

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

Leonard, Colm; Ward, Derek; Longson, Carole

DOI:

[10.1016/S0140-6736\(17\)30512-3](https://doi.org/10.1016/S0140-6736(17)30512-3)

License:

Creative Commons: Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)

*Document Version*

Peer reviewed version

*Citation for published version (Harvard):*

Leonard, C, Ward, D & Longson, C 2017, 'Antimicrobial resistance: a light at the end of the tunnel?', *The Lancet*, vol. 389, no. 10071, pp. 803. [https://doi.org/10.1016/S0140-6736\(17\)30512-3](https://doi.org/10.1016/S0140-6736(17)30512-3)

[Link to publication on Research at Birmingham portal](#)

## **Publisher Rights Statement:**

Checked 28/2/2017

## **General rights**

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

## **Take down policy**

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

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.

## References

1. [1](#)
  - o R Sugden, R Kelly, S Davies
  - o **Combating antimicrobial resistance globally**
  - o Nat Microbiol, 1 (2016), p. 16187
  - o [CrossRef](#)
2. [2](#)
  - o R Laxminarayan, D Sridhar, M Blaser, *et al.*
  - o **Achieving global targets for antimicrobial resistance**
  - o Science, 353 (2016), pp. 874–875
  - o [CrossRef](#)
  - o [View Record in Scopus](#)
3. [3](#)
  - o Draft political declaration of the high-level meeting of the general assembly on antimicrobial resistance, United Nations, New York (September, 2016) [http://www.un.org/pga/71/wpcontent/uploads/sites/40/2016/09/DGACM\\_GAEAD\\_ESCAB-AMR-Draft-Political-Declaration-1616108E.pdf](http://www.un.org/pga/71/wpcontent/uploads/sites/40/2016/09/DGACM_GAEAD_ESCAB-AMR-Draft-Political-Declaration-1616108E.pdf) (accessed Sept 30).
4. [4](#)
  - o A Holpuch
  - o **UN meeting tackles the ‘fundamental threat’ of antibiotic resistant superbugs**
  - o The Guardian (Sept 21, 2016) <https://www.theguardian.com/society/2016/Sep/20/un-declaration-antibiotic-drug-resistance> (accessed Sept 23, 2016).
5. [5](#)
  - o J O'Neill
  - o **Antimicrobial resistance: tackling a crisis for the health and wealth of nations. Review on antimicrobial resistance**
  - o <http://amr-review.org/Publications> (December, 2014) (accessed Sept 23, 2016).