irish dental association

Juncol Journal of the Irish Dental Association

Volume 64 Number 4 August/September 2018

Bad for the bone

Medication-related osteonecrosis of the jaws (MRONJ) review: what Irish dentists need to know, from international guidelines to current controversies

www.dentist.ie

Now available in 50 count boxes!

Diverse patients call for diverse options.

Reintroduced to Rep. Of Ireland contact your local dealer to order

Citanest[®] with Octapressin DENTAL, Prilocaine Hydrochloride 3% w/v Felypressin 0.54 micrograms/ml Solution for Injection

- No adrenaline for medically compromised patients.
- Latex-free cartridges to help avoid allergic reactions.



Each ml contains Prilocaine Hydrochloride 30 mg (66 mg/2.2 ml cartridge) and Felypressin 0.54 µg (1.19 µg/2.2 ml cartridge). This medicinal product contains less than 1mmol sodium (23mg) per dose i.e. essentially sodium free. PA1045/001/001.

Also available Xylocaine® 2% w/v with Adrenaline (Epinephrine) 1:80,000 DENTAL Solution for Injection

For further information, please contact Dentsply Sirona, Building 3, The Heights, Weybridge, Surrey KT13 ONY, UK

Precaution and Contraindications:

Not to be given in infants or when hypersensitivity to the active ingredients or to amide anaesthetics. Avoid in patients with anaemia or congenital or acquired methaemoglobinaemia. Caution in patients with severe and untreated hypertension, patients in poor general condition, severe anaemia, circulatory failure, children, elderly patients, epilepsy, impaired cardiac conduction, impaired respiratory function, and in patients with liver or kidney damage, if the dose or site of administration is likely to result in high blood levels. Patient should avoid inadvertent trauma to the lips, tongue, cheek mucosa or soft palate. Although there is no evidence of harm to the foetus, as with all drugs Citanest with Octapressin should not be given in early pregnancy unless the benefits are considered to outweigh the risks. Adverse reactions to Citanest are extremely rare in dental practice and are usually the result of excessively high blood concentrations due to inadvertent intravascular injection, excessive dosage, and rapid absorption or occasionally to hypersensitivity, idiosyncrasy or diminished tolerance on the part of the patient. In such circumstances systemic effects occur involving the central nervous system and/ or the cardiovascular system. CNS reactions are excitatory and/or depressant, and may be characterised by nervousness, dizziness, blurred vision and tramors, followed by drowsiness, dizzness, blurred vision and tremors, followed by drowsiness, convulsions, unconsciousness and possibly respiratory arrest. The excitatory reactions may be brief or may not occur at all, in which case the first manifestations of toxicity may be drowsiness, merging into unconsciousness and respiratory arrest. Cardiovascular reactions are decremented and may be characterized by branchesian emerging depressant, and may be characterised by hypotension, myocardial depression, bradycardia and possibly cardiac arrest. Allergic reactions are extremely rare. They may be characterised by cutaneous lesions, urticaria, and oedema or anaphylactoid reactions. Detection of sensitivity by skin testing is of doubtful value. Clinically significant levels of methaemoglobin may occur with cyanosis when doses of prilocaine exceed 600mg. Methaemoglobinaemia may occur at lower doses of prilocaine in patients suffering from anaemia, from congenital or acquired haemoglobinopathy or in patients receiving concomitant therapy. Infants are particularly susceptible. Methaemoglobinaemia may be treated by the intravenous administration of a 1% solution of methylene blue at a dose of 1mg/kg over five minutes. Headache, nausea, palpitations, raised blood pressure, dyspnoea, contusion mouth ulceration, injection site necrosis have very rarely been reported. For SMPC (May 2017), search Anaesthetic on dentsplysirona.com/en-gb for more information. You are encouraged to report negative effects to HPRA on www.HPRA.ie

POM

dentsplysirona.com

Dentsply Sirona

THE DENTAL SOLUTIONS COMPANY™

EDITOR	Professor Leo F.A. Stassen
	FRCS (I) FDSRCS MA FTCD FFSEM FFDRCSI FICD
DEPUTY EDITOR	Dr Dermot Canavan BDentSc MGDS (Edin) MS (UCalif)
EDITORIAL BOARD	AnnMarie Bergin RDH
	Dr Iseult Bouarroudj BDS NUI
	Dr Deirdre Coffey BDentSc Dip PCD (RCSI) MFD (RCSI)
	Dr Michael Crowe BSc BDentSc DPDS (Bristol)
	Dr Siobhán Davis BA BDentSc FDS MDentCh (Pros)
	FFD (RCSI) MSc LHPE (RCSI)
	Dr Brett Duane BDS MAM(Health) MPH PhD
	Dr Padhraig Fleming BDentSc (Hons) MSc PhD MOrth
	RCS FDS (Orth) RCS FHEA
	Dr Peter Harrison BDentSc MFD DChDent
	Dr Joe Hennessy BA BDentSc MFD (RCSI)
	DClinDent (TCD) MOrth (RCSEd) FFD (RCSI)
	Dr Mark Kelly BA BDentSc
	Karen Dinneen RDN MEd (TCD)
	Professor Chris Lynch PhD BDS FFD RCSI FFGDP (UK)
	FDS (Rest Dent) RCSI FACD FICD FADM FHEA
	Dr David McReynolds BA BDentSC MFDS RCSEd
IDA PRESIDENT	Dr Kieran O'Connor

IDA CHIEF EXECUTIVE Fintan Hourihan

Fionnuala O'Brien

The Journal of the Irish Dental Association is the official publication of the Irish Dental Association. The opinions expressed in the Journal are, however, those of the authors and cannot be construed as reflecting the Association's views. The editor reserves the right to edit all copy submitted to the Journal. Publication of an advertisement does not necessarily imply that the IDA agrees with or supports the claims therein.

For advice to authors, please see: www.dentist.ie/resources/jida/authors.jsp

Published on behalf of the IDA by Think Media, 537 NCR, Dublin 1 T: +353 1 856 1166 www.thinkmedia.ie

MANAGING EDITOR
EDITORIAL
ADVERTISING
DESIGN/LAYOUT

Ann-Marie Hardiman ann-marie@thinkmedia.ie Colm Quinn colm@thinkmedia.ie Paul O'Grady paul@thinkmedia.ie Tony Byrne, Tom Cullen, Niamh Short



Circulation 1.1.17 – 31.12.17: 3,574 average copies per issue. Audit issue October-November 2017: 3,949 copies Registered dentists in the Republic of Ireland and Northern Ireland.

Irish Dental Association Unit 2 Leopardstown Office Park, Sandyford, Dublin 18. Tel: +353 1 295 0072 Fax: +353 1 295 0092 www.dentist.ie

Follow us on Facebook (Irish Dental Association) and Twitter (@IrishDentists).





ONLINE MEMBER SUPPORT



GO TO www.dentist.ie TO JOIN TODAY!









165 EDITORIAL

- 167 PRESIDENT'S NEWS
- 168 IDA NEWS Mouth Cancer Awareness Day 2018; Moloney Award; Are you compliant?

171 DIARY OF EVENTS

172 FEATURE Pathways to the UK

174 QUIZ

- 174 BUSINESS NEWS All the latest news from the trade
- **180 INTERVIEW** Former Dean and CEO of the **RCSI Faculty of Dentistry** Dr Peter Cowan

MEMBERS ONLY

185 Unwind FEMPI and upgrade the DTSS; Defending general practice; Health and safety

190 PRACTICE MANAGEMENT Dento-legal considerations of MRONJ

193 PEER-REVIEWED

193 Medication-related osteonecrosis of the jaws (MRONJ) review: what Irish dentists need to know, from international guidelines to current controversies M. Cooney, C.J. Henry, M. O'Sullivan, L.F.A. Stassen

203 ABSTRACTS

205 CLASSIFIEDS

210 MY IDA Dr Naomi Rahman

Journal of the Irish Dental Association | Aug/Sept 2018 : Vol 64 (4) 163





Caring Dentist Awards 2018

Are you the Colgate Caring Dentist for 2018?

Patients can nominate their dentist or dental team at www.colgatecaringawards.ie

Awards Ceremony Saturday, December 1st 2018 Clayton Hotel, Ballsbridge, Dublin 4.



Keep Ireland Smiling



A lack of policy and priority

Failures in dental policy, education and services intersect repeatedly in this edition.



In the members' only section, Dr John Nolan, Chairman of the GP Committee of the Association, is unequivocal in his view of the current HSE contract for GPs in the Dental Treatment Services Scheme (DTSS - the Medical Card Scheme). He says that from a financial point of view the contract is a "disaster", outdated and irrelevant. Worse still, given that this is a widely shared view, he says the Association is constantly being put off by the HSE in attempts to deal with the issue. Praising the work of his colleagues on the Committee, Dr Nolan says they are making good progress in serving the particular needs of newly graduated and foreign-qualified dentists, with Dr Dina Dabic acting in a key role. Naturally, he says, much of the future of general dental practice in Ireland depends on the content of the forthcoming National Oral Health Policy. And speaking of that, the President of the Association, Dr Kieran O'Connor, in his news regrets yet another cancellation of the scheduled meeting between the Association and the Minister for Health, Simon Harris. The Policy is scheduled to be launched in the autumn and the Association has had no opportunity to discuss it with the Minister.

Dental education

Our interviewee, the former Dean and CEO of the Faculty of Dentistry in the RCSI, Dr Peter Cowan, reflects on a long career while offering astute observations on the current state of dentistry and dental education. He sets out which areas of practice have made great progress during his career, and also remarks on the very high standard of dental education in Ireland. He is particularly impressed at the level of theoretical knowledge of new graduates, stating that it is well in advance of the level of theory that he and his cohorts graduated with in the 1970s. He does, however, make an observation that we have heard in different forms before: that of the need for further clinical

training for new graduates in dentistry. He would recommend an 'intern year' similar to that undertaken by medical doctors immediately after graduation and says that it is "shameful" that when all the stakeholders in dentistry agree that there should be a user-friendly vocational training-like scheme, that successive governments and Ministers for Health have failed to act. He also calls for training of dental professionals throughout their career to be an integral part of the forthcoming National Oral Health Policy – which, he says, should include the need to start oral healthcare with the youngest in society so that good habits are established early. These positions are all consistent with IDA policy and when set alongside the work of the Association, echo the sentiments of Dr O'Connor when he wonders about the status of dentistry and oral health within the Department of Health.

MRONJ instruction list

In a peer-reviewed paper, Dr Maeve Cooney and colleagues have provided a very useful guide to what Irish dentists need to know about medication-related osteonecrosis of the jaws (MRONJ). This condition is a potentially severe adverse drug reaction, resulting in progressive bone destruction of the jaws. In their paper, the authors state that knowledge of the risk factors and aetiology of MRONJ is rapidly expanding and guidelines for prevention and treatment of this condition are developing. The paper also highlights important practice points in a concise instruction list (which forms an appendix to the paper). We are also grateful to Dr Martin Foster of DPL for his practice management paper on the dento-legal considerations of this condition.

Our thanks as always to all our contributors, reviewers, and Editorial Board members who work so hard to produce a *Journal* to the best international standards.

PLAQUE CONTROL: 'GOOD' CAN BE BETTER



THE PROVEN ORAL CARE COMBINATION

A combined analysis of 29 clinical studies on essential oils has been published in the *Journal of the American Dental Association*.

This showed that after 6 months of using **LISTERINE®**, after brushing and inter-dental cleaning, **37%** of patients had at least half their mouth free from plaque, compared with only **5.5%** of those who just brushed and used inter-dental cleaning.¹

LISTERINE® contains a unique anti-plaque agent, 4 powerful essential oils. These penetrate the plaque biofilm to kill **97%** of bacteria left behind after brushing.² For some patients 'good' can be better.

To see the full study visit http://jada.ada.org/article/S0002-8177(15)00336-0/abstract

Johnson »Johnson

www.listerineprofessional.co.uk

References 1. Araujo MW, et al. J Am Dent Assoc 2015;146:510–622. 2. Johnson & Johnson. Bata on file. IRE/11/16-1891







Minamata and beyond

It is shaping up to be an eventful period for the IDA, with major change coming to our profession from outside and within.



The process of phasing down the use of silver amalgam fillings commenced on July 1 and since then dental amalgam is no longer to be used for dental treatment of deciduous teeth, in children under 15 years and in pregnant or breastfeeding women, unless deemed strictly necessary by the dental practitioner based on the specific medical needs of the patient.

There was, I perceived, much apprehension among dentists in the months leading up to July. I am extremely grateful to the working group, along with the Quality and Patient Safety Committee of the IDA, for all their hard work in preparing guidance documents for both patients and dentists. These are a valuable resource clarifying the issues relating to Minamata in a way that reassures the public and gives the practitioner the facts about the start of the phase down and clear timelines for requirements going forward.

The IDA held a media briefing in Dublin on June 28. Dr Eamon Croke gave a clear and concise presentation on the issues involved, and in subsequent days the topic was well covered in the media at home and abroad. I was pleased to have the opportunity to chat with Miriam O'Callaghan on *Today with Miriam* on RTÉ Radio 1 and have a much broader discussion on oral health, and the importance of prevention and of regular check-ups starting at the first birthday, etc.

Oral Health Policy

In the last edition, I reported that our scheduled meeting with Minister for Health Simon Harris was cancelled at very short notice and unfortunately, I must report that our rescheduled meeting on June 20 was cancelled with two hours' notice. It leads me to question where dentistry and oral health lie on the priority list. We now expect the long-awaited Oral Health Policy to be published in the autumn and we regret that we have not had the opportunity to discuss it with the Minister, given the lack of engagement by the Department of Health with the Association during the consultation process. Once it is published and we have had an opportunity to study and analyse it, we plan to hold a national meeting of members to discuss the Policy, its aims and how we as an Association develop our response and thereafter our engagement with the Department.

DTSS

The Dental Treatment Services Scheme (DTSS) continues to cause members the usual assortment of difficulties and very little progress has been made with the issues of the last few months, again because of a lack of meaningful engagement by the HSE. Dr John Nolan, Chair of the GP Committee, comments on the DTSS in particular elsewhere in this issue. Setting aside the many operational problems of the Scheme, fees were cut as part of the FEMPI process and have remained unchanged for the best part of a decade. The MedAccount survey of 2016 showed how far DTSS fees had fallen behind private fees and the recent Dental Booster survey has reiterated this. I would suggest that each DTSS contract holder carry out a comparison of their private versus DTSS fees and assess their current business position regarding the Scheme.

Governance review

An ongoing review of governance is best practice in all organisations, and the IDA and IDU are currently undertaking such a review, along with an examination of the organisations' structures from the ground up, with the aim of simplifying some of the complexities of the IDA and IDU's interrelationship. The governance review committee is looking at structures from branches, to committees, Board, Council and executive committee. The important role of branches is a priority. A discussion took place on progress to date at the June Council meeting and the work will continue into next year.

O'Mullane Prize winners announced



Three fourth-year students from the Dublin Dental School were awarded the O'Mullane Prize at the Irish Society of Dentistry for Children Annual Conference on May 10. Their project was entitled: 'Silver Tooth: Are Stainless Steel Crowns Still Recommended in Children?' Pictured are (from left): Prizewinners Jia-Liang Eow, Usman Hussain and Adeen Solaiman with Prof. Denis O'Mullane.

Seminar for young dentists

Calling all recently established dentists, young graduates, and non-Irish graduates. The IDA is hosting a one-day seminar specifically aimed at younger dentists/new graduates and those who have graduated from a non-Irish dental college on Saturday, October 6, at the Crowne Plaza Hotel in Santry.

The seminar is open to both members and non-members of the IDA. However, we will offer non-members the IDA rate to attend the event if you join the IDA on or before the day.

The day will kick off with short presentations from younger dentists on how they have started their careers and how dentistry in Ireland thus has been for them thus far. We will also have presentations on employment law, tax advice, money advice, and both the DTSS (Medical Card scheme) and the DTBS (PRSI scheme).

We are delighted to have the Registrar of the Dental Council, Mr David O'Flynn, to present on Dental Council issues, and also Dr Martin Foster of DPL, who will present on important medico-legal issues for younger dentists.

The afternoon will see panel discussions on a series of topics relevant to all young dentists working in Ireland today.

The seminar will conclude at 4.30pm.

Booking will open shortly through www.dentist.ie.

Don't miss this opportunity to meet with many of your colleagues to discuss issues of mutual interest in today's dental marketplace.

Mouth Cancer Awareness Day 2018



September 19 is Mouth Cancer Awareness Day 2018. This year we are not asking dentists to offer mouth cancer exams. Instead, we are partnering with Men's Sheds around the country to offer advice on mouth cancer and good oral healthcare. A large percentage of men are affected by mouth cancer annually in Ireland, so we are specifically targeting men through the Men's Shed network for this year's campaign.

More information will be available on www.mouthcancerawareness.ie. If you would like leaflets on mouth cancer for your surgery, please contact the Irish Cancer Society directly on 1800 200 700.



Prices exclude VAT. E&OE. Offers valid Aug - Sept 2018 Dublin: 1890 400 405 • Cork: 021 602 0544 • Lisburn: 028 9260 1000 www.dmi.ie www.dmi.co.uk Email: info@dmi.ie

Moloney Award



Congratulations to the winner of the Moloney Award 2018, Dr Harry Barry, who has a special interest in mental health issues. Pictured are (from left): Dr Paddy Crotty, Trustee, Dental Health Foundation, presenting Dr Harry Barry with the Moloney Award 2018, and Dr Clodagh McAllister, Honorary Secretary, Irish Dental Association.

Are you compliant?

Part 2 of our 'An Inspector Calls – are you ready?' workshops takes place on Saturday, September 15, at the Radisson Hotel, Athlone.

This day-long event will cover a number of areas, including:

- infection control;
- designing a new surgery;
- hand hygiene;
- health and safety;
- water waste, water lines and amalgam; and,
- prevention is better than cure: how to avoid your ten biggest practice headaches.

This event is a must for any dentist. We are delighted to say that practice managers/nurses of IDA members are also welcome to attend.

Thank you to Henry Schein and DMI for their continued support for this event. A trade show will also be present on the day.

To book, log on to www.dentist.ie.

Cost: €250 pp*

*if you attended Part 1 in May 2018, you get a discount of €50, i.e., €450 for both events.



IDA CPD Corner

Hands-on composite course

We are delighted to welcome, in association with Dentsply Sirona, Dr Eimear O'Connell to Athlone on Friday, September 14.



Eimear is a prosthodontist based in Edinburgh. She received her dental degree from the University of Edinburgh and has run her own private dental practice in Edinburgh since 1996. She received her MFGDP and FFGDP from the Royal College of Surgeons London and her Diploma of Implant Dentistry from the Royal College of Surgeons in Edinburgh. Eimear and her Practice Manager Emma Raynes will offer two half-day courses on 'How to make

digital dentistry work for you and your practice'.

Numbers are limited on both courses so book now by logging on to www.dentist.ie.



For Dentists, by Dentists

Independent Advice

Excellent Fund Options

Lower Investment Managers Fees

Hands-on endodontic course



In association with Kerr, specialist endodontist Dr Lynda Elliott will give a half-day hands-on course on 'Predictable success in endodontic treatment' on Friday, September 14, at the Radisson Hotel, Athlone.

Numbers are limited so book now by logging on to www.dentist.ie.

Medical emergencies and basic life support



In order to comply with Dental Council regulations, you are obliged to have both basic life support (BLS) and medical emergencies certification. By completing this one-day course you will fulfil your Dental Council requirements. Safe Hands will offer a one-day, interactive, practical course on

how to deal with any medical emergency in the dental setting. It will also detail what drugs you should have in your drug kit and how/when to use them. Cost: \leq 195 IDA members.



JOIN US IN 2018!

Please remember

- a planned retirement is a happy one!
- procrastination ultimately costs more money!
- competitive charges make a difference to final out comes!
- our interest is focused on what's right for you!

67 Merrion Square South, Dublin 2, D02 CK11. Telephone: +353 (0)1 634 4800 www.irishdentistsretirement.com Acuvest manage the Irish Dentists' Approved Retirement Savings Scheme and also currently provide services to over 10 per cent of private sector workers who hold a Defined Contribution pension. To find out how to start a pension and / or how to protect your pension against market volatility as you approach retirement please contact us today by calling



Paul King

Mobile: +353 (0)1 634 4800 Mobile: +353 (0)87 9880626 Email: paul@irishdentistretiremen

Boyne Trustees Company Limited by Guarantee Directors: Mr. Gary Byrne, Dr. Elis Delep, Dr. Lynda Eliott, Dr. Brendan Glass, Dr. Geny Hall, Dr. Barry Hanington, Dr. Joe Murphy, Dr. Charles O'Malley, Dr. Roger Ryan.

Diary of events

SEPTEMBER

15 Compliance Workshop 2 'An Inspector Calls - are you ready?' Sheraton Hotel, Athlone 10.00am-3.00pm

29 Irish Academy of American Graduate Dental Specialists Conrad Hotel, Earlsfort Terrace, Dublin 2, 9.00am-1.00pm Annual Scientific Meeting

OCTOBER

11-12 IDA HSE Dental Surgeons Seminar Midlands Park Hotel, Portlaoise An interesting and educational line-up of speakers will include: Dr Susan Parekh, Consultant in Paediatric Dentistry, Eastman; Dr Joseph Noar, Consultant Orthodontist, Eastman; Dr Paul Ashley, Paediatric Consultant, Eastman; Dr Eleanor McGovern, Paediatric Consultant, Temple Street; and, Dr Caoimhin Mac Giolla Phadraig, Special Care Dentistry, St James's Hospital. A full trade show will take place on Thursday, October 11.



Friday will include lectures in the morning, and a workshop format in the afternoon. Delegates will be able to attend all four workshops on oral radiology, infection control, medical emergencies and paediatric trauma. Accommodation is available directly from the hotel by calling 057-867 1919. Rates: €90 per room per night.

- 12 IDA Munster Branch – Annual Scientific Meeting Save the date – further details to follow
- 13 International Leaders in Implant Dentistry Shannon Suite, The Marker Hotel, Dublin
- 18-19 Third International Conference of Faculty of Dentistry Jordan University of Science and Technology Registration and abstract submission are available on the conference website at: www.just.edu.jo/conferences/jidc.
- 19 **Kerry Branch Annual Conference**

Europe Hotel, Killarney

20 **Basic Life Support and Medical Emergencies** Radisson Blu Hotel, Dublin Airport

NOVEMBER

17 **Basic Life Support and Medical Emergencies** Birch Suite, Rochestown Park Hotel, Douglas, Cork

DECEMBER

1

Colgate Caring Dentist Awards Clayton Hotel, Burlington Road Save the date – further details to follow



Erratum

In the photograph of the Past Presidents' Lunch featured on page 118 of the June/July 2018 edition of the Journal of the Irish Dental Association, Dr Joe Lemasney was wrongly captioned as Dr Cathal Carr. We apologise for this error.



Tel: 066 7143964 Mob:087 3324779

Email/: dentanet@eircom.net www.dentanet.ie

Pathways to the UK

There are a number of options available to newly graduated dentists and final year students in the UK.

It's a path well trodden for Irish dental graduates over the years. In fact, it's rare to come across Irish graduates who haven't spent some period of their professional life in the UK. However, it's an ever-changing environment, so what is it like for young Irish graduates there today?

I graduated from UCC in 2014, and ours was the first year for whom vocational training (VT) was no longer an option for Irish graduates in the UK. This was in an effort to preserve places for UK graduates. It had been the case for many years that Irish graduates would secure a place in VT in the UK and then go on to either an associate or hospital post. Some would go directly into an associate post without VT. Fortunately, nowadays there are opportunities in Ireland and many graduates stay at home. In my case, I took a locum post in Cork, but then found it difficult to find a busy practice in Ireland where I could get the experience I needed after finishing university. I secured a few offers of associate posts in the UK and took up one I liked in Newcastle.

Performer number

For those who decide to go to the UK, there is one major obstacle: securing a performer number to work in the NHS. UK graduates require VT to obtain a performer number. EU graduates don't need VT; however, they do need an associate job "secured". Many associate job adverts, however, cite a performer number as essential for application; therefore, you're precluded from many job applications. It can take a long time looking through the advertised jobs in the *British Dental Journal* until you find a practice that will consider a new graduate without a performer number.

Securing a job without a performer number is still achievable; however, the practice will need to be willing to go through the paperwork with the local area team for you to get one. This takes time and patience; in my case it took three months from the job offer to when the performer number was secured and I could start work. Meanwhile, the practice was left with an empty surgery. Depending on the deanery, they may attach conditions to the performer number also. In my case, even though I had work experience in Ireland, I had conditions attached to my performer number that I needed to fulfil and that amounted to vocational training equivalence, including: two clinical audits; weekly tutorials with the practice principal; production of a clinical governance portfolio; 40 hours of CPD including all the General Dental Council (GDC) core modules; attending NHS courses; and, completing my Units of Dental Activity (UDA) target. This was over a nine-month period, and my case was then reviewed by a panel. I performed well,



but in truth it wasn't difficult, didn't add a large amount to my workload, and was in actual fact beneficial for my career development. However, it was more work and bureaucracy for my employer, so it's obvious why an applicant with a performer number is usually preferred. You may get lucky as some deaneries may simply give you the performer number outright with no conditions attached.

Valuable experience

The main benefit to a young graduate practising in the UK is the experience gained. Most practices in England are extremely busy, and as a young dentist you quickly become confident in general dentistry. However, there are major downsides compared to Ireland. The UDA system can be restrictive and a burden to treatment planning. There is close monitoring of your practice and the units of each treatment you provide, e.g., they may question why one practice is doing more fissure sealants than another practice in the same area. There are targets that have to be met for the contract to be of the same value to the practice every year, and this puts pressure on dentists to complete treatments faster. Although Ireland is catching up, the UK is one of the most litigious countries in the world to do dentistry, causing the GDC retention fee to be overpriced at £890.

Wanting to pursue specialist training, I've been doing dental core training (DCT) posts (formerly known as senior house officer posts) for the past two years in Scotland, first in oral and maxillofacial surgery and community dentistry, and now in restorative dentistry. I've immensely enjoyed these challenging posts and learned a great deal in each speciality. Typically, two to three years of DCT is expected before being considered for specialist training. There are hundreds of DCT posts across the UK. Application is through national recruitment (UK wide) and Irish dentists who haven't practised in the UK before aren't precluded. Even if you are unsure whether specialist training is for you, these posts still offer great experience that helps to develop you as a clinician.

Tips to help secure a DCT post

- Find a career's day or speak to people who have been through the process. Finding out other people's paths is enormously helpful to inform you on what to expect from different posts and what posts would be best for your career plan. Knowing what path you'd like to pursue will keep you motivated and ensure that you get the most out of the post.
- Review the person specification closely, e.g., GDC registration, clinical governance experience, posters, presentations, and MFDS/MJDF. Try to match your portfolio to the person specification to prove you're a worthy candidate.
- 3. Find out about the interview process. Typically there are five stations: communication with an actor; management of a situation testing your clinical and ethical knowledge; a clinical governance station assessing your knowledge and application of topics like audit and quality improvement; a situational judgement test assessing your clinical decision-making; and, assessment of your portfolio.

The application for this is done through Oriel online and usually opens in January. Finally, I'd like to say that although the future is uncertain politically nowadays with the Brexit cloud and Trump tower covering the skyline, I believe it's still bright for young Irish dentists both at home and abroad. There were many naysayers when my class graduated in 2014. We faced many challenges with the removal of VT in the UK as an option and harsh times in Ireland economically, to name a couple. However, having kept in close in contact with my class, I don't know of anyone struggling. The opportunities are out there, so stay positive!





ULTRA SAFETY PLUS

The only clinically trialled, published and proven safety injection system in the UK*

- Fully compliant with the 2013 law on Sharps Instruments in Healthcare
- Sliding protective sheath prevents needle stick injuries
- Transparent barrel so aspiration is clearly visible
- Pre-loaded with the superior quality Septoject triple-bevelled needles
- Bevel indicated to help ensure a painfree injection
- Easy cartridge reloading, making it ideal for extended procedures
- Available in a variety of needle sizes and with a choice of handles

CPD and training video available at: www.septodontlearning.co.uk

The smart choice

Download the Septodont App for product information, case studies, CPD and more at your fingertips



www.septodont.ie or call Gerry Lavery on: +44 (0)1622 695520/+44 (0)7836 255274 * Introducing safety syringes into a UK dental school - a controlled study by JM Zakrzewska, I Greenwood and J Jackson Published in BDJ Volume 190

MANAGING PAIN FOR YOUR PRACTICE



BUSINESS NEWS

New dental business investment opportunity

Dureka Dental Ltd is a new company established to manufacture and distribute dental handpieces from The Brewery Business Park, Dundalk, Co Louth. Its founders, Rory and Geraldine Clarke, state that they will have



secured all the necessary accreditation to manufacture and sell dental handpiece drills throughout Europe by the end of 2018.

Through operating the Dentech business to service dental handpieces, Rory tells the *Journal* that he identified a gap in the dental handpiece market. He believes that his experience in dealing with suppliers, end users and in the servicing and repair of dental handpieces has been invaluable in shaping the strategy for the Dureka business.



IDA's preferred provider of insurance products

We have developed our brokerage on the basis of providing exceptional service, sound advice and offering excellent insurance solutions and support to our clients. We also pride ourselves on our claim handling should a claim arise, and we are available at all times to our customers. We look forward to building long-term relationships with IDA members and their staff, and to meeting as many of you as possible at events throughout the country in the coming years.

> "At Doyle Mahon we always expect the unexpected so you don't have to."

Call Aidan Mahon with your IDA Membership Number to avail of these savin E: aidan@doylemahon.ie 1: 053-912 3630 M: 087-761 8574 M: www.doylemahon.ie

Doyle Insurance Brokers (Wexford) Ltd. T/a Doyle Mahon Insurances, is regulated by the Central Bank of Irelan Registered Office: Unit 1, Antegyan Business Park, Antegyan, Wexford, V35, NP49, Registered Number, 463420 Rory says: "It is Dureka's goal to become a worldwide recognised dental handpiece manufacturing company. Starting with the ROI and UK markets, then expanding to European markets, and USA and Asia in subsequent years". External investment is now required in order to move the business to the next stage of market launch. Dureka has outline approval from the Office of the Revenue Commissioners for the Employment Investment Incentive Scheme (EIIS) and is seeking investment through this. This affords 40% tax relief over four years. Additionally, Dureka is offering a 20% return on investment, also over four years.

Postgraduate Diploma in Conscious Sedation

The Dublin Dental University Hospital (DDUH) is inviting applications to the Postgraduate Diploma in Conscious Sedation in Dentistry to commence in January 2019.

The 18-month course is aimed at primary care dental practitioners providing support for patients with dental anxiety and undertaking dentistry in a safe, effective and anxiety free manner. It also aims to provide a recognised education and training programme that will equip dentists with the knowledge, skills and experience to safely and independently use conscious sedation techniques in their own clinics. The objectives of the course are to provide:

- a comprehensive education in clinical practice of conscious sedation, anxiety and pain control for patients in the theoretical principles; and,
- development of an ability to critically analyse and apply the findings of the professional literature.

The Diploma is awarded by the University of Dublin, Trinity College and is a registerable qualification with the Dental Council. See www.dentalhospital.ie or www.tcd.ie/graduatestudies for further information.

QUIZ Submitted by Siobhán Davis

Questions (answers on page 204)





FIGURES 1 and 2: Overdenture abutment.

- 1. What are the possible reasons why two mandibular implants were placed in this patient?
- What is the name of the implant overdenture abutment in Figures 1 and 2?
- 3. Is there any allowance for angle correction between implants?
- 4. What is the main advantage in considering this type of overdenture implant abutment?
- 5. What colour nylon insert (replacement male) gives the maximum retention?



Dentsply Sirona hosts Ankylos Congress 2018

The 2018 Ankylos Congress was held in Berlin, Germany in June. Organiser Dentsply Sirona states the event attracted more than 1,000 dental professionals for over 50 countries, who gathered to learn more about the Ankylos implant system.

Ankylos has been in use for 33 years, but the company stated this Congress looked forward and not backward, giving the assembled delegates a new vision of modern protocols including digital dentistry and new products. Scientific findings in implant dentistry formed the event's foundation according to the company, and this was blended with news of the industry. Clinical content was themed around the importance of trusting experience. Speakers presented on numerous topics, including: how to make your implant practice successful; the Atlantis CustomBase solution; and, the virtual patient, in relation to patient-focused implant dentistry.

A range of focus sessions explored many topics such as treatment options and enabled delegates to discover new techniques and hone their skills. The company states that one of the weekend's highlights was the Inspiration Hub. This was an exhibition covering a range of solutions for implant dentistry. Here, the latest Dentsply Sirona products were presented.

The Hub included a speaker's corner that hosted short presentations. Dentsply Sirona's science and research personnel were available to discuss clinical solutions and emerging innovations.

'Why digital? Why now?' was a short presentation by Mark Ludlow, which brought the Congress to a close, and Mark reiterated the importance of lifelong learning in applying these new techniques to create faster, more predictable treatment.

Specifying the event's takeaway message, Group Vice President of Dentsply Sirona Implants Lars Henrikson said: "Clinical experience, professional skills and scientific evidence is the basis for the development of new treatment protocols and for overcoming challenges, ultimately leading to a long-term contribution to oral health".



One Curve now available from Quintess Denta

Quintess Denta has announced their appointment as distributors for Micro-Mega, whose history dates back to 1905. According to Quintess Denta, Micro-Mega has holds internationally recognised knowledge in the design, manufacture and marketing of medical devices for use by dental specialists. These are root canal instruments, obturation, handpieces and instrument hygiene.

Nursing homes - the case for investment

When looking at the investment horizon the case for diversification is stronger than ever. Equity markets remain volatile and are by analyst estimates overvalued. Most readers will have significant equity exposure through their pensions, and returns going forward cannot match the gains achieved in the last eight years of rising markets. So how do you consolidate and retain these gains while interest rates and bond yields are so low?

One such option from certified financial planning firm Moore Wealth

James Hamill, CEO, Quintess Denta said: "We are thrilled to supply the superb range of products from Micro-Mega including the One Curve. This innovative product is loved by dentists around the world for its efficiency and value. It is made in France and allows simple, reliable, rapid and efficient root canal preparation techniques. One Curve is a smart instrument that reduces the mechanical shaping time, respects the original anatomy of the tooth, has proven cutting efficiency and uses a simple protocol with a direct downward movement to the working length."

James Hamill, CEO, Quintess Denta (left) with Florrian Donnard, Area Sales Manager, Micro-Mega.

Management is investment in Ireland's in-demand nursing home sector. Wellrun nursing homes are primed to perform strongly given the need for elderly and respite care coupled with an increasing age profile. Investing in homes with a fixed return and first legal charge on the asset allows you peace of mind that comes from owning an asset in an underserved market where the ESRI forecast that demand will increase by 54% in the next 10 years. Surprisingly, only 24% of the current market operates under a consolidated structure, with the bulk being standalone operations. Consolidation is now starting to take place and this is a good time to gain exposure to the upside.

BUSINESS NEWS



Fees cut for dentists' retirement scheme

From left: Paul King, Acuvest Limited; Gary Byrne, Director of Boyne Trustees Limited; and, Dr Barry Harrington, Director of Boyne Trustees Limited.

The Irish Dentists' Approved Retirement Savings Scheme was established in the 1970s to provide a vehicle for dentists to save for retirement. It is overseen by dentists and their advisers. Operator of the Scheme, Acuvest, states that the trustees (who in the main are practising or retired dentists) work without recompense and the charges levied only relate to the running of the Scheme. According to the company, the whole objective is to allow as much as possible of the contributors' monies to go directly into their own pension pot. The trustees therefore say they are delighted to announce that the upfront charges previously levied will be eliminated effective September 1, 2018. The company believes that small reductions in fees can have a significant impact on your overall fund at retirement.

Dr Barry Harrington, Trustee to the Scheme, said: "I would encourage retirement savers not currently members to consider some pension contribution for 2018 into the Scheme, which would give increased investment diversification for the individual and allow a direct comparison with other providers as a test of value for money".

New Henry Schein website



Henry Schein Ireland has re-designed its website and online shop. The company states that the new site has more extensive content and new features,



From left: Nick Lowcock, Chairman, Dental Care Ireland; Emma Harty, Head of Operations, Dental Care Ireland; Aisling Devoy, dental nurse, Dental Care Ireland Knocklyon; Marta Pietrzak, dental nurse, Dental Care Ireland Knocklyon; Colm Davitt, Chief Executive, Dental Care Ireland; Ria Czernak-Lebov, receptionist, Dental Care Ireland Knocklyon; and, Pamila Delos Sanos, dental nurse, Dental Care Ireland Knocklyon.

Dental Care Ireland hosts annual training day

Dental Care Ireland states that collaboration was the key theme at its annual training day and summer BBQ in Dublin's Morrison Hotel on Saturday June 30. The company states the event was designed to bring together the entire Dental Care Ireland team for a day of practical training and peer discussion.

Horton Consulting's Laura Horton and Micheal Bentley led the agenda, with presentations on how to enhance each room in the practice. As part of the programme, Dr Paul O'Dwyer, Group Clinical Advisor at Dental Care Ireland, provided an overview for staff on the importance of probity.

Speaking at the opening of the event, Colm Davitt, CEO, Dental Care Ireland, said: "At Dental Care Ireland, we believe that excellence in dentistry is achieved through outstanding patient care, professionalism, training and innovation. As the country's fastest growing network of established dental practices, it is the quality of our people that sets us apart".

and offers customers a better service and improved navigation. According to Henry Schein, key features of the new website are:

- a fresh design;
- ease of use;
- increased compatibility with all devices;
- new functionalities; and,
- special online offers in the web shop.

Henry Schein also states that the website's compatibility with all common operating systems and browsers has been improved. Paddy Bolger, Managing Director of Henry Schein in Ireland, said: "Our team has placed enormous effort into enhancing the user experience of our website. We have improved the product information, have made the navigation much easier and the enhanced content has got a cleaner, fresher design. All existing features were kept, but we created a streamlined and more efficient ordering process".



Try the S1 Plus range from Sendoline

S1 Plus has Sendoline's unique S-profile in combination with longer pitches to create an instrument which is both effective and flexible.

The file is size 25/06; the S1 systems standard size covering more than 70% of all cases. As a complement the S1 Small file (15/06) and the Big Apical files (35/04, 40/04, 45/04, 50/04) are available for those cases where they're needed.

The S1 system also offers matched guttapercha and paper-points in size 25/06 for aneasy and perfect obturation.

S1 Plus has several features:

- Increased flexibility the file will follow the original shape of the canal
- Shorter shank (11 mm) provides improved accessibility in the molar area
- Length marks on the file improves the control at WL

si by Sendoline

£799.00/€918.85

S1-E(electric) Plus Start Up Set. S1-A(air) Plus Start Up Set

Contents:

- 1 x S1-E/A Contra- angle incl. 1 Apex clip
- 8 x S1 Plus Treatment Pack (16 x S1 Plus 25/06)
- 1 x S1 Plus 25/06- Refill (pk6)

- 1 x S1 Small 15/06 Refill (pk6)
- 1 x S1 Gutta- Percha Standard 25/06
- 1 x S1 Paper Point Standard 25/06

All prices exclude VAT. Offers are subject to availability. We reserve the right to change prices & promotions without notice E&OE. Offer ends 31st August 2018. Please note that these are standard prices and may deviate throughout the year when offers and promotions are running.

Call +44 (0) 28 94 452668 or order online to receive an EXTRA 1.5% discount www.bfmulholland.com/SENDOLINE



BF Mulholland Limited, Langarve Dental, 58 Glenavy Road, Crumlin, Co. Antrim BT29 4LA Website: www.bfmulholland.com/SENDOLINE Tel: +44 (0) 28 9445 2668 Email: sales@bfmulholland.com



DCRS report 2017

The Annual Report of the Dental Complaints Resolution Service shows that the Service is an efficient and effective way of dealing with dental complaints.

The Annual Report of the Dental Complaints Resolution Service (DCRS) outlines the cases the Service dealt with last year and how it has become well known and respected among dentists and patients.

The DCRS accepted 128 complaints in 2017, an increase from 102 in 2016. Of last year's complaints, 71 are confirmed to have been resolved, while many more may be as the Service is not always informed by the parties if they sort things out themselves. This gives a confirmed resolution rate of 55%. The vast majority of resolved complaints in 2017 related to clinical issues (56).

Facilitator of the DCRS Michael Kilcoyne said: "In 2017, there was a sizable increase in the number of dentists resolving complaints in practice. This is always what the Service encourages in the first instance and we will not accept



Investment Opportunity

40% Tax Relief over four years plus 20% return on investment

Dureka is an Irish Dental Equipment Manufacturing start-up company which is approved by the Revenue Commissioners for the Employment Investment Incentive Scheme.

A qualifying investor can claim 40% of investment as tax relief over four years – 30% in the year the investment is made and 10% in year four.

20% return offered on investment after four years

Investment required is up to €200K in exchange for qualifying shares. Investment in multiplies of €5K.

Investment made directly and not through a large fund

- No fees for the investor
- Get to know the company and people you are investing in
- Know exactly where your investment is going

For more details contact Rory Clarke via email: rory@dureka.com

Rory Clarke

Dureka Dental Ltd

Unit 15 The Brewery Business Park | Ardee Road | Dundalk | Co Louth | Ireland Phone: +353 (0)42 933 1625 | Mobile: +353 (0)86 893 4454 a case from a patient until they have gone to their dentist first".

A similar pattern

Michael noted that the same patterns tend to emerge each year. The Service is now very experienced and able to deal with the type of complaints that emerge between dentists and patients.

There was a noticeable increase in the amount of complaints concerning work done under the medical card and PRSI schemes,

which the Service cannot accept. It can only take on

complaints relating to work done privately in the Republic of Ireland. The Service received 520 calls in 2017 and 1,120 emails/letters. A total of 36 complaints could not be accepted as they were outside the remit of the Service. Some 75% of complaints concerned IDA members.

Of the resolved complaints, the highest proportion (20) were settled by a refund of fees, while 17 were sorted out by payment of fees for treatment elsewhere. Some 15 complaints were straightened out by way of an apology and nine simply required an explanation from the dentist.

The complaints were further split into those relating to treatment and nontreatment. Of the treatment issues, the highest number of complaints were regarding root canal treatment (19). Of the non-treatment complaints, a failure by the dentist to explain treatment costs led to the highest number of complaints (14).

The facilitator noted that last year, two complainants asked for the DCRS to arrange independent assessments of the work they received but were informed that this is not something the DCRS provides. However, the Service employs a clinical advisor to help in the more dentally complex cases.

It was a good year for the DCRS and most of those whose complaints were accepted by the Service get them sorted out. If a dentist has an issue with a patient or the DCRS comes to a dentist on behalf of a patient, it is best for all involved if the dentist engages with the Service.

Table 1: Patient contact with the DCRS in 2017.	
Number of calls received	520
Number of complaints not accepted (outside remit, out of time, etc.)	

Table 2: Reasons for resolution		



British and Irish dentists' differing outlooks

Braemar Finance recently released a report on the challenges facing dentists and other professions in Ireland and Britain. The research was conducted by way of a survey. In the UK, 60% of dentists plan to seek funding in the next 12 months for a business investment, compared to 48% in Ireland.

Brexit has 33% of Irish dentists less confident about their

Choose the right insurance

Doyle Mahon Insurances (the IDA-approved general insurance provider) states it has access to the widest range of markets for practice, property, home and motor insurance. The insurer has discounts available to IDA members, their staff and families. The company states that its practice insurance scheme can offer a host of enhanced covers including: business prospects, compared to 27% of UK dentists. However, majorities in both jurisdictions believe their prospects will remain the same (Ireland 56%, UK 52%). Irish dentists are more confident about the economy. Some 78% plan to take on more staff in the next 12 months, compared to just 55% in the UK. When asked if they felt there has not been any true economic recovery yet, 13% of UK dentists agreed, compared to just 4% in Ireland. No Irish dentists thought the economy was worsening, but 4% of UK dentists did.

- standard limit of indemnity of €6.5m on the public liability section (for HSE requirements);
- legal expenses/Revenue audit cover; and,
- market-leading rates on contents and buildings insurance.

The company said: "More importantly we understand when it comes to insurance one size does not fit all. We can cater for complex requirements and provide the advice and claims support when it counts".

DG MUTUAL (new) & DENTISTS PROVIDENT (new) NOW BOTH QUALIFY FOR TAX RELIEF ON PREMIUMS



DENTISTS, YOU NOW HAVE A CHOICE

for DAY ONE INCOME PROTECTION

For more information or to request a quote, visit our website or contact Omega directly: 01 293 8554 • info@omegafinancial.ie

www.omegafinancial.ie/dentists



Former stalwart of the RCSI's Faculty of Dentistry, Dr PETER COWAN is a fourth-generation dentist and says that dentistry must have been in his genes.

Peter Cowan has always had two passions in dentistry – oral surgery and restorative dentistry. Unable to separate these two disciplines, his training background has allowed him to split his time equally between them in his clinical practice in Pembroke Road in Dublin.

Having qualified from Trinity College Dublin in 1978, he was appointed to junior and senior house officer posts in the Dublin Dental University Hospital before taking up a part-time teaching position as a clinical tutor in the same school for about 10 years. During this time, he completed a Fellowship in Dental Surgery from the Royal College of Surgeons of Edinburgh in 1981 and then, in 1983, he completed the Specialist Fellowship in Restorative Dentistry from the Royal College of Surgeons in Ireland (RCSI). In 1987, he was elected to the Board of the Faculty of Dentistry, RCSI, and subsequently held many senior roles there during his 31 years of service. In 2001 he was honoured to be elected Dean of the Faculty of Dentistry, RCSI, following which he took up the post of Director of Dental Affair from 2004-2007 and finally Chief Executive Officer of the Faculty from 2007-2018.



A family affair

Peter stepped down as CEO of the Faculty of Dentistry in May of this year but is still in active clinical practice, keeping a family tradition alive that's been going for over a century: "I come from a very long line of dentists. In the 1890s, my great-great uncle established a dental practice in Harcourt Street.

"This was taken over by my grandfather who lived and worked in Harcourt Street, where my father was born. My father then took over my grandfather's practice, and then in 1969 he moved the practice to Merrion Road where I was born (some time before this date!) I then took over the practice from my father in the 1980s and finally moved it to Pembroke Road in 2006 where it is currently located".

Dental progression

How has dentistry progressed over his career? "Hugely", he answers without any doubt and then expands about the areas that have influenced his career: "I suppose there are about four areas that have made a major impact in dentistry since I started out on my journey. The first of these is adhesive dentistry, which has revolutionised the way we work with restorations, orthodontics and even its interface with oral surgery. Second and perhaps the most influential in my career was the introduction of the concept of osseointegration and its impact on implant dentistry. As one of the early Irish pioneers in this arena in 1986, it combined everything I enjoyed about dentistry, and over the years it has provided enormous benefit to countless millions of patients worldwide.





"The two other areas that have made major strides are CAD/CAM technology and 3D printing. With the CAD/CAM systems, you can prepare and scan a tooth preparation and, a couple of hours later, complete a high-quality restoration in one visit. The use of 3D printing has been of great benefit in maxillofacial and other surgical areas by the production of models which replicate the particular surgical problem – thus allowing careful planning to increase the success rate of procedures for patients".

The use of 3D printing has been of great benefit in maxillofacial and other surgical areas.

Peter has hugely enjoyed working in dentistry and says that there have been many highlights in his career: "Certainly being elected Dean of the Faculty of Dentistry was a singular honour along with the opportunity to take up the intensive role of CEO for so many years. From a clinical point of view, I have also been immensely fortunate to have had a loyal following of patients over the 40 years I have been in practice".



Mouth Head & Neck Cancer is the Sixth Most Common Cancer in Men Worldwide.

Mouth Head & Neck Cancer Awareness Ireland is Collaborating with the Irish Men's Sheds Association for Mouth Cancer Awareness Day 2018. Let's Get Men Talking.







INTERVIEW



Some people might have found it difficult to be a clinician and take on such an administrative role as CEO of the Faculty of Dentistry, but Peter believes it helped him: "It was a really good match for me. In my role as CEO, there were actually two areas of activity on a day-to-day basis. Although one of these was administrative, it was combined with an academic/educational side which involved the assessment of candidates for the Faculty's postgraduate examinations in conjunction with the Faculty's Education Committee, and organising the various examination diets in Ireland and across the globe. In order to manage this, my background in clinical teaching and training was very helpful. I think it would be difficult for someone without a dental background to take up this type of a position".

It was very rewarding being a part of a great team over many years with the ultimate benefit of seeing young trainees coming through the Faculty's training system with great knowledge and confidence.

Being Dean is another family tradition. Peter's father, Dr Adrian Cowan, was not only the second Dean of the Faculty of Dentistry but also one of its founders: "Interestingly both my father and I were elected as Dean at the age of 45 and we both had careers in oral surgery and restorative dentistry! He was a very special man." Within the Faculty: "The major highlights include the establishment of the Faculty's overseas postgraduate training programmes in the Middle East, North-East Africa and the USA. It was very rewarding being a part of a great team over many years with the ultimate benefit of seeing young trainees coming through the Faculty's training system with great knowledge and confidence. In addition, [I am proud of] the establishment of the Diploma of Primary Care Dentistry in Ireland – a user-friendly examination designed solely for the Irish market, which is the common first step on the postgraduate training ladder for all graduates in this country".

He continues: "The Faculty's major postgraduate examinations – the MFDRCSI and the FFDRCSI – have grown exponentially over the years thanks to the hard work and expertise of so many Faculty members and administrative staff".

Having the opportunity to teach and examine in combination with his love of clinical work has had a profound effect: "I've been very lucky because having the academic background of the College has kept my brain alive! Carrying out my clinical work has certainly been influenced by what I've learned within the College system and so being able to implement some of it has given me the best of both worlds".

Dental education in Ireland

Peter is full of praise for the standard of dental education in Ireland: "I think it ranks very highly and is certainly comparable to

any country in the world. We are fortunate here in that we have some great educators in our dental schools and in the postgraduate arena".

He is optimistic about the future of dental education but there is one area he would like to see reintroduced: "In the undergraduate schools, the students have enormous theoretical knowledge now, much more than I would have had when I was a student. But because of clinical constraints within the schools and the amount of time spent with theoretical aspects of training, I feel the opportunities for clinical training are perhaps somewhat less than optimum".

For this reason, he thinks it would be beneficial for all students to complete their undergraduate degrees and then do a year of mentored clinical training, like the medical intern year: "For me, I would like to see all students come out of dental school and do an intern year, like the medics do after they're qualified. The Faculty, in conjunction with the other major stakeholders in dentistry, has tried for a number of years to re-establish a new 'user-friendly vocational training-like scheme' for all graduates in Ireland but successive Ministers for Health and governments have failed to take up this necessary challenge to date, which in my opinion is shameful".

The state of oral health

While some people may not have appreciated the importance of oral health in the past, Peter believes this has started to change: "I think the public in general

is beginning to understand the importance of maintaining good oral health and its potential implications on general health *per se*. This is largely down to education and the great work of organisations like the Irish Dental Association, the Dental Health Foundation, the HSE and the Faculty of Dentistry. Although the message is going out, I am not sure it is fully appreciated as yet".

One thing which will influence the way people look at their oral health for many years to come is the soon-to-be-published National Oral Health Policy. Peter hopes the new Policy recognises the need to start with the youngest in society. He would like to see a Policy which aims to develop good habits in children as young as one year: "The reason I say that is because if we can examine and

PERSONAL PROFILE

Peter is married to Siobhan and they have three children: Josh, Lia and Ben (no dentists unfortunately to carry on the tradition!) He has a very close and happy family and says that this is the most important part of his life: "I am a very fortunate man not only to have a great career but also to have such a close and loving family".

Tennis has been his great passion since he was a child and he also keeps active by playing golf, going to the gym and walking his Labrador, Bobbie.



develop good habits in young children and try to eradicate dental disease at an early age, the likelihood is that later on in life, they will reap the benefits. This has been shown, in a number of recent studies, to reduce potential costs to the exchequer. As things stand at the moment, there is evidence that there are still a lot of children in this country requiring extractions under general anaesthesia, which shouldn't be the case. By losing teeth early on, there is a knock-on effect in later life and this should be wholly preventable with a sensible long-term policy".

This is largely down to education and the great work of organisations like the Irish Dental Association, the Dental Health Foundation, the HSE and the Faculty of Dentistry.

In addition, he says that in any new policy: "It would be important that all dentists, but particularly those working in the community area, the HSE and so on, have an opportunity to continually upskill through recognised structured training programmes. There are currently programmes in existence that could

be utilised to provide training and further qualifications. The relevance of this is to improve service to our patients, which is, after all, our ultimate goal".

Challenges for new dentists

When it comes to the challenges facing new graduates, Peter notes that there are a number of major challenges: "Firstly, the financial costs of setting up a practice. Secondly, the need for newly qualified graduates to have a period of time in mentored, clinical, structured training. Without a system in place, this second point currently provides a challenge in Ireland".

Of new graduates he says: "There is no question that this is a very smart cohort of young graduates coming each year from the dental schools and they generally perform extremely well in postgraduate examinations. We are very fortunate in Ireland to have three excellent dental schools in Belfast, Cork and Dublin".

A good choice

Peter has no regrets with the professional path he has chosen. He says that although it can sometimes be hard physically and mentally, it is a great career choice for those who enjoy precision and people. He says: "If I had my time over again, I would make the same choice as I have really enjoyed every aspect of my career to date. Dentistry has given me immense personal satisfaction and the opportunity to make many close professional friends around the world".



The LPI Awards

15.75% FIXED RETURN NURSING HOME INVESTMENT



- Nursing home demand far outstrips supply and ESRI forecasts indicate this is not going to change with an estimated 54% increase over the next 10 years. This investment allows you to have a vital, high demand, income-producing diversified asset in your portfolio that's not correlated to stock market performance.
- The promoters, who already have six nursing homes under management, aim to become one of the largest providers of nursing home care in Ireland. Only 24% of homes currently operate under a consolidated structure so the others cannot access the cost efficiencies and advantages this brings.
- The investment offers a first legal charge on the nursing home at 85% of loan to value. This investment gives diversification away from the typical investment portfolio high in equity content.
- Two investment options: annual income of 5.25% or rolled up with 15.75% return after three years.
- Available to pension, personal or corporate investors.

FIXED TERM	ASSET BACKE	D	INVESTMENT RETURN	
Three-year	First legal charge o	n the	Fixed return 5.25% p.a.	
investment term	underlying asse	et	Total return 15.75%	
FOR FULL DETAILS	, CONTACT COLM@MWM.IE are Wealth Management is regulated by	KIERAN@MWM.IE the Central Bank of Ireland	051 832869	

Financial Planning Firm of the Year Nomine



IT'S A BIG DEAL.

Our best bundle. Without any compromise.

Our SCD Implant Bundle now offers quality components, greater compatibility with popular implant systems and the assurance of an all-inclusive price. The new Titanium Nitride (TiN) coated screw ensures reliable retention, better torqueing, and even better results for your patients. Enjoy guaranteed quality at a guaranteed price.

The SCD Implant Bundle Fully customised system.⁺



TITANIUM NITRIDE (TIN) COATING NEW

The improved, harder TiN surface provides a more stable and reliable connection with the implant.

For more information visit our website scdlab.co.uk or call us on (ROI) 048 8772 7100 or (NI/UK) 028 8772 7100.

Dento-legal considerations of MRONJ

From a dento-legal perspective, there are some important points to bear in mind when managing patients who may be at risk of developing MRONJ.



Many patients who are at risk of medication-related osteonecrosis of the jaws (MRONJ) will prefer to be seen by their own dentist rather than be referred. Most of the time, there is no reason that this preference should not be accommodated.

When treating a patient with any health issue or who is on medication, it is essential for the clinician to have an accurate grasp of the nature of this, the implications for dental care and, of course, the potential impact of the dental treatment itself on the patient's condition. For consent to be valid, it is essential that the patient also understands the potential implications of their medical history on their dental treatment and the possible outcomes.

First of all, careful attention should be given to history taking so that an accurate risk assessment can be made. It is important to be aware of any history related to antiresorptive or anti-angiogenic drugs used in the treatment of cancer and osteoporosis.

Whether a patient is deemed to be high or low risk of developing MRONJ does not contraindicate treatment being carried out in the general dental practice setting. However, it is important to make such patients aware of the risk of MRONJ developing if treatment will involve extractions or other trauma to bone. For example, there is a risk of MRONJ if implants are placed in patients who are on medication for osteoporosis so patients need to be aware of this.



The best cure

Preventing a need for treatment in the first place is the best form of care, so particular emphasis should be placed on prevention for individuals whose medical history suggests they are at risk.

For patients with more complex medical histories, where the practitioner is unsure about the best management, seeking an opinion from an appropriate specialist before embarking on treatment should be considered. For example, when planning treatment is there an option which avoids, or at least reduces, the need for extractions? Having formed a plan, the basis for any treatment decisions and the patient's agreement to the treatments should be clearly documented.

It is the duty of any treating dentist to act in the best interests of the patient and if treatment is required, then the patient should be advised and presented with the appropriate treatment options. Getting the balance right by providing appropriate information about the risk of MRONJ without putting the patient off from having treatment can be challenging. Patients at risk of MRONJ need to be made aware of it, but they should also be reassured that the incidence of this is relatively uncommon and it should not form a barrier to having necessary treatment.

Giving advice

Clear pre- and postoperative advice should be given so that patients know what to look out for. If MRONJ does develop, it is important that it is identified early. It is also important that the patient is sufficiently well informed to appreciate that this complication can happen and it is not a result of any fault on the part of the treating dentist.

A review appointment should be arranged after an extraction to check the progress of healing and to allow for early onward referral should there be any suspicion of MRONJ.

It goes without saying that keeping a clear and up-to-date patient record of all treatment and advice is important.



VOCO have the materials and products, like ADMIRA FUSION, with the essential characteristics; versatility, ease of use and excellent durability, to allow the creation of aesthetic and long-lasting restorations.

Mark Hill, Practice Principal





CLAIM YOUR RISK FREE TRIAL

BUY THE ADMIRA FUSION SET AND GET A FREE TRIAL PACK WORTH £53.10 RRP*

*Try the trial pack or syringe, if not satisfied please return the unopened set back to your preferred dealer for a full refund. E&OE.



VOCO.SOCIAL 00800 44 444 555 INFO@VOCO.SOCIAL



belmontdental.co.uk 020 7515 0333



Cool operation LED Series

Triple-axis movement your pinky can conduct and shadowless light at the click of your fingers.



Medication-related osteonecrosis of the jaws (MRONJ) review: what Irish dentists need to know, from international guidelines to current controversies

Introduction: Medication-related osteonecrosis of the jaws (MRONJ) is a potentially severe adverse drug reaction, resulting in progressive bone destruction of the jaws. MRONJ is associated with two classes of therapeutic drugs: antiresorptive and anti-angiogenic agents. There are several hypotheses that attempt to explain the aetiology of the process and its unique localisation to the jaws. Dental screening and appropriate treatment are fundamental to reduce the risk of osteonecrosis before patients begin taking these medications. The treatment of MRONJ often presents great difficulty and an optimal therapy strategy is yet to be established. For this reason, prevention occupies a pivotal role in the management of these patients.

Objective: To review the scientific literature that supports measures used primarily in the prevention of MRONJ in both nationally and internationally published guidelines.

Methodology: A bibliographic search using the PubMed/MEDLINE database was performed by the authors, with no time limitation and restricting the search to the English language. The authors selected key papers and engaged in collaborative data extraction and synthesis of the selected reference material. Practice guideline documents were assessed using the Appraisal of Guidelines for Research & Evaluation (AGREE II) Instrument.

Conclusion: Knowledge of the risk factors and aetiology of MRONJ is rapidly expanding, and guidelines for prevention and treatment of this condition are developing as more publications are released. On the basis of the findings of this literature review, the authors highlight important practice points in a concise instruction list, reflective of current high-quality clinical practice guidelines.

Key words: Medication-related osteonecrosis of the jaws (MRONJ); osteochemonecrosis; anti-resorptive osteonecrosis of the jaws (ARONJ); bisphosphonate-related osteonecrosis (BRON); bisphosphonate osteonecrosis (BRON); bisphosphonate osteonecrosis (BON): bisphosphonate-associated osteonecrosis of the jaw (BAONJ); dental interventions; tooth extraction.

Journal of the Irish Dental Association 2018; 64 (4): 193-202.



Dr Maeve Cooney BA BDentSc (Hons) DipPCD(RCSI) MFD(RCSI) Senior House Officer in Oral and Maxillofacial Surgery Poole District General Hospital, Poole, Dorset, UK

Dr Cían J. Henry BA BDentSc (Hons) DipPCD(RCSI) MFD(RCSI) Senior House Officer in Oral and Maxillofacial Surgery, National Maxillofacial Unit St James's Hospital Dublin **Dr Michael O'Sullivan** Associate Professor/Consultant in Restorative Dentistry, Dublin Dental School and Hospital, Lincoln Place, Dublin 2.

Prof. Leo F.A. Stassen FRCSI FDS RCS MA FTCD FFSEM FFD RCSI FICD Professor/Chair Oral and Maxillofacial Surgery. TCD

Corresponding author: Dr Maeve Cooney · cooneym5@tcd.ie



FIGURE 1: Clinical photograph of MRONJ. This image depicts an area of exposed, necrotic bone in the anterior maxilla in a patient medicated with intravenous bisphosphonates for the management of multiple myeloma.

Introduction

Medication-related osteonecrosis of the jaws (MRONJ) represents an adverse drug reaction, consisting of progressive bone destruction in the mandible or maxilla (**Figure 1**).¹ A patient may be considered to have developed MRONJ if there is exposed bone or bone that can be probed through an intra-oral or extra-oral fistula(e) in the maxillofacial region, which has persisted for a period of more than eight weeks after prior therapy with bisphosphonates (BPs) or other drugs that affect bone metabolism. There must be no history of radiation therapy or obvious metastatic disease to the jaws.² Despite the above definition being the most current and widely accepted, caution must be taken when coming to a final diagnosis. Fedele *et al.* described 28.9% of a 332-patient group having clinical manifestations of ONJ without frank bone exposure or radiological change, thereby being called Stage 0 MRONJ.³ Progression of the jawbone, including pathological fracture of the mandible.⁴

As MRONJ is an evolving clinical condition, with knowledge regarding pathophysiology and management constantly expanding, the implications of these medications in the dental clinical setting are still being determined. A recent audit in this area highlighted a need to re-evaluate nationally published guidance in relation to the prevention of MRONJ.⁵

The primary aim of this paper is to review the scientific literature that supports measures proposed in international guidelines on the prevention of MRONJ. The predominant focus of this review will be in the area of prevention and of management of those patients at risk of MRONJ. No discussion would be complete, however, without touching upon treatment strategies as the prevention and management of MRONJ reflect a continuum. A secondary aim is to assess the quality of clinical practice guidelines and provide a clear set of instructions to Irish dentists that is reflective of current international practice.

Aetiology and pathophysiology

Antiresorptive therapy is a collective term for a group of drugs that are potent inhibitors of osteoclast function and osteoclast-mediated bone resorption.⁶⁻¹⁰ Osteonecrosis of the jaw (ONJ) may be caused by three pharmacological agents: antiresorptive agents, including BPs; receptor activator of nuclear factor kappa-B ligand (RANK-L) inhibitors; and, anti-angiogenic agents.¹¹⁻¹³

Table 1: Hypotheses to explain the localisation of MRONJ to the jaws.

	Altered bone remodelling
	Oversuppression of bone resorption
	Angiogenesis inhibition
	Constant microtrauma
	Suppression of innate or acquired immunity
	Vitamin D deficiency
	Soft tissue toxicity
	Inflammation/infection
Add	pted from Ruggiero et al. ²

Although Marx first recognised and reported cases of ONJ 15 years ago, the pathophysiology of this disease process has yet to be fully elucidated.¹¹ There is ongoing debate in the literature attempting to explain its unique localisation to the jaws (**Table 1**).

Since the introduction of BPs, the archetypal drug of this category, antiresorptive agents have been effectively utilised to reduce skeletally related events and improve the overall quality of life for patients with osteoporosis, Paget's disease, osteogenesis imperfecta, and fibrous dysplasia.^{6,9} These drugs are also used to reduce the symptoms and complications of metastatic bone diseases (particularly those associated with multiple myeloma, and breast and prostate cancer).^{14,15}

The RANK-L inhibitor denosumab is a newer antiresorptive medication that inhibits osteoclast function, decreases bone resorption, and increases bone density.¹⁶⁻¹⁹ It is used in patients affected by osteoporosis or metastatic bone diseases.^{18,20,21} Denosumab is not incorporated into the skeleton and thus exhibits a much shorter half-life than BPs, which have a half-life in the order of five to 15 years.²²⁻²⁴ The effects of denosumab on bone turnover diminish within nine months of treatment completion.²²

Anti-angiogenic medications hinder the development of new blood vessels, blocking the angiogenesis-signalling cascade.²⁵ They are used in cancer treatment to restrict tumour vascularisation. The vascular endothelial growth factor (VEGF) inhibitors bevacizumab and aflibercept and the receptor tyrosine kinase (RTK) inhibitor sunitinib have been associated with MRONJ.²⁶⁻³⁰

At present, it is estimated that osteoporosis affects 300,000 Irish people, with an increase expected in the future due to a rise in our ageing population.³¹ Knowledge within the dental profession of these agents and their effects is therefore paramount to ensure that care is provided to this subset of patients without delay, to the highest standard, and in an appropriate setting.³²

Incidence

The literature shows wide variation in the reported incidence and prevalence of MRONJ due to the rare nature of the condition. In oncology patients treated with intravenous antiresorptive agents, MRONJ risk varies from 0-27%.³³⁻⁴⁴ The estimates towards the higher end of this range are derived from studies with small sample sizes, which have a tendency to overestimate the risk of low-frequency events.⁴⁵ In studies that include larger sample sizes (over 500 patients), the risk approximates 1%.⁴⁴ This contrasts greatly with the extremely low (0-0.1%) incidence of MRONJ when therapy is administered orally for the management of osteoporosis and other bony diseases.⁴⁶⁻⁵³

Table 2: Potential risk factors for the development of MRONJ.

1. Systemic risk factors

- Advanced age
- Smoking
- Chronic disease
- Compromised immune status or immunodeficiency

2. Local risk factors

- Dento-alveolar surgery
- Intra-oral trauma (e.g., ill-fitting dentures)
- Poor oral hygiene
- Oral infection

3. Medication-related risk factors

- Concomitant therapy with corticosteroids
- Increased potency
- Longer duration of treatment
- Greater frequency of administration
- Increased cumulative dose

Risk factors

Among publications, potential risk factors for the development of MRONJ are classified as local (i.e., oral disease, invasive dental procedures) and systemic (**Table 2**).^{33,40,41,54-66} Current literature suggests that the most significant risk factor for MRONJ development is the underlying medical condition for which the patient is being treated, with patients receiving therapy for a malignancy at greater risk than those being treated for osteoporosis.⁴⁴⁻⁵³ Risk stratification is a cornerstone of management in recently published international guidelines.^{2,67,68} Some international guidelines advocate that those at high risk of developing MRONJ should be referred to an oral and maxillofacial surgeon for invasive dental procedures, including dental extractions.^{2,67}

In early publications, emphasis was placed on the route of administration and the potency of BPs when deciding upon a patient's risk of developing MRONJ.^{55,69} It has now become apparent that the underlying condition for which the patient is being treated with either antiresorptive or anti-angiogenic agents is paramount among risk factors.^{40,44} Those suffering from underlying malignant disease appear to be most at risk. Increased duration of malignant disease and increased duration of bony metastases, as well as the specific type of cancer, may be associated with increased risk of MRONJ development.⁴⁴ MRONJ predominantly occurs in patients being treated for breast cancer, multiple myeloma and prostate cancer.^{37,39,70,71}

Methodology

A bibliographic search using the PubMed/MEDLINE database was performed by the authors, with no time limitation and restricting the search to the English language. The authors selected key papers and engaged in collaborative data extraction and synthesis of the selected reference material.

Clinical practice guideline documents pertaining to the dental management of patients at risk of MRONJ were assessed using the Appraisal of Guidelines for Research & Evaluation (AGREE II) instrument.⁷² The AGREE II tool consists of a 23-item checklist categorised into six domains (scope and purpose;

stakeholder involvement; rigour of development; clarity of presentation; applicability; and, editorial independence). Each domain aims to measure a different aspect of guideline development quality and identify potential biases. Each of the AGREE II checklist items are rated on a seven-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. A quality score is then calculated for each of the six AGREE II domains. Domain scores are calculated by summing up all the scores of the individual items in a domain and by scaling the total as a percentage of the maximum possible score for that domain. The six domain scores are independent and are not aggregated into a single quality score. Finally, the overall quality of each guideline is rated on a seven-point Likert scale ranging from 'lowest possible quality' to 'highest possible quality'.

Results and discussion

Preventive strategies

Appropriate dental care and preventive measures are crucial for all patients receiving a course of therapy that places them at risk of MRONJ, irrespective of the type of drug prescribed or the route of administration.⁵⁴ Optimising the dental health of those at risk of MRONJ development should be the focus of preventive therapy because the majority of patients who develop MRONJ experience this complication following simple dento-alveolar surgery.

Similar to head and neck cancer patients who are about to receive radiation therapy to the mouth and jaw, these patients should receive a comprehensive dental evaluation. Several studies have reported a reduction in the incidence of MRONJ in high-risk patients who have undergone dental assessment, oral hygiene instruction, and appropriate dental treatment prior to commencing antiresorptive therapy.^{63,70,73-78} If possible, antiresorptive/anti-angiogenic therapy should be delayed until dental health is optimised or all unsalvageable teeth are extracted.

For patients who have already commenced intravenous BP treatment, every effort should be made to avoid dento-alveolar surgery and maintain heightened vigilance with regard to dental health. Avoidance of more invasive procedures should always be advocated in the first instance for the treatment of dental/endodontic pathology, such as: orthograde endodontic therapy; and, coronectomy/coronal amputation and endodontic treatment of retained roots. Forced eruption with the aid of elastic orthodontic ligatures has also been proposed as an alternative to extraction for this patient cohort.⁷⁹⁻⁸¹ However, in light of the fact that this process can take up to six weeks to complete exfoliation, and because patients will most often present in an acute setting, the clinical efficacy of this treatment must be questioned.

MRONJ is often considered quite debilitating and can be notoriously difficult to treat, especially in severe cases. Therefore, the pinnacle of management rests on prevention. MRONJ is most commonly associated with procedures that stimulate the alveolar bone turnover, namely routine and surgical dental extractions, as well as dento-alveolar procedures such as enucleation, apicectomy and periodontal flap surgery.^{56,59,82,83}

A prospective study by Bramati *et al.* examined the effectiveness of preventive dental measures on the occurrence of MRONJ.⁷⁶ Some 212 patients who were scheduled to receive intravenous zoledronic acid for the treatment of metastatic cancer with bony involvement were recruited. Prior to commencing BP therapy the patients underwent clinical oral examination, professional oral hygiene therapy and surgical treatment of any active oral pathology, eliminating all potential sources of infection. The patients were followed up for 60 months and an incidence rate of 0% MRONJ was reported. The authors

Table 3: Preventive measures.				
Pre-operative	Intra-operative	Postoperative		
Drug holiday ⁸⁵	Prior rinsing with chlorhexidine digluconate ⁸⁶	Soft diet/cold semi-liquid diet ⁸⁶		
C-telopeptide test 87,88	Use of local anaesthetic without vasoconstrictor ⁸⁶	Postoperative antibiotics ⁸⁹⁻⁹¹		
Oral hygiene instruction and chlorhexidine digluconate rinsing ⁹⁰	Atraumatic surgical technique and the use of ultrasonic surgical equipment ⁹²	Rinsing postoperatively with chlorhexidine digluconate/hydrogen peroxide for one week ⁸⁶		
Tooth debridement and polishing ⁷⁴	Osteoplasty of the alveolar ridge to avoid sharp surfaces that might delay postoperative healing ^{89,91}	Vacuum-formed splint ⁸⁶		
Antibiotic prophylaxis ⁸⁹⁻⁹¹	Extraction sockets packed with scaffold-like autologous platelet concentrates and sealed with autologous fibrin ⁵²			
	Primary wound closure ^{90,91,93,94}			
	Low-level laser therapy ^{95,96}			

compared this to a control group with an incidence of 8.6% in a similar cohort of 186 patients recruited in a previous retrospective study.⁸⁴ The patients in the control group did not receive any preventive dental treatment prior to commencing intravenous BP therapy, and the authors concluded that a statistically significant reduction in the incidence of MRONJ could be achieved with the introduction of dental assessment and preventive treatment in this high-risk cohort.⁷⁶

Preventive strategies recommended in the scientific literature can be divided into pre-operative, intra-operative and postoperative measures (**Table 3**).

These measures related specifically to patients undergoing dental extraction/dento-alveolar surgical procedures in the pre-, intra-, and postoperative period.

Various novel treatment protocols have been proposed for patients at risk of MRONJ undergoing surgical procedures. The use of low-level laser therapy and autologous platelet concentrates and fibrin has been purported to aid in wound healing postoperatively.^{92,96-98} There is a growing body of evidence to support low-level laser therapy, more recently called photobiomodulation, having an important role in the management of radiation and/or chemotherapy-related mucositis in cancer patients.⁹⁹⁻¹⁰⁵ Accordingly, it has also been utilised in the prevention and treatment of MRONJ by harnessing the anti-inflammatory properties of the lasers to aid and encourage mucosal repair. There is little data to support this claim, however, with only two uncontrolled case series examining the use of low-level laser therapy in preventing MRONJ.^{95,96}

Recently, platelet-rich plasma (PRP), platelet-rich growth factors (PRGF), and platelet-rich fibrin (PRF) have been reported to be effective in the acceleration of tissue healing and bone regeneration following oral surgery procedures.^{106,107} The underlying concept is based on the collection of highly concentrated platelets whose granules are rich in substances fundamental for the promotion of the healing process. A systematic review carried out on the use of autologous platelet concentrates after tooth extraction in patients at risk of MRONJ found that of the 697 extractions performed, only 0.99% of cases developed osteonecrosis, suggesting that platelet concentrations stimulate tissue healing and/or regeneration.⁹⁸ These findings were based on the results

of three controlled trials in the use of platelet concentrates in the prevention of MRONJ post dental extraction. 97,107

Current guidelines

Clinical practice guidelines are systematically developed statements that assist practitioners in healthcare decision-making processes. These guidelines must aim to be methodologically sound to provide recommendations with the least bias possible. The AGREE II instrument was developed to assess the methodological rigour of developed guidelines by focusing on the transparency of their development.⁷²

The search strategy employed in this review yielded 12 clinical practice guidelines related to the management of dental patients at risk of MRONJ. The development methodology of the retrieved guidelines was assessed using the AGREE II instrument in six different domains and each guideline was assigned an overall quality score (**Table 4**). The majority of these guidelines were found to be of suboptimal quality in relation to the AGREE II instrument.

International guidance

While a number of international professional associations have established expert panels to review the evidence and construct guidelines, much of the available published material represents the views of single groups, and is based only on their individual experience.^{108,109}

The latest revisions to international guidance are from the National Health Service (UK) in January 2015, the American Association of Oral and Maxillofacial Surgery in October 2014, and the Scottish Dental Clinical Effectiveness Programme (SDCEP) in March 2017.^{2,67,68} Some of the more comprehensive guidance documents recently published make reference to high-quality evidence in certain aspects of management, but continued research in these specific areas is indicated in order to draw any meaningful conclusions on management strategies.^{2,68}

Current Irish practice

Current Irish practice is determined by a combination of guidance published in

Expert panel representation	Year of				AGREE II SCOR	E		
	publication	Scope and purpose	Stakeholder involvement	Rigour of development	Clarity of presentation	Applicability	Editorial independence	Overall guideline assessment
Scottish Dental Clinical Effectiveness Programme ⁶⁸	2017	95%	86%	88%	91%	79%	86%	6/7
American Society for Bone and Mineral Research ⁴⁴	2015	100%	48%	32%	57%	14%	93%	3/7
American Association of Oral and Maxillofacial Surgeons ²	2014	57%	33%	23%	24%	14%	21%	2/7
American Academy of Oral Medicine ¹¹⁰	2005	90%	30%	25%	40%	14%	14%	2/7
National Health Service ⁶⁷	2015	55%	20%	14%	40%	14%	14%	2/7
American Association of Endodontists ¹¹¹	2012	67%	19%	23%	33%	20%	14%	2/7
American Dental Association ¹¹²	2011	91%	57%	41%	67%	18%	14%	4/7
Allied Task Force Committee of Japanese Society								
for Bone and Mineral Research ¹¹³	2010	65%	33%	23%	40%	14%	14%	2/7
French Expert Panel ¹¹⁴	2009	82%	19%	23%	40%	14%	25%	2/7
German Society of Senology ⁷¹	2009	55%	35%	14%	35%	18%	21%	2/7
Spanish Expert Panel ¹¹⁵	2007	70%	14%	18%	30%	14%	40%	2/7
Australian Dental Association ¹¹⁶	2006	70%	14%	20%	35%	14%	20%	1/7

Table 4: Quality of clinical practice guidelines on the dental management of patients at risk of MRONJ.

circulating Irish literature and information used by national health organisations. Another source of guidance nationally, although lacking the same clarity, is what undergraduate dental students are currently taught in our national dental hospitals. The publication 'Guidelines for treating patients taking bisphosphonates prior to dental extractions' in the *Journal of the Irish Dental Association* (2010) is the most current Irish guidance, upon which other national guidance documents have been based.⁸⁶

Current controversies

There are areas of controversy among recommendations from all eligible publications, which warrant further discussion.

C-telopeptide test

The role of testing the serum bone turnover marker C-telopeptide (CTX) level as an indicator of risk for MRONJ in this patient population remains controversial. Some publications recommend serum CTX levels before invasive dental procedures to predict an individual's risk of developing MRONJ, with dental treatment modifications based on those results.^{87,88} However, other publications, including the latest Amercian Dental Association (ADA) guidelines, have indicated that serum CTX levels display neither reliability nor accuracy in predicting the risk for MRONJ and do not recommend routine testing.^{112,117-119}

Drug holidays

The concept of a drug holiday in individuals receiving BP therapy who require tooth extractions has been a subject of ongoing controversy, with little data to support current recommendations. There is currently no strong evidence to show that interrupting BP therapy alters the risk of MRONJ development in patients following tooth extraction due to the lengthy half-life of the drugs.^{6,61} Until more conclusive evidence in the form of clinical trials becomes available, reference to the benefit of a drug holiday should be removed from guidelines to prevent confusion among practitioners.

In contrast, although not strictly a drug holiday, it has been proposed that any

non-urgent dento-alveolar surgery in patients taking denosumab for the treatment of osteoporosis is delayed until a month prior to the patient's next scheduled drug administration.⁷ Resumption of denosumab treatment following invasive dental treatment should be delayed until the socket has healed.^{2,68} This requires close communication with the prescribing physician.

Prophylactic antibiotic therapy

There are conflicting and varying recommendations regarding prophylactic antibiotic therapy before and after dental treatment for prevention of MRONJ.^{89,90,120} Australian, German and Spanish guidelines recommend the use of antibiotic prophylaxis, whereas more recent ADA and SDCEP guidelines state that there is no evidence to support the use of antibiotics and/or antiseptic rinses.

This literature review found only observational studies, most of which were underpowered and lacking a control group, reporting a benefit in the use of antibiotics.⁸⁹⁻⁹¹ Generally, antibiotic regimes were included as part of a combination of preventive measures, making it difficult to interpret the individual role of these measures in reducing the risk of MRONJ.

The role, if any, of oral commensal bacteria in the development of MRONJ remains ambiguous and the value of antibiotics is thus unclear.¹²¹⁻¹²³ Due to the increasing incidence of bacterial resistance and adverse effects associated with antibiotic use, there must be clear evidence that their use confers a benefit to the patient.

Further investigation of current controversies

Continued research is required to order to fully elucidate the underlying pathophysiology of MRONJ at both cellular and molecular levels. The value of proposed preventive measures needs to be established, such as dental screening prior to commencing treatment, antibiotic therapy, drug holidays and CTX testing. Future research into the mechanisms underlying MRONJ would strategically enhance development of evidence-based clinical practice quidelines.

There are proposals to avoid the use of vasoconstrictors in local anaesthetics.⁸⁶ There has been no evidence published to support the assertion that this measure decreases MRONJ risk. Notwithstanding the lack of such evidence, this has been advocated in international publications as a simple, prudent measure to aid maintenance of vascularity.¹²⁴⁻¹²⁶ Questions also remain about the relationship between the risk of developing MRONJ and the extent of invasiveness in dental procedures.

Conclusion

Currently, there is a lack of evidence to support guidelines given the rare occurrence of this condition and inherent difficulties in carrying out highquality research on this patient cohort. The authors propose a clear instruction list to Irish dentists to more closely align practice to internationally agreed standards when treating patients at risk of MRONJ (**Appendix 1**). The authors acknowledge that there is very little evidence to support the efficacy of some measures proposed here. However, given their relatively conservative nature, these measures have been advocated based on good surgical principles and practice. In the current climate of uncertainty, and with a lack of robust evidence, individual judgment brought to each clinical situation by the patient's general/specialist dental practitioner is an important consideration.

References

- Hamadeh, I.S., Ngwa, B.A., Gong, Y. Drug induced osteonecrosis of the jaw. Cancer Treat Rev 2015; 41: 455-464.
- Ruggiero, S.L., et al. American Association of Oral and Maxillofacial Surgeons position paper on medication-related osteonecrosis of the jaw – 2014 update. J Oral Maxillofac Surg 2014; 72: 1938-1956.
- Fedele, S., et al. Nonexposed variant of bisphosphonate-associated osteonecrosis of the jaw: a case series. Am J Med 2010; 123: 1060-1064.
- Otto, S., et al. Bisphosphonate-related osteonecrosis of the jaws characteristics, risk factors, clinical features, localization and impact on oncological treatment. J Craniomaxillofac Surg 2012; 40: 303-309.
- Henry, C.J., O'Reilly, R., Stassen, L.F. Dental interventions in patients taking antiresorptive medication for the treatment of osteoporosis and other bone disease: an audit of current practice in the Dublin Dental University Hospital. J Ir Dent Assoc. 2017; 63 (5): 263-268.
- McClung, M., et al. Bisphosphonate therapy for osteoporosis: benefits, risks, and drug holiday. Am J Med 2013; 126: 13-20.
- Troeltzsch, M., Woodlock, T., Kriegelstein, S., Steiner, T., Messlinger, K. Physiology and pharmacology of nonbisphosphonate drugs implicated in osteonecrosis of the jaw. J Can Dent Assoc 2012; 78; c85.
- Hillner, B.E., et al. American Society of Clinical Oncology 2003 update on the role of bisphosphonates and bone health issues in women with breast cancer. J Clin Oncol 2003; 21: 4042-4057.
- McClung, M.R. Bisphosphonates. Endocrinol Metab Clin North Am 2003; 32: 253-271.
- Vondracek, S.F. Managing osteoporosis in postmenopausal women. Am J Health Syst Pharm 2010; 67; S9-19.
- Marx, R.E. Pamidronate (Aredia) and zoledronate (Zometa) induced avascular necrosis of the jaws: a growing epidemic. J Oral Maxillofac Surg 2003; 61: 1115-1117.
- Bagan, J., et al. Medication-related osteonecrosis of the jaw associated with bisphosphonates and denosumab in osteoporosis. Oral Dis 2016; 22: 324-329.
- Borumandi, F., Aghaloo, T., Cascarini, L., Gaggl, A., Fasanmade, K. Anti-resorptive drugs and their impact on maxillofacial bone among cancer patients. *Anticancer Agents Med Chem* 2015; 15: 736-743.

- Rizzoli, R., et al. Cancer-associated bone disease. Osteoporos Int 2013; 24: 2929-2953.
- Body, J.J., et al. Bone health in the elderly cancer patient: A SIOG position paper. Cancer Treat Rev 2016; 51: 46-53.
- Doggrell, S.A. Inhibition of RANKL: a new approach to the treatment of osteoporosis. Expert Opin Pharmacother 2006; 7: 1097-1100.
- McClung, M.R. Inhibition of RANKL as a treatment for osteoporosis: preclinical and early clinical studies. *Curr Osteoporos Rep* 2006; 4: 28–33.
- Lipton, A., et al. Randomized active-controlled phase II study of denosumab efficacy and safety in patients with breast cancer-related bone metastases. J Clin Oncol 2007; 25; 4431-4437.
- Sinningen, K., et al. Skeletal and extraskeletal actions of denosumab. Endocrine 2012; 42: 52-62.
- Lipton, A., et al. Superiority of denosumab to zoledronic acid for prevention of skeletal-related events: a combined analysis of 3 pivotal, randomised, phase 3 trials. *Eur J Cancer* 2012; 48: 3082-3092.
- Sutton, E.E., Riche, D.M. Denosumab, a RANK ligand inhibitor, for postmenopausal women with osteoporosis. Ann Pharmacother 2012; 46: 1000-1009.
- Bone, H.G., et al. Effects of denosumab treatment and discontinuation on bone mineral density and bone turnover markers in postmenopausal women with low bone mass. J Clin Endocrinol Metab 2011; 96; 972-980.
- Peris, P., et al. Prolonged bisphosphonate release after treatment in women with osteoporosis. Relationship with bone turnover. Bone 2011; 49: 706-709.
- Porras, A.G., Holland, S.D., Gertz, B.J. Pharmacokinetics of alendronate. *Clin Pharmacokinet* 1999; 36: 315-328.
- Leite de Oliveira, R., Hamm, A., Mazzone, M. Growing tumor vessels: more than one way to skin a cat – implications for angiogenesis targeted cancer therapies. *Mol Aspects Med* 2011; 32: 71-87.
- Koch, F.P., Walter, C., Hansen, T., Jager, E., Wagner, W. Osteonecrosis of the jaw related to sunitinib. Oral Maxillofac Surg 2011; 15; 63–66.
- Fleissig, Y., Regev, E., Lehman, H. Sunitinib related osteonecrosis of jaw: a case report. Oral Surg Oral Med Oral Pathol Oral Radiol 2012; 113: e1-3.
- Hoefert, S., Eufinger, H. Sunitinib may raise the risk of bisphosphonate-related osteonecrosis of the jaw: presentation of three cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2010; 110: 463-469.
- Ponzetti, A., et al. Jaw osteonecrosis associated with aflibercept, irinotecan and fluorouracil: attention to oral district. *Tumori* 2016; 102 (Suppl. 2).
- Fusco, V., Santini, D., Armento, G., Tonini, G., Campisi, G. Osteonecrosis of jaw beyond antiresorptive (bone-targeted) agents: new horizons in oncology. *Expert Opin Drug Saf* 2016; 15: 925-935.
- Irish Osteoporosis Society. About Osteoporosis. 2017. Accessed March 22, 2017. Available at: www.irishosteoporosis.ie/index.php/about_osteoporosis/.
- Bonetti, D.L., *et al.* Managing patients on bisphosphonates: the practice of primary care dentists before and after the publication of national guidance. *Br Dent J* 2014; 217: E25.
- Bamias, A., et al. Osteonecrosis of the jaw in cancer after treatment with bisphosphonates: incidence and risk factors. J Clin Oncol 2005; 23: 8580-8587.
- Reid, I.R., Cornish, J. Epidemiology and pathogenesis of osteonecrosis of the jaw. Nat Rev Rheumatol 2011; 8: 90-96.
- Coleman, R., *et al.* Safety of zoledronic acid and incidence of osteonecrosis of the jaw (ONJ) during adjuvant therapy in a randomised phase III trial (AZURE: BIG 01-04) for women with stage II/III breast cancer. *Breast Cancer Res Treat* 2011; 127: 429-438.

- Coleman, R., et al. Adjuvant zoledronic acid in patients with early breast cancer: final efficacy analysis of the AZURE (BIG 01/04) randomised open-label phase 3 trial. Lancet Oncol 2014; 15; 997-1006.
- Walter, C., et al. Incidence of bisphosphonate-associated osteonecrosis of the jaws in breast cancer patients. *Cancer* 2009; 115: 1631-1637.
- Mauri, D., *et al.* Osteonecrosis of the jaw and use of bisphosphonates in adjuvant breast cancer treatment: a meta-analysis. *Breast Cancer Res Treat* 2009; 116: 433-439.
- Vahtsevanos, K., *et al.* Longitudinal cohort study of risk factors in cancer patients of bisphosphonate-related osteonecrosis of the jaw. *J Clin Oncol* 2009; 27: 5356-5362.
- Saad, F., et al. Incidence, risk factors, and outcomes of osteonecrosis of the jaw: integrated analysis from three blinded active-controlled phase III trials in cancer patients with bone metastases. Ann Oncol 2012; 23: 1341-1347.
- Fehm, T., et al. Bisphosphonate-induced osteonecrosis of the jaw (ONJ): Incidence and risk factors in patients with breast cancer and gynecological malignancies. *Gynecol Oncol* 2009; 112: 605-609.
- Thumbigere-Math, V., *et al.* A retrospective study evaluating frequency and risk factors of osteonecrosis of the jaw in 576 cancer patients receiving intravenous bisphosphonates. *Am J Clin Oncol* 2012; 35: 386-392.
- Varun, B., Sivakumar, T., Nair, B.J., Joseph, A.P. Bisphosphonate induced osteonecrosis of jaw in breast cancer patients: A systematic review. *J Oral Maxillofac Pathol* 2012; 16: 210-214.
- Khan, A.A., et al. Diagnosis and management of osteonecrosis of the jaw: a systematic review and international consensus. J Bone Miner Res 2015; 30: 3-23.
- Cai, J., Zeng, D. Sample size/power calculation for case-cohort studies. *Biometrics* 2004; 60: 1015-1024.
- Malden, N., Lopes, V. An epidemiological study of alendronate-related osteonecrosis of the jaws. A case series from the south-east of Scotland with attention given to case definition and prevalence. *J Bone Miner Metab* 2012; 30: 171-182.
- Grbic, J.T., et al. The incidence of osteonecrosis of the jaw in patients receiving 5 milligrams of zoledronic acid: data from the health outcomes and reduced incidence with zoledronic acid once yearly clinical trials program. J Am Dent Assoc 2010; 141: 1365–1370.
- Lo, J.C., et al. Prevalence of osteonecrosis of the jaw in patients with oral bisphosphonate exposure. J Oral Maxillofac Surg 2010; 68: 243–253.
- Solomon, D.H., et al. Defining the epidemiology of bisphosphonate-associated osteonecrosis of the jaw: prior work and current challenges. Osteoporos Int 2013; 24: 237-244.
- Black, D.M., et al. The effect of 3 versus 6 years of zoledronic acid treatment of osteoporosis: a randomized extension to the HORIZON-Pivotal Fracture Trial (PFT). J Bone Miner Res 2012; 27; 243-254.
- Black, D.M., et al. The effect of 6 versus 9 years of zoledronic acid treatment in osteoporosis: a randomized second extension to the HORIZON-Pivotal Fracture Trial (PFT). J Bone Miner Res 2015; 30: 934-944.
- Lee, S.H., Chang, S.S., Lee, M., Chan, R.C., Lee, C.C. Risk of osteonecrosis in patients taking bisphosphonates for prevention of osteoporosis: a systematic review and meta-analysis. *Osteoporos Int* 2014; 25; 1131-1139.
- Chamizo Carmona, E., Gallego Flores, A., Loza Santamaria, E., Herrero Olea, A., Rosario Lozano, M.P. Systematic literature review of bisphosphonates and osteonecrosis of the jaw in patients with osteoporosis. *Reumatol Clin* 2013; 9: 172-177.

- Patel, V., McLeod, N.M., Rogers, S.N., Brennan, P.A. Bisphosphonate osteonecrosis of the jaw – a literature review of UK policies versus international policies on bisphosphonates, risk factors and prevention. *Br J Oral Maxillofac Surg* 2011; 49: 251-257.
- Badros, A., et al. Osteonecrosis of the jaw in multiple myeloma patients: clinical features and risk factors. J Clin Oncol 2006; 24: 945-952.
- Barasch, A., et al. Dental risk factors for osteonecrosis of the jaws: a CONDOR casecontrol study. Clin Oral Investig 2013; 17: 1839–1845.
- Barasch, A., et al. Risk factors for osteonecrosis of the jaws: a case-control study from the CONDOR Dental PBRN. Tex Dent J 2013; 130: 299-307.
- Dodson, T.B. The frequency of medication-related osteonecrosis of the jaw and its associated risk factors. Oral Maxillofac Surg Clin North Am 2015; 27: 509-516.
- Gaudin, E., Seidel, L., Bacevic, M., Rompen, E., Lambert, F. Occurrence and risk indicators of medication-related osteonecrosis of the jaw after dental extraction: a systematic review and meta-analysis. J Clin Periodontol 2015; 42: 922-932.
- Ghidini, G., et al. Medication-related osteonecrosis of the jaw: risk factors in patients under biphosphonate versus patients under antiresorptive-antiangiogenic drugs. *Minerva Stomatol* 2017; 66: 135-140.
- 61. Hasegawa, T., et al. A multicenter retrospective study of the risk factors associated with medication-related osteonecrosis of the jaw after tooth extraction in patients receiving oral bisphosphonate therapy: can primary wound closure and a drug holiday really prevent MRONJ? Osteoporos Int 2017; 28: 2465-2473.
- Hoff, A.O., et al. Frequency and risk factors associated with osteonecrosis of the jaw in cancer patients treated with intravenous bisphosphonates. J Bone Miner Res 2008; 23: 826-836.
- Kajizono, M., et al. Incidence and risk factors of osteonecrosis of the jaw in advanced cancer patients after treatment with zoledronic acid or denosumab: a retrospective cohort study. *Biol Pharm Bull* 2015; 38; 1850-1855.
- Katz, J., et al. Genetic polymorphisms and other risk factors associated with bisphosphonate induced osteonecrosis of the jaw. Int J Oral Maxillofac Surg 2011; 40: 605-611.
- Tsao, C., et al. Oral health risk factors for bisphosphonate-associated jaw osteonecrosis. J Oral Maxillofac Surg 2013; 71: 1360-1366.
- 66. Yazdi, P.M., Schiodt, M. Dentoalveolar trauma and minor trauma as precipitating factors for medication-related osteonecrosis of the jaw (ONJ): a retrospective study of 149 consecutive patients from the Copenhagen ONJ Cohort. Oral Surg Oral Med Oral Pathol Oral Radiol 2015; 119: 416-422.
- Malins, T. Dental Management of Patients Prescribed Bisphosphonates-Clinical Guidance. Department of Oral & Maxillofacial Surgery, University Hospitals of North Midlands NHS Trust. 2015. Accessed on March 22, 2017. Available at: www.england.nhs.uk/mids-east/wp-content/uploads/sites/7/2015/03/ bisphosphonates-guidelines-2015.pdf.
- Scottish Dental Clinical Effectiveness Programme. Oral Health Management of Patients at Risk of Medication-related Osteonecrosis of the Jaw-Dental Clinical Guidance. Dundee Dental Education Centre. 2017.
- Marx, R.E., Sawatari, Y., Fortin, M., Broumand, V. Bisphosphonate-induced exposed bone (osteonecrosis/osteopetrosis) of the jaws: risk factors, recognition, prevention, and treatment. *J Oral Maxillofac Surg* 2005; 63; 1567-1575.
- Filleul, O., Crompot, E., Saussez, S. Bisphosphonate-induced osteonecrosis of the jaw: a review of 2,400 patient cases. J Cancer Res Clin Oncol 2010; 136: 1117-1124.
- Fehm, T., et al. Bisphosphonate-associated osteonecrosis of the jaw in breast cancer patients: recommendations for prevention and treatment. Breast 2009; 18; 213–217.
- Brouwers, M.C., et al. AGREE II: advancing guideline development, reporting and evaluation in health care. Cmaj 2010; 182: E839-842.

- Sim le W., Sanders, K.M., Borromeo, G.L., Seymour, J.F., Ebeling, P.R. Declining incidence of medication-related osteonecrosis of the jaw in patients with cancer. J Clin Endocrinol Metab 2015; 100: 3887-3893.
- 74. Ripamonti, C.I., et al. Decreased occurrence of osteonecrosis of the jaw after implementation of dental preventive measures in solid tumour patients with bone metastases treated with bisphosphonates. The experience of the National Cancer Institute of Milan. Ann Oncol 2009; 20: 137-145.
- Manfredi, M., et al. A 5-year retrospective longitudinal study on the incidence and the risk factors of osteonecrosis of the jaws in patients treated with zoledronic acid for bone metastases from solid tumors. *Med Oral Patol Oral Cir Bucal* 2017; 22: e342– e348.
- Bramati, A., et al. Prospective, mono-institutional study of the impact of a systematic prevention program on incidence and outcome of osteonecrosis of the jaw in patients treated with bisphosphonates for bone metastases. J Bone Miner Metab 2015; 33: 119-124.
- Vandone, A.M., *et al.* Impact of dental care in the prevention of bisphosphonateassociated osteonecrosis of the jaw: a single-center clinical experience. *Ann Oncol* 2012; 23: 193-200.
- Dimopoulos, M.A., et al. Reduction of osteonecrosis of the jaw (ONJ) after implementation of preventive measures in patients with multiple myeloma treated with zoledronic acid. Ann Oncol 2009; 20: 117-120.
- Regev, E., Lustmann, J., Nashef, R. Atraumatic teeth extraction in bisphosphonatetreated patients. J Oral Maxillofac Surg 2008; 66: 1157-1161.
- Morita, H., Imai, Y., Yoneda, M., Hirofuji, T. Applying orthodontic tooth extrusion in a patient treated with bisphosphonate and irradiation: a case report. *Spec Care Dentist* 2017; 37: 43-46.
- Smidt, A., Lipovetsky-Adler, M., Sharon, E. Forced eruption as an alternative to tooth extraction in long-term use of oral bisphosphonates: review, risks and technique. J Am Dent Assoc 2012; 143: 1303-1312.
- Yamazaki, T., et al. Increased incidence of osteonecrosis of the jaw after tooth extraction in patients treated with bisphosphonates: a cohort study. Int J Oral Maxillofac Surg 2012; 41: 1397-1403.
- Otto, S., et al. Tooth extraction in patients receiving oral or intravenous bisphosphonate administration: a trigger for BRONJ development? J Craniomaxillofac Surg 2015; 43: 847-854.
- La Verde, N., *et al.* Osteonecrosis of the jaw (ONJ) in cancer patients treated with bisphosphonates: how the knowledge of a phenomenon can change its evolution. *Support Care Cancer* 2008; 16: 1311-1315.
- Damm, D.D., Jones, D.M. Bisphosphonate-related osteonecrosis of the jaws: a potential alternative to drug holidays. *Gen Dent* 2013; 61: 33-38.
- Rogers, S., et al. Guidelines for treating patients taking bisphosphonates prior to dental extractions. J Ir Dent Assoc 2010; 56: 40.
- Friedlander, A.H., Chang, T.I., Hazboun, R.C., Garrett, N.R. High C-terminal crosslinking telopeptide levels are associated with a minimal risk of osteonecrosis of the jaws in patients taking oral bisphosphonates and having exodontia. *J Oral Maxillofac Surg* 2015; 73: 1735-1740.
- Marx, R.E., Cillo, J.E. Jr, Ulloa, J.J. Oral bisphosphonate-induced osteonecrosis: risk factors, prediction of risk using serum CTX testing, prevention, and treatment. J Oral Maxillofac Surg 2007; 65: 2397-2410.
- Ferlito, S., Puzzo, S., Liardo, C. Preventive protocol for tooth extractions in patients treated with zoledronate: a case series. *J Oral Maxillofac Surg* 2011; 69: e1-4.
- Lodi, G., et al. Tooth extraction in patients taking intravenous bisphosphonates: a preventive protocol and case series. J Oral Maxillofac Surg 2010; 68: 107-110.
- 200 Journal of the Irish Dental Association | Aug/Sept 2018 : Vol 64 (4)

- Heufelder, M.J., *et al.* Principles of oral surgery for prevention of bisphosphonaterelated osteonecrosis of the jaw. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2014; 117: e429-e435.
- Scoletta, M., et al. Tooth extractions in intravenous bisphosphonate-treated patients: a refined protocol. J Oral Maxillofac Surg 2013; 71: 994-999.
- Matsumoto, A., et al. Primary wound closure after tooth extraction for prevention of medication-related osteonecrosis of the jaw in patients under denosumab. *Clin Oral Investig* 2017; 21; 127-134.
- Mozzati, M., Arata, V., Gallesio, G. Tooth extraction in osteoporotic patients taking oral bisphosphonates. *Osteoporos Int* 2013; 24: 1707-1712.
- 95. Vescovi, P., et al. Case series of 589 tooth extractions in patients under bisphosphonates therapy. Proposal of a clinical protocol supported by Nd:YAG lowlevel laser therapy. Med Oral Patol Oral Cir Bucal 2013; 18; e680-685.
- Vescovi, P., et al. Tooth extractions in high-risk patients under bisphosphonate therapy and previously affected with osteonecrosis of the jaws: surgical protocol supported by low-level laser therapy. J Craniofac Surg 2015; 26: 696-699.
- Asaka, T., et al. Platelet-rich fibrin may reduce the risk of delayed recovery in tooth-extracted patients undergoing oral bisphosphonate therapy: a trial study. *Clin Oral Investig* 2017; 21: 2165-2172.
- Lopez-Jornet, P., Sanchez Perez, A., Amaral Mendes, R., Tobias, A. Medication-related osteonecrosis of the jaw: is autologous platelet concentrate application effective for prevention and treatment? A systematic review. J Craniomaxillofac Surg 2016; 44: 1067-1072.
- Basso, F.G., et al. Proliferation, migration, and expression of oral-mucosalhealing-related genes by oral fibroblasts receiving low-level laser therapy after inflammatory cytokines challenge. *Lasers Surg Med* 2016; 48: 1006-1014.
- 100. Spanemberg, J.C., Figueiredo, M.A., Cherubini, K., Salum, F.G. Low-level laser therapy: a review of its applications in the management of oral mucosal disorders. *Altern Ther Health Med* 2016; 22: 24-31.
- Mallick, S., Benson, R., Rath, G.K. Radiation induced oral mucositis: a review of current literature on prevention and management. *Eur Arch Otorhinolaryngol* 2016; 273; 2285-2293.
- 102. Amadori, F., et al. Low-level laser therapy for treatment of chemotherapy-induced oral mucositis in childhood: a randomized double-blind controlled study. *Lasers Med Sci* 2016; 31; 1231-1236.
- 103. Zecha, J.A., et al. Low level laser therapy/photobiomodulation in the management of side effects of chemoradiation therapy in head and neck cancer: part 1: mechanisms of action, dosimetric, and safety considerations. Support Care Cancer 2016; 24: 2781-2792.
- 104. Zecha, J.A., et al. Low-level laser therapy/photobiomodulation in the management of side effects of chemoradiation therapy in head and neck cancer: part 2: proposed applications and treatment protocols. *Support Care Cancer* 2016; 24: 2793-2805.
- 105. Pandeshwar, P., et al. Photobiomodulation in oral medicine: a review. J Investig Clin Dent 2016; 7; 114-126.
- 106. Del Fabbro, M., Corbella, S., Taschieri, S., Francetti, L., Weinstein, R. Autologous platelet concentrate for post-extraction socket healing: a systematic review. Eur J Oral Implantol 2014; 7: 333-344.
- 107. Mozzati, M., Arata, V., Gallesio, G. Tooth extraction in patients on zoledronic acid therapy. Oral Oncol 2012; 48: 817-821.
- 108. Ruggiero, S.L., et al. American Association of Oral and Maxillofacial Surgeons position paper on bisphosphonate-related osteonecrosis of the jaws – 2009 update. J Oral Maxillofac Surg 2009; 67: 2-12.

- 109. Alhussain, A., Peel, S., Dempster, L., Clokie, C., Azarpazhooh, A. Knowledge, practices and opinions of Ontario dentists when treating patients receiving bisphosphonates. J Oral Maxillofac Surg 2015; 73: 1095-1105.
- 110. Migliorati, C.A., *et al.* Managing the care of patients with bisphosphonateassociated osteonecrosis: an American Academy of Oral Medicine position paper. *J Am Dent Assoc* 2005; 136; 1658-1668.
- 111. American Association of Endodontists. Biphosphonate-Associated Osteonecrosis of the Jaws. 2012. Accessed on November 14, 2015. Available at: https://www.aae.org/uploadedfiles/publications_and_research/endodontics_collea gues_for_excellence_newsletter/fall2012ecfe.pdf.
- 112. Hellstein, J.W., et al. Managing the care of patients receiving antiresorptive therapy for prevention and treatment of osteoporosis: executive summary of recommendations from the American Dental Association Council on Scientific Affairs. J Am Dent Assoc 2011; 142: 1243-1251.
- 113. Yoneda, T., et al. Bisphosphonate-related osteonecrosis of the jaw: position paper from the Allied Task Force Committee of Japanese Society for Bone and Mineral Research, Japan Osteoporosis Society, Japanese Society of Periodontology, Japanese Society for Oral and Maxillofacial Radiology, and Japanese Society of Oral and Maxillofacial Surgeons. J Bone Miner Metab 2010; 28; 365-383.
- 114. Tubiana-Hulin, M., et al. Physiopathology and management of osteonecrosis of the jaws related to bisphosphonate therapy for malignant bone lesions. A French expert panel analysis. Crit Rev Oncol Hematol 2009; 71: 12-21.
- 115. Bagan, J., et al. Recommendations for the prevention, diagnosis, and treatment of osteonecrosis of the jaw (ONJ) in cancer patients treated with bisphosphonates. Med Oral Patol Oral Cir Bucal 2007; 12: E336-340.
- 116. Sambrook, P., Olver, I., Goss, A. Bisphosphonates and osteonecrosis of the jaw. Aust Fam Physician 2006; 35: 801-803.

Appendix 1

Instruction list for dental patients at risk of medication-related osteonecrosis of the jaws.

The following instruction list has been formulated as an aid to clinicians in general and hospital-based practice when managing patients at risk of medication-related osteonecrosis of the jaws (MRONJ). The clinical guidance is based upon best practice international guidelines from the National Health Service (United Kingdom), the American Association of Oral and Maxillofacial Surgery, and the Scottish Dental Clinical Effectiveness Programme (SDCEP).

1. Risk assessment

Carry out a comprehensive medical history for all patients at risk of MRONJ. This would include precise records regarding the nature of antiresorptive and anti-angiogenic therapeutic regimes:

- underlying medical condition;
- drug type, formulation, dosage, route of administration and frequency; and,
- date of commencing (and ceasing, if relevant) treatment.

Assign patients to low- or high-risk categories according to the criteria proposed by the SDCEP's 'Management of Patients at Risk of Medication-related Osteonecrosis of the Jaw – Dental Clinical Guidance' (**Table 1**).

- 117. Enciso, R., *et al.* Assessing the utility of serum C-telopeptide cross-link of type 1 collagen as a predictor of bisphosphonate-related osteonecrosis of the jaw: a systematic review and meta-analysis. *J Am Dent Assoc* 2016; 147: 551-560.e511.
- 118. Kunchur, R., Need, A., Hughes, T., Goss, A. Clinical investigation of C-terminal cross-linking telopeptide test in prevention and management of bisphosphonateassociated osteonecrosis of the jaws. J Oral Maxillofac Surg 2009; 67; 1167-1173.
- 119. Edwards, B.J., et al. Updated recommendations for managing the care of patients receiving oral bisphosphonate therapy: an advisory statement from the American Dental Association Council on Scientific Affairs. J Am Dent Assoc 2008; 139: 1674-1677.
- 120. Bermudez-Bejarano, E.B., et al. Prophylaxis and antibiotic therapy in management protocols of patients treated with oral and intravenous bisphosphonates. J Clin Exp Dent 2017; 9: e141-e149.
- 121. Panya, S., et al. Role of microbiological culture and polymerase chain reaction (PCR) of actinomyces in medication-related osteonecrosis of the jaw (MRONJ). J Craniomaxillofac Surg 2017; 45; 357-363.
- 122. Mawardi, H., et al. A role of oral bacteria in bisphosphonate-induced osteonecrosis of the jaw. J Dent Res 2011; 90: 1339-1345.
- 123. Kumar, S.K., et al. The role of microbial biofilms in osteonecrosis of the jaw associated with bisphosphonate therapy. Curr Osteoporos Rep 2010; 8: 40-48.
- 124. Moinzadeh, A.T., Shemesh, H., Neirynck, N.A., Aubert, C., Wesselink, P.R. Bisphosphonates and their clinical implications in endodontic therapy. *Int Endod J* 2013; 46: 391-398.
- 125. Tarassoff, P., Csermak, K. Avascular necrosis of the jaws: risk factors in metastatic cancer patients. J Oral Maxillofac Surg 2003; 61: 1238-1239.
- 126. Soltau, J., et al. Antitumoral and antiangiogenic efficacy of bisphosphonates in vitro and in a murine RENCA model. Anticancer Res 2008; 28; 933-941.

Table 1: Risk stratification for patients at risk of medication-related osteonecrosis of the jaws (MRONJ).

High risk

Patients being treated for osteoporosis or other non-malignant diseases of bone (Paget's disease of bone, osteogenesis imperfecta, etc.) with oral bisphosphonates, or quarterly or yearly infusions of intravenous bisphosphonates, for >5 years

Concurrent use of systemic corticosteroids or other immunosuppressants

Patients being treated with antiresorptive or anti-angiogenic drugs (or both) as part of the management of cancer

Patients with a previous diagnosis of MRONJ

Low risk Patients taking oral bisphosphonates for the treatment of osteoporosis or other nonmalignant diseases of bone (Paget's disease of bone, osteogenesis imperfecta, etc.) for <5 years Patients being treated for osteoporosis or other nonmalignant diseases of bone (Paget's disease of bone osteogenesis imperfecta, etc.) with quarterly or yearly infusions of intravenous bisphosphonates for <5 years Patients being treated for osteoporosis or other nonmalignant diseases of bone (Paget's disease of bone osteogenesis imperfecta, etc.) with denosumab

2. Initial dental management of patients prior to commencing antiresorptive/anti-angiogenic therapy

Aim to optimise the oral health of the patient, rendering them as dentally fit as possible.

Establish optimal preventive regimes:

- smoking cessation;
- report any symptoms such as exposed bone, loose teeth, nonhealing cores or lesions, pus or discharge, tingling, numbness or altered sensation, pain or swelling as soon as possible;
- optimal oral hygiene instruction use of fluoride toothpaste and mouth rinse;

3. Dental treatment of patients undergoing antiresorptive or anti-angiogenic treatment

Low-risk patients

- Perform simple extractions and other dento-alveolar procedures in primary care:
 - advise the patient that there is a very small risk of MRONJ occurring to ensure valid consent;
 - consider the use of pre- and postoperative chlorhexidine rinsing;
 - consider the use of plain local anaesthetic without vasoconstrictor;
 - atraumatic surgery must be performed to reduce crushing of bone and further delay in healing;
 - sutures may be placed to approximate wound edges, but not tightly as this may cause ischaemia; and,
 - a soft diet postoperatively.
- Do not prescribe antibiotic prophylaxis specifically to reduce the risk of MRONJ.
- Review the patient appropriately to ensure mucosal healing. If the socket has not healed after eight weeks, or you suspect MRONJ, refer to an oral/oral and maxillofacial surgeon for assessment and management.

High-risk patients

- If extraction is indicated explore all possible alternatives to retain teeth.
- Perform simple extractions and other dento-alveolar procedures in primary care:
 - advise the patient that there is a risk of MRONJ occurring to ensure valid consent;
 - consider the use of pre- and postoperative chlorhexidine rinsing;
 - consider the use of plain local anaesthetic without vasoconstrictor;
 - consider the use of antibiotic prophylaxis (Table 2) especially if coexisting clinical indications;
 - atraumatic surgery must be performed to reduce crushing of bone and further delay in healing;
 - sutures may be placed to approximate wound edges, but not so tightly that they cause further ischaemia; and,
 - a soft diet postoperatively.

- caries risk assessment and tailored caries management plan;
- reduction of sugar intake and frequency;
- prescription of high fluoride toothpaste in patients with increased caries risk; and,
- six-monthly dental examinations (patients at higher risk of MRONJ may benefit from shorter recall intervals, e.g., three monthly, especially if other oral health risk factors are present).
- Treat any source of active caries, or periodontal or peri-apical infection, appropriately.
- Extraction of teeth with poor prognosis.
- Adjustment or replacement of ill-fitting dentures.
- Review the patient appropriately to ensure mucosal healing. If the socket has not healed after eight weeks, or you suspect MRONJ, refer to an oral/oral and maxillofacial surgeon for assessment and management.

Table 2: Antibiotic prophylaxis

Oral antibiotic regime for high-risk patients undergoing dento-alveolar surgery

Drug	Pre-operative dose	Postoperative dose
Amoxicillin	3g stat	500mg three times daily for seven days
Clindamycin (if allergic to amoxicillin)	600mg stat	150-300mg four times daily for seven days

As described in the SDCEP's 'Management of Patients at Risk of Medicationrelated Osteonecrosis of the Jaw – Dental Clinical Guidance', there is no benefit in referring the patient to a specialist or to secondary care based solely on their exposure to antiresorptive or anti-angiogenic drugs. Patients will feel more comfortable in the familiar surroundings of the general dental practitioner's surgery. For medically complex patients, or those requiring specialist procedures, and about whom you would normally seek advice, consider consulting/referral to an oral/oral and maxillofacial surgeon for clinical assessment and treatment planning.

An up to 50-year follow-up of crown and veneer survival in a dental practice

Olley, R.C., Andiappan, M., Frost, P.M.

Statement of problem: Indirect restorations are an important treatment in dental practice, but long-term survival studies are lacking.

Purpose: The purpose of this retrospective study was to report on the outcome of indirect restorations, which were followed up annually for up to 50 years in a dental practice.

Material and methods: A retrospective survival study was undertaken at a mixed National Health Service (NHS)/private dental practice in London, UK. Data were collected for restorations placed between 1966 and 1996 by one experienced operator. It was a requirement that patients had been followed up annually with clinical and radiographic examinations for up to 50 years. Patients were enrolled on a strict preventive policy and had excellent oral hygiene. Oral hygiene, restoration location, sensitivity, occlusion, and other details (preparation design, taper, cement used) were recorded. Restoration outcome was recorded as successful and surviving, unknown, or failed. The data were described descriptively. Kaplan-Meier survival curves and hazard curves were used to assess the survival of crowns and the probability of failure over time.

Results: A total of 223 restorations were placed in 47 patients between 1966 and 1996 and reviewed annually for up to 50 years (until 2016). These restorations included 154 metal-ceramic crowns (101 posterior and 53 anterior), 25 posterior gold crowns, 22 anterior ceramic veneers, and 22 anterior ceramic crowns. Restorations were in occlusion. The mean survival for metal-ceramic crowns was estimated as 47.53 years (95% confidence interval [CI]: 45.59-49.47 years). Failures in metal-ceramic crowns (n=6, 3.9%) were due to peri-apical periodontitis. The remaining restoration types had 100% survival at 50 years.

Conclusions: This study showed that the survival of crowns and veneers is high over 50 years in clinical practice with annual follow-up and good oral hygiene. The proportion of teeth with loss of vitality, confirmed clinically and with radiographs, was minimal.

Journal of Prosthetic Dentistry 2018; 119: 935-941.

Ratios of cantilever lengths and anterior-posterior spreads of definitive hybrid full-arch, screw-retained prostheses: results of a clinical study Drago, C.

Purpose: To record the distal cantilever lengths (CL) of full-arch, definitive hybrid prostheses fabricated for patients after treatment with an immediate occlusal loading protocol. Anterior/posterior (AP) spreads were measured on master casts of the definitive prostheses. CL/AP ratios were calculated for these two parameters. These measurements were then compared and evaluated for statistical and clinical significance; the CL/AP ratios were also compared between definitive and interim prostheses.

Materials and methods: One hundred and thirty patients with 193 edentulous arches (112 maxillary; 81 mandibular; 191 arches restored with four implants; two maxillary arches restored with five implants) were treated. Some 774 implants (Nobel Biocare Brånemark System [Nobel Active]) were included in this report. All but two patients had four implants placed into each jaw: the anterior

implants were relatively vertical; and, the posterior implants were tilted parallel to the anterior wall of the maxillary sinus and angled distally above the mental foramen. Patients were treated and followed in private practice by the author. Implants had to have at least 35Ncm of insertion torque to be immediately loaded. All implants were immediately loaded with full functional occlusions via interim, full-arch, all-acrylic resin prostheses. Definitive full-arch, hybrid prostheses were fabricated approximately six to nine months after implant placement with computer-aided design/computer-aided manufacturing (CAD/CAM) frameworks, denture bases, and acrylic resin denture teeth. Measurements of the distal cantilevered segments were made with a Boley gauge on the interim and definitive prostheses prior to insertion. AP spreads were measured on the master casts made from abutment level impressions approximately four months post occlusal loading. Prosthetic complications such as denture base fractures and cohesive/adhesive denture tooth fractures were recorded in the charts as they occurred. All charts were reviewed for this report. Prosthetic repairs for the definitive prostheses were analysed by type (tooth or denture base), arch, gender, and location within the edentulous arches.

Results: Patients were followed for up to 48 months post immediate occlusal loading. One patient experienced maxillary implant failure; the overall implant survival rate (SR) was 99.5% (770 of 774). Some 446 of 450 maxillary implants and 324 of 324 mandibular implants survived for SRs of 99.1% and 100%,



respectively. Thirty-three of the 193 interim prostheses (17.1%) warranted at least one repair during treatment. One of the 193 definitive prostheses demonstrated a posterior denture base fracture. The average cantilevered segments for the definitive maxillary prostheses were 15.6mm (right) and 15.4mm (left). The average cantilevered segments for the definitive mandibular prostheses were 15.5mm (right) and 15.6mm (left). The average maxillary AP spread was 18.4mm; the average mandibular AP spread was 17.3mm. Average maxillary CL/AP spread ratios were 0.85 (right) and 0.84 (left); average mandibular CL/AP spread ratios between the CL/AP ratios and the frequency or type of prosthetic repairs recorded in this study.

Conclusions: The results from this four-year clinical retrospective analysis indicated that one of 130 patients experienced implant failures. The prosthetic complication rate for the definitive prostheses in this study was less than 1% (0.005). The author suggests that the parameters used in this study's framework designs for full-arch, titanium-milled frameworks (CL/AP ratio <1) resulted in consistent, predictable results for rehabilitating edentulous patients.

Journal of Prosthodontics 2018; 27: 402-408.

In vitro effect of mastication on the retention and wear of locator attachments in a flat mandibular ridge model *Tehini, G., Baba, N.Z., Majzoub, Z., Nahas, P., Berberi, A., Rifai, K.*

Purpose: The effect of masticatory loads on the retention of overdenture attachments is poorly documented. The aim of this *in vitro* study is to assess the effect of simulated mastication on the retentive properties and dimensions of Locator inserts.

Materials and methods: Thirty specimens simulating non-anatomic edentulous flat ridges with two implant replicas each were fabricated. Overdenture units were connected to the implants with Locator attachments and three types of inserts: transparent (Group T; n=10 pairs), pink (Group P; n=10 pairs), and blue (Group B; n=10 pairs). The overdenture units were subjected to simulated bi-axial masticatory loads of 68.6N. Locator retention was assessed using axial dislodging forces at baseline (T0) and following 100,000 (T1) and 200,000 (T2) masticatory cycles. The inner diameter of the insert (XY) and the diameter of the central core (AB) were measured under stereomicroscope at T0 and T2. Retention changes and dimensional variations of the inserts were statistically analysed.

Results: The three groups showed significantly different retentions, with the highest values recorded for group T followed by group P, and finally group B at T0, T1, and T2. Groups T and P were not affected by loading while group B showed a significant mean retention loss from T0 to T1. XY and AB were significantly different between the three colour-coded inserts at baseline and at T2. No correlation could be established between retention changes and dimensional variations of the three types of inserts.

Conclusions: Within the limitations of this *in vitro* study, simulated mastication seems to significantly affect the extra-light blue Locator inserts but not the more retentive ones. The transparent and pink inserts may require less frequent replacements and could therefore be recommended under clinical conditions.

Journal of Prosthodontics 2018. Jul 2. doi: 10.1111/jopr.12940. [Epub ahead of print].

Dysplasia should not be ignored in lichenoid mucositis

Rock, L.D., Laronde, D.M., Lin, I., Rosin, M.P., Chan, B., Shariati, B., Zhang, L.

Oral lichen planus is categorised as a potentially malignant condition by the World Health Organisation; however, some argue that only lichen planus with dysplasia has malignant potential. Many pathologists call lichen planus with dysplasia "dysplasia with lichenoid mucositis (LM)" or "LM with dysplasia". Previous research has shown that certain high-risk patterns of loss of heterozygosity (LOH) in dysplastic lesions are associated with significantly increased cancer risk. However, LM without dysplasia lacks such molecular patterns, supporting the hypothesis that LM, by itself, is not potentially malignant and that only those with dysplasia have malignant potential. To further investigate the premalignant nature of LM with dysplasia, this study compared the rate of malignant progression of dysplasia with LM with that of dysplasia without LM. Patients from a population-based prospective cohort study with >10 years of follow-up were analysed. Study eligibility included a histological diagnosis of a primary low-grade dysplasia with or without LM. A total of 446 lesions in 446 patients met the selection criteria; 373 (84%) were classified as dysplasia without LM, while 73 (16%) were classified as dysplasia with LM. Demographic and habit information, clinical information, and outcome (progression) were compared between the two groups. Forty-nine of 373 cases of dysplasia without LM (13%) progressed compared to 8% (6/73) of dysplasia with LM. However, the difference was not statistically different (P=0.24). The three- and five-year rate of progression did not differ between the groups (6.7% and 12.5% for dysplasia without LM, and 2.9% and 6.6% for those with LM; P=0.36). Progression was associated with non-smoking, location at a high-risk site, and diagnosis of moderate dysplasia regardless of whether LM was present or not. Dysplasia with or without LM had similar cancer risk, and dysplasia should not be discounted in the presence of LM.

Journal of Dental Research 2018; 97 (7): 767-772.

QUIZ

Answers (questions on page 174)

- 1. Any combination of the following:
 - patient history of difficulty wearing/tolerating a mandibular denture;
 - there is a severely resorbed mandibular ridge with reduced bony support for mandibular denture base; and,
 - preservation of remaining residual mandibular bone.
- 2. The LOCATOR abutment.
- Yes, it allows correction of angles up to 40 degrees between divergent implants.
- The main advantage is where interocclusal space is limited as the total abutment and attachment height is low. Different collar heights may be selected.
- 5. The white insert (5lbs/2,250g) offers the maximum retention, but the blue (extra light 1.5lbs/680g) or pink (light 3lbs/1,350g) insert should be considered in advance of its use to give the option of using the maximum retention in the future for the patient. There is also a green insert available, which is an extended range male (4lbs/1,800g).

SITUATIONS WANTED

- Dentist available Galway/West region from mid June for maternity/locum cover. Eight years' experience in both UK and Ireland. Email galwaydent18@ hotmail.com.
- Dental associate available one to two days a week in Dublin. Available from August/September. Competent in endodontics, orthodontics, facial aesthetics. 12 years' experience in private practice. Email dentalassociate26@gmail.com.
- Experienced dentist, currently in specialist training, available for locum cover around Ireland July 23-31, August 1-7, 13-18. Contact locumdentist98@ gmail.com

SITUATIONS VACANT

Associates

Associate dentist required, interest in endo an advantage, to join northside practice, full private book. OPG, CBCT. Email brytesmile@gmail.com.

.....

- North west Ireland. Dynamic, flexible, self-motivated and experienced associate required. Immediate start. Full week. Busy well-equipped practice. Knowledgeable and supportive staff. Excellent figures with good earning potential. Email with CV and personal profile to rachelmccafferty71@gmail.com.
- Full-time associate position available, taking over mature book. Callan Dental operates from a brand-new, state-of-the-art facility in Kilkenny. See our virtual tour at Callandental.ie. Applications to careers@dentalcareireland.ie.
- Part-time associate required with kind, caring manner for north county Dublin general practice private and PRSI. Experience essential. CV to pdsvacancy@gmail.com.
- Experienced dental associate required for part-time position on Wednesdays and Saturday mornings, with scope to increase hours. Modern computerised practice in north county Dublin. Email colinpatricklynam@hotmail.com.

Advertisements will only be accepted in writing via fax (01-295 0092), letter or email (fionnuala@irishdentalassoc.ie). Non-members must prepay for advertisements, which must arrive no later than **Friday**, **September 7, 2018**. Classified ads placed in the *Journal* are also published on our website www.dentist.ie for 12 weeks. **Please note that all adverts are subject to VAT at 23%**.

Advert size	Members	Non-members
up to 25 words	€80	€160
26 to 40 words	€95	€190

The maximum number of words for classified ads is 40. If the advert exceeds 40 words, then please contact: Think Media, The Malthouse, 537 North Circular Road, Dublin 1. Tel: 01-856 1166 Fax: 01-856 1169 Email: paul@thinkmedia.ie

Please note that all classified adverts MUST come under one of the following headings:

- Positions Wanted
- Positions Vacant
- Practices for Sale/To Let
- Equipment for Sale/To Le

Classified adverts must not be of a commercial nature. Commercia adverts can be arranged by contacting Paul O'Grady at Think Media.

- Dental associate for part-time position two days per week in south county Dublin family practice to replace departing colleague. Fully computerised, full administrative back-up in friendly working environment. Email dentalassoc993@gmail.com.
- Crown Dental is seeking a part-time associate dentist to join our practice in south Dublin (preferably on Fridays/Mondays, with a view to building up to more days). Must be IDC registered. Email job@crowndental.ie.
- Associate dentist required three days a week to fill a busy, established position in Tralee practice. Email laurie8@eircom.net.
- Full-/part-time experienced dental associate required for busy north Dublin practice. Full book, computerised, digital x-rays, hygienist, excellent staff. Email: newdentistnorthdublin@hotmail.com.
- Full-time dental associate position available in Dublin City (Camden Dental Clinic). The practice is part of a large primary care centre, fully computerised and well managed. Experience ideal though not essential. Come join our friendly team now.

Email dublincitydentistry@gmail.com.

- PD Dental is seeking a full-time associate dentist to join our practice in north Dublin Must be IDC registered. Email mail@pddental.ie.
- Part-time associate required for busy Ennis practice. Fully computerised, OPG, digital x-rays, two hygienists, periodontist, three dentists. One to two days per week. Immediate start available. Three years' experience required. CVs to gbrowne.ennis@gmail.com.
- Dental associate position available part-time permanent. One day/week flexible. New surgery. OPG, hygienists. Digital radiography. Oral surgeon, multi-dentist practice. May suit newly qualified. Book can be built up to more days. Gorey, Co. Wexford. Email adecdental365@gmail.com.
- Experienced dental associate required to replace departing colleague in the south east. Please reply by email to bmmoleary@gmail.com or phone 087-240 5580.
- Dublin Part-time experienced associate required. Large potential to go full time. Busy, well-equipped, progressive, fully private, modern practice. Substantial footfall. Three surgeries – OPG, L. Ceph. Computerised. Experienced support staff. Contact niall@innovativedental.com.

Dentists

- Part-time experienced dentist required two to three days a week in busy, expanding, well-established practice in Monaghan. Fully computerised with digital X-ray. Email CV to associatemonaghan@gmail.com.
- Dentist required Co. Galway. Full-time (with Saturdays and late evenings possible). Busy multi-surgery, high-technology practice with great team. Computerised, digital X-rays, etc. To replace departing full-time associate. Email CV and intro letter to galwayassociatedentist@gmail.com.
- Dentist required in busy general auto and implant practice. Would suit person hoping to learn new skills. Some evening and Saturday work possible. Good earning potential. Apply to cavandentaljob@gmail.com.
- Dentist required for bright modern cheerful practice in Carlow Town. Looking for someone with a sunny disposition who loves their job. Enjoy a laugh and are a team player? We would like to hear from you at dentalapplication72@ gmail.com.
- Experienced dentist required in Newbridge. Three days to include Saturday, with a view to more days. Busy, multidisciplinary, well-equipped practice. Knowledgeable and supportive team. Strong list with plenty of scope for growth. Email recruitment@centrichealth.ie.

- TTM Healthcare recruiting for a general dentist based in Waterford, F/T hours. Candidates must be qualified and IDC registered. New graduates welcome to apply. Email rbarry@ttmhealthcare.com.
- Exciting opportunity for enthusiastic, self-motivated and experienced dentist in Dublin 15 area. Immediate start of three days per week, with a view to more days. Knowledgeable and supportive staff. Good list with plenty of scope for growth. Email recruitment@centrichealth.ie.
- Exciting opportunities for enthusiastic, self-motivated and experienced dentists in south Dublin areas. Full-time, part-time and maternity cover positions available. Modern, well-equipped practices with knowledgeable and supportive teams. Email recruitment@centrichealth.ie.
- Exciting opportunities for enthusiastic, self-motivated and experienced dentists in Dublin 8 and 12 areas. Full-time and part-time positions available. Also looking for experienced orthodontist. Modern, well-equipped practices. Fully computerised with OPG X-ray. Email diamondsmilejobs@gmail.com.
- Full- or part-time general dentist required for busy, friendly 12-surgery north Dublin practice. High earning potential while working at whatever pace you like. Fully computerised with orthodontist, endodontist, implantologist, dental technician, hygienists and OPG there to assist you. Please contact jheeney@mail.com.
- Experienced dentist required for part-time maternity cover starting September 2018 in Kerry. Email CV to info@ballybuniondental.ie.
- Experienced ethical dentist required to replace longstanding colleague southeast location within one hour of Dublin. Excellent facilities/staff in multi award-winning practice. Digital dentistry and laboratory. Specialist back-up. High clinical standards. Excellent earning potential. Email southeastdental46@gmail.com.
- Dentists Dublin Crumlin/Inchicore/Clondalkin/Lucan. Part-time/full-time for primary care setting. Email unagaster@gmail.com or contact Una Gaster on 087-917 4831.
- Dentists Laois/Offaly (Portlaoise/Tullamore), Meath/Louth (Navan/Duleek/Drogheda). Primary care. Full-time/part-time. Email unagaster@gmail.com or phone 087-917 4831.
- Ambitious, ethical dentist, two or four days a week, one hour from Dublin. Awardwinning practice Meath/Cavan/Louth border. Digital dentistry, great support from orthodontist, oral surgeon and endodontist. Excellent earning potential and scope to be the dentist you wish to be. Email scotty6@gmail.com.
- Enthusiastic, dynamic dentist required for two days per week in a busy, expanding dental practice in Bray, Co. Wicklow. Experience required. Email dentist2required@gmail.com.
- Dentist required for established practice, 15 minutes from Galway City, to replace departing colleague. Modern, family-oriented busy practice. Excellent support staff. Commencing September. New graduates welcome to apply. Please email CV to phewatal@eircom.net.
- Lucan dental clinics seeks part-time dentist (two/three days a week) for a sixmonth maternity cover. Send CV to oconnellb67@gmail.com.
- Docklands Dental Full-time position. Candidates must be a good person, take pride in their work, and show ambition to improve. Three years' postqualification experience and training, ideally in private practice, preferred. Email gregg@docklandsdental.ie.
- Waterford Smiles Dental has an exciting opportunity for an enthusiastic, passionate dentist to join our modern, well-established, well-equipped practice in Waterford. Candidates must be IDC registered. Position offers five days per week. Email joanne.bonfield@smiles.co.uk.

- Dundalk Smiles Dental has an exciting opportunity for an enthusiastic, passionate dentist to join our modern, well-established. well-equipped practice in Dundalk.
 Candidates must be IDC registered. Position offers five days per week. Email joanne.bonfield@smiles.co.uk.
- Dentist for Carndonagh, Co. Donegal. One or two days a week with a view to more and possible future partnership for the right candidate. Email donegaldental@yahoo.ie.
- Dentist required for busy schedule, working in our nursing home dental clinics. If you are looking for a rewarding, busy schedule, working with a great team, send your CV and cover letter to clinics@dentaltech.ie.
- Experienced dentist (at least two years) required, to replace departing colleague, for busy, modern surgery in Athlone with fantastic support staff. Long-term position for the right candidate. Email CV to reception@mearesdental.ie.

Locum dentists

- Locum dentist required. Experience essential. Busy general dental practice in Raheny, Dublin 5. Immediate start. Please contact Oconnordental@hotmail.com.
- Locum dentist required for holiday cover in busy south Dublin practice. Four days per week, including Saturday, July 2-4. Email alex@whitesmiledental.ie.
- West of Ireland locum dentist required for busy practice for holiday cover for the first two weeks in August. Also, vacancy available for a part-time dentist with a view to build up to full time if desired. Please contact dentalcastlerea@yahoo.ie.
- Locum dentist required mid July for six weeks in busy dental practice in the north east. Contact 086-378 3228. Email construction22hq@gmail.com.
- Locum required for maternity cover in a busy Cork practice, starting October. Contact northcorkdentist@gmail.com.

Specialist/limited practice

- Cork Smiles Dental has an exciting opportunity for an enthusiastic, passionate dentist with a special interest in either endo, oral surgery or ortho to join our well-established, well-equipped practice in Cork. Five days per week. Email joanne.bonfield@smiles.co.uk.
- Oral surgeon required for busy, expanding practice in Bray, Co. Wicklow. Full support and facilities available. Sessional basis. Email dentist2required@gmail.com.
- Specialist orthodontist required full or part time in south east region to join multidisciplinary specialist team. Ortho therapist support. Busy existing patient base. Must be on the specialist register. Please apply in confidence with CV to southeastdental46@gmail.com.
- Specialist orthodontist Smiles Dental is looking for a specialist orthodontist to join its well-established practice in Dundrum, Dublin, to cover maternity leave. One day per week. Practice offers state-of-the-art working environment. Must be on specialist register. Email joanne.bonfield@smiles.co.uk.
- Oral surgeon Smiles Dental is looking for a motivated specialist oral surgeon to join our well-established, busy practices. Practices offer modern, state-of-theart working environment and full support teams. Must be on specialist register. Email joanne.bonfield@smiles.co.uk.
- Specialist orthodontist required to provide orthodontic service part-time in three practices in the west and midlands. Modern, computerised practices with excellent support staff. Specialist registration essential. Email careers@dentalcareireland.ie.
- Experienced endodontist required for a high-profile specialist practice in north Dublin. Applications are invited by email to lisa@ncdental.ie.

Oral surgeon required to provide in-house oral surgery for a number of practices in Dublin/Leinster area. Modern, computerised practices with excellent support staff. Email careers@dentalcareireland.ie.

Dental technicians

- Dental technician and/or clinical dental technician required. Busy lab adjoining large dental practice in Co. Galway. All stages heat cured acrylic denture work, CEREC shaping, staining and glazing EMAX. See Indeed for more details. Experience advantage. Wages negotiable. CV by email to abbeydent.lab@gmail.com.
- Job opportunity for a qualified dental technician in a specialist practice. We are looking for a candidate with excellent organisational skills. This is a great opportunity to gain experience managing a lab in a busy, fast-paced environment. Email swordsorthoinfo@gmail.com.

Dental nurses/managers/receptionists

- Part-time dental nurse required for busy Dublin 4 surgery. Must be flexible for extra hours. Immediate start required. Apply with CV to info@sandymountclinic.com or call Paula on 01-668 9921.
- Full-time dental nurse required to join our existing team. We're seeking a friendly, outgoing candidate, with excellent interpersonal and organisational skills, and the ability to thrive as part of a team. Email careers@deansgrangedental.ie.
- Practice manager (part-time 20 hours per week) required for busy Dublin 15 dental practice. Must have minimum of five years' Irish dental experience and display excellent organisational skills. Great support staff. Flexible working hours. For job spec email pbodeker@touchstone.ie.
- Receptionist required for busy, computerised, modern practice in the north east. Our website – www.frielandmcgahon.ie – gives an insight into our practice and team. If interested email us on frielandmcgahon@gmail.com.
- Dental nurse/receptionist. Phoenix Dental, Dublin 15. Full-time in modern, multidisciplinary practice. Please email CV to drrhannon@hotmail.com.
- Specialist nurse required for prosthodontist/orthodontist. Good organisational and nursing skills needed with attention to detail a necessity. Location Carlow Town. Email marie@pembrokedental.ie.
- Part-time dental nurse/receptionist required for a busy Killarney dental practice. We are looking for a friendly, flexible, energetic candidate to join our dental team. Experience preferable but not essential. Email kategleeson@hotmail.com.
- Qualified dental nurse required for three and a half days a week in busy Swords dental practice, with scope to increase hours. www.swords-dental.ie. Email colinpatricklynam@hotmail.com.
- Full-time receptionist required for busy multidisciplinary practice in Dublin 2. Must have dental experience and display excellent organisational skills. Hours are Monday to Friday and remuneration will be discussed based on experience. Email info@harcourtdentalclinic.ie.
- Qualified dental nurse required for busy Galway City practice. Immediate start. Send CV and covering letter to devonparkdental@hotmail.com.
- Opportunity for a dental nurse in a general dental practice in Clontarf. Late August/early September start. Five days a week, experience a must, qualification preferable. Please email your details and CV to Laura at clontarfdentalpractice189@gmail.com.
- Dental nurse required for a modern, busy, specialist practice in Dublin. Experience is not essential but would be an advantage. Please send your CV to lisa@ncdental.ie.

- Full-time dental nurse position required for busy Limerick City centre general practice. Immediate start. Email hickeyaudrey@hotmail.com.
- Practice manager required to assist in running of three sister dental surgeries in Co. Cavan. Managing experience preferred. Must have five or more years working within Irish dental system. Flexible hours/days. Please email CV to info@virginiadentalsurgery.com.
- 3 Dental require a full-time dental nurse. We are a state-of-the-art, modern and forward-thinking dental practice. Multidisciplinary practice. Training will be provided. You will be working alongside a fantastic friendly team. Email shauna@3dental.ie.

Hygienists

- Hygienist required for one day per week (Thursday) in our busy practice in Carrick on Shannon. Possibility of further days available. Please forward CVs to summerhilldental@gmail.com.
- Committed enthusiastic hygienist required to join hygiene department at Dillon Dental in New Ross every Friday to manage well-established book of patients. Email dillondental2@gmail.com.
- Hygienist wanted for well-established, family practice 40 minutes from Dublin. Great team, good remuneration. Initially part-time and flexibility with days. Please send CV to info@goreydentalpractice.ie.

Will you still be smiling at the end of the year?

Make sure your practice is profitable in 2018

As Ireland's only specialist dental accountants we're here to help you control your practice costs

UARTERLY ACCOUNTS	PAYROLL SERVICES
TAX CONSULTANCY	COST OF TREATMENT
edAccount offer a full range o	f specialist dental accounting

MedAccount offer a full range of specialist dental accounting support and advisory services for Associates, Principals, Expense Sharing Partners and Hygienists.



- Dental hygienist required one-and-a-half days per week (currently Tuesday and Friday but some flexibility) in general dental practice in Drogheda, Co. Louth. Maternity cover starting late August/early September. Please email CV for consideration to angelamkearney@gmail.com.
- Enthusiastic dental hygienist required for busy private practice on Griffith Avenue, Dublin 9. Initially two days a week but with possibility of increasing to three in future. Excellent remuneration, great team. Position available immediately. Please contact annamodonovan@gmail.com.
- Dental hygienist needed Saturdays. Very busy dental hygiene clinic, supportive, welcoming team, well-maintained equipment, Cavitron, etc. To start early August, booked four weeks ahead, future possibility of other weekday. www.abbeytrinitydental.ie. CV and letter by email to manager.abbeydent@gmail.com.
- Enthusiastic, experienced hygienist required for long-established general dental practice in Dublin. Please email CV with references to chapelizod.dental@gmail.com.
- Hygienist required three days per week in established general practice, Carlow Town. Well-developed hygiene service and full book. Email CV to careers@dentalcareireland.ie.
- Galway City centre. Eyre Square Dental needs a full-time, permanent hygienist to join our fun, award-winning team. Motivated patients and a helpful, supportive team. Call 091-562 932 or email paula@eyresquaredental.ie to apply.
- Friendly, enthusiastic, hard-working dental hygienist required for Thursdays 2.00pm-7.30pm, possibility for more hours over time. Email info@cleardentalcare.ie.
- We are looking for a dental hygienist to join us in Swords. One day per week for the next four to five months to cover maternity leave. Excellent terms and conditions. Please email info@boroimhedentalpractice.ie.
- Enthusiastic, dynamic dental hygienist required for busy dental practice two days per week. Bray, Co. Wicklow. Experience desirable but not essential for the right candidate. Email dentist2required@gmail.com.
- Permanent position available for qualified dental hygienist for three days a week at a private practice in Churchtown. Devoted patients and great supportive team. Please email your CV to tfbc16@gmail.com.
- Permanent position available for a qualified dental hygienist in a busy Galway City dental practice. Initially on a two to three days per week basis. Position available from August 1, 2018. Email info@cuddydentistsgalway.ie.
- We are looking for a dental hygienist to join us in Thurles, Tipperary. One day per week for the next four to five months to cover maternity leave. Excellent terms and conditions. Please contact aidanburkethurles@yahoo.ie.

PRACTICES FOR SALE/TO LET

- For sale south west Dublin. Two surgeries, fully equipped. Very busy, long established, very large footfall. Digitised. Strong new patient numbers. Excellent figures for 2017 and 2018 to date. Large potential to expand hours and service. Principal retiring, available for transition. Email niall@innovativedental.com.
- For sale south east, long-established, busy, full-time four-surgery general practice in a prime location. Experienced, loyal staff. Digitised, partially computerised. Modern equipment. Low medical card. Hygienist service. Good new patient numbers. Great potential for growth. Immediate sale. Email niall@innovativedental.com.

- Surgery available on sessional basis to implant specialist/oral surgeon/prosthodontist/periodontist. Newly renovated clinic, well-established referral base. Dublin 3. Email CV/queries to dp1ortho@gmail.com.
- Prestigious landmark building, well known in Terenure, for sale. (Ten rooms plus courtyard.) Suit medical, dental practice, allied health with planning permission. Free street parking, easy access to M50 and bus routes. Contact 087-241 4131 or Castles 01-490 0700. Email absirl@aol.com.
- Fabulous street-side premises centrally located, opposite shopping centre in Listowel, Co. Kerry, to let. Excellent business potential for a start-up dentistry practice. Email aocphysio@eircom.net.
- Galway City long-established, busy general practice. Prime location. Two surgeries. Hygienist service. Modern equipment. Experienced, loyal staff. Fully computerised. Low medical card. Good new patient numbers. Good profits. Good growth potential. Principal available for transition. Contact niall@innovativedental.com.
- South Dublin. Superb location next to shopping centre, petrol station, HSE Clinic. Unopposed. Very busy, expanding area. Very long-established, two-surgery practice. Full planning. Steady turnover which can be easily increased by enthusiastic practitioner. Freehold. Email tom.madigan@madigan accountants.ie.
- London/Essex Two-surgery private practice for sale, leasehold, centre of town location, long-established, asking price 140K. Contact +4477 6075 7473 for details. Email dentalsurgery3451@gmail.com.
- Cork City. Long and well-established mixed practice. Very suitable for someone wanting to return to the prosperous and expanding city of Cork. Principal retiring 2019. Replies to JKOC66@hotmail.com.

EQUIPMENT FOR SALE

- General equipment for sale: Sirona C8 unit; A-dec unit; Gendex GX770 X-RAY; Densply Endo motor kit; Apex locator; Kodak 1000 x-ray digital-sensor size 2; Tecno-Gaz Andromeda autoclave. Email bernardcmolloy@hotmail.com.
- Equipment for sale: A-dec [stand-alone] chair; ceiling mounted OP light; wallmounted dentist element; Durr VSA300 Single suction pump; Durr t75 compressor [Bambi]; and, Melag 29v-s autoclave with water filtering system. Email bernardcmolloy@hotmail.com.
- Durr Dental Vista Scan Mini Easy for sale. Immaculate condition. Only used on parttime basis for six months. Owner is leaving practice. Email Vistascandublin@gmail.com.
- Dental instruments stock for sale. Retail value of stock €25,000. Selling at wholesale price of €7,000. All products available in 20-25 quantities. Visit www.sarkdental.com for products information. Email info@sarkdental.com.
- Sirona InEos Blue for 3D digitisation of single tooth or complete jaw saw-cut models and impressions. The unit is connected to a PC via a USB port. The PC must fulfil the minimum requirements. PC not included. Email victoria@seapointclinic.ie.
- Implant Direct 106 implants for sale €5,000 (full cost 15,000USD). Varying sizes, please email for full list. Email victoria@seapointclinic.ie.





Spreading the word on the positive power of chewing sugarfree gum

Dr Mike Dodds lends his support to the Wrigley Oral Healthcare Programme in Ireland.

For over twenty years the Wrigley Oral Healthcare Programme in Ireland has worked to educate on the benefits of chewing sugarfree gum after eating and drinking on the go. Recently, Oral Health Lead for Mars Wrigley, Dr Mike Dodds, visited Ireland as part of this annual programme, presenting the scientific support for the oral health benefits of chewing sugarfree gum with dental professionals and the dentists of the future.

Dr Mike Dodds, BDS, PhD, Senior Principal Scientist at Mars Wrigley R&D, joined Wrigley in 2002 after 15 years in academic dentistry and maintains an adjunct faculty position at the University of Illinois at Chicago (UIC) College of Dentistry, Chicago. He holds a dental degree from the University of Edinburgh and a PhD in Dental Science from the University of Liverpool and has published more than 50 peer-reviewed papers, book chapters and articles.

During his trip to Ireland in May, Dr Dodds delivered guest lectures to dental students in both Trinity College Dublin and University College Cork, Ireland's leading dental colleges. Connecting with a broad audience, from undergraduate to post graduate students and faculty members alike, explained the science underpinning the oral health benefits of sugarfree gum, as well as economic and social data from recent Wrigley research, including the 'Eat Drink Think' report.

Roundtable discussion

A highlight of the visit was a roundtable discussion attended by dental professionals, where the group explored current challenges as well as opportunities and trends for the practicing dental community in Ireland. The dentists in attendance represented different segments of the profession, including both newer graduates and more experienced practitioners, with practices that ranged from traditional fee for service, to those offering higher-end dentistry. Common problems identified by the group included staffing difficulties, lack of education on oral health for the public, coupled with many patients returning into dental care with a high level of dental needs, having neglected attending for a few years, possibly due to financial difficulties.

Speaking about his trip to Ireland, Dr Dodds said: "I was honoured to have the opportunity to speak at both Trinity College Dublin and University College Cork and discuss the importance of saliva, newer concepts of dental caries, and the role of sugarfree gum as a useful and scientifically proven adjunct to traditional oral hygiene methods for on the go dental care.



Pictured at the recent Wrigley Oral Healthcare Program (WOHP) roundtable discussion were: top row (from left): Dr Emma Molamphy; Dr Aoife Crotty; Katherine Hogan, Mars Ireland Corporate Affairs Director; Dr Danny Collins; and, Dr Alastair Woods. Bottom row (from left): Dr Michael 'Mike' Dodds, Senior Principal Scientist Mars Wrigley; Dr Susan Kiely; Bill Heague, GM Mars Ireland; and, Dr Brendan Fanning.

It was also very educational for me to hear first hand from dental professionals what they are experiencing with patients in their clinics – and there are a number of commonalities between issues faced by Ireland and other markets.

"Our 'Eat, Drink, Think' report shows that, as a society, we are eating and drinking more often between meals. It is therefore important that everyone receives advice that is tailored to their own pattern of behaviour to help counteract the impact frequent eating and drinking has on our teeth.

This trend, known as grazing, may be a contributing factor to the high prevalence of caries seen in many European markets, including Ireland.

Consistent advice on the simple interventions people can adopt to protect their teeth is needed, from both dental professionals and public health authorities.

Sugarfree gum, for example, offers an alternative to protecting teeth and gums in between meals when brushing isn't possible, which not only avoids the sugar intake, but has the additional benefit of encouraging the flow of saliva, which is proven to protect against caries."

Learn among friends

Dr NAOMI RAHMAN is a specialist oral surgeon based in Dublin. She says the IDA is a great way of getting to know other dentists and keeping up to date with the latest knowledge.

What led you to get involved with the IDA?

I joined the Association in 2004 when I first qualified. I stopped my membership in 2006 as I was going travelling for a year and then doing a three-year postgraduate course in oral surgery, and rejoined in 2010 when I completed that. I enjoyed reading the Journal of the Irish Dental Association, keeping up to date with dental news and reading the scientific articles. As a postgraduate student, I also submitted some articles to the *Journal*.

What form did that involvement take and how did it progress?

Initially, I just went to the Annual Conference. I enjoyed meeting my friends and combining CPD with a trip away! I worked with Dr Dermot Canavan, who encouraged me to get involved with some committees. My close friend Dr Rebecca Carville joined the Metropolitan Branch Committee and asked me to come along to evening lectures. She mentioned that the Committee was made up of young members and it was a relaxed and friendly environment. This made my decision to join seem less daunting, so when a space became available on the Committee I was delighted to come on board. I spent my first year learning the ropes, the next two as Treasurer, and took on the role of President last year. My year as President was very busy but enjoyable. The main activity was organising the programme of lectures for the year.

Once you start attending the evening lectures, you gradually get to know more people. Being on the Committee gave me an insight into just how much work goes on behind the scenes to keep the Association running.

What has your participation in the Association meant to you?

Being an active participant has allowed me to make many friends with colleagues from all aspects of dentistry. If I have a question about something I know I can always pick up the phone and talk to someone who will give me good advice.

What is the single biggest benefit of membership in your opinion?

The Association helps me to keep up to date with best practice. When I worked in the Dublin Dental Hospital I was keeping abreast of current techniques, as I was surrounded by consultants, lecturers and students in an environment that promoted continual learning. When I moved to private practice, I was out on my own. The resources the Association provides keep me in the loop with what is currently happening. Learning is life long and being a member is the easiest way of keeping up to date.

What developments would you like to see in the Association?

I think the Association is doing an excellent job at present. On the Metro Committee, I saw significant change over the past few years, with new members joining as some of the older members left. This turnover of members is what keeps the Committee fresh, with new ideas being generated all the time. I would encourage more dentists to take up an active role in whatever IDA branch they are closest to, be that by attending lectures or joining a committee. There are immense benefits and rewards from this type of participation.

Naomi is from Dundalk and studied in Trinity College Dublin, qualifying in 2004. She works in five dental practices and is a Consultant in the Mater Private Hospital. She is the Treasurer for the Irish Association of Oral Surgery. In her spare time, she enjoys walking her two dogs Ruby and Charlie. She loves travelling, music, reading and going to the gym. She always likes to have a project on the go, and at the moment is doing up her garden.

Now available in 50 count boxes!

Diverse patients call for diverse options.

Reintroduced to Rep. Of Ireland contact your local dealer to order

Xylocaine[®] 2% w/v with Adrenaline (Epinephrine) 1:80,000 DENTAL Solution for Injection

- Latex-free cartridges to help avoid allergic reactions.
- Trusted for over 60 years as your anaesthetic of choice for routine procedures.



20mg/ml + 12.5 microgram/ml lidocaine hydrochloride anhydrous + adrenaline tartrate. Excipients - contains sodium metabisulphite (E223). PA1045/003/001.

Also available Citanest* with Octapressin DENTAL Prilocaine hydrochloride 3% w/v Felypressin 0.54 micrograms/ml

For further information, please contact Dentsply Sirona, Building 3, The Heights, Weybridge, Surrey KT13 ONY, UK

Precaution and Contraindications:

Not to be given intravenously. Hypersensitivity to amide anaesthetics, any of the excipient, sulphite. Patient should avoid inadvertent trauma to the lips, tongue, cheek mucosa or soft palate. Caution should be taken in patients with epilepsy, impaired cardiac conduction, impaired respiratory function, and in patients with impaired real and hepatic function, taking tricyclic antidepressants, phenothiazines, butyrophenones, and non-selective blockers, which can interact with adrenaline to cause severe hypertension and potentially cause stroke or myocardial infarction. This is particularly important in highly vascular areas such as oral and dental tissues. Avoid injection where inflammation can already be seen. The incidence of neurological adverse reactions associated with local anaesthetics is very low. Reactions seen include oedema, chills, rash, erythema and arthralgia. More severe manifestations include anaphylactic shock, dyspnoea, and circulatory collapse. Allergic reactions to sodium metabisulfite are rare and more common in patients with steroid-dependent asthma. Dosage: The lowest dosage that results in effective anaesthesia should be used. The dosage will also depend on the area of the oral cavity to be anaesthetised, the vascularity of oral tissue and the technique of anaesthesia. The total dose must be adjusted to the age, size and physical status of the patient. More complicated dental procedures may require doses towards the higher end of the range: 1-5 ml (= 20-100 mg lidocaine hydrochloride). The maximum single dose of Xylocaine when given with adrenaline is 500 mg as a total.

For SMPC (May 2017), search Anaesthetic on dentsplysirona.com/en-gb for more information. You are encouraged to report negative effects to HPRA on www.HPRA.ie.

ром dentsplysirona.com



THE DENTAL SOLUTIONS COMPANY™





SAFER PRACTICE BETTER CARE DENTAL CONFERENCE 2018

The Convention Centre Dublin

Tackle the major risks in your daily practice with key insights from expert speakers.

Join us and enhance your handling of everyday challenges, with updates on the dentolegal landscape, current issues in dentistry, and the importance of balancing your own wellbeing.

To find out more and book visit dentalprotection.org/bettercare

Dental Protection Limited is registered in England (No. 2374160) and is a wholly owned subsidiary of The Medical Protection Society Limited (MPS) which is registered in England (No. 36142). Both companies use 'Dental Protection' as a trading name and have their registered office at Level 19, The Shard, 32 London Bridge Street, London, SE19SG. Dental Protection Limited serves and supports the dental members of MPS with access to the full range of benefits of membership, which are all discretionary, and set out in MPS's Memorandum and Articles of Association. MPS is not an insurance company. Dental Protection® is a registered trademark of MPS. 8494:05/18

Complete traumatic intrusion of an upper deciduous incisor in a two year old: case report

Précis

Management of a completely intruded upper deciduous central incisor and factors to assess aside from tooth position when considering management options for such traumatic injuries.

Abstract

Traumatic intrusion is the apical displacement of a tooth into alveolar bone, which has the potential to cause significant complications for the developing permanent tooth germ behind. A two-year-old male presented to our oral and maxillofacial surgery department with a completely intruded upper right deciduous central incisor. There are a number of considerations in deciding whether to extract or monitor intruded deciduous teeth. When labially intruded, primary teeth may spontaneously re-erupt. Palatal intrusion is an indication for extraction. Other considerations such as soft tissue injury, risk of infection, presence of socket fracture and patient factors should be taken into account when planning treatment. In this report, we show the management of complete traumatic intrusion of an upper deciduous incisor. Aside from radiographic positioning, after reviewing this patient, we considered that the presence of socket fracture and high risk of infection alone indicted removal of this tooth. Extraction was performed under a general anaesthetic (GA) due to limited patient co-operation. In conclusion, although position is a key determinant of intrusion management, soft tissue injury, risk of infection, socket fracture and patient factors should decide to extract or monitor.

Journal of the Irish Dental Association 2018; 64 (4): XXXX-XXX

Introduction

Intrusion is the apical displacement of a tooth from the socket into alveolar bone. This may result in compression of the periodontal ligament and crushing of the alveolar socket. In the primary dentition there is a risk of encroachment onto the developing permanent tooth germ.¹ Labial intrusion involves displacement of the root apex towards or through the labial bone plate. Palatal intrusion involves movement of the apex in the opposite direction, towards the developing tooth germ.²

The greatest incidence of dental trauma is found in children between two and three years of age,¹ with intrusive luxation causing the most developmental complications for the permanent dentition.³ The higher prevalence and severity of complications in children of this age are likely to be associated with incomplete bone and tooth germ mineralisation.^{4,5}

We present the case of a complete traumatically intruded upper deciduous central incisor (URA) and considerations for management.

Dr Jessie E. Tebbutt

Dental Core Trainee, Manchester Royal Infirmary

Mr Raghu R. Mani

nsultant Oral Surgeon, Oral and Maxillofacial Surgery partment, Royal Albert Edward Infirmary, Wigan Lane nan. UK.



Corresponding author: Dr Jessie E. Tebbutt Oral and Maxillofacial Surgery Department, Manchester Royal Infirmary, Oxford Road, Manchester M4 9WL T: 0044 7854 942181 E: Jessie.tebbutt@mft.nhs.uk

Case report

Clinical presentation

A two-year-old male patient presented to our emergency maxillofacial clinic having sustained an injury to the face during a fall the previous week. The parents reported that one of the front teeth had been pushed into the gingivae. A review had been carried out at another hospital where the patient had been immediately presented. Over the past two days, however, the parents had become increasingly concerned by the patient's persistent emotional upset, sweating and halitosis. Suppuration from the site of injury was reported.

History

The patient had fallen while playing at home, hitting his face against the back of a plastic toy bike. There was no loss of consciousness reported. He had been immediately presented to a local accident and emergency department. The parents reported that after an initial examination and radiographs, an unsuccessful attempt had been made to remove the tooth under local anaesthetic, although we cannot confirm this. The diagnosis made at this first presentation was recorded as labial luxation. The patient was referred for review one week later, to reassess and possibly extract the tooth.

Clinical examination

On examination the patient was fit and well. Extra-orally there were no abrasions or lacerations. The URA was not visible, appearing to have been completely intruded. An accompanying labial bone fracture exposed the root of the upper right lateral deciduous incisor (URB) (Figure 1). The area was erythematous with some swelling indicating possible infection. There was no evidence of suppuration but slough was present over the injury site. The URB was Grade II mobile, normal in colour but tender to palpation.

Investigations

Initial radiographic examination (**Figure 2**) revealed a severely intruded URA. There was possible root elongation with a poorly visualised apex, indicating palatal displacement. When roots of intruded teeth are moved labially, the apex can generally be visualised. Root lengths also appear shorter than the contralateral teeth.² There appeared to be close vertical proximity between the URA and the developing adult tooth.

Management

We considered the URA to be palatally intruded and unlikely to re-erupt. There was a high risk of infection, which could further affect the developing adult tooth (**Figure 3**), as well as significant gingival injury. On extraction, the developing adult tooth germ was visualised behind the intruded URA (**Figure 4**). The labial gingivae was replaced and sutured. A guarded prognosis was given for the URB. The need for regular GDP follow-up was emphasised due to risks of complications involving both the URB and developing UR1. Postoperative advice given included the need for a soft diet for two weeks, and pain relief as required. Maintaining a good level of oral hygiene to aid healing, with topical application of chlorhexidine, was advised. Risks of developing infection are associated with poor oral hygiene after injury.⁶

Discussion

Dental trauma frequently occurs in childhood, chiefly affecting up to 30% children between one and four years.³ Intrusive trauma is the most common cause of complications in successor teeth owing to the close association of the permanent tooth bud and primary tooth root within the jaw during development. Complications include enamel discolouration, enamel hypoplasticity, root or crown dilacerations, and arrested development.⁴ Prevalence of complications involving permanent successors is reported for 53%^{5,7} of those sustaining trauma between three and four years old. Younger patients demonstrate a greater prevalence and severity of sequelae of the developing dentition.^{7,8}

Extent of injury can be classified into the following groups:^{7,9}

- Grade I with >50% of the clinical crown exposed or <2mm intruded (mild);
- Grade II with <50% of the clinical crown exposed or 2-4mm intruded (moderate); and,
- Grade III where the clinical crown is not exposed fully intruded or >4mm intruded (severe).

The extent of injury is associated with increased frequency of complications for

the permanent dentition.⁷ This was a challenging case due to the severity of injury. It also highlighted differences in assessment and management of intrusive injuries.

Treatment of complex dental trauma has previously been limited to extractions in the primary dentition,^{3,8} but a growing body of evidence points towards more conservative management.¹⁰ Of deciduous teeth left to monitor for spontaneous re-eruption, around 78.4% demonstrate complete re-eruption and only 6.9% fail to re-erupt.⁸ This same study found that rates of spontaneous eruption reduce with age. Even in cases of complete intrusion and displacement through labial bone, re-eruption and survival has been reported after more than 36 months.¹

Teeth intruded less than 4mm with visible clinical crown re-erupt more frequently.⁹ As previously stated, the more mild the initial intrusion, the lower the occurrence of complications involving the adult tooth. Animal studies support that it is the extent of initial injury rather than subsequent treatment that determines the prognosis of developing permanent teeth.¹¹

However, there are other risks to the primary dentition, although less immediate in nature. In 14% of completely re-erupted teeth pulpal necrosis, root resorption and discolouration are reported.¹² Ankylosis may occur in cases of severe damage to the periodontal ligament. This in turn alters or delays eruption of the adult successor.¹ The majority of adverse effects of intrusion injuries are seen within one year, but can be observed after up to four years of follow-up.¹³

The extent of disturbance increases when the tooth bud is affected during early developmental stages, with an incidence of up to 69%¹⁴ in children under five years.¹⁵ In cases of primary dentition re-eruption, over half of permanent successors demonstrate developmental disturbances. Enamel hypoplasia is most common at 28.3%, followed by ectopic eruption in 16.7%.¹⁴ This may support the extraction of any intruded teeth regardless of the type of intrusion. Yet others demonstrate no connection between extent of intrusion and occurrence of complications. This could provide justification for awaiting reeruption even in the context of complete crown intrusion.⁹ It is argued that less than half of intrusion injuries justify extraction.⁹

It has been suggested that treatment of labially intruded teeth in acute settings should be limited to close observation.¹⁰ This allows opportunity for re-eruption and monitoring for further changes to the primary dentition.

The benefits of extracting early include reduced risk of exposing the patient to longer-term complications such as dental abscesses. It also avoids the need for potentially complex treatments or extractions in the future, for example if ankylosis develops. However, early loss of deciduous teeth may still lead to delayed or ectopic eruption of permanent successors. It may also have a potentially negative impact on the child psychologically.

The main advantages of retaining the tooth include maintaining aesthetics and space, and avoiding extraction. Normal exfoliation and eruption sequences may be preserved. Function during eating and for speech development is also maintained. However, it does put the patient at risk of longer-term complications.

Longer-term assessment is necessary due to late manifestations of complications – a point to emphasise to parents. According to International Association for Dental Traumatology (IADT) guidelines, clinical follow-up should be carried out after one week. Further examinations at three to four weeks, six to eight weeks, six months and one year should include radiographic assessment. From then on the tooth should be reviewed annually until

exfoliation. 1 It is noted that up to 25% of injured teeth are extracted on follow-up. 3

In this case, the initial plan for the patient had been to leave the tooth in situ and review. This may have been due to uncertainty about tooth position and proximity to the underlying tooth germ. Radiographic recommendations include use of paralleled peri-apical and standard upper occlusal (USO) views.² Extra-oral lateral imaging may have helped visualise the relationship between apex and permanent crown, but it is noted that these rarely add extra information.² Diagnosis should be based on a peri-apical view and clinical findings⁶ unless in cases of complete intrusion with inconclusive clinical findings. In this case there appeared to have been multiple views requested, but only the USO was taken. This could be related to limited patient cooperation.

Consideration needs to be given to soft tissues. Soft tissue swelling and bleeding may mean that the initial extent of trauma is not always evident. Although a wait and watch approach does seem to be indicated for intrusions,¹⁶ soft tissue considerations should include the presence or likelihood of development of infection in the area. There is a risk of infection in the reeruption period often associated with poor oral hygiene, for the first three weeks.⁶ Weekly reviews are recommended during this time.⁶ Spread of infection and inflammation to the permanent tooth germ is a risk, indicating extraction of the tooth and possible antibiotic therapy. Further considerations include presence of alveolar socket fracture. In the presence of fractures, risk of impact transference to the tooth germ increases,¹⁶ as does risk of disruption to its development.

Patient factors should be borne in mind. Features in the medical history including immune compromise or underlying cardiac conditions including infective endocarditis may indicate extraction rather than risking development of infection. Patient co-operation, need for further treatment and availability for these appointments should be taken into consideration.

Summary and conclusion

In conclusion, careful assessment to determine the direction and proximity of the deciduous tooth in cases of complete intrusion are necessary in order to plan management. Although the clinical findings in this case appeared conclusive, a lateral extra-oral view may have confirmed the relationship between the UR1 crown and URA root apex.

If intrusion is in a labial direction, a conservative approach of awaiting spontaneous re-eruption is indicated. Organising regular reviews to monitor for other longer-term complications will help to identify problems early on. This allows further treatment planning to protect the developing permanent successors. In instances of severe intrusion in a palatal direction, extraction as early as possible is advisable, as the extent of initial trauma is the main factor in causing problems for the developing dentition.

As in our case, the decision to treat should also consider other tissue injury. This includes presence of alveolar fractures, 16 as well as soft tissue assessment and the likelihood of infection developing.

References

- Council, O. Guideline on management of acute dental trauma. Dental Traumatology 2011; 1 (3).
- Malmgren, B., Andreasen, J.O., Flores, M.T., Robertson, A., DiAngelis, A.J., Andersson, L., et al. International Association of Dental Traumatology guidelines for

the management of traumatic dental injuries: 3. Injuries in the primary dentition. *Dental Traumatology* 2012; 28 (3): 174-182.

- Carvalho, V., Jacomo, D.R., Campos, V. Frequency of intrusive luxation in deciduous teeth and its effects. *Dental Traumatology* 2010; 26 (4): 304–307.
- Andreasen, J.O., Sundstrom, B., Ravn, J.J. The effect of traumatic injuries to primary teeth on their permanent successors. I. A clinical and histologic study of 117 injured permanent teeth. *Scand J Dent Res* 1971; 79: 219-283.
- de Amorim, Lde.F., Estrela, C., da Costa, L.R. Effects of traumatic dental injuries to primary teeth on permanent teeth – a clinical follow-up study. *Dental Traumatology* 2011; 27 (2): 117-121.
- Flores, M.T. Traumatic injuries in the primary dentition. *Dent Traumatol* 2002; 18: 287-298.
- Turley, P.K., Crawford, L.B., Carrington, K.W. Traumatically intruded teeth. The Angle Orthodontist 1987; 57 (3): 234-244.
- Altun, C., Cehreli, Z.C., Güven, G., Acikel, C. Traumatic intrusion of primary teeth and its effects on the permanent successors: a clinical follow-up study. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics* 2009; 107 (4): 493– 498.
- Colak, I., Markovic, D., Petrovic, B., Peric, T., Milenkovic, A. A retrospective study of intrusive injuries in primary dentition. *Dental Traumatology* 2009; 25 (6): 605–610.
- Cunha, R.F., Pugliesi, D.M., Percinoto, C. Treatment of traumatized primary teeth: a conservative approach. *Dental Traumatology* 2007; 23 (6): 360-363.
- Andreasen, J.O., Andreasen, F.M., Skeie, A., Hjørting-Hansen, E., Schwartz, O. Effect of treatment delay upon pulp and periodontal healing of traumatic dental injuries – a review article. *Dental Traumatology* 2002; 18 (3): 116-128.
- Gondim, J.O., Moreira Neto, J.J. Evaluation of intruded primary incisors. Dent Traumatol 2005; 21: 131-133.
- Qassem, A., Martins, N.D., Costa, V.P., Torriani, D.D., Pappen, F.G. Long-term clinical and radiographic follow up of subluxated and intruded maxillary primary anterior teeth. *Dental Traumatology* 2015; 31 (1): 57-61.
- Küchler, E.C., da Silva Fidalgo, T.K., Farinhas, J.A., de Castro Costa, M. Developmental dental alterations in permanent teeth after intrusion of the predecessors: clinical and microscopic evaluation. *Dental Traumatology* 2010; 26: 505-508.
- Brin, I., Fuks, A., Ben-Bassat, Y., Ziberman, Y. Trauma to the primary incisors and its effect on the permanent successors. *Pediatric Dentistry* 1984; 6 (2): 79.
- Torriani, D.D., Bonow, M.L., Fleischmann, M.D., Muller, L.T. Traumatic intrusion of primary tooth: follow up until eruption of permanent successor tooth. *Dent Traumatol* 2008; 24: 235-238.

