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IDA
irish dental association

Journal of the Irish Dental Association

Iris Cumainn Déadach na hÉireann

Oral health behaviours amongst homeless people attending rehabilitation services in Ireland

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Caring for the weak; and recognising great care

Honorary Editor, PROFESSOR LEO STASSEN, welcomes a scientific paper with an important social aspect; recommends the clinical feature; and, looks forward to a development in the Sensodyne Sensitive Dentist of the Year Awards.

A notable measure of the values and ethos of any society is its treatment of those who are weakest and most vulnerable and there can be no more vulnerable group than homeless drug addicts. Therefore, we especially welcome the peer-reviewed paper on 'Oral health behaviours amongst homeless people attending rehabilitation services in Ireland' published in this edition (pp144-149). Dr Marie Claire Van Hout of Waterford Institute of Technology and Evelyn Hearne of the Dublin Simon Community are to be congratulated on their research with individuals who were either in detoxification, rehabilitation or maintenance programmes.

Their findings echo previous research outside of Ireland, which indicates the low uptake of dental services amongst such individuals. It also highlights how self-consciousness and guilt around dental neglect impacts on the recovering addict's self-perception and potential for employability. On the positive side, it is evident that preventative care improves when the individuals are attending treatment and rehabilitation and that for those in recovery, specific dental interventions would be received positively.

The study calls for further research and we heartily endorse that call. Meanwhile, the *Journal* has just been made aware of a recent initiative by dentists to make dental care more easily accessible to the homeless in Dublin. We welcome this initiative and will report on it in future editions.

Clinical education

In the second of our clinical features, Dr Maurice Fitzgerald of Sandyford in Dublin outlines a step-by-step technique for building up an accurate mandibular impression (pp122-125). Given that the edentulous mandibular arch can be a difficult impression to make, this is a most practical and helpful guide. Dr Fitzgerald's provision of 16 photographs to illustrate the 11 steps that he describes makes for an easy-to-follow guide, for which the *Journal* is grateful.

CPD central

There is no doubt that the occasion of an IDA Annual Conference is a veritable treasure trove of continuing professional development. From the pre-Conference 'hands-on' courses to the presentations on all aspects of dentistry, there were learning experiences to be had in all lecture and conference rooms. The *Journal* can only bring a flavour of the proceedings, but does so once again on pp127-128. That such an important learning event has such a successful social aspect makes it a compelling experience.

In addition, there is the AGM and business of the Association to be conducted. Dr Barry Harrington and Mary Graham were the recipients of well-warranted recognition, while Dr Seán Malone passed the chain of office to Dr Peter Gannon, who we welcome in his first President's message in this edition.

Forensics

In our interview, we learn of some of the more difficult cases that dental forensics expert Professor David Whittaker has encountered. There can be no doubt that David advanced the science of forensic dentistry very significantly throughout his career and those who heard him speak in Kilkenny were privileged to do so. His fascination with Hitler's remains also makes for quite a story.

Sensodyne and the *Journal*

We are, as always, very grateful to all our advertisers for their continuing support. All research shows that the *Journal* offers advertisers the best place to advertise to dentists in Ireland.

Back in 2008, we set out in a very modest way to explore the notion of facilitating patients in expressing appreciation of the oral healthcare they receive from their dentists. With GSK, we entered completely unchartered territory with the Sensodyne Sensitive Dentist of the Year Awards. In our first year, we were thrilled to receive several hundred entries testifying to the great work of Irish dentists. Over the years since, the volume of entry has multiplied and the task of judging has become ever more challenging. Now in 2014, we are set to move up another gear in tandem with Sensodyne, with the announcement that there will be a Gala Awards Ceremony in Dublin to mark the culmination of this year's programme. We look forward to, once again, showcasing the superb work of Irish dentists as testified to by their patients.

This is another packed *Journal* and I trust that you will both learn from it and enjoy its contents.

Prof. Leo F. A. Stassen
Honorary Editor

An exciting year ahead

Incoming President Peter Gannon looks forward to the year ahead, and to the issues he hopes to tackle.

It is a great honour to write my first President's news for the *Journal of the Irish Dental Association* and I will endeavour to serve you as best I can for the coming year as President of the Association.

IDA Annual Conference 2014

I would like to thank all of the delegates who participated in this year's Annual Conference in Kilkenny. It was a resounding success and thoroughly enjoyed by all. We had first-rate speakers, both from home and further afield, and the calibre of the talks, courses, and presentations was excellent. Special thanks also to our trade sponsors, whose support we are very grateful for. Thank you and congratulations to the members of the conference organising committee – Ms Elaine Hughes, Drs Billy Davis, Naomi Richardson, Tom Rodgers, and Alastair Woods.

The Dental Act

One of the most significant matters in the upcoming year that I will face as President is the introduction of the new dental legislation.

The Association and Council members have engaged with the Department of Health to raise key issues on behalf of members and continue to lobby for compulsory CPD, foundation training, licensing of practices, and recognition of specialists.

It remains unclear when the legislation will come into effect, however, I feel confident that the new Dental Act will be of benefit to our profession.

The Dental Complaints Resolution Service (DCRS)

May saw the launch of the second annual report of the DCRS. Since its inception, the DCRS has been very busy and I believe it is a progressive and worthwhile initiative.

The more complaints that can be settled in this way, the less litigation there will be and our DPL yearly payments will ultimately reduce.

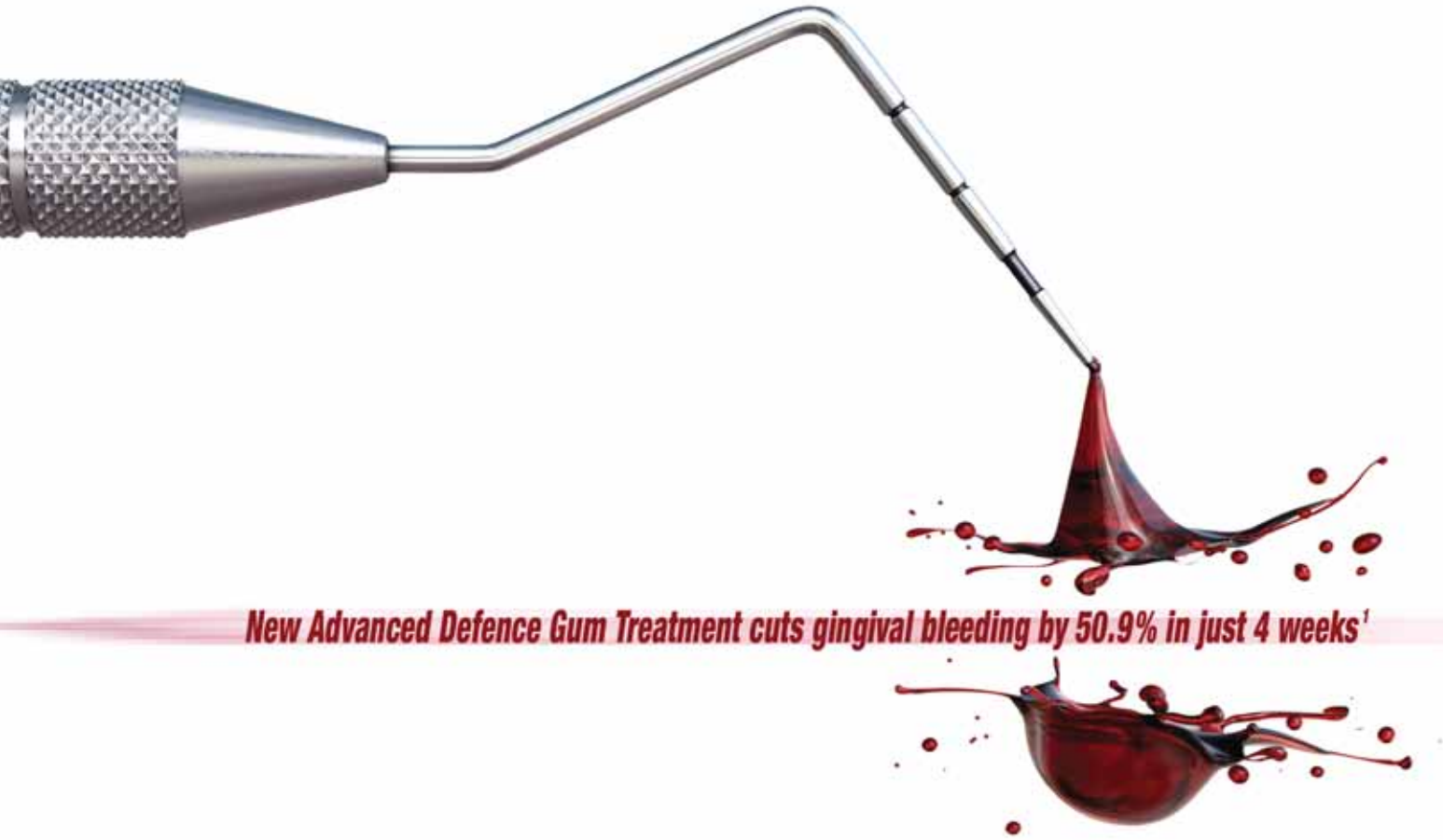
Fluoridation

The Association continues to endorse water fluoridation as the most practical, cost-effective, and safe public health measure to control the occurrence of tooth decay in Ireland and I will endeavour to further promote this issue and raise awareness over my term as President.

Time to recharge

Sincere thanks for appointing me as your President. I look forward to meeting as many of you as possible over the next 12 months. May I also take this opportunity to wish you all a safe and sunny summer. I hope you and your team manage to get a well-deserved break over the summer months and come back in the autumn refreshed and recharged.

Dr Peter Gannon
IDA President



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References:
1. Bleeding Index Reduction DOF 1 – 2013 (LAEBBA0001).
50.9% reduction in whole-mouth mean Bleeding Index at 4 weeks.
2. DOF 2 – 2013 (LINKPLT0006).

NEC/LI/13-0240b

Advanced Defence against gum disease

Letter to the Editor

Ms Etain Kett (left) and Dr Denise MacCarthy (right) representing Mouth Cancer Awareness Ireland at the Irish Pharmacy Union Annual Conference with Dr Catriona Bradley, Executive Director, Irish Institute of Pharmacy.

Dear Sir,

Representatives of Mouth Cancer Awareness Ireland attended the Irish Pharmacy Union (IPU) Conference on Saturday, May 10 in Cavan. The representatives had an information stand which was very kindly sponsored by the IPU. The purpose of attending the IPU Conference was primarily to heighten awareness amongst pharmacists about the risks and symptoms of mouth cancer and secondly to publicise the upcoming Mouth Cancer Awareness Day, which takes place on September 17, 2014.

Integrating primary care and oral health and increased collaboration between dental and all other health professionals means improving the rate of early detection of conditions such as mouth cancer. Early detection greatly improves the chance of successful treatment and saves lives.

This holistic approach to oral health is in line with goals one and two of Healthy Ireland, i.e., addressing risk factors and promoting protective factors at every stage of life and implementing interventions to target particular health risks.

Yours faithfully,

Ms Etain Kett

Acting Chief Executive, Dental Health Foundation

(Member, Mouth Cancer Awareness Ireland).

Media coverage of dental fees

The *Sunday Business Post* (SBP) recently compared prices for dental fees in the Republic with those in Northern Ireland. The Association was concerned about some of the comparisons and made its own enquiries in regard to the prices charged for different types of crowns on both sides of the border.

Chief Executive Fintan Hourihan responded in writing to the paper to state: "I must disagree strongly with most if not all of the conclusions and inferences drawn from the 'survey' of dental fees published in the most recent edition of the *Sunday Business Post* (April 27th edition).

"All the northern practices featured are based in smaller towns. It is misleading and unfair to contrast these with city-centre practices in Dublin and Cork, where running costs are greatest. A quick review online of fees in southern towns reveals prices at very similar levels for treatments across the border.

"The most common treatment for patients is an oral examination and cleaning of the teeth. These are also the most important treatments in ensuring long-term oral health. This is not mentioned at all. For these treatments the difference in fees north and south is often very slight.

"Tooth whitening and fitting sports mouth guards are just two of the treatments which online searches indicate to be cheaper south of the border. Again, these were not mentioned.

"Many readers recognise quality in choosing to buy newspapers published in the Republic of Ireland, which can be almost three times more expensive than alternative titles. Our experience is that patients ultimately choose a dentist based on the quality of care they offer, the friendly and expert advice they offer, and the convenience and peace of mind offered by local dentists in their community. It is reassuring to report that 95% of Irish adults say they trust the care provided by Irish dentists, according to research amongst 750 adults carried out last year by Behaviours and Attitudes.

"Recent independent research of the adult population (September, 2013) shows that, currently, adults have been with the same dentist for 11.5 years on average.

"Despite the advent of greater advertising, websites and social media, most patients choose a dentist on the basis of a personal recommendation. The biggest savings in dental costs are always achieved by simple measures at home and by regular, preventive dental visits.

"Clearly, there is scope for confusion and as a result it can be very difficult to compare like with like. When there is an actual like for like comparison, the fees charged south of the border are actually just as competitive. Thus, the original report caused upset to dentists in the Republic and this has been communicated to the *Sunday Business Post*."

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DENTSPLY IMPLANTS

Quiz questions

Answer page 151

Submitted by Dr Mark Kelly

A 30-year-old fit and healthy female attends the surgery complaining of general malaise and severe discomfort in the upper-right molar region for the past three days. She put her finger on UR6 as the perceived source of the pain and is convinced her problem is a dental one. The pain is spontaneous, 'sharp and stabbing' in character, and is becoming gradually worse. The patient also feels pain around her right eye. She noticed a rash recently developing on her right forehead and above her upper right eyelid (**Figure 1**). The UR6 (**Figure 2**) has an amalgam filling *in situ* (placed many years ago), which appears clinically sound.

Questions:

1. What is the most likely cause of this woman's pain?
2. What course of action would you take?

Figure 1

Figure 2

The author wishes to thank his patient for kindly allowing her photograph to be used to highlight this case.

Moore wins Moloney Award

At this year's IDA Annual Conference, Dr Paul Moore of Gate Dental Clinic in Galway was the winner of the Moloney Award.

The Killarney dentist in Colditz

Dr Julius Green attending a patient.

Julius Morris Green was born in 1912 and spent his early childhood in Killarney where his father had a dental practice. He studied at the Dental School of the Royal College of Surgeons in Edinburgh and was practising in Glasgow when he joined the Territorial Army in 1939, being posted to the 152 (H) Field Ambulance of the 51 Highland Division. He was captured with his brigade at St Valery in June 1940 and spent the remainder of the war in a succession of camps, his misbehaviour meaning that he eventually received the honour of being confined to Oflag IV-C, better known as Colditz.

Papers, photographs and the effects of Captain Green of the British Army Dental Corps, relating to his espionage activities on behalf of the British Directorate of Military Intelligence while a prisoner-of-war at Colditz and other camps in Germany, will be sold at Bonhams Auction House in Knightsbridge, London in June. The risks he was running, as a Jewish prisoner-of-war in Nazi hands, were enormous. Estimates for the material range from stg£4,000 to stg£6,000.

Dental graduates at winter conferring RCSI, including representatives of Faculty of Dentistry RCSI, Irish Dental Association, and Irish Faculty of Primary Dental Care.

Diplomates in Primary Dental Care

The first group of Diplomates of Primary Care Dentistry RCSI were conferred at the RCSI in December 2013.

The first sitting of the Diploma was held in October 2013. Fourteen candidates sat the examination and each was successful on their first attempt. The Faculty was delighted to welcome its first group of Diplomates to the winter conferring in December 2013. Apart from being a new qualification, this graduation carried special significance for the Faculty of Dentistry at RCSI, which celebrated its 50th anniversary in 2013 (1963 – 2013).

The Diploma of Primary Care Dentistry has been approved by the Dental Council and the examination has been developed by the Faculty of Dentistry RCSI in collaboration with the Irish Dental Association and the Irish Faculty of Primary Dental Care. Candidates who are successful in the Dip PCD RCSI may enter the MFD Part 2 directly (and are exempt the MFD Part 1) provided they meet all the requirements as set out in the regulations. The Diploma of Primary Care Dentistry, RCSI is also a stand-alone qualification.

A recent sitting of the Diploma examination was held in early April 2014. For those who may be interested, the next sitting of the Diploma examination will be in October 2014 at RCSI. The examination consists of an MCQ examination and a clinical reasoning assessment, which will take the form of a written paper. There will be a strong emphasis on clinical practice within both components of this examination. Further information, including regulations and the exam closing date, can be found on http://dentistry.rcsi.ie or by emailing facdentistry@rcsi.ie. The Faculty of Dentistry RCSI also runs a monthly Postgraduate Dental Education Programme, which provides a considerable amount of information that is relevant in helping candidates to prepare for this examination.

Prize winners

Meanwhile, the Faculty of Dentistry in RCSI also offers a number of prizes to recognise and support achievement of future members of the dental profession.

From left: Professor Gerard Kearns (Past Dean); Dr Liam Jones DipPCD RCSI; Dr Frank Ormsby (Irish Faculty of Primary Dental Care); Dr Osama Omer (Vice Dean); Dr Tony Markus (Ad Eundem FFD); Dr John Walsh (Dean). *(Image courtesy of Ms Maria Jones).*

In 2013, the Faculty was delighted to honour the following dental students and trainees:

- The Adrian Cowan Medal was awarded to Mr Ronan John O'Leary, the best all-round fourth year dental student at the Dublin Dental University Hospital.
- The Leo Heslin Memorial Medal was awarded to Mr Ahmed Sultan, a fourth year dental student at the Dublin Dental University Hospital.
- The John McGimpsey Prize was awarded to Ms Emily Lovegreen, who achieved first place in the Final BDS Examination at Queen's University Belfast.
- The (inaugural) Seamus Keating Prize was awarded to Ms Orna Ní Choileáin, who achieved first place in the Final BDS Examination in Child Dental Health at University College Cork.
- The RCSI/ IADR Postgraduate Clinical Research Award was awarded to Dr Emma Warren, Graduate Oral Surgery Programme, Cork University Dental School.

The first four prizes are named after leaders in dentistry in Ireland who made significant contributions to dentistry in general, and to the Faculty in particular. They were also noted as outstanding teachers who made a special effort to encourage excellence among dental students and young dentists.

WRIGLEY
Oral Healthcare
Programme

Busy lifestyles impact dental health

Busy lifestyles are bringing with them a gradual but significant change in our traditional eating habits. Now definitions for the word 'grazing' in the dictionary include 'eating frequently at irregular intervals' – not quite the same as snacking, but probably more frequent. Whether it's grazing or snacking, it comes down to grabbing something to eat on-the-go when and where we can. A snatched breakfast at the desk, a couple of mid-morning biscuits, sandwiches and crisps for lunch and afternoon treats to boost energy, with several cups of tea or coffee in between, are increasingly taking the place of the traditional three meals a day. Eating habits like these mean that teeth can come under pretty sustained attack from plaque acids during the day while all this snacking and grazing is going on and consumers are generally unaware of the dental health dangers associated with a grazing habit.

All of this puts the oral hygiene benefits of chewing sugarfree gum into a new lifestyle context and a recommendation to your patients to chew sugarfree gum after eating and drinking is more relevant than ever before.

Extensive research supports the oral hygiene benefits of chewing sugarfree gum, based on the simple science that chewing for 20 minutes increases the production of saliva which helps clean the teeth and neutralise plaque acids. So it really is a non-disruptive and simple oral care habit when brushing and flossing just isn't possible or convenient.

Resource for dental care professionals

The Wrigley Oral Healthcare Programme (WOHP) website (www.wrigleyoral healthcare.ie) has been designed exclusively for dental professionals. It is the place to find out more about the science, get information about the Extra® product range (which carries IDA accreditation,) find industry news and read about the dental professional ambassadors who support WOHP. There is also the opportunity to order free samples of Extra® to support a recommendation to chew for your practice patients. Samples come in a handy counter top unit with some information to take away, which is perfect for practice reception desks. In 2013 Wrigley launched a programme of free CPD on the site and we are continuously providing new modules.

Wrigley also looks forward to supporting the IDA on their national CPD programme and through the branch network during 2014. More on this to follow.

Eat Drink CHEW Extra

IRISH DENTAL APPROVED ASSOCIATION

The search is on

Sensodyne and the *Journal* have teamed up again this year for the premier award in Irish dentistry – the Sensodyne Sensitive Dentist of the Year.

The search is on again for the Sensodyne Sensitive Dentist of the Year, in association with the *Journal of the Irish Dental Association*. No self-nomination will suffice here. No notion of most attractive this or that. This is just about the dentistry and the care dentists give to patients. Chairman of the judging panel, Dr Barry Harrington, has stated that he has never seen, in his years in dentistry, such a bank of fantastic testimony to the standard of work and care by Irish dentists. And this year there is going to be a new development: dentists that are nominated are going to have the opportunity to attend the Awards Ceremony in Dublin.

Dentists are invited to register for the Awards by returning the prepaid postcard on the wrap around this edition of the *Journal*. Alternatively, just get in touch with GSK at their headquarters in Stonemasons Lane in Rathfarnham in Dublin.

At the launch of the Sensodyne Sensitive Dentist of the Year were (from left): Dr Peter Gannon, President of the Association; with GSK executives Claudia Long; Jennifer Valentine; Paul Hatton; and, Eilís Tobin.

Your patients do need your permission to enter – but the incentive is fantastic. The nominator of the winning dentist will receive a prize of a family holiday to the value of €5,000. In the event that there is more than one nomination of the winning dentist, the winning nomination will be decided by the judging panel. The competition is open to Republic of Ireland patients aged 18 or over only and the closing date for nominations is October 31.

Three ways to be nominated

Entering is simple. Patients just have to describe, in their own words, what it is that their dentist did for them that they consider above and beyond the normal duty of care. Patients can do this in three ways: they can post in an entry form that will be available in your waiting rooms (if you have registered to take part); patients can fill in the form on the competition website www.sensodynesensitivedentist.ie; or, patients can fill in the form on the Facebook page www.facebook.com/dentalhealthalliance.

New Awards Ceremony

In a new departure, this year there is going to be a Gala Awards Ceremony to announce the winners. It promises to be a fantastic occasion when dentists from all parts of Ireland will gather to celebrate the fact that their patients have nominated them to receive an award. Details of the date and venue will be announced in forthcoming editions of the *Journal*.

Launch

The Awards were formally launched at the Association's Annual Conference in Kilkenny in May. At the launch, Paul Hatton of GSK, makers of Sensodyne, said that the Awards are part of Sensodyne's commitment to better oral health and an important aspect of the company's engagement with the dental profession. He looked forward to a successful development of the Awards this year. Paul O'Grady, speaking on behalf of the *Journal*, thanked Sensodyne for their outstanding commitment to developing a programme that commenced in 2008 and which has grown very significantly since then.

New from Voco

According to Voco, Futurabond M+ is the universal adhesive in bottles that scores on content, reliability and abilities. The company states: "Futurabond M+ offers the user flexible solutions for every bonding situation. This applies to the etching technique: total-etch, selective-etch or self-etch – the dentist is free to choose and apply the etching technique, depending on indication or according to personal preference. Thanks to a new type of monomer technology, overetching of the dentine is impossible, which prevents post-operative sensitivity. Futurabond M+ is also considerably more flexible than conventional bottled bonding agents with regard to its spectrum of application: not only can it be used reliably for direct and indirect restorations, but it also offers secure adhesion to various materials such as metals, zirconium or aluminium oxide, as well as silicate ceramics – and it requires no additional primer."

Voco has also launched IonoStar Molar, which is a newly-developed glass ionomer restorative material which comes in the new VOCO application capsules. The material is applied without conditioner or adhesive and the company claims it scores particularly highly thanks to its non-sticky consistency and perfect marginal adaptation. It states: "IonoStar Molar can be modelled immediately after insertion and cures within four minutes. Its lastingly high level of fluoride release counteracts post-operative sensitivity. In conjunction with Easy Glaze, the nano-filled protective coating for surface sealing, IonoStar Molar can be used to quickly and easily create restorations that are as aesthetic as they are durable."

Dr Johnny Walker at NIDM

Recently a group of specialist practitioners attended the Northumberland Institute to hear Dr Johnny Walker speak on his latest initiative 'Jinga Life' - a mobile, digital, 24/7, home-based and personalised health solution. It is aimed at empowering and enabling the parents at the centre of family healthcare needs. How this technology is tailored for the dental profession was part of the focus of the evening.

Dr Anne O'Donoghoe introducing Dr Johnny Walker.

Southern Cross Dental unveils rebrand

Southern Cross Dental Laboratories has been meeting the laboratory needs of dentists throughout Ireland for over a decade. Early May saw the announcement of the company's decision to rebrand under the more succinct name of Southern Cross Dental. "The decision to rebrand largely came from listening to what our customers require," explains Managing Director, David Reaney (right), "We found that dentists often needed more than just a basic laboratory service. This is why we wanted to re-introduce our organisation as Southern Cross Dental, demonstrating our focus on being more than just a laboratory by providing streamlined solutions for our customers."

New services

As part of the rebranding process, Southern Cross Dental also launched a new user-friendly website, scdlab.co.uk. Southern Cross Dental plan to introduce a wholly interactive platform for their customers within the next few months, with new features and customer functions to be added that will enhance the customer experience further.

Guarantee

David Reaney is keen to point out that the company rebrand is reflective of the evolution of Southern Cross Dental: "You can be assured rebranding does not mean we will be turning away from any of the values that are so integral to our success. Reliability and quality will remain at our core, however, it is through the experience and innovation of our people that we will see some really exciting things start to happen within the profession."

Colgate launches new Maximum Cavity Protection Toothpaste

Colgate has launched what it says is a ground-breaking new Maximum Cavity Protection Toothpaste plus Sugar Acid Neutraliser Toothpaste. It aims to set a new standard of care in everyday cavity protection for individuals and families, and provide a new approach to address a major oral health challenge. Despite advances in caries prevention due to the inclusion of fluoride in daily toothpastes, dental caries remain a widespread problem. Children and teenagers are at increased risk of caries. As children grow older and gain more independence, free sugar (e.g., glucose) consumption in their diet and repeated snacking can increase, whilst at the same time they can become less careful about their oral health as parental supervision decreases.

Colgate Maximum Cavity Protection plus Sugar Acid Neutraliser Toothpaste directly targets acids produced from free sugar in plaque. Supported by eight years of clinical research involving 14,000 subjects, the technology has been clinically proven to provide greater cavity protection versus regular everyday fluoride toothpaste. The breakdown of dietary free sugars by some plaque bacteria produces acids. Colgate's unique Sugar Acid Neutraliser technology uses arginine, a naturally occurring amino acid. The arginine is metabolised by other plaque bacteria, which helps to neutralise the damaging acids produced by the breakdown of dietary free sugars, helping to restore pH in the plaque biofilm to a more neutral and healthier level. Colgate Maximum Cavity Protection plus Sugar Acid Neutraliser provides an effective everyday solution for the whole family to help fight the development of caries now and in years to come. All variants in this new toothpaste range contain 1450 ppm fluoride, including a kid's variant which benefits from a milder mint flavour to make it more acceptable to younger children. To find out more information, please visit and register at www.colgateprofessional.co.uk

Take the Instant Relief Challenge

Dental professionals attending the Dentistry Show in the UK joined over 51,000 participants who have already completed the Instant Relief Challenge using Colgate Sensitive Pro-Relief Toothpaste. Members of the dental team who suffer from dentine hypersensitivity had the opportunity to take part in the Instant Relief Challenge, which kicked off with sufferers drinking a glass of cold water ladened with ice cubes. Those who experienced the pain of sensitive teeth were invited to apply Colgate Sensitive Pro-Relief Toothpaste directly to their sensitive teeth for one minute. After this time they took another drink of ice cold water to compare the experience prior to using the toothpaste.

According to Colgate, of the participants who have taken the challenge to date, 83% stated Colgate Sensitive Pro-Relief Toothpaste was effective in providing instant sensitivity relief and 81% agreed it was effective in providing lasting protection. Dentists can ask their patients with dentine hypersensitivity to take the challenge by visiting www.colgatesensitiveprorelief.co.uk.

Special learning broadcast

Meanwhile, Colgate invites dentists to view a special learning broadcast delivered by Professor David Bartlett - Head of Prosthodontics at King's College London Dental Institute. In this broadcast, you have the opportunity to learn how you can further help your patients with dentine hypersensitivity. Simply view, give feedback and complete CPD questions to gain one hour CPD.

Dentine hypersensitivity is a painful yet common oral health problem. During this broadcast, Professor Bartlett provides an interesting and informative overview in which he discusses his personal experiences of dentine hypersensitivity and how his own perceptions around risk factors have evolved. The broadcast also looks at an overview, including epidemiology and aetiology before moving to reviewing measurement methods and underlying conditions as contributing factors. Towards the end of the hour, Professor Bartlett looks at available technologies and treatment

options based on the previously highlighted underlying conditions, whilst sharing some interesting case studies reviewing simple, complex and resistant cases. To view this complimentary broadcast visit http://www.colgate professional.co.uk/professional education/DHS-in-the-Dental-Surgery-1-hour-verifiable-CPD/video.

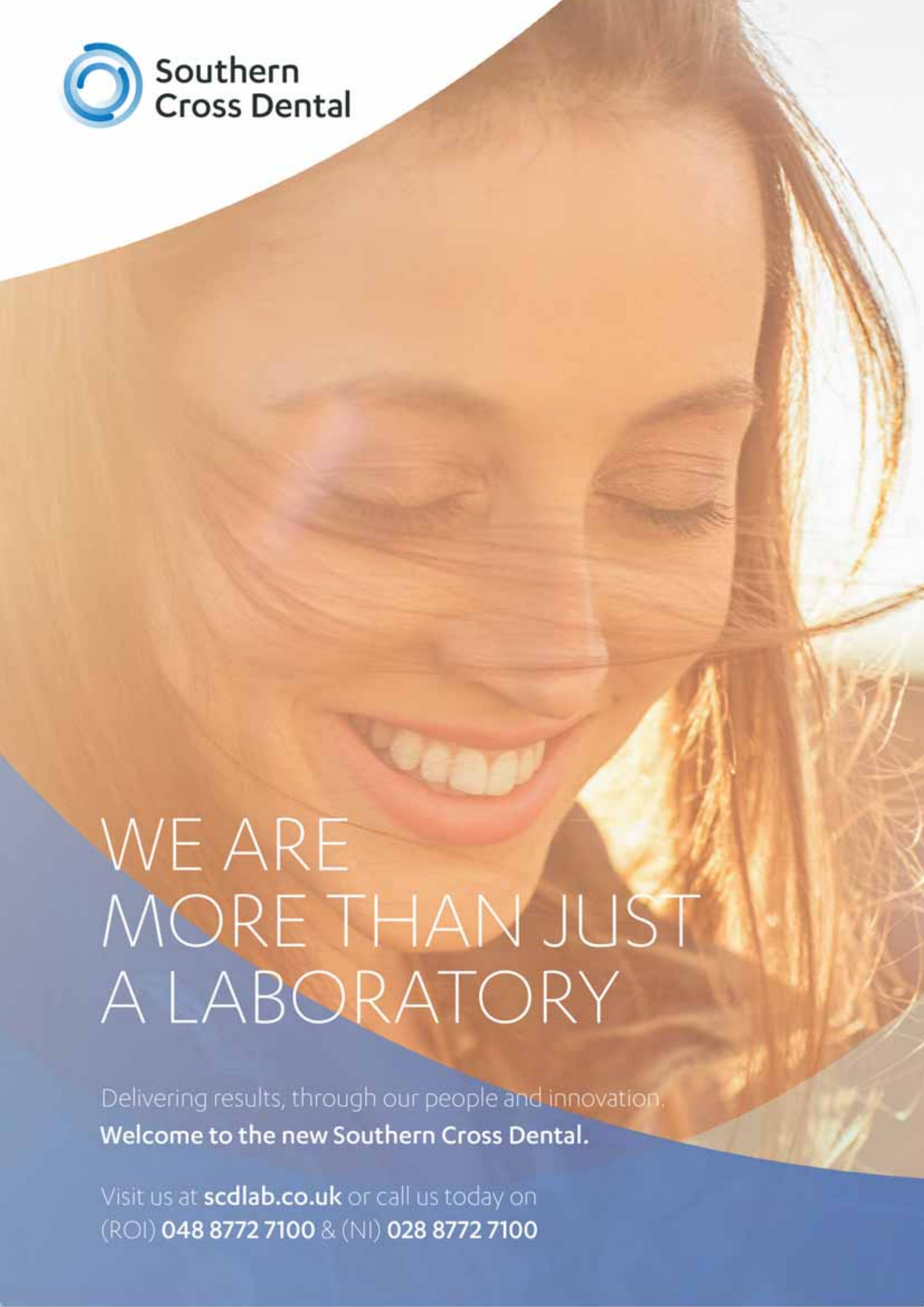
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FIGURE 1: The uncompressed ridges. Implants are present in this case, however the technique is identical for conventional complete dentures.

FIGURE 2: The mobility of the tissues is tested and mobile areas noted. Here the anterior region is mobile.

FIGURE 6: Mounting plaster is fast setting and suitable for edentulous impression.

FIGURE 7: The impression is cast in plaster and set in a base former.

A build-up impression technique for the edentulous mandible using various viscosities of silicone impression material

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The mandibular edentulous arch can be a most difficult impression to make during complete denture construction. Ill-fitting lower complete dentures are often a source of discomfort for patients. While implant retention helps to achieve vertical stability, unless a completely implant-supported denture is being made, the denture must have good tissue contact and correct anatomical extension. An impression technique is required that captures the denture-bearing areas, but also allows compression of the tissues in accordance with their relative nobilities.[1,2,3]

Loose tissues require a mucostatic (uncompressed) technique, whilst immobile tissues are best utilised with a mucocompressive (loaded) impression technique. This leads to a denture that differentially loads the area best able to support masticatory forces. There are a number of means to achieve this selective pressure. The use of impression compounds and Zinc Oxide Eugenol impression materials are classically advocated. However, in a busy practice, the use of various viscosities of polyvinylsiloxane (PVS) is convenient, accurate, dimensionally stable, fast setting, easily adjusted and added to, elastic when drawn over undercuts, dimensionally stable during transport, well tolerated by the patient, and time efficient.[4]

FIGURE 3: A stock edentulous tray is sized.

FIGURE 4: A good but overextended primary impression.

FIGURE 5: The boarders are removed from the impression to ensure the custom tray will be short of the borders.

FIGURE 8: Once set, the cast is marked for proper tray extension.

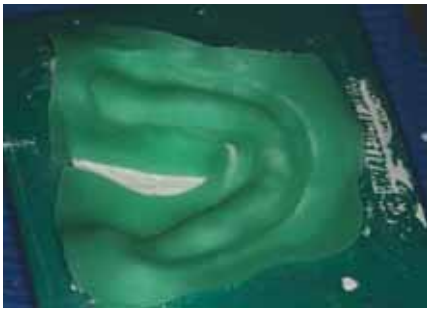

FIGURE 9: The tray material is rapidly adapted to the cast and trimmed.

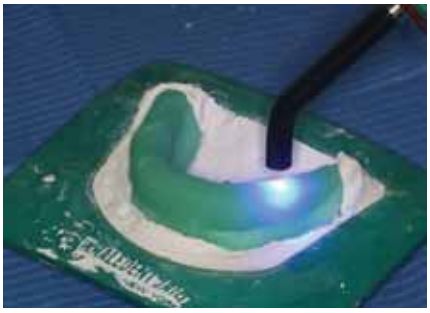

FIGURE 10: A curing light is used to polymerise the material. Note the shape of the handle so as not to interfere with moulding movements intraorally.

Below is a step-by-step method for building up of an accurate, functionally extended mandibular impression. This technique also works equally well for maxillary impressions and impressions for partial dentures. This technique is similar to that published by Massad,[5] however the "Massad technique" utilises prefabricated stock trays. It is this author's opinion that using rapidly fabricated custom trays gives the dentist greater control, less use of impression material, and leads to less overextension and less distortion of the dimensions of the sulcus. No particular brand of impression material is advocated, so long as various viscosities are used. All PVS materials will bond to each other when dry.

STEP 1 Primary and secondary impressions are taken at the same visit. The patient is instructed to discontinue wearing any existing prosthesis for 12-24 hours prior to the appointment, to allow the oral tissues to rebound and ensure an accurate impression of uncompressed tissues. If the existing denture is causing tissue problems, tissue conditioners or reline material may be used to restore health. The ideal representation of the denture bearing areas is borne in mind throughout the procedure, however, patients rarely conform exactly to this ideal, unless the dentist overextends the impression material (**Figure 1**).

STEP 2 The patient's oral mucosa is examined. Two blunt instruments are used to measure the relative mobility of tissue areas. Compressible or mobile areas are noted (**Figure 2**).

STEP 3 An alginate impression is made in a correctly sized edentulous stock tray. This impression will certainly be overextended and minimal efforts should be made to functionally mould this impression. Some tray show through is normal, but highly-inaccurate impressions or poorly-seated impressions should be discarded (**Figures 3 and 4**).

STEP 4 In order to quickly achieve a custom tray that is short of the anatomical boarders, the alginate is cut back with a scalpel 3-4mm circumferentially. This impression is cast with fast-setting stone. Mounting plaster is extremely fast to set, especially when mixed with warm water. It comes in individual sachets, which is conveniant for the general dental surgery. Excess plaster should be allow set in the mixing bowl and not discarded down a sink, unless a plaster trap *in situ* (**Figure 5**).

STEP 5 After five minutes the stone will be set and warm to the touch. The impression is removed. A pencil is used to mark the extension of the custom tray. Any large undercuts can be blocked out with blu-tack or wax. Tray material should extend to the base of the sulcus on the cast, half way up the retromolar pad, and into the sublingual space. A sheet of light-cured custom tray material is adapted to the cast and pressed into the sulcus. The pencil mark will be visible through the tray material, and a scalpel is used to trace around the pencil line. The excess tray material is removed, rolled into a sausage shape and adapted to the tray as both a vertical handle and reinforcement (**Figures 6 to 10**).

FIGURE 11: The tray is trimmed and smoothed.

FIGURE 12: Occlusal registration silicone used to space the tray.

FIGURE 13: Spacers are trimmed away from boarders.

FIGURE 17: The tray is returned to the mouth and boarder moulded many times until the PVS is fully set.

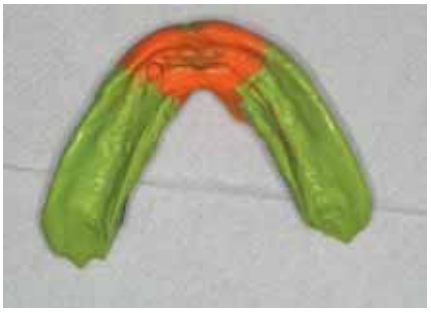

FIGURE 18: The final impression.

FIGURE 19: The final denture.

STEP 6 A composite curing light will rapidly set the tray material. The tray will not stick to the cast once set. The pencil mark will transfer to the set tray material and the tray can be trimmed to ensure the boarders are not overextended. The final tray should be left unpolished to help retain impression material. Perforations are not placed in the tray. The tray should be disinfected (**Figure 11**).

STEP 7 The patient is returned to the dental chair, having been waiting 10-15 minutes for tray construction. The tray is tried into the patient's mouth to ensure it is comfortable and not overextended during functional movements. Tissue stops are necessary to space the tray away from the tissues. Bite registration silicone is useful for this. Three small amounts are expressed onto the tray (spots of PVS adhesive can be used to ensure it sticks) and the tray seated into the mouth with as little pressure as possible. After setting, the silicone stops are trimmed into neat areas away from the boarders (**Figures 12 and 13)**.

STEP 8 A heavy viscosity (heavy body or putty consistency) silicone is mixed into a disposable syringe. PVS adhesive is painted around only the boarders of the tray. The silicone is injected only around the boarders and seated carefully in the mouth. The functional movements are made to capture the border extension. Upon removal, excess is trimmed with a scalpel. Further heavy bodied silicone can be added to areas and remoulded in the mouth if necessary. Folds, voids, and air blows in this increment are irrelevant. If the tray shows through the boarder, cut back the tray in that area and move to the next step (**Figures 14 and 15**).

STEP 9 Any exposed areas of tray are covered with PVS adhesive. Light viscosity silicone is added to the tray in the incompressible areas and ultralight silicone in any compressible areas. The tray is re- seated with force in the mouth and the functional movements carried out repeatedly until the material is set. If there are any deficiencies, another wash of ultralight can be made over the entire impression. Avoid adding only small areas of silicone. A total wash over the impression will avoid uneven seating of the tray, the differential elasticity of the deeper layers will maintain the selective pressure (**Figures 16 and 17**).

STEP 10 The final impression is dried and inspected. All the denture bearing areas should be captured and the boarders should be rounded and narrow. Any areas that do not conform to the image of an idea impression should be inspected in the mouth to see if they accurately represent the patient's anatomy. If there are major issues with the impression, peel the PVS from the tray and start over (**Figure 18**).

STEP 11 The dentist should prescribe the laboratory box and bead the impression to transfer the impression accurately. This is particularly important in regard to capturing the sulcus width. **Figure 19** shows the final prosthesis and recreated the boarders in all dimensions.

FIGURE 14: Heavy viscosity PVS is syringed around the adhesed borders.

FIGURE 15: Boarders moulded intraorally.

FIGURE 16: Ultralight PVS used in the mobile regions and light bodies in the immobile regions. Two guns are required to express the material rapidly enough to avoid premature setting.

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CPD central

RÓISÍN TREACY and PAUL O'GRADY report from the Association's Annual Conference in Kilkenny in May where dentists had the chance to experience a wide range of CPD.

Dr Nick Armstrong got the jam-packed team programme underway on Friday morning with his presentation on infection control and washer disinfectors. In a short presentation, Nick talked delegates through the importance of correct instrument washing and disinfection. The most important message he had for the audience was to always read the manufacturer's instructions when it comes to cleaning equipment.

If anyone was still feeling lethargic by 9.30am, Dr Conor McAlister was not making allowances for it. During his interactive presentation on Irish dental project in Africa 'Cheka', he challenged delegates to get involved and answer questions. Their efforts did not go unrewarded, as Conor provided prize bracelets for those who answered correctly.

The Cheka project is run in the town of Embulbul, located 20km outside Nairobi in Kenya. The project began in 2002, and Cheka opened a dental surgery in Embulbul in 2003. Since its foundation, 14 teams of volunteers have visited Nairobi as part of the project.

Delegates passing by outside the conference hall could be forgiven for thinking there was some kind of celebration going on inside, as the presentation concluded with a slideshow of photographs, to the music of Bob McFerrin's 'Don't worry, be happy'.

Putting on your thinking hat

Director of Dental Protection, Dr Kevin Lewis (pictured above right) was the third speaker of the morning, giving an address on simple steps members of the dental profession can take to reduce the risk of litigation. In an entertaining presentation, Kevin referenced statistics that show that New Zealand is the least litigious country for dentists, because the government compensates patients for any harm they might suffer during the dental process. However, in Ireland, claims are much bigger, and Dental Protection saw a massive rise in litigation when the recession hit.

Kevin adopted Edward de Bono's 'six thinking hats' tool as a method of helping the dental team avoid litigation. The group-thinking tool allows the dentist to look at a situation from six different angles - facts, emotions, threats, opportunities, innovation, rational – in order to determine the risk, and solve it before it becomes an issue.

Healthy tips for patient and dental team

Following the morning break, hygienist Kellie O'Shaughnessy took to the podium to discuss oral health promotion. Kellie's presentation emphasised the importance of communication with patients: "The moment the patient walks through the door, communication is key. Not just verbal contact, but also body language and eye contact."

Kellie went on to discuss how approaching a patient in a positive way about oral health can make all the difference. To prove this point, delegates were shown two different videos of the same scenario – discussing the issue of smoking with patients. The first video - the wrong approach – showed a doctor bullying a patient into giving up smoking, with the patient becoming agitated and upset during the conversation. While the second video showed the same doctor explaining to the patient in a calm and understanding manner how important it is that she quit smoking, and describing different aids to help her do this.

Physiotherapist Stephanie Tarrant presented a hugely beneficial talk on the causes and prevention of muscle injury in the dental practice. The dental profession holds an 80% incidence report compared to other health care groups. The factors that lead to muscle injury include: prolonged repetitive forceful or awkward movements; poor posture; ill-fitting chairs and equipment; and, a fast-paced workplace. Stephanie gave a number of helpful tips to reduce the risk of muscle injury.

During the presentation, Stephanie highlighted the need for a survey of current members to determine the extent of musculoskeletal injury within the industry. She explained: "Unless we know where we are, we can't move forward, we can't make things better."

A special presentation was made to Dr Barry Harrington on the occasion of attending his fiftieth IDA Annual Conference. Dr P.J. Byrne gave the citation and made the presentation.

Another presentation was made to IDA staff member Mary Graham as a gesture of thanks for her great service for more than twenty years as she approaches retirement.

Earning stripes

After lunch, delegates were given the opportunity to earn more CPD points during Stanley Malamed's 'Emergency medicine: back to basics' presentation. Healthcare providers have both a legal and moral obligation in emergency management – they must keep the victim alive until he or she either recovers, or help arrives to take over management. Stanley explained that the dental team must have a predetermined plan for managing medical emergencies, and this team is made up of three members. The first member is the first person on the scene of an emergency, their responsibility is to shout for help, stay with the victim and perform basic life support if necessary. The second member responds to the call for help and gets the necessary equipment (defibrillator, etc.), while the third member is everyone else on the dental team, and they are responsible for calling emergency services. The presentation went on to include advice on what to do in the case of seizures, asthma, allergies, and chest pain.

Paddy McCann's address on mouth cancer was certainly not one for the faint hearted. The picture-heavy presentation showed an array of different oral cancer cysts and tumours, in the pre-operative, operative, and post-operative stage. Paddy stressed the importance of taking an extensive patient history when it comes to patients with oral cancer, in order to determine how fit they will be for the journey, and whether they have the support required to get them through it.

Endurance specialist

High-achieving endurance athlete Gerry Duffy gave a highly entertaining and motivating speech about his journey from a humdrum, unhappy lifestyle in his mid-twenties to achieving many goals in his life. Interestingly, he noted that perhaps the single biggest challenge he faced was not completing something as extreme as the Deca Iron Man Challenge (which he won), but giving speeches. It has taken him most of his life to get to the stage where he is not filled with fear and dread ahead of a speech. It was only as recently as 2011 that Gerry reached a point where he felt confident that he could deliver a speech.

Gerry described his seven key habits for success, which are: 1) give yourself time to think; 2) improve your physical fitness; 3) surround yourself with great people; 4) be enthusiastic; 5) be different in your approach; 6) commit to continuous improvement; 7) constantly check your mindset. His favourite saying is: "It's not what happens to you, it's what you do about it."

Orthodontics focus

There were two contrasting presentations on orthodontics on the Saturday. The first was from Dr Michael Ormonde of the Kylemore Clinic in Kilkenny who addressed the theme of "The changing face of orthodontics". He acknowledged that digital technology had brought a lot to orthodontics but, he said, you need to know what to do with it. Michael reviewed many of the techniques currently being offered to general dental practitioners, pointing out their strengths and their weaknesses, and cautioned that taking on an orthodontic case that doesn't work can be enormously stressful. "I have had referrals and I've finished cases that prove that the dream that is being sold does not always work."

Dr Tif Qureshi, on the other hand, is a part-owner of the Inman company. He addressed the topic 'Truly minimally-invasive dentistry for every dentist'. He stated that the golden rule for any dentist taking on cosmetic work was "Do unto others as to yourself" and that sometimes referral to a specialist orthodontist is the best treatment for the patient. The big question, he said, is: should GDPs be doing orthodontic work? The answer, he stated, is given by the answer to a question that every dentist has to ask themselves: is it within your capability? His view is that simple orthodontic work is well within the scope of the GDP and that showing the correct planning and getting the proper, informed patient consent will result in professional respect for that work. The benefits he stated as: high patient acceptance; appropriate and low-risk work; progressive smile design (which he described as align, bleach, contour); de-radicalised preps; and far less stress.

Quality in dentistry

Professor Martin Tickle of the University of Manchester addressed the topic of quality in dentistry. Surprisingly, he revealed that quality in dentistry has tended, up to now, to be equated with complex restorative work. However, work is now underway to measure quality at the micro (individual dentist); meso (practice); and, macro (policy) levels. Improving quality, he said, requires shifting the performance of the entire system. Therefore, intervention and implementation are required. The acknowledged intervention methodology is: agree goals; agree how goals are measured; identify changes needed to achieve goals; test those changes; sustain and spread change.

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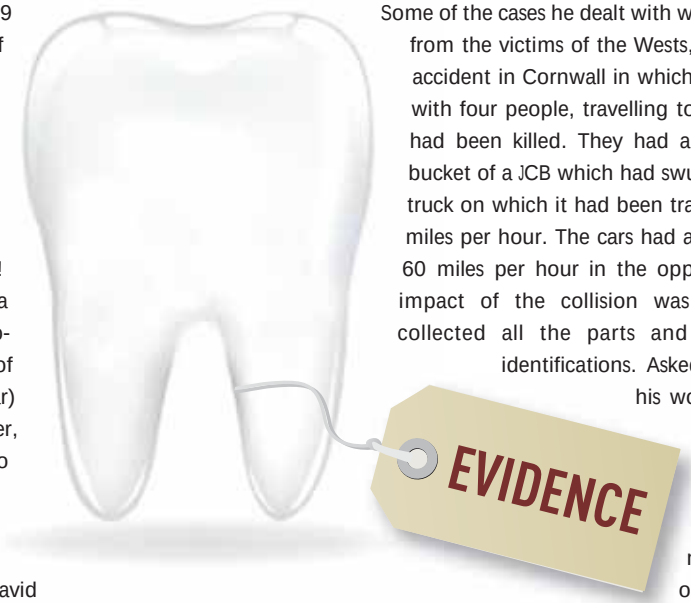
Searching for the tooth

One of the world's leading forensic dentists, Professor David Whittaker, was in Kilkenny for the Association's Annual Conference. He spoke to PAUL O'GRADY about his work, and especially about his long-established interest in identifying Hitler's remains.

Professor David Whittaker was born in 1939 and brought up on the Lancashire side of the Penines in England. At the age of 11, he won a State scholarship to grammar school and went on to study dentistry at the University of Manchester. Why did he choose dentistry? He had two cousins who studied medicine and he feared he wouldn't ever be as good as either of them! He always harboured a desire to be a surgeon, so went on to train as a maxillo-facial surgeon. While at an advanced stage of training (he was by then a Senior Registrar) and lecturing in the University of Manchester, he was poached by Cardiff University who were looking for something unusual – a person to teach the surgical anatomy of the head while also practicing as a clinician. Importantly, this ensured that David received a consultant's contract while teaching, doing research and doing two clinical sessions a week as a maxillo-facial surgeon.



Just before moving to Cardiff, a plane crashed into a petrol station in Stockport, killing 75% of the people on board. He was asked to help gather the dental records to allow the bodies to be identified. Very shortly after that, the Dean of the Dental School in Cardiff rang and asked if he had any experience of dental forensics as the police had a body they could not identify. From that point on, he worked closely with the pathologist Professor Bernard Knight and their work culminated in their collaborations on the victims of Fred and Rosemary West.

Developing forensic techniques

Over the years, Professor Whittaker realised that most forensic dentists were GDPs who worked off their own records. As the volume of forensic work he was being asked to do increased, he made an agreement with the University to channel the fees for that work into the setting up of properly-equipped forensic dentistry laboratories, and his title was amended to Professor of Oral Biology and Forensic Dentistry. The laboratories allowed him and his now team of colleagues to use electron microscopy and DNA to determine the gender of the victim and their age at death. He further advanced understanding by examining teeth of victims so that he could tell which type of filling material had been used, and even which type of burr had been used to drill the cavity.

Some of the cases he dealt with were terribly gruesome. Apart from the victims of the Wests, he dealt with a road traffic accident in Cornwall in which 12 people (three cars each with four people, travelling together to a social function) had been killed. They had all been decapitated by the bucket of a JCB which had swung out from the low loader truck on which it had been travelling at approximately 60 miles per hour. The cars had also been travelling at about 60 miles per hour in the opposite direction, and so the impact of the collision was especially horrifying. He collected all the parts and made all the necessary identifications. Asked if the macabre nature of his work ever upset him, he says that he treated it as science and trained himself to become emotionally detached. He never talked about the work outside of a work setting. That allowed him to, as he described it, "wash my hands and go home."

The Hitler case

One day at work in the 1970s, his colleague Professor Knight came over to his office. He had with him a copy, translated into English, of the post mortem carried out by the Russians on the remains of Hitler. It was, surprisingly, 30 pages in length; but exactly what happened to the body was obscure. It became a lifelong interest for Professor Whittaker and he has, over the years, put the various pieces of the story of what happened to Hitler's body together. While other scientists have also worked on this story too, Professor Whittaker related it to the *Journal of the Irish Dental Association* as follows.

It appears Hitler had a terror of having his body put on display somewhere after the war. Therefore, he gave instructions that his body (and that of Eva Braun) be burnt after he killed himself. This was done shortly before the Russians reached his bunker in Berlin in April 1945. Despite the remains being charred, the Russians took them to Moscow after a post mortem had been carried out. The post mortem was given to Professor Whittaker because the only significant remains were the upper and lower jaws. The post mortem, which appeared to have been smuggled out of Russia by a former Russian soldier, contained photographs and medical and dental descriptions of the upper and lower jaws. The question was whether the post mortem was genuine. Professor Whittaker set about the long task of seeing if he could

David Whittaker (above left) is certain the remains found were those of Adolf Hitler (left).

The Stockport plane crash (above right) in 1967 killed 75% of passengers.

establish its veracity. He got in touch with a colleague in the USA, Dr Ryder Sognaes, who had contacts with the CIA. They asked: does the Pentagon have any material that might help? It appeared that they did. First of all, they had full head X-rays of Hitler from a hospital in Germany that had been taken just after the bomb went off in the Wolf's Lair, which Hitler had been lucky to survive on July 20, 1944.

Additionally, while Hitler had been careful to dispose of his medical and dental records in the weeks prior to his death, his dentist, Dr Hugo Blaschke, had trained in Pennsylvania in the USA. He described Hitler's dental treatment in detail when interviewed by the US Secret Service after the war. His dental nurse, Frau Hauserman, also described her memories of the treatment of Hitler to the Americans. So while there were no formal records, there were two independent accounts of Hitler's dental treatment and full head X-rays from 1944.

Professor Whittaker succeeded in getting the X-rays and the descriptions so that he could compile charts and diagrams which reflected the state of Hitler's dentition. He then compared those results with the results of the port mortem carried out by the Russians. The outcome, he said, was that if he was asked to present his findings and his professional opinion in a British Court of Law, he believes the Coroner would identify the body as that of Hitler.

There is an interesting postscript. The BBC asked him if he would accompany them to Russia where they were hoping to be shown the actual remains. He agreed, but the travel was cancelled when the Russians, who had previously been co-operative, had very suddenly decided that the trip would not go ahead. Although there has been some speculation that the remains have been destroyed, Professor Whittaker believes that it was a change of those in power in Moscow around that time that caused the change of heart.

So what does he believe has happened to Hitler's remains? He says that it appears that after the post mortem, Hitler's remains (and those of Eva Braun and the Himmler family) were taken to ground outside Moscow and buried. That ground was identified in documents held in KGB headquarters and around the time of the fall of the USSR in 1991, the KGB went to the ground, which apparently now was a car park, and dug up the remains. "As far as we know," says Professor Whittaker, "they still have them."

What's so special about teeth?

In his address to the Conference, Professor Whittaker said that for a forensic scientist, teeth are special for three reasons: they are unique to the individual; they survive death; and, they are biologically inert, i.e., whatever you put in them tends to stay there!

If dental records exist, then you probably already know the identity of the body/victim – therefore most work for forensic dentists is in a scenario where dental records do not exist. Teeth then are very helpful in determining gender, and age at time of death. Dental forensics can also be very useful when bite marks are left on victims. General dental practitioners play a crucial role in dental forensics by keeping dental records. Professor Whittaker urged all dentists to pay close attention to their record-keeping. When asked to manage the identification of bodies of British victims of the tsunami in 2004 in Thailand and elsewhere, he observed fantastic dentistry, but not always fantastic record keeping.

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Warnings and precautions: Caution in allergic conditions. Avoid use with concomitant other NSAIDs including COX-2 selective inhibitors. Use lowest effective dose for the shortest duration necessary to control symptoms. Gastrointestinal bleeding, ulceration or perforation which can be fatal, have been reported with all NSAIDs at anytime during treatment, with or without warning symptoms or a previous history of serious gastrointestinal events. When gastrointestinal bleeding or ulceration occurs withdraw treatment. The risk of gastrointestinal bleeding, ulceration or perforation is higher with increasing NSAID doses, in patients with a history of ulcer, particularly if complicated with haemorrhage or perforation, and in the elderly. The elderly have an increased frequency of adverse reactions to NSAIDs especially gastrointestinal bleeding and perforation which may be fatal. Commence treatment in these patients on the lowest dose available. Ensure cure of oesophagitis, gastritis and/or peptic ulcer before starting treatment. Monitor patients with history of GI disease. Special care with NSAIDs in patients with a history of gastrointestinal disease (ulcerative colitis, Crohn's disease). Consider combination therapy with protective agents (e.g. misoprostol or proton pump inhibitors), and in patients requiring concomitant low dose aspirin, or other drugs likely to increase gastrointestinal risk. Monitor patients with a history of gastrointestinal toxicity, particularly when elderly, for unusual abdominal symptoms (especially gastrointestinal bleeding) particularly in the initial stages. Caution in patients receiving oral corticosteroids, anticoagulants, SSRIs or anti-platelet agents. Do not use with warfarin, other coumarins or heparin. Caution in patients with impaired renal function, receiving diuretic therapy or those who develop hypovolaemia. Ensure adequate fluid intake, may increase plasma urea nitrogen and creatinine. Caution in patients with impaired hepatic function. May increase some liver parameters. Monitor and advise patients with hypertension and/or mild to moderate heart failure. Special caution in patients with cardiac disease, especially episodes of previous heart failure. Monitor and advise patients with a history of hypertension and/or mild to moderate congestive heart failure as fluid retention and oedema have been reported. Some NSAIDs (particularly at high doses and long term treatment) may be associated with a small increased risk of arterial thrombotic events (e.g. myocardial infarction or stroke). Careful consideration before treating patients with uncontrolled hypertension, congestive heart failure, established ischaemic heart disease, peripheral arterial disease, and/or cerebrovascular disease. Similar consideration before initiating longer-term treatment of patients with risk factors for cardiovascular disease (e.g. hypertension, hyperlipidaemia, diabetes mellitus, smoking). Serious skin reactions (some of them fatal), including exfoliative dermatitis, Stevens-Johnson syndrome, and toxic epidermal necrolysis reported very rarely. Discontinue treatment at the first appearance of skin rash, mucosal lesions, or any other sign of hypersensitivity. Particular caution in patients with congenital disorder of porphyrin metabolism, dehydration, directly after major surgery. If long term use necessary, monitor hepatic and renal function and blood count. Stop treatment at first signs of severe hypersensitivity reactions. Avoid use with varicella. Caution in patients with haematopoietic disorders, systemic lupus erythematosus or mixed connective tissue disease. As other NSAIDs, dexketoprofen can mask the symptoms of infectious diseases. Contains sucrose.
Interactions: Other NSAIDs, anti-coagulants, heparins, corticosteroids, lithium, methotrexate, hydantoines and sulphonamides, diuretics, ACE inhibitors, antibacterial aminoglycosides and angiotensin II receptor antagonists, pentoxyfilline, zidovudine, sulfonylureas, beta-blockers, cyclosporin and tacrolimus, thrombolytics, anti-platelet agents and SSRIs, probenecid, cardiac glycosides, mifepristone, quinolone antibiotics.
Pregnancy and lactation: Do not use in pregnancy, lactation or in women attempting to conceive.
Undesirable effects: As with other NSAIDs, the most commonly observed adverse events are gastrointestinal. Peptic ulcers, perforation or gastrointestinal bleeding, sometimes fatal, particularly in the elderly may occur. Common (1-10%): Nausea and/or vomiting, abdominal pain, diarrhoea, dyspepsia. Uncommon (0.1-1%): insomnia, anxiety, headache, dizziness, somnolence, vertigo, palpitations, flushing, gastritis, constipation, dry mouth, flatulence, rash, fatigue, pain, asthenia, rigors, malaise. Rare (0.01-0.1%) anorexia, paraesthesia, syncope, hypertension, bradypnoea, peptic ulcer, peptic ulcer haemorrhage or peptic ulcer perforation, hepatic lesion, urticaria, acne, increased sweating, back pain, polyuria, menstrual disorder, prostatic disorders, peripheral oedema, liver function test abnormal. Very rare (<0.1%) neutropenia, thrombocytopenia, anaphylactic reaction including anaphylactic shock, blurred vision, tinnitus, tachycardia, hypotension, bronchospasm, dyspnoea, pancreatitis, hepatocellular injury, Stevens Johnson syndrome, toxic epidermal necrolysis (Lyell's syndrome), angioedema, facial oedema, photosensitivity reactions, pruritus, nephritis or nephrotic syndrome. Not known: laryngeal oedema, hepatitis, acute renal failure. As with other NSAIDs the following undesirable effects may appear: aseptic meningitis, which might predominantly occur in patients with systemic lupus erythematosus or mixed connective tissue disease; and haematological reactions (purpura, aplastic and haemolytic anaemia, and rarely agranulocytosis and medullar hypoplasia).
Pack size: 20 sachets.
Legal category: POM
Marketing authorisation number: PA 865/2/5
Marketing authorisation holder: Menarini International Operations Luxembourg S.A., 1 Avenue de la Gare, L-1611 Luxembourg.
Marketed by: A.Menarini Pharmaceuticals Ireland Ltd
Further information is available on request to A Menarini Pharmaceuticals Ireland Ltd, 2nd Floor, Castlecourt, Monkstown Farm, Monkstown, Co. Dublin, Ireland or may be found in the SPC.
Date of preparation: September 2013

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New oral anticoagulants and their implications for dental patients

Anticoagulation therapy is used in several conditions to prevent or treat thromboembolism. Over the last 40 years, warfarin has been the oral anticoagulant of choice and has been considered the mainstay of treatment. However, its use is limited by a narrow therapeutic index and complex pharmacodynamics, necessitating regular monitoring and dose adjustments.

Recently, two new oral anticoagulants - dabigatran etexilate (a direct thrombin inhibitor) and rivaroxiban (a factor Xa inhibitor) - have been approved for use in North America and Europe. Unlike warfarin, dabigatran and rivaroxiban are relatively small molecules that work as anticoagulants by targeting specific single steps of the coagulation cascade. Their advantages, relative to warfarin, include: predictable pharmacokinetics; limited food and drug interactions; rapid onset of action; and, short half-life. They require no monitoring. However, they lack a specific reversal agent.

The number of patients taking dabigatran and rivaroxaban is increasing. Therefore, it is inevitable that dentists will be required to perform invasive procedures on this cohort of patients. This paper outlines the various properties of the new oral anticoagulants and the most recent guidelines regarding the management of these dental patients taking these medications.

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Introduction

Anticoagulation therapy is indicated in several conditions to prevent, treat, or reduce the recurrence risk of thromboembolism. Included in these conditions are: deep vein thrombosis (DVT); pulmonary embolism (PE); atrial fibrillation; prosthetic and rheumatic heart valves; myocardial infarction; transient ischaemic attacks; and, stroke. Over the last 40 years, the coumarin-derivative, vitamin K antagonist, warfarin has been the oral anticoagulant of choice and has been considered the mainstay of treatment. Indeed, it has, along with other vitamin K antagonists, been the most widely-available, orally-administered anticoagulant.[1,2] However, like all medicines, warfarin is not without its disadvantages. Its use is limited by a narrow therapeutic index and complex pharmacodynamics, necessitating regular monitoring and dose adjustments. In addition, it has multiple drug and dietary interactions. These disadvantages created an impetus for the development of novel oral anticoagulants with a wider therapeutic index, less interactions, and a predictable level of anticoagulation at a specific dose. Recently, two new oral anticoagulants, dabigatran etexilate (a direct thrombin inhibitor) and rivaroxiban (a factor Xa inhibitor) have been approved for use in North America and Europe. In Europe, both dabigatran and rivaroxiban are licensed for short-term primary prevention of venous thromboembolic events in adult patients

TABLE 1: Indications for and pharmacology of oral anticoagulants.

	Warfarin	Dabigatran	Rivaroxaban
Indications	DVT, PE Prevention of thrombosis in AF Prevention of recurrent MI MHV	Prevention of CVA in AF VTE prophylaxis in elective THR, TKR	VTE prophylaxis in elective THR, TKR
Dose and regimen	Titrated according to INR Once daily	Range: 110-150mg BD for AF; 220mg daily for THR/TKR	10mg once daily
Site(s) of action	Factors II, VII, IX, and X Proteins C and S	Thrombin	Factor Xa
Oral bioavailability	~100%	3-7%	80-100%
Time to peak plasma concentration (T_{max})	2-8 hours	2-4 hours	2.5-4 hours
Half-life ($T_{½}$)	20-60 hours	12-17 hours Up to 28 hours in severe renal impairment	5-13 hours
Metabolism	Primarily CYP2C9 (liver)	Esterase catalyzed hydrolysis in plasma/liver	Liver: CYP3A4, CYP3A5, CYP2J2
Renal elimination	90-100%	80-85%	66%
Need for monitoring	Regular INR	None	None

Abbreviations

AF atrial fibrillation
CVA cerebrovascular accident
CYP cytochrome P
DVT deep venous thrombosis
INR international normalised ratio
MHV mechanical heart valve
MI myocardial infarction
PE pulmonary embolus
THR total hip replacement
TKR total knee replacement

who have undergone elective total hip or knee replacement surgery, while dabigatran is also licensed for prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation, plus one or more additional risk factors. Dabigatran is contra-indicated in patients with a prosthetic heart valve requiring anticoagulant treatment.[3] Unlike warfarin, dabigatran and rivaroxiban are relatively small molecules that work as anticoagulants by targeting specific single steps of the coagulation cascade.[4] In addition, they are reported to have fewer drug-drug interactions, no significant food interactions, and provide predictable anticoagulation at a specific dose, without the need for regular laboratory monitoring and alterations of dose.[5,6,7] The pharmacologic properties of dabigatran, rivaroxaban, and warfarin are outlined in **Table 1**.

As the number of patients taking dabigatran and rivaroxaban increases, it is inevitable that dentists will encounter them in the near future. It is therefore incumbent on all of us to become familiar with these drugs, their indications and method of action, and in particular the management of those patients requiring invasive dental procedures, so that these patients are managed in a safe manner. This present paper outlines the various properties of the new oral anticoagulants and the most recent guidelines regarding the management of these patients in dental practice.

Materials and methods

Dabigatran (Pradaxa®; Boehringer Ingelheim)

In October 2010, the Food and Drug Administration (FDA), USA, first approved the use of dabigatran etexilate to reduce the stroke and systemic embolisation risk in patients with non-valvular atrial fibrillation. It is now also used, in the EU and Canada, for thromboembolic prophylaxis in patients who have recently undergone a total hip or knee replacement.[8,9] Recent studies have shown that dabigatran, given at a fixed dose (owing to predictable pharmacokinetics) does not require monitoring and is as effective as

warfarin in preventing embolic events in patients with atrial fibrillation. The Randomised Evaluation of Long-Term Anticoagulation Therapy (RE-LY) trial demonstrated that, compared with warfarin, dabigatran 150mg twice daily is more effective at preventing stroke and systemic embolisation with a similar risk of major bleeding, whereas dabigatran 110mg twice daily is associated with a lower risk of major bleeding and a similar rate of stroke and systemic embolisation.[10] It has also been shown to be equivalent to warfarin in the prevention and management of recurrent venous thrombo-embolism (VTE) and PE.[11] However, significant concerns regarding the lack of a reversal agent, and difficulty in precisely monitoring its anti-coagulant effect remain.

Mechanism of action and pharmacology

It is a specific, reversible, direct thrombin inhibitor that, unlike warfarin, inhibits both free and fibrin-bound thrombin.12 It binds to the active site on the thrombin molecule (Factor II a) so that fibrinogen cannot be converted into fibrin.[5]

Dabigatran etexilate is a pro-drug which, following oral administration is converted to its active form, dabigatran. When administered orally, the bioavailability is approximately 3-7%. It is rapidly absorbed and is metabolised by the liver. It has a rapid onset of action with a peak plasma concentration at 0.5-4 hours.[13,14] When administered twice daily, a steady state plasma concentration is reached within two to three days.[13] The half-life elimination is 12-14 hours in healthy patients, 14-17 hours in the elderly, and up to 27 hours in patients with severe renal impairment (i.e., creatinine clearance <15-30 ml/min). There is no evidence for an alteration in pharmacodynamics in patients with moderate hepatic impairment (Child-Pugh B).[14]

Laboratory testing/monitoring

Unlike warfarin, routine monitoring of the anticoagulant effect of dabigatran is not required. However, certain situations such as emergency surgery, intra-cranial/cerebral bleeding, and overdose may require assessment of anticoagulation. The thrombin clotting time (TT), and ecarin clotting time (ECT) are reported to be the most sensitive tests for quantifying the anticoagulant effects of dabigatran. However, the ECT test is not widely available. The activated partial thromboplastin time (aPTT), whilst widely available, is less sensitive particularly at higher dabigatran doses.[15,16] Most dentists are familiar with the prothrombin time (PT), often expressed as the international normalised ratio (INR). However, this test is less sensitive than others and cannot be relied upon to determine the anticoagulant effect of dabigatran.

Adverse reactions

The RE-LY trial reported that more than 15% of patients experienced gastritis type symptoms.[10] Minor bleeding events were reported in 8-33%, and major bleeding in less than 6%. In addition, it reported drug hypersensitivity (including urticaria, rash, and pruritus), allergic edema, anaphylactic reaction, and anaphylactic shock in less than 0.1% of patients.

Reversal agent

Currently, there is no reversal agent for the dabigatran. However, owing to its short half-life, discontinuation of the drug may be sufficient to resolve minor haemorrhage, with the exception of patients with renal impairment. For more persistent or major bleeding, supportive measures such as pressure, vessel ligation, fluid replacement, and transfusion of blood products can be employed. Recombinant factor VII (rFVIIa), prothrombin complex concentrates, and/or haemodialysis may also be considered.[15]

Drug interactions

Unlike Warfarin, it appears that dabigatran has few clinically significant drug and food interactions. Ketoconazole, verapamil, and amiodarone may increase its anticoagulant effect, whilst rifampicin may decrease its effect. The risk of bleeding whilst on dabigatran may be increased by concomitant use of other anticoagulants, antiplatelets, and salicylates.[12] Stangier reported that the concomitant use of the non-steroidal anti-inflammatory drug (NSAID), diclofenac sodium, and dabigatran did not produce a significant interaction.[17] Nevertheless, given that non-cox-selective NSAIDs inhibit platelet aggregation and are associated with gastro-intestinal bleeding and peptic ulcer disease, it may be prudent to avoid their use in patients taking dabigatran. Paracetamol and opioid analgesics are suitable alternatives.[18]

Specific dental considerations

Unfortunately, to date, there are no clinical trials supporting specific measures in the event of haemorrhage in dental patients taking dabigatran. The most current information suggests that patients taking dabigatran can undergo invasive dental procedures without alteration of dose. As is the case with all patients, irrespective of coagulation status, local haemostatic measures (absorbable gelatin or oxidized cellulose pellets, sutures, gauze soaked in 5% tranexamic acid, pressure) should be employed in the event of bleeding. Owing to the risk of thromboembolism, dabigatran should never be discontinued without prior consultation with the treating physician. Firriolo and Hupp, studied data from reports on post-extraction bleeding in patients receiving low molecular weight heparin (LMWH).[5,19,20] In addition, they looked at the recommendations of van Ryn *et al* regarding the discontinuation of dabigatran before elective general surgery, and concluded that there should not be a significant risk for serious bleeding after dental treatment, including most uncomplicated dental extractions, in patients with normal renal function and without other risk factors for bleeding.[15] However, they continue to say that a temporary cessation of dabigatran may be required in patients requiring major oral/maxillofacial surgery. If this is the case, dabigatran should be discontinued (following consultation with the patients physician) at least 24 hours (or longer in renal impairment) before elective surgery. In addition, consideration should be given to performing a TT or aPTT six to 12 hours prior to surgery, which, if normal, indicates that the coagulation is normal and that the anticoagulant effect of dabigatran has resolved.[5,15,21]

Dabigatran should only be recommenced post-operatively once a stable clot has formed, thereby minimising the risk of bleeding. This is particularly important with dabigatran, and indeed rivaroxaban, as unlike warfarin, their onset of effect is predictable and rapid.

If discontinuation of anticoagulation is not considered safe, and extensive oral surgery is required, peri-operative bridging anticoagulation with an appropriate dose of subcutaneous LMWH or unfractionated heparin is recommended.

The RE-LY trial involving over 18,000 patients, looked at (amongst other things) the levels of bleeding in dabigatran versus warfarin.[10] Whilst the level of both major and minor bleeding was lower amongst the cohort taking dabigatran, no significant statistical significance was found.

A secondary analysis of the RE-LY trial showed that 4,591 patients had undergone at least one invasive procedure, with cessation of anticoagulation pre-operatively.[22] Interestingly, 10% (460) of these procedures were dental, which was the second most common type of surgery. Dabigatran was discontinued 24-72 hours (average 49 hours) or more pre-operatively, based on renal function and bleeding risk, and warfarin was discontinued an average of 114 hours pre-operatively. The analysis demonstrated similar rates of perioperative bleeding for both dabigatran and warfarin. More specifically, the incidences of major perioperative bleeding were 3.1% with dabigatran 110mg, 5.1% with dabigatran 150mg, and 4.6% with warfarin.[44] However, despite the fact that approximately 460 dental procedures were included in this study, it is difficult to find specific perioperative measures or guidelines as information regarding the duration and type of procedure are limited. Therefore, it is important to highlight that it is difficult to recommend this study as a guide for the management of patients requiring dental procedures.

Romond *et al.*, in a recent paper, describe the successful management of a patient taking dabigatran who required multiple extractions.[23] As per the recommendations of van Ryn *et al.*, they held the patients' dabigatran 24 hours prior to the procedure, which involved eight extractions, alveoloplasty, and tuberosity reduction.[15] They reported no prolonged post-operative bleeding. Interestingly, they also stated that had the patient required only one to three extractions, consideration would have been given to not stopping the patients' dabigatran. Weitz *et al.*, also suggest that dabigatran does not need to be stopped in cases where the bleeding risk is low and cites dental extractions as an example.[24]

Rivaroxaban (Xarelto®; Bayer)

Rivaroxaban is an orally-administered, selective, reversible, direct inhibitor of activated factor X (factor Xa), and is currently indicated for prophylaxis of venous thromboembolism (VTE) in adults after hip or knee replacement surgery. A number of studies have demonstrated that rivaroxaban can reduce VTE and all cause mortality in these patients.[25,26,27]

The ROCKET-AF trial investigated the effectiveness of rivaroxaban, relative to warfarin, in the reduction of ischaemic stroke or systemic embolism in patients with atrial fibrillation.[28] However, the FDA has yet to approve its use in the setting of atrial fibrillation, based on a perceived lack of evidence.[29]

Mechanism of action and pharmacology

Rivaroxaban is an oxazolidinone derivative that inhibits factor Xa and interrupts both the extrinsic and intrinsic coagulation pathways, thereby inhibiting thrombin formation.[12]

It is rapidly absorbed and has a rapid onset of action of two and a half to four hours. The half-life is five to nine hours in healthy adults, and 11-13 in the elderly (due to decreased total and renal clearance).[30] Oral bioavailability is 80-100% and the duration of effect is 10-18 hours.[4] It is excreted in the urine (66%) and faeces (28%).[31]

Laboratory testing/monitoring

Like dabigatran, routine monitoring of rivaroxaban is not required. However, in an emergency situation, measurement of the level of anticoagulation may be indicated. Anti-factor Xa assay is reportedly the most accurate measurement of the anti-coagulant effect of rivaroxaban (as well as LMWHs).[21] In addition, some authors suggest that aPTT and PT (with rivaroxaban specific calibration) may also be used.[32,33] The activated aPTT and HepTest® are prolonged dose-dependently; however, they are not recommended to assess the pharmacodynamic effect of rivaroxaban.[30]

Adverse reactions

Approximately 1-10% of patients taking rivaroxaban experience an adverse reaction.[34] Major bleeding occurs in 1-2%, and minor bleeding in 4-7%. Nausea occurs in 1% of patients.

Reversal agent

Unlike warfarin, there is no specific agent to reverse the anti-coagulant effect of rivaroxaban. However, owing to its short duration of action, discontinuation of the drug should be sufficient to arrest persistent minor haemorrhage. Severe or life-threatening haemorrhage may require the use of blood product transfusion, recombinant Factor VIIa, or prothrombin complex concentrate (PCC).[35,36]

Drug interactions

Two thirds of rivaroxaban is metabolised by the Cytochrome P450 (CYP) system, especially CYP3A4. In addition, rivaroxaban is also a substrate of P-gp transporters.[5] Therefore, the concomitant use of rivaroxaban with inhibitors or inducers of CYP3A4 should be avoided.[35,37] CYP3A4 inhibitors, which can increase the serum concentration of rivaroxaban and therefore the risk of bleeding, include erythromycin, ketoconazole, and amiodarone. Clarithromycin is considered a strong CYP 3A4 inhibitor, and a moderate P-gp inhibitor. However, the increase in peak serum concentration of rivaroxaban when administered with a twice-daily dose of Clarithromycin 500mg was found to be of no clinical relevance in one study.[38] Conversely, CYP3A4 inducers such as phenytoin, rifampicin and St Johns wort may increase the metabolism of rivaroxaban, thereby decreasing the level of anticoagulation. Non-steroidal and

opioid analgesics should be used with caution in patients taking rivaroxaban.[5]

Specific dental considerations

Similar to dabigatran, there are currently no clinical trials in the literature offering specific recommendations for the management of dental patients taking rivaroxaban.

Turpie *et al.*, suggest that interruption of rivaroxaban is not required for simple dental extractions.[39] The guidelines given above in relation to dabigatran are also applicable to rivaroxaban. Therefore, it is not necessary to discontinue rivaroxaban for uncomplicated extractions and other similar invasive dental procedures in patients with normal renal function. Local haemostatic measures, as described previously, should be employed when necessary. For patients undergoing elective oral/maxillofacial surgery, where the bleeding risk is significant, rivaroxaban should be discontinued (only after consultation with the patients physician) for at least 24 hours before surgery. A longer time period will be required in patients with renal dysfunction.[4,40]

Warfarin

The guidelines for management of dental patients taking warfarin, have previously been well described in the literature.[41-44] However, for completeness, a summary of the management of dental patients taking warfarin is included here. Warfarin inhibits the enzyme vitamin K epoxide reductase, therefore inhibiting the formation of vitamin K-dependent coagulation factors II, VII, IX, and X, and proteins C and S. The maximum anticoagulant effect of warfarin takes 48 to 72 hours to develop, with an estimated duration of action of two to five days and a reported half-life of two and a half days. It is important to stress that, owing to the risk of a potentially fatal thromboembolism, cessation of warfarin therapy prior to dental treatment is not recommended. Instead, an INR should be taken 24 to 48 hours pre-operatively to establish the degree of anticoagulation. In general, it is safe to proceed with an invasive dental procedure (including administration of local anaesthesia, periodontal or endodontic surgery, and routine/surgical extractions) if the INR is less than or equal to 3.5. Local haemostatic measures should be employed routinely. If the INR is greater than 3.5, the dentist should liaise with the treating physician in order to safely reduce the warfarin dosage. Due to warfarin's long half-life, a period of three to five days is required for a reduction in the level of anticoagulation, as reflected in a reduced INR. An INR again needs to be taken 24 to 48 hours prior to the procedure to ensure that it is less than or equal to 3.5. Finally, all dentists should be cognisant of the potential interaction between warfarin and other drugs commonly used in dentistry, including azole antifungals, macrolide antibiotics, and NSAIDs.

Discussion

Oral vitamin K antagonists have, for many years, been the mainstay of management for VTE treatment and prevention. Despite their widespread use, they are not without problem. They require regular monitoring and dose titration. In addition, they have multiple food and drug interactions. Despite this, the availability of an antidote, specifically Vitamin K, is somewhat reassuring. In the event of a significant or life-threatening bleed, prothrombin complex concentrate may also be used. Recently, the search for a better alternative to Vitamin K antagonists has resulted in the production of two new drugs, namely dabigatran etexilate and rivaroxaban. Their advantages, relative to warfarin, include predictable pharmacokinetics, limited food and drug interactions, rapid onset of action, and short half-life. They also require no regular monitoring or dose titration. A Cochrane review of 14 studies, incorporating 27,746 patients, comparing direct thrombin inhibitors to vitamin K antagonists and LMWH showed no statistically significant difference in the risk of bleeding.[45] However, the lack of a specific reversal agent remains a concern.

The RE-LY trial, which was referred to in the above section on dabigatran, looked at (amongst other things) the levels of bleeding in dabigatran versus warfarin.[10] Whilst the level of both major and minor bleeding was lower amongst the cohort taking dabigatran, no noteable statistical significance was found. However, significant concerns have since been raised regarding severe bleeding events (in patients whose anticoagulation was not stopped) and their management (or lack thereof) in patients taking dabigatran.[46-47]

To our knowledge, there are no randomised controlled trials looking at the peri-operative management of bleeding in dental patients taking dabigatran or rivaroxaban. Romond *et al.* describe the successful management of a patient taking dabigatran who underwent multiple extractions.[22]

Van Diermen *et al.* in an extensive literature review and summary of papers dealing with the management of dental patients receiving oral anti-thrombotic medication (including the novel oral anticoagulants) proposed an updated clinical practice guideline for dentists.[48] They concluded that the evidence does not support cessation of oral antithrombotic medication for simple dental procedures. More specifically, they recommend that novel oral anticoagulant treatment (including dabigatran and rivaroxaban) should not be interrupted to facilitate simple dental procedures (e.g., up to three dental extractions, up to three dental implants, and periodontal surgery).

Most current guidelines are largely based on expert opinion and the pharmacologic properties of the new oral anticoagulants.[5,12,15,18,22]

Current available information suggests that the risk of bleeding in patients undergoing invasive dental procedures (for example, extractions) is low, provided that local haemostatic measures (suturing, gelatin sponge, gauze soaked 5% tranexamic acid, tranexamic acid mouth rinse) are used and the patient has normal renal function. Indeed, the risk seems to be analogous to patients taking warfarin and with an INR of between two and three. For patients requiring multiple extractions, or oral/maxillofacial procedures, consideration must be given to discontinuation of dabigatran/rivaroxaban, with the duration determined by renal function and bleeding risk.[15] However, as stated previously,

dentists should not discontinue oral anti-coagulants without prior consultation with the patients' physician. If discontinuation is not feasible, due to the risk of VTE, bridging with LMWH or intravenous unfractionated heparin, as per the ACCP guidelines for patients taking vitamin K antagonists, is required.[49]

It is also important to be cognisant of the potential drug interactions between rivaroxaban/dabigatran and the drugs commonly used in dentistry, as outlined previously.

Conclusion

As the number of patients taking dabigatran and rivaroxaban increases, it is inevitable that dentists will encounter them in the near future. It is therefore incumbent on all of us to become familiar with these drugs, their indications and method of action, and, in particular, the management of those patients requiring invasive dental procedures. As our experience with these medicines increases, so will our understanding of appropriate management measures. Currently, no specific protocols are available and further observational studies and randomised controlled trial are required to properly define management guidelines.

Summary of management of dental patients taking dabigatran or rivaroxaban

- Based on current information, in patients with normal renal function taking dabigatran or rivaroxaban, invasive dental procedures can be carried out without interruption of the medication.
- All procedures should be performed as late as possible after the most recent dose.
- Local haemostatic measures should be used routinely in these patients.
- Patients requiring oral/maxillofacial surgery may need discontinuation of oral anticoagulants for at least 24 hours preoperatively, but always in consultation with treating physician.
- If stopped pre-operatively, dabigatran and rivaroxaban should only be re-commenced when a stable clot has formed (typically 24-48 hours post-operatively).
- If post-operative bleeding occurs, stop the oral anticoagulant, employ local haemostatic measures, and contact the patient's physician.
- For patients taking dabigatran, transfusion with packed red cells (PRC) or fresh frozen plasma (FFP) should be considered, plus haemodialysis +/- rFVIIa if required.
- For patients taking rivaroxaban, transfuse with PRC, or FFP, and, if available, give prothrombin complex concentrate or rFVIIa.
- NSAIDs and salicylates should be used with caution with dabigatran. Paracetamol and opioids are acceptable alternatives.
- NSAIDS, salicylates, macrolide antibiotics (especially erythromycin and clarithromycin), fluconazole, and opioids should be used with caution with rivaroxaban.
- Avoid ketoconazole, itraconazole, and voriconazole with rivaroxaban.

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Oral health behaviours amongst homeless people attending rehabilitation services in Ireland

Statement of the problem: Research on oral health behaviours and dental care service uptake of drug users and those in recovery remains scant.

Purpose of the study: The research aimed to explore and describe perspectives of drug users on their oral health behaviours, awareness of oral health complications caused by alcohol, cigarette and drug use, dental service uptake and opinions on improved dental service for active and recovering addicts.

Materials and methods: Two focus groups with a purposeful sample of participants (n=15) were conducted in two treatment and rehabilitation settings. The semi-structured guide consisted of open questioning relating to dental access and uptake, oral health, awareness of oral cancers, nutrition and substance consumption on oral health, and opinions around optimum oral health and dental service provision for active drug users and those in recovery. Thematic analysis of narratives was conducted.

Results: Participants described barriers to access and uptake, poor levels of preventative dental care, DIY dentistry in the event of dental emergencies, substance use to self-medicate for dental pain, mixed awareness of the effects of sugary products and substance use on oral health and cancers, and emphasised the importance of preventative dental care and dental aesthetics when in recovery.

Conclusions: Findings illustrate a profile of oral health behaviours in Irish drug users, with information useful for private and public practice, and in the further development of street, community and treatment setting oral health interventions.

Keywords
Oral health; dental health; addiction; dependency; qualitative.

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Introduction

Oral health forms an integral part of an individual's physical health and well being.[1] Abuse of tobacco and alcohol products, combined with drugs, worsens oral disease and contributes to oral complications. Consumption of licit and illicit drugs has been recorded amongst active drug users for dental pain management.[2-7] Research on oral health needs and health care access among active drug users and those in recovery remains scant, with studies confined to the reporting of prevalence of oral cancers, brushing habits, snacking, and recent visits to a dentist.[7-13] Poor oral health among users of illicit drugs is exacerbated by associated lifestyle factors in terms of personal hygiene, lack of tooth brushing, smoking, irregular eating patterns, consumption of sugary products, irregular dental visits, and chronic malnutrition.[4-6,8,10,12,17-19] It also results from direct physiologic, drug-related effects, such as reduced salivary function.[14-16] Social and behavioural factors relating to socio-economic status, oral hygiene, and childhood dental visits further complicate oral health status.[20] Concerns around dental appearance, missing, broken or loose teeth, dental erosion, caries, and bruxism have been reported amongst injecting drug users.[7,14-16,21-,23]

Despite the association between illicit drug use, and particularly injecting drug use of opiates, low levels of users accessing oral health services have been reported.[13,24-25] Research underscores general low uptake of preventative care services among injecting drug users, given the high rates of associated complications[26-29] and the need for outreach and outpatient primary care services.[30,31] Improved dental and oral health is contributory to physical and psychological well being within the recovery continuum, with poor dentition, related lowered self-esteem, and poor uptake of oral health services associated with poor treatment outcomes.[2,21,23] Successful oral health promotion activities situated in rehabilitation settings offer promise in the facilitation of health behaviour change.[9,32-34] Research has shown that methadone maintenance treatment clients report increased rates of health-care seeking behaviours.[13]

In 2006 in Ireland, the estimated national prevalence of opiate users was between 18,136 and 23,576 (with a point estimate of 20,790).[35] A total of 11,807 opiate users aged 15-64 years were known to services in Ireland, with an estimated 8,983 users not known to the services.[35] Current national data systems report that opiates (mainly heroin) were the most common problem drugs reported for those in treatment.[36] Opiate users in Ireland are characteristically aged between 25 and 34 years, male, early school leavers, and unemployed.[36,37] Meanwhile, opiate use among Irish females is on the increase since 2001.[36] The predominant mode of opiate use in Ireland is inhalation, closely followed by injecting and oral use.[37] Opiate dependence treatment uptake, in the form of methadone maintenance treatment, is also increasing, with 11,538 cases treated in 2007.[36,37] Polysubstance use (alcohol, cannabis, benzodiazepines, and cocaine) amongst users is common.[36,37]

To date, no research on the oral health of recovering opiate drug users in Ireland has been conducted. The aim of this study was: to explore and describe the perspectives of stabilised drug and alcohol users on their oral health behaviours; awareness of oral health complications caused by alcohol, cigarette and drug use; dental service uptake; and, opinions on improved dental service for active and recovering addicts.

Materials and methods

According to Neale *et al*.,[38] exploratory or inductive research is based on the description of 'bottom up' local, personal, or subjective experiences of participants within the drugs field. A qualitative methodology in the form of focus groups (n=2) was selected in order to explore and investigate participants' perspectives of oral health awareness and behaviours, as well as their uptake and experiences of access to dental services. A purposeful sample of participants (n=15) willing to partake in the study were recruited from two detoxification, treatment and rehabilitation services for homeless men and women. Ethical approval for the study was granted by the Waterford Institute of Technology Ethics Committee. Participants were provided with information regarding the research aim, confidentiality assurances, written and verbal consent, audio recording of the focus group(s), and the right to withdraw from the focus group(s) at any stage. This information was repeated by author two (EH), prior to commencement. Each participant provided written and verbal consent to partake, and all were provided with toothbrushes, toothpaste, and dental floss (courtesy of Colgate, Dental Medical Ireland (DMI), and Sensodyne). The semi-structured guide was developed in consultation with the extant literature, the treatment centre co-ordinators, and with the expertise of the second author (EH) - a dental nurse. The semi-structured guide consisted of open questioning relating to dental access and uptake; oral health; awareness of oral cancers, nutrition and substance consumption on oral health; and opinions around optimum oral health and dental service provision for active drug users and those in recovery. Questioning was kept neutral by actively inviting all participants to share their opinions, in a non-judgmental manner so as to reduce bias and optimise on accurate data retrieval. Focus group narratives were transcribed, with the resultant combined text analysed thematically[39] using NVivo 8, a qualitative text analysis software package. The text data set was read and reread several times by both authors, in order to identify and code the concepts found in the data, organise the concepts, explain any data outliers, and to develop the final thematic presentation of findings.

Results

Participant ages ranged from 20 years to 56 years, with six participants engaging in detoxification and nine participants currently in rehabilitation. Three participants were engaging in methadone maintenance treatment.

THEME ONE: Access to and uptake of dental care

Roughly half of participants described themselves as routine dentist attenders during childhood. Two participants reported that their dental visits were confined to dental cleaning and for the extraction of blackened teeth.

> "I was only at the dentist three times in my whole life. Two of those times were for a clean and polish."
> Participant two, male, age 31 years.

Some participants described 'symptomatic attendance', by only attending the dentist when experiencing toothache or when necessitating dental extraction, with the majority observing how poor personal dental care was exacerbated by substance abuse and dependence in the past.

> "I was never one to mind oral hygiene."
> Participant one, male, age 40 years.

> "I didn't really have a problem with 'em, I'd only go if they were sore."
> Participant three, male, age 26 years.

> "I'd no problems with me teeth. I'd only go to the dentist if I needed an extraction."
> Participant six, male, age 48 years.

Barriers to dentist visits were described as relating to lack of medical card, lack of money, and presence of a continued substance dependency problem. Current rates of dentist attendance ranged from zero to two times in the past twelve months, with participants describing their last previous routine screening, ranging between last week and five years previous. Some comments were made around fear of needles and use of rubber gloves in the dental surgery, and that this deterred participants from attending for routine check-ups. Some negative observations were made around medical card dentists.

> "I don't like people sticking needles in me and the rubber gloves are a funny taste in my mouth."
> Participant seven, male, age 40 years.

> "I'm afraid of the dentist, the needles scare me. I use needles, but I don't like those big needles you stick in your gums."
> Participant 11, male, age 46 years.

Many comments were made around the importance of access to dental care when in recovery, having a relationship with your dentist, and the presence of a dental practice located onsite in treatment and rehabilitation settings.

> "Yes most places want medical cards and here people are only starting to get out of their addiction, and the teeth start to matter and it would be very good if they could have it here."
> Participant one, male, age 40 years.

> "I think it would be a good idea having one here, to encourage people to take care of their teeth."
> Participant 13, female, age 39 years.

THEME TWO: Dental care

Levels of dental care in terms of brushing and flossing teeth were described by most participants as neglectful in the past, with some participants never brushing or flossing their teeth when in active addiction. Some comments were made around use of toothbrushes to attempt to knock off plaque, and the use of alcohol as mouthwash. Frequency of brushing and flossing when in the treatment and rehabilitation service setting had greatly improved, and ranged from once to four times a day. No participants reported flossing their teeth, either in the past or currently, with some participants reporting use of toothpicks instead. Comments were made around bleeding gums when attempting to insert toothpicks between teeth.

When questioned around the occurrence of oral health issues or dental emergency, some participants described the immediate making of appointments at their dentist, with others reporting delaying dental visits by the administration of toothpaste into the dental cavity to reduce pain, the self-medication for dental pain with painkillers (i.e., Nurofen), and the consumption of excessive levels of alcohol, prescribed and illicit drugs to escape the pain. Two participants without medical cards described doing nothing.

> "I'd wait until the last minute. I'd be in agony and I'd use that as an excuse to get mad out of it, because it would take the pain away for a while."
> Participant five, male, age 26 years.

> "Depends on how bad it is. I go to a doctor and if he says go to a dentist, I'll go. But I go to the doctor first for painkillers. I don't like dentists."
> Participant seven, male, age 40 years.

When probed around DIY dentistry in the event of a dental crisis, some participants described scraping tooth stains and plaque from their teeth with sewing needles and toothpicks, and attempts to extract teeth with pliers, or by tying the affected tooth to a closing door.

> "I did it once with a door. I scrape them sometimes with a sewing needle to get the dirt out."
> Participant four, male, age 20 years.

> "Yes, with a pliers. And a string on the door. Me tooth cracked and broke so I took the rest of it out."
> Participant seven, male, age 40 years.

THEME THREE: Dental state

Current dental state and oral health were described as important to participants, with many participants regretting their prior neglect of teeth and oral health, reflecting on their subsequent loss of confidence, and emphasising the importance of personal outer and dental appearance to them now when in recovery.

> "It is very important to me now as I am finished my addiction. I realise they are important as I am missing lots of me back molars and it is hard to chew food…. it builds peoples' confidence to smile again. I think everyone is laughing at my teeth."
> Participant one, male, age 40 years.

> "My teeth are very important for my physical appearance. My teeth are now getting crooked and I might be getting braces."
> Participant three, male, age 26 years.

Many comments were made around missing, decayed, and discoloured teeth. The majority of participants reported tooth loss ranging from one tooth to 12 teeth. One participant described avoidance of smiling so as not to draw attention to his discoloured and absent teeth. Some reported intending to receive fillings and teeth whitening in order to improve their aesthetics.

> "I am aware of them missing and it's a horrible feeling. There's so many missing."
> Participant one, male, age 40 years.

> "The lowers are all stained and they look like they are gonna fall out. Have just half a tooth too. I need to have teeth out and I don't want to get them out. I'm missing so many already."
> Participant four, male, age 20 years.

For the participants with children, personal neglect of dental care, and awareness of repercussions, resulted in strong motivations to teach good dental care (brushing, reduced sweet consumption, and routine check-ups) to their children.

> "It will impact on them as I'm gonna make sure they floss and look after them properly and I'll bring them for six monthly check ups as well, and so our children won't have to suffer."
> Participant one, male, age 40 years.

> "All my kids have lovely teeth, they brush them every day, and if there is something wrong I bring them straight to a dentist. Their teeth are perfect."
> Participant 12, male, age 46 years.

THEME FOUR: Consumption of substances and awareness of potential for damage

Participants all reported awareness of the link between consumption of sugary products and tooth decay. The consumption of sugary products when actively drinking and/or drug using was described by all participants. Current eating practices were described as healthier, with less consumption of biscuits, sweets and sugary breakfast cereal. Only half of participants reported awareness of alcohol's potential to increase tooth decay and demineralise tooth enamel.

> "Yes, I knew drink would fuck them up, but I didn't know about the enamel. I suppose it's the same as fizzy drinks."
> Participant four, male, age 20 years.

> "I knew it was bad for your teeth, but I didn't know it did that much damage."
> Participant seven, male, age 40 years.

All participants reported current rates of smoking, with age of onset ranging from 10 to 23 years. All participants, with the exception of two, reported awareness that tobacco can cause a wide range of oral problems, such as delayed wound healing, sinusitis, soft tissue damage, and gum disease. Some awareness of oral cancers relating to tobacco was described. In terms of licit and illicit drug use, participants described use of opiates, cannabis and stimulants, with many partaking in poly substance use. All participants were aware of dry mouth caused by drug use, but many were unaware of the causal impact on tooth decay.

> "Yeah, that's what melted my back teeth - sucking on tablets. Benzos [benzodiazepines], they wrecked my teeth."
> Participant five, male, age 26 years.

Discussion

The study, despite its small scale nature, presents a unique insight into the oral health behaviours of some recovering addicts attending treatment in Ireland. Findings cannot be deemed representative of the Irish situation, but do present illustrative and, to date, undocumented accounts of drug user dental histories and interplay with drug and alcohol dependence. Of concern is that only half of participants reported routine dental visits as a child and thereafter, despite evident strong current motivations to teach good dental care in their own children.

The study's findings are supported by other studies,[13,24-29] which indicate the low uptake of dental services amongst individuals experiencing problematic alcohol and drug use, addiction, and those without permanent accommodation. Barriers to dental services included lack of money or medical cards, and chaotic lives when actively misusing alcohol and drugs. Similar to Robinson and Acquah,[9] some participants described anxiety relating to fear of needles and gloves. Levels of dental care in terms of brushing teeth and flossing were described by most participants as neglectful in the past, with some participants never brushing or flossing. Many participants were regretful of their prior neglect of teeth and oral health. Similarly, Gray[40] has described how self-consciousness and guilt around dental neglect impacts on the recovering addict's self-perception, and potential for employability, and stated "their teeth are a beacon to their drug past". Similar to the extant literature,[7,9,13-16,21-24] participants reported dental and oral health problems, which included: missing,

broken or loose teeth; dental erosion; caries; gingivitis; and, bruxism, with cases of DIY dentistry in the form of tooth extraction, use of alcohol as mouthwash and the scraping of teeth with toothpicks described, alongside the use of substances and toothpaste to medicate for pain in the event of dental emergencies. Research has suggested that drug users may have a low pain tolerance,[41] thereby exacerbating continued alcohol and drug use when experiencing dental pain.[13] Participants described some awareness of the direct physiological effects of cigarette, alcohol and drug use, such as reduced salivary function[14-16] and the consumption of sugary products[4-6,8,10,12,17-19] on tooth decay, delayed wound healing, sinusitis, soft tissue damage, gum disease, and oral cancers.

On a positive note, routine dental care in the form of brushing and flossing, and preventative dental service uptake improved when attending the treatment and rehabilitation service. The study narratives underscore how improved oral health, and the improved appearance of teeth contribute to personal well-being, confidence, and self-esteem when recovering from addiction.[2,21,23-24]

Research suggests that the situation of dental practices and employment of oral health promotion initiatives in treatment and rehabilitation settings offer promise in the facilitation of health behaviour change, both for the addict and their children.[9,32-34,42] The findings offer a unique insight into the potential for development of oral health promotion and preventative care activities for those working with addicts in Ireland. Interventions developed in the UK and US include: target leafleting by street outreach workers; free mouth checks; integrated dentist and treatment services targeting special groups at risk;[7] dental 'drop in' clinics for active and recovering drug users;[2] and, outreach oral health promotion initiatives[43] for street drug users within a whole stakeholder community approach.[44] The proactive addressing of oral health needs, through screening, prevention, diagnosis and treatment, can improve client morbidity and well-being along the recovery continuum.[44] Research in the UK underscores the usefulness of collaboration between dental and addiction service key workers, the service user involvement team, and local pharmacies in the form of piloting dental drop in sites alongside shared care services for service users with oral health promotion central to building recovery capital.[2,8,45] Equally, the study findings can contribute the development of specific chemical dependence training for Irish dental nurses and dentists in both private and general dental practice.[2,44,47]

Conclusion

The study highlights that, for those in recovery, specific dental interventions in private and general dental practice would be received positively. It presents a starting point in creating an oral health profile of drug dependents in Ireland, with findings useful for the design of a larger study at a later date. We recommend further research investigating oral health status of clients attending addiction treatment in Ireland, and the feasibility and acceptability of various oral health care preventive strategies for use by public and private dental practices.

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The effect of flapless surgery on implant survival and marginal bone level: a systematic review and meta-analysis

Lin, G.H., Chan, H.L., Bashutski, J.D., Oh, T.J., Wang, H.L.

Background: The clinical outcomes of implants placed using the flapless approach have not yet been systematically investigated. Hence, the present systematic review and meta-analysis aims to study the effect of the flapless technique on implant survival rates (SRs) and marginal bone levels (MBLs) compared with the conventional flap approach.

Methods: An electronic search of five databases (from 1990 to March 2013), including PubMed, Ovid (MEDLINE), EMBASE, Web of Science, and Cochrane Central, and a hand search of peer-reviewed journals for relevant articles were performed. Human clinical trials with data on comparison of SR and changes in MBL between the flapless and conventional flap procedures, with at least five implants in each study group and a follow-up period of at least six months, were included.

Results: Twelve studies, including seven randomised controlled trials (RCTs), one cohort study, one pilot study, and three retrospective case-controlled trials (CCTs), were included. The SR of each study was recorded, weighted mean difference (WMD) and confidence interval (CI) were calculated, and meta-analyses were performed for changes in MBL. The average SR is 97.0% (range, 90% to 100%) for the flapless procedure and 98.6% (range, 91.67% to 100%) for the flap procedure. Meta-analysis for the comparison of SR among selected studies presented a similar outcome (risk ratio = 0.99, 95% CI = 0.97 to 1.01, P = 0.30) for both interventions. Mean differences of MBL were retrieved from five RCTs and two retrospective CCTs and subsequently pooled into meta-analyses; however, none of the comparisons showed statistical significance. For RCTs, the WMD was 0.07, with a 95% CI of −0.05 to 0.20 (P = 0.26). For retrospective CCTs, the WMD was 0.23, with a 95% CI of −0.58 to 1.05 (P = 0.58). For the combined analysis, the WMD was 0.03, with a 95% CI of −0.11 to 0.18 (P = 0.67). The comparison of SR presented a low to moderate heterogeneity, but MBL presented a considerable heterogeneity among studies.

Conclusion: This systematic review revealed that the SRs and radiographic marginal bone loss of flapless intervention were comparable with the flap surgery approach.

Journal of Periodontology. 2014; 85 (5): e91-e103.

Osteonecrosis associated with dental implants in patients undergoing bisphosphonate treatment

Kwon, T.G., Lee, C.O., Park, J.W., Choi, S.Y., Rijal, G., Shin, H.I.

Objectives: Bisphosphonate-related jaw necrosis (BRONJ) associated with dental implants is a rare but continuously reported complication. To verify clinical and pathological characteristics of BRONJ around dental implants, the present study analysed clinical, radiographic and histopathological findings of these lesions.

Patients and methods: Nineteen patients were diagnosed with osteonecrosis of the jaw associated with dental implants and treated at our institute from 2008 to 2011. The patients' medical history, demographic features, radiographic, and histopathological findings along with information on bisphosphonates (BP) administration were analysed.

Results: The majority of BRONJ patients associated with dental implants used oral BP for osteoporosis. The patients were divided into two groups: BP initiation before (n = 16) and after (n = 3) implant surgery. Only three patients (15.8%) could be regarded as "implant surgery-triggered" BRONJ. Many patients (n = 9) showed successful osteointegration after fixture installation to an average of 35 months (11–82 months) until the development of osteonecrosis. The histological features of the lesion showed that the necrotic bone with empty lacunae was infiltrated by inflammatory cells and bacterial colonies. Viable osteocytes were also observed in some areas of the bony specimens. Three types of bone destruction pattern were observed: (i) complete necrosis of the bone around the implant (frozen type), (ii) extensive osteolysis around the implant with or without sequestra (osteolytic type), and (iii) sequestration of bone with an implant maintaining direct implant–bone contact (en block sequestration type). These findings could be existed at the same lesions depending on the degree of local bone destruction and the severity of the infection.

Conclusion: These results and those of others suggested that already osseointegrated dental implants can also cause the osteonecrosis around the implant after BP administration. En block sequestration of bone with implant might be one of the characteristics of implant-related BRONJ, which is different from peri-implantitis-induced bone destruction. The possible role of microcracks in this type of bone destruction needs to be examined further.

Clinical Oral Implants Research. 2014; 25 (5): 632–640.

Status of ten self-etch adhesives for bonding to dentin of primary teeth

Krämer, N., Tilch, D., Lücker, S., Frankenberger, R.

Objective: Aim of this in vitro study was to compare self-etch adhesives regarding microtensile bond strength (-TBS) to dentin of primary teeth.

Methods: Fifty freshly extracted primary molars were ground to expose caries-free dentin. Specimens were bonded with ten self-etch adhesives (iBond self-etch/Heraeus, Xeno V+/Dentsply, G-Bond, Gaenial Bond/GC, BeautiBond/Shofu, AdheSE One F/Ivoclar Vivadent, Adper Easy Bond/3M ESPE, Clearfil SE Bond/Kuraray, OptiBond

XTR/KerrHawe, Prime&Bond NT/Dentsply). After 24-h storage (distilled water, 37°C), resin–dentin beams were cut and 848 resin–dentin sticks were subjected to -TBS tests. Fracture analysis was carried out at 40× magnification under a fluorescence microscope and under a SEM.

Results: Three adhesives (iBond SE, Clearfil SE Bond, Prime&Bond NT) did not suffer pre-test failures (PTF). AdheSE One F revealed the largest portion of PTF (28%; $P < 0.05$). Clearfil SE Bond and OptiBond XTR exhibited more cohesive fractures than the other adhesives (77.3% vs 64.8%; $P < 0.05$). iBond SE, Gaenial Bond, Clearfil SE, and OptiBond XTR achieved -TBS of >60 MPa, whereas Xeno V+ and AdheSE One F ranged only at ~20 MPa ($P < 0.05$).

Conclusion: Within the limits of this study, the self-etch adhesives under investigation proved different extents of initial -TBS to primary dentin with iBond SE, Gaenial Bond, Clearfil SE, and OptiBond XTR having been most successful.

International Journal of Paediatric Dentistry. 2014; 24 (3): 192–199.

The role of postoperative prophylactic antibiotics in the treatment of facial fractures: a randomised, double-blind, placebo-controlled pilot clinical study. Part 3: Le Fort and zygomatic fractures in 94 patients

Soong, P.L., Schaller, B., Zix, J., Iizuka, T., Mottini, M., Lieger, O.

The aim of this study was to evaluate the difference between the effect of a five-day and a one-day postoperative course of antibiotics on the incidence of infection after midfacial fractures. A total of 98 patients with displaced *Le Fort* or zygomatic fractures that required operation were randomly assigned into two groups, both of which were given amoxicillin/clavulanic acid 1.2g intravenously every eight hours from the time of admission until 24h postoperatively. The five-day group was then given amoxicillin/clavulanic acid 625mg orally eight-hourly for another four days. The one-day group was given placebo orally at the same time points. Patients were followed up one, two, four, six, and 12 weeks, and six months, postoperatively. The development of an infection of the wound was the primary end point. Ninety-four of the 98 patients completed the study. Two of the 45 patients in the five-day group (4%) and 2/49 in the one-day group (4%) developed postoperative wound infections. One in each group had a purulent infection, while the others had only wound breakdown. Two patients of the five-day group and one in the one-day group developed rashes on the trunk. There were no significant differences in the incidence of infection or side effects between the groups. In midfacial fractures, a one-day course of antibiotics postoperatively is as effective in preventing infective complications as a five-day regimen.

British Journal of Oral and Maxillofacial Surgery. 2014; 52 (4): 329-333.

Quiz answers

Questions page 115

1. What is the most likely cause of this woman's pain?

This woman has shingles (*Herpes Zoster*). Shingles is a viral infection of the nerve and affects the area of skin supplied by it. Early symptoms include headache, fever and generally feeling unwell, often followed, a few days later, by a painful skin rash. Pain in the teeth may also feature. *Herpes Zoster Ophthamicus* (involving the orbit of the eye) occurs in 10-25% of cases, caused by the virus reactivating in the ophthalmic division of the trigeminal nerve.

2. What course of action would you take?

Swift action is crucial: immediate referral to a medical practitioner/ specialist, who will begin treatment with analgesics and antiviral medications (Famciclovir 500mgs three times daily for seven days in this woman's case.) This will help prevent the virus from multiplying and limit symptoms. In severe cases, shingles of the eye can lead to inflammation of the whole eye, which may cause loss of vision. It can also cause corneal scarring, which would necessitate a corneal transplant, so the quicker treatment is commenced, the better.

Classified advert procedure

Please read these instructions prior to sending an advertisement. Below are the charges for placing an advertisement for both members and non-members. Advertisements will only be accepted in writing via fax (01- 295 0092), letter or email (fionnuala@irishdentalassoc.ie). Non-members must pre-pay for advertisements, which must arrive no later than July 14, 2014, by cheque made payable to the Irish Dental Association. If a box number is required, please indicate this at the end of the ad (replies to box number X). Classified ads placed in the *Journal* are also published on our website www.dentist.ie for 12 weeks.

Advert size	Members	Non-members
up to 25 words	**€75**	**€150**
26 to 40 words	**€90**	**€180**

Non-members must send in a cheque in advance with their advert. The maximum number of words for classified ads is 40.

Only if the advert is in excess of 40 words, then please contact:
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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
- Practices Wanted
- Unwanted/Second Hand Equipment for Sale

Classified adverts must not be of a commercial nature. All commercial adverts must be display advertisements, and these can be arranged by contacting Paul O'Grady at Think Media, Tel: 01 856 1166.

POSITIONS WANTED

Experienced dentist. Graduated 2000. Seeks part-time associate position/sessions in Cork and commutable surrounds. All enquiries to: associatecork@gmail.com.

POSITIONS VACANT

Associate position immediately available in south east to replace departed colleague. Initially three days with view to extend. Modern practice, computerised and digitial x-ray. Email: dentistsoutheast@gmail.com.

Dental associate required for one day a week - Wednesday/holiday cover in a busy, modern dental surgery just one minute from exit 11, M50. Please phone: 087 787 1648, or contact wmunroe@eircom.net.

Associate dentist required in County Monaghan to replace departing colleague. One/two days per week initially. Email: shirleywright.7@btinternet.com.

Full-time associate required for well-established, friendly, modern, computerised practice in Dundrum, Dublin. State-of-the-art premises. Minimum three years experience required. Email CV to: jen@glenvilledental.ie.

Part-time associate required for busy north-central Dublin practice. Opportunity for the right person to build their book with skills and personality. Fully computerised, small, friendly team with good admin support, good patient mix. Email enquiries/CV to: onemanorplace@eircom.net.

Experienced associate wanted to replace departing colleague at busy, modern practice in Navan. Computerised, digital x-rays, OPT. Intra-oral camera. Periodontist, implants, hygienist and experienced staff. Two to three days/week with a view to full-time. Email: gh@bridgeviewdental.ie.

Part-time associate required for new, fast-growing practice in Malahide, awarded Most Attractive Practice at 2014 Irish Dentistry Awards. Kindly contact us on: nicola@ivorydental.ie.

New private surgery SW London requires part-time associate, immediate start for the right person. Will wait for right dentist to move from Ireland. Experience three years, must be warm and friendly. Specialists welcome. CV and covering letter emails please: enquiries@thewimbledondentist.co.uk.

Associate required for Cork city practice starting September 2014. Minimum three-years experience. Computerised with full support staff. Email: corkcityassociate@gmail.com.

Full or part-time associate position available in busy Dublin city centre practice. Experience essential. Please email CV to: dentalrole@yahoo.com.

Associate required for busy west Dublin practice to replace departing colleague. One to three days available immediately. Reply with CV to: dentistrequired0@gmail.com.

Cork city southside. Part-time associate wanted initially for Thursday evening and occasional Saturdays. No medical cards. 50% basis. Email: airportdental@hotmail.com.

A part-time dental associate with at least three years experience is required for two to three days in a busy practice in Ashbourne, Co. Meath. Please apply by sending CV and references to: peadar.ashdent@gmail.com.

Locum required for sessions in Dublin 6W practice for month of July, with a view to long-term position. Busy practice with nurse and reception staff. Min three years exp required. Please email CV to: jobs@elitedental.ie.

Associate required in long-established, three-surgery private practice, Dublin 14. Applicants with experience and a long-term view preferred. Apply with CV to: southdubdentpractice@gmail.com.

Dentist required in south county Dublin practice, for one or two days at the end of May beginning of June 2014, for approximately six weeks. Email: dentsurg1@gmail.com.

We are looking for a dentist to replace a Tuesday-Friday and every second Saturday list from September 2014 - January 2015 to cover maternity leave. Position may then have potential to offer a part time/full time position thereafter. Email: audrey@molesworthclinic.ie.

Enthusiastic dentist required for sessional work at a modern practice with digital imaging and a highly trained back up team in Dublin 16. Please email: kbmdental.grange@gmail.com.

Dentist required for state of the art clinic in Dublin 2. Must have at least five years experience. Please email CV to: carol.moroney@redmondmolloy.ie.

Experienced dentist wanted for busy, well-established dental practice in Co. Louth. Excellent long-standing support staff. April start. Email: susie@smiles.ie.

South East/Kildare requires a dentist part time Monday to Thursday 8.30am to 5.30pm. Email: loretodentalsurgery@gmail.com.

Dentist wanted for established, busy Saturday book in an entirely private practice in Co. Meath. On-site periodontist and endodontist, superb level of equipment and excellent staff. Please reply with CV to: abbeydentists@hotmail.com.

Tuam, Co. Galway: Full-time locum dentist required for maternity leave August 2014. Fully computerised, digital radiography, rotary endo, CEREC Omnicam, implantology, intra-oral camera. Excellent support staff, hygienist and lab. Please submit CV to: reception@abbeytrinitydental.ie.

Locum required for busy surgery in south east, just over one hour from Dublin. Cover is for one week from June 9. Email: rollywoods@hotmail.com.

Experienced locum dentist required for four to six weeks from mid July. Busy modern practice with hygienist. Tramore, Co. Waterford. Contact: bridcantwelldental@gmail.com.

Galway – locum dentist required to cover maternity leave August 2014 for six months. Email: charles@irishdentist.com.

Locum required, either part or full-time for a period of up to 10-12 months. Busy practice in Co. Wicklow with a high private proportion. For further information please email: stu.lotte@hotmail.co.uk, or phone: 085 7855120, 059 6482749.

Locum required for busy Dublin city centre practice for June. Please email CV to: dentaldublin@gmail.com.

Locum required for busy, thriving practice in Co. Tipperary . Minimum three years experience. Computerised practice, digital x-ray, modern fully-equipped surgery with excellent support team. For further information contact Linda at: 087 228 1282 or lindaryan001@gmail.com.

Orthodontist required to do sessional work at a busy practice in Dublin 16. We are a modern practice with digital imaging and a highly-trained back-up team. Email: kbmdental.grange@gmail.com.

Dental nurse required for busy general dental practice within a specialist practice setting. Stephen's Green area. Email: Info@harcourtdentalclinic.ie, or practiceadmin@woolfedwyer.com.

Part-time dental nurse required for busy dental clinic Leixlip area. Experience desirable and be able to work well as part of a team. Please email CV to: reception@rfdentalclinic.com.

Dental nurse (experienced) required for full-time position in Glanmire, Cork. Starting May 2014. Email CV to: squiresgary@yahoo.co.uk.

Part-time dental receptionist required for busy dental clinic Leixlip area. Candidate must have experience and be able to work well as part of a team. Please email CV to: reception@rfdentalclinic.com.

Experienced dental nurse required for part-time position in busy Limerick dental practice. Please send your CV to: limerickdentjob@gmail.com.

Fully-qualified dental nurse required to work full time in a busy practice in Cork city. Computer literacy and good people skills are required. Available to start immediately. Please send CV with photo to: corkdentalpractice@gmail.com.

Part-time hygienist required for busy, modern, progressive, computerised practice in New Ross. Applicant must be confident and motivated and must possess good interpersonal skills. Position is for Thursdays/Fridays and is permanent €34/hr worked. Email: dillondental2@gmail.com.

CONTINUED OVERLEAF

CONTINUED FROM OVERLEAF

Computerised, modern, busy practice in Cork is hiring a dental Hygienist with great interpersonal skills. This part-time position is available immediately; three days per week. Email letter and CV with photo to: corkdentalpractice@gmail.com.

Full-time hygienist position available for busy dental practice in Westmeath. Immediate start. Please email: hygienistwestmeath@gmail.com.

A full-time dental receptionist is needed to cover maternity leave for eight months from the last week of May 2014. Excellent interpersonal skills and computer literacy are essential. Please send CV to: swordsdentalreception@ gmail.com.

Locum dentist required for two-to-three days per week in Newry from June to August. Please contact Michael at info@gentledentalclinic.com.

Experienced locum dentist required for busy practice for last two weeks in July/first week in August and also for one week in September. Flexible on days worked. Contact Laura by email at kingscourtdentalpractice@ gmail.com.

Locum Dentist required for holiday leave July 18-July 25 in friendly modern practice. 30 mins from Limerick/Ennis and Nenagh. Tel 086 2871468

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For sale - South Dublin. Four miles from city centre. Top class location. Excellent footfall. Two well-equipped surgeries. Ripe for expansion, extra room available. Medical card half national average. Walkinable. Good figures. Speedy sale required. Tel: 00 353 86 807 5273. Email: niall@innovativedental.com.

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Single-chair practice for sale 5km from Dublin city centre. Low-cost, low stress with good mix of patients. Over 50y established, fully functional but some TLC needed. Please text or ring 087 337 9403 for details. Email: terof2001@yahoo.com.

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PRACTICES WANTED

Practice wanted Cork south/central. Single or double-handed with expansion possible preferred. Hygienist, parking, low medical card preferred. Confidentiality assured. Finance in place. Email: dentist@irishinternet.com.

SEPTEMBER

Munster Branch AGM — IDA MEMBERS ONLY
September 10 — *Maryborough House Hotel, 8.00pm.*

Third World Congress of Clinical Safety (3WCCS)
September 10-12 — *University of Cantaberia, Spain*
Main theme: Clinical risk management. For further information see http://www.iarmm.org/3WCCS/.

Munster Branch Meeting — IDA MEMBERS ONLY
September 15 — *Maryborough House Hotel*
Strategies for providing care for patients with neurological disorders. Speaker is Dr Alison.

Mouth Cancer Awareness Day
September 17

IAAGDS Annual Meeting
September 27 9-00am – 1-00pm — *Radisson Blue Hotel, Dublin 8*

Annual Conference of European Prosthodontic Association
September 25-27 — *Istanbul, Turkey*
For further information contact info@ipa2014.org.

Infection Prevention 2014
September 29 – October 1 — *SECC Glasgow*
The UK's largest infection prevention and control event. To register, contact www.ips.uk.net. Further information: ipsconf@fitwise.co.uk.

OCTOBER

Munster Branch Meeting — IDA MEMBERS ONLY
October 9 — *Maryborough House Hotel*
New generation orthodontic materials – what does the future hold? Speaker is Dr Gerry Buckley.

HSE Dental Surgeons Seminar 2014

October 16 and 17 — *Mount Wolseley Hotel, Tullow, Co Carlow*

Faculty of Dentistry RCSI Annual Scientific Meeting 2014
October 30-31 — *RSCI Dublin*
For further information email facdentistry@rcsi.ie.

NOVEMBER

Munster Branch Annual Scientific Meeting — IDA MEMBERS ONLY
November 21 — *Fota Island*

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