



## Medicines Evidence Commentary

commentary on important new evidence from Medicines Awareness Weekly

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### **Antibiotic stewardship: duration of antibiotic treatment for common infections frequently exceeds guideline recommendations**

A large cross-sectional study of UK prescribing data found that the duration of antibiotic prescriptions for common infections in primary care frequently exceeded national guideline recommendations. The most common reason for antibiotic prescribing was for respiratory infections, and more than 80% of prescriptions for acute cough and bronchitis, acute sore throat, acute otitis media and acute exacerbations of COPD were for longer than recommended. Substantial reductions in antibiotic exposure can be achieved by prescribing antibiotics in line with [NICE and Public Health England guidance on managing common infections](#).

#### **Overview and current advice**

Tackling antimicrobial resistance is a [global health priority](#). The UK [20-year vision](#) and [5-year national action plan on antimicrobial resistance \(2019–2024\)](#) focuses on three key ways of tackling antimicrobial resistance:

- reducing need for, and unintentional exposure to, antimicrobials;
- optimising use of antimicrobials; and
- investing in innovation, supply and access.

In its guideline on [antimicrobial stewardship: systems and processes for effective antimicrobial medicine use](#), NICE defines antimicrobial stewardship as an organisational or healthcare-system-wide approach to promoting and monitoring the judicious use of antimicrobials in order to preserve their future effectiveness. Public Health England (PHE) has published an [antimicrobial resistance resource handbook](#), which collates national resources on antimicrobial resistance, antimicrobial stewardship and infection prevention and control. PHE has also collated information on addressing antimicrobial resistance, including 2 national toolkits to support best practice: the [TARGET antibiotics toolkit](#) for primary care and [‘Start smart, then focus’](#) for secondary care.

NICE and PHE have jointly published [antimicrobial prescribing guidelines](#) for a range of common infection topics, which include recommendations on the choice, dosage and course length of antibiotics, if appropriate. NICE and PHE have also brought together their information on managing common infections into a [summary table](#) to enable organisations to keep their local antimicrobial formularies up to date.

Historically, it was thought that longer antibiotic courses should be used to prevent the development of antimicrobial resistance in the infection being treated. However, current concerns mainly relate to the emergence of resistance in common commensal bacteria, rather than in bacteria causing the infection. Evidence suggests that the longer the exposure to antibiotics, the greater the development of resistance, which leads to a greater risk of resistance in future infections. Overuse of antibiotics also puts people at risk of side effects (such as diarrhoea, rash and thrush); and cumulative exposure to antibiotics is a major risk factor for *Clostridium difficile* infection. National strategies to reduce inappropriate antibiotic prescribing have mainly focused on the initial decision to prescribe antibiotics. Evidence about the contribution of excessive treatment duration to antibiotic overuse in primary care is limited.

The NICE interactive flowcharts on [antimicrobial prescribing for common infections](#) and [antimicrobial stewardship](#) bring together all related NICE guidance and associated products on this topic. NICE has also produced a key therapeutic topic on [antimicrobial stewardship: prescribing antibiotics](#).

## New evidence

A cross-sectional study of data from The Health Improvement Network (THIN) database, evaluated the duration of prescriptions for antibiotic treatment of common infections in English primary care ([Pouwels et al. 2019](#)). This was compared with the recommended course durations for first-line antibiotic choices, based on PHE guidance from 2013. Antibiotic use for chronic or recurrent infections, repeat prescriptions or use for prophylaxis were excluded.

From 2013–2015, 931,015 consultations resulted in an antibiotic prescription for 13 included indications, most commonly for acute cough and bronchitis (41.6% of consultations), acute sore throat (25.7%), acute otitis media (8.9%) and acute sinusitis (8.2%), cellulitis (5.9%) and acute cystitis (5.7%). Other included indications were acute exacerbation of COPD, community-acquired pneumonia, acute prostatitis, pyelonephritis, impetigo, Scarlet fever and gastroenteritis.

For all 13 indications together, about 1.3 million days were beyond the durations recommended by guidelines. This was mainly due to respiratory indications, which accounted for more than two-thirds of prescriptions. A substantial proportion of prescriptions for acute cough and bronchitis (85.6%), acute sore throat (83.8%), acute otitis media (86.4%) and acute exacerbation of COPD (89.0%) exceeded guideline recommendations for course length. Fewer prescriptions exceeded recommendations for non-respiratory indications, but more than half of prescriptions for cystitis in women (54.6%) were for longer than recommended. The duration of antibiotic prescriptions exceeding recommendations were lower for pyelonephritis, cystitis in men, impetigo and cellulitis (4 to 18% of prescriptions). Furthermore, antibiotics for cystitis in men and acute prostatitis were often prescribed for shorter durations than recommended.

Similar results were seen when the analysis took account of co-morbidities and previous use of medicines that may influence the duration of antibiotic treatment, such as immunosuppressants and corticosteroids. There were also no differences in results between adults and children.

Current recommendations on antibiotic course length are in some cases less than was recommended in PHE guidance from 2013. For example, if antibiotics are appropriate for people with acute sinusitis, the recommended course duration has reduced from 7 days to 5 days ([NICE antimicrobial prescribing guideline on acute sinusitis](#)). The current recommended durations for antibiotics (when they are appropriate) for the 13 indications considered in this study are below.

**Table: Current recommended durations for antibiotics**

Indication	Current recommended duration for first choice antibiotics	Current guidance
Acute sinusitis	5 days	<a href="#">NICE guideline NG79</a> (October 2017)
Acute sore throat	5–10 days for phenoxymethylpenicillin (5 days for other antibiotics)	<a href="#">NICE guideline NG84</a> (January 2018)
Acute otitis media	5–7 days	<a href="#">NICE guideline NG91</a> (March 2018)
Acute cough and bronchitis	5 days	<a href="#">NICE guideline NG120</a> (February 2019)
Community-acquired pneumonia	5 days (for CRB65=0) 7–10 days (for CRB65=1–2 or CRB=0 and poor response)	<a href="#">PHE guidance</a> (February 2019) ( <a href="#">NICE guideline in development</a> , expected publication September 2019)
Acute exacerbation of COPD	5 days	<a href="#">NICE guideline NG114</a> (December 2018)
Acute cystitis (non-pregnant women)	3 days	<a href="#">NICE guideline NG109</a> (October 2018)
Acute cystitis (men)	7 days	
Acute prostatitis	14 days then review	<a href="#">NICE guideline NG110</a> (October 2018)
Pyelonephritis	7–10 days for co-amoxiclav and cefalexin 7 days for ciprofloxacin 14 days for trimethoprim	<a href="#">NICE guideline NG111</a> (October 2018)
Cellulitis	7 days (14 days if slow response)	<a href="#">PHE guidance</a> (February 2019) ( <a href="#">NICE guideline in development</a> , expected publication September 2019)
Impetigo	7 days	<a href="#">PHE guidance</a> (February 2019) ( <a href="#">NICE guideline in development</a> , expected publication December 2019)
Scarlet fever	10 days for phenoxymethylpenicillin (5 days for clarithromycin)	<a href="#">PHE guidance</a> (February 2019)
Gastroenteritis	5–7 days	<a href="#">PHE guidance</a> (February 2019)

## Commentary

**Commentary provided by Dr Tessa Lewis, General Practitioner, Principal, Blaenavon, Gwent and Chair of the NICE managing common infections advisory committee**

This study provides a useful insight into antibiotic prescribing in general practice in 2013–15.

Most of the excess days treatment were due to respiratory infections, particularly cough and bronchitis. The decision about whether to prescribe in these conditions can be complex and requires consideration of the individual's risk factors. However, the decision on what antibiotic course length to use for acute cough should be more straightforward. The authors noted that, “we found similar results when restricting to healthy patients without comorbidities or past use of immunosuppressive drugs or

corticosteroids, suggesting that comorbidities do not play a major part in the decision process about the duration of the antibiotic prescribed”.

Guidance on length of treatment for cough ([PHE common infections guidance](#)) was consistent for several years prior to 2013. The [NICE guideline on antimicrobial stewardship](#) reminds the prescriber to follow prescribing guidelines and use the shortest effective course, and that stewardship teams provide feedback and advice to prescribers who prescribe antimicrobials outside of local guidelines when it is not justified.

### **If there are likely to be changes to clinical practice in the UK – how might these be shown?**

This study by Pouwels and colleagues suggests that course length is an important area for antimicrobial stewardship. Local audit is needed to establish whether these findings from 2013–15 remain an issue. It should be recognised that evidence for antibiotic course lengths in guidance is often limited and based on expert consensus. Therefore, discussion with prescribers is important to explore both the rationale for current practice as well as the awareness of current guideline recommendations.

This study and updated guidance suggest that course length for the following acute conditions may be of particular interest and require active engagement with prescribers:

- Cough and bronchitis – high prevalence and accounted for the majority of excess treatment days.
- Sore throat – the recommended course length for phenoxymethylpenicillin changed from 10 days to 5–10 days ([NICE guideline](#) [2018]).
- Sinusitis – the [NICE guideline](#) (2017) advised against an antibiotic prescription in the first 10 days and recommended a course length of 5 days (previously 7 days).
- Urinary tract infection in men and pyelonephritis – under-treatment was seen in the study (shorter than recommended course lengths).

Declaration of interests:

Tessa Lewis declared no interests.

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## **References**

Pouwels KB, Hopkins S, Llewelyn MJ et al. (2019) [Duration of antibiotic treatment for common infections in English primary care: cross sectional analysis and comparison with guidelines](#). *BMJ* 364: l440

### **About this Medicines Evidence Commentary**

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