



EDITORIAL

Antimicrobial Resistance: A global, multisectoral concern that requires a coordinated response



Resistencia a los antimicrobianos: un problema global y multisectorial que requiere una respuesta coordinada

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Antimicrobial resistance (AMR) poses a growing threat to the effective treatment of an increasing range of infections caused by bacteria, parasites, viruses, and fungi. AMR reduces the efficacy of antibacterial, antiparasitic, antiviral and antifungal drugs, making the treatment of patients at imminent risk increasingly costly or even impossible. Its impact is often stronger for the most vulnerable populations, as it can lead to prolonged illness and increased mortality.

AMR threatens the achievement of the United Nations Sustainable Development Goals (SDGs) for 2015–2030 by directly impacting the following SDGs:

SDG 1, Poverty reduction: AMR most strongly affects low-resource countries. People living in poverty are more susceptible to infectious diseases and resistant infections are more likely to spread in poor living conditions. Poor people are less likely to have access to effective treatment. Insufficient care and partial treatment can lead to infections by resistant pathogens. Moreover, high treatment costs and chronic infections will impoverish millions of individuals. An additional 28.3 million people, the majority of whom live in low- and middle-income countries, could be pushed into extreme poverty by 2050 due to AMR.¹³

SDG 2, Food safety and security: Infections in animals and plants caused by resistant microorganisms threaten the growing demand for food and livestock production in low-income countries would be severely impacted, with a potential production loss of 11% by 2050 in the high AMR impact scenario.¹

SDG 3, Health and well-being: Globally, infections due to antimicrobial-resistant pathogens currently cause at least 700,000 deaths per year² and increase the costs of patient management, rendering optimal treatments unaffordable for a large portion of the population and hindering the implementation of Universal Health Coverage. The reduction of infant mortality depends on effective antibiotics. Currently, 200,000 newborns die each year from drug-resistant infections, such as pneumonia or bloodstream infections caused by resistant pathogens.¹³

SDG 6, Clean water and sanitation: Waste from hospitals and food production contaminates the environment, including the waterways where it is discarded. Lack of access to adequate water and sanitation services is leading to the spread of infectious diseases, which in turn increases the use of antibiotics, thus contributing to the emergence and spread of AMR.

SDG 8, Decent work and economic growth: By 2030, the increased mortality and morbidity due to AMR, and consequently reduced labor supply, could lead to a decline in global economic output ranging from 1 to 3%, with estimated losses of up to \$3.4 trillion.¹³

SDG 10, Reduction of inequalities: High-income countries, as opposed to middle- and low-income countries, have the resources to introduce significantly more expensive, state-of-the-art drugs. This situation is evident globally¹² as well as in the Americas,¹⁶ where middle and especially low-

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income countries suffer the greatest impact on the burden of disease due to AMR.

SDG 12, Responsible consumption, and production: Antimicrobial compounds and their metabolites can be found in wastewater from antimicrobial manufacturing sites. In extreme cases, antimicrobial compounds have been found downstream of manufacturing sites in concentrations higher than those found in the blood of patients receiving these drugs.³ This determines that surface waters have become a selective environment for the emergence, modulation and dissemination of AMR.

Other SDGs such as 5, 9, 11, 13 and 14 are also indirectly affected.

Several of the SDGs depend on the sustained availability of affordable and effective antibiotics.⁴ Furthermore, AMR could undermine universal health coverage⁵ through various factors, such as higher costs for second- or third-line drugs, longer treatment times, and increased hospitalizations. AMR is also a growing concern in animal health, which is threatening the livelihoods of small farmers and ranchers and the sustainability of food production. Antibiotics are still widely used in meat production as growth promoters. Although there are good examples of countries restricting their use for that purpose while maintaining production levels and profitability, the agricultural sector may oppose these policies and careful negotiations are needed. In addition, in both the human and animal sectors, the circulation of counterfeit and low-quality antimicrobial products is contributing to the development of AMR. These are widespread and their prevalence is higher in low- and middle-income countries. Although the quality of evidence is poor and these data are not generalizable, 17.4% of the global antibiotic supply is substandard or counterfeit.¹⁸

Compounding the situation, in recent years the planet has suffered the rapid international spread of SARS-CoV2, which prompted the declaration of a pandemic by the WHO Director-General in March 2020. By November 8, 2023, more than 771 million cases and nearly 7 million deaths have been reported worldwide.⁶ The COVID-19 pandemic highlighted the need to better understand the complex connections between bacterial and viral infections. In fact, patients in countries that have used excessive amounts of antibiotics now face an increase not only in the levels of resistance, but also in the complexity of resistance. An example of this situation in the Americas is the increase in resistance to carbapenems in the region both in percentages of resistance as well as in the emergence and spread of strains harboring multiple carbapenemases that leave patients infected with these microorganisms with almost no treatment options.¹⁷ This situation was partly the result of the intensive use of antibiotics in the treatment of patients with COVID-19,¹¹ in most cases without the presence of co-infections or secondary bacterial infections that would have made them necessary.

In addition to the direct impact on AMR as a result of the increased use of antibiotics in human health, the use of antimicrobials in animal and plant food production is a cause of concern. According to studies published in 2016, only 30% of the antimicrobials produced in the world are used in humans, the remaining 70% are used in the agricultural food production industry.¹

With regard to the international response to AMR, in May 2015, the Sixty-eighth World Health Assembly adopted the Global Action Plan (GAP) on AMR. This action plan echoes the global consensus that AMR represents a profound threat to human and animal health; it is the first global action plan on AMR endorsed by all WHO Member States.¹⁴ This plan includes five fundamental pillars: 1) *Improving understanding and awareness of AMR*, 2) *Strengthening knowledge through surveillance and research*, 3) *Reducing the incidence of infections through effective hygiene and infection control*, 4) *Optimizing antimicrobial use in humans and agriculture*, and 5) *Ensuring sustainable investment through research and development*. In response to the GAP, the Pan American Health Organization (PAHO) developed a regional action plan to combat AMR and established technical cooperation with the countries of the Americas to ensure the design of a National Action Plan (NAP) for each country. A recent publication presenting the state of progress in NAP governance across 114 countries in 2020-21,¹⁰ along with the NAP status information routinely reported by countries through the Tripartite AMR Country Self-Assessment Survey (TrACSS), shows that there is great heterogeneity among countries of the Americas with respect to NAP implementation, stakeholder engagement and the scope of AMR containment activities under the One Health approach. Numerous challenges remain with regard to governance strengthening, sustainability of actions and budget allocation to the (For example, according to the TRACSS 2023 report on 30 countries in the Americas, 3 have financed their NAP and only 1 has financed it).

AMR is now recognized as a global crisis that threatens sustainable development and has led to a high level of political commitment mobilized at the G7, the G20, and the United Nations, resulting in the adoption of a political declaration on AMR at the United Nations General Assembly in 2016.¹⁵ The Inter-Agency Coordination Group on AMR (IACG) was convened by the UN Secretary-General following the 2016 High-Level Meeting on AMR. The IACG brought together UN partners, international organizations, and individuals with expertise in human, animal and plant health, as well as the food, feed, trade, development and environment sectors, to formulate a plan for combating AMR. The IACG report, published in 2021, reflected the strengthened commitment of the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (WOAH), and the WHO to collaborative action at the national, regional, and global levels.⁹ Finally, in 2022, due to the impact of anthropogenic activities on environmental contamination with resistant microorganisms, resistance genes, and antimicrobials, the United Nations Environment Programme (UNEP) joined the tripartite, transforming the coalition into a quadripartite. UNEP has recently published several documents on the issue of AMR in the environment⁷ and put forward environmental measures to address the spread of AMR with a One Health approach.⁸

AMR is a global problem that threatens the well-being and health of humans, animals, and plants, as well as the world economy, and is jeopardizing the achievement of the sustainable development goals set by the United Nations for the period 2015-2030. Moreover, it generates enormous inequities affecting countries with fewer resources and those who are most vulnerable. The COVID-19 pandemic fur-

ther fueled the problem, especially in the countries of the Americas. Although there is a strong international commitment to AMR control by country governments and leading agencies in human, animal, plant and environmental health, there is still a long way to go. The 79th General Assembly of the United Nations will be held in 2024 and AMR is included among the priority issues to be addressed to formulate new global guidance to manage this problem. This will be a great opportunity to analyze the lessons learned in recent years and plan future actions for AMR control within the framework of the One Health approach.

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