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| **Antimicrobial Resistance****Briefing produced by Public Health England’s East of England Healthcare Public Health Team and Health Protection Team – August 2019 (V1.00)** |

This briefing paper has been produced by Public Health England’s East of England Healthcare Public Health Team and Health Protection Team. It is designed to provide easy access to key reference points and useful resources around the antimicrobial resistance agenda for strategic leads and commissioners within Sustainability and Transformation Partnerships (STPs) and Integrated Care Systems (ICSs), and will be updated on a regular basis as new information becomes available.

The information in each section is presented chronologically, with the most recent first. Those resources relevant specifically to NHS organisations are also indicated.

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| State of play, recent developments and way forward |

Antimicrobial resistance (AMR) arises when the organisms that cause infection (microbes) evolve ways to survive treatments such as antibiotic, antiviral and antifungal medicines (collectively termed antimicrobials)1. Resistance is a natural biological phenomenon but is increased and accelerated by various factors such as medicines misuse, poor infection control practices and global trade and travel.

Within AMR, antibiotic resistance is of particular concern: many recent medical advances, such as organ transplantation and cancer chemotherapy, require antibiotics to prevent and treat the bacterial infections that can be caused by the treatment1. Without effective antibiotics even minor surgery and routine operations could become high-risk procedures if serious infections can’t be treated. Without action, deaths attributable to AMR globally could rise to 10 million per year2.

The UK has long taken a leading role in stimulating global action on this issue, adopting a national strategy ahead of international calls to action by the World Health Assembly3 and Council of the EU4. The initial UK strategy set out to slow the development and spread of AMR by focusing activities around a) improving knowledge and understanding, b) antimicrobial stewardship, and c) developing new diagnostics and therapies5.

However, regionally, incidence of key drug-resistant infections, including Carbapenemase-producing Enterobacteriaceae (CPE), *Clostridium difficile* infection (CDI) and Gram-negative bacteraemia, has continued to increase annually while methicillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia has not been eliminated6. Over 70% of these infections are acquired in the community but some of these already-infected individuals are accepted into secondary care centres in the East of England.

The recently revised and updated national action plan7 now focusses on ‘One Health’ approaches to a) reduce need for and unintentional exposure to antimicrobials, b) optimize use of antimicrobials, and c) invest in innovation, supply and access, with the ultimate ambition of containing, controlling and mitigating AMR globally by 20408.

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| National policy and reports |

**NHS Long Term Plan**

The [**NHS Long Term Plan**](https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/) (**January 2019**) requires the health service to continue

supporting the implementation and delivery of the UK [**5-year action plan**](https://www.gov.uk/government/publications/uk-5-year-action-plan-for-antimicrobial-resistance-2019-to-2024) and [**20-year vision**](https://www.gov.uk/government/publications/uk-20-year-vision-for-antimicrobial-resistance) for AMR (**January 2019**). These plans call for local, national and global One Health approaches in collaboration with other nations and partners, with the ambition of containing, controlling and mitigating AMR globally by 2040.

**NICE Impact AMR**

This [**report**](https://www.nice.org.uk/Media/Default/About/what-we-do/Into-practice/measuring-uptake/NICEimpact-antimicrobial-resistance.pdf) (**November 2018**) details how NICE’s evidence-based guidance can change prescribing practice to help slow the emergence of AMR and ensure antibiotics remain effective treatments for managing infections. It includes ambitions for antimicrobial prescribing in primary care, antimicrobial stewardship in secondary care and the specific scenario of sepsis.

**English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR) Report**

This PHE [**annual report**](https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report) (**updated November 2018**) presents national data on antibiotic prescribing and resistance, antimicrobial stewardship implementation, education and engagement activities. It sets a standard to compare antimicrobial use and resistance in successive years and acts as a resource for commissioning and implementing antimicrobial stewardship policies in England.

**Health and Social Care Committee Report on AMR**

This [**report**](https://publications.parliament.uk/pa/cm201719/cmselect/cmhealth/962/962.pdf) (**October 2018**) makes recommendations in 5 key areas for tackling AMR: 1) Priority and political leadership, 2) Pharmaceutical market failure, 3) Antimicrobial use in healthcare, 4) Antimicrobial use in animals, and 5) Antimicrobials and the environment.

**Call to Action on AMR**

This [**report**](https://www.gov.uk/government/publications/antimicrobial-resistance-roundtable-summary-report) (**November 2017**) summarises the discussion between government ministers and CEOs from across the One Health agenda working to tackle AMR. It identifies 10 underpinning principles agreed by the co-hosts, including the UK government, Wellcome Trust and UN Foundation.

**Embedding National Antimicrobial Prescribing and Stewardship Competences into Curricula**

This [**report**](https://www.hee.nhs.uk/sites/default/files/documents/Full%20report%20-%20Embedding%20national%20antimicrobial%20prescribing%20and%20stewardship%20competences%20into%20curricula.pdf) (**August 2016**) by Health Education England summarises the results from a survey on the embedding of national antimicrobial prescribing and stewardship competences into health education curricula at 45 universities. It includes recommendations for health education institutions and other stakeholders.

**Review on AMR**

The [**review**](https://amr-review.org/Publications.html) (**updated May 2016**) examines and boosts awareness of the economic issues surrounding the development, containment and spread of AMR and recommends international level action to increase investment in research and development of new antimicrobial drugs. It has published a series of reports quantifying the future economic impact of rising drug resistance, assessing the development pipeline for new antibiotics and identifying key areas where action is required.

**Global Action Plan on AMR**

This[**action plan**](https://www.who.int/antimicrobial-resistance/publications/global-action-plan/en/) (**2015**), authored by the World Health Organisation, calls for an effective One Health approach involving coordination among numerous international sectors and actors in order to deliver on 5 objectives and thereby ensure treatment and prevention of infectious diseases with quality-assured, safe and effective medicines. The action plan recognises and addresses the variable resources nations have to combat AMR and the economic factors that discourage development of replacement products by the pharmaceutical industry.

**Chief Medical Officer’s Report on AMR and Infectious Diseases**

This [**report**](https://www.gov.uk/government/publications/chief-medical-officer-annual-report-volume-2) (**March 2013**) from the Chief Medical Officer encourages development of new antibiotics and highlights that looking after the current supply of antibiotics is equally important. This means using better hygiene measures to prevent infections, prescribing fewer antibiotics and making sure they are only prescribed when needed

 **Data, guidance, infographics and toolkits**

**AMR Fingertips Profile**

This PHE [**tool**](https://fingertips.phe.org.uk/profile/amr-local-indicators/data#page/0/gid/1938133070/pat/46/par/E39000026/ati/154/are/E38000056) provides indicators arranged in 6 data domains: 1) Supporting NHS England Initiatives, 2) AMR, 3) Antibiotic prescribing, 4) Healthcare-associated infection, 5) Infection prevention and control, and 6) Antimicrobial stewardship.

**Treat Antibiotics Responsibly, Guidance, Education, Tools (TARGET)**

This [toolkit](https://www.rcgp.org.uk/clinical-and-research/resources/toolkits/target-antibiotic-toolkit.aspx) (**updated July 2019**) helps influence prescribers’ and patients’ personal attitudes, social norms and perceived barriers to optimal antibiotic prescribing. It is for use by the whole primary care team within the GP practice or out of hours setting, and includes patient leaflets, resources for clinical and waiting areas, audit toolkits and resources for commissioning and training.

**Dental Antimicrobial Stewardship**

This PHE [**toolkit**](https://www.gov.uk/guidance/dental-antimicrobial-stewardship-toolkit) (**updated** **July 2019**) was developed in collaboration with the Dental Subgroup of PHE’s English Surveillance Programme for Antimicrobial Utilisation and Resistance, the Faculty of General Dental Practice and the British Dental Association. It provides resources to help primary care practitioners promote appropriate use of antibiotics in dental care. It includes information leaflets for patients, guidance for dentists and education, training and audit tools for dental teams.

**Health Matters**

The PHE [**Health Matters collection**](https://www.gov.uk/government/collections/health-matters-public-health-issues) (**updated July 2019**) is a collection of information and resources for public health professionals, local authorities and CCG commissioners. Since the publication of this collection PHE has published specific guidance around [**AMR**](https://www.gov.uk/government/publications/health-matters-antimicrobial-resistance) and [**preventing infection and reducing AMR**](https://www.gov.uk/government/publications/health-matters-preventing-infections-and-reducing-amr)**.** The guidance sets out effective methods to avoid unnecessary prescribing of antibiotics and outlines the importance of infection prevention and control and how it can contribute to reducing AMR.

**All Our Health**

The PHE[**All Our Health framework**](https://www.gov.uk/government/collections/all-our-health-personalised-care-and-population-health) (**updated June 2019**) is a framework of evidence to help healthcare professionals in England understand and maximise the impact on improving health outcomes and reducing health inequalities. Since the publication of this framework PHE has published a resource [**about the framework**](https://www.gov.uk/government/publications/all-our-health-about-the-framework) and another piece of guidance around applying ‘All Our Health’ in relation to [**AMR**](https://www.gov.uk/government/publications/antimicrobial-resistance-amr-applying-all-our-health). The guidance provides examples to enable healthcare professionals to promote antimicrobial stewardship and good infection control practices.

**Practical Guide to Antimicrobial Stewardship in Hospitals**

This [**booklet**](http://bsac.org.uk/practical-guide-to-antimicrobial-stewardship-in-hospitals/) (**April 2019**), produced by the biotechnology company bioMérieux, provides high-level practical recommendations for healthcare workers in hospitals to improve the quality of antibiotic prescribing and thereby improve patient clinical outcomes. Recommendations have been adapted from the National Stewardship Guidance from Australia, the UK (including the Start Smart then Focus toolkit below), USA and other countries

**AMR Resource Handbook**

This PHE [**handbook**](https://www.gov.uk/government/publications/antimicrobial-resistance-resource-handbook) (**updated April 2017**) collates national policy, guidance and supporting materials covering prevention and control of healthcare-associated infections and antimicrobial stewardship in order to aid in the reduction of AMR. It is designed to assist local health and social care professionals in quickly retrieving relevant information provided by PHE, the Department of Health and Social Care and other key stakeholders.

**Integrated Surveillance of AMR in Foodborne Bacteria**

This WHO [**guidance**](https://www.who.int/foodsafety/publications/agisar_guidance2017/en/) (**2017**) is to assist in the establishment and development of programmes of integrated surveillance of AMR in bacteria commonly transmitted by food by taking a One Health approach. This expands on traditional public health surveillance to include multiple elements of the food chain and antimicrobial use data to better understand the sources of infection and transmission routes.

**Code of Practice on the Prevention and Control of Infections**

This [**guidance**](https://www.gov.uk/government/publications/the-health-and-social-care-act-2008-code-of-practice-on-the-prevention-and-control-of-infections-and-related-guidance) from the Department of Health and Social Care (**July 2015**) is for all NHS bodies and providers of independent healthcare and adult social care in England to optimize antimicrobial use and reduce AMR. The law states the code must be taken into account by the Care Quality Commission when it makes decisions about registration and providers must have regard to the code when deciding how they will meet The Health and Social Care Act 2008 (Regulated Activities) Regulations 2014.

**Start Smart Then Focus**

This PHE [**toolkit**](https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus) (**updated March 2015**) is to help organizations demonstrate compliance with the Code of Practice (see above). It includes algorithms for antibiotic treatment and surgical prophylaxis and resources including audit tools, drug charts and antimicrobial review stickers.

**Epic3 Guidelines for Preventing Healthcare-Associated Infections**

These [**guidelines**](https://improvement.nhs.uk/resources/epic3-guidelines-preventing-healthcare-associated-infections/) (**2014**) detail the standard principles for preventing HCAI in hospital and other acute care settings and include recommendations for preventing infections associated with use of short-term indwelling urethral catheters and intravascular access devices.

 **NICE Guidelines and Quality Standards**

[**Antimicrobial stewardship: changing risk-related behaviours in the general population**](https://www.nice.org.uk/guidance/ng63) **(January 2017)**

This NICE guideline is to make people aware of how to correctly use antimicrobial medicines (including antibiotics) and the dangers associated with their overuse and misuse. It also includes measures to prevent and control infection that can stop people needing antimicrobials or spreading infection to others. It aims to change people’s behavior to reduce AMR and the spread of resistant microbes.

[**Antimicrobial stewardship**](https://www.nice.org.uk/guidance/qs121) **(April 2016)**

This quality standard covers the effective use of antimicrobial medicines (including antibiotics) in all settings to reduce the risk of AMR.

[**Healthcare-associated infections**](https://www.nice.org.uk/guidance/qs113) **(February 2016)**

This quality standard is to prevent and control infections in secondary care settings that develop because of treatment or from being in a healthcare setting. It includes monitoring, responsibilities, and policies and procedures in secondary care organisations to reduce the risk of infection in patients, staff and visitors.

[**Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use**](https://www.nice.org.uk/guidance/ng15) **(August 2015)**

This NICE guideline covers the effective use of antimicrobials (including antibiotics) in children, young people and adults. It aims to change prescribing practice to help slow the emergence of AMR and ensure that antimicrobials remain an effective treatment for infection.

[**Infection prevention and control**](https://www.nice.org.uk/guidance/qs61) **(April 2014)**

This quality standard is to prevent and control infection in adults, young people and children receiving healthcare in primary, community and secondary care settings. It includes preventing healthcare-associated infections.

 **Initiatives and Campaigns**

**Antibiotic Guardian**

This ongoing PHE [**initiative**](https://antibioticguardian.com/) invites members of the public, students, educators, scientists and health and social care professionals and leaders to choose a pledge in order to make better use of antibiotics and help save these vital medicines from becoming obsolete.

**Keep Antibiotics Working**

PHE relaunched this national [**campaign**](https://campaignresources.phe.gov.uk/resources/campaigns/58-keep-antibiotics-working) in October 2018 to support government efforts to reduce inappropriate antibiotic prescriptions by raising awareness of antibiotic resistance and hence reducing demand from the public. Resources, including leaflets and posters, are available to download and order for websites, clinical settings and local authority buildings.

**Fighting AMR**

This NHS Improvement [**programme**](https://improvement.nhs.uk/resources/fighting-antimicrobial-resistance/) launched in April 2016, offering hospitals, family doctors and other health service providers incentive funding worth up to £150 million to support expert pharmacists and clinicians review and reduce inappropriate prescribing.

**Tackling AMR**

The National Institute of Health Research launched this [**campaign**](https://www.nihr.ac.uk/explore-nihr/campaigns/tackling-antimicrobial-resistance.htm) to highlight the role research has to play in combating the AMR threat and to support researchers, life science industry and other key players to tackle AMR.

**AMR Campaign Kit**

This [**campaign kit**](http://publichealth.ipsf.org/antimicrobial-resistance-awareness/amr-campaign-kit/) from the International Pharmaceutical Students Federation provides a framework and resources to run a medicines awareness campaign.

**Training opportunities**

**AMR and Infections**

This [**programme**](https://www.e-lfh.org.uk/programmes/antimicrobial-resistance-and-infections/) was developed by Health Education England in collaboration with PHE, NHS England, NHS Improvement, Care Quality Commission and NICE. It supports all health and social care staff to understand the threats posed by AMR and what they can do to help tackle this major health issue. It includes an e-learning session for all clinical and non-clinical staff and other resources to support awareness and education of clinical staff in different care settings.

**Helping to Improve Understanding of AMR**

These [**resources**](https://www.hee.nhs.uk/our-work/antimicrobial-resistance) from Health Education England are to promote awareness of AMR, encourage those prescribing, dispensing and administrating antibiotics to do so responsibly and with an understanding of AMR, and ensure that it is included in the prevention, management and control of infection curricula for human medicine, nursing, pharmacy, dentistry and other professionals.

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