



Public Health  
England

Protecting and improving the nation's health

# **English surveillance programme for antimicrobial utilisation and resistance (ESPAUR)**

## **Report 2017: executive summary**

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# Executive summary

This is the fourth annual report from the English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR). Much of the national data presented in this report is now also available by Clinical Commissioning Group (CCG), Acute Trust, General Practice (GP) or Local Authority on the Public Health England (PHE) Fingertips antimicrobial resistance (AMR) local indicators or related pages that were launched in April 2016.<sup>1</sup> The AMR local indicators receive more than 4,000 unique visits per quarter and have more than 80 indicators available.

Halving the numbers of healthcare-associated Gram-negative bloodstream infections (GNBSIs) by March 2021 is a key government ambition, announced as a key action in Lord O'Neill's Review of Antimicrobial Resistance (AMR). In this report, we highlight the year-on-year increased burden (in terms of the number of individuals) of antibiotic-resistant GNBSIs and urinary tract infections (UTIs), though encouragingly the proportion of GNBSIs that are resistant to key antibiotics has remained broadly stable over the last 5 years. This is in contrast to many other countries globally and most likely reflects good antimicrobial stewardship and rare use of cephalosporins and quinolones in the community settings in England.

In 2016, the commonest cause of BSIs was *Escherichia coli*; of these, 41% were resistant to the commonest antibiotic used to treat infections in hospitals (co-amoxiclav) and almost one in five of these bacteria were resistant to at least one of other key antibiotics, though multi-drug resistance (resistance to three antibiotics) remained uncommon (<5%). This suggests that patients with severe infections, including sepsis, who have risk factors for resistant bacteria may require a combination of antibiotics, such as a  $\beta$ -lactam antibiotic and an aminoglycoside, for the first 24 hours of treatment while waiting for laboratory results to guide the choice of optimal therapy. Patient risk factors for resistant bacteria include those who have received prior antibiotic courses, or with a history of recent or recurrent hospital admissions and/ or the elderly, especially those living in long-term care facilities. The high levels of AMR also highlight the importance of taking patient clinical samples (especially blood and urine) prior to commencing antibiotics in patients who present with infections to the A&E department or while a hospital inpatient, in order to inform antibiotic treatment after the first 24-48 hours.

This report highlights that AMR was common in the more than 1 million UTIs caused by bacteria identified in NHS laboratories in 2016. Current guidelines recommend that urine samples be sent to the laboratory from those individuals with clinical treatment failure, frequent or recurrent UTI or who have a likelihood of a

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<sup>1</sup> <https://fingertips.phe.org.uk/>

resistant infection. Almost two-thirds of samples were taken in community healthcare settings (General Practice [GP], community hospitals, long-term care facilities). We highlight that trimethoprim resistance is very common in laboratory processed urine samples (34%) but that the current recommended first line treatment, nitrofurantoin is currently effective (3%). This supports the PHE infections guidelines to switch from trimethoprim to nitrofurantoin as empiric treatment for UTI before laboratory results are available.<sup>2</sup> To improve data on unselected urines, a sentinel surveillance programme with careful sampling from the populations at risk is required.

Between 2012 and 2016, antibiotic prescribing reduced by 5%, when measured as defined daily doses per 1000 inhabitants per day, with declines across the majority of antibiotic groups. However, significant regional variation in antibiotic use continues to occur.

The number of prescriptions dispensed in the GP setting decreased by 13% between 2012 and 2016 (-2% from 2015 to 2016), largely driven by reductions in use of penicillins. Dental practices dispensed 1 in 5 fewer prescriptions in 2016 compared to 2012 and more than 99% of prescribed antibiotics were in accordance with dental treatment guidelines. Secondary care, despite some progress observed in 2015, has not had a sustained reduction in total antibiotic prescribing. However, from 2015 to 2016 hospitals reduced their use of the ultra-broad spectrum antibiotics piperacillin/tazobactam and carbapenems (both -4%). This is the first step in reducing antibiotic use in hospitals and focussing on using these antibiotics appropriately is key to preventing the emergence and spread of carbapenem-resistant Gram-negative bacteria.

The national importance of reducing unnecessary and inappropriate antibiotic use was demonstrated through the development of NHS antimicrobial stewardship initiatives, namely the Quality Premium (QP) from 2014/15 in primary care and Commissioning for Quality and Innovation (CQUIN) from 2016/17 in secondary care. Over the first two years of the QP, 88% of CCGs met their objective to reduce antibiotic consumption and 83% reduced broad-spectrum antibiotic use to the target level. In the first year (2016/17) of the CQUIN, 37%, 33% and 52% of NHS acute Trusts met their objectives to reduce total antibiotic, piperacillin/tazobactam and carbapenem consumption respectively, to 2013/14 levels; though significantly more reduced their piperacillin/tazobactam and carbapenem compared to 2015/16 levels (66% and 67% respectively). The impact of these interventions on infection-related hospital admissions, length of stay and mortality, led by the Imperial College Health Protection Research Unit, will report shortly.

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<sup>2</sup> <https://www.gov.uk/government/publications/managing-common-infections-guidance-for-primary-care>

Parallel to the GNBSI work, the Prime Minister announced an ambition to halve inappropriate antibiotic prescribing. This report features the outputs of the joint PHE-Department of Health workshop in this area, where it was recommended that all practice reduce total antibiotic prescribing by 10% by 2020/21 and that secondary care reduce total prescribing by a further 1% and use of piperacillin/tazobactam and carbapenems by a further 3% respectively in 2018/19.

This report highlights the initial results of the point prevalence survey of healthcare associated infections (HCAI) and antimicrobial use (AMU) in acute hospitals, performed in 2016. Despite an older population with increased co-morbidities and surgery, there was no significant change in the prevalence of HCAI or AMU between the last survey in 2011 and 2016. In 2016, one in fifteen patients in acute hospitals had an HCAI and one in three were on antibiotics on the day of survey. A higher level of antibiotic resistance was seen in those with an HCAI compared to the rates observed in the all-patient GNBSI and UTI surveillance data, suggesting that HCAIs are more likely to be antibiotic resistant than community infections. Infections were most prevalent among patients on intensive care units (ICUs). This survey highlights the continuing importance of surveillance of Gram-negative infections, ICU patients and antibiotic use in England.

We also present data on use of and resistance to antifungals in this report. The data highlights the variation in testing performed in laboratories, both reference and clinical, and is the first step to improving surveillance of antifungal resistance.

PHE leads, along with professional and partner organisations, the development and evaluation of antimicrobial stewardship toolkits across the healthcare economy. This report features process evaluations of both the dental and GP toolkits, demonstrating their wide global uptake and utility in helping clinicians prescribe antibiotics appropriately.

ESPAUR has led the development of the Antibiotic Guardian professional and public behaviour change and engagement campaign. We report on the activities to increase engagement and its reach to two thirds of the worlds countries and evaluation of its rollout to other countries. We also present evaluations of webinars and training for healthcare professionals through activities to GPs and hospital staff. ESPAUR has also worked closely with PHE marketing team on the national public campaign, Keep Antibiotics Working, that will launch on 23 October 2017.

As in previous reports, updates from our partner organisations in the ESPAUR Oversight Group are presented, underscoring the importance of cross-working and networking to engage and maximise action to control AMR. Contributions from organisation's representatives on the ESPAUR oversight group assist us in ensuring we meet the needs of our stakeholders and the NHS.