

Antimicrobial resistance and public health

Drug-resistant infections are estimated to cause 10 million deaths a year and cost up to \$100 trillion by 2050. Historical evidence shows that the impact of antimicrobial resistance can be reduced through sound public health policies.

Antimicrobial resistance (AMR) develops when microorganisms such as bacteria, viruses, parasites and fungi develop resistance to an antimicrobial drug, threatening the effective prevention and treatment of infections. AMR has increasingly become a problem because the use of antimicrobials is steadily rising, while the pace of discovering and developing new antibiotics has slowed down.

Antimicrobials are currently used widely across healthcare, and the spread of AMR has prompted fears that many of the gains linked to modern advances in medicine could be lost. The Review on Antimicrobial Resistance has recently set out proposals to overhaul the global antibiotics pipeline.

Social science research can help us to better understand the effect of human behaviour on the spread of AMR, and the best ways of changing behaviour in different settings.

The report *Health, wellbeing and antimicrobial resistance* has analysed the historical evidence of AMR to examine

possible scenarios and likelihood of epidemic outbreaks. The authors suggest that good governance delivering sound public health policies can substantially reduce the impact of antimicrobial resistance – focusing both on the supply pipeline of new drugs and the public consumption of antimicrobials.

Key findings

- With the virtual eradication of most infectious diseases, life expectancy in the UK and other high-income countries has doubled in the last century or so. The gains in poor countries have been smaller, but still significant.
- In high-income countries most of the increase in life expectancy preceded the antibiotics revolution.
- The welfare gains associated with the control of infection have been huge.
- Public health measures have historically been essential to control infectious diseases.
- The challenge of AMR needs to be set in an historical context: though real, it does not have to mean a return to 'the dark ages of medicine'.

Policy relevance and implications

- The supply pipeline for new drugs is not as dry as usually claimed. The outlook for MRSA, TB and malaria is slightly positive.
- A pipeline strategy should focus not on resistance in general, but on where it presents the greatest threat - especially gram-negative bacteria resistant to 'last resort' carbapenem antibiotics. Sustained public funding is needed to support high-risk low-return research in this area, which is primarily carried out by universities and public health research institutions.
- A public health/NHS initiative aimed at encouraging GPs and surgeries to reduce antimicrobial prescriptions could reduce the use of antimicrobials in treatment. Other targets could include earlier detection, more rapid screening and improved hand hygiene.
- A public health campaign aimed at the general public to raise awareness of the problem of antimicrobial resistance could complement other measures to restrain consumption.

BRIEF DESCRIPTION OF THE PROJECT

Researchers Romola Davenport, Kerry Hickson and Cormac Ó Gráda have analysed the historical evidence of AMR to inform measures against potential epidemic outbreaks. They recommend sound public health policies to reduce the impact of antimicrobial resistance.

Web: www.smf.co.uk/publications/the-challenge-of-antimicrobial-resistance-lessons-from-the-past-for-the-present-and-the-future/

FOR MORE INFORMATION

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The report *Health, wellbeing and antimicrobial resistance* was published by the ESRC-funded Centre for Competitive Advantage in the Global Economy (CAGE).
Web: www2.warwick.ac.uk/fac/soc/economics/research/centres/cage



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