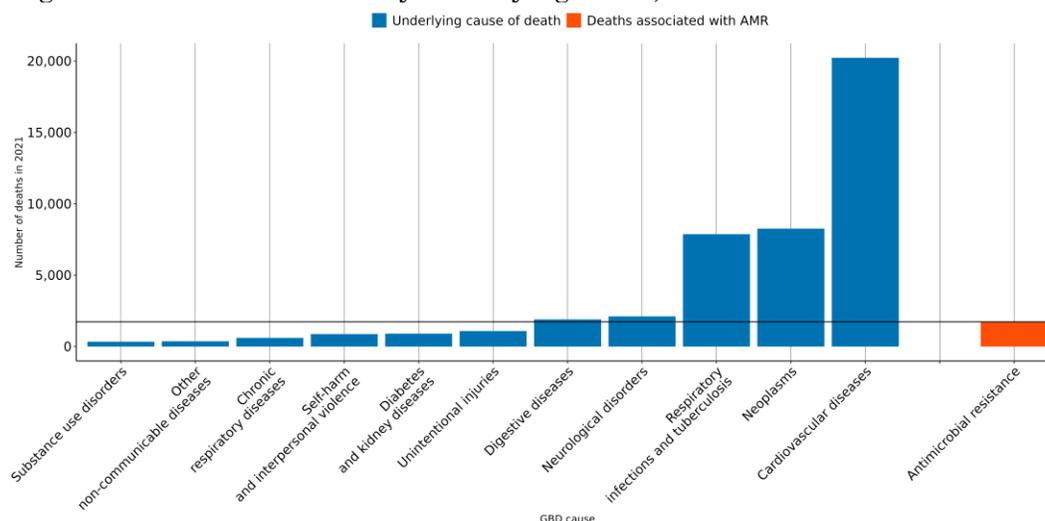


The burden of antimicrobial resistance (AMR) in Lithuania

Executive summary

- Antimicrobial Resistance (AMR) is a major global health threat, over **500 lives** have been lost each year since 1990 in Lithuania due to AMR.
- In 2021, there were an estimated **383 UI (325-441)** deaths attributable to AMR and **1,730 UI (1,460-2,000)** deaths associated with AMR in this location.
- The largest number of deaths associated with AMR in 2021 occurred among those aged **70+** in the country.
- Among the most deadly pathogen-drug combinations in 2021 were *Staphylococcus aureus* resistant to methicillin, *Pseudomonas aeruginosa* resistant to carbapenems and *Acinetobacter baumannii* resistant to carbapenems.

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



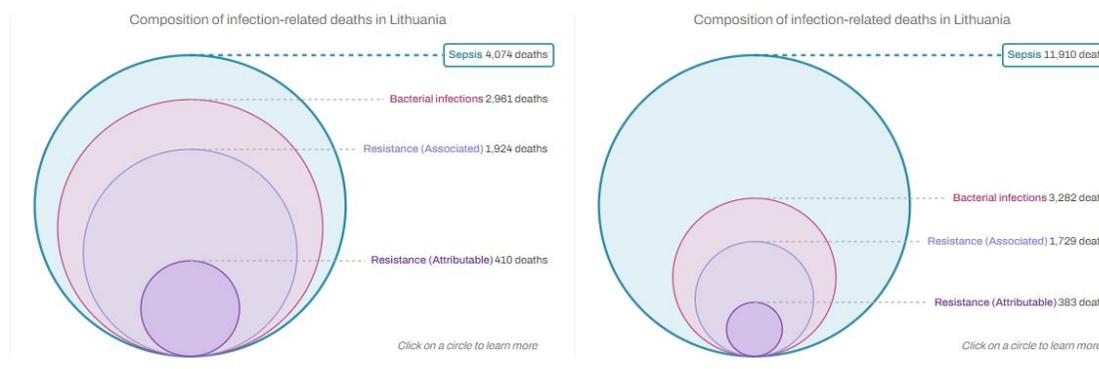
- In 2021, the number of deaths associated with AMR (orange bar in *figure 2*) were high compared to the most relevant underlying causes of death (depicted in blue) in the country. AMR associated deaths occur within multiple Global Burden of Disease (GBD) causes of death and AMR is not an underlying 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 Lithuania, a 10% reduction means to decrease the number of deaths associated with AMR to **1,620**, but currently the trend for this country could reach up to **1,830 UI [1,500-2,220]** AMR-associated deaths in 2030.

AMR in Lithuania

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 Lithuania between 1990 and 2019.



- To look at these and more visualization interactively visit [Measuring Infectious Causes and Resistance Outcomes for Burden Estimation \(MICROBE\)](#)
- In **Lithuania** in 2021, there were an estimated **383 UI (325-441)** deaths attributable to AMR and **1,730 UI (1,460-2,000)** 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, **Lithuania has the 40th 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	
	UI (range)	Change	UI (range)	Change	UI (range)	Change
	Staphylococcus aureus 694 UI (609-778)	↑	Escherichia coli 458 UI (398-519)	↑	Escherichia coli 86 UI (70-102)	↑
	Escherichia coli 650 UI (568-731)	↑	Klebsiella pneumoniae 234 UI (200-267)	↓	Klebsiella pneumoniae 54 UI (44-64)	↑
	Pseudomonas aeruginosa 316 UI (277-355)	↑	Staphylococcus aureus 218 UI (170-266)	↓	Acinetobacter baumannii 51 UI (44-57)	↓
	Klebsiella pneumoniae 294 UI (258-331)	↑	Pseudomonas aeruginosa 174 UI (145-203)	↓	Pseudomonas aeruginosa 46 UI (36-57)	↓
	Streptococcus pneumoniae 236 UI (206-265)	↓	Acinetobacter baumannii 125 UI (109-141)	↓	Staphylococcus aureus 44 UI (36-52)	↓
	Enterococcus faecalis 147 UI (129-165)	↑	Streptococcus pneumoniae 106 UI (74-137)	↓	Enterococcus faecium 18 UI (14-22)	↑
	Acinetobacter baumannii 129 UI (112-145)	↓	Enterococcus faecium 84 UI (73-94)	↑	Streptococcus pneumoniae 17 UI (11-23)	↓
	Enterobacter spp. 117 UI (102-131)	↑	Proteus spp. 61 UI (45-76)	↑	Mycobacterium tuberculosis 15 UI (0-36)	↑
	Group A Streptococcus 104 UI (90-119)	↑	Enterobacter spp. 58 UI (46-71)	↓	Enterobacter spp. 14 UI (11-16)	↓
	Proteus spp. 98 UI (85-110)	↑	Enterococcus faecalis 48 UI (41-56)	↑	Enterococcus faecalis 9 UI (6-11)	↑

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

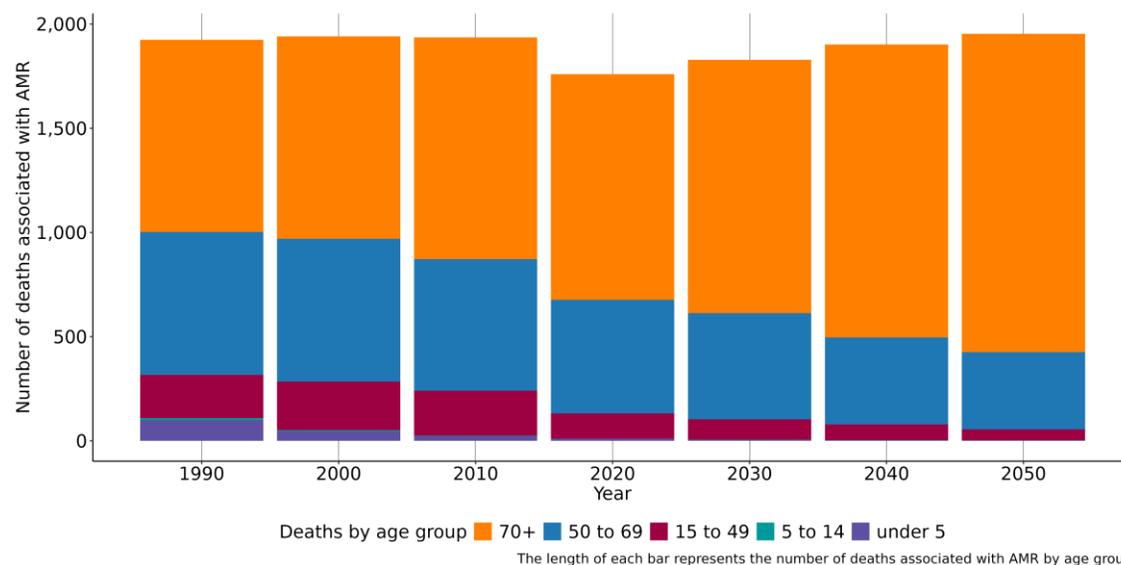
Table 2. Combinations which cause most deaths in 2021 (Number of deaths in parenthesis)

Burden Rank	Associated			Attributable		
	UI (range)	Change	UI (range)	UI (range)	Change	UI (range)
	Escherichia coli Aminopenicillin	406 UI (340-471)	↑	Acinetobacter baumannii Carbapenems	28 UI (22-33)	↑
	Escherichia coli TMP-SMX	293 UI (232-355)	↑	Pseudomonas aeruginosa Carbapenems	26 UI (19-34)	↑
	Klebsiella pneumoniae TMP-SMX	189 UI (154-224)	↓	Staphylococcus aureus Methicillin	23 UI (16-30)	↑
	Escherichia coli Beta-Lactam/Lactamase Inhib.	187 UI (149-224)	↑	Escherichia coli Aminopenicillin	18 UI (12-24)	↑
	Klebsiella pneumoniae Beta-Lactam/Lactamase Inhib.	181 UI (149-213)	↑	Escherichia coli TMP-SMX	18 UI (10-25)	↑
	Escherichia coli Fluoroquinolones	175 UI (134-217)	↑	Acinetobacter baumannii Fluoroquinolones	13 UI (11-16)	↑
	Klebsiella pneumoniae Aminoglycosides	169 UI (137-200)	↓	Klebsiella pneumoniae Fluoroquinolones	13 UI (9-17)	↑
	Klebsiella pneumoniae Fluoroquinolones	168 UI (140-195)	↑	Escherichia coli 3GC	12 UI (7-17)	↑
	Staphylococcus aureus Macrolides	155 UI (110-200)	↓	Klebsiella pneumoniae Aminoglycosides	12 UI (8-15)	↓
	Klebsiella pneumoniae 3GC	144 UI (121-166)	↑	Escherichia coli Beta-Lactam/Lactamase Inhib.	12 UI (2-21)	↑

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

- 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 (1,970 UI (1,730-2,210)), lower respiratory infection (excl. COVID) (997 UI (849-1,150)), peritoneal and intra-abdominal infections (698 UI (604-791)), urinary tract infections and pyelonephritis (275 UI (224-327)) and infections of the skin and subcutaneous systems (204 UI (170-239)).

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



- In Lithuania, people aged 70+ saw the largest number of deaths associated with AMR both in 1990 and 2021, which indicates that 70+ continues to be particularly vulnerable to infections which are resistant to antibiotics. In 2021, the number of deaths associated with AMR among the 70+ was 1,070 UI (893-1,250), whereas the mortality rate per 100,000 was 267 UI (222-312).

Data sources for Lithuania

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 Lithuania by source type

Source type	Years	Sample size	Sample size units
Microbial or laboratory data without outcome	1990-2021	262,912	Isolates
Microbial or laboratory data with outcome	1990-2021	107,300	Isolates
Literature studies	1990-2009	198	Cases/isolates/susceptibility tests
Single drug resistance profile data	1990-2021	118,061	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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