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JIDA
Journal of the Irish Dental Association
Iris Cumainn Déadach na hÉireann

Volume 70 Number 1
February/March 2024

Sustainability and general dental practice

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Th!nk Media

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

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abc Audit issue January-December 2023: **3,867** circulation average per issue. Registered dentists in the Republic of Ireland and Northern Ireland.

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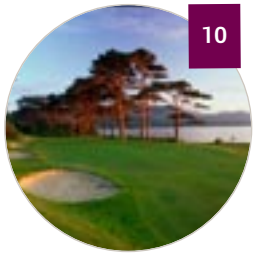

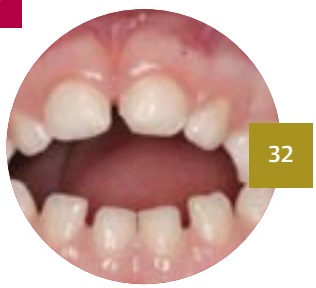

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EDITORIAL

Dr Cristiane da Mata
Honorary Editor

Reflecting on sustainability

The *JIDA* readership survey provides important feedback, while a focus on sustainability is essential for dental professionals.

JIDA readership survey and Scholastica data

First of all, I would like to thank all the readers who took the time (which I know is so limited these days!) to complete our readership survey. Feedback is critical to the growth of the *Journal* and I can assure you that the Editorial Board takes your opinions and suggestions very seriously.

I was delighted to see that the majority of respondents have the *JIDA* as their number one dental publication, and that 40% prefer the *JIDA* for clinical and peer-previewed articles. All sections of the *Journal* seem to be read by the majority of respondents, with more than 70% of readers always or usually reading the scientific section. Other strong areas mentioned by the survey participants were features and interviews, IDA news and members' news. I commend you to read more about the readership survey results on pages 18-20.

To those who haven't had a chance to respond to the survey, I would be delighted to hear from you if you have any comments or suggestions. You may email them directly to me at journaleditor@irishdentalassoc.ie.

Behind the scenes

I was recently reading the story of a man named David Plouffe, who was Barack Obama's campaign manager, and who nobody had heard about until recently. He has written a book called *The Audacity to Win*, which has become a *New York Times* bestseller, where he details how he helped Obama win the presidency. David's story illustrates the concept of the "invisible", described by the author David Zweig as someone who most people don't notice but who does incredibly important work.

We recognise the work done by all dentists and non-dentists, staff and volunteers to help the IDA advance the dental profession in Ireland. Our readers have also suggested that they would like to see more content about the work done on members' behalf by IDA staff and member volunteers. So, to do justice to these behind-the-scenes people, a new series will shed some light on the work of the different IDA committees, starting with the GP Committee (page 50).

Time to reflect on our environmental impact

This edition brings an outstanding scientific section, with articles on pulp diagnosis and current guidelines, non-nutritive sucking habits, and a clinical feature about the topical issue of sustainability in dentistry.

Sustainability is a term that has been around for a while, but just recently it has been linked to dentistry. In the broader sense, sustainability refers to the ability to maintain a process/activity over time. Environmental sustainability,

according to the UN Environment Programme, "is about making life choices that ensure an equal, if not better, way of life for future generations".

In dentistry, it may be about time we reflected on our choices and practices, with sustainability being at the core of these decisions. Rethink, refuse, reduce, reuse, repair and recycle are principles of sustainability we are quite familiar with, but do they still apply after we cross our practice's front door? Dr Rhian FitzGerald and Prof. Declan Millet take us through the journey of rethinking our practices and taking simple steps to minimise the environmental impact of our profession. I really enjoyed the read and commend you all to read their article (pages 41-44).

Finally, I have recently come across a pledge for sustainable dentistry published by the FDI, which I think is worth sharing with you:

Oral healthcare is essential for overall health, well-being and quality of life. This needs to be delivered ethically, with high levels of quality and safety, and be environmentally sustainable. In this way, the healthcare opportunities of current and future generations are respected and protected by actively minimising negative environmental impacts. Climate change, pollution and loss of biodiversity are problems that affect everyone, including you, your family and friends. There is an urgent need for the oral healthcare profession to acknowledge responsibility for its impact and ensure high-quality, environmentally sustainable care for all."

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Dr Eamon Croke
IDA President

To be fair

The IDA stands ready to play its part in a national oral health service that is equitable and sustainable, in line with WHO and UN goals.

We all know that State health schemes, especially in dentistry, are failing their purpose and their patients, and not only in Ireland. Dentists are also being failed by the State. Dentists are very concerned that fees reviews, such as that provided for in the Dental Treatment Benefit Scheme (DTBS), must be fair, thorough and evidence based in measuring whether the payments offered by the State reflect the costs incurred by dentists. Equally, the manner in which the State interprets competition law for all self-employed professions (doctors, dentists, vets, pharmacists, and others) means that we are not afforded the same rights in representing self-employed members as our salaried members. The risk for the DTBS, similar to other State schemes, is that, ultimately, underinvestment and an unjustifiable imbalance in power will force *Homo economicus* to reluctantly rise above his altruistic alter ego to the detriment of the many in society. Fairness is an indisputable condition for a workable contract.

Once in a lifetime

In a nearby existence, another year has passed and the fifth anniversary of the publication of Smile agus Sláinte looms. There is pressure building to progress the National Oral Health Policy. The World Health Organization's (WHO) 'Global Strategy on Oral Health' was published in 2022, which expands and reinforces Goal 3 of the United Nation's (UN) '2030 Agenda for Sustainable Development' (2015). The Irish Dental Association has developed a new position paper, 'Towards Sustainable National Oral Health Services', in response to the WHO's strategy for universal healthcare, and in an effort to progress discussion and development of sustainable national oral health services that are people centred with a just use of available resources. The paper has been circulated to all IDA members and will be presented to all key decision-makers, including Government officials, in the coming weeks. A summary is published on pages 25-27 of this edition of the *JIDA*, and the full document is available to view on the IDA website – www.dentist.ie.

The UN, in various declarations, places considerable emphasis on the word 'sustainable', both in the capacity for maintaining healthcare programmes and the outcome of these programmes on the environment. The IDA shares similar goals. The UN declarations emphasise the primary importance of political and financial commitment to ensure the aims and objectives of the Agenda. This is a recognition of the shortfalls in current healthcare delivery.

A primary WHO objective is to establish "win-win partnerships" from the outset. The WHO recognises that dental associations have a role in the delivery of its Strategy. There can be no meaningful reform without the active support of the profession. The IDA is primed to take a very positive role, as our position paper signals.

"The Irish Dental Association has developed a new position paper, 'Towards Sustainable National Oral Health Services'."

A new national oral health programme presents a once-in-a-lifetime opportunity. The Association will continue to endorse independent practice as the optimal system of sustainable, quality-driven healthcare. It is critical that we recognise that successive Governments have failed in their duty to provide equitable access to oral healthcare. From the outset, we need the Government to commit to the primary strategic objective of the WHO (political and financial commitment to oral health based on win-win partnerships) and to willingly embrace the need for a change in approach, in operation.

Equitable and just

It is also important that the Government explains its ambition for the term 'universal'. The dictionary description of what the WHO promises is financially unsustainable and, undoubtedly, unjust. The budget required would drain the Government's finances to the detriment of other essential services. The UN promotes the right of every human being, without distinction of any kind, to the enjoyment of the highest attainable standard of physical and mental health, but it provides useful qualifications. The UN reaffirms that universal healthcare should be "equitable", "leaving no one behind, reaching the furthest behind first", "while ensuring that the use of these services does not expose the users to financial hardship, with a special emphasis on the poor, vulnerable and marginalised segments of the population". Universal healthcare must be equitable and accepted as fair. Prevention, for example, can be developed as an equal start for all of our youngest. It is morally and financially just, and good for the person, the environment, and the Exchequer. Equitable use of resources, financial and human, will require the best mix of moral philosophy, political nous and partnership.

The goal of the WHO Strategy requires a different way of thinking. It demands change and that will be the constant challenge. Centuries ago, Niccolo Machiavelli recognised that there is nothing more difficult, more perilous, than change. But then, a once-in-a-lifetime opportunity requires nothing less. 'Towards Sustainable National Oral Health Services' is a statement of the Association's ambition for change.

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ADVOCACY AND CAMPAIGNS UPDATE

Fintan Hourihan
IDA CEO

Diktats, brickbats and caveats

With talks beginning on implementation of the national oral health policy, are there signs that the Department of Health will work with the IDA to improve oral health for all?

The fifth anniversary of the publication of the first ever Irish oral health policy, Smile agus Sláinte, is almost upon us.

Our view on the process that led to its publication is well documented. Dentists and their representatives were never properly consulted and that was a serious mistake. There are many worthwhile ideas contained in the policy, however, and we welcome the fact that an oral health policy was published for the first time ever in the history of the State.

The Irish Dental Association is the same age as the State, but unfortunately the State has ignored dentistry consistently over the last century. Are there any signs the next century will be different?

New priority

On the face of things, there are signs of hope that dentistry will assume a new priority. The Minister for Health and his officials have engaged in an unprecedented series of meetings with the Dental Council, the Association, and other representative bodies in recent weeks. The Minister has written to the Association indicating his wish to prioritise reforms in dentistry and the roll-out of the oral health policy in 2024. A new ten-person Oral Health Unit has been established within the Department, led by a newly appointed civil servant, who reports directly to an Assistant Secretary responsible for Primary Care Oversight and Performance. Dr Anne O'Neill has been appointed as a Strategic Lead in the HSE, reporting to the Chief Clinical Officer, Dr Colm Henry, and responsible for delivering 17 of the 41 actions contained within Smile agus Sláinte.

The Department says it wants to work constructively with the IDA. For our part, the Association has been busily preparing to engage with the State if a basis for engagement can be agreed. That is an important caveat. We have continued to remind the State of the huge damage done to its relationship with the dental profession in recent years, where neglect and insult have prevailed.

Win-win partnership

In our own preparations, we have visited the primary inspiration and source for the Government's policy, the WHO Global Oral Health Action Plan (2023-2030). This is a binding policy on the Irish Government to integrate oral health into general health, but also to ensure that all citizens have access to essential oral healthcare "without suffering financial hardship". Taken at face value, that is a radical policy goal with huge implications for dentistry and dentists.

When we studied the WHO plan, we did notice that some of its primary building blocks – an explicit political and financial commitment to oral health and the establishment of a win-win partnership with national dental associations – were notably absent from the oral health policy here.

Our newly published policy paper 'Towards Sustainable National Oral Health Services: Delivering the WHO Oral Healthcare Strategy for Ireland' forensically reviews the WHO plan and how this is reflected in Smile agus Sláinte, but also identifies essential building blocks to successful reform built on a central role for the Association, as well as specific issues that need to be addressed in view of the capacity, funding, clinical, legal and policy deficits already evident in Ireland. Our President, Dr Eamon Croke, deserves huge credit for his work in co-ordinating the paper and I would commend it to all readers.

The Association has nothing to fear from engaging with the State and potentially much to gain. Self-imposed isolation or a refusal to engage cannot serve any useful purpose. We will speak truth to power and make no apologies for representing our members.

State schemes

We must assume that there will always be State dental schemes – the DTBS has existed since the 1950s and the current medical card scheme dates from 1994. A new scheme for medical card patients needs to be negotiated with the IDA as a priority.

The IDA is the only body authorised by law to represent dentists in contract negotiations and annual fees reviews. We have successfully ensured the resumption of annual fees reviews for the DTBS and we will now see the first increase in the examination fee paid to DTBS contract holders. Of course, the decision of the fees review was not what we wanted, but dentists will be paid more this year for doing the same as they did last year.

The updated DTBS contract was changed in a handful of instances to ensure compliance with competition law. We obtained legal advice on the contract, which we were adamant could not remove any rights for dentists or the Association within the legal parameters that now exist.

Imagine there was no IDA. There is no way the Department of Social Protection would have agreed to restore annual fees reviews or indeed to increase the exam fee without our efforts. We are ready to roll up our sleeves in 2024.

If you have not done so already, I invite you to become a member of the IDA to build a strong Association to act in your behalf, to make your voice heard and to be kept informed. United we stand, divided we fall.

Annual Conference 2024

This year's Annual Conference in Killarney features a wealth of courses and world-renowned speakers, as well as a fantastic social programme. A full preview will feature in the next edition of the *JIDA*.

Welcome evening at Killarney Brewing & Distilling Co.

This year's Annual Conference will kick start in style with a welcome evening at the newly opened, state-of-the-art Killarney Brewing & Distilling Co. Guests will enjoy the beautiful surroundings of this purpose-built new establishment, where local beers are brewed and whiskey and gin distilled beneath the majestic MacGillycuddy's Reeks. Guests will enjoy a tasting session, followed by buffet dinner and Irish music and dance.

All are welcome.

Tickets are €60, with limited availability, so book early.

Facial aesthetics live demonstration

A deep dive into the world of botox and how it is applied in general dental practice will take place during this year's Annual Conference, with a full-day demonstration and lecture by three leading Irish practitioners: Drs Mairead Browne, Paul Kielty and Sarah Kate Quinlivan. Advice and guidance on what training is needed to provide botox treatments safely and effectively in your dental practice will be given on the day. The programme will look at injection techniques and different products on the market. This course is an absolute must for any dental practitioner who is using botox or who would like to know more about treating patients with botox.

Composite focus

The IDA is delighted to announce that a full-day hands-on course entitled 'Anterior Composites – Mini Smile Makeover' will be given by Dr Dipesh Parmar on Thursday, April 25, at the Great Southern Hotel Killarney, as part of Annual Conference 2024. Dr Parmar, a well-known restorative trainer and practitioner in London, will give the day-long course to those who want to bring their restorative skills to the next level. Places are limited and are booking fast.

Saturday, April 27 will see Dr Monik Vasant present on 'Composite Artistry'. This is a wonderful opportunity to hear Monik speak on this topic. Not to be missed!

To book, go to www.dentist.ie.

See you in Killarney!

Dr Dipesh Parmar.

Dr Monik Vasant.

President's Golf – Killarney Golf & Fishing Club

The President's Golf competition takes place in the majestic surroundings of Killarney Golf & Fishing Club, just outside Killarney. Golf takes place on Thursday, April 25, but some tee times have been reserved on Wednesday (Mahony's Point) for those involved in pre-Conference courses. Tee times are limited so please book early.

Webinars are back

Our monthly webinars continue for 2023. Our first webinar took place on January 31 with Dr Lewis Winning – this webinar is still in our library on the CPD section of our website for members to listen to.
The next webinar will be on February 28 at 8.00pm via Zoom.

Rubber dam – hands-on course

Dr Céline Higton.

Dr Céline Higton will give her Isol8 full-day hands-on course in rubber dam technique on Friday, May 31, at the Johnstown Estate, Enfield.
Become proficient at placing rubber dam isolation to create a working environment that is reproducible, predictable and patient friendly. Learn a multitude of different techniques and methods to isolate even the most challenging cases including posterior quadrants, onlays and crown preparations, veneer preparations, deep margins, split dam and much more. Céline is a GDP in London with a special interest in restorative dentistry.
To book, go to www.dentist.ie.

HSE Seminar 2024

The annual HSE Dental Surgeons Seminar will take place this year at the Radisson Hotel, Athlone, on October 10-11 next. Make sure to put the dates in your diary.

Medical emergencies courses

Are you up to date with your medical emergencies (BLS or ILS) training? Remember if you use sedation in your practice, you must complete the ILS training programme. The IDA will be running courses in Dublin and Kerry on the following dates:

Dublin
ILS – Friday, February 23, Radisson Hotel, Dublin Airport
BLS – Saturday, February 24, Radisson Hotel, Dublin Airport

Kerry
ILS – Friday, March 29, Killarney Plaza Hotel
BLS – Saturday, March 30, Killarney Plaza Hotel

COLTENE for endodontics

COLTENE states that its range of tools and materials for conservative, safe and successful endodontics are used by dentists and specialists who want to deliver gold-standard treatments that return patients to health. Including the HyFlex EDM file sequence – which the company states is so flexible that only one or two files are often needed to complete shaping – COLTENE says that its endo portfolio is designed for reliable, high-value and predictable outcomes.

As well as endodontics, COLTENE states that it covers restorative and general practice, and invites customers to join the Rewards programme to get even more from its products.

Five-star file

In endodontic treatment, the application of checklists and following standard procedures increases reproducibility and safety. COLTENE states that its HyFlex EDM – OGSF files offer dental professionals a tailor-made solution for fast and reliable preparation of root canal anatomies. The company states that HyFlex EDM files are designed to be used as a sequence with one straightforward protocol, and include a new orifice opener and glidepath file for opening the glide path, as well as a shaping file for shaping the root canal over the full length. The company states that the defined treatment procedure makes root canal preparation easy and keeps the learning curve short.

BioHorizons Camlog launches Striate+

BioHorizons Camlog has announced the launch of Striate+, which the company says is an innovative collagen membrane developed by Orthocell Ltd for advanced bone and tissue regeneration.

According to the company, Striate+ is manufactured from porcine-derived raw materials, selectively sourced from Australian veterinary-certified animals, and the manufacturing process, referred to as scaffold matrix regenerative therapy (SMRT), removes immunogenic contaminants and ensures high biocompatibility while preserving the structure of the native collagen. Striate+ is fully resorbed through physiological processes within 26 weeks, the company states, so a second surgical intervention to remove it is not necessary.

BioHorizons Camlog states that Striate+ can be applied without prior hydration and will gently conform and adhere to the defect contours without fixation, yet can be stabilised by suturing and pinning if needed. According to the company, the membrane absorbs fluids by capillarity but doesn't excessively swell, which facilitates the primary closure and makes it particularly suitable for patients with thin phenotypes.

Striate+ has a bilayer structure with a rough and a smooth side. The smooth side, comprising of densely packed collagen fibers, acts as a barrier to the infiltration of gingival cells while allowing the passage of bioactive molecules. Conversely, the rough side, composed of loosely distributed collagen fibers, provides a scaffold for osteoprogenitor cells to deposit osteoid. The company states that this results in an active promotion of bone formation and allows for early implant placement.

MY FAVOURITE PIECE OF EQUIPMENT

Dr Shkre Agkhre

Prosthodontist Dr Shkre Agkhre's favourite piece of dental equipment is the intra-oral scanner. Shkre works in three practices: O'Brien, Molloy and Delaney in Galway; Keystone Periodontics in Longford; and, Smiles Dundrum. He uses both the 3Shape and Primescan scanners in his work.

Shkre says he uses the scanner from start to finish on cases, and it provides a positive experience from the get go with the patient. One major benefit is that it eliminates the need for a wax impression. Another huge advantage is patient communication, says Shkre, who finds it great to take a scan of someone's mouth and then show it to them on screen: "It's easy for them to understand the problem, for me to communicate the issue, and the way we will treat it".

It is also more convenient if something is not right with the scan. With traditional impressions, if there is something wrong, you have to do the whole impression again, but with the scanner, you can simply delete the affected area and scan the section again. The scanner also improves communication with the lab, decreasing waiting time for the final product: "It is a very convenient way of communication. The intra-oral scanners' cloud and software allow me to attach all the required information, such as the lab dockets, the photos, any additional information, all of these in one platform or portal, which makes it easy at both ends of the prosthesis fabrication".

Another benefit is around record storage. Instead of physical records, when Shkre is finished, he can upload the records to the cloud. Shkre says the scanners are also fantastic for re-evaluation, as you can check earlier scans at follow-up appointments: "So if there is any issue, we can compare the scan that I did one year ago and the scan now, evaluate the issue, and take it from there".

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Minimally invasive and cost-effective restorations

Dr Sean Malone presents a case where he used two different Coltene composites to restore teeth in the aesthetic zone following trauma.

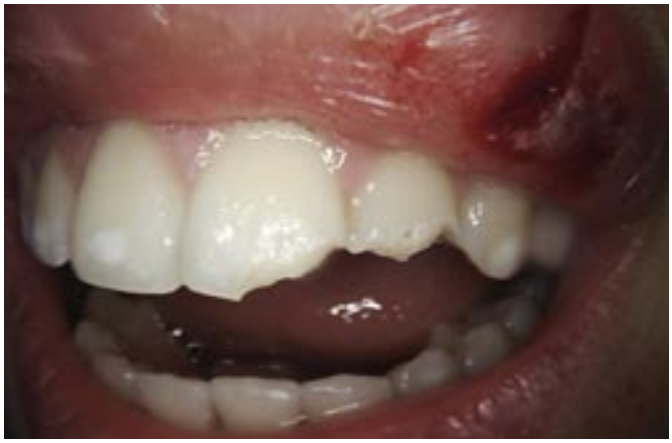


FIGURE 1: Patient photograph after initial trauma.

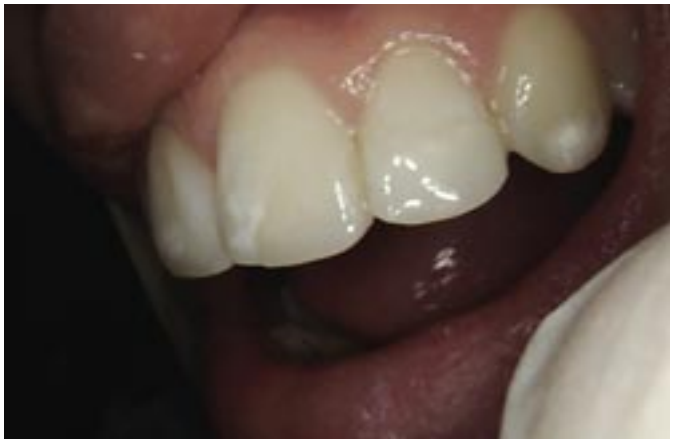


FIGURE 2: Patient post emergency restoration.

Presentation, diagnosis and treatment

A 15-year-old female patient presented to the practice as an emergency, regarding trauma to her front teeth. She had been hit by a hockey ball and had not been wearing a gumshield, resulting in fractures to her UL1 and UL2 (**Figure 1**).

At this time, we decided to restore the teeth using composite. This was completed during a single appointment, with satisfactory results (**Figure 2**). The patient regained adequate function and aesthetics in the area. I also advised the patient and her mother that endodontic treatment might be necessary for one or both of the affected teeth. In follow-up appointments, I monitored these teeth closely and they retained full vitality. After three years, the patient returned and requested a more aesthetic restoration. We discussed a number of potential options including veneers and crowns, but I advised the patient that the gum level remodels between the ages of 17 and 23, so definitive treatment is not recommended until then. Because of the patient's young age, I recommended a more minimally invasive approach, to avoid any treatment that would require significant tooth reduction. I also advised about the risk of requiring endodontic treatment at age 17 following crown or veneer preparation. The patient was happy with this.

For this treatment, the UL1 and UL2 were approached differently, to meet the specific clinical needs of each tooth and produce a highly aesthetic outcome with optimal function. Existing composite material was removed with care, so as not to unnecessarily remove healthy tissue (**Figure 3**).

The UL1 was restored using the BRILLIANT EverGlow composite from Coltene in shades A1 and A2. The UL2 required a light bevel all the way around. I scanned the tooth using the CEREC Omnicam. The resulting scan was used to design and mill a restoration. This was fabricated using the BRILLIANT Crios reinforced composite from Coltene in shade A2. BRILLIANT Crios is the CAD/CAM bloc version of the BRILLIANT EverGlow we use in the clinic. It is a reinforced composite that combines the advantages of an innovative submicron hybrid composite with those of a CAD/CAM fabrication process. This gives reliable, aesthetic and fast restorations without a separate firing process. It can be milled, chairside (as in this case) or in a laboratory. The BRILLIANT Crios restoration can be repaired or added to at any time with the same Brilliant EverGlow composite and One Coat 7 Universal bond. The restoration was bonded in position using SoloCem resin cement from Coltene as it produces a long-lasting, aesthetic result (**Figure 4**).

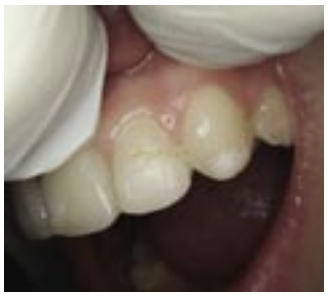


FIGURE 3: Patient photograph three years after initial treatment.

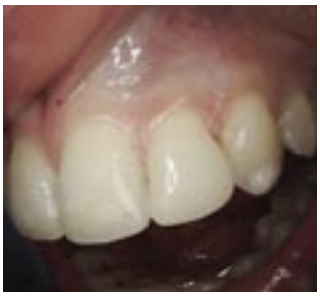


FIGURE 4: Post final restoration.

Conclusion

The total chair time of the second appointment was one hour. The patient was very happy with the result, and experienced no post-treatment sensitivity. This minimally invasive treatment approach has kept our options open should she require any further treatment down the line. It has also provided her with a lovely smile to enjoy in her young adult years. This case was completed in September 2022, and the patient has experienced no problems since then.

Dr Sean Malone qualified from Trinity College Dublin in 1980, and has worked in a number of dental hospitals and practices offering a variety of treatment types, including dental implants, complex root canal procedures, and caring for those who have had oral cancer treatment.

Easolief DUO

BRIDGING THE GAP IN PAIN RELIEF

PARACETAMOL

IBUPROFEN

DUAL ACTION PAIN RELIEF

GETS TO WORK FAST[1] + 80% MORE PAIN RELIEF[1*]

References 1. Daniels et al. Maxigesic® 325 Acute Dental Pain Study. *compared with the same daily dose of standard paracetamol alone. †Faster onset of action than standard ibuprofen alone. **Easolief DUO 500 mg/150 mg film-coated tablets** Each tablet contains paracetamol 500 mg and ibuprofen 150 mg. **Presentation**: White, capsule shaped tablet with breakline on one side and plain on the other side. **Indications**: Short-term symptomatic treatment of mild to moderate pain. **Dosage**: **Adults/elderly**: The usual dosage is one to two tablets taken every six hours up to a maximum of six tablets in 24 hours. **Children**: Easolief DUO is contraindicated in children under 18 years. **Contraindications**: Severe heart failure, known hypersensitivity to paracetamol, ibuprofen, other NSAIDs or to any of the excipients, active alcoholism, asthma, urticaria, or allergic-type reactions after taking acetylsalicylic acid or other NSAIDs, history of gastrointestinal bleeding or perforation related to previous NSAID therapy, active or history of recurrent peptic ulceration/haemorrhage, severe hepatic failure or severe renal failure, cerebrovascular or other active bleeding, blood-formation disturbances, during the third trimester of pregnancy. **Warnings and precautions**: This medicine is for short term use and is not recommended for use beyond 3 days. Clinical studies suggest that use of ibuprofen, particularly at a high dose may be associated with a small increased risk of arterial thrombotic events. Patients with uncontrolled hypertension, congestive heart failure, established ischaemic heart disease, peripheral arterial disease and/or cerebrovascular disease should only be treated with ibuprofen after careful consideration and high doses should be avoided. Careful consideration should be exercised before initiating long-term treatment of patients with risk factors for cardiovascular events. The use of paracetamol at higher than recommended doses can lead to hepatotoxicity, hepatic failure and death. Patients with impaired liver function or a history of liver disease or who are on long term ibuprofen or paracetamol therapy should have hepatic function monitored at regular intervals. Severe hepatic reactions, including jaundice and cases of fatal hepatitis, though rare, have been reported with ibuprofen. Paracetamol can be used in patients with chronic renal disease without dosage adjustment. There is minimal risk of paracetamol toxicity in patients with moderate to severe renal failure. Caution should be used when initiating treatment with ibuprofen in patients with dehydration. The use of an ACE inhibiting drug, an anti-inflammatory drug and thiazide diuretic at the same time increases the risk of renal impairment. Blood dyscrasias have been rarely reported. Patients on long-term therapy with ibuprofen should have regular haematological monitoring. Like other NSAIDs, ibuprofen can inhibit platelet aggregation. GI bleeding, ulceration or perforation, which can be fatal, has been reported with all NSAIDs at anytime during treatment. Combination therapy with protective agents (e.g. misoprostol or proton pump inhibitors) should be considered. Use with concomitant NSAIDs including cyclooxygenase-2 selective inhibitors should be avoided. NSAIDs may lead to onset of new hypertension or worsening of pre-existing hypertension and patients taking antihypertensive medicines with NSAIDs may have an impaired anti-hypertensive response. Fluid retention and oedema have been observed in some patients taking NSAIDs. NSAIDs may very rarely cause serious cutaneous adverse events such as exfoliative dermatitis, toxic epidermal necrolysis and Stevens-Johnson syndrome. Acute generalised exanthematous pustulosis (AGEP) has been reported in relation to ibuprofen-containing products. Products containing ibuprofen should not be administered to patients with acetylsalicylic acid sensitive asthma and should be used with caution in patients with pre-existing asthma. Adverse ophthalmological effects have been observed with NSAIDs. For products containing ibuprofen aseptic meningitis has been reported only rarely. NSAIDs may mask symptoms of infection and fever. In order to avoid exacerbation of disease or adrenal insufficiency, patients who have been on prolonged corticosteroid therapy should have their therapy tapered slowly rather than discontinued abruptly when products containing ibuprofen are added to the treatment program. Caution is advised if paracetamol is administered concomitantly with flucloxacillin due to increased risk of high anion gap metabolic acidosis (HAGMA). **Interactions**: Warfarin, medicines to treat epilepsy, chloramphenicol, probenecid, zidovudine, medicines used to treat tuberculosis such as isoniazid, acetylsalicylic acid, other NSAIDs, medicines to treat high blood pressure or other heart conditions, diuretics, lithium, methotrexate, corticosteroids, flucloxacillin. **Fertility, pregnancy and lactation**: Easolief DUO is contraindicated during the third trimester of pregnancy. **Driving and operation of machinery**: Dizziness, drowsiness, fatigue and visual disturbances are possible after taking NSAIDs. If affected patients should not drive or operate machinery. **Undesirable effects**: Dizziness, headache, nervousness, tinnitus, oedema, fluid retention, abdominal pain, diarrhoea, dyspepsia, nausea, stomach discomfort, vomiting, flatulence, constipation, slight gastrointestinal blood loss, rash, pruritus, alanine aminotransferase increased, gamma-glutamyltransferase increased, abnormal liver function tests, blood creatinine increased and blood urea increased. Refer to Summary of Product Characteristics for other adverse effects. Adverse reactions should be reported via HPRA Pharmacovigilance, website: www.hpra.ie. **Pack size**: 24 tablets. **Marketing authorisation holder**: Clonmel Healthcare Ltd. Waterford Road, Clonmel, Co.Tipperary. Marketing authorisation number: PA0126/294/1. Supply through pharmacies only. **Date last revised**: October 2023. **Date prepared**: January 2024. 2024/ADV/EAS/004H

CLONMEL HEALTHCARE
STADA GROUP

Leading the way

Our most recent readership survey shows that the *JIDA* is still the dominant publication for dentists in Ireland, while Scholastica is bringing the *Journal*'s scientific content to a global audience.

The results of the most recent readership survey undertaken by the *Journal of the Irish Dental Association* (*JIDA*) show that readers still consider the *JIDA* to be the strong leader among dental publications available in Ireland.

The survey asked a range of questions around readers' preference for print versus online publication, their preferred journals, and their preferred content.

Some 65% of respondents to the survey were general dentists, with HSE-employed dentists the second largest group at 13%. The vast majority had been in practice for more than 10 years (79%), and 55% of respondents were female.

When asked what format they prefer when reading the *Journal*, readers overwhelmingly stated a preference for print over online, with 80% voting for print.

"When it comes to the type of articles, readers cited the JIDA *as best for clinical and scientific content, features and interviews, practice management, and business and trade updates."*

Content

A huge 93% of dentists stated that they read the *Journal* thoroughly, compared to 33% for the next most popular publication. Reasons for their choice included the *JIDA*'s relevance to an Irish-based audience; the high-quality peer-reviewed articles and clinical features; the range of relevant topics covered; verifiable CPD; and, its practical insights. When it comes to the type of articles, readers cited the *JIDA* as best for clinical and scientific

content, features and interviews, practice management, and business and trade updates. Over 91% preferred the *JIDA* for content on political and contractual topics, with 87% saying they preferred the *JIDA* when it comes to finding out what's going on in Irish dentistry.

Respondents cited three main reasons for reading the *JIDA*:

- CPD;
- keeping up to date with clinical developments; and,
- local/Irish relevance.

87%

prefer the *JIDA* to find out what's going on in Irish dentistry.

3,400

unique visitors to the *JIDA*'s scholastica site.

How can we improve?

The survey asked dentists what new items they would like to see covered in the *JIDA*. Answers included: international clinical research; a section for associates; and, more content about the work done on members' behalf by IDA staff and member volunteers.

The Editorial Board of the *JIDA* would like to thank those members who took the time to complete this survey. The Board has reviewed the results and will continue to ensure that the *Journal* remains relevant to dentists in Ireland, providing readers with the content that they want and need from their professional journal. For example, this edition features an article on the IDA's engagement and collaboration with colleagues across the EU and globally, as well as the first in a series of profiles of IDA committees.

80%

of dentists prefer to receive a print copy of the *JIDA*.

91%

prefer the *JIDA* for content on political and contractual topics.

JIDA science content reaching a global audience

In autumn 2022, the *JIDA* changed it submission process for clinical content, moving to a system administered by Scholastica. All submissions of peer-reviewed articles, clinical features and clinical tips are now made via Scholastica, and all accepted articles are published online at https://jida.scholasticahq.com prior to publication in the print edition. While this increases the efficiency of the submission process, importantly, it also ensures that articles receive a digital object identifier (DOI), which permanently identifies the article and links to it on the web, making all articles citable.

As 2023 was the first full year of operation for the new system, it was timely to look at some statistics. In 2023, there were 3,400 unique visitors to the *JIDA*'s Scholastica site, with 8,300 page views, 4,600 article page views, and 392 article downloads.

There were 728 page views of and 633 unique visitors to the website's 'For Authors' page, suggesting that authors are interested in learning more about submitting papers to the *JIDA*.

Top articles

The top five viewed articles were:

- 'Oral ulceration' by Nicholas Rawlings and Amanda Willis (1,683 page views, 1,600 unique visitors, 59 downloads);
- 'Aggressive pyogenic granuloma mimicking a malignant lesion: case report and review' by Assim Banjar *et al*. (854 page views, 739 unique visitors, 107 downloads);
- 'Dental assessment pre radiotherapy for head and neck cancer' by Edward Fahy *et al*. (189 page views, 173 unique visitors, 22 downloads);
- 'Pulp diagnosis: current guidelines, shortcomings, and future developments' by Brian Maloney *et al*. (142 page views, 117 unique visitors, 10 downloads); and,
- 'An update in non-nutritive sucking habit cessation' by Brian Maloney *et al*. (133 page views, 111 unique visitors, 15 downloads).

Readers from 109 countries looked at our scientific content on Scholastica in 2023. The top 10 countries were:

COUNTRY	PAGE VIEWS	COUNTRY	PAGE VIEWS
IE	2,703	DE	237
US	1,216	BR	231
GB	974	SA	208
IN	677	EG	125
ID	323	CN	115

The world of dentistry

Dentists across Europe and the world face similar problems, and the IDA is actively engaged in both the Council of European Dentists and the *Fédération Dentaire Internationale*.

The Council of European Dentists (CED) and *Fédération Dentaire Internationale* (FDI) are the two main international dental bodies of relevance to dentists in Ireland. The CED focuses on European matters, while FDI is worldwide. The IDA is represented at both organisations through its International Affairs Committee.

IDA involvement in CED

Almost two-thirds of legislation in Ireland, and any EU country, originates from the EU, so the CED is probably of more relevance on a day-to-day basis to Irish dentists than the FDI. And it is a big year for the EU, with elections taking place in June that could radically change the face of the Parliament. Every time these elections come around, the CED sends out a list of topics that are relevant to dentistry at European level, and encourages members to put these issues to candidates.

Colm Quinn
Senior Journalist,
Think Media Ltd

Each of 33 national associations sends a delegation to the CED. This includes the EU countries, along with the UK, Switzerland, Norway and Iceland. Some countries have more than one association, such as Belgium, which has separate organisations for its French- and Flemish-speaking regions. Albania also has observer status. The organisation holds two general meetings per year, one in Brussels and the other in whichever country holds the presidency of the EU.

The CED has five working groups, which carry out research and prepare policy statements on their different areas:

- Education and Professional Qualifications;
- E-Health;
- Patient Safety, Infection Control & Waste Management;
- Dental Materials and Medical Devices; and,
- Oral Health.

There are also two task forces: Communications; and, the Internal Market.

The three IDA representatives at the CED are Drs Nuala Carney, Robin Foyle and Kieran O'Connor. IDA CEO Fintan Hourihan also acts as an advisor. Robin is on the CED's Board of Directors, Nuala Chairs the Education and Professional Qualifications Working Group, and Kieran is on the Patient Safety, Infection Control & Waste Management Working Group.

"The CED was involved in submitting proposals for updating the subjects of the curriculum for the basic degree, with an emphasis put on the importance of practical skills training."

Robin says: "The purpose of the CED is to represent the interest of the profession within EU institutions and structures. About 60% of laws generally are generated from Europe and the EU for the EU member countries, so our job is obviously to promote the interests of the profession within those. We also want to promote high standards of oral health. That's always brought to the fore when we engage with the members of the Commission or the Parliament, or even our own politicians".

Making sure dentists' views are heard

The CED represents 340,000 dentists across Europe, who ultimately fund the organisation, and Robin is keen that these dentists know more about it: "I'm very conscious that they are aware of what we do and that it is important for the profession in general, and that we do have some successes with it. Without our representation in Europe, there's a lot of things that we take for granted that we might not have".

Representing the IDA at the CED (from left): Dr Robin Foyle; IDA CEO Fintan Hourihan; Dr Kieran O'Connor; and, Dr Nuala Carney.

All of the working groups and task forces are busy at all times with a number of different issues, but at the moment, here are some of the hot topics they are focusing on.

On the Dental Materials and Medical Devices Working Group, the upcoming phase-out of amalgam is being discussed. Another major topic for this group is the Medical Devices Regulation.

The Patient Safety, Infection Control & Waste Management Working Group is addressing waste management by working on a policy paper on waste management and dentistry. The Group does not want dentistry to be marked as a polluter, but the CED wants to make sure that any regulations are proportionate and wouldn't impose significant costs on dentists without actually benefitting the public.

The working group on E-health has prepared a policy paper on direct-to-consumer orthodontics, which makes clear that any dental treatment should involve an examination by a suitably qualified professional. This certainly holds true after one of the biggest providers of such services, Smile Direct Club, folded in December.

On the Professional Qualifications Working Group, a big topic is the Professional Qualifications Directive, which is all about recognition of diplomas and degrees within EU countries. Dentists have automatic recognition in EU member states but there is quite a wide variety of standards of training. The EU is aiming to address this right now. Annex V of the Directive was updated recently. The CED was involved in submitting proposals for updating the subjects of the curriculum for the basic degree, with an emphasis placed on the importance of practical skills training.

The Oral Health Working Group follows developments and prepares CED policy in areas related to oral health.

A keen eye

The CED maintains an office in Brussels, where three full-time employees monitor and analyse any political or legal developments coming out of the Commission that involve dentistry, dental care and related matters.

Robin is keen to highlight how helpful they are: "Their grasp of European politics and how the institutions work is enormous and we do that on a budget, to which all 33 member organisations contribute. It's about €600,000, so we're certainly running it on a relative shoestring: 340,000 dentists contribute about €600,000 to fund this. I think it does represent very good value for money".

That's less than €2 per dentist per year, and Robin says engagement with European institutions and politicians is good: "When you do meet parliamentarians from whatever country in the European Parliament, they're quite willing to listen and they're quite willing to take your points on board … that's why I think the CED work is essential, because if we didn't put the point of view of the profession across, it just wouldn't get heard".

Some of the CED's successes over the years include on tooth whitening, where CED work helped to ensure it stayed in the realm of dentistry. Nationally, the IDA found the network of dentists across the continent extremely helpful when the Revenue Commissioners were considering charging VAT on associates' fees. The IDA was able to go to its colleagues in the CED and ask how dentistry operated in their countries. By doing this, the IDA was able to show Revenue that the associate model is similar and taxed similarly in many other countries in Europe.

FDI

The other major international dental organisation the IDA is involved with is FDI World Dental Federation, which is the largest membership-based dental organisation in the world. There are 200 national member dental associations from 130 countries. FDI represents over one million dentists and is the global voice of the profession. Each dental association appoints a National Liaison Officer (NLO), who is responsible for sharing information between their association and FDI, and vice versa. Dr Nuala Carney has been Ireland's NLO since 2014 and is now handing over the reins to Dr Kieran O'Connor.

Nuala says: "As a federation of national dental associations and other specialist groups, FDI ensures members' interests are represented at the global level to help support their efforts at a national level".

Ireland's NLO and IDA CEO try to attend FDI World Parliament every year to ensure that the voice of Ireland's dentists is heard, says Nuala: "IDA Council members and experts are invited every year to contribute to the drafting of policy statements. This ensures that FDI policy statements are truly representative of every dental member organisation. The IDA frequently uses these policy statements in helping to frame policy at home in briefings with stakeholders to inform them of the international position on many different topics".

Nuala says that the IDA learns much from being involved with FDI and it is helpful to hear the experiences of others who face similar issues: "Conversations with association leaders from abroad are often an early insight as to how behaviours are

CED President speaks to *JIDA*

Dr Freddie Sloth-Lisbjerg is CED President and is a general dentist in the Danish city of Kolding. Freddie is experienced in dental politics and in representing the interests of the ordinary dentist. He helped to establish of a co-operative of dental practices in Denmark and served as president of the Danish Dental Association for seven years.

Freddie took up his term as CED President in 2021 and says it is a role with two main areas. One is being the political leader and with the board, deciding the direction the CED should go. The other side is being the administrative leader in the Brussels office. He is in almost daily contact with the CED policy officers, who keep him abreast of EU policy.

In his political role, he says: "We monitor and follow every kind of legislation. We also try to influence that, of course, and we are doing that with the five working groups".

One of the CED's main areas of interest at the moment is the European Professional Qualifications Directive. There is recognition of qualifications across the EU, and this is great, but there is an issue, says Freddie: "The problem that we can see in close to all European countries is a lack of clinical training. We will focus very much in the next year to make the Commission understand that it is very important that the dentists leaving the universities have a sufficient level of clinical training".

The creation of an EU health database of some kind, the Medical Devices Regulation, and green dentistry are other pressing issues.

Dentist to dentist

Freddie explains that the CED exists to help national dental associations: "We are there to support the national associations on what will come up from EU level. So what are the benefits, you can say, for the newly educated leaving dental schools? We have what we call the EU manual.

CED President Dr Freddie Sloth-Lisbjerg was a guest at the IDA's centenary Annual Conference in Kilkenny in 2023.

That's a book where you can find everything about how is dentistry organised and done in Ireland, in Denmark, in every European country".

Collaboration breeds benefits and Freddie notes an example. Research from Spain and Italy from the pandemic showed that dental employees were less likely to become infected with Covid-19: "It should have been at least the same, because we are also normal citizens.

I think we took what we learned about how to protect from infections from our dental offices back home and when we travelled and so on".

Freddie enjoys his role in the CED: "You do that because you love to meet other people, talk different languages, experience something during your travelling across Europe, and you are curious on how they do dentistry in other countries. But especially, you do that because you get a network and you gain something in the contact with other people".

"As a federation of national dental associations and other specialist groups, FDI ensures members' interests are represented at the global level to help support their efforts at a national level."

changing and what may lie ahead. We noted this particularly several years ago when Smile Direct Club, a provider of direct-to-consumer orthodontics, burst onto the scene in the US and Canada".

Some of the FDI's main goals at the moment are:

- advocating for and guiding the dental profession with the roll-out of the WHO global oral health plan;
- a fresh approach to the continuing education programme strategy;
- engaging with the Minamata Convention on Mercury and COP-5;
- recognising the efforts of FDI members through the Smile Grant;
- awarding sustainability champions for an environmentally sound dental practice;
- supporting innovative initiatives through the World Dental Development Fund;
- Vision 2030 implementation and monitoring working group; and,
- position statement on free sugars.

What you should know about FDI

Nuala highlights some of the benefits of FDI membership, which are available to IDA members, such as access to the *International Dental Journal* and a wealth of information and CPD available on the website: https://www.fdiworlddental.org/.

She also encourages dentists to consider attending FDI congress. Held over four days, the congress features one of the largest scientific programmes of any conference. Last year it was in Australia, but in 2024 it is relatively close by, taking place in Istanbul from September 12-15.

IDA
irish dental association

Volume 70 Number 1
February/March 2024

MEMBERS' NEWS

Working towards sustainable oral health services

The IDA has produced a comprehensive report on what is needed to develop sustainable national oral health services in Ireland. Here is an exclusive summary for members.

In the foreword to the report, which is entitled 'Towards Sustainable National Oral Health Services: Delivering the WHO Oral Healthcare Strategy for Ireland', IDA President Dr Eamon Croke puts the need for the paper in acute perspective:

"Oral healthcare is a historical "blind spot", as described by Minister for Health Stephen Donnelly TD in the Houses of the Oireachtas in May 2023. This is to the disadvantage of large numbers of the Irish public, with children and the many who are eligible for State-subsidised oral healthcare being failed the most.

These facts stand in stark contrast to Ireland's commitment to the World Health Organization's (WHO) ambitious strategy for the integration of oral healthcare into universal health care (UHC) in the next seven years. UHC's aim is to ensure that [illegible]

to explain to stakeholders, including dental healthcare professionals, how its vision may be enacted.

The IDA appreciates that while it might share, and could ultimately support, many of the aspirations of Smile agus Sláinte, it cannot support a piecemeal roll-out of a new service that history tells us will be with us for a long time to come. Such a service will fail and fail quickly. A cursory glance at the history of State-funded oral healthcare over the past 100 years is evidence of this. The WHO is explicit that dental associations have a significant role in the planning and delivery of services. Our Association is no exception; we are ready and willing, under the principles of co-operation and co-ordination, to be a positive influence in the eventual delivery of a future-facing, sustainable oral healthcare service.

"This paper aims to provide [illegible]

Our starting point: WHO Global Strategy

The Irish Government has committed to the WHO's strategies on UHC. In its Global Strategy on Oral Health (2022), the WHO sets out it aims, objectives and goals with clarity. The vision of the Strategy is UHC for oral health for all individuals and communities by 2030, enabling them to enjoy the highest attainable state of oral health and contributing to healthy and productive lives (150/7 Annex 3, 21). The WHO states an overarching goal to guide member states to:

(a) develop ambitious national responses to promote oral health;
(b) reduce oral diseases, other oral conditions and oral health inequalities;
(c) strengthen efforts to address oral diseases and conditions as part of UHC; and,
(d) consider the development of targets and indicators, based on national and subnational contexts, building on the guidance to be provided by the WHO's global action plan on oral health, in order to prioritise efforts and assess the progress made by 2030.

Of particular relevance to member states in developing their own national policy and ensuring its success are realising the six key strategic objectives:

Strategic Objective 1

Oral health governance – improve political and resource commitment to oral health, strengthen leadership and create win-win partnerships within and outside the health sector.

Strategic Objective 2

Oral health promotion and oral disease prevention – enable all people to achieve the best possible oral health, and address the social and commercial determinants and risk factors of oral diseases and conditions.

"Achieving the highest attainable standard of oral health is a fundamental right of every human being."

WHO Global Strategy on Oral Health (2022)

The WHO has set out a holistic vision with a strategy that sets a long-term goal and enables governments to set short-term milestones. Achieving the WHO's goals demands 'joined-up thinking'.

Under Strategic Objective 1, the WHO sets out the elements of governance, which, the IDA advocates, should be the starting point for all discussions and any development at national level. While each objective has multiple influences on the outcome, governance has an overarching effect on all other objectives and all guiding principles.

For the Irish Government to achieve this objective, it needs to break new ground, not least making a meaningful political and budgetary commitment to tackle oral diseases, which, to the frustration of the profession, has not been the case heretofore.

Towards sustainable oral health services

The IDA's aim is to work co-operatively and in a co-ordinated manner with stakeholders to develop a sustainable oral healthcare system for the people of Ireland. We believe that all stakeholders must seek the merits in both Smile agus Sláinte and the WHO Strategy – neither of which will work in the present Irish oral healthcare context – to provide a once-in-a-lifetime review and overhaul of the oral health ecosystem.

Current challenges

The WHO's aim is for an expanded oral healthcare service, this requires it to be fully resourced.

In our most recent pre-Budget submission (Budget 2024), we first estimated that an additional allocation of €71m is required to address the remaining and training crisis, and an allocation of between €108 and €232.5 million to

knowledge, and numbers a workforce capable of delivering the required service. Integration of disease prevention and health promotion into UHC will require regular upskilling of all involved.
- Health promotion – the development and delivery of health promotion is a synergistic tool when combined with prevention programmes.
- Service systems – oral healthcare services will be expected to deliver on prevention and promotion/corrective modalities/data collection and audit.
- Legislation – the current Dentist Act, 1985 is not fit for purpose. The Department of Health received a submission from the Dental Council in October 2021 on proposals for a new Act, which is supported by the IDA.
- People-centred – people-centred healthcare, which moves away from the previous models of healthcare, should respond to peoples' needs, improve service delivery and feedback, and will become a pivot point in partnerships.

Building blocks

The IDA has developed a 'building block' approach to the establishment of integrated, sustainable, and responsive oral healthcare, which accepts the principles and objectives of the WHO's Global Strategy on Oral Health. This approach supports a phased introduction of a new agreed oral health plan, laying the foundations based on the required political and financial commitment, along with the accompanying legislative and leadership changes. These building blocks are as follows:

1. Explicit political and financial commitment.
2. Establishment of win-win partnerships.
3. Establishment of a new oral health reform oversight group.
4. Appointment of clinical leadership.
5. Representation of all stakeholders in an implementation group.
6. Consensus on a new model of funding for oral healthcare.
7. Introduction of a new Dental Act.
8. Recognition of a broad range of dental specialties.
9. Enhanced education and skills development.

Fundamentals for a successful policy

- A people-centred approach to oral healthcare policies will respond to peoples' needs, improve service delivery and feedback, and will become a pivot point in partnerships.

The appropriate education and regulation of dental healthcare professionals is indispensable, along with the required levels of funding of our dental schools.
- A properly developed public dental service is central to UHC delivery.
- There is an immediate requirement for the acceptance and then public and private service availability of a broad range of specialties. Ireland has only two dental specialties.
- Patient choice is a quintessential driver, which requires backing to ensure justice in the provision of healthcare services for those in lower socio-economic groups, the institutionalised and the isolated.
- A strong private primary and secondary dental sector is key to universal oral healthcare delivery. The private dental sector will remain the primary delivery mechanism for oral healthcare in Ireland.

IDA concerns on amalgam phase-out

The IDA has asserted the need for a clear list of clinical exemptions as the European Parliament votes to phase out amalgam.

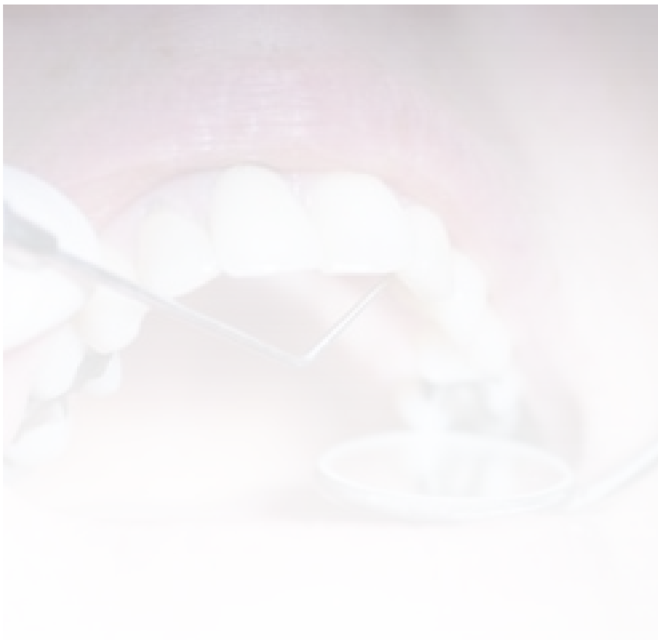
Last week the European Parliament voted to phase out amalgam by January 1, 2025, in less than 12 months' time. This timeline is much quicker than the envisioned phase-out by 2030 proposed by the European Commission.

The issue will now go to a meeting of the European Parliament and European Council, along with the European Commission, where a provisional agreement on enacting legislation will be concluded and, following this, will be adopted.

In light of this development, the International Affairs and Quality and Patient Safety Committees of the IDA have requested an urgent meeting with the Department of Health and the Department of the Environment, Climate and Communications.

In a letter to the Chief Dental Officer, the IDA asserts that the Departments have not addressed the justifiable concerns outlined by the Association in its response to Ireland's national plan on the phase-down of amalgam. The IDA has also made suggestions regarding preventive programmes that there has been no progress on.

The IDA acknowledges that mercury and its organic compounds are a serious environmental and health threat. The Association also acknowledges that dental amalgam is a predictable and effective restorative material, and has a long history of safe use, which has withstood repeated scrutiny by the dental and scientific community.



Clinical exemptions

The Association strongly supports the continued use of amalgam when clinically indicated. The choice of treatment and materials should remain within the mandate and expertise of the dentist, and should be based on informed decision by the patient. The IDA believes the following circumstances must be included in the list of clinical exemptions for the use of dental amalgam:

- medical history, including allergy to non-amalgam restorative materials;
- patient management that may only allow amalgam placement;
- dental treatment under general anaesthetic;
- high caries rate or risk that contraindicates other approaches;
- size, number or morphology of the restoration that precludes other approaches;

Environmental impact of alternative materials

There is little or no information on the environmental impacts of the manufacture and packaging of alternative materials, the impact of micro-materials that enter the public water supply, and the health impact of potential leeching of these materials intra-orally.

Environmental concerns need to be extended to alternative materials, including their disposal. The IDA has concerns regarding the lack of available information on mercury-free materials, as well as the safety profile and biocompatibility of certain materials. The Association is calling for further research regarding such materials, especially before proceeding with the envisioned ban on amalgam use.

Prevention

Prevention is and will always be the answer to reducing amalgam use. In order

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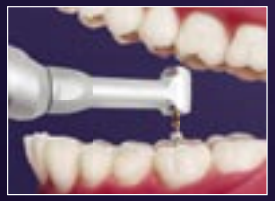

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The human and financial cost of clinical negligence claims

Ireland is an outlier in having higher costs for and longer times to resolution of clinical negligence claims, which takes a toll on dentists and patients alike.

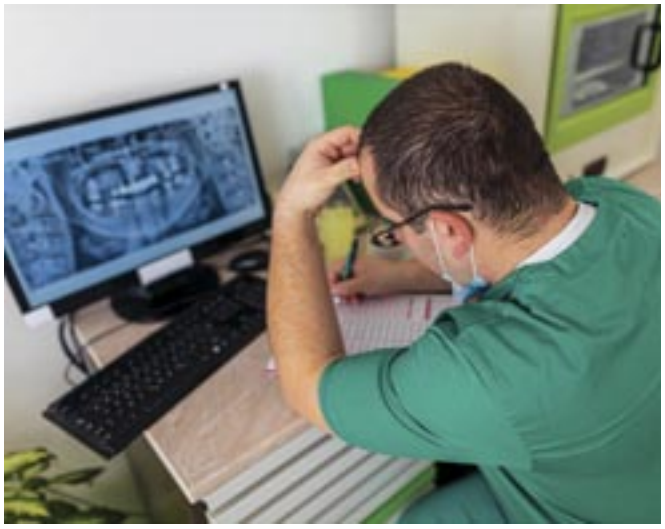
Any readers who have faced a clinical negligence claim, or know a colleague who has, will know how stressful it can be. At Dental Protection we support dentists in Ireland with claims day in day out, and they often tell us how it hangs over their personal and professional life, and leads to them questioning every clinical decision they make. Dental Protection research supports this; in a survey of around 50 dentists who have faced a claim, 96% were worried about their mental well-being during the process, with some saying they reconsidered their careers in dentistry as a result of the claim.

Dentists in Ireland also frequently express their dismay at the inordinate length of time it takes to resolve claims, which of course exacerbates their stress and anxiety.

Ireland an outlier

The claims process feels protracted and convoluted, simply because it is. However, that is not the case in every country where Dental Protection has members. A new Dental Protection report on the human and financial cost of clinical negligence claims puts things into context. A claim in Ireland takes 1,059 days on average to resolve, which is 19% longer than in Hong Kong (892 days), 27% longer than in Malaysia (836 days), 43% longer than in Singapore (742 days), and 53% longer than in the UK (693 days). This means that dentists in Ireland are dragged through what can be a harrowing experience, for longer than necessary. Patients too are having to wait longer to receive compensation and have, in published research, described their experience of the clinical negligence claims process as "excruciating" and "adding insult to injury".

The human cost of the current claims process is something we are keen to stress to policymakers, on behalf of our members. However, we also know all too well that slow processes also come at a financial cost. A protracted claims process inevitably means that lawyers are involved extensively and over a longer period, and this is racking up legal costs in Ireland that are among the highest in the world. Our report shows that the legal cost for an Ireland claim managed by Dental Protection (€13,359) is, for example, 234% more expensive than in Singapore (€4,390) and 645% more expensive than in the UK (€2,016). When legal costs are high, naturally this affects the cost of indemnity, which dentists require to protect themselves against claims, and we know this places pressure on members.



Solutions

Why is Ireland an outlier? The delays to the clinical negligence claims process in Ireland stem from the lack of mechanisms, such as pre-action protocols or case management, which allow for early resolution. Pre-action protocols are a set of guidelines, laid out through legislation, which explain the conduct and steps a court expects parties to take before claims can commence. This encourages claims to be settled outside of litigation and reduces the time the process takes.

Pre-action protocols are not new, nor are they revolutionary. In fact, they have been widely accepted as needed in Ireland by the great and the good over the last ten years, including in reviews by Mr Justice Peter Kelly, Ms Justice Mary Irvine, and Mr Justice Charles Meenan. The Government has accepted the recommendation for pre-action protocols, and has committed to their introduction in both the 2022 and 2023 Justice Plan. Progress is, however, painfully slow, and we are still waiting for the necessary regulations to be introduced.

This vital reform must be delivered without further delay and we will continue to press the Government on this. With damaging effects to dentists' mental well-being, significant delays to patients receiving compensation, and eye-watering legal costs, clearly the status quo is no longer sustainable.

Dr Raj Rattan
Dental Director at Dental Protection

An update on non-nutritive sucking habit cessation

Précis: This narrative review presents the evidence-based techniques available to manage non-nutritive sucking habits in children in general practice.

Abstract

Statement of the problem: Non-nutritive sucking habits (NNSH) encompass a variety of comforting behaviours in children. While considered normal in early childhood, the persistence of these habits has the potential to cause adverse effects on dental and skeletal relationships in the permanent dentition. Several interceptive techniques to promote habit cessation have been recommended.

Purpose of the review: To update the dental practitioner on techniques recommended for cessation of NNSH in children and evidence of their efficacy.

Discussion: There are various interventions for NNSH cessation, including pacifier substitution, behavioural modification, orthodontic appliances, or aversive therapy. Psychological interventions were more likely to stop NNSH versus no treatment in the short and long term. Appliances were shown to be effective in stopping NNSH and demonstrated favourable effects on occlusion. There was no difference between alternative behavioural techniques. While there is insufficient evidence in support of a single intervention, these techniques demonstrate success when used alone or in combination to promote the cessation of NNSH.

Conclusions: Creating awareness of the treatment options available for managing NNSH may allow practitioners to work with families to establish early habit intervention, with options individualised to the patient. Further high-quality studies are needed to strengthen the evidence base surrounding techniques available for NNSH cessation in general practice.

Journal of the Irish Dental Association February/March 2024;70(1):31-35

Introduction

Non-nutritive sucking habits (NNSH) refer to a collective group of comforting, repetitive behaviours in infants and young children that manifest most frequently as pacifier use or digit sucking. Digit sucking is an instinctual and primitive reflex, which starts in the intrauterine period and facilitates the development of sucking reflexes for breastfeeding.[1] Children engage in these unconscious behaviours as part of their normal psychological and physiological development. Engaging in these habits can provide a calming effect for the child, promoting psychological stability and aiding in nutrition. The global prevalence of NNSH is estimated to range from 34% to 90%,[2] with the incidence reducing with age.[3] An Irish study looking at over 800 preschool children found that 64% engaged in NNSH, with five times as many pacifier users as digit suckers.[4]

The majority of NNSH are ceased spontaneously by the child's own impetus, often when the habit becomes socially unacceptable and with the development of greater psycho-emotional maturity.[5] However, it has been found that over half of children may continue to have an NNSH up to 24 months, with habits persisting beyond 36 months in 20% of children.[6] Habits are classified as prolonged if they continue beyond 36 months of age.[7] Prolonged duration of such behaviours can have significant consequences for the developing orofacial structures and occlusion.[7]

Dental practitioners must be aware of NNSH and their role in delivering

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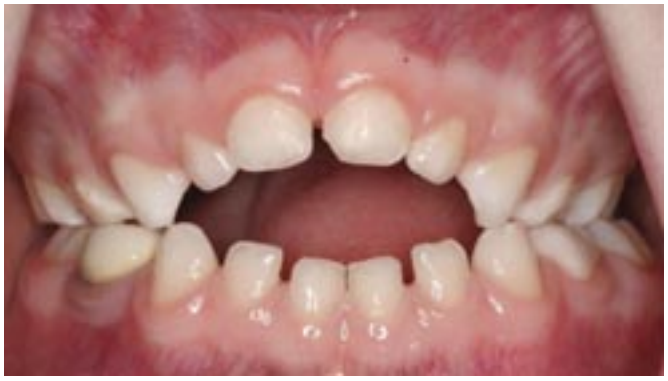

FIGURE 1: Digit-sucking-induced anterior open bite in the primary dentition.

FIGURE 2: MAM orthodontic pacifier. Available from: https://www.mambaby.com/p/mam-original-6-love-mummy-pacifier/fa1a2za002-cun/.

habit cessation advice, as malocclusions can be improved or prevented if these habits are managed early. Indeed, all healthcare workers who have contact with children during their early years, such as public health nurses, should have awareness about NNSH, in order to deliver anticipatory guidance.

Understanding the range of approaches available can reduce the need for more invasive and rehabilitative approaches in later life. A recent Cochrane review examined the evidence for habit cessation techniques, including behaviour modification techniques, aversive therapies, and orthodontic appliances.[8] Some interventions may be more applicable depending on the particular habit, and certain approaches are easier to implement than others. The aim of this narrative review is to update the dental practitioner with contemporary techniques for NNSH cessation and their evidence base.

What is the problem with prolonged NNSH?

The development of the dentofacial complex is governed by both genetic and environmental factors. The earlier the introduction of environmental factors, the greater their effect on the developing dentoskeletal complex is likely to be.[9] Persistent NNSH, especially during the establishment of the permanent dentition – i.e., with the eruption of the permanent incisors – can contribute to undesirable dentoskeletal effects. The resultant malocclusion is dependent on a triad of features associated with the habit: intensity; severity; and, duration.[10]

The characteristic features of persistent NNSH are theorised to result from the

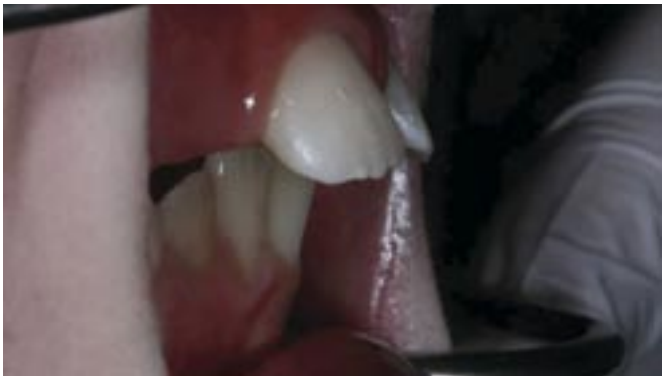

FIGURE 3: Digit-sucking-induced proclination of upper incisors and increased overjet (Angle's Class II Division 1).

combination of direct forces acting on the dentition from the digit itself, and changes in the pressure on the teeth from the peri-oral musculature.

While both digit sucking and pacifier use cause effects on the developing dentition, pacifier use has been found to have a more detrimental effect on the occlusion.[11] In addition, there is some evidence that prolonged use of pacifiers can contribute to speech difficulties. However, the evidence base for this is limited.[12] If pacifier use continues beyond the age of three, there is a higher reported incidence of anterior open bite (**Figure 1**) and posterior crossbite compared to digit sucking, with the extent of these changes proportional to the longevity of the habit. Orthodontic pacifiers (**Figure 2**) may cause less detrimental effects on the occlusion than conventional ones; however, the evidence for this is limited.[13] During prolonged thumb-sucking, the tongue is depressed, causing a change in the balance of forces between the tongue and the cheeks. In addition, the negative pressure caused by the sucking action can cause constriction of the upper arch, leading to the development of transverse discrepancies, manifesting in posterior crossbites.[14] Prolonged digit pressure also leads to intrusion and proclination of the upper incisors and retroclination of the lower incisors, creating the features characteristic of an Angle's Class II Division 1 malocclusion (**Figure 3**). Studies have shown that digit sucking is more likely to cause an increased overjet than pacifier use.[3] An overjet greater than 6mm, alongside a loss of lip competency, has been shown to more than double the risk of trauma to the dentition.[2] The positioning of the digit causes separation and subsequent overeruption of the teeth posteriorly, leading to an anterior open bite, which is often characteristically asymmetrical, depending on the digit(s) being sucked.

How can these habits be managed in general dental practice?

The first step in the management of persistent NNSH is the recognition that the problem exists. This can be elucidated through a thorough habit history from a parent/guardian, to ascertain the presence of the habit, its duration, intensity, and factors that may perpetuate the habit. Once a habit is recognised, the most important factors for management include the child's age and the emotional significance of the habit.[15]

The age of the child will dictate whether active intervention is necessary to address an NNSH. A clinical protocol published by Shah and colleagues offers an algorithm to manage NNSH, based on the age of the child, and is in line with international guidelines.[16]

Before the age of two, NNSH are considered part of normal development and are rarely discouraged. In particular, NNSH are useful in aiding the nutrition of preterm infants.[17] The role of NNSH in the prevention of sudden infant death syndrome (SIDS) is very controversial, and more evidence is needed concerning a potential protective effect.[18]

Between two and four years, mild discouragement is recommended. Therefore, it is suggested that early dental visits are important to provide parents with anticipatory guidance to intercept the habit, providing the opportunity to deliver and act on advice for NNSH cessation before the habits become persistent.[19] This is aligned with the ethos of the National Oral Health Policy, Smile agus Sláinte, which supports universal access to oral care services from birth. Early interceptive efforts can be instigated once the child is aged four and above when a child will have a greater understanding.[7] More invasive approaches are reserved for children from age seven onwards, especially where habits are beginning to affect dentoalveolar relationships.

The child's emotional attachment to the habit should not be underestimated. Co-operation and motivation to stop the habit are very important factors in predicting the success of NNSH cessation techniques. Efforts to intercept the habit will be futile if the child does not possess the impetus and desire to stop the habit. However, practitioners should be aware that persistent NNSH in older children may represent a compensating response, and onward referral for further assessment may be required.

There is a range of approaches available to manage NNSH, including pacifier substitution, psychological therapies, aversive therapies, and orthodontic approaches.

Pacifier substitution

It has been demonstrated that, once developed, digit-sucking habits last longer than pacifier use,[8] thus imparting a more detrimental effect on the occlusion. As a result, some authorities recommend switching to pacifiers for infants under four who demonstrate digit-sucking habits. This is based on the premise that a pacifier may be easier to remove if the habit becomes persistent.[16] The American Academy of Pediatrics recommends the use of a pacifier for infants under six months, based on good patient-oriented evidence.[20] However, this is not a uniformly supported recommendation. The WHO does not advise pacifiers for infants, as they are considered to discourage breastfeeding. It is important to note, however, that a recent Cochrane review found no significant effect of pacifier use on lactation, whether starting from birth or after breastfeeding.[21]

Psychological techniques

Psychological techniques to intercept NNSH range from patient/parent counselling to the implementation of behaviour modification techniques, and involve various methods central to the cessation of any maladaptive behaviour. Habit reversal therapy is employed for many repetitive behavioural problems. This technique involves training the child to recognise behaviours that precede the habit and teaching new responses to the habit. This technique involves four steps: awareness training; competing response therapy; social support; and, motivational training. For example, the child who is a digit sucker is first made aware of the habit. They are then taught a competing behaviour or response, which is incompatible with the habit (such as sitting on their hands). The child is then given prompts and reminders to continue these competing behaviours, as well as praise. Finally, the child is rewarded for their efforts.

Other commonly used psychological techniques include reinforcement. Positive reinforcement involves the addition of a reinforcing stimulus following wanted behaviour to encourage that behaviour in the future, for example, offering a reward when a child does not engage in NNSH. Conversely, negative reinforcement involves outlining the risks and consequences associated with a behaviour to elicit interest in habit cessation, such as warning about the need for orthodontic treatment in the future. A Cochrane review found that both positive and negative reinforcement significantly reduced the incidence of NNSH versus no treatment, with no difference between the techniques.[8] Clinical guidelines from the American Dental Association (ADA) recommend psychological therapies as a first-line approach for NNSH cessation, but with an emphasis on positive rather than negative reinforcement.[22]

Psychological techniques have been shown to have high success rates (75-100%) for some maladaptive behaviours, but the evidence is limited for NNSH. However, it may be useful for practitioners to be aware of these structured techniques as a basis for advising parents and patients on NNSH cessation.

FIGURE 4: Thumbsie thumb guard. Available from: https://thumbsie.co.uk/.

FIGURE 5: Stop'n'Grow nail varnish. Available from: https://onlinepharmacy.ie/products/stop-n-grow.

Aversive techniques

Aversive therapies involve the use of barriers to act as deterrents when the NNSH manifests as digit sucking. These barriers remind the child to avoid these behaviours and, as such, co-operation is a prerequisite for success. These can include physical barriers, such as thumb guards (**Figure 4**), gloves, plasters, and socks, or chemical agents such as Stop'n'Grow (**Figure 5**), which is a bitter-tasting nail-biting deterrent. The purpose of these barriers is to eliminate the satisfaction associated with the behaviour, especially at night, when the child may engage in habits subconsciously. While there is some reported success with

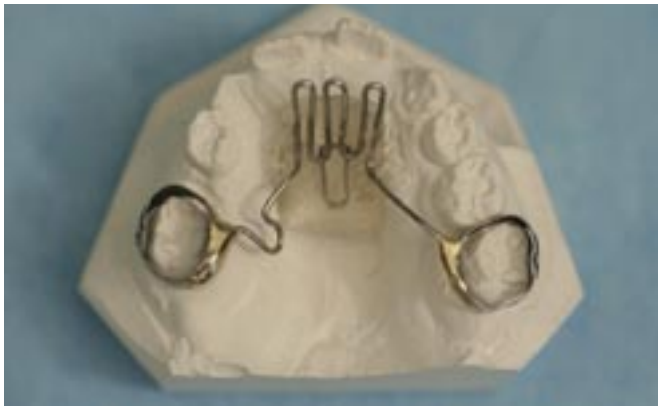

FIGURE 6: Orthodontic habit-breaker appliance.

chemical agents, a recent Cochrane review concluded that there is currently insufficient evidence to suggest whether barrier techniques are any more or less successful at habit cessation than psychological techniques alone.[8] However, where first-line psychological therapies fail in NNSH cessation, it is recommended to follow with aversive therapies. There is also evidence to suggest that these techniques are less useful for long-standing habits. It is important to be cognisant that the use of aversive approaches may be associated with the child adopting oppositional behaviour in place of an NNSH.[23]

Orthodontic devices

Orthodontic appliances have been a mainstay in the management of persistent NNSH, often employed at the later stages of more persistent habits and usually related to digit sucking. The principal mechanism of action of these devices is the elimination of the pleasure associated with the habit, by preventing the formation of a seal between the digit and lips. There are a variety of designs, most of which incorporate a distractor/barrier in the anterior maxilla to physically stop the child from engaging in NNSH (**Figure 6**). Several studies have concluded that fixed orthodontic appliances are beneficial for habit cessation in both the long and short term versus no treatment, with a cumulative success rate of 46%.[8] Orthodontic habit breaker appliances not only improve tooth positioning, but may also improve skeletal relationships, and are highly effective in the early treatment of digit-sucking-induced open bites.

These techniques are not without problems, however, given the long period (up to 10 months) appliances must be worn for. Problems encountered with these appliances include the cost, emotional upset, speech problems, and eating difficulty. The child may also develop oppositional behaviour in response to the treatment. With the use of fixed orthodontic appliances, there is also an increased tendency for enamel decalcification and gingival inflammation.

What guidelines exist to aid practitioners in the management of these cases?

There is currently no single standard treatment for the cessation of NNSH. Contemporaneous guidelines published by the American Academy of Pediatric Dentistry (AAPD) and the ADA offer some guidance to general practitioners in the management of these complex cases (**Table 1**).[22,24] These guidelines recommend adopting a stepwise approach to managing NNSH, with an emphasis on the early introduction of psychological therapies, while more invasive techniques are withheld for older children with more ingrained habits. The age at which NNSH should be considered a problem is reflected in the effect of the habit on the occlusion. Consideration for referral to a specialist in more complex cases is also advocated. For parents and caregivers, the HSE provides practical, parent-centred advice concerning NNSH, with information on simple ways to stop these habits, including the use of soothers only at set times and removal of soothers when the child is asleep, as well as making sure hands are clean for those who suck digits.[25]

Table 1: Clinical guidelines for NNSH cessation.

American Academy of Pediatric Dentistry (AAPD)[24]	American Dental Association (ADA)[22]
■ The timeframe for commencement of habit cessation techniques should be dictated by the emergence of unfavourable effects of NNSH on the developing dentition.	■ First-line therapy should take the form of reinforcement approaches.
■ Treatments must be tailored to the child's level of development and comprehension.	■ Positive reinforcement is recommended in place of negative reinforcement.
■ Co-operation is key.[25]	■ A reward system should be developed to discourage NNSH.
■ Techniques include counselling of the child/parent, psychological techniques, and appliance therapy.	■ Failure of early psychological approaches can be followed with barrier therapies such as applying a bandage or sock to the child's hand at night.
■ Referral to an orthodontist, psychologist, or myofunctional therapist may be beneficial.	■ Where habits continue to persist, referral to specialist care is beneficial.

Conclusion

NNSH are common, normal behaviours seen in children worldwide, which are important in early childhood development and should not be withdrawn too early. An understanding of the effects of persistent NNSH on the developing dentition and the management options available may assist general practitioners to intercept habits before the need for more invasive rehabilitative approaches later in life. Several methods can be employed at various stages to aid in habit cessation. The option chosen must be individualised to the patient, with due consideration for the success of any previous techniques used, the child's comprehension and development, and individual patient circumstances. Future high-quality studies are needed to strengthen the evidence base surrounding the various techniques available to the general practitioner to promote NNSH cessation.

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CPD questions

To claim CPD points, go to the MEMBERS' SECTION of www.dentist.ie and answer the following questions:

1. Persistent NNSH have been associated with which of the following features:

- ○ A. Increased overjet
- ○ B. Increased trauma risk
- ○ C. Anterior open bite
- ○ D. All of the above

2. According to guidelines published by the American Dental Association, which first-line effort should be instigated for NNSH:

- ○ A. Orthodontic appliances
- ○ B. Barrier techniques
- ○ C. Pacifier substitution
- ○ D. Psychological techniques

3. Beyond which age does pacifier use increase the risk of anterior open bite?

- ○ A. 0-2
- ○ B. 2-4
- ○ C. 4-7
- ○ D. 7+

Pulp diagnosis: current guidelines, shortcomings, and future developments

Learning outcomes

- To develop an understanding of the basis of pulpal diagnosis;
- to understand the limitations of contemporary diagnostic tools and systems; and,
- to be aware of the future of pulpal diagnostic tests and technology.

Introduction

Accurate and reliable diagnosis is at the core of operative dentistry and endodontics, as without it over- or undertreatment will ensue. Current diagnostic tools should aim to differentially diagnose not only whether the pulp is vital or non-vital, but also the threshold between reversible and irreversible pulp damage. Identifying this inflammatory threshold will help determine whether the pulp can be preserved in its entirety, in part, or not at all.

Current endodontic diagnosis relies on the use of proxy measures that elicit the symptoms experienced by the patient and can indicate the condition of the dental pulp.[1] The primary means of obtaining a pulpal diagnosis involves the use of pulp sensibility tests,[2] accompanied by clinical history, examination and radiographs. The responses to thermal and electrical stimuli and their relative severity indicate the condition of the pulp; however, inflammatory processes affecting the pulp are dynamic, with signs/symptoms changing based on the degree of inflammation present.[3] Therefore, tests should be able to reproduce the symptoms of pulpal inflammation and determine the degree of inflammation present in the pulp.

However, as in medicine, endodontic diagnostic procedures are associated with some degree of uncertainty. To formulate an accurate pulpal diagnosis, practitioners should be aware of the diagnostic value (sensitivity and specificity) of available pulp tests and how their results should be interpreted, have a working understanding of the limitations associated with their use, and be aware of future trends in the area in order to provide more biologically based, conservative treatments. The aim of this review is to analyse current diagnostic systems, discussing their use and limitations as well as highlighting future areas of development.

Classification of pulpal disease

Diagnostic systems should be capable of correlating biological conditions within the dental pulp to clinical and radiographic findings in order to arrive at a correct diagnosis, which subsequently informs treatment options.

The currently accepted classification of pulpal and periapical disease, as endorsed by the American Academy of Endodontology (AAE), is a binary system of diagnosis based on the perceived ability of the pulp to repair following insult, and relies solely on patient symptoms and subjective responses to tests.

Pulpitis of a reversible nature represents a vital pulp associated with the initial inflammatory reaction in response to the progression of carious lesions through the tooth without bacterial colonisation within the pulp chamber or root canal system. Pathognomonic symptoms classically include short, sharp, non-lingering pain brought about only through stimulation of the affected tooth. Reversible pulpitis can be treated effectively with the removal of this irritating stimulus and appropriate restoration without the need to remove pulpal tissue. Irreversible pulpitis is characterised by a range of symptoms, most commonly describing persistent, spontaneous, and often nocturnal pain. This is histologically associated with bacterial colonisation of the tertiary dentine and pulp. According to current guidelines, the irreversibly inflamed pulp, although still vital, cannot be repaired and is not amenable to vital therapies, necessitating its extirpation followed by root canal treatment. Currently, terminology to diagnose pulpal pathology, although universally employed, has been criticised by authors due to its limitations in ascertaining the true pulpal status. While the differentiation between health and necrosis is relatively straightforward,[4] accurately diagnosing the degree of pulpitis (or threshold) along the inflammatory continuum with current gold standard methods is a challenge. The terms reversible and irreversible do not reflect the dynamic biological processes occurring within the inflamed pulp. Therefore, the clinical diagnosis reached with these terms can only ascertain the probable pulpal diagnosis, and is based on relatively crude measures to correlate clinical signs and symptoms with the inflammatory status of the pulp.

The level of insult/inflammation within the dental pulp determines the type of endodontic treatment and level of intervention required. The publication of recent guidelines by both the European Society of Endodontology (ESE)[5] and the AAE[6] emphasises the growing interest in minimally invasive, biologically oriented endodontics that preserve pulp vitality. However, current terminology does not facilitate these techniques, which are often

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Table 1: False responses from sensibility tests.[10]

False negative	False positive
Calcified/sclerosed canals: the presence of sclerosed canals will impede fluid flow within the tubules, thus acting as an insulator to stimuli.	Multi-rooted teeth: teeth with multiple roots might have inflamed pulp tissue in a canal, while the pulp chamber and other canals might be necrotic and infected.
Trauma: recent trauma can result in a transient loss of response to pulp tests.	Metallic restorations: the electrical current might be conducted to adjacent teeth through contacting Class II restorations, especially if they are metallic.
Immature apex: young patients with large immature apices often have false negative responses. This is because the development of Raschkow's plexus lags behind the eruption of the tooth. Cold is recommended in place of electrical pulp testing (EPT).	Anxious or young patients.
Extensive restorations: similar to calcified pulps, large restorations act as insulators to external stimuli, thus resulting in false negative responses for some teeth.	Contact with gingival tissues.

successful even in teeth with signs and symptoms indicative of irreversible pulpitis. Therefore, proposals have been made to update the current system of pulpal disease[7] to diagnose the pulp along a continuum from health to varying stages of inflammation.

Pulpal diagnostic tests

Diagnostic nomenclature relating to pulp pathology is based on classic studies of the histological state of the pulp as a measure of validity. Diagnostic accuracy systems utilise histology as a reference standard to define/verify clinical classifications. Histological verification is regarded as the gold standard in endodontics as there is no other objective measure of pulpitis currently available.[8] However, assessing the condition of the dental pulp clinically through histology is not feasible. In addition, the dentine-pulp complex is encased in a mineralised barrier of tooth structure, and therefore the pulp cannot be directly inspected until it is exposed. As a result, surrogate markers of pulpal health, such as an assessment of the condition of nerve supply (sensibility) and/or blood supply (vitality) are routinely employed.

The ideal pulp diagnostic test should be objective, easily completed, inexpensive, reliable, reproducible, standardised, painless, and non-invasive.[9] Although a myriad of diagnostic tests exist, they all have inaccuracies, leading to misdiagnosis at the time of testing and the creation of false positive and false negative results (**Table 1**).[10]

The diagnostic accuracy of any clinical test is based on its inherent ability to differentiate between health and disease. This can be quantified as sensitivity and specificity. Sensitivity is the ability of a test to detect disease in a patient who has a disease, while specificity is the ability to detect the absence of disease in those patients without that said disease or condition.[4] These values are given for teeth that have known diseased states. In unknown diseased states, positive predictive values (PPVs) and negative predictive values (NPVs) are used. PPV indicates the probability that a positive result represents a diseased tooth, whereas an NPV is the probability that a negative result indicates a disease-free tooth. Although these values can be used to compare to each other, their value is questioned due to the limitations of the tests, which will be discussed.

Table 2: Pooled diagnostic accuracy of five pulp tests.[4]

	Sensitivity	Specificity	Accuracy	PPV	NPV
Cold test	0.867	0.843	0.840	0.807	0.871
Heat test	0.778	0.665	0.723	0.619	0.785
Electrical pulp test (EPT)	0.720	0.928	0.817	0.888	0.804
Laser Doppler flowmetry (LDF)	0.975	0.950	0.971	0.937	0.997
Pulse oximetry (PO)	0.973	0.954	0.974	0.943	0.990

FIGURE 1: roeko Endo Frost (C) refrigerant spray.

The validity of each recognised sensibility and vitality test has been extensively researched in the literature. The pooled sensitivity/specificity for each type can be seen in **Table 2**. It is important to state that a diagnosis of the condition of the pulp cannot and should not be formed only on the basis of the results obtained from pulp tests. These diagnostic tests serve as adjuncts and must be combined with information gained from a thorough history, additional clinical tests, and radiographic analysis to formulate an accurate diagnosis for the pulp.

Current standards in pulpal diagnostics

Sensibility tests

Sensibility tests assess the neural response of pulpal tissue to an external stimulus by activation of A-delta fibres.[8] These tests indirectly assess the condition of the pulp via the integrity of these nerve fibres and aim to reproduce the symptoms experienced by the patient to reach a pulpal diagnosis. Therefore, the condition of the nerve supply is used as a surrogate marker of pulp vitality, i.e., blood supply.

Thermal stimuli, when applied to the surface of a tooth, result in the hydrodynamic movement of fluid within the dentinal tubules, acting on A-delta fibres within the dentine-pulp complex. A subjective evaluation of the response elicited gives a determination of the sensory innervation of the pulp. Cold testing (**Figure 1**) is the

FIGURE 2: Electric pulp test (EPT).

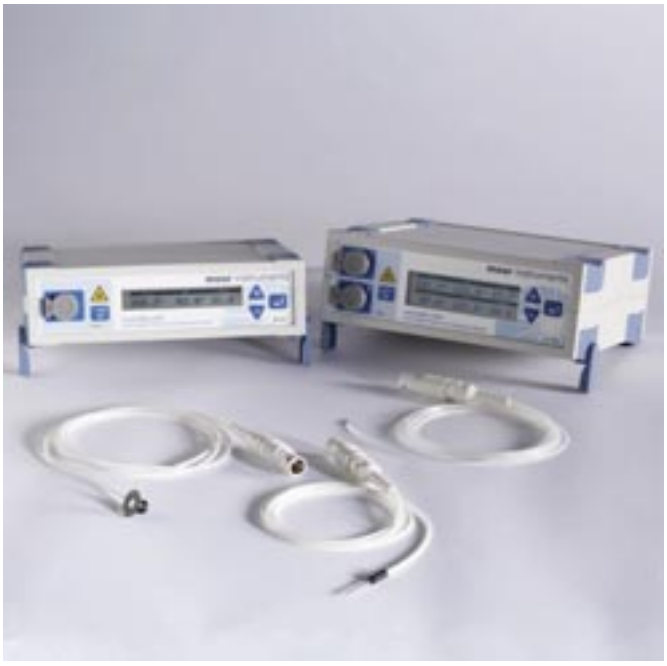

FIGURE 3: Laser Doppler flow (LDF) machine.

most common method used to assess the condition of the pulp. Heat testing is used less than cold testing and is less reliable and sensitive,[4] although it may have its uses in mimicking the symptoms of acute pulpitis. However, It is important to note that the application of heat on a tooth for greater than five seconds can result in biphasic stimulation of A-delta and C fibres, causing lingering pain.[2]

In contrast to thermal testing, electric pulp tests (EPTs; **Figure 2**) involve the direct stimulation of A-delta fibres to elicit a response measurable by a numeric value.[11] Application of the electric current elicits ionic shift within the dentinal fluid, causing depolarisation and formation of an action potential in the A-delta fibre. The numerical reading generated by the electrical pulp tester is not a quantitative measure of the condition of the pulp. Rather, it indicates that at least some A-delta fibres are functional and able to respond to the electrical current applied to the tooth. Generally, when applying an electric stimulus to the tooth, contralateral and adjacent teeth are also tested for comparison.

Limitations of current methods of diagnosis

Sensibility tests exhibit inherent limitations, as they do not measure true vitality, but sensibility, by determining whether the nerve supply can respond to a stimulus. The true indication of vitality is whether the vascular supply is intact. While patients' symptoms from such tests can differentiate health from disease, determining the exact degree of inflammation or threshold of irreversible damage of the pulp is more challenging. This is because pulpitis is diagnosed on arbitrary and subjective measures such as patient response to pain, which may be exaggerated by some, and underestimated by others. A systematic review by Mejàre *et al.*[12] examined the accuracy of the most common diagnostic tests and concluded that there is insufficient evidence to show that signs/symptoms and responses to stimuli accurately reflect true pulp status in the presence of inflammation.

The reproduction of symptoms of pulpal inflammation should allow clinicians to ascertain the degree/severity of insult in the dental pulp. This has not been shown to be the case, however; while symptoms have been accepted as an indication of the inflamed status of the pulp, it has been shown that we cannot confidently correlate clinical signs and symptoms with histological status.[13] This finding, however, has recently been disputed.[14]

The lack of correlation between signs and symptoms and histological status of the pulp, alongside diagnostic tests with relatively limited accuracy, culminates in a situation where accurately diagnosing the pulp along a continuum of disease with contemporary techniques is challenging.

Vitality testing

Sensibility tests use neural function as a surrogate marker for pulpal health but cannot directly ascertain the vascular supply to the tooth. Therefore, vitality testing is the most accurate measurement of the condition of the pulp.[15] In a bid to improve accuracy with pulpal diagnosis and reduce false positive and negative responses, vitality testing methods have been introduced.

These tests measure the blood flow in the pulp objectively, without any reliance on the patient's response to stimuli, thus resulting in improved accuracy in diagnosing the pulpal status. These tests aim to address the recognised limitations of sensibility tests and include pulse oximetry (PO) and laser Doppler flowmetry (LDF) (**Figure 3**).

LDF is an objective, non-invasive diagnostic test that measures the numbers and velocity of particles in circulation in the pulp to give a measurement of the health of the pulp. LDF has been shown to have greater sensitivity and specificity than conventional sensibility tests.[16] Therefore, LDF should be capable of assessing between a healthy and necrotic tooth. However, while this is of particular utility in traumatised sound anterior teeth, it is of less use in heavily restored or sclerotic teeth where false positives and negatives are common.

Pulse oximetry is a physiometric technique that measures the oxygen saturation of pulpal blood via catheter diodes.[17] This objective non-invasive technique is less vulnerable to the relative limitations associated with other sensibility tests. A recent systematic review and meta-analysis concluded that LDF and PO are the most reliable means of determining the status of the dental pulp. When both methods of vitality testing were compared, PO was regarded as the gold standard. Although PO shows great promise, there is currently no commercially available kit on the market.

Despite the improved sensitivity and specificity associated with these pulpal diagnostic tests, they too are associated with limitations.[18] In LDF, differentiating between a healthy and inflamed pulp is not currently possible as a result of error margins due to the small volume of blood measured; therefore, it can only differentiate between health and necrosis and not along a continuum.[19] Background interference from surrounding tissues has been shown to lead to inaccuracies in results with LDF. The ability of LDF to penetrate the mineralised tissue of teeth has been questioned. The equipment has also been shown to be prohibitively expensive. On the other hand, failings with PO have occurred as the instrument is not designed for dental use, although an adaptation of a tooth-specific instrument has shown it to have higher sensitivity and specificity values than EPT and cold tests.[20]

Vital pulp treatment

Endodontics has seen a shift in recent times towards a more biologically centred treatment approach by employing vital pulp treatments (VPT) in teeth displaying even signs of advanced pulpal inflammation.[21] This comes from improved data on the reparative capacity of the pulp, as well as the development and use of bioactive materials shown to promote superior mineralised bridge formation. In addition, there has been greater emphasis on the benefits of preserving some or all of the pulp, such as allowing for the continual formation of tertiary dentine and preserving proprioceptive functions that reduce overloading.[22]

While root canal treatment is a successful treatment modality, it is a technique-sensitive, invasive and costly approach to carry out to a high standard in general practice. The use of VPT to preserve some or all of the pulp represents a simpler, more cost-effective approach with documented success levels, comparable with conventional endodontics.[23] By employing minimally invasive treatment as a first-line therapy, the invasive options can be avoided, or delayed until their implementation is warranted.

That said, it is recognised that the success of VPT is dependent on an accurate diagnosis of the inflammatory status of the pulp. When using current gold standard diagnostic tests, this is currently not possible. Contemporaneous methods of assessing the condition of the pulp are relatively limited in their ability to assess, objectively and quantitatively, the severity and extent of pulpal inflammation. Current pulpal diagnostic terminology and the use of crude surrogate markers of the pulpal health do not facilitate or encourage the use of VPT as a first-line treatment option, despite our knowledge of the reparative capacity of the pulp, resulting in root canal treatment being completed on teeth that may benefit more from less invasive treatment.

An improvement in the accuracy of pulpal diagnostic tests and the development of objective point-of-care measures to assess the condition of the pulp are likely needed to ideally reflect the continuum of inflammation within the pulp to facilitate evidence-based, conservative treatment options being employed at varying stages of pulpal pathosis, with the primary aim of preserving some or all pulpal tissue where possible.

Future trends

Although it has been shown that accurate diagnosis can be achieved by current subjective diagnostic tools, new objective diagnostic methods show promise in improving accuracy, e.g., dual wave spectrometry and improvements in LDF. However, these diagnostic tests are not yet commercially available.

Research is ongoing to understand the role of inflammatory mediators that better indicate pulpal status.[24] Point-of-care analysis could use gingival crevicular fluid or dentinal fluid in situations where the pulp is not exposed, or blood could be sampled from the pulp in cases of exposure to discriminately assess the inflammatory condition of the pulp quantitatively, while preserving pulpal vitality and the integrity of the tooth. Analysis may allow for the detection of molecules associated with tissue degradation, such as matrix metalloproteinase or markers of cell death, thus allowing for assessment of the degree of inflammation in a pulp.

There have been efforts made to address the downfalls associated with our current system of pulpal diagnostic terminology. A biologically centred classification system for pulpal disease[3] advocates the staged use of VPT. Pulpitis is viewed along a continuum from initial pulpitis, represented by increased response to cold, to severe pulpitis, characterised by spontaneous nocturnal pain. Ricucci *et al.* (2019) have reported that no distinct boundary exists after which the pulp is rendered beyond repair.[25] Therefore, this system recommends minimally invasive, biologic therapies as a first-line treatment. Indirect pulp therapy is advocated when pulpitis is gauged to be in the initial and mild stages. Severe pulpitis could potentially be managed with pulpotomy in place of traditional pulpectomy procedures, although recent research has highlighted that success drops after partial pulpotomy if the symptoms are classed as severe.[26] However, despite some improvements, this and other updated classification systems all suffer from the same problem, which is the lack of a reliable reference standard.[27] With developments being made with pulpal biomarkers, future systems could incorporate one or several of these markers into an objective measure of the condition of the pulp to formulate a diagnosis and subsequently guide treatment.

Conclusion

Although a myriad of pulp diagnostic tests exist, none unfortunately are ideal. Operator use and an understanding of the drawbacks of each test are important to reduce inaccuracies. Despite the recognised limitations of pulpal sensibility tests, recent guidelines have highlighted that they remain a helpful and essential aid in endodontic diagnosis.

With an understanding of the limitations of pulpal sensibility tests, efforts to assess pulpal vitality directly with vitality tests have so far had mixed success. Currently, no such vitality tests are superior in all aspects when compared to sensibility tests.

Promising new objective diagnostic tests should improve the sensitivity and specificity, but more evidence-based research and non-cost-limiting equipment need to be produced. Future research is needed in the field of pulpal diagnostic technology in a bid to reduce inconsistencies, and improve accuracy and reliability.

An understanding of the diagnostic accuracy and relative limitations of pulp testing methods will aid practitioners in accurately diagnosing the degree of pulpitis, thereby facilitating the selection of the most appropriate and effective treatment for dental pulp.

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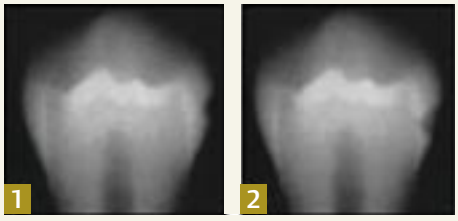
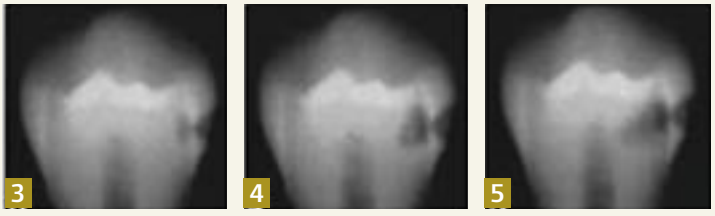
Quiz

Submitted by Dr Cristiane da Mata.

1. A number of studies have assessed the relationship between the radiographic lesion depth and the presence of cavitation. According to them, how likely are the following lesions to be cavitated? Use seldom cavitated, may be cavitated or not, or usually cavitated as your response options.
2. What is the current recommendation for the treatment of lesions 1 and 2?
3. According to a recent consensus on the management of carious lesions, what are the factors that determine intervention thresholds, in addition to cavitation?





Answers on page 44.

Sustainability in dentistry part I: Sustainability and general dental practice – an overview

Learning outcomes

This article aims to assist the reader to:

- identify the contribution of a sustainable approach to mitigating the effects of climate change;
- highlight how a structured approach to sustainability within the dental sphere can provide sustainability, cost and efficiency savings in the short, medium and long term; and,
- provide exemplars of the nature and impact of sustainability interventions in the dental sphere.

Introduction

In 1987, the United Nations Brundtland Commission defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs".[1] Subsequently, the '7 Rs' model for sustainability was developed over time. This model refers to the concepts of Reduce, Reuse, Recycle, Rethink, Repurpose, Repair and Refuse, and provides a useful reference point for developing more sustainable clinical practice. There is a common preconception that increasing the sustainability of healthcare is more expensive. However, many interventions are cost neutral, and many that involve capital expenditure demonstrate a positive return on investment within a short period of time.[2] This paper aims to provide an overview of sustainability from an overall context within healthcare and specifically from a dental perspective.

Healthcare and sustainability

Healthcare is a leading emitter of environmental pollutants, responsible for 9% of common air pollutants in the US[3] and 20% of UK public sector emissions.[4] Hospitals are one of society's most energy-intensive facilities,[2] and this is in addition to healthcare's use of toxic substances such as radioactive materials and drugs. The climate footprint derived from healthcare corresponds to 4.4% of global net emissions of greenhouse gases. If the healthcare sector were considered a country, it would rank as the fifth largest emitter globally.[5] Operating theatres have the largest individual healthcare footprint worldwide,[5] with emissions being greater than those derived from global fishing and agriculture combined.[6]

Healthcare education

Within dentistry, sustainability is a focus for the Association for Dental Education in Europe (ADEE), which is committed to ensuring that education around sustainability is instilled in undergraduate training programmes and that such considerations are at the forefront of daily decision-making among our future colleagues. A survey of undergraduate dental students in the USA found that environmental sustainability was "quite" or "extremely" important to the respondents, but only 5% reported content on sustainability in their curricula.[7] A survey of 735 dental professionals in Ireland found that 69% were interested in dental sustainability.[8] Worldwide, a number of dental associations, including the American and Canadian Dental Associations, have released guidance and position papers on sustainability in dentistry. The British Dental Association and other parties form part of the Dental Sustainability Advisory Group, which has produced an excellent dental sustainability guide.[9] This is a very practical guide, which considers a diverse range of areas in which more sustainable practice can be introduced.

These range from encouraging active travel, to safely disposing of medications, to increasing biodiversity by creating a wildlife-friendly garden. All of these suggestions come with an easily visualised chart showing how easy or hard the changes are to implement, the financial return on investment, and the environmental impact of the change, among other factors. The guide also contains additional links to allow calculation of the financial and carbon savings to the practice.

Dental practice setting

A focused review of the individual practice setting with sustainability in mind is an essential step to instil and support the development of a culture of sustainability throughout the working environment. Training is particularly important so that staff are aware of the 'easy wins' that can be achieved; for example, recycling and double-sided photocopying. Ideally, training should be delivered from within the practice so that staff can take ownership of the process and changes can be embedded within the workplace.

Change and improvement needs to be thought of as a continuous process. There are improvements that can be made at all stages of the patient journey, from how patients and staff arrive at the practice, to how the patient progresses through their treatment.

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Table 1: Suggested sustainability improvements in the dental practice setting.

Area	Suggestions for improvement
Access	Proximity to public transport
	Engage staff in sustainable, health-focused choices, i.e., steps challenge, staff walk to work
	Safe and secure bike storage
	Access to electric car charging points
Building	Optimally insulated doors, windows, floor, roof and walls
	Heat pump technology where appropriate
	Solar photovoltaic panels for renewable energy generation
	Other renewable forms of power where possible, such as wind or geothermal
	Reuse of grey water as appropriate
Internally	Only heat, air condition and provide lighting in those areas in active use, e.g., motion-activated lighting
Bathrooms	Dual-flush toilets
	High-efficiency toilets, using high water velocity rather than volume
	Recycled toilet paper
	Low-flow taps or low-flow aerator in tap to reduce amount of water used
	Energy-efficient method of drying hands
	Fix leaks

Improvements to the practice setting can be thought of in terms of external and internal factors. From an external point of view, improving the energy efficiency of the building has a marked impact on energy requirements, such as through insulation and double-glazed windows. With regard to the source of power, electricity suppliers who use renewable sources only and use of ground source heating or solar photovoltaic panels should be considered.

Provision of secure parking for bicycles on the premises and encouragement of cycle to work schemes assist with more sustainable travel for staff and patients. This is particularly important, as travel and procurement are the largest contributors to the dentally related carbon footprint.[10,11]

Internally, introduction of low-energy LED bulbs and dual flush toilets to reduce energy and water consumption are simple infrastructural changes that could be adopted. Avoidance of heating, cooling or lighting of unoccupied spaces, maintenance of equipment with appropriate regularity, and avoidance of air and water leakages are sensible sustainable practices (**Table 1**).

Reducing waste

Proper segregation of waste is a simple and extremely effective way of reducing costs and increasing sustainability (**Table 2**). The World Health Organisation (WHO) estimates that around 85% of the waste generated by healthcare activity is general, non-hazardous waste, comparable to domestic waste.[12] Use of the incorrect method of waste disposal creates further problems, such as unnecessary incineration. The cost difference between disposal of domestic and clinically contaminated waste has been shown to be almost €1,000 per tonne.[13]

Table 2: Correct waste disposal.

Waste stream	Bag colour	Items	Management
Infectious waste	Yellow bag	Blood- or bodily fluid-stained items	Incineration
Infectious sharps	Yellow bin	Blood- or bodily fluid-contaminated sharp items	Incineration
Non-risk residual waste	Clear bag	Household non-risk, non-recyclable items Non-contaminated gloves, aprons and masks	Landfill
Mixed recycling	Green bag	Mixed dry recycling	Recycled

Single-use equipment

The use of single-use medical devices (SUDs) is widespread. The Covid-19 pandemic has led to a considerable increase in the amount of single-use PPE, with plastic as a principal component. Increased use of PPE is problematic in terms of its production and its disposal, as the former requires sourcing through various environmentally harmful methods and the latter necessitates incineration as clinical waste, thereby contributing to air pollution and the release of potential toxins, such as mercury. Increased use of plastics and PPE is unlikely to reduce in the short term. The development of washable, reusable PPE such as sterilisable facemasks, eye protection and gowns ought to be encouraged where feasible. Other frequently used single-use items such as paper bibs, plastic wells, single-use cups, plastic 3-in-1 tips and impression trays can be replaced with reusable, sterilisable versions. It has been estimated that within a UK primary dental care setting, 14.4 tonnes of plastics are generated annually, but this increases to 27 tonnes if one includes Covid-related PPE.[14]

Oral hygiene

Patients' oral hygiene regimes often offer significant scope to improve overall sustainability in dental practice. The significant environmental problem associated with toothbrush disposal is well documented; nearly every toothbrush ever made since the 1930s is still in existence. Given that surveys suggest that the toothbrush beats the car and computer for inventions that North Americans cannot live without,[15] sustainable toothbrushes are of considerable importance. Various innovations aimed at reducing the environmental impact of toothbrushes are becoming well established, including bamboo toothbrushes and toothbrushes with replaceable heads. A comparative analysis found that plastic toothbrushes with a replaceable head and bamboo toothbrushes have a significantly reduced environmental impact compared to traditional plastic and electric toothbrushes.[16] When considering land use and the consequential reduction in biodiversity and habitat, the negative impact of the electric toothbrush was over 36 times that of the bamboo toothbrush.[16]

Toothpaste manufacturing companies are increasingly committed to designing containers with recycling in mind; Unilever has declared that their full toothpaste range will be fully recyclable by 2025, while Colgate has launched a recyclable toothpaste tube. At present, enough plastic waste from

toothpaste tubes is generated annually to encircle the world twice, with 300 million toothpaste tubes going to landfill on a yearly basis.[17] Dental floss offers various sustainable options, ranging from those made of silk to sustainable interdental brushes.

Reduce travel

Avoiding unnecessary patient travel has a significant impact on carbon emissions. A study assessing English primary dental care demonstrated that two-thirds of carbon emissions relate to travel (patients (31%) and staff (30%)), with the remainder being related to procurement of equipment (19%) and energy usage (15.3%).[10] The significance of travel-related carbon emissions in dentistry is a global phenomenon.

During the Covid-19 pandemic, travel was restricted in many locations globally, resulting in expansion of the use of online consultations and dental monitoring, such as 'Attend Anywhere', 'Dental Monitoring' and 'Dentulu'. These systems can allow virtual appointments and detect when there are problems with treatment, potentially allowing it to progress more smoothly.

Patient records

The use of electronic patient record (EPR) systems reduces the need for paper and plastic, and decreases the physical space required for their storage. An EPR system also integrates well with digital radiography, which significantly reduces the use of chemicals for film processing and single-use lead backing on films. Radiographic images can be more widely shared via electronic methods rather than printing and posting hard copies. An EPR-based approach may also be expanded to include intra-oral scanning rather than the use of impressions for generating working and study models, thus reducing material and storage requirements. In addition, this approach reduces the quantity of gypsum used for such models. Gypsum can have adverse environmental effects if disposed of incorrectly and requires special consideration.[18]

Reducing treatment need

A preventive approach to oral health has a positive environmental impact, as healthier mouths require less restorative intervention with a need for fewer appointments and use of restorative materials. The environmental effect of both amalgam and composite in terms of heavy metal pollution and microplastic release is well recognised. Also, a reduction in the premature loss of primary teeth due to caries may result in less impacted teeth and less crowding, with a consequent reduction in the need for orthodontic intervention and its associated environmental impact in terms of time and materials. However, awareness of the environmental impact of oral healthcare is low among professionals and the public.

By preventing disease occurrence and progression, less treatment is required, and thus fewer materials, travel, clinician and patient time, and re-treatment where necessary. The earlier in the disease process that preventive advice can be given and acted on, the greater its impact; for example, smoking cessation advice rather than a mandibular resection with free flap for an invasive oral cancer, or application of silver diamine fluoride to arrest caries in a deciduous tooth rather than extraction under general anaesthetic for a young child.

Patient ownership and treatment factors

Active patient involvement in and ownership of their treatment enhances the sustainability of active dental treatment, for example by leading to fewer wasted appointments when patients fail to attend.[19] This can be enhanced by the use of techniques such as electronic appointment reminders, shared decision-making, patient engagement, and addressing health behaviour change. Clinical research and systematic reviews, which demonstrate recall intervals and treatment efficiency and predictability, are beneficial. The practice of evidence-based dentistry, with more predictable outcomes, can potentially reduce the need for multiple appointments and interventions. The use of treatment protocols may further enhance these benefits, through standardisation of treatment approach and supporting the use of more sustainable procurement methods.

Conclusions

There are many actions that may be taken to improve the sustainability of dental practice. A clinician may feel overwhelmed by the magnitude of the environmental impact posed by dentistry and be unaware of their potential ability to improve sustainability. A structured approach using the ideas contained within this article and guided by the 7 Rs may help to break this down into a more manageable series of plans. While individuals may have a commitment to sustainable practice at home, this may not transfer to their workplace and professional duties. A conscious effort to translate home behaviours to work is necessary. Many changes discussed here are easy to attain and accrue a considerable impact over a working career. The overall goal is to normalise a sustainable approach, creating an environment where both clinical staff and patients are mindful of the need for sustainability in their actions. This applies to types of treatments as well as to how they are provided.

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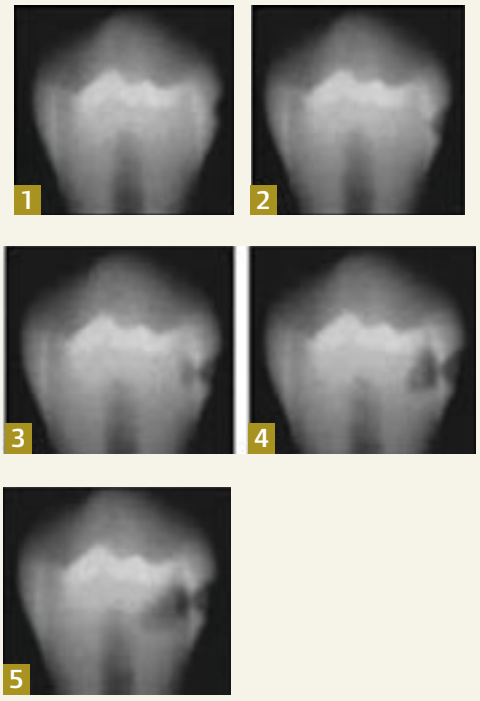
Quiz answers

Questions on page 40.

Question 1

1. Seldom cavitated.
2. Seldom cavitated.
3. May be cavitated or not.
4. Usually cavitated.
5. Usually cavitated.



Question 2

Oral hygiene instructions, especially regarding flossing and diet advice. May consider fluoride varnish

Question 3

1. Lesion activity. Active lesions must be managed either non-invasively (using oral health instruction, fluoride varnish, or dietary advice), or surgically with restorations; inactive or arrested lesions are like scars and do not need to be treated unless aesthetics or function are of concern).
2. Cleansability of the lesion. Cleansable lesions may be remineralised by changing the patient's behaviours (oral hygiene, fluoride, diet); non-cleansable lesions are unlikely to become inactive.
3. Caries risk.
4. Age.
5. Dentition (permanent versus primary).

Cleaning methods of contaminated zirconia: a systematic review and meta-analysis

Thammajaruk P, Guazzato M, Naorungroj S.

Objectives: The aims of this study were to systematically review the literature and statistically analyse the effectiveness of different cleaning methods on the bond strength of resin cement to zirconia in short- and long-term ageing conditions.
Data/sources: The literature was electronically searched in the PubMed (MEDLINE), Embase, Wiley, Scopus, and Open Access Theses and Dissertations databases to select relevant articles that evaluated the bond strength between contaminated zirconia and resin cements. A manual search was performed by scanning the reference lists of included studies.
Study selection: All articles were published online before April 2022 and were in English. Meta-analyses were conducted using random effects models to calculate standardised mean differences (SMD) between uncontaminated zirconia and various cleaning methods in two ageing conditions (short and long term). Statistical heterogeneity was assessed using I-square statistics. The risk of bias of all included studies was assessed. All statistical analyses were conducted using Stata (StataCorp; College Station, Texas).
Results: Of the 1,181 studies, 25 met the inclusion criteria for qualitative analyses. In short-term ageing conditions, cleaning contaminated zirconia with water, alcohol, or acid etching reported significantly lower bond strength than uncontaminated zirconia. For long-term ageing conditions, cleaning contaminated zirconia with water, cleaning agents, alcohol, or acid etching reported significantly lower bond strength than uncontaminated zirconia. Aluminium air-abrasion or cleaning with sodium hypochlorite were comparable to uncontaminated zirconia for both short- and long-term ageing conditions.
Conclusions: This meta-analysis appeared to indicate that the cleaning methods of contaminated zirconia restoration have an effect on zirconia bonding.

Dent Mater. 2023;39(3):235-245.

Dental caries in children with attention deficit/hyperactivity disorder: a meta-analysis

Drumond VZ, Souza GLN, Pereira MJC, Mesquita RA, Amin M, Abreu LG.

Objectives: The aim of the study was to evaluate whether children with attention deficit/hyperactivity disorder (ADHD) are more affected by dental caries than children without ADHD by means of a systematic review and meta-analysis.
Design: Electronic searches were performed in four databases (PubMed, Embase, Scopus, and Web of Science) in July 2021. A grey literature search in OpenGrey, a search in Google Scholar, and searches in the reference list of included articles were also conducted. The eligibility criteria were observational studies in which children with ADHD were compared with children without ADHD with respect to dental caries. Study selection, data extraction, and risk of bias assessment, applying the Joanna Briggs tool, were performed by two reviewers independently. Meta-analysis and assessment of heterogeneity among studies were conducted with the meta-package of RStudio using the R programming language (R Core Team; Vienna, Austria). Results of meta-analysis were provided in mean difference (MD), odds ratio (OR), and confidence intervals (CIs). For assessment of heterogeneity, Baujat plot and influence analysis plot were obtained.
Results: Thirteen studies were included and 10 were incorporated into meta-analyses. The meta-analysis showed that children with ADHD had a higher decayed, missing, and filled teeth (DMFT) index than their peers without ADHD (I2 = 42%; MD = 0.75 [0.38-1.13]). For decayed, missing, and filled surfaces (I2 = 0; MD = 0.39 [-0.02 to 0.80]) and decayed surfaces (ds) (I2 = 0%; MD = 0.35 [-0.63 to 1.33]), no difference between groups was observed. In addition, children with ADHD had higher odds of having dental caries than their healthy peers (OR = 3.31 [1.25, 8.73]; I2 = 0%). After assessment of heterogeneity among studies, sensitivity analysis was conducted for DMFT. One study was removed and the significant difference between groups remained. Children with ADHD had a significantly higher DMFT index than their peers without ADHD (MD = 0.98 [CI = 0.75, 1.20]; I2 = 0%). Risk of bias ranged from low to high.
Conclusion: The main shortcoming of the included studies is the high risk of bias regarding the strategies to deal with confounding factors. Within its limitations, this systematic review and meta-analysis demonstrated that children with ADHD were more likely to develop dental caries than their healthy counterparts.

Caries Res. 2022;56(1):3-14.

Associations between sleep bruxism and other sleep-related disorders in adults: a systematic review

Objective: Systematic reviews on sleep bruxism (SB) as a comorbid condition of other sleep-related disorders are lacking. Such reviews would contribute to the insight of sleep clinicians into the occurrence of SB in patients with other sleep-related disorders, and into the underlying mechanisms of such comorbid associations. This systematic review aimed: 1. to determine the prevalence of SB in adults with other sleep-related disorders; and, 2. to determine the associations between SB and other sleep-related disorders, and to explain the underlying mechanisms of these associations.
Methods: A systematic search on SB and sleep-related disorders was performed in PubMed, Embase, Cochrane Library, and Web of Science to identify eligible studies published until May 15, 2020. Quality assessment was performed using the Risk of Bias Assessment tool for Non-randomised Studies.
Results: Of the 1,539 unique retrieved studies, 37 articles were included in this systematic review. The prevalence of SB in adult patients with obstructive sleep apnoea, restless leg syndrome, periodic limb movement during sleep, sleep-related gastroesophageal reflux disease, REM behaviour disorder (RBD), and sleep-related epilepsy was higher than that in the general population. The specific mechanisms behind these positive associations could not be identified.
Conclusions: SB is more prevalent in patients with the previously mentioned disorders than in the general population. Sleep arousal may be a common factor with which all the identified disorders are associated, except RBD and Parkinson's disease. The associations between SB and these identified sleep-related disorders call for more SB screening in patients with the abovementioned sleep-related disorders.

Sleep Med. 2022;89:31-47.

SITUATIONS WANTED

Locum dentist available. Highly experienced, Trinity graduated. Private practice for last 20 years. Skilled in all aspects of general dentistry. Lot of experience with digital dentistry (CEREC and iTero). Affable and friendly. Would ideally like Dublin-based work. Contact: paulodonnell81@icloud.com.

SITUATIONS VACANT

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Galway City practice seeks associate dentist. Full/part-time, experience preferred. Modern, digital environment. Flexible days. CV to eilis.ohagan@galwaydentists.ie.

Dental associates required – south Dublin practices. Full- and part-time available. Excellent terms and support. Three years' experience and IDC registration required. Email tom@midentalcare.ie.

Dental associate required in Newbridge. Flexible hours available in private well-established clinic. Be part of a great multidisciplinary team focusing on general dentistry, orthodontics and implants. Excellent backroom support. Cerec, in-house laboratory, digital scanner, CBCT. Contact southeastdental46@gmail.com.

Lucan dental surgery seeks part-time associate/locum associate. Please send CV to oconnellb67@gmail.com.

Associate full- or part-time, Ratoath Dental, 30 minutes from Dublin City. New year start. Fully private, superb equipment and staff. Rare opportunity to join this excellent practice. Amazing earning potential. Fluent English. Three years' experience. CV and references required. Contact Conor.Irwin@ratoathdental.ie.

Cork (Midleton). Unique opportunity for experienced dentist replacing departing colleague. Mainly private/PRSI. Self-employed associate position, five days a week including Saturday mornings. Excellent earning (50% split). Exact software, digital X-rays/OPG. Email CV to npdent22@gmail.com.

Part-time with possibility of full-time associate dentist position available for fully private dental practice located in Dublin 3. Fully computerised, OPG, CBCT, IO scanner, possibility of mentorship. In-house specialists. Contact dentaldublin@mail.com.

Ennis, Co. Clare. Associate for busy practice required. Great work–life balance. Great staff, happy environment. Exciting time to join an expanding clinic. Great opportunity. Excellent remuneration, experience preferred. Please reply to mahonydentalltd@gmail.com.

Dublin 10 – Full-time associate required for New Year. Busy two-surgery mixed practice. High earning potential, easy going, well equipped. The right candidate will do very well here. Non corporate. Reply to sbarnes@ballyfermotdental.ie.

Dublin city centre – Associate required two days per week. Practice private/PRSI, excellent support staff. Exact, OPG, minimum three years' experience. Please email CV to marycreddy@gmail.com.

Associate dentist position available in Dublin 9. Private/PRSI. Friendly working environment. Must be IDC registered. Immediate start possible. Reply with CV to dublinsmilecenter@gmail.com.

Associate dentist required to join private and PRSI practice in Limerick city centre. Experience essential. P position. Own surgery. Modern equipment. Apply with CV to jacqueline.obrien89@gmail.com.

Boyne Dental Dunshaughlin. Seeking skilled associate dentist. State-of-the-art facility, supportive team, and thriving patient base. Experience excellence in dentistry. Apply with CV to andrew@boynedental.ie.

Flexible part-time dental associate position available in Dublin. Excellent remuneration in fully private practice. State-of-the-art equipment, digital technology including 3Shape scanner, digital X-rays and Exact software. Friendly, experienced support staff. Mentoring available if needed. Contact northdublindentalassociate@gmail.com.

Associate dentist position available in Wexford Town. Full-time or part-time commitments are possible. Excellent earning potential, keep 50% of gross income. Must be IDC registered. Three to four years' experience as a general dentist. Contact info@primedental.ie.

SW Dublin beside M50. Full-time associate to replace departing colleague. Part-time also available. Extremely busy community-based practice with longstanding friendly support staff – great earning potential! Excellent remuneration 50%. Apply to Wendy at wmunroe@eircom.net.

Experienced dental associate required Waterford City. Full-time position available in private-only clinic. Special interest welcomed. Excellent backroom support. Visiting periodontist, orthodontist, oral surgeon. Implantology, digital scanner, CBCT. Please send CV to bpm.gmedical@gmail.com.

Associate position SW Dublin. Full- or part-time options. Long-established, busy family practice. Private/PRSI. Digital X-ray, OPG, scanner. Orthodontist, hygienist. Mentorship available for suitable candidate. Please reply with CV to tullyhouse@gmail.com.

Part-time associate dentist required as start, possibility for full-time position in modern, fully computerised practice with great support staff in Westmeath. Contact sysakroman@gmail.com.

Galway. Associate required to replace departing colleague for busy, modern, computerised practice in Co. Galway. Please reply with CV to loughreadentalassociate@gmail.com.

Associate dentist, Dun Laoghaire – Smiles Dental opportunity available for a full- or part-time dentist to join an experienced team. Great earning potential, established patient list and clinical support. Based in a modern, purpose-built building. Contact Linda.foster2@bupadentalcare.co.uk.

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Classified advertisements are accepted via the IDA website – www.dentist.ie – only, and must be pre-paid. The deadline for receipt of advertisements for inclusion in the next edition is **Friday, March 8, 2024**. Classified ads placed in the *Journal* are also published on www.dentist.ie for 12 weeks. **Please note that all prices are inclusive of VAT.**

Advert size	Members	Non-members
up to 25 words	€135.30	€270.60
26 to 40 words	€161.70	€330.65

The maximum number of words for classified ads is 40.
If the advert exceeds 40 words, then please contact:
Think Media, The Malthouse, 537 North Circular Road, Dublin 1.
Tel: 01-856 1166 Fax: 01-856 1169 Email: paul@thinkmedia.ie
Please note that all classified adverts MUST come under one of the following headings:

- Situations wanted
- Situations vacant
- Practices for sale/to let
- Practices wanted
- Equipment for sale/to let

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

Associate Dentist, Bray – We are looking for a dedicated associate dentist to join us in our well-established Smiles Dental practice in Bray. Full- and part-time hours considered. Contact Linda.foster2@bupadentalcare.co.uk.

Part-time associate dentist required for a busy, modern and friendly practice in the heart of Stoneybatter. Great patients, great team, great location. Private and PRSI only. Contact onemanorplace@gmail.com.

40 minutes north of Dublin. Part-time associate required for extremely busy three-surgery general practice. Modern equipment including iTero scanner, Aquacare, digital X-rays, etc. Excellent opportunity for the right candidate to join our long-established team. Contact Elizabethjohnston28@yahoo.co.uk.

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Part-time general dentist. Opportunity for career and skill development. State-of-the-art equipment. Focus on digital dentistry. Newly refurbished building. Multidisciplinary practice including routine dental, dental implants, orthodontics, hygienists and facial aesthetics. CV to monique@kinsaledental.ie.

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Dentist required. South Dublin practice. Very busy. Private. iTero, OPG. Candidate must have an orthodontic specialisation and interest in Invisalign. Wonderful support staff. Contact dublindentistblackrock@gmail.com.

We are recruiting experienced general dentists for our multidisciplinary clinics located in Limerick, Roscrea and Blackrock. Join our partnership and work in busy, modern clinics with strong support teams, with opportunities to enhance your skills and broaden your experience. Contact jobs@shieldsdentalclinic.ie.

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Full-time dentist required to join our team in a longstanding, modern, busy practice in Dublin 22. Full book. Experienced staff. Great work environment. Please send CV to practicemanager221@gmail.com.

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Dental Care Ireland Ennis – part-time, flexible options within our modern, established practice. Full patient book on offer, high earnings. Clinical team in place is experienced and friendly. Private/PRSI only practice. IDC registration essential. Contact careers@dentalcareireland.ie.

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Locum dentist required to cover maternity leave from May to December with potential for long-term position. Very busy private book. Modern, progressive practice with excellent support staff, located only 30 minutes from Dublin. Contact wicklowdentist@hotmail.com.

Specialist/limited practice

Orthodontist required. Established south Dublin orthodontic practice. Very busy. Private. Fully digital, iTero, OPG. €250,000 pre-tax take home. Flexible days/hours. Two fully equipped rooms at your disposal. Experienced general dentist also on site. Excellent location. Contact dublindentistblackrock@gmail.com.

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Sessions available in our popular specialist dental clinic in Swords. Great facilities, friendly staff. Ideal for facial aestheticians, specialists or dentists with a special interest (DWSI). Contact northdublinassociate@gmail.com.

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Dental hygienist position available, Gorey, Wexford. Two to three days. Hours flexible. No late nights. No weekends. Newly refurbished surgery. Full support staff. Nurse if needed. Digital X-rays. Coincidental software. Email info@thebridgedentalsurgery.ie.

Dental hygienist required one to two days in established practice, Mallow, Co. Cork. Modern facilities with experienced and supportive staff. Negotiable days and pay. Contact suzannecurran@aol.com.

Galway. Hygienist required for busy modern practice in Galway. Please reply with CV to loughreadentalassociate@gmail.com.

Hygienist required for one or two days per week at Phoenix Dental. Flexible hours, Cavitron, parking. Friendly practice. Please email CV to drrhannon@hotmail.com.

Full-time hygienist wanted for busy, modern dental practice in Galway. Fully computerised, newly renovated practice. Contact office@renmoredental.ie.

Wanted – part-time hygienist for maternity cover at Clonakilty Dental Centre. From March/April, 8-12 hours per week. Contact sjhennessy10@gmail.com.

Dental nurses/receptionists/managers

Dental Care Ireland Dundrum – our established, modern practice has an opportunity for a full-time dental nurse with minimum two years' experience. Full induction provided working alongside our friendly and experienced team. Eligible to work in Ireland essential. Contact careers@dentalcareireland.ie.

Dental Care Ireland Cabinteely – immediate opportunity for a dental nurse/receptionist to join our established modern practice part time, 25 hours, Monday, Thursday, and Friday. Dental nursing qualification and three years' experience required. Eligible to work in Ireland essential. Contact careers@dentalcareireland.ie.

Dental nurse required to cover maternity leave for busy implant and endodontic practice in Dublin 15 area. An organised, friendly, positive attitude, good communication skills and computer knowledge is essential. Contact Bdunne359@gmail.com.

Position available full-time in single surgery practice for nurse/receptionist to replace departing colleague. Starting January 2024. At least two years' experience required. Contact cathalodonoghue@icloud.com.

Dental nurse position available in award-winning dental practice in north Dublin. Opportunity for career development working with specialists in a modern, fully digital practice. Opportunities to grow into a senior role within the practice. In-house training provided. Contact northdublindentalassociate@gmail.com.

We are looking for a qualified dental nurse (part-time and full-time position) at Dunboyne Orthodontics. Please email CV to dunboyneorthodontics@gmail.com or call 01-825 5682.

Busy dental practice, Charleville, Cork, requires dental nurse for maternity cover, starting March 3, 2024. An enthusiastic, friendly person with a positive attitude is required to join our team. Experience not essential. Four days per week. No weekends or late evenings. Contact ncdreception2@gmail.com.

Full/part-time dental nurse position available in state-of-the-art modern and fully digital private practice. Great opportunity to work alongside a specialist, one general dentist and two hygienists. Email your CV to info@naasdental.ie.

Specialist orthodontic clinic in Blackrock looking for a qualified dental nurse with an interest in orthodontics. Experience preferred but not essential. Monday-Thursday. Contact info@newparkclinic.com.

PRACTICES FOR SALE/TO LET

North Dublin: city centre c. 8km – high-profile location, excellent footfall and passing trade. Extremely busy two-surgery practice with room to expand. Nil medical card. Good support staff. Computerised. Area wide open for development of services, including hygienist. Contact niall@innovativedental.com.

Galway City: prime orthodontic practice. Long established. Excellent location/top-class facilities. Modern equipment including scanner. Three surgeries. Very experienced loyal staff/orthodontic therapist. Low overheads/excellent profits. Growth potential high, as very busy. Transition period negotiable. Contact niall@innovativedental.com.

Dublin south west: Very busy three-surgery, community-based practice with strong loyalty: 30 years at same excellent location. Expanding area. Knowledgeable supportive staff. Strong new patient numbers. Ample parking both on site and close by. Low overheads. Transition period available. Contact niall@innovativedental.com.

Three-surgery general practice for sale in Westmeath. Option to purchase building freehold in September 2024. Contact anne@familydentist.ie.

Busy, long-established practice for sale in Castlebar town centre. At present single handed, but extensive patient list with potential to expand. Private/PRSI. Principal retiring. Contact dentalpracticecastlebar@gmail.com.

Practice for sale – Wexford Town: centrally located, principal retiring. A unique opportunity to acquire a four-storey building comprising ground floor practice and three-storey residence above. Fully equipped, private list, loyal patient base, wide open for expansion. Enquiries to 053-912 0968.

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Focus on the future

In the first of a new series on IDA committees, Dr Will Rymer, Chair of the GP Committee, talks about that Committee's work and aspirations.

The GP Committee of the IDA works to represent the interests of the general dental practitioners (GDPs) who currently make up approximately 75% of the Association's membership. The Committee meets five or six times a year, with most meetings taking place online. Members are drawn from the IDA's regional groups, and the Committee can also co-opt additional members.

Committee Chair Dr Will Rymer (left), himself a GDP in Roscrea, Co. Tipperary, says that traditionally the Committee might have been seen as predominantly for older dentists and practice owners, but that's a perception they are keen to change: "Around 75-80% of dental graduates are female, so there's a greater move towards trying to get women involved in the group and we're now at 54% female representation. We're also trying to get younger dentists involved, associates as well as practice owners, so a third of our representatives are associates".

This focus on diversity is important, both to get an accurate view of day-to-day dentistry on the ground, and also to involve younger dentists in decisions that will undoubtedly affect their future, such as negotiations on the national oral health policy, or the State schemes: "They may feel they don't have enough experience to talk about the medical card or the PRSI scheme, but they bring a unique view to the table. The last time the medical card scheme was negotiated was about 30 years ago, so whatever we end up with, the likelihood is we're going to be stuck with it for 30 years or more. It's really important that the negotiating teams are able to bring those talks back to the GP group, use them as a sounding board and get a feel for the reality of dentistry in 2024".

It's about supporting those dentists too: "We need a really broad spectrum of people on the committee and within the mentoring scheme in the IDA to offer that value to members".

Contract negotiations are important, but Will says they take less prominence at GP meetings than heretofore, as more and more dentists no longer have State contracts. Dentists have gotten used to doing dentistry differently, and have other issues of concern, which feed into the Committee's discussions and priorities: "We talk about issues that dentists have in their practice, like cost of living issues for patients, or increasing costs for running a dental practice. We had a really interesting conversation recently about dentists on maternity leave. How can the Association best help dentists in that situation?"

Those issues also include the recruitment crisis in the profession. Will mentions the Committee's work on lobbying for more capacity in dental training, the recognition of dental specialties, and mandatory CPD, all of which will improve the profession overall, and lead to retention of dentists in Ireland. Support for rural dentists, such as exists in other countries, is also a suggestion. One thing is certain, the Committee is not resting on its laurels: "If we sit around waiting for the Government to sort out our profession, we're going to be waiting a very long time".

Meet the members

Two members of the GP Committee tell us why they got involved.

Dr Rebecca Hogan Doyle

Rebecca graduated in 2014 and works as an associate in OC Dental, Gorey, Co. Wexford.

"2014 was the first year when Irish dental school graduates were no longer able to avail of the Vocational Training Programme in the UK. This meant that you were thrown in the deep end when you graduated – training wheels fully off and fear of litigation in overdrive. I would like, therefore, to be involved in supporting new graduates at the start of their dental career journeys. I want to be proactive and feel a responsibility to work on issues that concern the profession and our patients, rather than just sit on the sidelines. Joining the GP Committee felt like getting involved in the game.

Lastly, it was my colleague – who was herself already on the Committee – who encouraged me to join. This highlights the importance of always having mentors in our careers. I do not believe there ever comes a stage in your career when you should not seek out mentors and seek to mentor others yourself."

Dr Sarah Edgar

Sarah graduated in 2003 and is an associate dentist in Buncrana, Co. Donegal.

"I joined the GP committee to become more informed about the strategy and delivery of both public and private dental services in Ireland. As a rural dentist 'at the coal face' delivering general dentistry, and now definitely in the minority still providing GMS dentistry, I want to ensure that the needs and voices of our patients are heard and catered for in the roll-out of a national oral health strategy."

Get involved

A full list of GP Committee members can be found at:
https://bit.ly/ManagementCommittee2

Will says there are places available on the Committee, and they're always looking for new members. If you'd like to get involved, or wish to contact a member of the Committee, please email oralhealth@irishdentalassoc.ie with the name of the intended recipient included in the subject bar.

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Prof. Gerry McKenna
BDA NI Branch President 2024

A restorative theme

New President of the NI Branch of the BDA, Prof. Gerry McKenna, outlines a busy year ahead.

Having just celebrated the 100-year anniversary of the Northern Ireland Branch, it is a great honour for me to be President as we enter our second century. Although I grew up on the north coast, I studied dentistry in Newcastle before completing my PhD and specialist training in restorative dentistry in University College Cork. I returned home in 2014 to take up a clinical academic post in Queen's University Belfast and immediately became involved with the BDA Northern Ireland Branch. I chaired the Northern Ireland Hospitals Group and sat on NI Council for many years, as well as acting as a member of BDA central committees, including Health and Science. I am incredibly grateful for the opportunity that the BDA Northern Ireland Branch gave me to get to know so many of my colleagues across all aspects of dentistry and I hope to continue this during the next year.

I am delighted to have been able to call on so many friends to deliver the 2024 lecture programme. The overall theme is 'Practical Restorative Dentistry', which I hope will appeal to everyone working in practice, the community dental service and also the hospital service. All of the speakers are active clinicians, and I am delighted that they have agreed to share their insights into their own specialist areas, including caries management, fixed and removable prosthodontics, endodontics, and management of anxious patients.

New venue

I am sure that it will not go unnoticed that I have changed the venue for the lectures this year. One of my main aspirations is that my presidential year will serve as an opportunity to foster closer relationships between the BDA and the Centre for Dentistry at Queen's University Belfast. I have deliberately chosen Riddell Hall as our venue as it is a beautiful building within the university campus, and I hope this will encourage our dental students to play a full part in the BDA Northern Ireland Branch by attending our lecture and social programmes. As our future BDA Northern Ireland members and colleagues, I hope everyone will join me in making them feel very welcome.

Although I cannot match the glitz and glamour of our recent centenary ball, I think we have another excellent social programme to look forward to in 2024. I hope that everyone will enjoy these events and take the opportunity to engage socially with the BDA family.

Highlights

I would like to thank everyone who has contributed to this Branch programme including the BDA Northern Ireland Office, members of Branch Council and our generous sponsors. I look forward to seeing all of you at our events throughout 2024. Certainly, we have a really busy programme and let me briefly take you through some of the highlights.

"We have another excellent social programme to look forward to in 2024."

On February 28, we host a Community Dental Services Day in the Dunadry Hotel. The following day back at Queen's we have presentations on 'Rethinking caries management' by Prof. Avi Banerjee and Dr Ciaran Moore.

On March 21, Drs Conor McLister and Simon Kingston present a CPD event on 'Increasing predictability with fixed prosthodontics', while there is a terrific social event on Saturday, April 13, when we undertake a Belfast Food Tour.

We face our friends and colleagues in the Irish Dental Association in the annual Lyttle Cup Golf Match at the marvellous Royal Portrush Golf Club on April 19, and for those who wish to visit Kerry, the IDA's Annual Conference takes place in Killarney over the following Thursday to Saturday, April 25-27. This year it is in conjunction with the American Association for Fixed Prosthodontics. To round out a busy month, Prof. Hal Duncan and Dr Graham Quilligan will present a CPD event on 'Evidence-based endodontics' on Tuesday, April 30.

The British Dental Conference and Dentistry Show is being staged at the NEC in Birmingham on Friday and Saturday, May 17-18. Our golfers always enjoy their Captain's Day outing in mid June and this year it will take place at Royal Belfast Golf Club on Friday, June 14.

Summer holidays then take over until we reconvene in September when myself and Prof. Murali Srinivasan team up to present a CPD event on 'Removable prosthodontics – conventional vs digital' on Tuesday, September 17.

Drs Niall Neeson and Adele Cunningham present a CPD event on 'Managing complex patients' on Tuesday, October 22, while there are social/dining events taking place on November 8 and 16. Prior to that, the Hospital Dental Services multi-topic Study Day is scheduled for Monday, November 4.

We follow that on November 19 with our Branch AGM, which takes place in tandem with a CPD event on 'Multidisciplinary care in hypodontia' presented by Drs Paul Murphy and Martina Hayes.