

# Learning from COVID-19 to Tackle Antibiotic Resistance

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**ABSTRACT:** COVID-19 has brought into sharp focus the failure of not preventing and preparing for pandemics. As the world reels from the tragedy and economic fallout of COVID-19, there are vital lessons to learn and apply in the fight against drug resistance. The unchecked growth of drug-resistant infections is a silent pandemic with long-term implications for global public health and the global economy. Now more than ever, governments have the opportunity to make robust and comprehensive investments into the way they prepare and respond to antibiotic resistance. This could cascade into lasting and long-term benefits for people and countries.

Drug-resistant “superbug” infections kill an estimated 700 000 people a year,<sup>1</sup> a number set to rise exponentially as drug resistance grows and weakens our ability to treat even common infections. A worrying number of infections are becoming harder, and sometimes impossible, to treat due to drug resistance. The consequences of not addressing the silent pandemic of drug-resistant infections now could result in a future where we are unable to treat common infections like pneumonia, urinary tract infections, and infections in newborns. There is an opportunity now to avert this potential catastrophe through strong leadership, collaboration, and investment in measures to counteract drug resistance.

Like COVID-19, drug-resistant bacteria can infect anyone, of any age, in any country. Infections can also spread rapidly through international travel and migration.

As we have seen clearly over the past year, antibiotic prescriptions increase substantially during a viral pandemic and are often used inappropriately to treat viral infections. This could have a long-term impact on the availability and use of antibiotics and potentially upon drug resistance.

The health impact of antimicrobial resistance (AMR), already a public health crisis in low- and middle-income countries, is projected to increase exponentially over the coming decades and could undermine the achievement of several Sustainable Development Goals, including ending extreme poverty by 2030, reducing inequality, and ensuring the sustainability and security of food production and the livelihood of farmers.

The human cost is deeply painful, and it is often the most vulnerable that are affected. The hopes and expectations many mothers have for their newborn children are often crushed by drug-resistant infections. In 2015, an estimated 214 000 newborn babies died due to infections resistant to first-line antibiotics.<sup>2</sup>

Serious bacterial infections (SBIs) lead to longer hospital stays, long-term disability, more preventable deaths, and a massive financial burden for health systems. Fifty percent of SBIs are resistant to multiple drugs.<sup>3</sup>

COVID-19 has highlighted the importance of preventing and combating AMR through increased investment and acting

swiftly and with more intensity. It has reinforced the importance of development, testing, and deployment of treatments, vaccines, and diagnostics to prevent and treat pandemic diseases.

COVID-19 has clearly shown that a single country cannot solve the challenges of a rapidly moving pandemic on its own. We need to join forces as countries, organizations, institutions, and companies to identify and develop new ways to prevent, test, and treat. We need to execute worldwide clinical trials and produce adequate supply to meet the needs of all.

While presenting huge challenges, there is hope that COVID-19 could be brought under control within a few years through infection prevention and control, improved clinical management in hospitals, testing, treatments, and vaccines.

In contrast, AMR requires a long-term, sustained response, including resources, political will, and coordination across multiple sectors, from reforms to health systems and food systems to improved infection prevention and control and long-term research and development efforts.

We have recently seen some positive developments to combat AMR. Recognizing the critical role antibiotics play in modern medicine, including pandemic responses such as COVID-19, the German government recently announced additional funding for the Global Antibiotic Research and Development Partnership (GARDP), a not-for-profit developing new treatments for antibiotic-resistant infections.

We are also seeing some progress in collaborative initiatives to address drug resistance, such as plans to develop a new European biomedical research agency to protect against future cross-border threats. There are also signs the private sector is recognizing the failure of business as usual in tackling this silent pandemic. This includes the establishment of the AMR Action

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Fund, a new initiative that aims to bring two to four new antibiotics to patients by 2030. However, these initiatives will not be enough without a drastic change in approach from governments and the private sector.

In our recent paper on learning from COVID-19 to tackle antibiotic resistance, GARDP recommends five measures to strengthen domestic and global responses to AMR.

The first is to recognize and urgently address the silent pandemic of drug-resistant infections. Unlike COVID-19, where governments and scientists are still learning about the disease and constantly adjusting the international response, with AMR, there is the ability and knowledge to prepare now. The drug-resistant microbes are known, and the potential economic and health impacts of AMR over the next 30 years have been estimated.

Second, there is a need to invest in the development of medical countermeasures (diagnostics, treatments, and vaccines) as a critical element of pandemic preparedness. Following decades of underinvestment, investments are also required in basic science and research for AMR to ensure that governments are better prepared. Through investment in tackling drug-resistant infections, we can reduce the number of deaths and avoid the kind of societal and economic costs that we have seen during the COVID-19 pandemic.

Our third recommendation focuses on access. We must ensure that affordable access to diagnostics, treatments, and vaccines for all is a cornerstone of pandemic preparedness and response. As we have seen in the scramble for COVID-19 vaccines in countries that are wealthy, poor, large, and small, the existence of any effective new medicine, diagnostic, or vaccine in the midst of a public health crisis is not necessarily available to those who need it most.

As it relates to AMR, governments could consider several recommendations to ensure fair and equitable access. These could include resurrecting agreements such as the Development and Stewardship Framework, ensuring international and domestic supply chains are reliable and robust, and stockpiling critical countermeasures needed for both the sudden onset of a viral pandemic like COVID-19 or to tackle the long-term pandemic of drug-resistant infections.

To counter AMR, it will be essential to improve collaboration and coordination to ensure that the best diagnostics, treatments, and vaccines are selected for development. It will be essential to understand the evolution of resistance in different settings and efficiently test vaccines and treatments in high-burden countries. No country can or should act alone to develop new countermeasures to prevent and respond to drug-resistant infections.

Fourth, global cooperation across geographies and sectors and within a One Health framework needs to be expanded. The One Health<sup>4</sup> concept involves designing and implementing programs, policies, legislation, and research through bridging multiple sectors across countries and regions to implement comprehensive responses.

Finally, it will be crucial to ensure that low- and middle-income countries are equal partners in a comprehensive global response. Many low- and middle-income countries have built impressive domestic strategies and solutions in the face of the HIV pandemic while also addressing other outbreaks and epidemics over the last few decades. Many of these countries are now responding successfully to COVID-19. The solutions, strategies, and innovations pioneered by these countries should

be recognized and integrated into the way we prepare and respond to pandemics.

The evolving silent pandemic of drug-resistant infections has the potential to cripple the world in the same way that COVID-19 has done. However, unlike with COVID-19, we know what it will take to combat drug resistance and that meaningful change can be achieved with sufficient political will and resources. There is an opportunity now to significantly step up our response to drug-resistant infections and prepare ourselves to handle the unpredictable and silent nature of the pandemic, where the true extent of damage done remains somewhat invisible.

The fight against drug-resistant infections will rely on governments seizing this opportunity to develop a more robust, coordinated, and equitable approach to pandemic preparedness and global health security. Our success in fighting this pandemic will depend on the motivation now to secure investment and ensure access to solutions like better surveillance of resistant infections, tests to identify resistance, and new and improved treatments.

Out of the global tragedy of COVID-19, we have the opportunity to mobilize and take collective responsibility to prevent an AMR catastrophe.

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### Notes

The author declares no competing financial interest.

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