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WHO: Topic #1 – Antibiotic Misuse: Antibiotic Resistant Bacteria and Overuse of Antibiotics

YUNMUN XXXVI

Since the discovery of penicillin by Sir Alexander Fleming in 1928, the world of medicine has never been the same. Penicillin was the first largely utilized antibiotic, saving countless lives and often being described as a "miracle drug." Although effective, penicillin has been used too extensively, to the point where the pathogens it is treated against have started to gain resistance to the drug. This has led to the current situation of antimicrobial resistance (AMR); when bacteria, viruses, fungi, and parasites no longer respond to antimicrobial medicines.[1]

AMR is one of the leading causes of death worldwide; with 4.95 million deaths attributed to it in 2019.[2] Microbial mutations and adaptations to the medications over time have led to the severity of this issue. Between 2018 and 2023, antibiotic resistance rose by over 40% in monitored pathogen-antibiotic combinations, with an average annual increase of 5-15%.[3] The increase in AMR has been rivaling, if not outdoing, advancements in modern medicine, with the disparity between the two growing more each year. This has led to the creation of the Global Antimicrobial Resistance and Use Surveillance System (GLASS), which receives data from over 100 countries.

The increase in AMR is a global concern as it threatens our ability to treat common infections and to perform life-saving operations. Additionally, this is not a purely human problem, as this issue also impacts the health of agriculture, animals, and the environment. Farmers use antibiotics on their livestock which lead to AMR pathogens being introduced into

[1] https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance

[2] https://microbiologysociety.org/why-microbiology-matters/knocking-out-antimicrobial-resistance/amr-explained.html#_ftn2

[3] https://www.who.int/news/item/13-10-2025-who-warns-of-widespread-resistance-to-common-antibiotics-worldwide

our food supply. Additionally, these pathogens can spread through water supplies and other vectors to infect wildlife and ecosystems.[4] Because of its pervasiveness, AMR has become an expensive and resource-intensive problem that does not care about borders or income levels, but affects lives across the socioeconomic and geopolitical spectrum.

As you prepare and research this topic, consider the following:

- How has your country been impacted by antimicrobial resistance?
- What are the legislative and medical policies in place in your country?
- How can your country collaborate with international organizations to address this issue?

These questions are a guideline to help begin your research, but do not let them limit you. You should be informed and well-researched on this topic in preparation. I do not expect you to know all the science and methodology of how antibiotics work, rather a basic understanding of the main concepts.

Please note that YUNMUN has a zero-tolerance policy for plagiarism, and all papers will be checked through Turnitin. In addition, generative AI is not permitted to be used, and if found to be used may impact your eligibility for awards.

If you have any questions, please don't hesitate to reach out to me at nnarowe@mail.yu.edu. I am very excited to read your position papers and meet you at this year's conference!

All the best,
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[4] https://www.mdpi.com/2306-7381/9/9/480