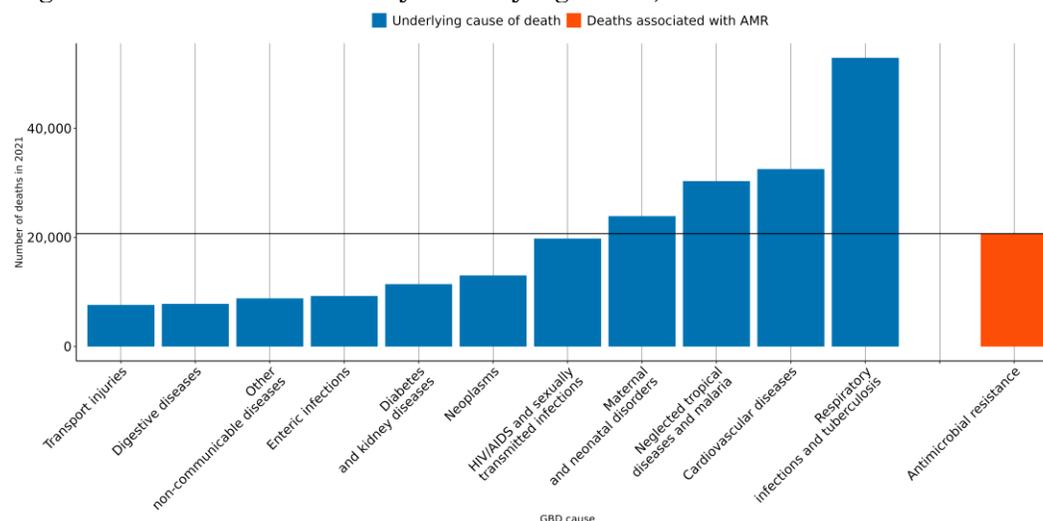


# The burden of antimicrobial resistance (AMR) in Cameroon

## Executive summary

- Antimicrobial Resistance (AMR) is a major global health threat, over **5,000 lives** have been lost each year since 1990 in Cameroon due to AMR.
- In 2021, there were an estimated **4,310 UI (3,020-5,610)** deaths attributable to AMR and **20,700 UI (15,200-26,200)** deaths associated with AMR in this location.
- The largest number of deaths associated with AMR in 2021 occurred among those aged **under 5** in the country.
- Among the most deadly pathogen-drug combinations in 2021 were *Staphylococcus aureus* resistant to methicillin, *Klebsiella pneumoniae* resistant to beta lactam / beta-lactamase inhibitors and *Streptococcus pneumoniae* resistant to penicillin.

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



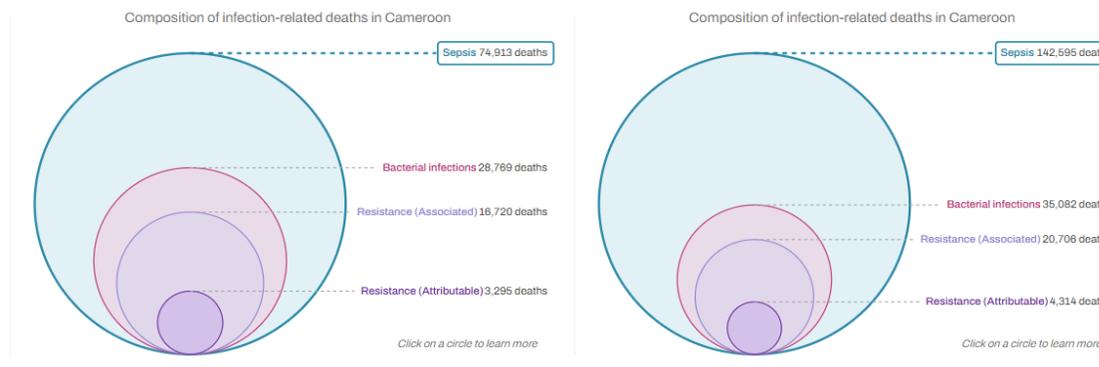
- In 2021, the number of deaths associated with AMR (orange bar in *figure 2*) were high compared to the most relevant underlying causes of death (depicted in blue) in the country. AMR associated deaths occur within multiple Global Burden of Disease (GBD) causes of death and AMR is not an underlying 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 Cameroon, a 10% reduction means to decrease the number of deaths associated with AMR to **20,700**, but currently the trend for this country could reach up to **23,200 UI [15,900-33,400]** AMR-associated deaths in 2030.

## AMR in Cameroon

### 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 Cameroon between 1990 and 2019.



- To look at these and more visualization interactively visit [Measuring Infectious Causes and Resistance Outcomes for Burden Estimation \(MICROBE\)](#)
- In **Cameroon** in 2021, there were an estimated **4,310 UI (3,020-5,610)** deaths attributable to AMR and **20,700 UI (15,200-26,200)** 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, **Cameroon has the 43rd highest** 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
	Mycobacterium tuberculosis 4,940 UI (2,480-7,400)	↑	Streptococcus pneumoniae 3,910 UI (2,720-5,100)	↓	Klebsiella pneumoniae 810 UI (570-1,050)	↑
	Streptococcus pneumoniae 4,580 UI (3,330-5,830)	↓	Klebsiella pneumoniae 3,680 UI (2,820-4,530)	↑	Streptococcus pneumoniae 702 UI (430-974)	↓
	Klebsiella pneumoniae 4,310 UI (3,390-5,240)	↑	Escherichia coli 3,500 UI (2,460-4,550)	↑	Escherichia coli 667 UI (414-920)	↑
	Escherichia coli 3,820 UI (2,740-4,900)	↑	Staphylococcus aureus 1,870 UI (1,350-2,390)	↑	Acinetobacter baumannii 513 UI (387-638)	↑
	Staphylococcus aureus 2,920 UI (2,270-3,580)	↑	Pseudomonas aeruginosa 1,740 UI (1,230-2,240)	↑	Pseudomonas aeruginosa 417 UI (275-560)	↑
	Pseudomonas aeruginosa 2,900 UI (2,270-3,530)	↑	Acinetobacter baumannii 1,440 UI (1,060-1,830)	↑	Staphylococcus aureus 397 UI (230-563)	↑
	Acinetobacter baumannii 1,890 UI (1,480-2,290)	↑	Enterobacter spp. 607 UI (475-739)	↑	Enterobacter spp. 156 UI (122-190)	↑
	Group B Streptococcus 1,450 UI (1,110-1,780)	↑	Group B Streptococcus 538 UI (368-709)	↑	Serratia spp. 124 UI (93-156)	↑
	Non-typhoidal Salmonella 1,380 UI (609-2,160)	↑	Serratia spp. 517 UI (393-642)	↑	Citrobacter spp. 92 UI (66-117)	↑
	Shigella spp. 985 UI (240-1,730)	↓	Shigella spp. 430 UI (11-849)	↓	Mycobacterium tuberculosis 75 UI (0-271)	↑

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

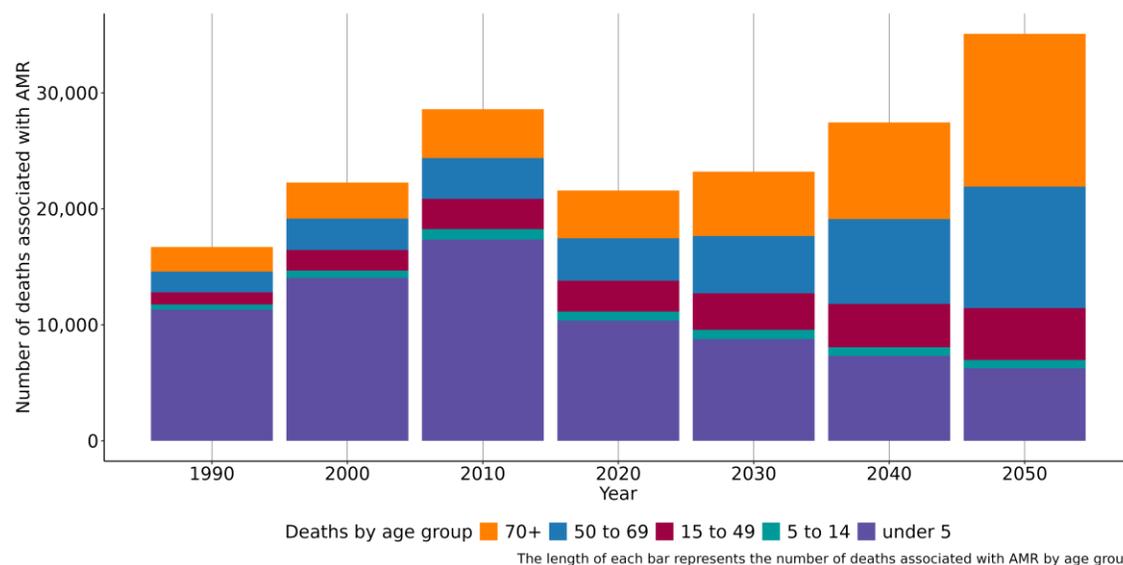
Table 2. Combinations which cause most deaths in 2021 (Number of deaths in parenthesis)

Burden Rank	Associated		Attributable	
	UI (range)	Change	UI (range)	Change
	Streptococcus pneumoniae TMP-SMX 3,590 UI (2,430-4,740)	↓	Klebsiella pneumoniae Beta-Lactam/Lactamase Inhib. 233 UI (99-368)	↑
	Klebsiella pneumoniae Beta-Lactam/Lactamase Inhib. 3,320 UI (2,460-4,190)	↑	Staphylococcus aureus Methicillin 216 UI (101-330)	↑
	Klebsiella pneumoniae TMP-SMX 3,250 UI (2,460-4,030)	↑	Streptococcus pneumoniae Penicillin 202 UI (116-288)	↑
	Escherichia coli Aminopenicillin 3,230 UI (2,010-4,460)	↑	Acinetobacter baumannii Fluoroquinolones 171 UI (132-210)	↑
	Escherichia coli TMP-SMX 3,070 UI (2,190-3,950)	↑	Klebsiella pneumoniae TMP-SMX 167 UI (83-252)	↑
	Streptococcus pneumoniae Penicillin 2,330 UI (1,280-3,380)	↓	Escherichia coli TMP-SMX 166 UI (108-225)	↑
	Escherichia coli Beta-Lactam/Lactamase Inhib. 2,030 UI (1,410-2,650)	↑	Escherichia coli 3GC 146 UI (49-243)	↑
	Escherichia coli Fluoroquinolones 1,850 UI (935-2,760)	↑	Streptococcus pneumoniae 3GC 145 UI (81-209)	↑
	Streptococcus pneumoniae Macrolides 1,760 UI (1,130-2,380)	↑	Pseudomonas aeruginosa Fluoroquinolones 142 UI (86-198)	↑
	Staphylococcus aureus Fluoroquinolones 1,620 UI (1,160-2,080)	↑	Klebsiella pneumoniae 3GC 123 UI (65-181)	↑

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

- 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 (18,000 UI (14,200-21,700)), lower respiratory infection (excl. COVID) (17,700 UI (13,100-22,400)), diarrhea (7,570 UI (3,480-11,700)), tuberculosis (4,940 UI (2,480-7,400)) and meningitis (2,980 UI (1,790-4,170)).

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



- In Cameroon, people aged under 5 saw the largest number of deaths associated with AMR both in 1990 and 2021, which indicates that under 5 continues to be particularly vulnerable to infections which are resistant to antibiotics. In 2021, the number of deaths associated with AMR among the under 5 was 9,580 UI (6,780-12,400), whereas the mortality rate per 100,000 was 808 UI (619-997).

### Data sources for Cameroon

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 Cameroon by source type

Source type	Years	Sample size	Sample size units
Antibiotic use	1990-2021	2,171	Study-year datapoints
Microbial or laboratory data without outcome	1990-2021	9,032	Isolates
Literature studies	1990-2021	2,748	Cases/isolates/susceptibility tests

## 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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