Background Guide

Addressing Antimicrobial Resistance

Prepared by the Executive Board

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Letter from the Executive Board

Distinguished Delegates,

It is our honour to welcome you to the World Health Organization. Over the course of this conference, you will engage with one of the most consequential, yet least visible, threats to global health: antimicrobial resistance (AMR).

AMR is sometimes described as a "silent pandemic." Unlike an outbreak that arrives suddenly, AMR advances gradually as the medicines we rely upon to treat infections lose their power. The stakes are difficult to overstate. Of roughly 8.9 million deaths due to bacterial infections in 2019, 1.27 million deaths were attributable to AMR and 4.95 million deaths were associated with AMR. If current trends continue, bacterial AMR could cause 39 million deaths between 2025 and 2050, equating to three deaths every minute.

This guide is designed to give you approximately 80 to 90 percent of the substantive research you will need. It explains the science in accessible terms, traces the history of the problem, surveys the international response, and maps the principal fault lines of debate. What it cannot do is research your country for you. Your task is to take this foundation and build upon it: to understand your nation's Action Plan, its healthcare system, its patterns of antibiotic consumption, and its diplomatic priorities.

We request you to remember that AMR is not solely a medical question. It is a question of trade, agriculture, development financing, intellectual property, equity, and national sovereignty. The best delegates will resist simple answers and instead grapple with genuine tensions, above all the tension between *access* (ensuring everyone who needs antibiotics can obtain them) and *stewardship* (ensuring antibiotics are used sparingly enough to remain effective).

We look forward to debate that is rigorous, diplomatic, and solutions-oriented.

Warm regards,

Chairperson- Shourya Mahajan

Vice Chairperson- Dhakshinya Easwaran

Rapporteur- Kaustubh Kanhaiya Pawale

About the World Health Organization

History

The World Health Organization was established on 7 April 1948, a date now commemorated annually as World Health Day. It emerged from the post-war conviction that health is a shared international responsibility and that no nation can secure the health of its population in isolation. Its constitution famously defines health as a state of complete physical, mental, and social well-being, and not merely the absence of disease. Headquartered in Geneva, Switzerland, WHO is the directing and coordinating authority on international health within the United Nations system, with 194 Member States.

Mandate

WHO's mandate is broad: to act as the directing and coordinating authority on global health; to set norms and standards; to articulate evidence-based policy options; to provide technical support to countries; and to monitor and assess health trends. On AMR specifically, WHO coordinates the human-health dimension of the global response while collaborating with partner agencies on the animal, plant, food, and environmental dimensions.

Organizational Structure

- **The World Health Assembly (WHA):** the supreme decision-making body, composed of all Member States, which meets annually in May in Geneva. It sets policy, approves the budget, and adopts resolutions.
- **The Executive Board:** composed of 34 members technically qualified in health, it gives effect to the decisions and policies of the Assembly and prepares its agenda.
- **The Secretariat:** headed by the Director-General, it carries out the day-to-day work of the Organization.

WHO also operates through six regional offices: the African Region (AFRO), the Region of the Americas (PAHO/AMRO), the South-East Asia Region (SEARO), the European Region (EURO), the Eastern Mediterranean Region (EMRO), and the Western Pacific Region (WPRO).

Functions

WHO's functions relevant to AMR include surveillance and data coordination, the development of technical guidelines and classifications, normative standard-setting, capacity-building in Member States, and convening stakeholders. WHO identifies priorities to address AMR in human health that include preventing infections, ensuring universal access to quality diagnosis and appropriate treatment, and strengthening strategic information and innovation such as surveillance of AMR and

antimicrobial consumption and research and development for novel vaccines, diagnostics and medicines.

Powers and Limitations

It is essential that delegates understand what WHO can and cannot do. WHO is fundamentally a normative and coordinating body. With limited exceptions (such as the International Health Regulations), its resolutions and action plans are not legally binding on Member States; they are recommendations that rely on national sovereignty for implementation. WHO cannot compel a country to regulate its farms, fund its hospitals, or reform its pharmacies. It cannot directly regulate pharmaceutical companies or set drug prices. Its principal instruments are evidence, persuasion, technical assistance, standard-setting, and the mobilization of political will.

Decision-Making Process

Decisions in the WHA are ideally reached by consensus, reflecting the diplomatic culture of global health. Where votes are required, each Member State has one vote, with most decisions taken by a simple majority and certain important questions requiring a two-thirds majority. Resolutions typically express collective political commitment and request the Director-General to undertake specific actions.

WHO's Role in Combating AMR

WHO has been the principal architect of the global health response to AMR. The May 2015 World Health Assembly adopted a global action plan on antimicrobial resistance, which outlines five objectives: to improve awareness and understanding; to strengthen the knowledge and evidence base through surveillance and research; to reduce the incidence of infection through sanitation, hygiene and infection prevention; to optimize the use of antimicrobial medicines in human and animal health; and to develop the economic case for sustainable investment. WHO also maintains the Global Antimicrobial Resistance and Use Surveillance System (GLASS), the Bacterial Priority Pathogens List, and the AWaRe classification of antibiotics.

Scope of Debate

What Delegates Are Expected to Discuss

This committee should focus on the human-health dimensions of AMR and on WHO's coordinating role across sectors. Appropriate topics include: global and national surveillance; antimicrobial stewardship and rational use; infection prevention and control (IPC); diagnostics and laboratory capacity; equitable access to existing and new antimicrobials; incentives for research and development; public awareness; the integration of the One Health approach; international financing; and capacity-building in low-resource settings.

What Lies Outside WHO's Mandate

Delegates should avoid drafting provisions that impose legally binding obligations on sovereign agricultural, trade, or industrial policy; set or regulate drug prices or intellectual property law directly (these fall to bodies such as the WTO and WIPO and to national governments); direct the internal operations of other agencies (FAO, WOAH, UNEP) without their cooperation; or create enforcement or sanctioning mechanisms that WHO has no authority to operate. WHO can recommend, coordinate, standardize, and finance through voluntary mechanisms; it cannot compel.

Objectives of the Committee

The committee should aim to produce a resolution that strengthens global coordination, accelerates equitable progress toward the targets adopted in 2024, closes the financing and innovation gaps, and reconciles the access-stewardship tension in a manner sensitive to the needs of countries at every income level.

Introduction to the Agenda

Antimicrobials, the medicines that kill or inhibit microorganisms, are among the foundational technologies of modern medicine. They make routine surgery, childbirth, chemotherapy, organ transplantation, and the treatment of common infections survivable. Antimicrobial resistance occurs when the microorganisms these drugs are designed to defeat evolve to withstand them, rendering the medicines ineffective and infections progressively harder or impossible to treat.

The phenomenon is natural and inevitable; microbes have always evolved. What has accelerated it dramatically is human behaviour: the overuse and misuse of antimicrobials in people, animals, and crops, combined with weak infection control, poor diagnostics, environmental contamination, and a faltering pipeline of new drugs.

The consequences are already severe and projected to worsen. More than one million people died from AMR globally each year between 1990 and 2021; over that period, AMR deaths among children under five declined by 50 percent while those among people aged 70 and older increased by more than 80 percent, and forecasts indicate AMR deaths will rise by almost 70 percent by 2050 compared to 2022. AMR is, in this sense, both an immediate clinical emergency and a slow-moving structural threat to the gains of the past century.

Key Terminology

Term	Definition
Antimicrobials	Medicines used to prevent and treat infections in humans, animals, and plants, including antibiotics (against bacteria), antivirals, antifungals, and antiparasitics.
Antimicrobial Resistance (AMR)	The phenomenon whereby bacteria, viruses, fungi, and parasites no longer respond to the medicines designed to defeat them, making infections harder to treat.
Antibiotic Resistance	A subset of AMR specific to bacteria and antibiotics; the most urgent and best-documented form of resistance.
Antimicrobial Stewardship	Coordinated efforts and programmes to promote the appropriate, optimal use of antimicrobials to preserve their effectiveness.
One Health	An integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems, recognizing their interconnection.
GLASS	The WHO Global Antimicrobial Resistance and Use Surveillance System, the global platform standardizing the collection and reporting of AMR and antimicrobial-use data.
AWaRe Classification	The WHO classification of antibiotics into three groups: Access, Watch, and Reserve, to guide appropriate use.
MDR	Multidrug-Resistant: an organism resistant to at least one agent in three or more antimicrobial classes.
XDR	Extensively Drug-Resistant: an organism resistant to nearly all available treatment options.
Pan-resistant	Resistant to all available antimicrobials.
Healthcare-Associated Infections (HAIs)	Infections acquired during the course of receiving healthcare, often involving resistant organisms.
Surveillance	The systematic, ongoing collection and analysis of data on resistance patterns and antimicrobial use.
Diagnostics	Tests that identify a pathogen and its resistance profile, enabling targeted rather than empirical treatment.

Priority Pathogens	Bacteria identified by WHO as posing the greatest threat and the greatest need for new treatments.
Gram-negative / Gram-positive	A classification of bacteria by cell-wall structure; Gram-negative bacteria are generally harder to treat.
Carbapenems / Colistin / Polymyxins	"Last-resort" antibiotics used when other treatments fail.
Plasmid	A small, mobile piece of DNA that can transfer resistance genes between bacteria, even across species.

Historical Background

The Discovery of Antibiotics

The antibiotic era began with serendipity. In 1928, Alexander Fleming found that an uncovered Petri dish had become contaminated with mould spores, and he observed that the bacteria near the mould colonies were dying; he isolated the mould and identified it as a member of the Penicillium genus. He discerned that it was not the mould itself but a substance it produced that killed the bacteria, and he named this substance penicillin. Fleming shared the 1945 Nobel Prize in Physiology or Medicine with Howard Florey and Ernst Chain for the discovery of penicillin, the first antibiotic substance discovered.

The Development of Resistance

Crucially, the danger of resistance was foreseen from the very beginning. Fleming warned, in his Nobel acceptance speech, that the careless use of penicillin could expose bacteria to non-lethal doses and effectively educate them to become resistant. His warning proved accurate: resistance began to emerge within 10 years of the wide-scale introduction of penicillin. Other discoveries followed, including streptomycin for tuberculosis; Selman Waksman was awarded the Nobel Prize in Physiology or Medicine in 1952.

Evolution of AMR as a Global Issue

For decades, resistance was managed by the steady introduction of new drugs. As that pipeline slowed and resistance spread, AMR migrated from a clinical concern to a global policy priority, culminating in coordinated international action from 2015 onward.

Timeline of Major Milestones

Year	Milestone
1928	Fleming discovers penicillin.
1945	Fleming, Florey, and Chain awarded the Nobel Prize; Fleming warns of resistance.
1960–1961	Methicillin-resistant Staphylococcus aureus (MRSA) first observed, less than one year after methicillin entered clinical practice.
2015 (Jan)	WHO launches GLASS to globally standardize AMR surveillance.
2015 (May)	The World Health Assembly adopts the Global Action Plan on AMR.
2015 (Nov)	Transferable colistin resistance via the mcr-1 gene first described in China.
2016	AMR Political Declaration adopted by the 71st UN General Assembly (A/RES/71/3).
2017	WHO publishes the first Bacterial Priority Pathogens List.
2019	WHO updates the AWaRe classification and adds a 60% Access target.
2022 (Mar)	FAO, UNEP, WHO, and WOAH form the Quadripartite.
2024 (May)	WHO releases the updated Bacterial Priority Pathogens List (24 pathogens, 15 families).
2024 (Sept)	UN General Assembly adopts a new political declaration on AMR (26 September), negotiated among 193 countries.
2029	Follow-up high-level meeting on AMR scheduled at the UNGA.

Scientific Background

How Antimicrobials Work

Antibiotics work by targeting features essential to bacterial survival that human cells either lack or possess in a different form. Some attack the bacterial cell wall, causing the cell to rupture; others disrupt protein synthesis, DNA replication, or essential metabolic pathways. Because they exploit differences between bacterial and human cells, well-designed antibiotics can kill the pathogen while sparing the patient.

How Resistance Develops

Resistance arises through natural selection. When a population of bacteria is exposed to an antibiotic, those few cells that happen to carry a protective trait survive while susceptible cells die. The survivors multiply, and resistance spreads. Every exposure to an antimicrobial, whether necessary or not, applies this selective pressure, which is why overuse and misuse are so dangerous.

Mechanisms of Resistance

Bacteria deploy several strategies. They may produce enzymes that destroy or modify the drug; alter the drug's target so it no longer binds; reduce the drug's entry into the cell; or pump the drug out. Critically, resistance genes can spread not only vertically but also horizontally between unrelated bacteria, often via a plasmid. For example, the mecA gene responsible for methicillin resistance produces penicillin-binding protein 2a, which has a lower binding affinity for beta-lactam antibiotics, accounting for the observed resistance.

Major Resistant Pathogens and WHO Priority Pathogens

In 2024 WHO updated its prioritization. The 2024 list includes 15 families of antibiotic-resistant pathogens grouped into critical, high, and medium categories. The top-ranked bacterium was carbapenem-resistant Klebsiella pneumoniae; antibiotic-resistant Gram-negative bacteria and rifampicin-resistant Mycobacterium tuberculosis ranked in the highest quartile, while among community-acquired infections the highest rankings were for fluoroquinolone-resistant Salmonella Typhi, Shigella, and Neisseria gonorrhoeae.

Tier	Examples (2024 BPPL)
Critical	Carbapenem-resistant Klebsiella pneumoniae and Acinetobacter baumannii, plus rifampicin-resistant Mycobacterium tuberculosis (newly added).
High	Carbapenem-resistant Pseudomonas aeruginosa (moved down from critical), and high-burden pathogens such as Salmonella, Shigella, and Staphylococcus aureus.
Medium	Group A and B streptococci, Streptococcus pneumoniae, and Haemophilus influenzae, particularly affecting vulnerable populations.

Why AMR Is Difficult to Address

AMR is uniquely difficult. It is biologically inevitable, so it can be slowed but never eliminated. It spans multiple sectors, defying any single-sector solution. It is a classic collective-action problem: every actor benefits from using antibiotics freely, but the cost of resistance is shared by all. The economics of drug development are broken, and the worst burden often falls where surveillance is weakest.

Current Global Scenario

Mortality and Disease Burden

The most authoritative estimates come from the Global Research on Antimicrobial Resistance (GRAM) Project. There were an estimated 4.95 million deaths associated with bacterial AMR in 2019, including 1.27 million deaths attributable to it. In 1990 there were 1.06 million deaths directly due to AMR within a broader 4.78 million associated deaths, while in 2021 AMR led directly to 1.14 million deaths and was associated with a broader 4.71 million deaths.

The burden falls unevenly. The attributable death rate was highest in western sub-Saharan Africa at 27.3 deaths per 100,000 and lowest in Australasia at 6.5 per 100,000. The six leading pathogens (Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae, Streptococcus pneumoniae, Acinetobacter baumannii, and Pseudomonas aeruginosa) were responsible for 929,000 attributable deaths and 3.57 million associated deaths in 2019.

Future Projections

Metric	Projection
Cumulative direct AMR deaths, 2025–2050	39 million deaths (three deaths every minute).
Annual direct AMR deaths by 2050	Rising from 1.14 million (2021) to 1.91 million, a 67.5% increase.
Annual AMR-associated deaths by 2050	Could rise to 8.22 million, a 75% increase from 2021.
Lives savable, 2025–2050 (better care)	92.0 million deaths could be averted through better care and access.
Lives savable (new Gram-negative drugs)	11.1 million AMR deaths could be averted.

The 2016 O'Neill Review warned that without coordinated action, AMR is projected to cause 10 million deaths per year by 2050.

Economic Burden

The World Bank estimates AMR could result in US$1 trillion in additional healthcare costs by 2050 and US$1 trillion to US$3.4 trillion in GDP losses per year by 2030. Health costs could rise by US$66 billion to US$159 billion in a business-as-usual scenario. The O'Neill Review estimated around 300 million premature deaths over 35 years and 60 to 100 trillion USD of lost economic output.

Surveillance Snapshot

The GLASS 2022 report (data from 87 countries in 2020) showed high resistance in bloodstream infections caused by Acinetobacter species (over 56%) and Klebsiella pneumoniae (over 57%); 8% of bloodstream infections caused by Klebsiella pneumoniae were resistant to carbapenems, and over 60% of Neisseria gonorrhoeae isolates showed resistance to ciprofloxacin.

Causes and Drivers of AMR

Human Medicine

The single most important driver is the misuse and overuse of antimicrobials in human health: over-prescription (including for viral infections), self-medication where antibiotics are sold without prescription, incomplete courses and under-dosing, and, paradoxically, inequity of access, since more people still die from lack of access to effective antibiotics than from resistance itself.

Counterfeit and Substandard Medicines

Falsified and substandard antimicrobials, containing too little active ingredient or none at all, expose pathogens to sub-therapeutic doses and directly breed resistance while failing patients.

Animal Health and Agriculture

A very large share of global antimicrobial use occurs in animals. Estimates suggest livestock accounted for around 72% of total antibiotic use, with a more recent study estimating 66%. Without interventions, global livestock antibiotic use could rise to 143,481 tons by 2040, an increase of 29.5% from the 2019 baseline of 110,777 tons, with Asia accounting for around two-thirds of global use.

Aquaculture and Environmental Contamination

Antimicrobials are also used extensively in aquaculture. Antibiotics and resistant bacteria enter soil and water through animal waste, human sewage, and manufacturing effluent, creating environmental reservoirs that connect the human, animal, and ecosystem dimensions of the problem.

Pharmaceutical Manufacturing

Discharge of antibiotic residues from manufacturing sites, especially where wastewater treatment is inadequate, creates local "hotspots" of intense selective pressure.

Weak Surveillance and Poor Diagnostics

Without good data, resistance spreads undetected. Without rapid diagnostics, clinicians must prescribe empirically, often defaulting to broad-spectrum drugs. Many primary-care facilities in low- and middle-income countries lack the laboratories and trained technicians needed for advanced diagnostics.

Lack of Innovation

The pipeline of new antibiotics is failing, and that failure is becoming more visible with each annual review. WHO has repeatedly warned that development is inadequate to address the mounting threat of resistance, and its pipeline assessments show a system that is still too thin, too fragile, and too dependent on small companies with limited financial runway. Even when new candidates do enter the pipeline, many are not truly innovative in the sense needed to overcome the most dangerous forms of resistance.

The reasons behind this stagnation are mostly economic, although scientific difficulty also plays a role. Antibiotics are unlike drugs for chronic diseases. They are taken for short courses, they are often held in reserve so they are not overused, and health systems do not usually pay high prices for them. That means the commercial return on investment is low, especially when compared with medicines for conditions such as diabetes, hypertension, or cancer, where patients may take treatment for years and companies can recover development costs more easily.

This creates a structural problem for large pharmaceutical companies. Many of them have withdrawn from antibiotic research because the market does not reward the scale of investment required. Developing a new antibiotic can take 10 to 15 years and cost more than 1 billion US dollars, while the final product may be used sparingly and sold at relatively low prices. For a company deciding where to allocate capital, that makes antibiotics a weak business case even when the public health need is urgent.

The pipeline has therefore shifted toward small biotechnology firms, but this has not solved the problem. WHO has noted that much of the remaining innovation now comes from small and medium-sized companies that struggle to secure late-stage financing, and many suspend development or go bankrupt before a product reaches approval. In other words, the pipeline is not only small, it is unstable. The preclinical and early clinical stages may produce promising candidates, but the financial burden of taking a drug through trials, registration, and manufacturing is often too much for smaller firms to carry alone.

There are also scientific reasons the field remains difficult. It is increasingly hard to identify novel compounds that are effective against resistant Gram-negative bacteria, especially pathogens with double cell membranes and multiple resistance mechanisms. That is why many of the few antibiotics still in development are incremental modifications of existing classes rather than breakthroughs against the most urgent pathogens. WHO's own pipeline review has shown that only a small share of clinical candidates meet its criteria for innovation, and only a very limited number are active against WHO critical priority pathogens.

Another reason companies hesitate is that the regulatory pathway is expensive and uncertain. Antibiotic trials are difficult to design because infections may progress quickly, patient populations are heterogeneous, and proving benefit can be complex in severe or resistant disease. Added to this is the fact that resistance often emerges soon after market entry, which shortens the commercial life of even successful products. From a business perspective, companies face high research costs, uncertain approval, limited sales volume, and rapid obsolescence. From a public health perspective, the result is a dangerously weak innovation ecosystem.

That is why many analysts and public health institutions argue that antibiotic development cannot be left to the market alone. If the world wants a stronger pipeline, it must create incentives that reward availability, not volume, and support smaller firms before they collapse under late-stage development costs. Subscription models, public funding, advance purchase commitments, and delinked reimbursement systems are all attempts to fix this market failure, but none will work without sustained government commitment.

Case Studies

MRSA (Methicillin-Resistant Staphylococcus aureus)

MRSA is the archetypal hospital superbug. It was first observed in 1960, less than one year after the introduction of methicillin. Its history unfolds in waves: penicillin resistance (1940–1960); methicillin resistance and hospital-associated MRSA (1960–1980); worldwide spread (1980–1990); and the rise of community-associated and livestock-associated MRSA (1990–2000). Meticillin-resistant S. aureus caused more than 100,000 deaths attributable to AMR in 2019.

MDR-TB (Multidrug-Resistant Tuberculosis)

MDR-TB is caused by strains resistant to both isoniazid and rifampicin. Globally, an estimated 400,000 people developed MDR or rifampicin-resistant TB in 2023, and 175,923 were diagnosed and started on treatment. Treatment success for MDR/RR-TB reached 68% versus 88% for drug- susceptible TB. In 2023 TB returned to being the world's leading infectious-disease killer and a major cause of AMR-related deaths.

Carbapenem-Resistant Enterobacterales (CRE)

Carbapenems are last-resort antibiotics, so resistance to them is especially alarming. Carbapenem-resistant Klebsiella pneumoniae is the top-ranked critical priority pathogen in the 2024 BPPL. Its spread is driven partly by rising carbapenem use to treat infections already resistant to other drugs, illustrating a vicious cycle.

Drug-Resistant Gonorrhoea

Neisseria gonorrhoeae has progressively defeated almost every drug used against it. The first three global cases of XDR gonorrhoea resistant to ceftriaxone with high-level azithromycin resistance were reported in the United Kingdom (one) and Australia (two). Since 2022 Europe has reported cases of XDR Neisseria gonorrhoeae of sequence type 16406, with related cases in Austria, the United Kingdom, and France, and similar isolates in Cambodia. Because ceftriaxone is the first-line treatment, resistance to it threatens to make gonorrhoea effectively untreatable.

Colistin Resistance and the mcr-1 Gene

Colistin is a polymyxin held in reserve for the most resistant Gram-negative infections. In November 2015, transferable colistin resistance mediated by the plasmid-borne mcr-1 gene was described in China in E. coli and K. pneumoniae. The emergence of MCR-1 heralds the breach of the last group of antibiotics by plasmid-mediated resistance. Because the gene sits on a mobile plasmid, isolates

carrying it have since been reported in over 25 countries across Asia, Europe, the Middle East, North Africa, and North America.

International Response

The WHO Global Action Plan (2015)

The cornerstone of the global response is the Global Action Plan (GAP), adopted by the World Health Assembly in 2015 and endorsed by FAO and WOAH and welcomed by UNEP. Its five strategic objectives provide the template for National Action Plans. By the end of 2023, 178 countries had developed plans, with 68% implementing them but only 25% having costed and budgeted plans. The 2024 declaration requested the Quadripartite to update the Global Action Plan by 2026.

The One Health Approach and the Quadripartite

In March 2022, FAO, UNEP, WHO, and WOAH signed an agreement to strengthen cooperation across human, animal, plant, and environmental health, forming the Quadripartite. Its aim is to maintain the effectiveness of antimicrobials and ensure sustainable and equitable access for responsible and prudent use.

GLASS (Surveillance)

GLASS, launched in 2015, aims to globally standardize AMR surveillance. As of 2024, 130 countries are enrolled, 104 have submitted national AMR data, and 74 have reported antimicrobial use data at least once between 2021 and 2023.

The AWaRe Classification (Stewardship)

WHO classifies antibiotics into three groups: Access (recommended for common infections, should be readily available); Watch (higher resistance risk, for more severe conditions); and Reserve (last resort, only for multidrug-resistant pathogens). The earlier target was 60% Access consumption by 2023; at the September 2024 UN High-Level Meeting, leaders committed to at least 70% Access by 2030.

Infection Prevention and Control (IPC)

Preventing infections reduces the need for antibiotics. The 2024 declaration set targets including 100% of countries having basic WASH services in healthcare facilities and 90% meeting WHO's minimum IPC requirements by 2030. WHO analyses indicate vaccines could prevent over 10% of deaths associated with AMR while reducing antibiotic consumption.

The Sustainable Development Goals

AMR is not a standalone SDG but cuts across several, threatening progress on good health (SDG 3), food security (SDG 2), clean water and sanitation (SDG 6), and responsible consumption (SDG 12).

The UN Political Declarations (2016 and 2024)

The first declaration came in 2016. The second, on 26 September 2024 at the 79th UNGA High-Level Meeting, committed to reduce the estimated 4.95 million human deaths associated with bacterial AMR annually by 10% by 2030, a mortality-reduction target that is a first for AMR. It calls for sustainable national financing and US$100 million in catalytic funding toward a target of at least 60% of countries having funded national action plans by 2030, plus an independent panel on evidence for action by 2025.

Major Stakeholders

Stakeholder	Role in Addressing AMR
WHO	Leads the human-health response; maintains GLASS, the BPPL, and AWaRe; sets norms and coordinates globally.
FAO	Promotes a One Health approach across the agrifood system; leads on antimicrobial use in agriculture and food production.
WOAH	Sets international standards for responsible antimicrobial use in animals and monitors veterinary use.
UNEP	Brings the environmental sector into the One Health response.
UNICEF	Supports child health, immunization, WASH, and access to quality medicines.
UNDP	Supports development financing, governance, and integration of AMR into national planning.
Governments	Develop and fund National Action Plans, regulate sales and agricultural use, run surveillance and IPC.
Healthcare workers	Front-line stewards: prescribing appropriately, practising IPC, educating patients.
Pharmaceutical industry	Researches and manufactures antimicrobials, diagnostics, and vaccines; central to both innovation and access.
Academia	Generates the evidence base, develops new tools, trains the workforce.
NGOs and civil society	Raise awareness, advocate for access and accountability, reach underserved communities.

A guiding mechanism is the One Health Joint Plan of Action, launched by the Quadripartite to help the world collectively prevent, predict, detect, and respond to health threats.

Country and Regional Perspectives (Possible Blocs)

High-Income Countries

Concerns: hospital superbugs, the broken innovation pipeline, stewardship. Priorities: R&D incentives, strong stewardship and IPC, advanced surveillance. They generally have funded plans and champion R&D incentives but may be cautious about commitments affecting their industries or trade.

Low- and Middle-Income Countries (LMICs)

Concerns: both lack of access and rising resistance, with weak surveillance. Priorities: financing, capacity-building, technology transfer, equitable access. The impact of AMR falls most heavily on low- and lower-middle-income countries; they emphasize that stewardship must not become a barrier to access.

The African Region

Concerns: the highest mortality burden combined with the weakest surveillance. Priorities: laboratory and surveillance capacity, WASH and IPC, access, and financing.

The European Region

Concerns: cross-border spread and preserving last-resort drugs. Priorities: consumption-reduction targets, limits on antibiotics in livestock, R&D investment, environmental monitoring; a strong advocate of One Health.

The South-East Asia Region

Concerns: very high consumption in humans and animals, large populations, high TB burden. Priorities: balancing access expansion with stewardship, regulating over-the-counter sales, managing manufacturing effluent.

The Eastern Mediterranean Region

Concerns: fragile and conflict-affected systems, displacement, disrupted surveillance. Priorities: rebuilding surveillance and IPC; MDR/RR-TB treatment success in the region rose from 64% in 2017

to 73% in 2020.

The Region of the America

Concerns: wide internal disparities and high agricultural use in major exporters. Priorities: regional coordination through PAHO, stewardship, surveillance harmonization.

The Western Pacific Region

Concerns: home to major agricultural and pharmaceutical producers and the origin of key resistance events. Priorities: reducing agricultural use, environmental management, regional surveillance.

Major Pharmaceutical Manufacturing Nations

Concerns: sustaining industries while addressing manufacturing contamination and the innovation gap. Priorities: R&D incentives, IP considerations, commercially viable access commitments.

Countries with High Agricultural Antimicrobial Use

Concerns: protecting food security and farm livelihoods while reducing use. Priorities: practical alternatives and transition support. 47 countries have pledged to decrease antimicrobial use in food-producing animals by 30 to 50% by 2030.

Current Challenges

Political: AMR competes for attention with more visible crises, and political will fades between meetings. Accountability mechanisms remain comparatively weak; the follow-up high-level meeting is set for 2029.

Scientific: Resistance evolves faster than science can respond. Just 12 new antibiotics entered the market from 2017 to 2021, too few against critical pathogens.

Economic: The antibiotic market is broken. A successful new antibiotic should be used as little as possible to preserve it, which destroys the commercial incentive. Start-ups such as Achaogen and Melinta have failed commercially.

Ethical: Reconciling the needs of present and future patients, and of rich and poor countries, raises hard questions about who bears the cost of restraint.

Regulatory: Many countries lack capacity to enforce prescription-only sales, control substandard medicines, or regulate agricultural and manufacturing use.

Equity: The burden is concentrated among the poorest, who also have least access to diagnostics and second-line drugs.

Access versus Stewardship: The central dilemma. Restricting use to slow resistance can deny life-saving drugs; expanding access can accelerate resistance without stewardship. Any credible resolution must balance the two.

Possible Crisis Scenarios and Emergencies

- **Outbreak of a pan-resistant organism:** a bacterium resistant to all available antibiotics emerges in a major hospital.
- **Hospital superbug epidemic:** a carbapenem-resistant organism spreads rapidly across borders.
- **Collapse of surveillance systems:** a major data system fails or a key contributor withdraws.
- **Global shortage of last-resort antibiotics:** manufacturing disruption depletes global stocks of a Reserve antibiotic.
- **Counterfeit antimicrobial crisis:** falsified antibiotics flood several markets.
- **Conflict-related and humanitarian AMR:** war wounds, displacement, and collapsed infrastructure create ideal conditions for resistant infections.
- **Zoonotic outbreak involving a resistant pathogen:** a resistant organism jumps from animals to humans.
- **Climate-related challenges:** flooding, heat, and shifting disease patterns spread resistant organisms and disrupt sanitation.

For each, delegates should consider rapid information-sharing, emergency stockpiles and equitable allocation, surge support to affected systems, and the coordination mechanisms that would be activated.

Possible Areas for Deliberation

1. **Surveillance:** expanding GLASS participation and data quality; integrating One Health surveillance.
2. **Stewardship:** operationalizing the 70% Access target; regulating over-the-counter sales.
3. **Research funding:** designing "push" and "pull" incentives to revive the pipeline.
4. **Diagnostics:** scaling affordable, rapid, point-of-care tests for primary care.
5. **Public awareness:** coordinating education for prescribers, patients, and farmers.
6. **Regulation of agriculture:** phasing out non-therapeutic use while protecting food security.
7. **Incentives for innovation:** exploring delinkage models separating revenue from sales volume.
8. **International financing:** strengthening the AMR Multi-Partner Trust Fund and catalytic funding.
9. **One Health implementation:** making cross-sectoral coordination real at national level.
10. **Capacity-building:** technology transfer, workforce training, and infrastructure.

Questions Delegates Should Consider

1. How does my country balance access and stewardship, and which does it prioritize?
2. Does my country have a costed and funded National Action Plan, and how is it implemented?
3. What is the state of AMR surveillance and laboratory capacity, and does it report to GLASS?
4. What proportion of antibiotic use is in the Access group, and how far is it from 70%?
5. How significant is agricultural and veterinary antimicrobial use to the economy?
6. Does my country host pharmaceutical manufacturing, and what are the implications?
7. Who should pay for new antibiotic development, and who should benefit?
8. How can stewardship be promoted without denying life-saving drugs to the poor?
9. What accountability mechanisms would make the 2024 targets meaningful?
10. How can One Health be financed and implemented in countries with weak institutions?
11. What role should vaccines and infection prevention play relative to new drugs?
12. How should the world prepare for the emergence of a pan-resistant pathogen?
13. What is the right balance between binding commitments and national sovereignty?
14. How can falsified and substandard medicines be addressed across borders?
15. What does equitable access to a future last-resort antibiotic look like in practice?

Questions a Resolution Must Answer (QRMA)

1. How will the resolution operationalize the 2024 target to reduce AMR-associated deaths by 10% by 2030, and how will progress be measured?
2. What concrete financing mechanism will fund National Action Plans, especially in LMICs?
3. How will the resolution strengthen and expand GLASS and integrated One Health surveillance?
4. What incentive structures will revive antibiotic R&D, and who will fund them?
5. How will equitable access to new and existing antimicrobials be guaranteed alongside stewardship?
6. What measurable stewardship commitments will the resolution set?
7. How will the resolution address antimicrobial use in agriculture and aquaculture without undermining food security?
8. How will environmental contamination, including manufacturing effluent, be monitored and reduced?
9. What targets and support will the resolution set for IPC, WASH, and vaccination?
10. How will the resolution scale up affordable diagnostics, especially in primary care?
11. What role will the independent scientific panel and the Quadripartite play, and how will accountability be ensured?
12. How will the resolution support conflict-affected and humanitarian settings?
13. What capacity-building and technology-transfer provisions will assist the least-resourced states?
14. How will the resolution respect national sovereignty while ensuring meaningful collective action?
15. What review and follow-up process will track implementation ahead of 2029?

Delegate Research Guide

- **National Action Plan on AMR:** Does your country have one? Is it costed, funded, and implemented?
- **Healthcare system:** structure, financing, universal health coverage, access to essential medicines.
- **Surveillance systems:** participation in GLASS, laboratory capacity, data quality.
- **Antibiotic consumption:** total use, the Access/Watch/Reserve breakdown, over-the-counter sales.
- **Agricultural practices:** scale of veterinary and aquacultural use and the importance of livestock.
- **Pharmaceutical industry:** whether your country manufactures or exports antimicrobials.
- **WHO and UN commitments:** alignment with the 2016 and 2024 declarations and WHA resolutions.
- **Regional partnerships:** engagement with the relevant WHO regional office and regional bodies.
- **Recent national developments:** new legislation, outbreaks, funding, or policy shifts in the past one to two years.

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