

Executive summary

Antimicrobial resistance (AMR) – the ability of microbes to resist antimicrobial agents – is one of the greatest public health threats globally, with far-reaching social, economic and health consequences for people, animals and the environment.

This report builds on the 2018 OECD report *Stemming the Superbug Tide: Just a Few Dollars More*. It demonstrates that in the absence of stronger One Health action – targeting people, animals, agri-food systems and the environment – AMR levels will remain unacceptably high for at least the next 25 years. Resistant infections will claim the lives of thousands of people in OECD and EU/EEA countries every year and exert additional pressure on hospital resources that are already strained from the COVID-19 pandemic. The cost to health systems and economies will continue to mount.

The report demonstrates that tackling AMR is an excellent investment by looking at the effectiveness and cost-effectiveness of 11 One Health policy interventions and three policy packages to reduce the deleterious impacts of AMR. The report highlights the following key insights.

Worrisome trends in antibiotic consumption raise the risk of untreatable infections

Consumption of antimicrobials – both in humans and animals – remains at high levels. In human health, despite policy efforts to optimise antibiotic consumption, average sales of all classes of antibiotics have been rising by nearly 2% since 2000, while more than one-third of OECD countries do not meet the target set by the World Health Organization for first line (Access) antibiotics to make up at least 60% of all antibiotic consumption. If historical trends continue, consumption of antibiotics in humans will not decrease significantly until at least 2035.

In animals, the use of antimicrobials across OECD countries has halved from 181 to 91 milligrams of antimicrobial per kilogram of food animal between 2000 and 2019 and projections suggest that it could decrease by an additional 10% by 2035. But the majority of antimicrobial sales for animals takes place outside OECD countries and sale of antimicrobials for animal use in G20 countries is expected to reach nearly double that of the OECD average by 2035.

Fuelled by high levels of inappropriate use of antimicrobials, resistance proportions across 12 antibiotic-bacterium combinations stand at around 20% across the OECD, meaning that one in every five infections is now caused by superbugs. However, there are even more alarming trends:

- If left unchecked, resistance to third-line antimicrobials – the last resort drugs against difficult-to-treat infections – could be 2.1 times higher by 2035 in the OECD compared to 2005. This means that health systems will be closer to running out of options to treat patients suffering from a range of illnesses such as pneumonia and bloodstream infections;
- Today, AMR remains dangerously high in some countries such as Greece, India and Türkiye. In these countries, more than 40% of all infections caused by the 12 antibiotic-superbug combinations that OECD studied are expected to be resistant to antibiotics by 2035;

- For certain antibiotic-bacterium pairs such as fluoroquinolone-resistant and carbapenem-resistant *Acinetobacter baumannii*, the projected resistance proportions can be as high as nearly 90% in the countries with the highest resistance proportions.

Without decisive policy action, too many lives will be lost due to resistant infections

Every year, around 79 000 people lose their lives due to resistant infections across 34 OECD and EU/EEA countries. This corresponds to 2.4 times the number of deaths due to tuberculosis, influenza and HIV/AIDS combined in 2020. The elderly bear the brunt of AMR death toll, with around two out of three deaths due to AMR occurring among people above 65 years of age. Babies are also at risk.

The resistant strains of three bacteria – *Escherichia coli*, *Klebsiella pneumoniae* and *Staphylococcus aureus* – are the main drivers of the AMR burden, causing nearly three in four deaths due to resistant infections and making it more difficult and costly to treat meningitis, bloodstream, surgical site and other infections. Resistant infections acquired in healthcare settings are particularly dangerous. These infections account for about one in three resistant infections but represent more than 60% of AMR-related deaths.

Health systems and economies will continue to bear a heavy financial burden

The cost of inaction to tackle AMR is high. The cost of treating complications due to resistant infections can exceed USD 28.9 billion every year adjusting for purchasing power parity across 34 OECD and EU/EEA countries. For comparison, across 17 countries for which data is available, the total health expenditure incurred each year due to AMR is about 19% of the total health expenditure due to treating COVID-19 patients in 2020. Most of these costs are caused by longer hospitalisations: additional 32.5 million days are spent in hospital per year to treat the consequences of AMR. This is roughly equivalent to using the entire acute bed capacity of Spain for a whole year.

The impact of AMR on workforce participation and productivity is estimated to be equivalent to USD 36.9 billion, corresponding roughly to one fifth of the gross domestic product in Portugal in 2020.

Investments across human and animal health, agrifood systems and the environment deliver the highest returns

The vast majority of OECD, EU/EEA and G20 countries have already developed a national action plan to tackle AMR. In addition to ensuring that the national action plans are funded and implemented, the policy analysis has identified the following policy priorities for action:

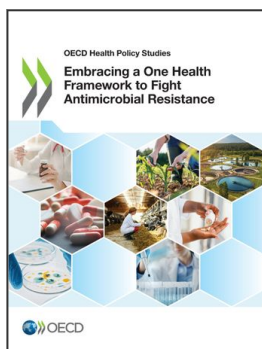
- Bolstering nationwide implementation of programmes for infection prevention and control and for optimal use of antimicrobials in line with international standards and best practices across human and animal health, as well as agri-food systems;
- Investing in more robust surveillance systems, particularly in specific areas in human health (e.g. long-term care) and animal health;
- Ensuring greater compliance with regulatory frameworks, especially to promote prudent use of antimicrobials in animals; and
- Increasing investments in research and development for new antibiotics, vaccines and diagnostics.

By addressing many of the existing policy gaps, all 11 policy interventions modelled by the OECD are estimated to generate substantial health and economic gains. In particular, the following interventions yield the highest gains:

- Three human health policies: strengthening antimicrobial stewardship programmes, better environmental and hand hygiene practices in healthcare settings; and
- Two policies outside human health – better food safety practices and improved biosecurity in farms – are also promising.

Scaling up investments in One Health packages of actions against AMR is affordable, with a return on investment significantly greater than implementation costs. Every USD 1 invested in a mixed policy package across the health and food sectors, generates returns equivalent to USD 5 in economic benefits achieved through reductions in health expenditure and increased productivity at work. The health and economic benefits of implementing One Health policies as policy packages far exceed the benefits accrued by implementing these policies in isolation.

The AMR pandemic is already here. While COVID-19 has led to efforts to prevent and control the spread of infections, there is no room for complacency in the fight against AMR. Results from the OECD analysis demonstrate that policy action that is grounded in a One Health approach is urgently needed to tackle AMR.



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