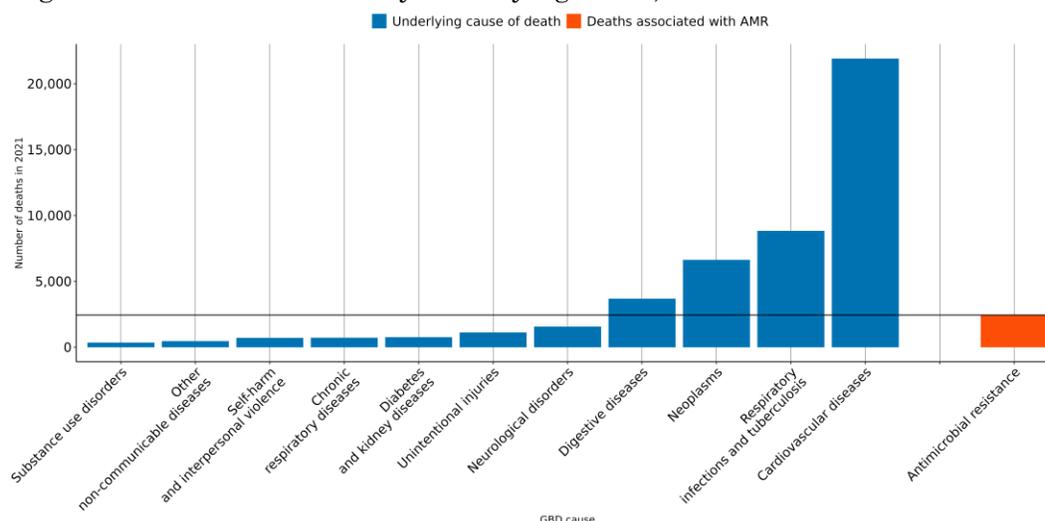


The burden of antimicrobial resistance (AMR) in Republic of Moldova

Executive summary

- Antimicrobial Resistance (AMR) is a major global health threat, over **800 lives** have been lost each year since 1990 in Republic of Moldova due to AMR.
- In 2021, there were an estimated **635 UI (495-776)** deaths attributable to AMR and **2,450 UI (1,970-2,920)** deaths associated with AMR in this location.
- The largest number of deaths associated with AMR in 2021 occurred among those aged **50 to 69** in the country.
- Among the most deadly pathogen-drug combinations in 2021 were *Staphylococcus aureus* resistant to methicillin, *Klebsiella pneumoniae* resistant to carbapenems and *Acinetobacter baumannii* resistant to carbapenems.

Figure 1 Number of deaths by underlying cause, and those associated with AMR in 2021



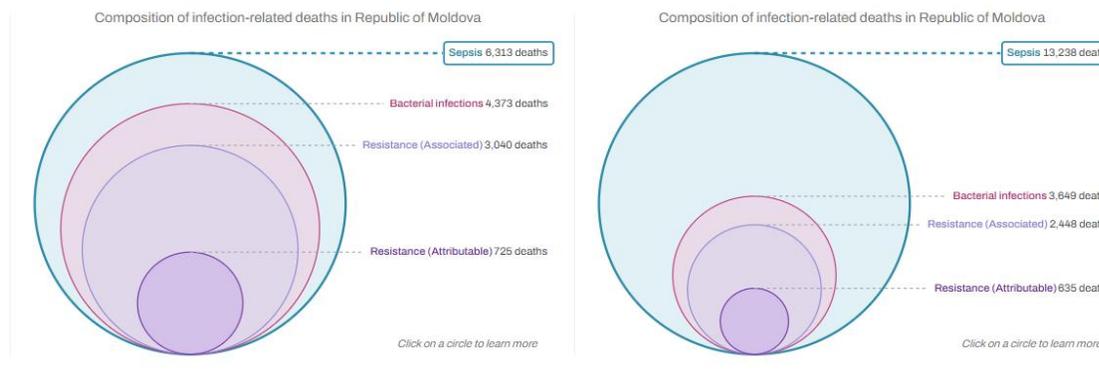
- In 2021, the number of deaths associated with AMR (orange bar in *figure 2*) were high compared to the most relevant underlying causes of death (depicted in blue) in the country. AMR associated deaths occur within multiple Global Burden of Disease (GBD) causes of death and AMR is not an underlying cause of death by itself.
- At the [2024 United Nations General Assembly high level meeting on antimicrobial resistance](#), country members agreed to aim for a **10% reduction** compared to 2019 baseline (**from 4.95 to 4.45 million**) in the global number of deaths associated with AMR by 2030. But [our forecast](#) indicates that in absence of concerted action, deaths associated with AMR could reach **5.5 million** (UI 4.8 - 6.2) if current trends continue. For Moldova, a 10% reduction means to decrease the number of deaths associated with AMR to **2,300**, but currently the trend for this country could reach up to **2,640 UI [2,020-3,340]** AMR-associated deaths in 2030.

AMR in Republic of Moldova

Key takeaways

- Antimicrobial Resistance (AMR) is a major global health threat, over *a million lives* have been lost each year since 1990.
- Globally, 4.71 (95% Uncertainty Interval (UI) 4.2-5.2) million deaths were associated with bacterial drug-resistant infections in 2021.
- And 1.14 (UI 1 - 1.3) million deaths were attributable to bacterial drug-resistant infection in the same year.
- *39 (UI 33 - 46) million deaths* directly attributable to bacterial AMR are projected to occur between 2025-2050 unless concerted action is taken. This equates to three deaths every minute.

Figure 2 Comparing 30 years of infection related deaths, and those associated with and attributable to AMR in Republic of Moldova between 1990 and 2019.



- To look at these and more visualization interactively visit [Measuring Infectious Causes and Resistance Outcomes for Burden Estimation \(MICROBE\)](#)
- In **Republic of Moldova** in 2021, there were an estimated **635 UI (495-776)** deaths attributable to AMR and **2,450 UI (1,970-2,920)** deaths associated with AMR. Here “*attributable deaths*” are considered to be those that would have been prevented had the drug-resistant bacteria causing the infections not been drug-resistant. “*Associated deaths*” are considered to be those that would not have occurred had the infections been prevented entirely.
- Across 204 countries, **Republic of Moldova has the 75th lowest** age-standardized mortality rate associated with AMR in 2021.
- *Table 1* shows the bacteria which caused most deaths in 2021 (↑ indicates an increasing estimated annual rate between 1990-2021, ↓ indicates a decreasing annual trend), and *table 2* shows the pathogen-drug combinations which caused most deaths in 2021.

Table 1. Bacteria which cause most deaths in 2021 (Number of deaths in parenthesis)

| Burden rank | Overall susceptible and resistant | | | Associated | | | Attributable | | |
|-------------|-----------------------------------|------------------|--------|----------------------------|------------------|--------|----------------------------|-----------------|--------|
| | Bacteria | UI (range) | Change | Bacteria | UI (range) | Change | Bacteria | UI (range) | Change |
| | Staphylococcus aureus | 776 UI (692-859) | ↑ | Escherichia coli | 458 UI (363-554) | ↓ | Escherichia coli | 107 UI (80-133) | ↓ |
| | Escherichia coli | 530 UI (474-586) | ↓ | Staphylococcus aureus | 366 UI (221-512) | ↓ | Staphylococcus aureus | 101 UI (59-143) | ↑ |
| | Streptococcus pneumoniae | 405 UI (361-449) | ↓ | Klebsiella pneumoniae | 314 UI (276-351) | ↓ | Klebsiella pneumoniae | 95 UI (82-108) | ↓ |
| | Pseudomonas aeruginosa | 381 UI (340-421) | ↓ | Streptococcus pneumoniae | 283 UI (217-349) | ↓ | Acinetobacter baumannii | 71 UI (62-79) | ↓ |
| | Klebsiella pneumoniae | 368 UI (328-407) | ↓ | Pseudomonas aeruginosa | 251 UI (202-299) | ↓ | Pseudomonas aeruginosa | 61 UI (46-76) | ↓ |
| | Acinetobacter baumannii | 177 UI (157-197) | ↓ | Acinetobacter baumannii | 174 UI (155-194) | ↓ | Streptococcus pneumoniae | 52 UI (33-71) | ↓ |
| | Enterococcus faecalis | 145 UI (129-162) | ↓ | Enterococcus faecalis | 103 UI (90-116) | ↓ | Mycobacterium tuberculosis | 42 UI (0-94) | ↑ |
| | Mycobacterium tuberculosis | 135 UI (119-151) | ↓ | Enterobacter spp. | 94 UI (82-106) | ↓ | Enterobacter spp. | 29 UI (25-33) | ↓ |
| | Enterobacter spp. | 120 UI (107-133) | ↓ | Mycobacterium tuberculosis | 86 UI (53-120) | ↑ | Enterococcus faecalis | 18 UI (11-25) | ↓ |
| | Enterococcus faecium | 98 UI (87-109) | ↑ | Enterococcus faecium | 79 UI (69-89) | ↑ | Enterococcus faecium | 16 UI (13-20) | ↑ |

Annualized rate of change (1990-2021): <-3% (blue), -1.5% to 0% (light blue), 1.5% to 3% (red), >5.0% (dark red), -3% to -1.5% (dark blue), 0% to 1.5% (orange), 3% to 5% (brown)

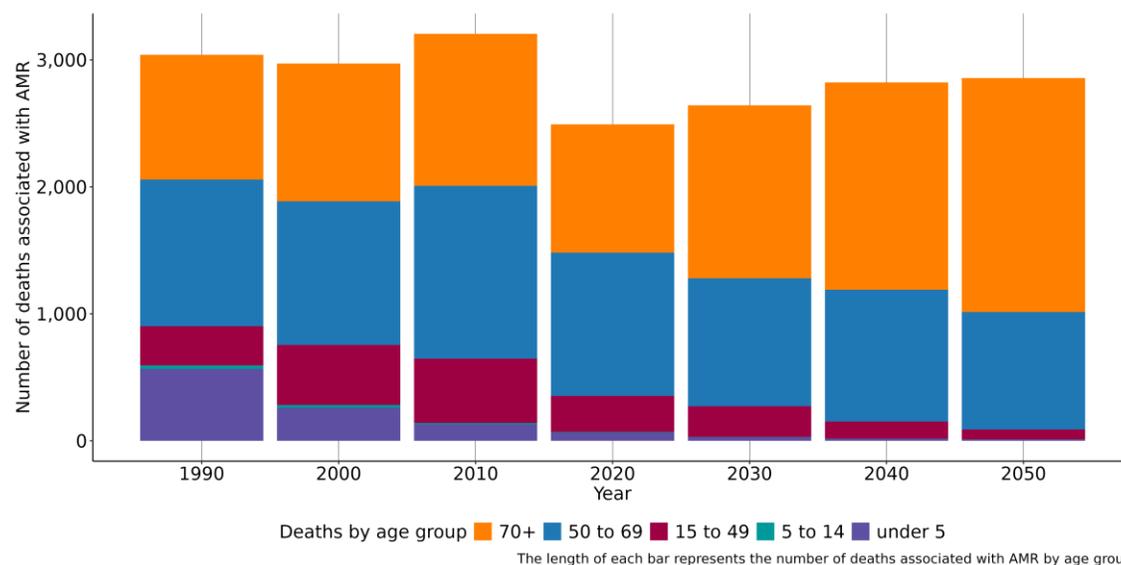
Table 2. Combinations which cause most deaths in 2021 (Number of deaths in parenthesis)

| Burden Rank | Associated | | | Attributable | | |
|-------------|--|------------------|--------|--|----------------|--------|
| | Combination | UI (range) | Change | Combination | UI (range) | Change |
| | Escherichia coli Aminopenicillin | 428 UI (279-576) | ↑ | Staphylococcus aureus Methicillin | 69 UI (36-101) | ↑ |
| | Klebsiella pneumoniae Fluoroquinolones | 293 UI (252-334) | ↓ | Acinetobacter baumannii Carbapenems | 40 UI (33-48) | ↓ |
| | Staphylococcus aureus Methicillin | 280 UI (135-425) | ↑ | Klebsiella pneumoniae Carbapenems | 32 UI (24-39) | ↑ |
| | Escherichia coli TMP-SMX | 278 UI (204-353) | ↓ | Escherichia coli Carbapenems | 28 UI (15-41) | ↓ |
| | Escherichia coli Fluoroquinolones | 277 UI (177-376) | ↑ | Mycobacterium tuberculosis MDR excluding XDR | 28 UI (0-67) | ↑ |
| | Klebsiella pneumoniae Aminoglycosides | 269 UI (230-307) | ↓ | Streptococcus pneumoniae Carbapenems | 28 UI (15-41) | ↓ |
| | Klebsiella pneumoniae 3GC | 267 UI (233-301) | ↓ | Klebsiella pneumoniae Fluoroquinolones | 26 UI (18-33) | ↓ |
| | Escherichia coli 3GC | 245 UI (175-315) | ↑ | Escherichia coli 3GC | 23 UI (16-30) | ↑ |
| | Streptococcus pneumoniae TMP-SMX | 233 UI (158-308) | ↓ | Pseudomonas aeruginosa Fluoroquinolones | 21 UI (15-28) | ↓ |
| | Klebsiella pneumoniae Beta-Lactam/Lactamase Inhib. | 214 UI (156-271) | ↓ | Acinetobacter baumannii Fluoroquinolones | 20 UI (16-23) | ↓ |

Annualized rate of change (1990-2021): <-3% (blue), -1.5% to 0% (light blue), 1.5% to 3% (red), >5.0% (dark red), -3% to -1.5% (dark blue), 0% to 1.5% (orange), 3% to 5% (brown)

- Independently of antimicrobial resistance, the infectious syndromes accounting for the most deaths in 2021 were as follows (estimated thousands of deaths in parenthesis) bloodstream infections (2,090 UI (1,840-2,330)), lower respiratory infection (excl. COVID) (1,460 UI (1,290-1,630)), peritoneal and intra-abdominal infections (623 UI (546-700)), urinary tract infections and pyelonephritis (327 UI (284-370)) and infections of the skin and subcutaneous systems (192 UI (159-225)).

Figure 3. Number of deaths associated with AMR by age group between 1990-2020 and 2050 projection



- In Republic of Moldova, people aged 50 to 69 saw the largest number of deaths associated with AMR both in 1990 and 2021, which indicates that 50 to 69 continues to be particularly vulnerable to infections which are resistant to antibiotics. In 2021, the number of deaths associated with AMR among the 50 to 69 was 1,080 UI (866-1,300), whereas the mortality rate per 100,000 was 296 UI (236-357).

Data sources for Republic of Moldova

In total, 520 million individual records or isolates covering 19,513 study-location-years were used as input data to our estimation process. The subset of input data for this country is shown below.

Table 3. Data inputs for Republic of Moldova by source type

| Source type | Years | Sample size | Sample size units |
|-------------------------------------|-----------|-------------|--------------------------------|
| Antibiotic use | 2010-2021 | 66 | Study-year datapoints |
| Single drug resistance profile data | 2010-2021 | 435 | Antibiotic susceptibility test |

More information

About GRAM:

The purpose of the Global Research on AntiMicrobial resistance (GRAM) project is to **generate accurate and timely estimates of the magnitude and trends in antimicrobial resistance (AMR) burden** across the world, which can be used to inform treatment guidelines and agendas for decision-making and research, detect emerging problems and monitor trends to inform global strategies, as well as facilitate the assessment of interventions over time.

GRAM is the flagship project of the University of Oxford–IHME Strategic Partnership. GRAM was launched with support from the United Kingdom Department of Health and Social Care’s Fleming Fund, and the Wellcome Trust.

All resources:

For all resources on AMR analysis at IHME, visit <https://www.healthdata.org/antimicrobial-resistance>.

To look at these and more visualization interactively visit [Measuring Infectious Causes and Resistance Outcomes for Burden Estimation \(MICROBE\)](#).

Data sources:

To download the list of data input sources by country, and AMR results by region, visit the [Global Health Data Exchange \(GHDx\)](#).

Contact us:

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