

# Global burden of bacterial antimicrobial resistance in 2019: an advocacy to intensify efforts for antimicrobial stewardship in low-and-middle income countries

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A landmark paper was published in February 2022 in *The Lancet*, entitled ‘Global burden of bacterial antimicrobial resistance in 2019: A systematic analysis’<sup>1</sup>. A consortium of experts in the field of antimicrobial resistance (AMR) collected and analysed a broad range of data from the literature for 23 pathogens and 88 pathogen-antibiotic combinations, in 204 countries in 2019. It included hospital and surveillance systems; and other sources worldwide; to estimate deaths and disability-adjusted life-years (DALYs) attributable to, and associated with, AMR. They estimated two different primary criteria, based on two counterfactuals:

1. Deaths attributable to AMR;
2. Deaths associated with AMR;

(each comparing the current situation to a situation where infections with drug-resistant bacteria would be replaced by no infection).

Their main findings were that around 5 million deaths were associated with AMR in 2019; including 1.3 million attributable to AMR. Of note, the burden of AMR was the highest in Western sub-Saharan Africa (27.3 deaths attributable to AMR per 100,000 inhabitants) and the lowest in Australasia (6.5 deaths attributable to AMR per 100,000 inhabitants). Lower respiratory tract infection was the most burdensome infectious syndrome (>1.5 million deaths attributable to AMR), and the three primary pathogens in terms of AMR burden were *Escherichia coli*,

*Staphylococcus aureus* and *Klebsiella pneumoniae*.

A combination of data with heterogeneous methods and quality, and the lack of data from many parts of the world, are limitations to consider. But this paper provides an insightful assessment of the current burden of AMR worldwide, with better awareness of the large heterogeneity between areas. It depends not only on AMR prevalence but also on the tools available to fight AMR; including surveillance, antimicrobial stewardship (AMS) programmes and access to antibiotics active on multidrug-resistant (MDR) bacterial infections. Most results are in line with the findings of estimates coming from other research groups and methods. This is also in line with predictions of the *Review on AMR* commissioned by the UK government<sup>2</sup>, which estimated that AMR could kill around 10 million people each year by 2050.

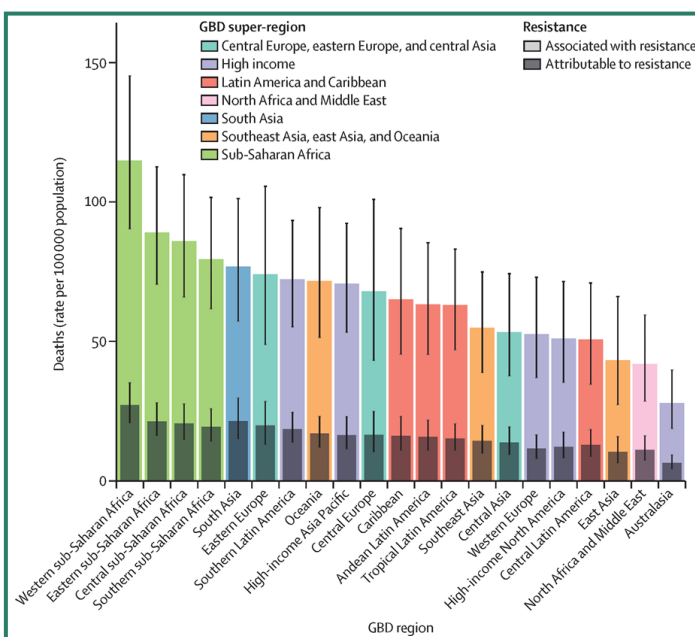


Figure 2: All-age rate of deaths attributable to and associated with bacterial antimicrobial resistance by GBD region, 2019

The disproportionate burden of AMR in Western sub-Saharan Africa (more than 4 times higher than Australasia) is probably the most striking and sobering result of this study. Efforts to improve access to diagnostic tools and appropriate treatment for infections due to MDR bacteria, as well as capacity building of key stakeholders (physicians, microbiologists and pharmacists) are therefore urgently required in that part of the world taking into account the aspect of One Health.

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## References

1. Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet*. 2022;399:629-655
2. O'Neill J. Review on Antimicrobial Resistance; London: 2016. Tackling drug-resistant infections globally: final report and recommendations.