-resourced and sustainable leadership and coordination that includes all relevant stakeholders;
2. **Financing.** Allocate domestic and international funds for national, regional and global action;
3. **Evidence for action.** Strengthen AMR surveillance, research and sharing and use of data;
4. **Effective implementation.** Accelerate implementation of human health sector priorities, based on a people-centred public health approach and core interventions package;
5. **Capacity in countries.** Scale up learning, experience sharing and technical support for countries to accelerate national responses, address inequities, and monitor and report progress; and
6. **Innovation.** Promote science, research and innovation, including research and development, and access measures.

To galvanize action and enable monitoring of progress, WHO is also proposing specific, measurable, ambitious and inspiring goals and targets for Member States to consider.

A more detailed description of each of the proposed recommendations for consideration by Member States is provided below.

1. Leadership and governance: ensure effective, well-resourced and sustainable leadership and coordination that includes all relevant stakeholders.

Leadership and oversight are needed at the highest levels of government to accelerate and sustain both multi-sectoral and sector-specific planning, coordination and action.

- Strengthen national health sector and multi-sectoral leadership, ownership and oversight of the AMR response at the highest levels of government. For example, some countries have set up AMR coordination structures at cabinet level or in the deputy president / prime minister's office.
- Alongside effective multi-sectoral coordinating bodies, ensure that health sector governance structures for AMR are established, functioning, well-resourced, inclusive

and accountable – including recognition and engagement of all relevant stakeholders including civil society, communities, youth, AMR survivors, the health workforce and the private sector.
- Champion efforts at all levels to raise awareness of AMR, educate and promote positive behaviours, especially among health decision-makers, the health workforce, media, schools and the general public.
- Review and update human health and muti-sectoral global governance processes established since 2016, as recommended collectively by the Quadripartite, including strengthening and sustaining the Quadripartite Joint Secretariat hosted by WHO.

2. Financing: allocate domestic and international funds for national, regional and global action.

Current domestic and international funding to address AMR is inadequate. Progress has been made in countries in accessing funds from the Global Fund, Pandemic Fund and other bilateral and multilateral sources, but increased health sector funding is urgently needed. A core package of human health AMR interventions has an estimated return on investment of roughly 10:1[8]; in many countries reducing inappropriate use of antibiotics will have large, direct and indirect savings for health budgets; and the cross-cutting nature of AMR interventions can lead to other efficiency gains.
- Increase domestic financing to address AMR in national health sector plans and budgets, while ensuring funding for AMR-relevant interventions is aligned with budgets for relevant disease programmes and health systems strengthening.
- Develop, with technical support from WHO and other relevant partners if requested, examples of country-specific investment cases for domestic and international health and multi-sectoral financing to accelerate implementation of prioritized and costed AMR national action plans.
- Recognizing the need for solidarity, increase official development assistance and strengthen global financing modalities to address AMR; this could include requesting the United Nations Secretary-General to establish an ad hoc inter-agency working group on financing to address AMR.

3. Evidence for action: strengthen AMR surveillance, research, and sharing and use of data.

There are critical gaps in information to guide national and global responses to AMR and monitor progress. To build on the achievement of 90 countries now reporting data to the WHO Global AMR and antimicrobial use Surveillance System (GLASS), redoubled efforts are needed on surveillance, laboratory capacity, and strengthening the evidence base to inform appropriate and well-targeted action.
- Collect and report quality data to GLASS on antimicrobial resistance and antimicrobial use; use data to guide public health decisions and action; and share data across sectors, both in countries and via global data systems and their planned integration (GLASS, InFARM, ANIMUSE).

[8] Economic analysis commissioned by the Global Leaders Group on Antimicrobial Resistance and Quadripartite Joint Secretariat, forthcoming

- Strengthen the AMR evidence base through implementation of nationally representative AMR prevalence surveys and priority research agendas for human health[9] and for One Health.[10]
- Strengthen bacteriology and mycology laboratories and quality-assured laboratory networks, including through the WHO Global AMR Diagnostics Initiative.

4. Effective implementation: accelerate implementation of human health sector priorities, based on a people-centred public health approach and core interventions package.

WHO's *Strategic and operational priorities to address drug-resistant bacterial infections in the human health sector, 2025-2035* sets out a clear vision, aims and objectives for human health for countries to take forward in their multi-sectoral national action plans (NAPs) to address AMR that are based on implementation of a comprehensive people-centred approach and accompanying package of interventions.

- Apply, in their AMR NAPs, the WHO *Strategic and operational priorities to address drug-resistant bacterial infections in the human health sector, 2025–2035*, and integrate the WHO people-centred approach and its core package of interventions in universal health coverage benefit packages and national health sector strategies and plans, including for primary health care, universal health coverage and health emergency preparedness and response.
- Pay particular attention to strengthening diagnosis of infections, including through the WHO AMR Diagnostic Initiative; improving access to affordable and good quality health services; antibiotic stewardship based on the WHO AWaRe antibiotic framework; AMR awareness-raising and education at all levels, including pre- and in-service training to build health workforce knowledge and capacity; and integration of gender, equity and human rights considerations in AMR interventions.
- Maximize mutually reinforcing joint efforts on AMR with other relevant programmes, strategies and funding, e.g. for immunization; WASH; infection prevention and control; primary health care for universal health coverage; HIV, TB, malaria, sexually transmitted infections and other diseases; health emergencies; medicines and health products; science and research; gender equality, human rights and health equity; and others.

5. Capacity in countries: scale up learning, experience sharing and technical support for countries to accelerate national responses, address inequities, and monitor and report progress.

Countries at all income levels are requesting technical support, advice and guidance, tailored to local contexts, in all these areas. Quality and consistent technical support is needed to address both short- and longer-term needs, especially to ensure equitable access to all AMR interventions.

- Scale up tailored technical support to countries in response to demand, for example through the new WHO global AMR Technical Assistance Mechanism (AMR-TeAM) and its roster of AMR experts.

[9] https://www.who.int/publications/m/item/global-research-agenda-for-antimicrobial-resistance-in-human-health
[10] https://www.who.int/publications/i/item/9789240075924

- Foster learning and sharing of experience across countries at all income levels on how to oversee and accelerate the human health sector response to AMR and how to ensure a people-centred response that leaves no-one behind.
- Monitor AMR national action plan implementation and impact of interventions to inform policy decisions, and report annually at the national, regional and global levels, including through the Tracking AMR Country Self-assessment Survey (TrACSS).[11]

6. Innovation: promote science, research and innovation, including research and development, and access measures.

There is an inadequate research and development (R&D) pipeline for new vaccines, diagnostics and antimicrobials to prevent and address AMR, especially for antibiotics. Urgent action is needed to address both this R&D crisis and the accompanying crisis of inequitable access to existing and new antimicrobials.

- Strengthen the AMR R&D ecosystem for vaccines, diagnostics, antimicrobials and alternatives through sustainable and predictable financial and non-financial measures and resources, including push and pull incentives that target areas of greatest public health need.
- Bolster equitable and global access to all essential health products for AMR, including by integrating AMR in relevant international cooperation mechanisms, supporting regional and global access initiatives, working with the private sector and including diagnostics and antibiotics in AMR national action plans.
- Strengthen global coordination of these R&D and access measures, building on existing partnerships and forums, and drawing on recommendations such as those of the Global Leaders Group on AMR to address the antibiotic pipeline and access crisis in human health[12].

Targets and monitoring of progress

Previous high-level meetings have catalyzed greatest impact when Member States agreed meaningful, inspirational, action-oriented and measurable targets. The WHO secretariat is proposing that Member States consider adopting human health targets at the HLM.

At WHO's 154th Executive Board, many Member States and other stakeholders expressed their expectation that the High-Level Meeting would result in targets to guide action and would be accompanied by the development of national and global measurement and monitoring frameworks. WHO developed a draft measurement framework for the *Strategic and operational priorities to address drug-resistant bacterial infections in the human health sector, 2025-2035.*[13] This draft framework was opened to comments by Member States and partners until 2 August 2024. An analysis of the feedback received through the global consultation will be shared with all Member States.

[11] https://amrcountryprogress.org
[12] https://www.amrleaders.org/resources/m/item/glg-recommendations-to-address-the-antibiotic-pipeline-and-access-crisis-in-human-health
[13] amr-strategic-and-operational-priorities-draft-monitoring-framework-and-indicators.pdf (who.int)