



Task Force 6  
Accelerating SDGs: Exploring New  
Pathways to the 2030 Agenda



# RESPONDING TO THE SILENT EPIDEMIC OF ANTIMICROBIAL RESISTANCE (AMR)

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# Abstract



**A**ntimicrobial resistance (AMR) is a threat to animal and plant health, resulting in major food security and food safety concerns. The World Bank estimates that unchecked AMR is likely to reduce annual global gross domestic product by 1.1 percent by 2050. Ninety-five percent of the world's population currently live in nations that have finalised national action plans (NAPs) for AMR. The Quadripartite Organizations have advocated a One Health (OH) approach for dealing with health challenges at the human-, animal-, plant-, and environment-interface, both globally and regionally. The G20 has been focused on a OH multi-stakeholder approach. Key policy points for the G20 agenda include:

- Promoting AMR awareness and understanding through knowledge dissemination and capacity building of healthcare workers, policymakers, and other stakeholders.
- Strengthening surveillance and research on antimicrobials that should lead to reduction of AMR in humans, animals, and the environment.
- Enhancing access to and safe use of antimicrobials in agriculture, animals, and humans.

Committing increased financial investment and building a case for return on investment on new antimicrobials, diagnostics, and other innovations that are country- and region-specific.



# **The Challenge**



# **1**

## Silent pandemic

Antimicrobial resistance (AMR) is a silent pandemic that has rightfully gained attention as the development and use of antibiotics have increased among humans, animal husbandry, and agriculture. The impact of AMR is immense: it has increased health care costs; caused millions of preventable deaths and long-lasting disabilities; has become a threat to food security; has severely affected livelihoods; and led to loss of lives.

The international community seeks to be more vigilant and responsive to this threat of AMR, which has globally caused an estimated 700,000 annual deaths.<sup>1</sup> AMR is also a threat to animal and plant food health, resulting in major food security and food safety concerns. The overuse of antibiotics was reported from South Asian countries during the COVID-19 pandemic.<sup>2</sup>

## Background

The international medical research community agree that AMR is an impediment to achieving the Sustainable Development Goals (SDGs).<sup>3</sup> The factors accelerating the spread of resistant pathogens include poor access to health services, ineffective regulatory frameworks, and lack of awareness about AMR risks and AMR stewardship at all levels of the health system. The Institute for Health Metrics and Evaluation projected 1.27 million deaths (95 percent uncertainty interval 0.1–1.71 M) caused by drug-resistant infections in 2019, with the highest mortality rate in Sub-Saharan Africa and Asia.<sup>4</sup> The mortality due to poor access to critical antimicrobials is more than 5.7 million per year globally. Effective, affordable diagnostics play a crucial role in correct antibiotics prescription, access to which is compromised in many LMICs.

## Box 1: World Bank Projections of AMR impact by 2050<sup>5</sup>

- **GDP.** In an optimistic scenario of comparatively low impact, unchecked AMR will likely reduce by 2050 the annual global GDP by 1.1 percent. In a high AMR impact, by 2050, drug-resistant infections could cut annual global GDP by 3.8 percent.
- **Poverty.** AMR is projected to lead to a pronounced increase in extreme poverty. By 2050, of the additional 28.3 million people falling into extreme poverty in the high-AMR scenario, the vast majority (26.2 million) will be in the low-income countries.
- **Livestock.** Livestock production in low-income countries will decline the most by 2050, with a possible 11-percent loss in the high-AMR impact scenario.
- **Trade.** By 2050, the volume of global real exports could fall below base-case values by 1.1 percent in the low-AMR scenario and by 3.8 percent in the high-AMR scenario.
- **Healthcare costs.** In the high-AMR scenario, healthcare expenditures in 2050 can be as much as 25-percent higher than the baseline values for low-income countries, 15-percent higher for middle-income countries, and 6-percent higher for high-income countries.

## Global efforts

In 2015, the 68<sup>th</sup> World Health Assembly endorsed a global action plan (GAP) that strengthened an effective policy guidance for AMR and laid down implementation mechanisms. GAP focuses on improving awareness through education and training, strengthening surveillance and research, preventing infections, improving sanitation, optimising antimicrobial use, and developing the case for sustainable investment.<sup>6</sup>

The Quadripartite Organisations—Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme (UNEP), World Health Organization (WHO), and World Organisation for Animal Health (WOAH)—work together on the health challenges at the human-, animal-, plant-, and environment-interface, both globally and regionally. In their current joint action plan (2022–26), the Quadripartite Organisations have used the principles of the ‘One Health’ (OH) approach for better multi-sectoral collaboration, capacity building, and effective coordination.



# **The G20's Role**

# **2**





**T**he G20 leaders agreed in 2016 that AMR poses a substantial risk to public health and global economies. WHO, the FAO, the WOA, and the Organisation for Economic Co-operation and Development (OECD) were commissioned to report in the next summit (2017) with possible solutions.<sup>7</sup> A health track was added for the first time under the German presidency (2017) to discuss the priorities in global health,<sup>8</sup> and the Berlin declaration, ‘Shaping an interconnected world’, focused on combatting antimicrobial resistance.<sup>9</sup> The G20 meeting of health ministers in 2018 welcomed the commitment of G20 agriculture ministers to cooperate and spread awareness on the prevention and prudent use of antibiotics in agriculture.<sup>10</sup>

The establishment of the Global AMR R&D Hub in Berlin was another milestone to help G20 members with the latest AMR research and provide opportunities for investment and collaboration. This was matched with support to develop new, affordable, and safer antimicrobial medicines with a focus on efforts to deal with drug resistance in fungal infections, and drug-resistant HIV, TB, and malaria.<sup>11</sup> The 2019 summit reaffirmed the commitment to achieving

universal health coverage by 2030, management of health risks and health security by strengthening sustainable financing, human resources, and institutional capacities to implement the NAP, and regional action plans under an OH approach.<sup>12</sup> The 2020 summit took stock of the COVID-19 pandemic with a reaffirmation to comply with international health regulations (IHR 2005), which includes the capacity enhancement of a country and timely sharing of data through its declaration.<sup>13</sup>

The Bali Summit in 2022 emphasised the need for a multisectoral approach to achieve OH global goals to enable pathogen surveillance and collaborate towards systemic evidence synthesis of gaps as well as lay the groundwork for a systematic implementation of NAPs.

### **Key challenges in global efforts to tackle AMR**

Two years after the GAP, global efforts have ensured that 95 percent of the world’s population are in countries that have finalised their NAPs for AMR.<sup>14</sup> However, the national governments face challenges, such as limited knowledge for designing supportive policies and programmes, ensuring coordinated action, resolving conflicting sectoral interests, and enforcing sanitation.



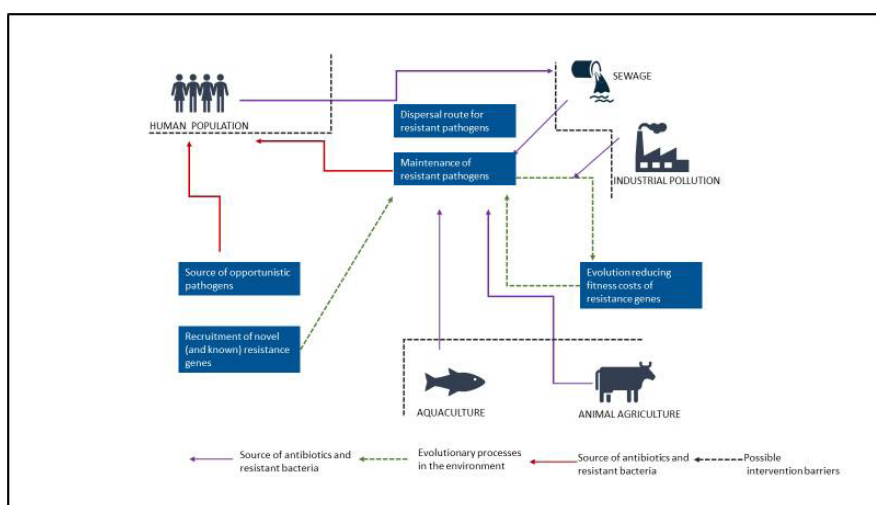
These governments also face challenges in surveillance of microbial spread, the trends of these spread, and setting up of standards for infection prevention. The other less explored, less understood, yet vital area of concern for AMR is infection prevention and control (IPC).

Challenges remain in tracing the entire chain of antibiotic production, prescription, and consumption in all sectors, and its presence in air, water, and soil. The prevention of infections, particularly in post-surgery, result in reducing the need of antibiotics. Prevention of infections can greatly influence the spread of AMR and should be an important element of the


advocacy campaigns, which is often missing. Pharmaceutical discharge into water bodies is another continuing challenge; technologies for preventing the entry into and removal of antibiotics from the environment are being explored. The current action plans also need reflection and revision as they only discuss advocacy and education, but not about shortages in trained human resources (HR) and infrastructure (clinical, diagnostics, and public health research).

Emerging and re-emerging infectious diseases still account for more than 60 percent of the total burden of diseases in both humans and animals.<sup>16</sup> Trade of domestic animals and their products

**Fig 1: Role of Environment in Antibiotic Resistance Development**



Source: Adapted from Scott Metcalfe et al., "Combating Antimicrobial Resistance Demands Nation-Wide Action and Global Governance"<sup>15</sup>



facilitates this spread of microbial agents over long distances and countries. Still, the progress on establishing an effective and responsible governance structures is slow. Despite G20 discussing AMR problems since 2016, one of the areas of concern in AMR governance structures is to go beyond tokenism and effectively engage international and regional agencies to mobilise the much-required resources.

To be sure, a number of countries have taken important initiatives. For example, Indonesia is developing surveillance plans, India has been working on state action plans, and Australia is focusing and prioritising reduction of antibiotic use in animals.

The Indian Presidency of G20 has advocated adopting the OH approach to deal with the challenge of AMR. The current G20 platform can be advantageously used to ensure better investment flows to implement regional action plans, and bring in funding for new diagnostics, antibiotics, and vaccines with supporting market infrastructure. The possibility of private sector engagement for well-structured supply chains should also be explored.

## Recent global innovations

Over the years, as awareness has evolved, countries are constantly innovating with AMR measures. Bangladesh's experience of its IPC programme in Cox's Bazar is instructive. All health facilities were upgraded to institutionalise IPC; this directly dealt with healthcare-associated infections (HAI). Kenya has outlined a comprehensive approach in its NAP to evaluate its operations and human resources requirements.<sup>17</sup> Germany, Switzerland, and the United Kingdom have adopted the WHO AWaRe (Access, Watch, Reserve) categorisation for surveillance of antibiotic use in 2020. England and Scotland have adapted the AWaRE index by recategorising some of the antibiotics, taking cues from local resistance profiles and antibiotic use according to their local antibiotic drug scenario.


The NAPs of many countries are yet to make use of appropriate data for utilising the existing infrastructure, deal with the need for staff capacity-building for AMR, and conduct an economic analysis of the necessary technologies required.<sup>18</sup>



# **Recommendations to the G20**

# **3**





**T**he goal of international agreements on AMR is to garner support for the development and implementation of NAPs. Accountability must be ensured by each actor, globally and locally.<sup>19</sup> WHO, the FAO and the OIE have been tracking the progress across regions and have come to a reasonable conclusion that an OH-based approach is required to define a monitoring framework based on cross-sectoral coordination.<sup>20</sup>

The UN Sustainable Development Cooperation framework included two specific indicators on AMR in 2012 as part of SDG 3 (good health and well-being); SDG indicator 3.d.2 is on percentage of bloodstream infections due to selected antimicrobial-resistant organisms; and SDG indicator 3.d.3 is on proportion of health facilities that have a core set of relevant essential medicines which are available and affordable sustainably (where antibiotics will be disaggregated from the core set of data used in the metadata). A problem of such complexity that involves multiple sectors requires a holistic approach such as OH. While Italy (2021 presidency) and Indonesia (2022 presidency) concentrated on the setting up of regional manufacturing

and research hubs, India focuses on adopting the OH approach to deal with the linkages among humans, animals, and the environment to mitigate the effects of AMR on communities.

Following are recommendations to strengthen AMR governance in NAPs:

- **Capacity-building for research and within the health systems to tackle AMR**

The LMIC landscape on AMR is still lacking informed awareness of the problem. Additionally, weak health systems, the governance of AMR, and the increasing burden of diseases are the biggest stumbling blocks in aligning the NAPs with GAP and achieving the targets stipulated in NAPs. Capacity-building at all levels and stakeholder engagements should be the priority of any dialogue on AMR. Many countries lack robust healthcare infrastructure on human resources for health, access to clinical microbiology laboratories, and mechanisms for disease surveillance.<sup>21</sup> The core of capacity-building is interdisciplinary and intersectoral, and requires international collaboration, which should foster cross-learning in LMICs. Investment in capacity-building will result in sustained delivery of

services and help achieve the SDGs. Research and innovation will be essential in the planned management of AMR. This is not only restricted to discovering new antimicrobials but also in setting the agenda for countries as they build their NAPs.


- **Strengthening surveillance through better coordination across sectors**

Surveillance data guides AMR planning and management; without the availability of credible data, the effects of interventions cannot be measured. There is currently a lack of coordination across government departments on routine data sharing, which needs to be tackled. Setting up surveillance networks in countries entail identifying gaps in data collection and utilisation and streamlining the sharing of data across research organisations of different sectors (human, animal, and environmental). The Global Antimicrobial Resistance Surveillance System (GLASS) was developed by WHO to support the global action plan on AMR. This system is for AMR surveillance in humans, and similarly, other sectors can take lessons and establish similar systems for animals

and agriculture. Even though some surveillance efforts are in place, funding is required for studies to understand barriers to surveillance and its effective and regular use for informed decision-making.

- **Resource allocation to strengthen IPC**

IPC remains another important area of research, and countries need to deal with common protocols in the NAPs. Much of the focus during the COVID-19 pandemic was on infection prevention and control. Mandatorily using IPC in all of healthcare is critical in tackling the AMR crisis.<sup>22</sup> Countries can further tighten their targets to reduce hospital-acquired infections in their existing healthcare action plans. This must be matched with adequate funding for developing new technologies and diagnostics, and research on interventions to reduce healthcare infections. It should be strengthened in areas marred by humanitarian crises and disasters, where the challenge is to operate and treat with limited resources. The G20 must come up with guidelines for the use of antibiotics in health emergencies.



- **Access to and safe use of antimicrobials in agriculture, animals, and humans**

Until now much of the focus remains on human use of antimicrobials. The G20 platform must strive to achieve greater understanding and inclusion of plant health, food safety, and environmental safety into the AMR plans. Guidelines should be developed for greater safety in laboratory research and use of animals in research. Unnecessary and irrational use of antibiotics in animals has been the focus of European nations since 2006, which resulted in a 20-percent decline of unnecessary and irrational antibiotics use in animals between 2011–16 across 25 EU members.<sup>23</sup> Each sector, such as poultry, beef, and seafood have their unique characteristics; antibiotic use reduction targets would have to be supplemented by training in animal hygiene and other relevant technologies and management activities.

- **Increased resource allocation for new antimicrobials, diagnostics, and other innovations and collaboration with private sector**

This calls for different sectors like public health research, health economics, the


social sciences, and public and private sectors to work together to understand the unique problems of AMR that are both region- and country-specific. This will help bring out the burden that the unique problems of AMR impose on health institutions, and national financial resources and infrastructure and which can be averted through careful prevention and management. No one country can succeed in its efforts alone; these initiatives must be organised both regionally and globally so that no country is left behind. This requires consistent political commitment to ensure that unbiased research can be promoted which is not influenced by commercial considerations.<sup>24</sup> Government research institutions and philanthropic research organisations of member countries need to coordinate and prioritise OH approaches to AMR and its prevention. It is also imperative that novel antimicrobial-related research is funded to ensure that they are affordable and accessible.

Attribution: Shweta Sharma, Pallavi Mishra, and Rajib Dasgupta, “Responding to the Silent Epidemic of Antimicrobial Resistance (AMR),” *T20 Policy Brief*, June 2023.


## Endnotes

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