

Up to two-fifths of antibiotic prescriptions in the US could be inappropriate

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As much as two fifths (43%) of antibiotic prescriptions in the United States could be inappropriate, warn researchers in a study published by *The BMJ* today.

Such a high degree of potentially unnecessary prescribing has important

implications for antibiotic stewardship—efforts to reduce [antibiotic use](#) in response to the growing threat of antimicrobial resistance.

Inappropriate antibiotic prescribing is a major public health problem. Studies examining the appropriateness of antibiotic prescribing rely on a "documented indication" in patients' [medical records](#). But these are not always required, leading to [missing data](#) and underestimates of antibiotic use.

So a team of researchers based in Oregon set out to estimate how often [antibiotics](#) are prescribed without a documented indication in non-hospital (ambulatory) care settings in the United States, and what factors are associated with lack of documentation.

Using data from the National Ambulatory Medical Care Survey (NAMCS), they analysed 28,332 visits (representing over 990 million visits across the United States) to office-based [healthcare providers](#) in 2015.

Of these visits, around 130 million (13%) involved an antibiotic prescription and were included in the study.

The researchers then used official diagnostic codes to identify whether each antibiotic prescription was accompanied by appropriate, inappropriate, or no documented indication.

According to their criteria, 57% (around 74 million) [antibiotic prescriptions](#) were deemed appropriate, while 25% (around 32 million) were considered inappropriate, and 18% (around 24 million) lacked either an appropriate or inappropriate documented indication.

This means that as much as 43% of prescriptions in this analysis could be potentially inappropriate, say the researchers.

When they looked at the data in more detail, they found that 20% of adults aged 18-64 and 22% of adults aged 65 years and older received antibiotics without a documented indication compared with 8% of patients under 18 years.

Patients who spent more time with a physician were more likely to receive an antibiotic without indication (15% for those with shorter visits vs 21% with longer visits). Patients with [chronic conditions](#) were also more likely to receive an antibiotic without indication (22% for those with a chronic condition vs 14% for those without).

Primary care providers had a significantly lower percentage of antibiotic prescriptions without an indication documented (12%) compared with other specialists who commonly prescribe antibiotics (24%) as well as those in all other specialties (29%).

There were no differences in prescribing without indication by type of antibiotic, ethnicity, day of the week, or across seasons.

This is an observational study, so can't establish cause, and the researchers point to some limitations, such as relying on only the first five diagnostic codes documented in the health record, and not assessing [prescriptions](#) provided as part of virtual or telephone consultations.

Nevertheless, the results are based on nationally representative survey data, so are highly generalisable to the US population.

As such, the researchers say this study "demonstrates that indications for antibiotic prescribing are not always adequately documented and this can lead to underestimates of the true burden of unnecessary antibiotic use in ambulatory care settings."

They add: "Our study identified a wide range of factors associated with

antibiotic prescribing without a documented indication, which may be useful in directing initiatives aimed at supporting better documentation."

A comprehensive coding system is central to effective antibiotic stewardship, says Professor Alastair Hay at the University of Bristol, in a linked editorial. This should involve ensuring that a diagnostic code is recorded every time an antibiotic is prescribed, and that all infections are coded (not just those for which an antibiotic is being prescribed).

Along with other strategies, such as better infection control, vaccination, and improved diagnostic precision, this information could help clinicians reflect on and refine their prescribing behaviour, he concludes.

More information: Antibiotic prescribing without documented indication in ambulatory care clinics: national cross sectional study, *BMJ* (2019). [DOI: 10.1136/bmj.l6461](https://doi.org/10.1136/bmj.l6461)

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