

**THE URGENT THREAT OF
DRUG-RESISTANT INFECTIONS**
PROTECTING CHILDREN WORLDWIDE
A UNICEF Guidance Note on Antimicrobial Resistance

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EXECUTIVE SUMMARY

The emergence and spread of antimicrobial resistance threaten children everywhere. Children must have access to effective infection prevention measures such as immunization, clean and regularly available water and sanitation, nutrition and education about these important health issues to mitigate the impact of AMR. And we must also promote the rational use of medicines to protect children from the growing threat of drug-resistant infections; otherwise, we may not be able to treat common infections in a very near future. AMR is an urgent problem that requires strong coordination and collaboration among different sectors. As a multisectoral organization, UNICEF already works in several areas that can protect children from AMR, but much more is needed to protect them from one of the greatest threats to child survival and global health of our time.

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EXECUTIVE SUMMARY

This guidance note discusses the impacts of antimicrobial resistance (AMR) on UNICEF’s ability to achieve its mission and goals for children, including how the COVID-19 pandemic has made it more difficult to confront the serious and growing global threat of AMR to child survival, growth and development. The document maps UNICEF’s existing programmes, many of which have direct (AMR-specific) and indirect (AMR-sensitive) impacts on the response to AMR, and identifies potential strategic areas for future engagement where UNICEF has comparative advantages in the global AMR response.

The problem: overall AMR threats and particular risks and impacts among children

Antimicrobial resistance (AMR) is steadily growing around the world and has particularly devastating effects on the health and well-being of children, with the poorest and most vulnerable bearing the brunt. AMR occurs when pathogens develop resistance to the antimicrobial drugs commonly used to treat a wide variety of infections, and which as a class of drugs has saved countless millions of lives the past several decades. This makes many infectious diseases more difficult to treat and increases the costs of hospitalizations and treatment, the risk of spreading such diseases and the risk of death. AMR is further aggravated by the fact that the emergence and spread of drug resistance is far outpacing the rate at which new drugs capable of thwarting such infections are being developed.

Global estimates for 2019 indicate that children disproportionately carry the burden of deaths, with 254,000 of the 1.27 million deaths directly attributable to AMR – about 20 per cent of the total – occurring among those under the age of 5. This is equal to one child dying nearly every two minutes.¹ Of those 254,000 children, more than 99 per cent are from low- and middle-income countries (LMICs) and over half die in their first month of life.²

AMR has the potential to undo many of the gains in child health and well-being achieved by UNICEF and the global development community in recent years. For instance, there are major physical and financial costs to children and their families related to AMR affecting children, including impaired child development,³ a loss in earnings due to hospitalizations, limited or inconsistent school attendance, and the consequences of higher toxicity and side effects of second-line antimicrobials that can lead to lifelong disability.⁴ Costs related to failure to halt increasing AMR in general across society could include more precarious food security and the lack of effective antimicrobials to be used for surgery prophylaxis and organ transplants, or to ward off infections from cancer chemotherapy.⁵

Children living in poverty and those with limited access to basic services face heightened risk. A lack of access to vaccinations and safe water, sanitation and hygiene (WASH) in communities, hospitals and schools makes children in low-resource settings more vulnerable to AMR infections. For these and numerous other reasons, AMR negatively affects progress in achieving the overall 2030 Agenda for Sustainable Development, with its impact being especially direct on eight of the Sustainable Development Goals (SDGs), ranging from SDG 3 (good health and well-being) to SDG 8 (decent work and economic growth) to SDG 5 (gender equality).

The factors that drive and sustain AMR

A main reason for the growing threat of AMR is that antimicrobial drugs are not used properly, often due to weak knowledge of how they work and poor-quality products. Ongoing risk factors include unrestricted sales and suboptimal use of antimicrobials and 'irrational' prescribing and availability of these potent drugs. Excessive use of antimicrobials, one prominent example of irrational

prescribing, can occur when prescribers are not trained appropriately; when prescribers are unsure of the cause of a patient's symptoms (due, for example, to the lack of diagnostics, which can lead to the prescribing and use of antibiotics against viral infections); or the correct antimicrobial and/or dosage is not available and another antimicrobial is prescribed instead. Excessive use of these drugs often results as well from unrestricted and insufficiently regulated sales.

Substandard or falsified medicines reported as antibiotics are another factor contributing to AMR and more broadly to ill health and death by people experiencing infectious diseases – by preventing those in need from receiving the correct and strongest doses to treat such diseases. According to the World Health Organization (WHO), 17 per cent of substandard or falsified medicines reported are antibiotics and more than 169,000 childhood pneumonia deaths annually are caused by falsified antibiotics.⁶ Counterfeit and poor-quality antimicrobials not only fail to treat the cause of an infection, but may also foster the emergence of drug resistance.

The COVID-19 pandemic has also contributed to worsening global and local conditions regarding AMR. Recent reports evaluating the effects of COVID-19 on AMR indicate that levels of drug resistance have risen worldwide since the start of the pandemic. For example, a global review showed an increase in reported cases of some multidrug-resistant organisms in hospital settings after the pandemic began, a development attributed in part to the absence or weakening of infection prevention and control (IPC) protocols.⁷ Moreover, throughout the first two years of the pandemic there have been reports of widespread improper use of antibiotics in many countries, including many LMICs that have used them to treat non-serious cases of COVID-19 – even though WHO guidelines on the clinical management of COVID-19 do not recommend antibiotic therapy or prophylaxis in patients with mild/moderate COVID-19.⁸

Additional drivers of AMR include the incorrect use (including overuse) of antimicrobials outside the human sectors, including in animals, plants and crops, as well as the release of pharmaceutical manufacturing by-products and human and animal waste into the environment. If antimicrobials continue to be used indiscriminately in food production (including animal husbandry practices), the levels of resistant pathogens will continue to

rise, infections will become harder to treat, and outbreaks among food animals that can wipe out entire herds or flocks will become more likely. This could have a direct impact on food security due to higher food prices and food scarcity, with those living in poverty (including many children) facing dire health and well-being consequences.⁹

An important environment-related contributing factor in AMR is climate change, which can increase threats and risks both directly and indirectly. For example, unusual and lengthy droughts, more severe storms and other erratic weather patterns that can result in water shortages, food insecurity, poor sanitation and displacement are linked to climate change. Warmer temperatures on their own, a climate change impact in much of the world, are directly linked to increasing threats of drug resistance.

UNICEF's current and future roles: promoting safe and proper use of antimicrobials

Antimicrobial drugs are instrumental for global health and well-being and will continue to play that vital role around the world. It is therefore important that the AMR response does not focus on restricting access to antimicrobials but instead emphasizes the optimal use of these drugs. Effectively addressing AMR requires a global coordinated, intersectoral and interdisciplinary response that should be developed and implemented with a sense of urgency.

For UNICEF, this entails doing much of what it already does in regard to AMR in a more scaled-up and targeted fashion while also expanding support and programming as needed. UNICEF currently works to improve access to good-quality health services, potent antimicrobials and diagnostics through engagement with industry, as well as supply chain, procurement and financing initiatives. UNICEF supports AMR stewardship or coordinated programmes that promote the appropriate and rational use of antimicrobials through supporting countries in adopting and implementing WHO guidelines and initiatives regarding primary health care (PHC); universal health coverage (UHC); maternal, newborn, child and adolescent health; HIV; malaria; integrated management of newborn and childhood illness (IMNCI); and integrated community case management (iCCM).

To further harness UNICEF's strengths for the global response to AMR in a sustainable way, it will be necessary to strengthen institutional capacities relevant for AMR such as developing skills and competencies of teams around AMR, ensuring minimum levels of human resource capacity in key country offices, and investing appropriately on the implementation of programmes at scale that can lead to improved policy and programming around AMR.

As suggested above, much of the organization's ongoing work that is highly relevant for AMR is in three broad areas: disease prevention, AMR stewardship, and raising awareness and implementing social and behaviour change. These closely link with the three priority areas that this guidance document suggests will shape UNICEF's future AMR work:

- **Objective 1: Reduce the incidence of infection**
 - Entry points in this area: improve access to health and infection prevention services; strengthen health, community and supply systems; generate evidence to improve interventions
- **Objective 2: Ensure access to and optimal use of antimicrobial agents**
 - Entry points in these areas: promote antimicrobial stewardship; engage with industry to strengthen the global AMR response; support advocacy initiatives and access to medicines and diagnostics
- **Objective 3: Ensure awareness and understanding of AMR to improve political commitment and resource mobilization; catalyse social engagement and behavioural change to combat AMR**
 - Entry points in these areas: raise awareness of AMR and its impact on children; deploy social and behavioural change (SBC) interventions to address AMR; promote AMR educational initiatives among children and young people; empower community organizations to educate communities and prevent the emergence and spread of AMR at the community level

