

Society of Biology Policy Briefing: The Threat of Antimicrobial Resistance

Professor Dame Sally Davies, Chief Medical Officer for England, has described antimicrobial resistance (AMR) as a 'catastrophic threat' to the world akin to terrorism and climate change. Indeed, after the publication of Dame Sally's annual report in March 2013, antimicrobial resistance was proposed as an addition to the national risk register.

Antibiotic resistance has been highlighted as a particular concern. Bacterial infections account for 7% of all deaths in England and account for one in five days off work. However, resistance occurs when problem-causing bacteria are able to survive the medicines aimed to destroy them and as a result treatments become ineffective. It is a global problem and it is imperative that it is treated as such.

Antibiotic resistance can be countered providing there is a sufficient pipeline of novel antibiotics. However this is not currently the case; no new classes of antibiotic have been discovered since 1987.

Furthermore, resistance is rapidly building to the few remaining effective treatments that are left. This means that, according to Dame Sally Davies, the healthcare system could return to a 19th century environment where routine operations could be fatal due to the bacterial infections incurred.

Antibiotic resistance is linked with exposure so, as well as developing new antibiotics, it is necessary to control how the remaining effective therapies are used. GPs prescribe 35 million courses of antibiotics in England alone each year and the vast majority of surgical procedures invoke antibiotics.

These medicines are also commonplace in farming practices and are routinely given to animals both as a preventative measure. Action must be taken to ensure that antibiotics are used appropriately.

The pharmaceutical industry is vital in the fight against antibiotic resistance. Increased focus and spending on the development of new antibiotics will be necessary. However, a perceived financial disincentive exists as any new therapy developed is likely to be shelved for as long as possible to avoid the build-up of resistance. Even when it is eventually used, a new antibiotic would be prescribed only for short periods of treatment rather than for months or years. Hence, in the current uncertain drug discovery landscape, the development of new antibiotics is often not prioritised.

As well as a financial disincentive, there are regulatory barriers which exist to prohibit the development of new antibiotics. Harmonisation of current regulatory pathways as well as a review of the clinical trial procedure for new antibiotics could serve to facilitate the reinvigoration of the pipeline.

The development of novel therapies and technologies will also be vital in the fight against antibacterial resistance. Research into new vaccines and rapid diagnostics has the potential to be game-changing.

Policy Developments

The Department of Health has released a UK 5-year Antimicrobial Resistance Strategy for 2013 to 2018. This document sets out targets to slow the development and spread of antimicrobial resistance by focusing activities around 3 strategic aims:

- improving the knowledge and understanding of antimicrobial resistance
- conserving and stewarding the effectiveness of existing treatments

- stimulating the development of new antibiotics, diagnostics and novel therapies.

Following this, the House of Commons Science and Technology Select Committee held an inquiry into antimicrobial resistance in November 2013. The Society of Biology's response called on the UK Government to act immediately to address AMR via a multi-faceted approach including improving infection prevention and control measures, optimising prescribing practices and prioritising research and development. We indicated that this will require political will and international coordination across both human and animal medicine, as well as new funding.

The Committee's subsequent report, Ensuring access to antimicrobials, calls for the Government to take immediate and decisive action, particularly regarding the stewardship of current antimicrobial agents and the development of new treatments. Government is urged to undertake immediate scoping of pricing alternatives, and to demonstrate how they plan to incentivise organisations to invest in new antimicrobials on a global basis. The report emphasises that the life sciences sector must be encouraged to re-engage in this field before the pipeline of antimicrobial agents runs dry.

The Committee also highlight the need for the development of rapid diagnostics to ensure that antibiotic prescribing is founded on good diagnoses. The Society welcomed these recommendations. The Government subsequently published a response to the House of Commons Science and Technology Committee report Ensuring access to working antimicrobials.

Action

A number of organisations and campaigns exist to address antimicrobial resistance. One such organisation is Antibiotic Action. Supported by a number of our member organisations, this group seeks to inform and educate both the scientific community and the general public about the need for discovery, research and development of new antibiotics. It contributes to national and international activities and acts as a conduit through which all stakeholders are educated on the importance of new ways to treat bacterial infections.