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Implications for practice and research
▸ The study highlights the urgent need for improved surveillance, prevention and control of bacterial antimicrobial resistance worldwide.
▸ Research should be conducted to develop rapid and accurate diagnostic tests to detect resistant infections.

Context
Antimicrobial resistance (AMR) is a growing global health threat, and the misuse and overuse of antibiotics are contributing factors. AMR is estimated to have caused 4.95 million deaths worldwide in 2019, according to the study that looked at data from 204 studies. The findings of the 2019 study highlighted the urgent need for global action to address the problem of bacterial AMR. Governments, healthcare providers and the public all have a role to play in reducing the burden of AMR and ensuring that antibiotics remain effective for future generations.1 Global action plans on AMR have been developed by the WHO, which include promoting new antibiotics, reducing antibiotic overuse and misuse and strategies for improving surveillance.2

Methods
The researchers used data from various sources, including national health surveys, hospital records and scientific literature (including CINAHL and PubMed). They estimated the incidence, prevalence and mortality rates of infections caused by antibiotic-resistant bacteria, as well as the attributable disability-adjusted life years (DALYs). The study also assessed the economic impact of AMR, including the costs of healthcare and lost productivity.

Findings
The global burden of AMR was estimated by a systematic analysis in 2019. The study evaluated the effects of infections caused by antibiotic-resistant bacteria on morbidity, mortality and DALYs. Despite the considerable economic costs and morbidity associated with bacterial AMR, the study found that bacterial AMR is a major global health issue. Research estimates that in 2019, 4.95 million deaths are associated with bacterial AMR, which includes 1.27 million deaths are related to bacterial AMR, while 1.5 million deaths are related to lower respiratory infections. The study highlights the urgent need for coordinated global action to address the problem of bacterial AMR.1

Commentary
It is the first comprehensive study to assess the global burden of AMR, and it evaluates the data availability. It is estimated that AMR is responsible for a high proportion of deaths in low-resource settings. Making informed, location-specific policy decisions, including access to essential antibiotics, the development of new vaccines and the development of new antibiotics, requires a deep understanding of AMR. A large number of low-income settings should have access to microbiology laboratories and data collection systems to better understand this important human health threat.1 Both drug-resistant bacterial infections and the direct burden of drug resistance were examined in this study. There is nearly four times as much difference at the global level attributed to AMR.3 Due to a lack of evidence, it was impossible to estimate how many drug-resistant infections would disappear if drug resistance were eliminated. The findings may not apply to other resistance mechanisms or pathogens.4 5 Bacterial AMR severely impacts global health. Numerous beneficial agents, including fluoroquinolones and beta-lactams, have high resistance to the pathogens. It is essential to improve patient care, collect high-quality local and global surveillance data and develop national action plans in order to address the large and universal burden of AMR. AMR research could also be expanded to evaluate indirect effects of AMR with the improved infrastructure. The identification of strategies to reduce bacterial AMR is a major priority, whether they are adaptive to the available resources or tailored to specific pathogens and drugs depending on the context.

Competing interests None declared.

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