Proceeding Paper

Dental Antimicrobial Prescribing in the Midlands: A Regional Action Plan [†]

Shima Chundoo [1,*], Conor Jamieson [2], Rob Tobin [3] and Anna Hunt [4]

1 Regional Leadership Fellow, Royal Wolverhampton Hospitals NHS Trust, Wolverhampton WV10 0QP, UK
2 Regional Antimicrobial Stewardship Lead, NHS England, Birmingham B2 4BH, UK
3 Urgent Care Managed Clinical Network West Midlands, Primary Care, Birmingham B37 7TR, UK
4 Dental Public Health, NHS England, Birmingham B2 4BH, UK
* Correspondence: s.chundoo1@nhs.net
† Presented at the 6th Antibiotic Guardian Shared Learning and Awards, Antibiotic Guardian, 2 May 2023; Available online: https://antibioticguardian.com/antibiotic-guardian-2022-shared-learning-awards/.

Abstract: The aim of our project was to create a resource to support an improvement in dental antibiotic prescribing. The initial phase considered antimicrobial prescribing activity, through NHSBSA data collection, which demonstrated that prescribing in the Midlands was higher than the England average. The second phase involved a targeted action plan through the creation of a bespoke regional website. It is a single resource combining the latest evidence-based guidance to tackle inappropriate prescribing and antimicrobial resistance. The national toolkit on Dental Antimicrobial Stewardship was updated for the Midlands, including adapted audit tools. Communication tools were developed, involving patient discussion tools and a multi-professional awareness campaign.

Keywords: dentistry; antimicrobial; antibiotic; antimicrobial resistance; website; governance; audit

1. Project Overview

Dental professionals are key stakeholders in tackling antimicrobial resistance (AMR). The UK Government has set tangible targets to tackle AMR as part of the National Action Plan, including to reduce UK antimicrobial use in humans by 15% by 2024 [1]. It has been estimated that primary care dental prescribing accounts for an estimated 7.4% of all antimicrobial prescriptions in England (excluding the private sector and secondary care) [2].

A survey of antimicrobial prescribing amongst dentists in ten English local authorities revealed suboptimal prescribing, including for inappropriate clinical situations and under time pressures [3]. COVID-19 certainly appears to have exacerbated the threat of AMR. Studies appear to suggest that the number of antibiotic prescriptions administered in primary care settings has increased, despite the overall reduced number of appointments [4]. Dental antibiotic prescribing during the pandemic was 20% higher in 2020 compared with the previous year [5]. Antibiotic prescribing increased within the Midlands and was one of the five highest regions within the UK across the pandemic [5].

There are further challenges in regard to the collection of prescribing, or indeed dispensing, data which may not necessarily reflect true prescribing. Overall, there is a lack of appropriate interventions to communicate and target AMR strategies within the Midlands region.

The aim of this project was to create a resource to support an improvement in dental antibiotic prescribing. Further objectives are included to present key prescribing data by different systems. This project comprised two phases. The initial phase considered antimicrobial prescribing activity within the Midlands from data collected by the NHS Business Services Authority (Newcastle Upon Tyne, UK). The results demonstrated that prescribing in the Midlands, particularly the east Midlands, was higher than the England average, as

seen in Figure A1. Amoxicillin was the most prescribed antibiotic, as seen in Figure A2. This directly conflicts with recent guidance published by Antimicrobial Prescribing in Dentistry: Good Practice Guidelines, which currently recommends phenoxymethylpenicillin instead of amoxicillin [2].

The second phase involved a targeted regional action plan. Prescribing activity data across the Midlands was presented at local and national meetings by the regional leadership fellow. This permitted an open dialogue with practitioners and key stakeholders, which was enhanced through anonymous feedback and polls. It also enabled a targeted discussion, using tangible figures, to raise awareness. These discussions crystallised the need for a single resource that practitioners can easily refer to for up-to-date guidance and support.

The regional leadership fellow created a bespoke website dedicated to AMR in dentistry. It was designed for patients, the public, professionals and practices. It is a novel single resource combining the latest evidence-based guidance and information to tackle inappropriate prescribing and AMR within dentistry. It is freely accessible through mobile and desktop formats.

Upon centralising antibiotic stewardship information, there was a noted lack of recent updates on the national dental antimicrobial stewardship website, with historic links and new resources missing from the information. The regional leadership fellow updated the national toolkit on Dental Antimicrobial Stewardship to incorporate recently published antimicrobial guidance and new e-learning resources. Audit is a critical step in stewardship, and it provides practitioners with tangible figures on individual practice, which can then be used to drive changes to lead to an improvement in prescribing activity. The current audit had a lack of uptake with clinicians in our region and the regional leadership fellow sought to improve user engagement by specifically adapting the national audit for regional use within primary and secondary care settings. The audit tool was made easier to navigate through drop-down functions and clearer design. This should enable streamlined use of the audit and improve compliance.

The role of non-clinical staff in facilitating a cohesive antimicrobial stewardship message was very much highlighted, as they are the first frontline staff to communicate with patients suffering from toothache. To address this, additional communication tools were developed by the regional leadership fellow. Firstly, a patient discussion tool to assist non-clinical staff when dealing with difficult antibiotic conversations was created, whilst safe-guarding patient care. Secondly, a professional awareness campaign which displays the key aspects of stewardship and how to make an antibiotic pledge was developed. It can be used through a variety of formats (screensaver, poster or printout) for a range of staff members.

2. Outcomes and Impact

2.1. Regional Website Creation

There is a bespoke single-resource website dedicated to tackling AMR and stewardship, which is free to access. It is designed for patients and professionals alike. It covers several domains including stewardship and audit, with the latest links to learning modules and guidance. Further domains are planned, including common infections and additional signposting.

Meaningful engagement is critical to demonstrate that our community is actively engaging with our regional plan and using the latest resources/toolkits to improve practices. Google Analytics are enabled on the website and will be used to continually monitor/track engagement. Although website hits may not necessarily demonstrate direct behaviour change, it is hoped that Google Analytics will demonstrate a measured change in regional engagement with antimicrobial resistance initiatives through website hits. Ultimately, website engagement will demonstrate proof of concept and our regional development.

2.2. Updated Audit Tools

The national audit tool was updated for use within the Midlands and within primary and secondary care settings. Microsoft Excel was used to simplify the audit spreadsheet, with the addition of drop-down functions, which should reduce the time taken to input data. The clearer design and drop-down functions should be easier to navigate and ultimately enable improved compliance with our recommendations. This will enable practices to submit their audits for further incentives, including social media publicity and awards, which will further help to spotlight good practice.

2.3. Communicational Tools

Firstly, a patient discussion tool was created to assist non-clinical staff when dealing with difficult antibiotic conversations, whilst safe-guarding patient care. It is vital that frontline team members are supported in having AMR discussions, with a simple three-step strategy. Secondly, a professional awareness campaign was developed which displays the key aspects of stewardship and how to make an antibiotic pledge. It should help to signpost stakeholders whilst demonstrating engagement.

We plan to review the outcomes of our three key initiatives over a period of 1 year. A range of measured outcomes are planned, including measuring prescribing activity, audit submission and website hits through Google Analytics, (Google 2023, online).

3. Future Development

There are a number of possibilities for our regional project. Firstly, the website is growing, with additional domains planned to further support antibiotic prescribing and tackle AMR. Ongoing updates are planned to ensure that links, communication and interaction with our website are maintained. It is vital to ensure that our website continues to meet the needs of our region. However, we recognise that, long-term, the website will look to be hosted as part of the NHS England website. Google Analytics will be used to monitor and track engagement within our regional action plan. As a region, we believe that a single resource for professionals and the public on dental antimicrobial stewardship and resistance is a fantastic opportunity to reach a wide audience and emphasise a clear message.

Secondly, we recognise the importance of engaging our interprofessional colleagues to assist when patients present with dental infection/conditions. As such, we plan to incorporate an updated list of urgent care practitioners and out-of-hour practices to further signpost on our website. We believe that early intervention and collaboration is key to developing a sustainable long-term plan for tackling antimicrobial resistance. We aim to foster deep connections with adjacent colleagues to promote and support all team members involved in dental prescribing and patient management. As such, dental infection guidance and emergency care signposting have been planned with pharmacy undergraduates at Aston University to further develop interprofessional understanding and contribute to our shared goal. Ultimately, we plan to extend this package towards multi-professional resources and webinars to assist with our regional plan. This will enable a cohesive, multi-professional and collaborative approach to AMR for the future.

Thirdly, we plan to drive regional engagement further by tackling regions with high prescribing activity. Additional meetings and data presentations are planned to further highlight differences in prescribing activity and support practitioners to become more compliant. Practices will be encouraged to submit audit results for further incentives, such as AMR Champion of the Month and social media publicity.

The website and project will continue to develop our website further and engage our region through additional input from the incoming clinical fellow and local Dental Chairs. Ultimately, the aim of our resources is to improve antibiotic prescribing. We hope that by centralising information into a single resource, which is free to access and houses several domains and tools, our regional practitioners will be successful in improving their prescribing activity and tackling AMR.
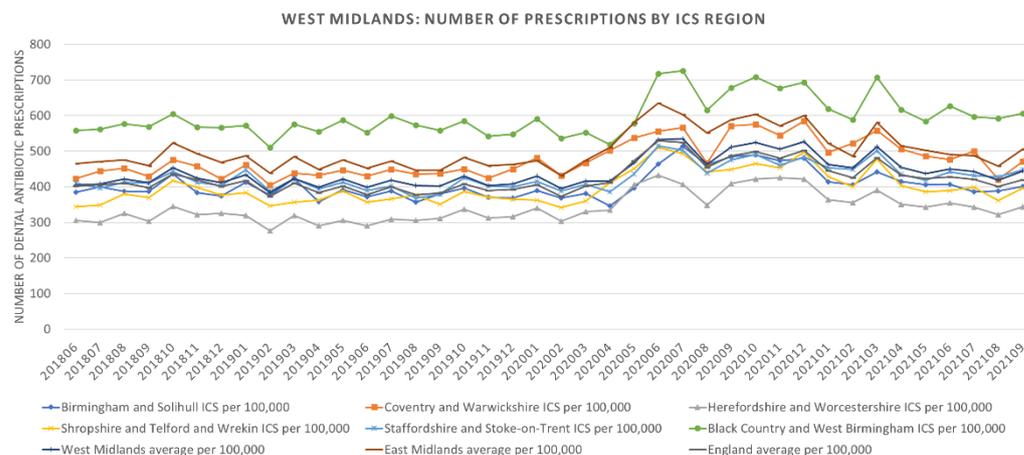
Appendix A

Figure A1. Number of prescriptions in the west Midlands per 100,000, by integrated care systems, and using ONS mid-year population estimates.
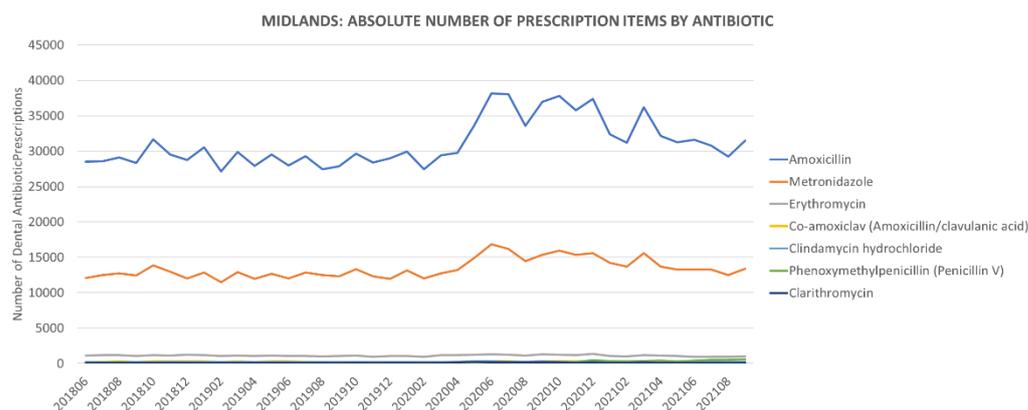
Figure A2. Absolute number of prescription items by antibiotic in the Midlands.

References

1. Tackling Antimicrobial Resistance 2019–2024: The UK's Five-Year National Action Plan. Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1070263/UK_AMR_5_year_national_action_plan.pdf (accessed on 8 August 2022).
2. Palmer, N. (Ed.) *Antimicrobial Prescribing in Dentistry: Good Practice Guidelines*, 3rd ed.; Faculty of General Dental Practice (UK) and Faculty of Dental Surgery: London, UK, 2020.
3. Palmer, N.A.O.; Pealing, R.; Ireland, R.S.; Martin, M.V. A study of therapeutic antibiotic prescribing in National Health Service general dental practice in England. *Br. Dent. J.* **2000**, *188*, 554–558. [CrossRef] [PubMed]
4. Armitage, R.; Nellums, L.B. Antibiotic prescribing in general practice during COVID-19. *Lancet Infect. Dis.* **2020**, *21*, e144. [CrossRef] [PubMed]
5. Shah, S.; Wordley, V.; Thompson, W. How did COVID-19 impact on dental antibiotic prescribing across England? *Br. Dent. J.* **2020**, *229*, 601–604. [CrossRef] [PubMed]