

# Antimicrobial resistance: a light at the end of the tunnel?

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Antimicrobial resistance (AMR) is an area of grave concern globally,<sup>1</sup> <sup>2</sup> reflected in the recent UN meeting on the subject to rally worldwide coordinated action to combat the AMR threat.<sup>3</sup> A multipronged approach is required, including reduction in use of antibiotics in agriculture, better stewardship of antibiotics in human medicine, and encouraging development of new antibiotics. Margaret Chan, Director General of WHO commented that, “with few replacement products in the pipeline the world is heading to a post-antibiotic era in which common infections...will once again kill”.<sup>4</sup> Efforts have started to encourage new antibiotic development, but there is a lack of recent evidence on the actual development pipeline.

The National Institute for Health and Care Excellence (NICE) provides advice to the National Health Service (NHS) in England on new treatments. The National Institute for Health Research Horizon Scanning Research and Intelligence centre (NIHR HSRIC) undertakes horizon scanning on behalf of the NHS, including NICE. NICE and NIHR HSRIC have examined the future antibiotic pipeline to determine what agents could potentially receive marketing authorisation over the next 5 years.

We identified 28 new antibiotic indications in development and potentially coming to market within the next 5 years, with a significant number active in high risk areas such as methicillin-resistant *Staphylococcus aureus* or vancomycin resistant enterococci (15), carbapenemase-producing Enterobacteriaceae (6), *Clostridium difficile* (4) and Gram-negative infections (9). At first glance, the quantity of new antibiotic indications appears reassuring; however, most (17) are not novel classes, but are rather next-generation agents derived from existing classes or new combinations of existing agents. Additionally, the 11 agents with novel mechanisms of action are not all active against high-risk systemic, urinary tract, or respiratory infections; four of 11 are indicated for skin or skin structure infections, and one is a topical agent for mildly infected diabetic foot ulcers.

We support the accelerated development of new antimicrobials to combat AMR, but we believe that it is not sufficient to encourage antibiotic innovation in a broad-brush manner; we must accurately define the key gaps in our antibiotic armoury, and prioritise these areas for investment in research and development. This approach requires active cooperation between research institutions, health care economies, the pharmaceutical industry, and governments both nationally and internationally, as set out in the recommendations of the O'Neill review on antimicrobial resistance and the UN high-level meeting, which we fully support.<sup>3</sup> <sup>5</sup>

We declare no competing interests.

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