

Antibiotics don't cure toothache: can clinical audit reduce antibiotic prescribing in primary dental care?

Laurie Powell¹, Katy Kerr², Louisa Griffiths³, Justine Howard⁴, Wendy Thompson¹

1. Division of Dentistry, Faculty of Biology, Medicine & Health, University of Manchester, Manchester, UK 2. NHS England WT&E Thames Valley & Wessex,
3. Buckinghamshire, Oxfordshire and Berkshire West Integrated Care Board, 4. Betsi Cadwaladr University Health Board, NHS Wales

Background

- Dentistry is responsible for about 7% of prescribed antibiotics in UK primary care but studies indicate up to 80% are inappropriate.¹
- The College of General Dentistry (CGDent) provides evidence-based guidance for antimicrobial prescribing in dentistry.²
- Engaging NHS dental practices in audit, although challenging, is demonstrated to be effective at reducing the amount and improving the appropriateness of antibiotic prescribing.
- The UK Health Security Agency (UKHSA) developed a dental antimicrobial stewardship toolkit to provide primary care dental teams with resources to promote responsible antimicrobial prescribing.³
- Integrated Care Boards (ICBs) have a core statutory duty regarding quality improvement. This provision mandates that ICBs must exercise their functions with a view to securing continuous improvement in the quality of health services provided and in outcomes achieved.⁴
- Buckinghamshire, Oxfordshire and Berkshire west ICB invited dentists in primary care to take part in a funded collaborative audit project looking at their antibiotic prescribing patterns as part of a local quality improvement initiative.

Aims

To investigate the extent to which a funded collaborative audit among NHS dentists, offering best practice antimicrobial stewardship education, could improve appropriate prescribing when treating patients presenting with toothache.

Methods

- The study was classed ethically exempt by University of Manchester, No 2025-22814-40252, 24th March 2025.
- Buckinghamshire, Oxfordshire and Berkshire west ICB recruited local, Thames Valley NHS dentists to a collaborative audit by email.
- Participants consented to their anonymised data being collated, analysed and disseminated with a remuneration package set at £390 per completed audit cycle.
- Participants were asked to display the NHS poster "antibiotics don't cure toothache" from the UKHSA toolkit in the practice (figure 1).
- Self-reported data were collected using the UK Dental Antimicrobial Stewardship Toolkit self-audit tool before submission via a MS forms bespoke document. (Microsoft, USA)³
- Baseline data were collected for a minimum of the first 20 patients treated for toothache in unscheduled appointments from April to August 2025.
- In October 2025 a verifiable CPD educational session was funded by NHS England Workforce, Training and Education and provided by Dr Wendy Thompson, a College of General Dentistry (CGDent) expert.
- Further data were collected, November 2025 to February 2026, with additional questions to elicit the experience of participating in the study.
- Before and after data were compared using descriptive statistics.
- Thresholds for compliance were set at >84% of prescriptions per dentist representing high compliance and <54% as low compliance in accordance with CGDent guidance.⁴



Figure1 (Reproduced under Crown Copyright)

Results

- 43 participants consented, of which 62% (n=27) completed the first cycle and 51% (n=22) completed both cycles.
- Variation in the number of cases existed between each practitioner: between 20 to 75 cases in cycle 1 and between 20 to 40 in cycle 2.
- 52% (n=14/27) reported high compliance with guidelines before the intervention while 30% (n=8/27) indicated moderate to low compliance. (Comparison between the two cycles seen in figure 2)
- Following the CPD intervention, 73% (n=16/22) reported high compliance.
- 95% (n=21/22) reported their prescribing habits had changed between audit cycles.
- The second cycle provided an opportunity to reflect on the common reasons participants had highlighted for prescribing variations. (figure 3)

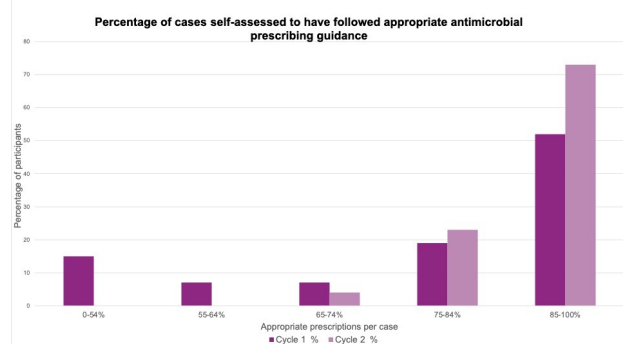


figure 2

Common reasons participants had highlighted for prescribing variations.

Variation theme	Examples
Clinical decisions	- Antibiotic type / dose varies from recommendations - Antibiotics prescribed when local measures not attempted - Antibiotics prescribed for alveolar osteitis / pericoronitis without signs of systemic involvement
Patient factors	- Anxious or poorly cooperative patients making clinical interventions difficult - Complex medical history requiring onward referral – patients prescribed antibiotics in interim
Capacity, time and access barriers	- Over-capacity / under-staffing - Too short appointment times for clinical interventions

figure 3

Conclusion

- The UKHSA Dental AMS Toolkit self-audit provides a clear framework to assess antibiotic use, helping to identify appropriate prescriptions and areas for improvement.
- Antimicrobial stewardship education seemed to improve appropriate prescribing.
- Audit provided a valuable tool for reflecting on both prescribing habits and clinical decision-making.
- Further work is needed to understand the barriers behind the low participation in the study and to explore the obstacles that led to the prescribing variation.

References

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