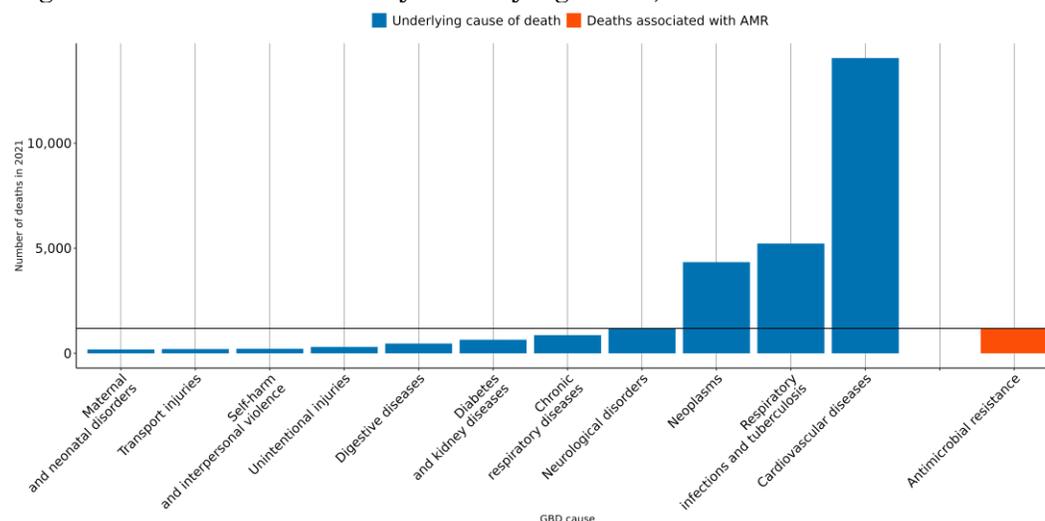


The burden of antimicrobial resistance (AMR) in Albania

Executive summary

- Antimicrobial Resistance (AMR) is a major global health threat, over **300 lives** have been lost each year since 1990 in Albania due to AMR.
- In 2021, there were an estimated **278 UI (196-361)** deaths attributable to AMR and **1,180 UI (898-1,470)** 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



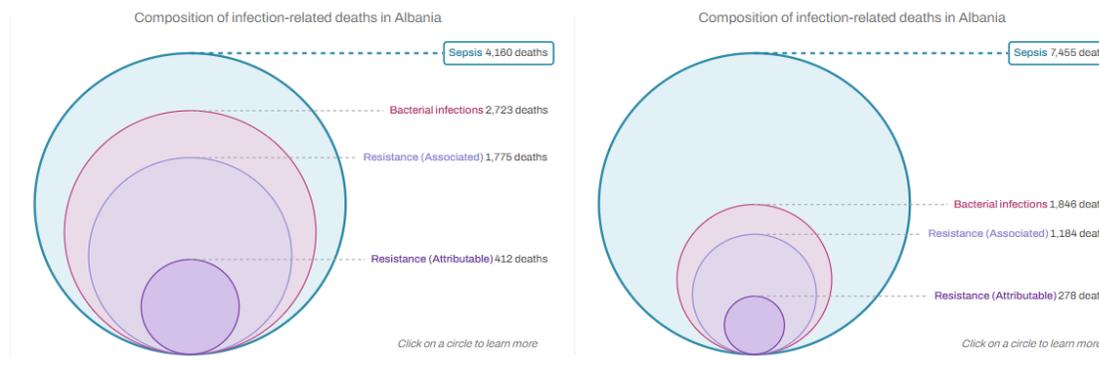
- In 2021, the number of deaths associated with AMR (orange bar in *figure 2*) were high compared to the most relevant underlying causes of death (depicted in blue) in the country. AMR associated deaths occur within multiple Global Burden of Disease (GBD) causes of death and AMR is not an underlying 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 Albania, a 10% reduction means to decrease the number of deaths associated with AMR to **1,130**, but currently the trend for this country could reach up to **1,270 UI [933-1,630]** AMR-associated deaths in 2030.

AMR in Albania

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 Albania between 1990 and 2019.



- To look at these and more visualization interactively visit [Measuring Infectious Causes and Resistance Outcomes for Burden Estimation \(MICROBE\)](#)
- In **Albania** in 2021, there were an estimated **278 UI (196-361)** deaths attributable to AMR and **1,180 UI (898-1,470)** 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, **Albania has the 39th 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)

	Overall susceptible and resistant	Associated	Attributable
Burden rank	Staphylococcus aureus 464 UI (384-544) ↑	Staphylococcus aureus 271 UI (193-348) ↑	Staphylococcus aureus 56 UI (29-83) ↑
	Escherichia coli 245 UI (203-287) ↑	Escherichia coli 202 UI (146-258) ↑	Escherichia coli 47 UI (30-64) ↑
	Streptococcus pneumoniae 212 UI (175-249) ↓	Klebsiella pneumoniae 140 UI (114-167) ↓	Klebsiella pneumoniae 37 UI (29-44) ↓
	Pseudomonas aeruginosa 208 UI (172-244) ↓	Pseudomonas aeruginosa 134 UI (103-164) ↓	Pseudomonas aeruginosa 35 UI (25-44) ↓
	Klebsiella pneumoniae 175 UI (145-205) ↓	Streptococcus pneumoniae 124 UI (83-165) ↓	Acinetobacter baumannii 33 UI (28-38) ↓
	Acinetobacter baumannii 82 UI (68-96) ↓	Acinetobacter baumannii 82 UI (68-96) ↓	Streptococcus pneumoniae 23 UI (14-33) ↓
	Group A Streptococcus 60 UI (46-73) ↓	Enterobacter spp. 42 UI (34-49) ↓	Enterobacter spp. 13 UI (10-16) ↓
	Enterococcus faecalis 57 UI (47-68) ↑	Enterococcus faecalis 41 UI (33-48) ↑	Enterococcus faecalis 8 UI (4-11) ↑
	Enterobacter spp. 52 UI (43-60) ↓	Enterococcus faecium 37 UI (30-44) ↑	Enterococcus faecium 7 UI (5-9) ↑
	Enterococcus faecium 46 UI (38-54) ↑	Proteus spp. 30 UI (21-38) ↑	Serratia spp. 6 UI (5-8) ↓

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

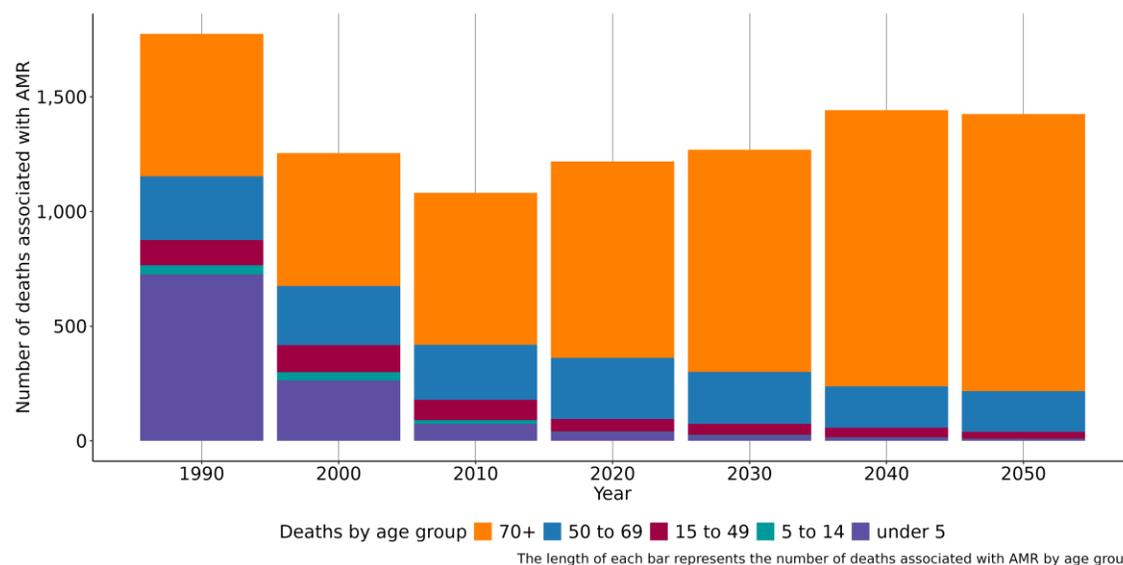
Table 2. Combinations which cause most deaths in 2021 (Number of deaths in parenthesis)

	Associated	Attributable
Burden Rank	Staphylococcus aureus Macrolides 229 UI (176-281) ↑	Staphylococcus aureus Methicillin 34 UI (12-56) ↑
	Escherichia coli Aminopenicillin 177 UI (91-264) ↑	Acinetobacter baumannii Carbapenems 16 UI (13-20) ↓
	Staphylococcus aureus Methicillin 142 UI (40-244) ↑	Pseudomonas aeruginosa Carbapenems 13 UI (8-19) ↑
	Escherichia coli Fluoroquinolones 130 UI (64-196) ↑	Escherichia coli Carbapenems 12 UI (2-23) ↓
	Klebsiella pneumoniae Beta-Lactam/Lactamase Inhib. 122 UI (93-151) ↓	Staphylococcus aureus Macrolides 10 UI (7-14) ↑
	Escherichia coli TMP-SMX 122 UI (86-157) ↑	Escherichia coli 3GC 10 UI (7-14) ↑
	Klebsiella pneumoniae Fluoroquinolones 113 UI (88-139) ↓	Klebsiella pneumoniae Fluoroquinolones 9 UI (7-12) ↓
	Escherichia coli 3GC 113 UI (69-157) ↑	Escherichia coli Fluoroquinolones 9 UI (4-14) ↑
	Klebsiella pneumoniae Aminoglycosides 105 UI (82-127) ↓	Streptococcus pneumoniae Carbapenems 9 UI (4-13) ↓
	Escherichia coli Beta-Lactam/Lactamase Inhib. 94 UI (72-116) ↑	Pseudomonas aeruginosa Fluoroquinolones 9 UI (6-12) ↓

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

- 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 (1,050 UI (875-1,230)), lower respiratory infection (excl. COVID) (1,040 UI (833-1,240)), peritoneal and intra-abdominal infections (183 UI (148-218)), urinary tract infections and pyelonephritis (131 UI (98-164)) and infections of the skin and subcutaneous systems (103 UI (72-135)).

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



- In Albania, people aged under 5 experienced the largest number of deaths associated with AMR in 1990 but this changed by 2021 as the largest number of deaths occurred among the 70+. This indicates that prevention of infections among the under 5 has contributed to the reduction in the number of AMR associated deaths. In 2021, the number of deaths associated with AMR among the 70+ was 838 UI (633-1,040), whereas the mortality rate per 100,000 was 309 UI (233-385).

Data sources for Albania

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 Albania by source type

Source type	Years	Sample size	Sample size units
Antibiotic use	1990-2021	386	Study-year datapoints

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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