Oral Health Management of Patients at Risk of Medication-Related Osteonecrosis of the Jaw: Dentist Surveys

In March 2017, the Scottish Dental Clinical Effectiveness Programme (SDCEP) published guidance on the *Oral Health Management of Patients at Risk of Medication-related Osteonecrosis of the Jaw* (MRONJ). This guidance provides recommendations, advice and information to help dental practitioners manage the routine dental care of patients prescribed these drugs and supersedes the 2011 SDCEP *Oral Health Management of Patients Prescribed Bisphosphonates* guidance.

To help inform the evaluation and implementation of the MRONJ guidance, TRiaDS conducted pre- and post-publication surveys of primary care dentists.

The aims of the surveys were to:

- explore current practice pre- and post-publication of the guidance;
- explore barriers and facilitators to implementation of the guidance recommendations.

Key Findings

- 218 dentists completed the pre-publication questionnaire and 72 completed the post-publication questionnaire.
- There were no statistically significant differences in the demographic characteristics of participants who only returned the pre-publication questionnaire and those who returned both questionnaires.
- Significantly fewer participants were aware of anti-angiogenic drugs than anti-resorptive drugs both pre- and post-publication of the guidance.
- Participants were significantly more aware of anti-angiogenic drugs post-publication than pre-publication.
- Participants asked patients about current use of anti-resorptive and anti-angiogenic drugs more frequently than they asked about past use both pre- and post-publication of the guidance.
- When taking a medical history, participants asked about past use of both categories of drugs more frequently post-publication of the guidance than pre-publication.
- For higher-risk patients the frequency with which guidance recommended practice was carried out post-publication was higher for performing straightforward extractions in primary care, reviewing healing of extraction sockets no later than 8 weeks, prescribing antibiotic or antiseptic prophylaxis following an extraction.
- Participants indicated that they thought several types of implementation tools and training would be useful to support them manage the oral health of patients at risk of MRONJ including a checklist of the points to cover during consultation, a patient information leaflet and a list of medications.

Summary

The findings provide some evidence that post-publication there is improved compliance with the guidance recommendations in comparison to pre-publication. Several of the tools suggested to support implementation have been provided

This summary presents findings from pre- and post-publication surveys of primary care dentists to inform the evaluation and implementation of SDCEP's *Oral Health Management of Patients Prescribed Anti-Resorptive or Anti-Angiogenic Drugs* guidance.

SDCEP (Scottish Dental Clinical Effectiveness Programme) has a national remit to provide user-friendly, evidence based, clinical guidance in priority areas for dental healthcare in Scotland.

TRiaDS (Translation Research in a Dental Setting) is a multidisciplinary research collaboration working in partnership with SDCEP to increase the implementation of SDCEP guidance through the development and evaluation of theory-informed interventions for change.

Background and Aim

In 2011, the Scottish Dental Clinical Effectiveness Programme (SDCEP) published guidance on the *Oral Health Management of Patients Prescribed Bisphosphonates*. In 2015, the guidance was placed under review to take into account the wider range of drugs that had been implicated in the development of Medication-Related Osteonecrosis of the Jaw (MRONJ).

As a result of the review the 2011 guidance was superseded by the *Oral Health Management of Patients at Risk of Medication-related Osteonecrosis of the Jaw* guidance in March 2017.

To support evaluation of the impact of the 2017 guidance and inform its implementation, TRiaDS conducted pre- and post-publication surveys of primary care dentists.

The overall aims of the surveys were to: 1) explore current practice pre- and post-publication of the guidance; 2) explore beliefs underpinning the barriers and facilitators to the implementation of the MRONJ guidance recommendations; and 3) provide information to support the implementation of the SDCEP MRONJ guidance.

Methods

Design

A before and questionnaire survey.

Sample

A random sample of 500 primary care dental practices was selected from the Practitioner Services Division, Management Information Dental Accounting System. Within each practice a single dentist was randomly selected to achieve a random sample of 500 dentists across 500 practices.

Recruitment

Pre-publication: Sample dentists were invited by letter to take part in the survey. The pre-publication questionnaire and information sheet were included as was a FREEPOST envelope for questionnaire return. Also provided was information about an optional Quality Improvement (QI) (Research) project associated with the survey. Reminders were sent at four weeks and six weeks.

Post-publication: All dentists who had returned a pre-publication questionnaire were invited to complete the post-publication questionnaire six months following publication of the guidance. Reminders were sent at four weeks and six weeks.

Questionnaire Development

The content of the questionnaire was informed by the findings of preliminary interviews with dentists across Scotland during the consultation stage of the guidance development process and underpinned by the Theoretical Domains Framework (TDF).[1] Analysis of the interviews identified specific beliefs salient to the target behaviour; the management of patients at risk of MRONJ. These specific beliefs mapped to eight domains which were taken forward for inclusion in the questionnaire. Within the questionnaire most questionnaire items were measured using a Likert scale with some using a nominal category response set.

Data Handling and Analysis

Ten percent of the data was double entered to check data quality. Analysis was carried out using Stata. Summary descriptives for all items in the questionnaire were produced. Related t-tests, Wilcoxin signed-rank tests or McNemar tests, as appropriate, were used to compare pre- and post-publication responses. Due to multiple testing the *a priori* criterion for statistical significance was $P<0.01$. Multiple regression analysis was used to explore associations between current practice and beliefs.

Governance

All data was anonymised and stored securely in accordance with data protection regulations. NHS Ethical review was not required under Governance Arrangements for Research Ethics Committees (GAfREC).

Results

This paper presents key summary statistics and pre-and post-publication comparisons only. A paper focusing on associations between current practice and beliefs is being prepared for journal publication.

Response Rates

In total 505 pre-publication questionnaires were distributed. This number comprised the original random sample of 500 plus an additional five participants who directly requested to participate in the study. Of the 500, nine were removed from the sample due to factors such as maternity leave, retirement or the recipient no longer working at the practice, giving a final sample of 496. In total 218 questionnaires were returned, resulting in a 44% response rate.

Only the 218 participants who returned a pre-publication questionnaire were sent the post-publication questionnaire. The response rate was 33% (72/218). Fifty-six of these 72 participants completed all aspects of the QI (Research) project.

Demographics

Demographic characteristics of the pre- and post-publication participants are presented in Table 1. Comparison of the demographic characteristics of participants who only returned the pre-publication questionnaire with those who returned both questionnaires found no statistically significant differences.

Table 1 **Demographics**

Demographic variable		Pre-publication n (%)	Post-publication n (%)
Sex	Male	110 (51%)	36 (%)
	Female	106 (49%)	36 (%)
Role	Principal dentist	94 (43%)	35 (49%)
	Associate dentist	119 (55%)	36 (50%)
	Salaried dentist	2 (1%)	1 (1%)
	Other	2 (1%)	0 (0%)
Hours worked	1-8 sessions	101 (47%)	42 (59%)
	9 or more sessions	115 (53%)	29 (41%)
Practice Type	NHS	13 (6%)	3 (4%)
	Mostly NHS	149 (69%)	48 (67%)
	Equal NHS/private	26 (12%)	6 (9%)
	Mostly private	25 (12%)	13 (18%)
	Private	4 (2%)	1 (1%)

Valid responses only. Percent totals may not sum to 100 due to rounding.

Awareness of Anti-resorptive and Anti-angiogenic Drugs and MRONJ

Most participants (95%) were aware of anti-resorptive drugs before reading the pre-publication questionnaire. Significantly fewer participants (64%) were aware of anti-angiogenic drugs (McNemar's chi2(1) = 67.00, P<0.001).

Post-publication, all participants were aware of anti-resorptive drugs before reading the post-publication questionnaire and 82% were aware of anti-angiogenic drugs. Although the gap in participants' awareness of these two categories of drugs had narrowed, it remained statistically significant (McNemar's chi2(1) = 13.00, P<0.001).

Participants who had returned both questionnaires were significantly more aware of anti-angiogenic drugs post-publication (82%) than pre-publication (60%) (McNemar's chi2(1) = 9.14, P=0.003).

Most participants responded that they were aware that patients taking these medications had a very small risk of MRONJ both pre- (96%) and post-publication (99%) of the guidance (Table 2).

Table 2 Awareness of Anti-resorptive and Anti-angiogenic Drugs and MRONJ

	Pre-publication n (%)		Post-publication n (%)	
Before reading this questionnaire were you aware of this category of medication?	**Yes**	**No**	**Yes**	**No**
Anti-resorptive drugs	205 (95%)	12 (6%)	72 (100%)	0 (0%)
Anti-angiogenic drugs	138 (64%)	79 (36%)	59 (82%)	13 (18%)
Are you aware that patients taking these medications have a very small risk of MRONJ?	207 (96%)	9 (4%)	70 (99%)	1 (1%)

Valid responses only. Percent totals may not sum to 100 due to rounding.

Medical History and Risk Assessment

Prior to publication of the guidance when taking a medical history, most participants usually or always asked patients about their current use of anti-resorptive (87%) or anti-angiogenic (63%) drugs. Fewer usually or always asked about past use (anti-resorptive 43%: anti-angiogenic 28%) and differences in the frequency of asking about current and past use of each drug were statistically significant (anti-resorptive $z=10.42$, $P<0.001$: anti-angiogenic $z=9.35$ $P<0.001$).

Post publication the significant differences between the frequencies of asking about current and past use of each drug persisted (anti-resorptive $z=5.34$, $P<0.001$: anti-angiogenic $z=5.33$ $P<0.001$). There were no statistically significant changes in the frequency participants asked about current use of these drugs pre- and post-publication of the guidance. However, they asked about past use more frequently post-publication of the guidance than pre-publication (anti-resorptive $z=-4.13$, $P<0.001$: anti-angiogenic $z=-4.30$, $P<0.001$) (Table 3).

Table 3 Medical History and Risk Assessment

When taking a medical history, do you ask patients about:	Pre-publication n (%)			Post-publication n (%)		
	Never / Rarely	**Sometime**	**Usually / Always**	**Never / Rarely**	**Sometime**	**Usually / Always**
Current use of						
Anti-resorptive drugs?	15 (7%)	12 (6%)	187 (87%)	1 (1%)	4 (6%)	63 (93%)
Anti-angiogenic drugs?	65 (31%)	13 (5%)	135 (63%)	7 (10%)	7 (10%)	54 (79%)
Past use of						
Anti-resorptive drugs?	63 (29%)	58 (27%)	93 (43%)	11 (16%)	14 (21%)	43 (63%)
Anti-angiogenic drugs?	109 (52%)	43 (20%)	59 (28%)	18 (26%)	17 (25%)	33 (49%)
For a patient taking anti-resorptive or anti-angiogenic drugs, I						
Advise the patient the drug is associated with a very small risk of MRONJ	11 (5%)	15 (7%)	190 (88%)	0 (0%)	2 (3%)	70 (97%)
Record the assigned risk level in the patient's notes	77 (35%)	38 (18%)	102 (47%)	19 (26%)	12 (17%)	41 (57%)
Record in the patient's notes that they have been advised of the risk of MRONJ.	43 (21%)	33 (15%)	137 (63%)	8 (11%)	9 (13%)	55 (76%)

Valid responses only. Percent totals may not sum to 100 due to rounding.

Most participants reported they usually or always advised patients about the very small risk of MRONJ both pre- (88%) and post-publication (97%) of the guidance. Fewer usually or always recorded the assigned risk level in patients' notes (pre- 47%: post- 57%) or recorded that patients had been advised of the risk of MRONJ (pre- 63%: post- 76%) (Table 3).

The frequency with which participants advised patients about the very small risk of MRONJ increased post-publication of the guidance (z=-3.16, P=0.002) as did the frequency they recorded the assigned risk level in the patients notes (z=-3.45, P<0.001) and recorded that patients had been advised of the risk of MRONJ (z=-2.77, P=0.005).

Management of Low- and Higher-Risk Patients

The SDCEP guidance recommends that for both low- and higher-risk patients practitioners provide routine dental treatment as normal, perform straightforward extractions in primary care, review healing at eight weeks and do not prescribe antibiotic or antiseptic prophylaxis unless required for other clinical reasons. Current practice of participants in respect of these recommendations both pre- and post-publication of the guidance is presented in Tables 4 and 5.

Table 4 **Management of Low-Risk Patients**

For low-risk patients taking anti-resorptive or anti-angiogenic drugs, I:	Pre-publication n (%)			Post-publication n (%)		
	Never (1,2)	**Neutral (3)**	**Always (4,5)**	**Never (1,2)**	**Neutral (3)**	**Always (4,5)**
Carry out all routine dental treatment in primary care.	2 (1%)	8 (4%)	206 (95%)	0 (0%)	2 (3%)	60 (97%)
Perform straightforward extractions in primary care	16 (7%)	15 (7%)	184 (86%)	0 (0%)	2 (3%)	60 (97%)
Review healing of extraction sockets no later than 8 weeks	56 (26%)	39 (18%)	120 (56%)	9 (15%)	10 (16%)	43 (69%)
Prescribe antibiotic or antiseptic prophylaxis following an extraction	122 (57%)	39 (18%)	54 (25%)	42 (68%)	13 (21%)	7 (11%)

Likert response scale 1 = never to 5 = always. Valid responses only. Percent totals may not sum to 100 due to rounding.

Table 5 **Management of Higher-Risk Patients**

For higher-risk patients taking anti-resorptive or anti-angiogenic drugs, I:	Pre-publication n (%)			Post-publication n (%)		
	Never (1,2)	**Neutral (3)**	**Always (4,5)**	**Never (1,2)**	**Neutral (3)**	**Always (4,5)**
Carry out all routine dental treatment in primary care.	25 (12%)	70 (33%)	116 (55%)	6 (10%)	19 (31%)	37 (60%)
Perform straightforward extractions in primary care	106 (50%)	57 (27%)	49 (23%)	19 (31%)	11 (18%)	32 (52%)
Review healing of extraction sockets no later than 8 weeks	26 (13%)	23 (11%)	157 (76%)	1 (2%)	7 (12%)	53 (87%)
Prescribe antibiotic or antiseptic prophylaxis following an extraction	87 (42%)	37 (18%)	82 (40%)	40 (65%)	10 (16%)	12 (19%)

Likert response scale 1 = never to 5 = always. Valid responses only. Percent totals may not sum to 100 due to rounding.

For low-risk patients, comparison of the responses from participants who completed both questionnaires found that post-publication, the frequency with which guidance recommended practice was carried out was higher for:

- performing straightforward extractions in primary care (z=-3.17, P=0.002);
- reviewing healing of extraction sockets no later than 8 weeks (z=-4.19, P<0.001).

For higher-risk patients the frequency with which guidance recommended practice was carried out post-publication was higher for:

- performing straightforward extractions in primary care (z=-3.60, P<0.001);
- reviewing healing of extraction sockets no later than 8 weeks (z=-3.37, P<0.001);
- prescribing antibiotic or antiseptic prophylaxis following an extraction (z=2.57, P=0.009).

Tools and Training

Participants were asked how useful they believed a range of tools and training options would be to support them manage the oral health of patients at risk of MRONJ, measured on a Likert scale of 1 = not at all useful to 5 extremely useful.

Almost all participants believed that a checklist of the main points to cover during consultation with patients prescribed these drugs (97%, mean 4.9), a patient information leaflet (97%, mean = 4.8) and a list of medications associated with MRONJ (97%, 4.8) would useful (Likert score 4 or 5). Slightly fewer believed that online training (82%, mean 4.4), clinical audit tools (73%, mean 4.1), a poster for the waiting room detailing all the drugs associated with MRONJ (72%, 4.3) and in-practice training (65%, n=4.0) would be useful.

Summary

The findings provide some evidence that post-publication there is improved compliance with the guidance recommendations in comparison to pre-publication. However, the number of participants who returned a post-publication questionnaire was relatively low and this finding may not be generalisable outwith the survey sample. To support the implementation of the guidance a number of supporting tools identified by the survey participants as useful have been provided including patient information leaflets, a list of drugs associated with MRONJ and a national clinical audit.

References

1. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A. Making psychological theory useful for implementing evidence based practice: a consensus approach. *Qual Saf Health Care.* 2005;14.

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