



# Can antibiotic prescribing recover its downward trajectory during 2021?

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**T**he COVID-19 pandemic has been described as the first truly global event in the history of mankind, affecting every person in the world. Twelve months ago, it took the world by surprise. Or appeared to. In fact, a pandemic of some sort was expected. Robin Marantz Henig, author of *A Dancing Matrix*, reminds us that, as long ago as 1990 *experts were identifying conditions that could lead to the introduction of new, potentially devastating pathogens – climate change, massive urbanisation, the proximity of humans to farm or forest animals that serve as viral reservoirs – with the worldwide spread of those microbes accelerated by war, the global economy and international air travel.*<sup>1</sup> The response to COVID has been based on rapidly evolving evidence resulting in a seemingly endless changing set of policies and guidelines. This article aims to compare the rapid response to COVID-19 with another, albeit slow-motion, pandemic: antibiotic resistance.

## The new media stars

During the year following the first imposed steps to restrict the spread of COVID-19 there

has been no shortage of ‘experts’ on virology, epidemiology and infection prevention and control (IPC) sharing their firm opinions, making decisions on our behalf, updating us on a daily basis and becoming media stars in their own right. At times, it has been perplexing to interpret the information accurately and some only hear either the most appealing reassurances or translate what is offered as cynical manipulation. Clearly the unpredictability of this novel virus underpins the challenge of management. Public safety messaging has, by design and necessity, been repetitious and perhaps tedious and sometimes patronising, giving the impression that not much has changed day by day. Crisis fatigue continues to be a significant risk to compliance with both regulatory and advisory measures while, at the same time, fear of attending perceived hot spots of transmission like dental practices and misinformation about the safety of vaccines is causing disproportionate paralysis for some.

## The lightning speed of change

In reality, there has been a continual development and transformation of national

policies, influenced by science, growing evidence and best guesswork. IPC dogma has been challenged and guidelines changed, or at least amended, at lightning speed. It has affected our own world of dentistry and many have repeatedly asked for more science and evidence and less risk averseness in the guesswork. At the height during 2020, Dental Protection answered three times the normal daily numbers of requests for advice from members and, along with other professionally-led organisations, presented regular panel webinars attended by thousands of members to assist in clarifying the rapid changes in guidance and answering frequently asked questions.

## The other pandemic

In the deep shadow of the anxieties to prevent loss of life through COVID-19 transmission is the other slow-motion truly global pandemic. Antimicrobial resistance (AMR) is such a risk to public health that it has been compared to the threat presented by climate change and global terrorism.<sup>2</sup> Effective antibiotics protect patients from potentially fatal diseases and, because of their existence, procedures (such as major surgery and cancer chemotherapy) can be provided at low risk. As antibiotics become increasingly ineffective due to the development and spread of resistant

infections, even minor surgeries and routine operations could become high-risk procedures.<sup>3</sup> Standard treatments for infections will also become ineffective, and infections will persist and spread more easily among populations. It is estimated that within thirty years, more people will die worldwide from antimicrobial resistant infections than from cancer.

Big pharma is more attracted to the development of vaccines and profitable medicines. The economics are inescapable. Developing a vaccine subsidised by governments, and with a future market-place where everyone on the planet would be treated at least twice and possibly annually for years to come, is extremely lucrative. Why would they wish to invest in new antibiotics which would be restricted to use for situations in which all other antibiotics no longer worked. The cost per unit would be huge and with no guarantee of returns. Big pharma has voted with its feet and, in many cases has terminated antibiotic programmes.<sup>4</sup> It may be said that the preparatory research and work in vaccine production has literally paid dividends in the global collaboration to bring COVID-19 transmission under control.

### When people really need antibiotics, they really need them to work

Meanwhile, the absence of antibiotics in the pipeline, despite the enthusiastic efforts of small and middle-sized pharmaceutical and biotech companies, presents the world with a complex global health problem that leaves everyone vulnerable. Clinical studies have shown that resistance occurring when a patient takes antibiotics persists in that patient's microbiome for up to 12 months.<sup>5</sup> Furthermore, these bacteria may develop resistance not only to the causative drug but also to several others. Exposing a patient to antibiotics when *not* necessary (e.g. 'just in case' or to meet patient demands) increases the risk that antibiotics will fail for that patient when they *are* necessary (e.g. to treat sepsis). It also increases the risk that bacteria resistant to antibiotics will spread to the patient's families, friends and other contacts. Before every decision to prescribe antibiotics, care must be taken to assess the risk of antibiotic resistance developing for the individual patient as well as spreading more widely across society.

### COVID-19 and AMR

The extent to which the COVID-19 pandemic is impacting overall levels of AMR is neither known nor properly understood yet. Some

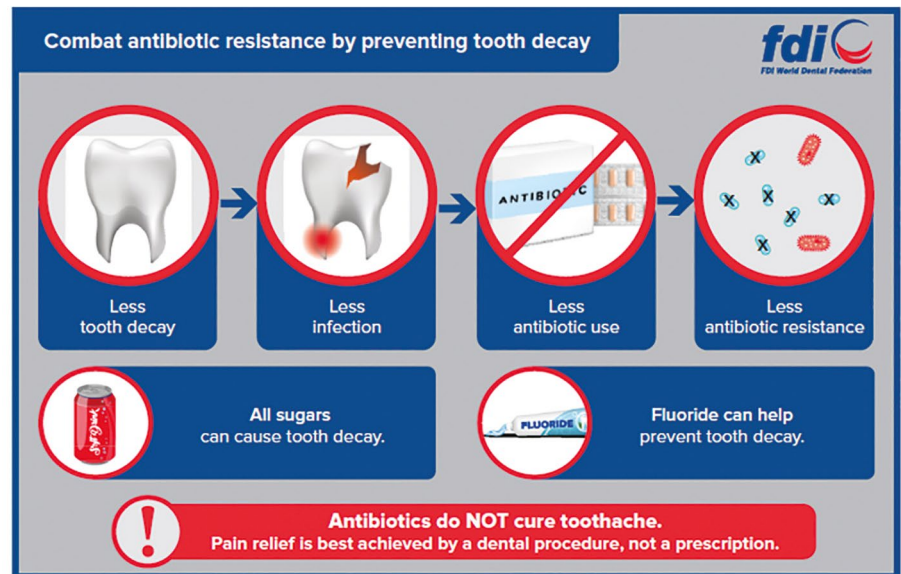


Fig 1 Combat antibiotic resistance by preventing tooth decay

predict the COVID-19 pandemic may have led to reduced antibiotic prescribing due to reductions in the spread of bacterial infections such as respiratory tract infections. Improved IPC practices in healthcare facilities and in the community may have created this additional benefit.<sup>6</sup> By contrast, dental infections are non-communicable diseases: preventing them involves oral hygiene, low sugar diet advice and routine dental examinations to address concerns before they become an infection which might require antibiotics.

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### Antibiotic stewardship in dentistry

Dentistry, in the UK in recent years has made real progress in effective antibiotic stewardship (ABS).<sup>7</sup> Overall, antibiotic prescribing by dentists reduced by 24.4% in contrast with a fall of 14.8% throughout all primary care settings in England between 2010 and 2017. The UK is ahead of many countries in the availability of accessible published guidance. Nevertheless, Dental Protection's dentolegal consultants assisting dentists with GDC investigations are more than familiar with charges that a registrant's fitness to practise is impaired by failing to

comply with published prescribing guidance. Prescribing guidance is published by the Faculty of Dental Practice (FGDP) and British National Formulary (and its user-friendly interpretation by Scottish Dental Clinical Effectiveness Programme (SDCEP)). The FDI World Dental Federation's white paper, *The essential role of the dental team in reducing antibiotic resistance*, provides global leadership, highlighting the importance of optimising antibiotic prescribing as well as preventing dental infections and raising awareness about antibiotic resistance among the wider community (Fig. 1).

### The 'triple A' approach

As part of the UK's emergency response to the COVID-19 pandemic, dental practices in England were instructed to stop providing routine, non-urgent, face to face care on 25 March 2020. A network of urgent dental care hubs (UDCs) were established locally for referral of patients who required active clinical intervention. Until a level of service was resumed by general dental practices on 8 June 2020, general dental practitioners (GDPs) were expected to carry out assessment and provide advice remotely by telephone. The AAA approach to be adopted for patients with urgent dental needs comprised: *Advice, Analgesics and Antibiotics where appropriate*. The addition of *...in line with prescribing guidance* was a later qualification.

The timescale for establishment of the UDCs was variable across the country and, while some providers were ahead of the game,<sup>8</sup> many GDPs were left for days with nowhere

to refer patients in pain for necessary clinical interventions. Dental Protection received calls from members concerned that referral protocols required them to have prescribed antibiotics (sometimes more than one course) even when the diagnosis indicated their use would be pointless. Not surprisingly, it emerged later that numbers and rate of antibiotic items dispensed by pharmacists to NHS patients between April and July in 2020 were 25% higher than the same period in 2019.<sup>9</sup> Shah et al, commenting on these data, reflected: 'Unnecessary dental antibiotic prescribing is a complex behaviour which is influenced by a plethora of clinical and non-clinical factors which affect dentists and patients.'<sup>9</sup> Available data demonstrate some recovery towards 2019 figures of prescribing numbers as dental practices resumed a level of service in June 2020.

### Unprecedented times

The last 12 months have been described as unprecedented times so frequently that it has become an overused coronavirus cliché and a butt of comic irony. But they have also been remarkable for the way in which what had appeared to be fixed precedents could be changed so much more swiftly than we have been persuaded previously. The Human Medicines (Coronavirus and Influenza) (Amendment) Regulations 2020 (*SI 2020/1125*) allows temporary authorisations for vaccines, civil liability and immunity for participants in vaccination programmes, expansion of the healthcare workforce who can administer vaccines, promotion of vaccines and an exemption to a wholesale licensing requirement. The Coronavirus Bill enabled rapid changes and easier deployment of suitable people to where they are most used. It acknowledged that things were not going to be straightforward for a while and introduced compromise solutions.

In the midst of this swift accommodation of the unprecedented situation, the stark reality of the UK's oral health has been revealed. Years of inadequate national investment in prevention of oral disease means that many of our patients need regular, active maintenance of their dentition and periodontal conditions. Dentists found themselves in a situation described as a rock and a hard place as far as the AAA policy is concerned.<sup>10</sup> The AAA approach is no longer extant and should not now be necessary. Nevertheless, more rocks and hard places have emerged. Surgery time remains restricted and the reinstatement of England NHS contract targets has introduced, once again, perverse incentives to delay

treatment for those who need it most.<sup>11</sup> Further delays for patients with acute dental problems mean that restorable teeth will become unrestorable with the accompanying difficult conversations if patients feel the outcome could have been different.

There is no doubt that dentists have been able to fall back on the justification of the unprecedented situation to explain their actions during the last 12 months. If their fitness to practise were challenged, their indemnity advisers would no doubt recommend a review of the GDC's guidance to the Case Examiners<sup>12</sup> to see whether the regulator might be sympathetic.

The guidance is remarkably comprehensive and empathetic but includes the statement: 'In view of the challenges and pressures dental professionals were facing during the COVID-19 pandemic, they should be able to demonstrate how they sought to: *provide the best and safest care they could in line with the best evidence available at the time as well as any other relevant guidance*'.

Care can only be provided with the patient's consent and that applies to a course of antibiotics as much as it does to a root treatment or extraction. The Montgomery case law introduced the concept that valid consent is only achieved if the patient has the opportunity to understand what is materially important to them in respect of the proposed treatment. The risks of adverse outcomes such as anaphylaxis, antibiotic-related colitis, changes to the patient's microbiome and the longer-term impact of selecting for antibiotic resistant bacteria on future medical care are all important. At the same time, dentists have a duty to act in their patients' best interests and provide them with appropriate guidance of what that might entail. The recent NICE consultation on its proposed guidance on Shared Decision Making (SDM) has highlighted that dentistry is ahead of the game in understanding the need for valid consent. It is, after all, unlike most NHS medical settings, an environment in which the patient pays for their care.

Antibiotic prescription numbers have again risen towards the end of 2020 and into 2021. This second wave is hugely disappointing particularly as the new edition of the FGDP prescribing guidance has recently been published.<sup>13</sup> The acute period of the COVID-19 pandemic will come to an end and, indeed, at the time of writing, there is good news about reductions in infection rates and increasing vaccination numbers. Perhaps it is now time to look outside this pandemic box and stop papering over the cracks of

poor access to dental care with inappropriate antibiotics. Justification provided by the COVID-19 pandemic can no longer be relied on. Of course, it is not only down to those writing the prescriptions. Faced with contractual perverse incentives, dentists may have stark choices between offering proper clinical solutions or the financial sustainability of their practices. There has long been a call for properly funded time for the management of acute unscheduled problems. When difficult and rapid solutions can be found, funded and implemented so swiftly during a pandemic to protect the NHS, this really important and simple issue should be easy to solve, shouldn't it? ♦

### References

1. National Geographic. Experts warned of a pandemic decades ago. Why weren't we ready? Available online at: [www.nationalgeographic.co.uk/science-and-technology/2020/04/experts-warned-of-pandemic-decades-ago-why-werent-we-ready](http://www.nationalgeographic.co.uk/science-and-technology/2020/04/experts-warned-of-pandemic-decades-ago-why-werent-we-ready) (Accessed March 2021).
2. Thompson W, Williams D, Pulcini C, Sanderson S, Calton P and Verma M. Tackling Antibiotic Resistance: Why Dentistry Matters. *Int Dent J* 2021; doi.org/10.1016/j.identj.2020.12.023
3. World Health Organisation. Global Action Plan on Antimicrobial Resistance. In: 2015.
4. Dahal D and Culp J. COVID and AMR: Crisis Reframes Antibiotics Fight. *Pharmaceutical Executive* 2020; **40**: 12.
5. Costelloe C, Metcalfe C, Lovering A, Mant D, Hay A D. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *Br Med J* 2010; **340**: c2096.
6. Collignon C and Beggs J. CON: COVID-19 will not result in increased antimicrobial resistance prevalence. *JAC-Antimicrobial Resistance* 2020; **2**: dlaa051.
7. Thornhill M H, Dayer M J, Durkin M J et al. Oral antibiotic prescribing by NHS dentists in England 2010–2017. *Br Dent J* 2019; **227**: 1044–1050.
8. Shah A, Bryant C, Patel J et al. COVID-19: establishing an oral surgery led urgent dental care hub. *Br Dent J* 2020; **228**: 957–963.
9. Shah S, Wordley Y and Thompson W. How did COVID-19 impact on dental antibiotic prescribing across England?. *Br Dent J* 2020; **229**: 601–604.
10. Modgill O, Patel G, Akintola D, Obisean O and Tagar H. AAA: a rock and a hard place. *Br Dent J* 2021; doi.org/10.1038/s41415-020-2594-3.
11. British Dental Association. News release: Healthwatch Report: An access crisis that won't be solved by targets. Available online at: <https://bda.org/news-centre/press-releases/Pages/Healthwatch-Report-An-access-crisis-that-won't-be-solved-by-targets.aspx> (Accessed March 2021).
12. General Dental Council. Supplementary advice for GDC decision makers on factors specific to COVID-19. Available online at: [www.gdc-uk.org/about-us/who-we-are/case-examiners/case-examiner-procedures/covid-19-advice-for-gdc-decision-makers](http://www.gdc-uk.org/about-us/who-we-are/case-examiners/case-examiner-procedures/covid-19-advice-for-gdc-decision-makers) (Accessed March 2021).
13. FGDP(UK). Antimicrobial Prescribing in Dentistry. Available online at: [www.fgdp.org.uk/guidance-standards/antimicrobial-prescribing-in-Dentistry](http://www.fgdp.org.uk/guidance-standards/antimicrobial-prescribing-in-Dentistry) (Accessed March 2021).

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