

# A survey of UK dental health professionals using a medicines information service: what questions do they ask and do they get useful answers?

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## IN BRIEF

- To safely and effectively prescribe medicines, dentists need easy access to up-to-date, evidence-based information.
- A UK medicines information service is available to advise dental health professionals with questions about medicines and prescribing.
- This paper describes the findings of a survey of dental health professionals who used the service, illustrating their common questions and opinions of the service.

Dentists prescribe a limited range of medicines but it is important that they consider the effects of all medicines their patients are taking when providing dental care. In the UK, a national medicines information (UKMi) service funded by the National Health Service is available to advise health professionals on prescribing and to support evidence-based practice. This paper presents the results of a survey of 151 dental health professionals who contacted the UKMi service for advice. Enquiries most commonly involved antibiotics (32%), but dental health professionals also asked for advice on legal issues relating to medicines (10%), and on managing patients receiving bisphosphonates (9%), local anaesthetics (6%) and anti-platelet drugs (5%). One hundred and forty-six (97%) enquirers used the advice provided: for managing current patients, planning the care of future patients, for continuing professional development and teaching others. Two thirds of enquirers used the information provided to check if current or proposed management was appropriate, one half to change therapy and over one quarter to identify, manage or avoid adverse effects or drug interactions.

## BACKGROUND

General dental practitioners (GDPs) prescribe few medicines compared with general medical practitioners. In 2009, National Health Service (NHS) dental prescription items accounted for 0.6% of the total 886 million items dispensed in England.<sup>1</sup> Three-quarters of these were antibacterials, 10% were drugs acting on the oropharynx (mostly mouthwashes, gargles and toothpastes) and 9% were fluoride preparations.<sup>1</sup> Dentists are required to restrict their prescribing to medicines that have uses in dentistry<sup>2</sup> and prescribe and give medicines safely.<sup>3,4</sup> Throughout their working life, dental professionals are expected to maintain their knowledge and

competence,<sup>5</sup> but it can be difficult to keep up-to-date with the high volume of constantly changing, sometimes conflicting, information about medicines. Although they prescribe a limited range and number of medicines, it is important that they consider all medicines their patients are taking, including unfamiliar medicines.<sup>6</sup> A study of 1,275 NHS dentists showed that their knowledge of drugs they commonly prescribe is far from ideal, with practitioners having a poor understanding of antibiotics used in dental practice.<sup>7</sup>

The practise of evidence-based dentistry (EBD) has emerged to help dental health professionals provide the best care for patients.<sup>8</sup> This approach involves a systematic process of collecting and analysing scientific evidence to answer specific clinical questions. In March 2008, the National Institute for Health and Clinical Excellence (NICE) published evidence-based guidance recommending against the use of prophylactic antibiotics to prevent infective endocarditis in patients undergoing dental procedures.<sup>9</sup> In contrast to the traditionally-held belief that bacteraemia following dental procedures causes endocarditis, the NICE review found

no consistent association between dental procedures and increased risk of endocarditis, and the level of bacteraemia to be no higher than after toothbrushing. This recommendation is reflected in the British National Formulary<sup>10</sup> and has been adopted by the Faculty of General Dental Practitioners and the Scottish Dental Clinical Effectiveness Programme.<sup>11,12</sup> Although dental health professionals are reported to welcome EBD,<sup>13,14</sup> implementation of evidence-based guidelines may lag ten years or more behind their publication.<sup>15,16</sup> Research into dental health professionals' knowledge and practice of EBD indicates that awareness of, access to and use of resources is variable.<sup>13,14,17</sup> Few GDPs use the internet or electronic databases (eg Medline) to influence clinical decisions<sup>13,17</sup> and most dental health professionals are unaware of the Cochrane Library,<sup>18</sup> (a collection of electronic databases containing high-quality, independent evidence to inform healthcare decision making).<sup>13,14</sup> The main barriers to practising EBD are lack of time, financial constraints and poor access to resources.<sup>13,14</sup>

In the UK, an NHS-funded national medicines information service (UKMi),

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provided by a network of local and regional centres staffed mainly by pharmacists experienced in literature searching, critical appraisal and the principles of evidence-based medicine, supports all health professionals through its clinical enquiry answering service.<sup>19</sup> In 2008/9, the northwest of England regional (NWMi) Centre answered nearly 900 enquiries from dental health professionals. The aim of this study was to assess what dental health professionals contacting the NWMi Centre ask about, how advice provided to them is used, and whether they find the advice useful for patient care.

## METHODS

This study was part of a larger study evaluating the use of advice provided by the NWMi Centre to a wider range of health professionals (previously reported<sup>20</sup>). All enquiries received by the NWMi Centre are recorded in a bespoke electronic database, MiDatabank. Data collected include enquirer name and contact details, nature of the enquiry, resources used to research the answer, answer provided and method of providing the answer (telephone/email/fax/letter). Answers are researched using one or more medicines information resources, including standard UKMi recommended textbooks and internet-based databases, and UKMi Medicines Q&As (freely-available documents providing evidence-based answers to frequently asked questions about medicines). A multiple-choice questionnaire was designed based on an existing validated service evaluation questionnaire,<sup>21</sup> findings of a literature search<sup>22–29</sup> and a short pilot study. It consisted of three sections. The first section (seven questions) asked for the enquirer's opinion of service quality, including whether they considered their enquiry had been understood and if they received the answer in time for it to be useful. The second section included three questions about whether they used the information provided and how it was used. Section three (two questions) needed to be completed only by enquirers who used the information for patient care and asked what they did with the information. At the end of the questionnaire, respondents had the opportunity to add further comments.

The questionnaire was sent (by post or email) to dental health professionals who

contacted the NWMi Centre with an enquiry between September 2008 and March 2009. If a dental health professional contacted the centre more than once during this time they were sent only one questionnaire in response to their first enquiry, in order to avoid questionnaire fatigue. In the six-month study period, 1,720 enquiries were answered by the NWMi Centre, of which 349 (20%) were from dental health professionals. Of these, 205 were first enquiries and eligible for study inclusion. The questionnaire was sent two weeks after the enquiry was answered to allow sufficient time for the enquirer to act on the information provided. Non-responders were sent a reminder questionnaire four weeks after the first mailing. Research ethics committee approval was not sought since this research was a service evaluation.<sup>30</sup>

## DATA ANALYSIS

Enquirer questions and NWMi Centre answers were recorded in a medicines information enquiry answering Windows software application (MiDatabank 2.0, CoAcS Ltd). Questionnaire responses were collated, stored and analysed using survey software (SNAP for Windows) and spreadsheets (Microsoft Excel 2003 for Windows). Validity of data entry using survey software was assured by double data entry of a random selection of 5% of returned questionnaires, conducted by a member of the research team (JR) not involved in data entry. No errors were found. Simple descriptive statistics were used to summarise respondents' data.

## SURVEY RESULTS

Of 205 questionnaires sent out, 151 (74%) were returned. Respondents included 135 (89%) GPs, six (4%) secondary care practitioners (hospital dentists or oral and maxillofacial surgeons), three dental nurses, two dental hygienists, two dental lecturers, one dental therapist, one practice manager and one receptionist.

Table 1 shows the topics of enquiries submitted by respondents. The most common questions were about antibiotics (32%), with over half of these being about prophylaxis. Fifteen (10%) enquirers asked about legal issues relating to use of medicines in dentistry and 14 (9%) had an enquiry about managing a patient taking a bisphosphonate. Between 3 and

**Table 1 Topics of enquiries received from respondents (n = 151)**

Enquiry topic	Number (percentage) of respondents
Antibiotics	48 (32)
Antibiotic interactions	12 (8)
Antibiotic prophylaxis	25 (17)
Brain abscess	1 (1)
Endocarditis	12 (8)
Immunosuppression	10 (7)
Joint replacement	2 (1)
Choice of antibiotic	11 (7)
Legal issues	15 (10)
Bisphosphonates	14 (9)
Local anaesthetics (LAs)	8 (6)
Allergy	1 (1)
Contraindications	3 (2)
Interactions	3 (2)
Use in pregnancy	1 (1)
Antiplatelet drugs	8 (5)
Choice of therapy (not involving antibiotics)	8 (5)
Corticosteroid cover	8 (5)
Adverse effects	7 (5)
Availability of medicines	6 (4)
Drug interactions (not involving antibiotics or LAs)	5 (3)
Drugs in pregnancy	5 (3)
Warfarin	5 (3)
Drug identification	4 (3)
Dosage	3 (2)
Other	7 (5)

6% of enquiries each involved a request for advice on managing patients taking antiplatelet drugs or warfarin, or the use of local anaesthetics. Table 2 gives details of some of the enquiries received with a summary of the answer given and the resources used. In 41 (27%) enquiries, a UKMi Medicines Q&A was used to provide the answer.

Ninety-nine percent of respondents considered the advice provided answered their question (144 of 145 who answered this question) and 97% subsequently used the advice (146 of 151). 144 respondents provided data on what they used the

Table 2 Examples of enquiries received and answers given

Enquiry	Answer	Resources used
Antibiotic interactions	Metronidazole does not interact with methotrexate and can be prescribed for this patient.	Manufacturer's summary of product characteristics.
A patient taking methotrexate needs an antibiotic for a dental infection. Amoxicillin interacts with methotrexate. Is metronidazole safe to prescribe?		Stockley's Drug Interactions (online database).
Antiplatelet drugs	Aspirin and clopidogrel should not be stopped. However bleeding time is likely to be prolonged. Do the extraction early in the day to allow time to manage any problems, be prepared to pack and suture the socket and advise the patient on how to avoid dislodging the clot.	UKMi Medicines Q&A: Surgical management of the primary care dental patient on antiplatelet medication.
A patient taking aspirin and clopidogrel needs a tooth extraction. Should the antiplatelet drugs be stopped?		
Availability of medicines	Aphthasol is a US product containing amlexanox. Two preparations (Aphtheal and Aftasol) containing amlexanox are licensed in the UK but have never been marketed. A Swedish company has rights to market Aphthasol in Europe but cannot say when they will market it in the UK. Currently Aphthasol can be imported from the US via a hospital or community pharmacy.	Internet search.
A university dental hospital department wants information on the availability of Aphthasol 5% oral paste in the UK.		European and UK medicines regulator websites.
		Manufacturer's website/medical information department.
		Drug import company.
Bisphosphonates	Do not stop the bisphosphonate. Advise the patient about a small risk of BONJ, signs and symptoms to report and the need for good oral hygiene. Do not prescribe antibiotics. Extract the tooth and follow up the patient at 3-4 weeks to ensure the socket has healed and there is no evidence of ONJ; refer promptly to secondary care if problems occur.	Local dental hospital bisphosphonate guidelines.
A patient taking alendronate needs a tooth extraction. What advice do we give about managing the risk of bisphosphonate-induced osteonecrosis of the jaw (BONJ)?		British Dental Association Factfile on bisphosphonates.
Corticosteroid cover	A tooth extraction under local anaesthesia is considered to be a minor surgical procedure. Local anaesthetics do not provoke the stress response. The patient does not need corticosteroid cover.	British National Formulary
A patient needs a tooth extracted under local anaesthesia. He had a corticosteroid injection in his shoulder last week. Will he need corticosteroid cover?		In-house evidence-based review (prepared following a literature search for published papers and national guidance).
Legal issues	Since April 1 <sup>st</sup> 2006, schedule 2 and 3 controlled drugs (including temazepam) must be prescribed on a FP10PCD form. There are two versions available – a personalised form containing the prescriber's details (FP10PCDNC) and a non-personalised form (FP10PCDSS). These should be ordered from your local primary care trust.	NHS Business Services Prescription Pricing Division website.
A dentist wrote a private prescription for temazepam which a community pharmacist refused to dispense. How can he prescribe temazepam for his patients?		UKMi Medicines Q&A: How should dentists prescribe, store, order and dispose of controlled drugs?
		British Dental Association.
Local anaesthetic interactions	Adrenaline given as part of a dental local anaesthetic does not significantly interact with quetiapine, lithium or venlafaxine. However using an aspirating syringe and giving no more than two 2.2mL cartridges containing 1:80,000 adrenaline will minimise effects on blood pressure, should it be inadvertently injected intravenously.	Textbooks/Manufacturer's summary of product characteristics.
A patient taking quetiapine, lithium and venlafaxine has been told he must not have adrenaline. He has previously had tachycardia after local anaesthesia using adrenaline. Does adrenaline interact with antipsychotics?		Stockley's Drug Interactions (online database).
		UKMi Medicines Q&A: What is the clinical significance of potential drug interactions with local anaesthetic preparations used in primary care dentistry?

information for (see Table 3). One hundred and twenty-nine respondents (90%) used it for managing a current patient and 65 (45%) for planning the care of future patients. Nearly one third of respondents used the information for their own continuing professional development (CPD) and 24% for training or teaching others.

Of the respondents who used the information to inform the care of current or future patients, 99% (n = 141/142) considered the advice useful. One hundred and thirty-eight provided further details on how it was

Table 3 Respondent use of information provided in response to enquiries (n = 144)

Use of the information	Number (percentage) of respondents using the information <sup>a</sup>
For managing current patients	129 (90)
For managing future patients	65 (45)
For continuing professional development	45 (31)
For training or teaching	35 (24)
Other	7 (5)
For use in research	2 (1)

<sup>a</sup>Totals add up to more than 100% as respondents could choose more than one option.

used (Table 4). The most common use was to check if current or proposed management was appropriate (64%,  $n = 88/138$ ), such as when choosing an antibiotic for the management of infection or checking whether it is safe to extract a tooth from a patient taking two antiplatelet drugs. Over one quarter of respondents (29%) used the advice to identify, manage or avoid adverse effects or drug interactions. Although a substantial proportion of enquiries involved adverse effects, only one enquirer used the advice to report an adverse effect to the UK's medicines regulatory authority. In 66 (48%) enquiries, the advice provided was used to make a change to therapy, either to start, supply or sell a medicine (24%), stop a medicine (14%), change a dose, dose frequency or form, or course duration (7%), or to change the route of administration (4%). One fifth of enquirers used the information to advise a colleague about managing a patient, and one fifth also used it to educate a patient (or their relative or carer) about their medicines.

With regard to respondents' opinions of the quality of the service, all respondents were satisfied with how it was provided – all were able to contact the service at their first attempt, were happy with the way their enquiry was initially handled and were confident that their question was understood (all 151/151). For the 49 (34%) respondents who did not need immediate advice, 46 (94%) said a time-frame for a response had been agreed with them (three were unsure). Ninety-nine percent of respondents said the advice was provided in time to be helpful ( $n = 148/150$ ; one respondent did not answer this question). Six (4%) respondents did not use the information provided, four because it was no longer required. For 117 (77%) enquirers the answer was provided in less than one hour; 138 (91%) were answered within one day. Most enquiries (134, 89%) were answered by telephone, 14 (9%) by email and three (2%) by letter. Of the 134 enquirers answered by telephone, additional information was sent by email or letter to 28 (21%).

## DISCUSSION

The survey shows that dental health professionals contacting the UKMi service with a question about medicines consider the advice provided to be useful in caring

**Table 4** Respondent use of advice provided in caring for patients ( $n = 138$ )

Use of the advice	Number (percentage) of respondents using the advice <sup>a</sup>
To check that current or proposed management is appropriate	88 (64)
To identify, manage or avoid an adverse effect or drug interaction	40 (29)
To start, supply, sell or recommend a medicine	33 (24)
To advise another health professional on the management of a patient	30 (22)
To educate or inform a patient or their relative/carer	26 (19)
To stop a medicine	19 (14)
To change a dose, dose frequency, dose form or course duration of a medicine	9 (7)
Other use – details not provided	8 (6)
To identify a medicine	6 (4)
To produce guidelines, protocols, patient group directions, etc.	5 (4)
To change the route of administration of a medicine	5 (4)
To ensure a medicine is stored or administered correctly	4 (3)
To identify a supplier of a medicine	4 (3)
To simplify a patient's medication regimen	3 (2)
To monitor a patient	1 (1)
To inform completion of an adverse effect report to the medicines regulatory agency	1 (1)

<sup>a</sup>Totals add up to more than 100% as respondents could choose more than one option.

for patients. They use it to check if the current or proposed management plan for a patient is appropriate, and to plan the care of future patients. Nearly half (48%) use the information to make changes to their patient's drug therapy and over one quarter use it to identify, avoid or manage an adverse effect or drug interaction. They also use it for their own continuing professional development, for training or teaching purposes, and to educate patients and/or their carers.

Most enquirers contacting the NWMi Centre work in primary care and the majority of these are GDPs. The UKMi network has about 200 local centres based within hospitals so secondary care practitioners are more likely to access their services rather than contacting one of the 16 regional centres. Relatively few dental nurses, hygienists or therapists use the medicines information service. Although these professional groups may have responsibility for giving medicines, GDPs are the only group among primary care dental health professionals with a prescribing role; it is therefore expected that most enquiries will be from GDPs. In the future,

dental hygienists and therapists giving or supplying medicines under patient group directions may have greater need for a medicines information service.

Enquiries to the NWMi Centre from dental health professionals are most commonly about antibiotics; this is expected as latest prescribing figures show that 76% of English NHS dental prescriptions are for antibacterial drugs.<sup>1</sup> In the survey, nearly one fifth of enquiries were about antibiotic prophylaxis, usually in patients at risk of endocarditis or who are immunosuppressed. The remainder of antibiotic-related questions were about drug interactions with antibiotics or involved a request for advice on choice of antibiotic. Given the relatively recent changes to national guidance on endocarditis prophylaxis<sup>9</sup> and evidence showing that decision making about antibiotics by GDPs, like general medical practitioners, requires improvement,<sup>7</sup> support for practitioners around antibiotic prescribing would appear valuable.

Other enquirers contact the service requiring guidance on legal issues around medicines in dentistry. Many calls are



drug-specific, for example asking for advice in understanding the implications of the change in legal status of midazolam from a schedule 4 to a schedule 3 controlled drug, or wanting an explanation of why Duraphat toothpaste, as a prescription only medicine, cannot be sold or supplied without prescription to NHS patients. Other enquiries are about general issues relating to supply or prescribing of medicines. The increasing concern about bisphosphonate-induced osteonecrosis of the jaw has prompted some practitioners to call for advice on an issue for which national guidance is currently lacking. Other enquiries involve local anaesthetics, antiplatelet drugs, corticosteroids and warfarin drugs familiar to GPs but which can still cause uncertainty if used in patients with complicated medical and drug histories. UKMi Medicines Q&A documents relating to drugs in dentistry provide concise evidence-based advice on many of the commonly asked questions received by the medicines information service. They are freely available on the UKMi website and are a useful resource for dental health professionals.

## CONCLUSION

Dental health professionals contacting the UKMi service use the advice provided and consider it useful for patient care, their own continuing professional development and for teaching others. The service supports dental health professionals in their safe and effective evidence-based use of medicines.

To use the UKMi service, contact your nearest regional centre (see inside cover of the *British National Formulary*) or your local centre if working in secondary care.

To access UKMi dental Medicines Q&As, visit [www.ukmi.nhs.uk/activities/specialistServices/](http://www.ukmi.nhs.uk/activities/specialistServices/)

To report an adverse effect with a medicine, visit [www.yellowcard.gov.uk](http://www.yellowcard.gov.uk)

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