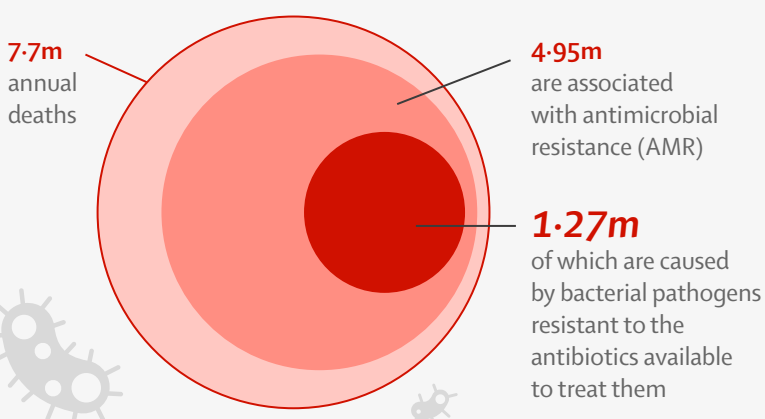
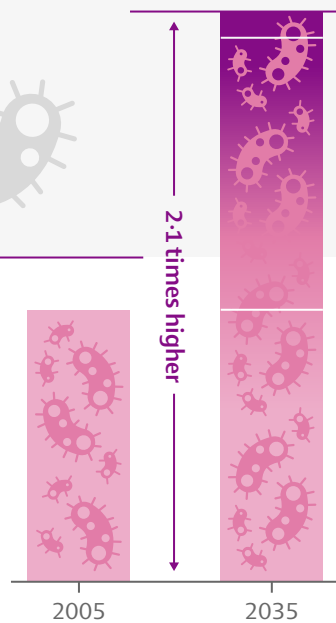


Antimicrobial resistance: an enormous, growing, and unevenly distributed threat to global health

Each year, an estimated 7.7 million deaths are associated with bacterial infections

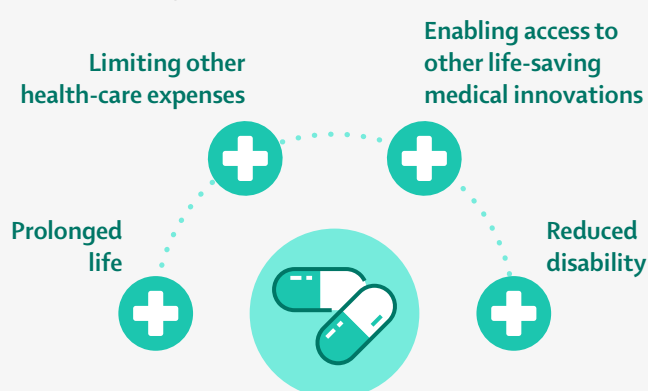


Rising AMR has been documented over the past two decades. Projections from high-income countries predict resistance to third-line antibiotics—the last-resort drugs—could be 2.1 times higher in 2035 compared to 2005



Improving access to effective antibiotics and addressing AMR are critical to achieving global goals for child survival and healthy aging

Antibiotics, if used as indicated, can avert many deaths from bacterial infections, and access to second-line antibiotics can even prevent deaths from some drug-resistant infections. However, rising resistance threatens to thwart the benefits antimicrobial use provides, such as:



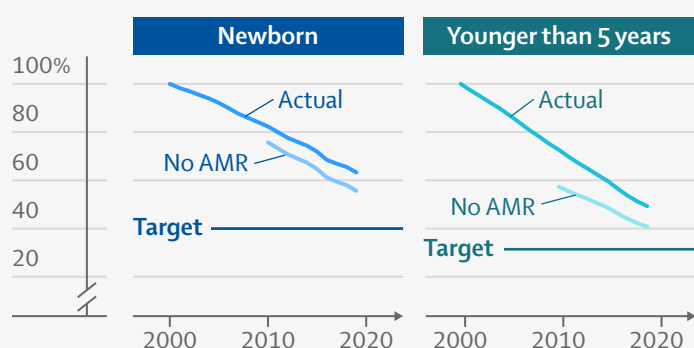
Everyone is at risk—including those that have never taken an antibiotic. Those most vulnerable include:



Image credits: Ariel Skelley; RUNSTUDIO; Alexander Grey; Guido Dingemans, De Eindreactie

AMR compromises the fulfilment of global health and development targets

All-cause mortality, relative to 2000



Its impact is heaviest in low-income and middle-income countries

AMR-associated deaths per 100 000 population

Central Europe, eastern Europe, and central Asia	67.7
High income	55.7
Latin America and Caribbean	57.9
North Africa and Middle East	42.0
South Asia	76.8
Southeast Asia, east Asia, and Oceania	47.1
Sub-Saharan Africa	98.9

Strengthening surveillance

In all cases, AMR is inadequately documented because laboratory testing is insufficient, and its burden of disease is poorly measured. Strengthening surveillance is essential for stopping AMR and measuring successes in its containment.

Existing interventions can have a significant impact in LMICs

Findings of the *Lancet* AMR Series indicate that reducing global AMR-associated deaths by 10% by the year 2030 is achievable with existing interventions. These findings provide robust evidence to guide countries in prioritising public health interventions, offering the greatest potential to mitigate AMR burden. For example:

Aligning IPC standards



Aligning infection prevention and control (IPC) standards in LMIC healthcare settings with those of HICs could prevent up to 337 000 AMR-associated deaths annually

Access to WASH services



Achieving universal access to water, sanitation, and hygiene (WASH) services could prevent up to 247 800 AMR-associated deaths annually

High-priority paediatric vaccines



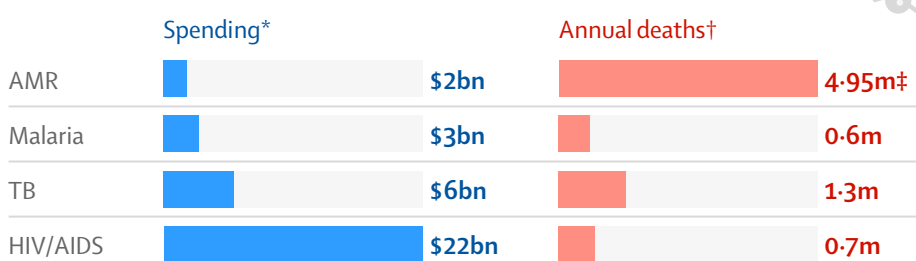
Achieving universal coverage of high-priority paediatric vaccines—such as those against rotavirus, pneumococci, and RSV—could prevent up to 181 500 AMR-associated deaths annually

LMICs=low-income and middle-income countries; HICs=high-income countries; Image credits: Tima Miroshnichenko; PICHA Stock; ER Productions Limited

Improved access to existing and new antibiotics, vaccines, and diagnostics is needed. Innovation should focus on LMICs, where the burden of AMR is greatest.

Antibiotics

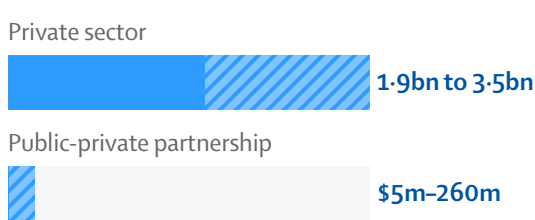
The ability to deploy drugs and diagnostics for HIV/AIDS, malaria, and TB is well developed. However, similar support is absent for antibiotics even though non-TB bacterial infections kill far more than HIV/AIDS, malaria, and TB combined.



*Average spending, 2017 to 2021; † Estimated global deaths in 2019; ‡ Associated deaths

New, publicly funded models with public-private partnerships could support investment in antibiotic development and testing for AMR-associated infections, as well as lower the cost for the patient, making drugs more accessible.

Cost to develop or adapt a drug, 2024 US\$



Diagnostics

Preserving antibiotic effectiveness requires timely diagnostics but there are challenges in scaling up. The diagnostic landscape changed during the COVID-19 pandemic: new technologies are improving the quality, speed, and affordability of diagnostics. Furthermore, economic incentives are needed to encourage use of diagnostics to inform treatment and thereby improve antimicrobial stewardship.

Vaccines

Sustainable access to antibiotics cannot be achieved without preventing infections. Vaccination coverage must be scaled up, and new vaccines are needed to tackle both resistant bacterial pathogens and the viral infections that trigger antibiotic use.

The *Lancet* AMR Series proposes attainable global ambitions that can achieve sustainable access to effective antibiotics. They require political will, targets, accountability frameworks, and funding.

By 2030, relative to 2019, achieve the following global targets*:

- » A 10% reduction in mortality from AMR
- » A 20% reduction in inappropriate human antibiotic use
- » A 30% reduction in inappropriate animal antibiotic use



- » The establishment of an independent scientific body to expand the evidence base for policy implementation and to inform new targets
- » Increased funding for infection prevention mitigation programmes in human and animal health

The High-Level Meeting of the UN General Assembly in September, 2024 offers an opportunity to set a bold and ambitious goal of ensuring that no one anywhere dies because of lack of access to effective antibiotics.

*National targets may vary depending on their current situation

Read the series in full at www.thelancet.com/series/antibiotic-resistance