

Abstract

Research on Antimicrobial Utilization and Resistance in England 2021–22 (ESPAUR Report) [†]

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The Research Chapter (Chapter 8) of the English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR) Report 2021–2022 showcases the research that has been undertaken and that is ongoing at the UK Health Security Agency (UKHSA) in the field of healthcare-associated infections (HCAIs) and antimicrobial resistance (AMR) from April 2021 to March 2022 [1,2]. These findings were presented at the ESPAUR Report webinar on 23 November 2022.

This chapter highlights the scope and breadth of projects that are underway covering many research and development priorities, including improvements in surveillance and data collection and enhancing insights drawn from them. Work has been directed to the development of novel diagnostics and treatments, as well as improving the evidence base for existing control strategies, including infection prevention and control (IPC), antimicrobial stewardship (AMS), diagnostics, antimicrobials, and novel alternatives (such as vaccination and host-directed therapies). A significant amount of research has been undertaken to improve our understanding of the mechanisms of disease transmission, risk factors for carriage and infection, and the health and economic burden. As well as covering a breadth of topic areas, this research also uses a breadth of methodologies, both quantitative and qualitative, from mathematical modelling to behavioral research, and from exploratory laboratory science to implementation science. The projects covered in the chapter span the majority of the major themes of the national action plan (NAP) for AMR [3], as shown in Figure 1.

Examples of AMR and HCAI research projects from across the NAP's major themes are described in the chapter, with the majority of projects reflecting the themes of 'Stronger laboratory capacity and surveillance in AMR', 'Human infection prevention and control', and the 'Optimal use of antimicrobials'. Further projects cover the themes of 'Basic research', the 'Development of new therapeutics', and 'Development and access to novel diagnostics'. The publication distribution in Figure 2 shows that there is also cutting-edge research underway across the following topics: 'Environmental contamination', 'Better food safety', 'Wider access to therapeutics', 'Development and access to vaccines', 'Better quality assurance', and 'International diplomacy'.



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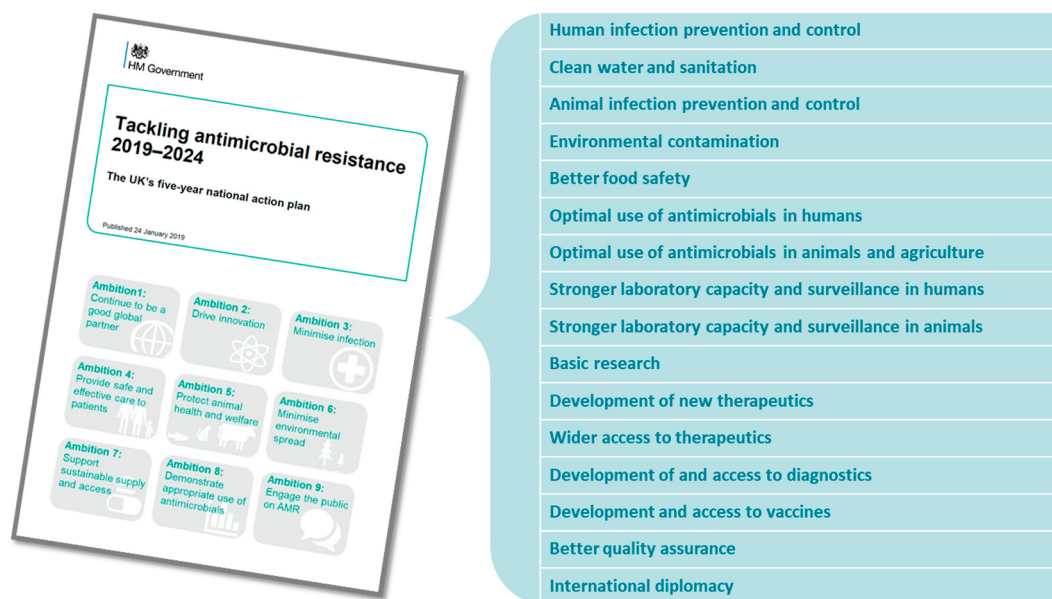


Figure 1. National action plan major AMR themes. Adapted from Ref. [3].

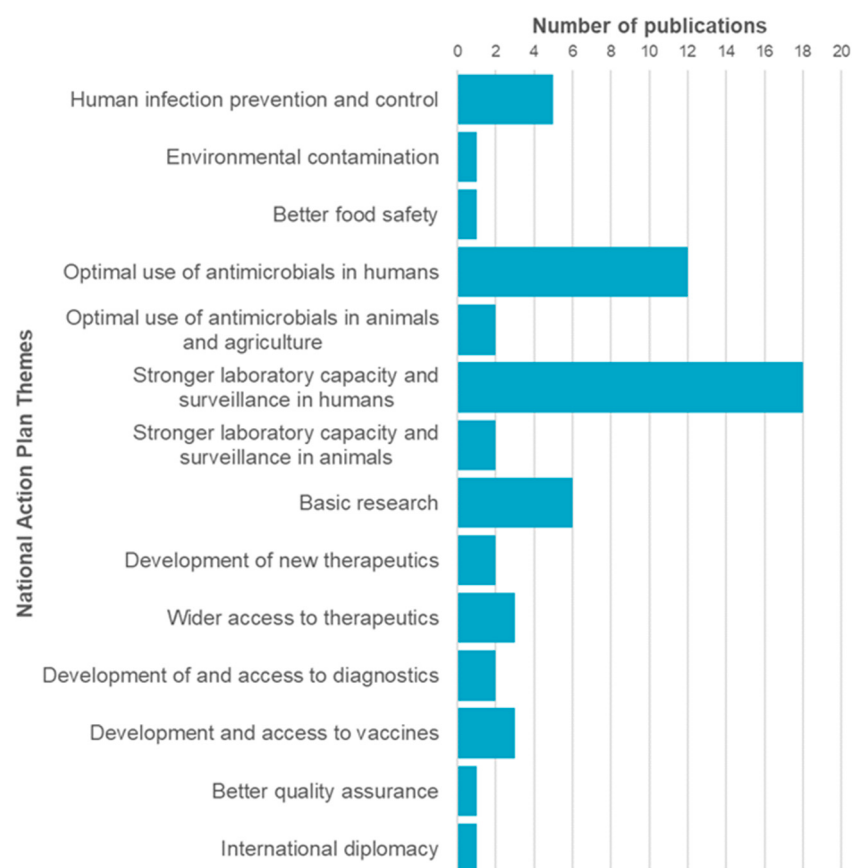


Figure 2. An illustration of the wide distribution of almost 60 publications [4–61] from UKHSA across the NAP's major themes.

Research from the two National Institute for Health Research (NIHR) Health Protection Research Units (HPRUs) in the topic areas of HCAI and AMR, led by Imperial College London and Oxford University in partnership with UKHSA, is highlighted. The HPRUs are multi-disciplinary centers of excellence, with a focus on collaboration, training, and knowledge sharing. An overview of the four main research themes of each HCAI and AMR

HPRU is provided and individual exemplar research projects are described, demonstrating the breadth and scale of the work within the HPRUs. These include, for example, a large-scale observational hybrid sequencing-based study that explores the mobilomes associated with Gram-negative bloodstream infections, and work in collaboration with global expert stakeholders to develop a research roadmap for optimizing antibiotic use in human populations. The work of HPRUs is intended to be translational, e.g., helping to shape the next national action plan. As such, in unity with the goals of HPRUs, this chapter highlights the importance of—and approaches to—embedding knowledge mobilization, optimizing the use of research-generated knowledge, and ensuring that the right audiences are reached in the right way to achieve the greatest impact.

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