



15 June 2021

Excellency,

I have the honour to share herewith the summary of the High-level Interactive Dialogue on Antimicrobial Resistance (AMR) convened on Thursday, 29 April 2021, in accordance with General Assembly resolution 74/2 entitled, “Political Declaration of the High-level Meeting on Universal Health Coverage” adopted on 10 October 2019.

The summary highlights key messages and discussions from Member States, the United Nations system, and other stakeholders. I sincerely hope the summary will benefit the global cause in tackling AMR, the “silent tsunami”.

I once again take this opportunity to thank all Member States for their proactive engagement, strong political resolve around the fight against AMR and the achievement of universal health coverage. This Dialogue has helped us, not only, in building back better, but also in translating our commitments and visions into concrete and accelerated actions.

Please accept, Excellency, the assurances of my highest consideration.

Volkan BOZKIR

All Permanent Representatives and
Permanent Observers to the United Nations
New York



High-Level Interactive Dialogue on Antimicrobial Resistance



29 April 2021

Summary of the President of the General Assembly

I. Introduction

The President of the General Assembly, H.E. Volkan BOZKIR, convened a High-level Interactive Dialogue on Antimicrobial Resistance (AMR) on Thursday, 29 April 2021, in accordance with General Assembly Resolution 74/2 entitled “Political declaration of the high-level meeting on universal health coverage” which called for a discussion on AMR during the seventy-fourth session of the General Assembly. Originally scheduled for April 2020, this High-Level Interactive Dialogue was postponed due to COVID-19. The High-level Dialogue – which was the highest-level meeting on AMR since the 2016 High-level Meeting of the General Assembly on Tackling Antimicrobial Resistance – sought to mobilize political commitment and accelerate actions on combatting AMR, particularly through a One Health Approach, to achieve the Sustainable Development Goals (SDGs) and Recover Better from COVID-19.

The Meeting ([programme](#)) consisted of an opening segment, four interactive panels, and [a Call to Action](#). The event attracted high-level representatives from governments, the UN system, business leaders, and health and development experts across civil society and academia¹ who participated through pre-recorded statements, livestream as well as in-person attendance. The panels focused on four key areas:

- Evaluating AMR in the context of COVID-19 and the SDGs;
- Taking stock of global progress and the vision of the recently launched One Health Global Leaders Group on AMR;
- Tackling AMR at country-level, including implementation of National Action Plans (NAPs);
- Exploring sustainable financing, R&D, and innovation for delivering life-saving solutions and accelerating action against AMR.

The dialogue demonstrated strong political support for strengthening the One Health approach at all levels of government to tackle AMR, as one of the prerequisites for

¹ Heads of Government, Ministers of Health, Principals of the Tripartite (Food and Agriculture Organization of the United Nations, World Health Organization, and World Organisation for Animal Health), UN leadership – including the Deputy Secretary-General, Executive Director of UNICEF and Deputy Executive Director of the UN Environment Programme – members of the One Health Global Leaders Group on AMR..

achieving the SDGs. It also highlighted the importance and urgency of considering AMR in the context of pandemic preparedness, health systems strengthening and universal health coverage (UHC).

II. Key Messages

Antimicrobials transformed modern medicine, saving countless lives over the last century and contributing to advancements in health and development. However, rising levels of AMR threaten to erode many global health gains and hinder progress across the SDGs, particularly those focusing on health and well-being, poverty reduction, food security, water, and economic growth.

Antimicrobials are becoming increasingly ineffective as drug-resistance spreads globally, leading to more difficult to treat infections and death. Currently, AMR causes 700,000 deaths a year and is projected to cause up to 10 million deaths per year by 2050.

The inappropriate use of antimicrobials in humans, animals and plants, along with weak regulations and health systems; inadequate infection control and prevention measures; and gaps in surveillance are accelerating the spread of AMR globally.

Although the lack of access to antimicrobials currently kills more than drug resistance, AMR is now becoming a barrier to access: people cannot afford more expensive, effective drugs, when the first line response fails.

The cost of AMR to the economy is also significant. In addition to death and disability, prolonged illness results in longer hospital stays, the need for more expensive medicines and financial challenges for those impacted.

AMR could erode recent gains in key areas of food safety and food security, economic growth and development – potentially causing economic damage equal to the 2008-2009 economic crisis and forcing 24 million people into extreme poverty. AMR will drive inequalities between countries and communities. No health system will be sustainable without access to affordable and effective antimicrobials.

Investments in tackling AMR have proven to be economically beneficial and pay for themselves. Governments must invest to save.

Lack of adequate financing has been a major challenge to implementation of National Action Plans (NAPs), especially for least developed countries (LDCs), and low- and middle-income countries (LMICs), and Small Island Developing States (SIDS).

Global action on AMR has not yet met the scale of the threat. COVID-19 has provided a stark wake-up call on the impacts of health threats left unchecked and has highlighted the need for policies and budgets to prioritize pandemic preparedness.

AMR is a shared responsibility, linked to other critical agendas, such as climate change and the environment, sustainable food systems and food security, and WASH. Strategies to combat AMR require coordinated, multisectoral action, at the global, regional, and national levels as part of the One Health Approach, which includes the human, animal, and environmental sectors, as well as the engagement of and collaboration between public and private sector stakeholders.

The clinical pipeline of new antimicrobials is dry, threatening to return the world to a pre-antibiotic era. Due to market failures, there is an urgent need for innovation in funding for research and development of new treatments, such as de-linking the price of medicine from investment or classifying these medicines as global goods.

Increased multisectoral financing is needed to implement NAPs on AMR. This includes funding for key actions across One Health sectors such as systems strengthening and infrastructure, surveillance and laboratory capacities, stewardship programmes, infection prevention and control measures, hygiene and biosecurity measures, and public campaigns and education for awareness raising.

Private sector has a key role to play in the research and development of new drugs, as well as in food production systems. Collective dialogue and investor influence can help promote good stewardship in corporate practice and help build out progressive strategies that safeguard people and planet.

The urgent global threat of AMR demands political visibility and advocacy at the international, regional, and national levels. Illiteracy on AMR remains a challenge. Education, engagement of all stakeholders, and clear messaging are key for raising awareness of the ‘silent pandemic’.

III. Opening segment

The Opening segment featured statements from the President of the General Assembly, the Deputy Secretary-General, Heads of Government (Co-chairs of the One Health Global Leaders Group on AMR), the Directors General of the Tripartite (Food and Agriculture Organization of the United Nations, World Health Organization, and World Organization for Animal Health), and the Deputy Executive Director of the UN Environment Programme (UNEP). Together, these leaders issued an urgent call for addressing AMR, highlighting the devastating impact of inaction on achieving the 2030 Agenda.

H.E. Mr. Volkan BOZKIR, President of the 75th Session of the UN General Assembly, declared AMR one of the greatest threats facing our planet – a threat which we ignore at our own peril. The spread of drug resistance is rendering the medicines, which we rely on to keep us safe, ineffective. Lack of regulation, misuse and overuse of antibiotics in humans and animals, improper disposal of antimicrobials, and over the counter and internet sales of antimicrobials are driving this resistance. Therefore, it is critical to mount a multistakeholder response, engaging actors from the health sector, food production, animal husbandry, and agriculture in an inclusive response. He commended the launch of the One Health Global Leaders Group on AMR and encouraged stakeholders to work with the Group to catalyze attention and accelerate actions for tackling AMR. He further stressed that AMR must be considered within the context of pandemic preparedness and incorporated into COVID-19 recovery strategies. President BOZKIR noted several key takeaways from the COVID-19 pandemic, applicable to combatting AMR: effective communication, education, and training, coordinated actions and policies across the One Health spectrum, and investments in universal health coverage, which will ensure the core components of a health system are in place, to help prevent and manage infections. As with the current pandemic, responding to AMR is a shared responsibility and multistakeholder partnerships are key.

Ms. Amina J. Mohammed, UN Deputy Secretary-General, reflected on the work of the Interagency Coordination Group (IACG), which reported recommendations for combatting AMR to the Secretary-General two years ago, noting that during this time the world has witnessed first-hand the devastating impact of hard to treat infections. If no action is taken, the fallout from AMR could be as bad, or worse, than COVID-19. The effect of AMR will reverberate across the SDGs: health systems will not be sustainable without access to effective antibiotics; UHC will be more difficult to attain due to increased costs; protracted illness will disproportionately affect women. She urged for a scaled-up AMR response at national, regional and global levels, strengthened by the Tripartite and UNEP, and calling for increased engagement from other entities.

Hon. Ms. Sheikh Hasina, Prime Minister of the People's Republic of Bangladesh and Co-chair of the One Health Global Leaders Group on Antimicrobial Resistance issued an urgent warning that AMR may cause even more lethal pandemics in the future and the failure to tackle this hazard in time will cost lives. She identified five key areas

for action: 1) An integrated, multisectoral action plan on AMR at the regional and global levels, with a special focus on LIC and LMICs; 2) Laboratory and surveillance framework; 3) Equitable access to affordable and effective antibiotics; 4) Sustainable financing for AMR containment activities; 5) Global public awareness in combating AMR through political commitment and partnership through member states.

Hon. Ms. Mia Mottley, Prime Minister of Barbados and Co-chair of the One Health Global Leaders Group on Antimicrobial Resistance presented the mission of the Global Leaders Group, to promote a One Health approach and advocate for political action on AMR globally. She stressed that while the challenge is complex and multifaceted, it is not insurmountable. COVID-19 has presented an opportunity to ‘build *forward* better’ and integrate AMR into preparedness plans. Simple language, effective communication and resolute political leadership are needed for a successful campaign.

Mr. Qu Dongyu, Director-General, Food and Agriculture Organization of the United Nations, stressed that AMR is becoming an increasingly visible and complex threat to health and food security, leading to substantial social and economic damage. As FAO expects a 45% rise in the global demand of animal proteins by 2050, he stressed that we must face the double challenge of meeting this increasing demand while reducing the risks of AMR. Therefore, the importance of producing, processing and delivering affordable and accessible healthy diets through efficient, inclusive, resilient and sustainable agri-food systems must be recognized. The solution is not as simple as waiting for new drugs but relies on collective efforts and collaboration across sectors. In this regard, the Tripartite serves as an important mechanism for bringing together all stakeholders.

Dr. Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization, addressed AMR in the context of COVID-19, recognizing the devastating impact of a microbe for which there is no treatment or vaccines and the challenges in mounting a global response to a global threat, as well as the urgency, solidarity and innovation that can be harnessed in such circumstances. This must also be applied to AMR. As with COVID-19, the spread of AMR cannot be halted without first addressing weaknesses in health systems – particularly the lack of water and sanitation precluding adequate infection prevention and control (IPC). Health workers in one-third of the world’s health facilities have nowhere to wash their hands at points of care. However, encouraging actions have been taken to address AMR: the Joint Tripartite and UNEP, as well as the One Health Global Leaders Group on AMR, are critical platforms for promoting the One Health approach. The inclusion of the new SDG indicator on blood stream infections for AMR, as part of strengthening capacity in countries, is an important step in supporting the efforts of low- and middle-income countries for early warning and management of national and global health risks. for. He concluded by urging all countries to sign onto the Call to Action on AMR.

Dr. Monique Eloit, Director-General of the World Organisation for Animal Health (OIE), reiterated the urgency of tackling AMR, in support of the collaborative work of the

Tripartite, stating OIE's added value is two-fold: as veterinarians engaged in public health, preserve animal health and welfare. For both, effective antimicrobials must also be available for the many different animal species to treat animal diseases to She emphasized the role of country ownership and need for pragmatism. Proposed action plans must include practical steps and incorporate the voice of frontline workers in the animal sector, such as farmers and animal health professionals. Safeguarding the efficacy of antimicrobials is a shared responsibility, for which disease prevention through vaccination is key to reducing the overuse and misuse of antimicrobials.

Ms. Joyce Msuya, Deputy Executive Director of the UN Environment Programme (UNEP), stressed that COVID-19 offers a warning for AMR, as a disaster for which there have been many unheeded warnings. AMR is an increasingly pervasive issue and dangerous to human, animal, and environmental health. Improving ecological and agricultural practices, including restoration of degraded lands, is a necessary step for addressing AMR. Human pollution is a significant factor in infections; emerging infectious diseases can be exacerbated by land use changes and habitat fragmentation; and some studies have showed increasing local temperatures are linked to increasing AMR in local pathogens. There are many applicable lessons from COVID-19, including the capacity to respond rapidly to emerging issues, which need to be applied to AMR.

IV. Panel 1: AMR in the Context of COVID-19

COVID-19 and Pandemic Preparedness

Panelists discussed AMR in the context of pandemic preparedness, as 40 – 60% of infectious diseases in many countries are now showing drug resistance. COVID-19 exposed the devastating impact of infectious diseases on economies and geopolitics, with impacts extending well beyond the health sector. It has also revealed the risk of individual national approaches to threats that are of global importance. In this regard, AMR – often referred to as a silent pandemic – shared many similarities.

COVID-19 has illustrated global interconnectedness, as well as the threat of complacency and the danger of hiding behind complexity. To-date, there has not been sufficient investment, innovation, or political commitment required to confront AMR. As with COVID-19, global solidarity, including on equitable access to the results of scientific endeavors, will be critical to success.

Panelists also noted the direct impact of COVID-19 on AMR, including concerns of the increase in inappropriate antibiotic use in COVID-19 patients. The longer this pandemic continues, the weaker the world will be to fight the next.

Communications and Messaging

Panelists noted the complexities of 21st century challenges, as global, transnational, and requiring multisectoral collaboration. COVID-19 presents an opportune juncture to

jumpstart the conversation on AMR; to conceptualize this slower pandemic of drug resistance in the context of COVID-19.

Drug resistance is not a new phenomenon but has been known since the invention of the first antibiotic, Penicillin. Yet, the struggle to convey the message and heed the warnings remains a challenge almost a century later. The pandemic has also shown that while science and politics can contribute solutions, ultimately success relies on public engagement. AMR needs clear and accessible messaging to breakdown the complexity of the problem so that the public understands the consequences. As a multisectoral challenge, requiring a whole-of-society approach, there is also a need to expand the community of AMR stakeholders engaged in this dialogue.

AMR and the 2030 Agenda for Sustainable Development

Panelists noted that AMR is not only a public health issue, but also a development issue, linked to other critical agendas across the SDGs, such as climate change, food systems and food security, and Water, Sanitation and Hygiene (WASH). Addressing AMR requires a One Health approach, with coordinated actions across the public health, animal health, plant health and the environmental health.

As a health concern, AMR is undermining modern medicine – from cancer therapy to maternal and child health. To address AMR in the health sector, health system strengthening, including scaling up diagnostics and surveillance, rapid deployment of treatment, and expanding access to vaccines, especially for at-risk populations, would be critically needed. Antibiotics are the most prescribed drugs in the world, yet lack of access to antimicrobials still kills more than drug resistance. However, AMR is now becoming a barrier to access, as people cannot afford more expensive, effective drugs, when the first line response fails. No health system will be sustainable without access to effective and affordable drugs, and thus equitable access and responsible use of antimicrobials must be promoted simultaneously.

Panelists encouraged the UN, to use its convening power and influence at the macro level, to consider One Health more broadly and work to influence major trends, such as the increased demand for meat in diets. Livestock for consumption now comprises 60% of all biomasses on the planet. This has significant implications for AMR and climate change, which are impacted by the animal rearing practices meeting this demand.

Multisectoral, Multistakeholder, One Health Approach

Panelists noted that AMR is a complex, cross-sectoral issue and therefore requires coordinated, multisectoral action and global efforts as part of the One Health Approach, as well as the engagement of public and private actors. Suggested solutions, therefore, combine interventions across sectors, including stewardship programmes, prevention through enhanced hygiene and biosecurity measures, media and awareness campaigns, and capacity building to maximize the impact of existing and new technologies.

Panelists noted that due to the lack of a systemic, sustainable, and adequately funded approach, implementation of NAPs remains one of the greatest challenges on the ground. At present, fragmentation causes countries to seek small funding from different sources, which complicates planning and coordination. Further, at the national level, many AMR projects are time-bound and therefore not integrated into national budgets, policies or systems. While funding constraints remain an issue especially for low- and middle-income countries (LMICs), AMR will not be defeated if gains are only made in high-income countries. In this regard, the panelists stressed that a One Health approach needs to be strengthened at the regional and national levels in particular.

Beyond much needed government interventions, civil society organizations (CSOs) have an important role to play in supporting NAP development, community-based interventions for raising awareness, providing hospital care, and promoting stewardship. CSOs can also aid the research agenda – identifying gaps and contributing to global discussions.

Surveillance and Data

Panelists noted that improved surveillance is an urgent priority to accurately understand the scale of drug resistance as well as to address the misconception that AMR is a problem of the future. The current lack of data is a barrier to effectively lobbying politicians, pharmaceutical companies, and the media, to prioritize AMR now. The ability to measure has increased dramatically over the past decade due investments made by many – including, for example, the work of the World Health Organization and the UK’s Fleming Fund, which supports AMR surveillance capacity building in LMICs, where the impact of infectious diseases is highest and the ability to respond to AMR may be limited. Other private platforms have also contributed, including through mapping of antimicrobial use and resistance around the world to help inform researchers, policy makers and the public of important trends in antibiotic use and drug resistance. A sustainable, global surveillance system to monitor all infectious diseases as well as AMR, is the foundation of pandemic preparedness.

V. Panel 2: Overview of Global Progress and Vision of the One Health Global Leaders Group on AMR

Panelists stressed that antimicrobials are an essential part of sustainable infrastructure for modern health systems, animal health and food systems, and the planet. The UN Inter-Agency Coordination Group (IACG) recommendations, submitted to the UN Secretary-General in 2019, demanded unprecedented efforts from governments, researchers, civil society and the private sector to accelerate action on AMR, preserve antimicrobials, and develop new solutions across the One Health sectors.

The discussion highlighted recent global developments in tackling AMR, including the work of the three important mechanisms: Tripartite Joint Secretariat, the One Health Global Leaders Group on AMR, and the Multi Partner Trust Fund (MPTF).

Tripartite Joint Secretariat

The Tripartite Joint Secretariat addresses AMR through a One Health approach and has taken important steps to strengthen capacity – as individual organizations and collectively.

Following the recommendations of the IACG, the Tripartite Joint Secretariat was established to accelerate collaboration on AMR. Together, the Tripartite organizations, with UNEP’s input, are close to finalizing a 5-year Tripartite Strategic Framework on AMR, detailing how the agencies will work together at global, regional and country level to address AMR. The Tripartite has published technical guidance on WASH and wastewater management to guide Member States on how to reduce the spread of AMR, as well as the Tripartite AMR Self-Assessment Survey (TRACSS), which has been operational since 2017 and is part of the overall Tripartite Monitoring and Evaluation Framework – a cross-cutting and multisectoral framework that has established a set of core indicators across the One Health spectrum.

The AMR MPTF was established as a mechanism to financially support collaborative Tripartite action in countries. Panelists noted that the Tripartite and UNEP, as well as the Global Leaders Group will continue to advocate for Member State support to ensure that sustainable financing is available for AMR.

Global Governance

The members of the Global Leaders Group participating in this dialogue as panelists, pledged the Group would work to demonstrate the strength of multilateral, collaborative action and innovation, to mobilize political commitment, including through involving youth in decision-making and advocacy. Panelists noted the upcoming results from the Global Research on Antimicrobial Resistance (GRAM) Project - a major study into the global burden of AMR, conducted by the Institute for Health Metrics and Evaluation and Oxford University, which will be published in the summer of 2021. This project is funded by the Fleming Fund, Gates and Wellcome, and will provide an evidence base that will increase the visibility of AMR.

The discussion from the dialogue highlighted the need for effective therapies for animals, given the myriad of critical roles they play in society. However, current practices across all sectors remain untenable and actively create conditions which increase AMR and mortgage planetary health with limited ability to pay for it. The extent to which future generations will pay depends on action now.

Infectious diseases do not respect boundaries and thus require global and cross-sectoral collaboration. The global experiences of eradicating smallpox and fighting Ebola, as well as national efforts to tackle malaria, are instructive for addressing AMR. Counterfeit, substandard, and falsified medicines are also contributing to the spread of AMR and need to be addressed by the World Health Assembly and WHO initiatives and key stakeholders.

Addressing the major macro-economic challenges of AMR will require public and private sector engagement. The private sector is particularly critical for innovation and investment. The World Bank's commitment to apply an AMR lens to their investments and lending, as well as the European Bank for Reconstruction and Development and the UK's CDC Group support for their investors are encouraging developments for addressing the economic concerns of AMR.

Panelists stressed that the window for political action is narrow. The Global Leaders Group will, therefore, engage with high-level political groups, including at the G20 and G7 forums, and through regional blocs, such as the EU, ASEAN and the African Union (AU). The Group will also seek a High-Level Meeting on AMR at the UN between 2024-2026. In addition to global actions, panelists reiterated the need for plans to be appropriate for each locality and sensitive to local dynamics and cultures.

Pandemic Preparedness

Panelists provided recommendations for embedding AMR in COVID-19 economic recovery plans, including the funding for strengthened surveillance and laboratory capacities, increased and more equitable access to medicines, disease prevention and control (IPC), and stewardship on a One Health basis. The Global Leaders Group will advocate for AMR to feature in any international Pandemic Treaty. As with COVID-19, global solidarity and cooperation are needed and the Global Leaders Group will work to ensure that politicians understand and fund this vision.

Panelists had an in-depth discussion on the importance of investment and inclusive growth for tackling AMR globally. Investing in prevention, first and foremost, is a necessary step. Embedding actions for tackling AMR in national SDG frameworks can help ensure allocated funding for AMR within national budgets. Panelists also stressed that investments in tackling AMR are economically beneficial and encouraged governments to "invest to save".

There is also an urgent need for innovation in funding for research and development of new treatments, such as de-linking the price of medicine from investment. A transparent supply chain is needed to understand the pinch points, environmental standards of drug production, and financial implications of compensating shortages.

The IACG called for collaboration, which should now be inspired by the public-private collaboration on COVID-19. The IACG also advocated for investors to use their power to leverage sustainable behaviors and integrate AMR into decision-making. Fourteen investors are now contributing to the Investor Action on AMR initiative, and more investors are encouraged to join to help advance the global response.

Environment

The Global Leaders Group is embracing a One Health approach to ensure responsible and sustainable antimicrobial use across every sector. Panelists stressed the significance of

recognizing the environment as an intermediary between humans, animals, pharmaceuticals and farms; the environment is a vehicle to deliver resistance and lead unknowingly to greater resistance. To address the environmental concerns, panelists highlighted multiple entry points to integrate the environment into the intricate, multisectoral response for AMR, including the increased involvement of UNEP. The Tripartite is also compiling a multiagency document on the code of conduct, emphasizing all approved legislation and/or guidance on keeping the environment clean, to aid Member States in the establishment of their NAPs. During AMR MPTF grant reviews, coaching is provided to help countries in establishing multisectoral project proposals that emphasize environmental dimensions. Both the International Health Regulations (IHR) and Joint External Evaluations (JEE) also examine countries' preparedness for emerging pathogens from a multisectoral perspective, including environmental considerations.

Evidence-based, Action-oriented Targets

Panelists stressed that global and national actions will need to be guided by science, risk-based data, and surveillance and monitoring across all sectors.

Good monitoring systems need to be in place to measure pharmaceutical effluent, and to ensure the standards are affordable. Global policymakers and leaders need to listen and incorporate the learning of rural farmers, without digital access, to find approaches to minimize disease and promote responsible and sustainable antimicrobial use.

The Global Leaders Group recognizes the importance of surveillance across the One Health sectors and global targets. Targets will be dependent on the provision of good information, and measurements must be evidence-based, repeatable and action-oriented. There needs to be coordinated discussion, recognizing and addressing differences between countries and sectors. The Global Leaders Group will seek to improve and coordinate the approach to targets, noting that targets can be applied differentially.

VI. Panel 3: Tackling AMR at country level

Recognizing that national ownership is a critical dimension of the collective effort to fight AMR., Sweden, the Republic of Fiji, the Russian Federation, Ghana, the People's Republic of China, Mexico, the United States, and the Republic of Croatia presented their National Action Plans (NAPs) as case studies, sharing their successes and challenges with implementation. Other member states² shared their national experiences and identified key areas for further deliberation.

The Global Action Plan on AMR (2015) recommends five key tasks for national actions: 1) Whole-of-society approach, with all sectors engaged in a common effort; 2) Prevention of infections through sanitation, hygiene and related measures to slow the spread of AMR infections; 3) Rationalizing the use of existing and new antimicrobial medicines to preserve countries' abilities to treat serious infection; 4) Sufficient and sustainable financing for NAPs, including long-term investment in essential AMR infrastructure; and

² Australia, Thailand, Jamaica, Denmark, Spain, Indonesia, Japan, Pakistan, Poland, and Morocco

5) Measurable targets to track and report progress in ways which allow countries the flexibility to prioritize actions with the highest relevance to their national circumstances.

National Action Plans

Countries are developing and implementing several key measures at the national level to tackle AMR, including strengthening surveillance and monitoring, increasing awareness of AMR through public campaigns, research, and training, and seeking to reduce the incidence of infection through prevention and control measures. Panelists underlined the importance of using the One Health approach, noting that AMR requires coordination, collaboration, and accountability across all relevant sectors.

Common Challenges

Several key challenges were identified, including the lack of adequate financing and capacity for implementing NAPs, particularly in low- and middle-income countries and SIDS; increasing the engagement of the environmental sector in national AMR strategies; ensuring equitable access to any future new generation of antibiotics, noting the prohibitive costs in some parts of the developing world; and strengthening national training systems. Panelists also noted internal imbalances (e.g., resources and professional staffing) – among different regions, between urban and rural areas, and among different agencies – in the management of antimicrobials and the prevention and control of AMR. While countries are making progress at the national level, they also face challenges which can only be tackled collectively.

Panelists quantified the negative impact that AMR is already taking on human health and the economy, in countries of all income levels. Many LMICs and SIDS face additional challenges, including that of climate change, which is altering the length of seasons and changing weather patterns, causing shifts to the epidemiological patterns of climate-sensitive diseases.

Strong political leadership, such as the One Health Global Leaders Group on AMR and the Alliance of Champions, must work to enhance global cooperation and concrete action to accelerate needed changes. Financial contributions are also needed for the AMR MPTF, in order to support low- and middle-income countries to implement NAPs.

Whole-of-Society Engagement & One Health Approach

Many countries have developed NAPs under the framework of a One Health approach, engaging ministries from relevant sectors to contribute to the fight against AMR. Among these sectors, panelists noted the inclusion of ministries of health, agriculture, aquaculture, education, environment, technology and innovation, animal health and food production, biosecurity, revenue, trade and customs, and international development cooperation, as well as professional societies (e.g. pharmaceutical and medical professionals), and consumer and academic representatives.

Through engaging ministries across sectors, NAPs have defined cross-cutting strategic actions for governance; AMR awareness and literacy; surveillance; infection prevention and control; stewardship programmes, including the optimized use of antimicrobials; research and development; and necessary investments toward addressing AMR. Countries are also increasingly working to incorporate environmental criteria into NAPs, including consideration for waste management in the production of pharmaceuticals. Incentives such as reimbursement programmes can be employed to encourage more environmentally sustainable approaches to the production of pharmaceuticals.

Prioritizing prevention, Equitable Access, and Appropriate Use of Antimicrobials

The global community has developed many effective containment strategies which must now be scaled up to prevent infections and save lives. Mass immunization is a critical tool for combatting AMR, as access to vaccines will help prevent the spread of infectious disease and reduce the need for antimicrobials.

Panelists noted cause for concern over the frequent, inappropriate use of antibiotics to treat viral infections. Evidence shows that inappropriate use of antimicrobials has been exacerbated by the pandemic, with some studies demonstrating that up to 70 percent of hospitalized patients received antibiotics during the pandemic, though only 10 percent required them. However, panelists noted that COVID-19 has also accelerated innovation and development of resources to treat and prevent infectious diseases, which may provide new approaches and solutions for tackling AMR. For example, the messenger RNA (mRNA) vaccines, which have turned out to be highly safe and effective for COVID-19, provide a new strategy for vaccinating against other infectious diseases. Tools developed for contact tracing, such as the app for tracing Leptospirosis and COVID-19 used in Fiji, can also be applied to tracing the spread of AMR.

Close cooperation and dialogue with prescribers are needed to reduce the spread of drug resistance. Several countries highlighted the introduction of systems to monitor the movement of medications and promote responsible use, such as STROMA, an interdisciplinary organization which has been active in Sweden since 1995. The Swedish system for e-prescription makes it easier to track prescription of antibiotics, and the practice of benchmarking and open comparison between care providers has been increasing pressure for the rational use of antibiotics. As an instrument of digital support for decision-making, experts in the Russian Federation have developed an Antimicrobial Resistance Map, which is an online platform that analyses and visualizes data about the sensitivity of micro-organisms to AMR.

Monitoring the responsible use of antibiotics is also important in veterinary medicine and food production and therefore is being monitored across these sectors in many countries, to track the residual amounts of antibiotics in food production inputs as well as in the final products for consumption.

Acknowledging the barrier of limited AMR awareness, several panelists also emphasized the need for public information campaigns to improve literacy on the rational use of antimicrobials for citizens of all ages, who prescribe, dispense, and consume them. Prioritizing the improvement of education and training programmes, on the use of antimicrobials, for medical students and pharmacists, as well as the implementation of antimicrobial stewardship programmes in hospitals, is also a key element of many NAPs. Public policies and relevant programmes must be constantly monitored, updated and strengthened to ensure AMR is followed rigorously and managed accordingly.

Sustainability: investments in infrastructure, research and innovation

Investing in research and innovation, along with surveillance and data analysis, are top priorities for national strategies on tackling AMR. Panelists noted the challenge to provide sufficient private sector investment for the development of new antimicrobials, where the markets are expected to be small and new drugs must be saved for critical situations were deemed essential. Determining ways to de-risk projects for private sector investment will be critical.

In order to address market failures and secure access to important antibiotics, panelists noted several initiatives and pilot programmes at the national level. In the United States (US), for example, the National Institutes of Health (NIH) is collaborating with the Biomedical Advanced Research and Development Authority (BARDA) to facilitate product development and has helped to advance more than 85 compounds in 11 countries, aimed at producing solutions for currently resistant organisms. The US has also expanded the Antibacterial Resistance Leadership Group, which is a clinical trial network for testing new antibiotics. China is leveraging the unique advantages of traditional medicine as multi-target treatment to reduce the use of antimicrobial drugs and has included traditional medicine in its AMR research agenda to expand the pool of potential tools available for combatting AMR. An alternative payment model for new antibiotics is being piloted in Sweden, in which pharmaceutical companies receive a guaranteed pre-agreement payment, regardless of sale level, if they commit first access of the antibiotic to the health care system.

International research cooperation, through such mechanisms such as the Joint Programming Initiative on Antimicrobial Resistance (JPIAMR)³ and the Transatlantic Taskforce on Antimicrobial Resistance (TATFAR),⁴ is important for accelerating action

³ The Joint Programming Initiative on Antimicrobial Resistance (JPIAMR) is an international collaborative platform engaging 28 nations and the European Commission to curb antimicrobial resistance (AMR). The JPIAMR coordinates national research funding and supports collaborative action for filling knowledge gaps on AMR with a One Health perspective. The Strategic Research and Innovation Agenda outlines the key areas to be addressed and provides guidance for countries to align their AMR research agendas nationally and internationally.

⁴ TATFAR, established in 2009, is comprised of government agencies from Canada, EU, U.S. and Norway and is co-chaired by U.S. Department of Health and Human Services and the European Commission – Directorate-General for Health and Food Safety.

on new treatments and maximizing and synchronizing national efforts through transnational collaboration.

Collection, analysis and sharing of national AMR data at a global level, through the WHO's **Global Antimicrobial Resistance Surveillance System (GLASS)**⁵, enables a standardized approach to strengthen the evidence base on AMR, which in turn helps informing decision-making and drive national, regional, and global actions. In this regard, countries (such as Sweden and the Republic of Korea) are assisting WHO to further develop and implement GLASS and encouraging other countries to join the system. Countries are also encouraged to participate in self-assessment surveys on AMR sponsored by the Tripartite.

Additional actions taken at the national level are aimed at helping scientists to better understand mechanisms of resistance in order to develop better therapeutics. The United States has developed a national sequence database on antibacterial pathogens which compiles complete genome information on emerging organisms that are unresponsive to current antibiotics. In the Russian Federation, a WHO collaborating center has been operating since 2016 with the goal of strengthening capacity for epidemiological monitoring and research on AMR.

NAPs also include actions to curb drug resistance in animal raising and agriculture, with guidelines and dedicated measures for the use veterinary antimicrobials. Sweden is a notable example of phasing out the use of antibiotics as growth promoters in the 1980s, without compromising animal health or yield, and can serve as a model for others.

VII . Panel 4: Ensuring sufficient and sustainable AMR financing

Under the One Health approach, closer cooperation is needed at the interface of human, animal and environmental health, including closer relations among the international organizations that play decisive roles such as WHO, OIE, FAO and UNEP. Bilateral efforts have also been a source of assistance, particularly for LMICs. One such example is Germany's Global Health Protection Programme, which supports other countries with capacity building efforts, particularly in Asia and Africa.

Sustainable Financing

AMR is a multifaceted challenge that requires substantial financing to address its multiple sides. Restructuring the organization and delivery of health, agriculture and environmental systems is a huge task, but will only require a fraction of what is being spent now on COVID-19. Ultimately, the cost of inaction will be much higher.

⁵ GLASS promotes and supports a standardized approach to the collection, analysis and sharing of AMR data at a global level. Launched in October 2015, the Global Antimicrobial Resistance Surveillance System (GLASS) supports the global action plan on AMR.

Many effective actions for combatting AMR are already known but are lacking the financial resources needed to be implemented. While the discovery of new antimicrobials is a critical priority, panelists noted that the financial challenges are not limited to the drug pipeline, but are, in fact, much broader, extending to health systems and infrastructure, surveillance across sectors, preventative measures, and implementation of NAPs.

The International Development Association (IDA), as part of the World Bank, is a powerful instrument that is addressing AMR through the lens of health systems strengthening. IDA19 facilitated access to USD \$82 billion in concessional and grant financing for LMICs, primarily to develop and strengthen health systems, including laboratory infrastructure and human resources. IDA20 will, for the first time, include human capital as one of the five special themes around which its policy framework is structured, with crisis preparedness included as a cross-cutting issue. This will allow the World Bank to further assist countries through the One Health approach.

There are also promising signs of progress in generating new resources for the battle against AMR. For instance, the AMR MPTF is an excellent example of international, multisectoral action to assist countries to implement context-specific AMR plans at the national level. The AMR MPTF was launched in 2019 for an initial five-year period by the Tripartite with the aim to support low middle-income countries to design and implement their own national multi-sectoral responses to AMR. Through the AMR MPTF, countries can receive up to USD \$1 million over a two-year interval to undertake key priority actions to implement NAPs. Currently the funding gaps remain significant and other countries are encouraged to support the AMR MPTF.

COVID-19 has constricted the global economy and demanded resources be redirected for response and recovery efforts. However, much of what is needed for COVID-19 and pandemic preparedness are the same foundational elements for combatting AMR.

Since the onset of COVID-19, the World Bank has mobilized USD \$18 million for emergency response, which has reached at least 100 countries. The World Bank continues to support countries to develop a framework for pandemic preparedness, including stronger surveillance, infrastructure, human resources, training and guidelines for the rational use of medical commodities, in addition to intersectoral elements such as handwashing, hygiene and collaboration with other sectors (e.g., animal health, agriculture). These investments will also serve the fight against the hidden pandemic of antimicrobial resistance.

Noting the challenges for research and development of new antimicrobials, and the need for appropriate incentives to address market failures, panelists encouraged new ways of thinking and alternative approaches, such as potentially working with governments to classify these medicines as global public goods.

The AMR Action Fund, launched in July 2020, aims to bring 2-4 new antibiotics to patients by 2030. Supported by the International Federation of Pharmaceutical

Manufacturers and Associations (IFPMA), in conjunction with the Government of the UK, the Wellcome Trust and WHO, the AMR Action Fund is a mechanism for pooled investment, which expects to invest more than USD\$1 billion in small biotech companies, while providing industry expertise to the clinical development of novel antibiotics.

Panelists stressed that given the multiple financing mechanisms and priorities, strengthening coordination to maximize impact is of utmost importance. The Global Action Plan for Healthy Lives and Well-being was noted as an important framework with which to align actions at country level in order to synchronize elements of the overall health agenda and actors on the ground.

Research and Development

Panelists noted WHO's 2020 *Antibacterial Agents in Clinical and Preclinical Development* as an important reference document which highlights the significant amount of work taking place in this area, though concluding there is currently little innovation that promises to move the needle for hard-to-treat infections. Solutions may require new approaches to treating bacterial infections, such as identifying and targeting specific mechanisms causing harm, or the bacteria's ability to colonize or be transmitted. Work on vaccines also needs to be accelerated, as prevention reduces the need for anti-infectives, helping to preserve their efficacy.

Under the Germany presidency four years ago, the G20 initiated the Global AMR Research and Development Hub which aims to improve the coordination of global AMR research and development. However, alongside international commitment on AMR, countries are also encouraged to develop national solutions that are tailored to the structure of individual health systems and contexts.

The Global Antibiotic Research and Development Partnership (GARDP), created by the World Health Organization and Drugs for Neglected Diseases *initiative* (DNDi), mobilizes partners to develop new and improved antibiotics. GARDP aims to develop five new active substances capable of treating the multi-drug resistant pathogens posing the greatest threat to public health by the year 2025.

The AMR Action Fund, which aims to strengthen and accelerate antibiotic development through global pooled funding, is also expected to play an important role in ensuring that the most innovative and promising products receive the required funding.

Beyond research and development for human pharmaceuticals, increased public investment in animal agriculture and research is needed, especially for low- and medium-income countries, including knowledge sharing and equity of access to these technological innovations.

Investment Incentives

Research and development of new antimicrobials is a key component of AMR strategies. Panelists reflected on the principle that “the best antibiotic is no antibiotic” and the inherent challenges this creates for a sustainable business model. Given the need to limit antimicrobial use to preserve efficacy, and the capital, time and risk which is invested to bring new antimicrobials to market, there is no market solution that allows for industry to sustain the pipelines for drugs going forward.

New and innovative models are being explored by all stakeholders. Governments can create incentives by funding for research and reimbursement of newly developed substances. Panelists also stressed the power of investor influence in helping companies understand the financial materiality of reducing the use of antimicrobials and potential regulatory measures that might expose them to risk. Collective dialogue with companies to promote good stewardship of investment capital is a particularly powerful tool for stressing the potential impact that ignoring AMR may have on corporate reputations and bottom lines. It is important to also highlight the opportunities for leadership and first-mover advantage of building out progressive strategies that safeguard people and planet. In one notable example, investor engagements over a three year period with 20 global restaurants and fast food chains, on reducing and eliminating the use of medically important antimicrobials in the livestock supply chain, resulted in all 20 companies developing policies to engage with their supply chains, across multiple proteins, and creating timebound targets for addressing AMR.

In this regard, the Investor Action on AMR was launched in November 2020, bringing together partner investors with over USD\$ 11 trillion in assets to commit to assessing and integrating opportunities and impact related to AMR when making investment decisions and engaging investment companies. The partners pledged to take a One Health approach and recognized the need for a multisectoral strategies that consider the interconnection between humans, animal and environment.

Stewardship

The research and development of new antibiotics constitutes only one component in the fight against AMR. It is critical that actions are taken to preserve the efficacy of existing antimicrobials, through strengthening health systems, health literacy, and the provision of care – i.e., the ability to precisely diagnose and appropriately treat infections with the right drug, for the right time, in the right patient. Yet, in many parts of the world where health systems are chronically under-financed and under-resourced, stewardship remains weak.

Prudent use of antibiotics and funding for infection prevention must be scaled up to reduce the need for antibiotics in the first place. For example, antibiotics that are effective against high priority, multi-drug resistant pathogens, can be reserved and granted special status. The COVID-19 pandemic has further illustrated the need for cross-border efforts and coordinated action in the fight against dangerous pathogens.

The feed industry, through supporting animals' optimal health and access to nutritional innovation, is also an important part of the solution to reduce AMR. The feed industry is responding to two key drivers in the marketplace: 1) regulation, driven by the Tripartite agencies' directive guidance to combat AMR and 2) consumer demand, driven by the increased preference for antibiotic-free products in many parts of this world. To respond to these drivers, increased public and private investment in nutrition and infection prevention, aimed at supporting animals' natural defense systems and resilience capabilities, is needed, including for good animal husbandry and hygiene, farm management and biosecurity, and the use of adapted breeds, which are more resistant to disease.

Feed safety plays a critical role in minimizing animals' exposure to microbials, chemicals, other contaminants of concern that can enter the food chain through animal sourced food. Adaptation and strengthening of regulatory frameworks to enable innovative feed solutions is key for encouraging needed research and development of nutritional solutions. In line with these measures, the International Feed Industry Federation (IFIF) has a global feed safety training program to support capacity development in low-income countries and is collaborating with FAO on awareness raising and knowledge sharing initiatives to support implementation of the CODEX code on good animal feeding.

VIII. Call to Action

The meeting culminated with remarks from several of the Co-chairs of the Group of Friends of Tackling Antimicrobial Resistance and a presentation of the *Call to Action*.

Rt. Hon. Matt Hancock, MP, Secretary of State for Health & Social Care, the United Kingdom (Co-chair & Secretariat of the Group of Friends of Tackling AMR), issued an urgent plea for action, stressing that modern medicine will otherwise cease to exist and the silent pandemic of AMR could have consequences far more deadly than COVID-19. Recognizing that AMR is an existential threat as great as climate change, he pledged to work with any partner to accelerate action on combatting AMR. Among these actions, he noted better use of existing, and development of new, antimicrobials, safe supply chains based on shared global standards, and constant consideration of One Health interactions, recognizing collective vulnerability. The UK will use its G7 Presidency to bring partners together to address AMR and will continue its engagement through international funding, including supporting 24 countries to develop surveillance systems on infection and AMR through the Fleming Fund and the UK's recent grant of an additional £1.3 million (GBP) to the MPTF. AMR must also feature in the upcoming COP26 and Food Systems Summit.

Hon. Dr. Zweli Lawrence Mkhize, Minister of Health, South Africa (Co-chair of the Group of Friends of Tackling AMR), reaffirmed his commitment to take action, incorporating lessons learned from the pandemic. As the true burden of AMR is unknown, the need for investments to quantify this burden is critical. There is a clear need for ensuring sufficient and sustainable financing for AMR, strengthening health systems, including IPC measures, and research for new therapeutics, diagnostics and vaccines. The actions have been identified and now need political commitment to be pushed forward.

Ms. YU Yanhong, Vice Minister, National Administration of Traditional Chinese Medicine, National Health Commission, China (Co-chair of the Group of Friends on Tackling AMR), concluded by commending the work of the Group of Friends on Tackling AMR for its dedication to promoting strategic discussion and cooperation, and called for increased cooperation globally, particularly in integrating the lessons learned from COVID-19 in addressing AMR. She noted the need to take effective actions at the micro-level and improve governance in the local, national and regional contexts. As one of the co-chairs of the Group of Friends, China stands ready to share experiences and approaches to build a global community of health for all.

Mr. Tom Woodroffe, Acting Deputy Permanent Representative of the United Kingdom to the United Nations (Secretariat and Co-chair of the Group of Friends on Tackling AMR), presented the *Call to Action on AMR*, which, commits signatories to enhance national and global efforts to tackle AMR through One Health approach, accelerate previous commitments to AMR, improve antimicrobial stewardship, work towards financing for AMR action, increase research on AMR's impacts, and support the new One Health Global Leaders Group on AMR, among many other key steps. As of 29 April 2021, the *Call to Action* had 108 Member State signatories.⁶

⁶ Member State signatories as of 29 April 2021 include: *Albania, Algeria, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belgium, Bhutan, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Djibouti, Dominican Republic, Egypt, El Salvador, Estonia, Fiji, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Guinea, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritius, Mexico, Monaco, Mongolia, Montenegro, Morocco, Namibia, Nepal, Netherlands, New Zealand, Nigeria, North Macedonia, Norway, Oman, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russian Federation, San Marino, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, St. Vincent and the Grenadines, Sweden, Switzerland, Thailand, Togo, Turkey, Tuvalu, Uruguay, United Kingdom, United States of America, Venezuela, Vietnam, Zambia*