Committee: World Health Organization (WHO)

Agenda: Combating antimicrobial resistance through international cooperation in fostering the development of alternative treatments and advancing emerging healthcare technologies

List of Countries: Bangladesh, Bolivia, Canada, Denmark, Federal Republic of Germany, Finland, France, Guatemala, Haiti, Honduras, India, Indonesia, Kuwait, Malaysia, Mexico, Nigeria, Pakistan, People's Republic of China, Republic of Korea, Russian Federation, United Kingdom, United States of America, Kenya, Malawi, Saudi Arabia, Sweden, Venezuela

I. General Overview

Figure 1. The World Health Organization Emblem

1. Committee Introduction

WHO, the World Health Organization, was established in 1948 as a specialized agency to promote international cooperation to improve global health conditions through providing technical assistance to other countries and coordinating responses to health emergencies. With its administrative headquarters in Geneva, the governance of the WHO operates through the World Health Assembly (WHA), which meets annually for general policy-making, and through the Executive Board of health specialists elected for three-year terms by the assembly.

To ensure improved health and global well-being, the WHO addresses global health problems and strives to connect countries to collaborate regarding health issues. It generally encourages the strengthening and expansion of the public health administrations of the member

states through providing technical advice to their governments, offering aid in the development of the national training institutions for medical specialists, and assisting in setting up local health centers. Moreover, the WHO sets international health norms and standards, especially when coordinating responses to non-communicable diseases. For instance, during the COVID-19 pandemic, WHO established a codified set of international sanitary regulations designed to standardize quarantine measures without unnecessarily interfering with trade and air travel across national borders.

The World Health Organization is a specialized agency of the United Nations, serving as the coordinating authority on international public health and facilitating global cooperation during health crises. The committee ensures the sharing of critical health information and strengthens health systems in all nations. However, it lacks significant authority when it comes to enforcing compliance from the member states. It does not have any enforcing powers or the authority to impose health measures such as lockdowns or vaccine mandates on a country. When the WHO Director-General declares a Public Health Emergency of International Concern (PHEIC), they issue temporary recommendations, but these are non-binding and rely entirely on member states' willingness to comply. Moreover, WHO is funded financially through the annual contributions made by the member states based on their ability to pay, significantly decreasing its authority as their capacity to enforce health measures depends on the willingness of member states to contribute funds or follow its recommendations.

2. Significance of Agenda

As bacteria, viruses, and other pathogens evolve to resist existing treatments, common infections and medical procedures become in dire need to develop accordingly to this change. According to the World Health Organization, "bacterial antimicrobial resistance (AMR) was directly responsible for 1.27 million global deaths in 2019, and contributed to 4.95 million deaths (2025)." This means that infections that were easily treated with standard antibiotics are now becoming harder or nearly impossible to cure. As resistance increases, the risk of complications and mortality rate rises significantly. AMR has already caused millions of infections and hundreds of thousands of deaths annually, and data predicts that this number could rise dramatically. Since resistant pathogens transcend borders through travel, trade, and human migration, AMR cannot be contained by national policies and requires international coordination

to resolve the issue. Despite the severity of the issue, developments are lagged because pharmaceutical companies have limited economic incentive to develop new antibiotics, which are costly to create and used sparingly to prevent resistance. This has led to an underfunded antibiotic research, causing the issue to exacerbate as time progressed. As existing drugs lose their effectiveness and no one derives a solution, even routine surgeries, childbirth, and immunocompromising treatments such as chemotherapy become too dangerous, increasing the health burden on a global scale.

Given these escalating challenges, it is essential for the United Nations to prioritize AMR as a global agenda and promote international cooperation to resist it. The UN provides a platform for member states to share data and invest collectively in research that individual nations may not be able to fund alone. This cooperation is significant for advancing innovative solutions such as CRISPR-based antimicrobials and next generation vaccines as it requires financing and equitable distribution of these technologies, which are areas where the UN plays a leadership role in. Furthermore, AMR is tied to the One Health framework, an integrated approach that recognizes the connection between human, animal, and environmental health, aiming to sustainably balance and optimize the health of all three because it does not originate in a single sector. The misuse and overuse of antimicrobials in human medicine, animal agriculture, and improper waste management lead to the development of resistant bacteria that can migrate between humans and animals, as the environment serves as a transmission pathway for resistance. Only a global coordinating body such as the UN can ensure that policies align with the framework and that innovations reach low and middle income countries which are most vulnerable to AMR. Thus, combating AMR with international cooperation through the United Nations is necessary for global stability and health security.

3. Key Terms

Antimicrobial Resistance (AMR)

According to the World Health Organization, antimicrobial resistance occurs when harmful bacteria, fungi, and parasites no longer respond to the antimicrobial medicines, which are medicines used to prevent infectious diseases. Following this phenomenon, diseases become more difficult or impossible to treat. Although antimicrobial resistance is a natural process which

is caused by genetic changes in pathogens, human activity plays a role in increasing the recurrence and spread of AMR through the overuse of antimicrobial agents in treatments. As cases of antimicrobial resistance occur more frequently than before, the need to combat AMR is highlighted.

Selective Pressure

Selective pressure, according to the WHO, is the stress the pathogens are put under after disease control measures are stepped up, usually through administration of medicines. The exposure to the medicine allows susceptible microbes to be terminated whereas the resistant microbes survive and multiply. The overuse of drugs and antibiotics facilitates selective pressure which amplifies antimicrobial resistance. Selective pressure is highest when antimicrobials are overutilized in health.

Horizontal Gene Transfer (HGT)

Horizontal Gene Transfer (HGT) refers to the process in which microorganisms exchange genetic material directly with each other. Horizontal gene transfer plays a vital role in antimicrobial resistance in microorganisms as through this process, antibiotic resistant genes are often directly passed down/transferred from one another at rapid speeds, exponentially increasing the number of antimicrobial resistance microorganisms. Through mechanisms such as plasmid exchange, transformation, or bacteriophage-mediated transfer, HGT allows resistance to move rapidly across different strains and even different species. This makes HGT a major driver in the global rise of antimicrobial resistance and a critical scientific concept for understanding how resistant infections emerge and spread.

II. Historical Background

Antimicrobial resistance (AMR) emerged almost immediately after the introduction of antimicrobial drugs. The first documented case appeared in the 1930s when Treponema pallidum, the bacterium that causes syphilis, began showing reduced sensitivity to arsphenamine shortly after doctors began using the drug. Because antibiotics are derived from the ecological competitors of microbes such as other microbes, fungi, plants and animals, the emergence of resistance within microbes was expected. Although microbes first developed resistance through

the natural process of mutations and gene transfer, with the development and introduction of new antibiotics constantly arising combined with the misuse and overuse of antibiotics in agriculture and healthcare, antimicrobial resistance within bacteria worsened.

A major turning point occurred in 1928 with Alexander Fleming's discovery of penicillin. This discovery transformed modern medicine, and penicillin quickly reduced deaths from common bacterial infections once it entered clinical use. However, even this breakthrough revealed how quickly microbes can adapt. In 1940, researchers discovered strains of Escherichia coli that produced enzymes capable of breaking down penicillin. This limited the ability of the drug to kill the bacteria. The early appearance of resistance marked the beginning of a pattern that continued with most antibiotics introduced afterward. Each time a new drug was created, resistant strains soon followed.

In the late 1930s, people began using antibiotics for agricultural purposes. With the rise of industrial farming, a large number of animals were kept together in crowded spaces in unsanitary conditions. These conditions made the animals prone to infectious diseases. Therefore, people began feeding the livestock antibiotics to increase growth rates and limit illnesses. However, unlike in healthcare, there were no limits and restrictions regarding the usage of antibiotics in agriculture. It was a common practice to give livestock subtherapeutic doses of antibiotics. This fosters selective pressure which leads to the development of antimicrobial resistant bacteria in the bodies of the animals. Although there were warnings indicating the potential for the antimicrobial-resistant bacteria to spread from the animals' bodies to humans, the use of antibiotics in agriculture still persists.

As AMR expanded throughout the mid and late twentieth century, its impact grew beyond local settings. Healthcare systems around the world began reporting rising levels of drug resistant tuberculosis, gonorrhea, staphylococcal infections, and hospital acquired diseases. At the same time, the development of new antibiotics slowed. Pharmaceutical companies shifted their focus to medicines that offered greater long term profits, which left the world with fewer new treatment options as older drugs became less effective. To combat this crisis, the U.S. Centers for Disease Control and Prevention released the first Antibiotic Resistance Threats Report in 2013. The report looked into the threats posed to humans by antimicrobial resistance in the United States. The report helped bring government attention to the issue, causing the White House to take action in 2014 and 2015.

III. Interested Parties

1. International Organizations

Food and Agriculture Organization (FAO)

The Food and Agriculture Organization (FAO) addresses antimicrobial resistance within food systems and agriculture, as misuse of antibiotics in livestock and aquaculture contributes significantly to resistance. FAO's Action Plan on Antimicrobial Resistance (2021-2025) supports countries in strengthening national antimicrobial resistance policies, regulating veterinary drug use, and improving biosecurity in farms. The FAO collaborates with WHO, WOAH, and UNEP to ensure that antimicrobial resistance efforts in the agricultural sector align with global standards and emphasize sustainable practices that minimize antibiotic reliance.

Drugs for Neglected Diseases initiative (DNDi)

The Drugs for Neglected Diseases initiative (DNDi) is an international non-profit R&D organization focused on developing new treatments for neglected and drug-resistant diseases. DNDi promotes open-source research models and public-private partnerships to accelerate innovation in antibiotic development. Its collaboration with WHO on GARDP has driven efforts to revitalize the global antibiotic pipeline while ensuring equitable access to resulting medicines.

United Nations Environment Programme (UNEP)

The United Nations Environment Programme (UNEP) addresses the environmental dimension of antimicrobial resistance, highlighting how antibiotic residues and resistant microbes spread through wastewater, soil, and water systems. In 2022, UNEP released the report, "Bracing for Superbugs," emphasizing the need for environmental surveillance and waste management standards to control antimicrobial resistance. As part of the Quadripartite Alliance (WHO, FAO, WOAH, UNEP), the organization integrates environmental considerations into national antimicrobial resistance strategies and fosters sustainable practices to reduce pollution from pharmaceutical and agricultural sources.

World Organization for Animal Health (WOAH)

Formerly known as OIE, the World Organization for Animal Health (WOAH) plays a crucial role in mitigating antimicrobial resistance in veterinary medicine and animal production. WOAH develops international standards and guidelines for antimicrobial use and resistance monitoring in animals. It helps member countries build laboratory capacity and regulatory systems to prevent overuse of antimicrobials in livestock. Through its Global Database on Antimicrobial Agents in Animals, WOAH tracks trends in antimicrobial consumption and supports the transition to responsible veterinary drug practices globally.

2. Nation States

Honduras

Honduras, like many low and middle income countries, faces a severe challenge in tackling AMR due to constrained healthcare resources and widespread unregulated antibiotic use. Many communities in Honduras utilize antibiotics without proper medical guidance, accelerating resistance, and sacrificing over 900 lives annually since 1999. Despite the severity of the issue in Honduras, the country lacks formal legislation for preventing antimicrobial contamination in the environment and very limited capacity to regulate antimicrobial use in agriculture. Through UN agencies, WHO, and ICARS, Honduras is positioned to receive capacity-building support and AMR interventions. Honduras has started planning and partially implementing a National Action Plan (NAP) on AMR, but the TrACSS report indicates that its progress has been uneven and very slow in a number of critical areas, and emphasizes the need to enhance data quality and build a more formal, well-funded coordination mechanism.

Federal Republic of Germany

Germany is a major backer in the fight against antimicrobial resistance, combining strong national investment and international solidarity. The German Federal Ministry of Education and Research (BMBF) helped establish the Global AMR R&D Hub and funds its Berlin secretariat, coordinating R&D priorities globally. Berlin also contributed significantly to the Global Antibiotic Research & Development Partnership (GARDP), committing an additional €50 million for 2023-2027 to support development of affordable antibiotics for low and middle

income countries (GARDP, 2022). Beyond R&D, Germany has assisted capacity building for countries in need of help regarding the AMR issue. Through its development agency GIZ, it has created hospital partnerships across Sub-Saharan Africa under the COMBAT AMR in Africa network to improve data sharing and infection control. Germany views the AMR issue as a global responsibility, its investment supporting innovation and strengthening health systems abroad.

Denmark

Denmark is recognized as one of the global pioneers in AMR prevention, especially in the agricultural sector. The country dramatically reduced antibiotic use in livestock through strict regulations and monitoring after finding the early links between agricultural overuse and rising resistance in humans. Since Denmark's economy relies significantly on agricultural exports, the emergence of AMR posed direct risks to trade relationships and food safety standards. Due to their success, DANMAP, the Danish Programme for surveillance of antimicrobial consumption, became a model example of tracking antibiotic use and resistance. In its latest National Action Plan, Denmark pledged USD 43 million for its official development assistance (ODA) to continue core funding for ICARS (International Centre for Antimicrobial Resistance Solutions) through 2030 (ICARS, 2025). ICARS specializes in context-specific AMR interventions, partnering with low and middle income countries to co-develop scalable, One Health-oriented solutions.

India

AMR is a very serious public-health threat in India, carrying one of the largest burdens of AMR in the world. According to the NAMS (National Academy of Medical Sciences) task force, India faces very high resistance rates, and over-the-counter (OTC) antibiotics sale, misuse of antibiotics by the public, and weak regulations further worsened the situation. According to the report by the Institute of Health Metrics and Evaluation (IHME), there were an estimated 297,000 direct deaths and over 1 million associated deaths by India due to antimicrobial resistance (Institute of Health Metrics and Evaluation, 2023). In response to the severity of the issue, India launched its National Action Plan on AMR which focuses on six strategic priorities such as awareness and education, surveillance, infection prevention and control, research and

innovation, and strengthening collaboration within the country. India most importantly emphasizes their need for an improved governance, and is working to build an integrated surveillance system, calling for support in financing, better regulation, and a stronger governance framework at a global AMR conference.

IV. Status Quo

1. Current Situation

Antimicrobial resistance has emerged as one of the most pressing global health threats of the 21st century, posing a great threat to decades of medical progress and placing immense strain on healthcare systems worldwide. According to the Global Research on Antimicrobial Resistance (GRAM) Report, antimicrobial resistance directly accounted for 1.27 million deaths in 2019, with nearly 5 million deaths associated with drug-resistant infections—figures expected to rise substantially without coordinated global intervention. Low- and middle-income countries (LMICs), particularly in sub-Saharan Africa and South Asia, bear a disproportionate share of the burden due to high infectious disease prevalence, inadequate surveillance systems, and limited access to appropriate treatments. At the same time, high-income countries continue to face increasing resistance rates linked to antibiotic overuse in clinical settings and agriculture, as well as insufficient development of new therapeutics.

Despite the urgent need for novel antimicrobial agents, the pace of innovation remains steady. Traditional antibiotics have become less profitable for pharmaceutical companies due to high research costs, long development timelines, and uncertain market returns, resulting in limited investment. New therapeutic approaches—such as bacteriophage therapy, antimicrobial peptides, CRISPR-based antimicrobials, and pathogen-specific vaccines—show promise but remain in early development stages and face regulatory, financial, and infrastructural obstacles. Furthermore, global health inequities hinder the equitable distribution of existing treatments, allowing resistant pathogens to propagate unchecked in underdeveloped countries. International collaborations such as the Global Antibiotic Research and Development Partnership (GARDP), the World Health Organization's Global Action Plan on AMR, and surveillance systems like the Global Antimicrobial Resistance and Use Surveillance System (GLASS) attempt to coordinate research, improve progress, and support access to essential medicines. However, these efforts are

often undermined by inconsistent national commitments, insufficient funding, limited global regulatory actions, and substantial gaps in laboratory and healthcare infrastructure across regions, which collectively reduce their overall effectiveness.

As a result, antimicrobial resistance continues to threaten global health security, pushing millions into extreme poverty, inflating healthcare costs, and hindering progress toward universal health coverage. Without immediate and sustained international cooperation to foster innovation, strengthen healthcare technologies, and ensure equitable implementation, antimicrobial resistance is projected to not only cause substantial economic losses estimated at trillions of dollars but also cause up to 10 million deaths annually by 2050.

2. Past Actions

Global Action Plan on Antimicrobial Resistance (GAP)

Adopted in 2015 by the World Health Organization (WHO) in collaboration with the Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (WOAH), the Global Action Plan serves as the primary international framework for combating antimicrobial resistance. The GAP outlines five objectives, including improving awareness, strengthening surveillance, reducing infection incidence, optimizing antimicrobial use, and investing in sustainable research and development of new medicines, vaccines, and diagnostics. Countries implementing National Action Plans under the GAP have established surveillance systems such as the Global Antimicrobial Resistance and Use Surveillance System (GLASS), which collects resistance data from member states.

Global Antibiotic Research and Development Partnership (GARDP)

Initiated in 2016 by WHO and the Drugs for Neglected Diseases initiative (DNDi), GARDP aims to accelerate the development and increase the accessibility of new antibiotic treatments. The partnership focuses on addressing critical gaps in the R&D pipeline, particularly for drug-resistant bacterial infections affecting vulnerable populations, including newborns and immunocompromised individuals.

Antimicrobial Resistance Multi-Partner Trust Fund (AMR MPTF)

Established in 2019, the AMR MPTF provides financial resources to strengthen antimicrobial resistance-related projects under a One Health approach. Through contributions from donor states, the fund supports initiatives aimed at enhancing surveillance networks, expanding laboratory capacity, and integrating emerging healthcare technologies in national health systems. While the MPTF has supported pilot projects across Asia, Africa, and Latin America, total contributions remain insufficient relative to the global scale of the antimicrobial resistance challenge, limiting long-term sustainability.

Global Health Security Agenda (GHSA)

Founded in 2014, the GHSA includes antimicrobial resistance as one of its core technical areas, prioritizing infection prevention, laboratory strengthening, and global surveillance. Through multisectoral cooperation among over 70 countries, the GHSA has improved the sharing of technical expertise and promoted standardized protocols for antimicrobial stewardship. GHSA member states have also invested in emerging health technologies, such as rapid diagnostic platforms and genomic sequencing tools. Nonetheless, capacity gaps persist between countries, and the uneven adoption of technologies impedes coordinated global response efforts.

V. Future Outlook

Advancing Public Awareness

Public awareness of antibiotics is limited in many regions, leading to self-medication and incomplete treatment courses. Without public awareness, the strongest policies can fail because individuals and communities continue practices that quicken AMR. Misuse and overuse of medication due to lack of public understanding is one of the leading causes of high risks of AMR, especially in low or middle income countries, which brings light to the need for widespread awareness.

Member states could collaborate by developing large-scale global campaigns backed by public agencies such as WHO that deliver messages about the dangers of AMR. The goal is to make responsible antimicrobial usage a social norm, and this could be achieved through public

awareness, making individuals cautious about utilizing antimicrobials, ultimately reducing its overuse and AMR rates.

A coordinated global approach involving accessible promotion of AMR education. Also, international organizations can collaborate with the state in order to ensure that accurate information about antibiotic use is adapted and widely distributed.

Global Technology Exchange

Strengthening global technology exchange is crucial for advancing the development and control of antimicrobial resistance. Many low and middle income countries lack access to advanced technology that are essential for early detection of resistant pathogens. Through partnerships with technologically advanced countries, countries that lack the necessary technology can gain access to advanced digital surveillance tools and diagnostic platforms, minimizing the gaps that allow AMR to spread unchecked. Not only is the exchange important for low and middle income countries, but for the technologically advanced countries as well. Resistant pathogens transcends national borders through travel, trade, and migration. It would also benefit the developed countries if they assist the developing countries with high AMR rates, especially those they have a close relationship with, technologically because it would prevent AMR being migrated into their own country.

Moreover, international bodies such as the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS), the Food and Agriculture Organization (FAO), and the World Organization for Animal Health (WOAH) can facilitate technology exchange. These organizations can support countries lacking electronic health surveillance systems through various ways in order to bridge the global AMR preparedness gap.

Multisector Partnerships

Because AMR emerges at the intersection of human, animal, and environmental health, member states can create solutions involving multisector collaboration. Aligning hospitals, agricultural industries, pharmaceutical companies and environmental regulators under the “One Health” approach reduces the risk of inconsistent policies and ensures that antimicrobial use is regulated comprehensively rather than in individual sectors. Partnerships between these sectors

can strengthen surveillance networks and create accountability tools across all areas where AMR develops.

Shared surveillance data allows countries to identify regional hotspots and compare resistance data to react accordingly when AMR rates rise, whether by adjusting prescribing guidelines or increasing inspections in livestock production. Collaborations with environmental agencies further strengthen this method by addressing the ecological drivers of AMR. Many countries struggle with pharmaceutical runoffs from hospitals and livestock operations, which contaminates water and soil sources, accelerating the spread of resistant organisms. Through environmental partnerships, nations can establish shared standards for wastewater treatment and develop joint cleanup programs that assist in reducing AMR acceleration.

Questions to Consider:

1. What alternative treatments should the global community prioritize for research? Why?
2. How can equitable access be guaranteed so that new treatments reach low and middle income countries as well as developed countries?
3. What incentives are needed for pharmaceutical companies to develop new antibiotics or alternative treatments when profitability is low?
4. Should AMR be governed through a binding international treaty?
5. Which sector (human and animal health, agriculture, environment, etc) most directly affects the AMR, and what specific actions can be taken to mitigate its consequences?

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