

Embracing a One Health Framework to Fight Antimicrobial Resistance

Luxembourg

Antimicrobial resistance (AMR) – the ability of microbes to resist antimicrobials - remains an alarming global health threat that jeopardises the effectiveness of many 20th century public health advances. The latest OECD analysis shows that across 34 OECD and EU/EEA countries, AMR is estimated to claim more than 79 thousand lives every year, with the annual costs to health systems nearing USD PPP 29 billion. Adopting a multisectoral approach called the One Health framework is vital to tackling the complex drivers of AMR across human health, animal health, agrifood systems and the environment.

In recent years, Luxembourg made important strides in tackling AMR. Yet, more progress is needed:

**Resistance proportions** for 12 antibiotic-bacterium pairs increased between 2005 and 2019 (12.3% vs 14.3%) but averaged below the EU/EEA average (21.3% in 2019). If left unchecked, resistance proportions are projected to increase considerably to 20.3% by 2035, thus reaching the expected EU/EEA average (20.3%).



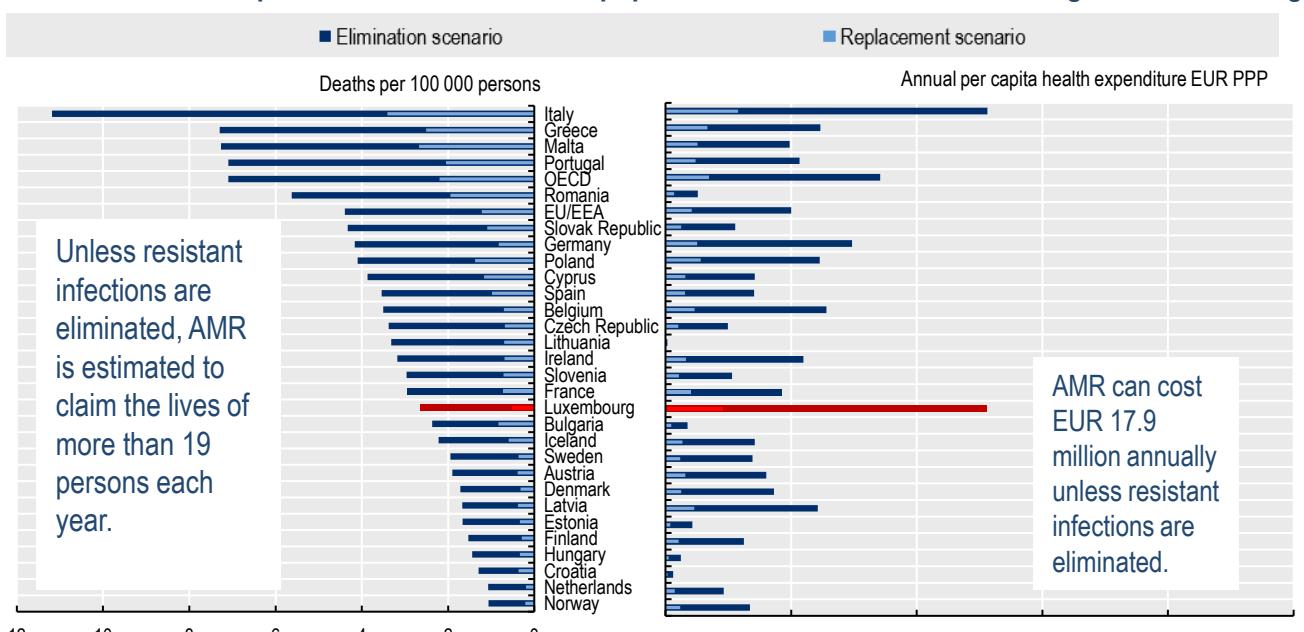
Without further policy action, resistance proportions for third-generation cephalosporin-resistant *Escherichia coli* and carbapenem-resistant *Escherichia coli* are expected to grow at the fastest pace between 2019 and 2035 (8.9 and 8.4 percentage points respectively). Growing resistance in these antibiotic-bacterium pairs can undermine the treatment of illnesses such as diarrhea, urinary tract infections and pneumonia.

 **Total antibiotic consumption in human health** averaged at 29.4 defined daily dose (DDD) per 1 000 persons per day in 2015, above the EU/EEA average (24.1). If trends persist, total antibiotic consumption is expected to decline to 27.3 DDD per 1 000 persons per day by 2030, remaining above the projected EU/EEA average (23.2).



Access antibiotics – first- and second-line therapies with lower resistance potential – made up 55.1% of all antibiotics consumed in Luxembourg in 2015, remaining below the WHO target for Access antibiotics to make up at least 60% of national consumption.

AMR continues to pose a worrisome threat to population health and healthcare budget in Luxembourg:



Note: The impact of AMR on population health is modelled by the OECD using two scenarios: 1) Elimination Scenario and 2) Replacement Scenario. The Elimination Scenario assumes elimination of all the resistant infections whereas the Replacement Scenario considers a situation where all resistant infections are assumed to be completely replaced by susceptible infections. Both scenarios are seen as plausible due to the dearth of concluding evidence in the literature.

In Luxembourg, there is substantial room for further policy action:

National AMR Action Plan



Optimising antimicrobial use in human health



Monitoring antimicrobial consumption in human health



Infection prevention and control (IPC) in human health



Training and education on AMR in human health



Biosecurity practices in terrestrial animal production



Good management and hygiene practices in food processing



The following priorities for action are identified to align policies with the *Global Action Plan to Tackle AMR*:

- **Advancing in the AMR agenda** by incorporating the financial provisions for the implementation of the AMR action plan into the national action plans and budgets.
- **Optimising antimicrobial use in human health** to ensure national guidelines are implemented and data on antimicrobial use is systematically fed back to prescribers.
- **Improving the national monitoring system for consumption and rational use of antimicrobials in human health** to ensure regular data collection on a) antimicrobial sales/or consumption and b) prescribing and rational use in a representative sample of healthcare facilities.
- **Improving IPC in human health** to ensure a) functional national and health facility level best practices are systematically in place b) compliance and effectiveness are assessed and c) guidance is regularly updated.
- **Improving biosecurity practices** by a) implementing a nationwide plan to ensure good animal husbandry and biosecurity best practices and b) implementation is regularly assessed.
- **Improving good management and hygiene practices** in food processing by a) implementing a nationwide plan to promote best practices in manufacturing and hygiene and b) implementation is regularly assessed.

Notes: 1- least developed; 5 – most developed; diamonds indicate mode for OECD and EU/EEA countries; country scores are denoted in light blue.

Source: 2021-22 Tripartite AMR Self-Assessment Survey

The One Health approach underscores the importance of pairing policies across sectors. The OECD examined the impact of different policies including a mixed policy package that would involve the scaling-up of 5 policy priorities across sectors.



Improve antibiotic stewardship



Improve hand hygiene practices in healthcare settings



Delayed antimicrobial prescription



Increase mass media campaigns



Enhance food safety

In Luxembourg, investing 6 EURs per person annually in a mixed policy package can yield important gains every year:

Infections prevented



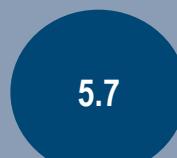
Lives saved



Savings in healthcare costs (in million EURs)



Gains by increased workforce participation and productivity (in million EURs)



Return per EUR invested

