

New review provides most comprehensive estimates of the Burden of Antimicrobial Resistance



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[Antimicrobial Resistance Collaborators.](#)
[Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis.](#)
[Lancet. 2022;399\(10325\):629-655. doi:10.1016/S0140-6736\(21\)02724-0](#)

Using major methodological innovations to create models capable of incorporating disparate data sources, this systematic review provides important new insights into the global AMR burden. Furthermore, this is the first study to report burden both attributable to and associated with AMR.

Researchers used data from multiple sources to estimate the AMR burden based on 12 major infectious syndromes, 23 bacterial pathogens, 99 pathogen-drug combinations and covering 204 countries. Incidence, prevalence, mortality, and DALYs were measured. The modelling was based on 2 scenarios: 1) all resistant infections are replaced by susceptible infections (deaths attributable to AMR) and 2) all resistant infections are replaced by no infection (deaths associated with AMR).

A total of 4.95 million deaths are associated with bacterial AMR and 1.27 million deaths are attributable to bacterial AMR. These numbers are significantly increased from the previous major report on AMR, "Review on Antimicrobial resistance" (J O'Neill), published in 2016, where 700 000 deaths were attributable to resistance. The highest burden was in low-income countries in sub-Saharan Africa, where 1 in 5 deaths linked to resistance were in children under 5. Study estimates also indicated that the AMR burden is at least as large as major diseases such as HIV and malaria, and potentially much larger.

- **Three infectious syndromes** (lower respiratory and thorax, bloodstream and intra-abdominal) dominate the global burden and make up 79% of deaths.
- **Six leading pathogens** are associated with bacterial AMR with E. coli being responsible for the most deaths.
- **Resistance to fluoroquinolones and beta-lactams** accounted for more than 70% of deaths attributable to AMR.
- **Five main categories of intervention strategies** were identified to address the AMR challenge: infection prevention and control, vaccines, reduce exposure to antibiotics, minimize antibiotic use, and developing new antibiotics.



"Drug resistance is a major global health threat that warrants more attention, funding, capacity building, research and development, and pathogen-specific priority setting from the broader global health community," wrote the study authors.