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Journal of the Irish Dental Association
Iris Cumainn Déadach na hÉireann

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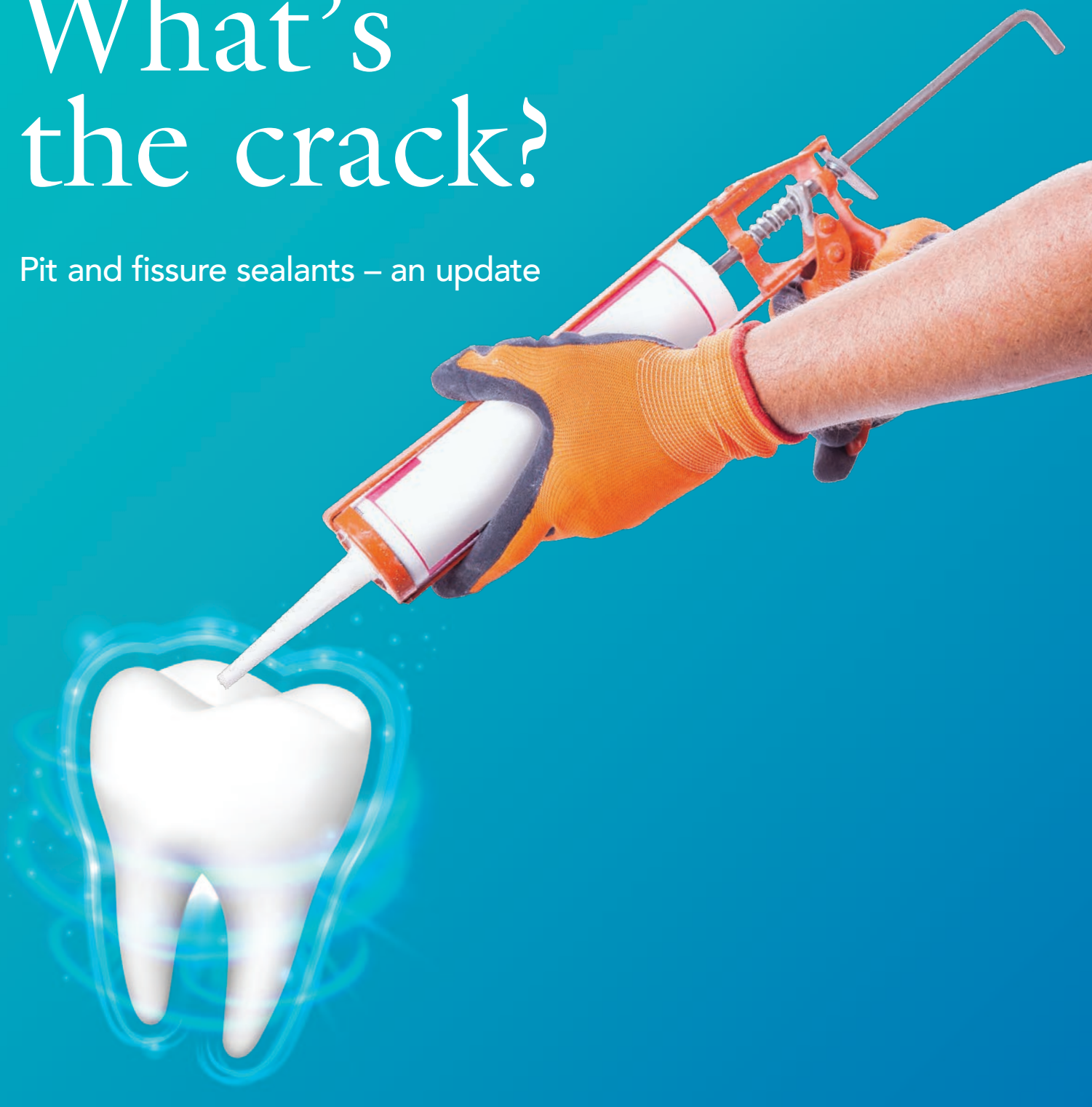
What's the crack?

Pit and fissure sealants – an update



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1. Araujo M W B et al. Meta-analysis of the effect of an essential-oil containing mouth rinse on gingivitis and plaque. JADA 2015; 146:610-622

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MANAGING EDITOR **Ann-Marie Hardiman** ann-marie@thinkmedia.ie
EDITORIAL **Colm Quinn** colm@thinkmedia.ie
ADVERTISING **Paul O'Grady** paul@thinkmedia.ie
DESIGN/LAYOUT **Tony Byrne, Tom Cullen, Niamh Short**

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Irish Dental Association Unit 2 Leopardstown Office Park, Sandyford, Dublin 18.
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EDITORIAL

Dr Ciara Scott
Honorary Editor

Feeling the burn

As dental teams come to terms with the demands of practice in a post-Covid-19 environment, protecting against the factors that can lead to burnout is more important than ever.

There has been a growing interest in the prevalence of burnout in healthcare professionals and the pandemic has amplified this concern. In the past, burnout has been considered in terms of the individual response to workplace stress and personal resilience. Sonja Wallbank is a clinical psychologist and Head of Culture Transformation for the NHS. Her recent work has identified that burnout is not just related to individual factors, but highly correlated to the dynamic within a healthcare team.[1] Workplace culture can influence the risk of burnout of the individual and the team. When an individual is suffering from burnout, they will typically blame themselves for not coping. Workplace wellness strategies can offer individuals support, but fail if they do not address the broader workplace issues that lead to burnout. Setting good boundaries around how we manage challenges and value and support each other can protect healthcare teams from burnout.

In Ireland, researchers have identified that an organisation's ability to be proactive and innovative in developing new possibilities also influences the risk of individual and team burnout.[2] This is particularly relevant as we manage new challenges and change. Researchers in Dublin City University are investigating workplace culture in healthcare teams in Ireland, and on page 66 you can read more about how to participate in this research to broaden our understanding of workplace culture in dental teams.

Practical guidance and the move online

In our practice management section, Raj Rattan offers some advice on managing patients' expectations and establishing a zone of tolerance as we modify our practice to meet new demands.

The members' section of this issue discusses the widening cracks in our public dental services, with reduced access for children and adults, and the challenges that private practitioners have faced over the last year. Smile agus Sláinte emphasised the benefits of proactive prevention strategies as well as reactive spending to manage disease. In this issue, Deirdre O'Neill and her co-authors offer an excellent and comprehensive update on the evidence for pit and fissure sealants in the reduction of caries risk and offer some practical guidance for clinicians. In our second peer-reviewed article, Harriet Byrne and colleagues describe a case report of a patient whose initial presentation of gingival hyperplasia and hypertrophy was later diagnosed as acute myeloid leukaemia, and provide an overview of this condition for dental practitioners. Our clinical feature is the final case study in our periodontal series on utilisation of the new classification by Cristiane da Mata and her co-authors from University College Cork. I thank all our authors for their valued contributions to this issue.

The IDA Conference will be a virtual affair this year and I thank Jeanette MacLean for her interview in this issue. This offers us a preview of her expertise in minimally invasive techniques in children and innovative developments in the aesthetic management of enamel defects, and I look forward to her presentation on Saturday, April 17. So much work goes on behind the scenes at the Association to develop and deliver the virtual events and webinars, and credit must go to Clodagh McAllister, Elaine Hughes and all the Conference committee. Maurice Fitzgerald has been instrumental in supporting IDA CPD to move online and I am delighted that he has shared more about his work on behalf of members in this issue.

Many thanks to all our contributors, advertisers, publishers and editorial board for their continued hard work in creating each issue.

References

1. **Wallbank, S.** Features of a patient safety culture. Available from: https://improvement.nhs.uk/resources/features-patient-safety-culture/.
2. **Kearney, C., Dunne, P., Wales, W.J.** Entrepreneurial orientation and burnout among healthcare professionals. *Journal of Health Organization and Management* 2020. E-pub ahead of print.

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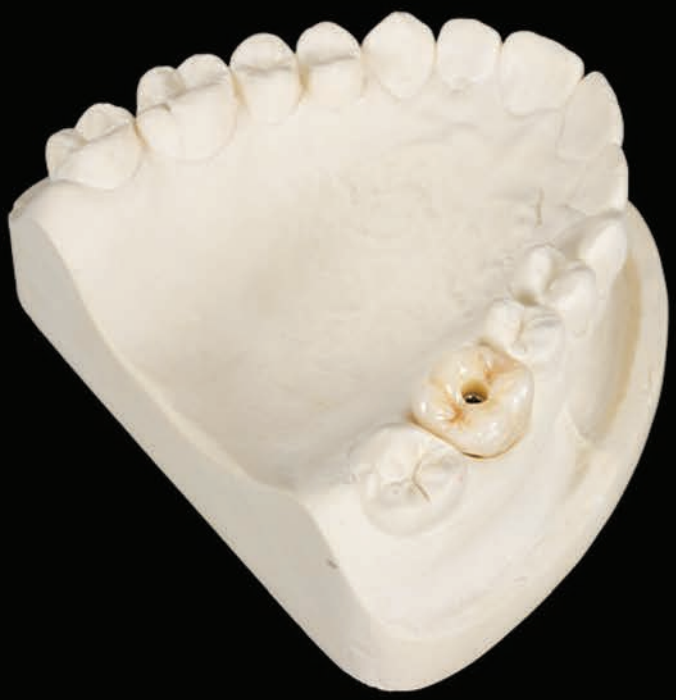

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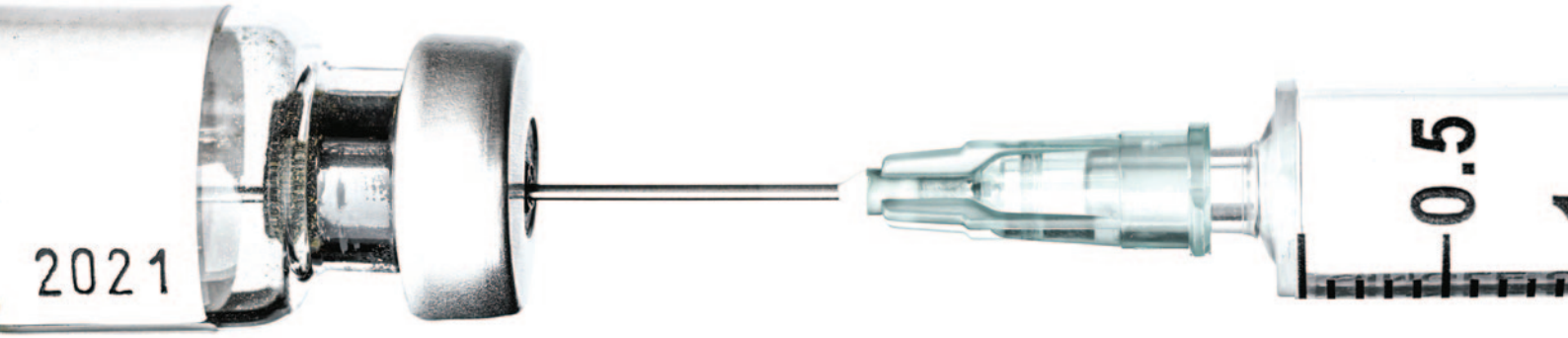
Dr Anne O'Neill
IDA President

Turning challenge into opportunity

As we reach the first anniversary of the declaration of a pandemic, we must reflect on the changes to dentistry, and which of these will, and should, be with us in the long term.



At this time of year we mark the return of the longer days through the changing of the clocks. This year, March also marked the anniversary of the declaration of the Covid-19 pandemic. It has been one of the most challenging years for anyone employed in patient care. And yet, when we review the past 12 months, we can appreciate how much we have learned about the virus that prompted so much change. The declaration of pandemic and the need to implement transmission-based precautions has forced us to rethink nearly every detail of how we provide care within the profession.

The pandemic has thrown a spotlight on many assumptions and presumptions about patient care across the entire healthcare industry, and dentistry was no exception. As clinicians, we rapidly adapted to meet the needs of patients, updating our infection control processes and workflows to be able to continue clinical care. As an Association, we turned to technology to enable our communications – all of which allowed us to keep moving at a much altered pace.

Where to now?

However, as the vaccination programme rolls through its turbulent journey, we now need to consider which, if any, of the new practices can be safely retired and which offer us long-term opportunities. This year's Annual Scientific Conference is a perfect example of the potential opportunities that we might never have accessed without the prompt of pandemic. A line-up of speakers who might not have considered travelling to our corner of the planet, or whose costs were beyond our grasp, are now available to us on our first digital conference. It will sow the seed for future opportunities – hybrid events may give us the perfect blend of social contact and worldwide speaker content.

Not every pandemic prompt has been an opportunity realised. When the prioritisation lists for vaccinations were published, it became apparent that despite being a registration-based profession, no methodology was in place to enable direct contact with all dentists to invite them to register. The IDA CEO spent many hours over many days in contact with the Chief Clinical Officer and the Vaccination Lead of the HSE liaising on behalf of our members. Contact was made with key personnel in each HSE area to create communication pathways to enable IDA dentists to access vaccinations for themselves and their staff. Despite the ready availability of communications platforms – phone, email, text, web messaging, encrypted messaging applications, traditional post – there is no clear responsibility or pathway within the entire oral health system structures to undertake a clear message to all registered practitioners in a time of pandemic. Dentistry is not alone in this difficulty: the same is true of other registered professions. I would suggest that such a pathway has been a victim of the outdated Dentists Act, which is due for renewal through new legislation, long promised and not yet delivered as it is linked to the oral health policy.

The value of IDA membership

Now is the time for all within the oral health system to review what we have learned over the past 12 months, and identify the innovations that enable a lean system of communications, those that we should retain within an updated oral healthcare environment. I believe that members relied heavily on the IDA to provide support, information, solutions and communications on a diverse range of topics, many of which were outside the dentistry objectives of the Association. Membership of the professional representative association gave its members access to information that the wider oral health system was unable to communicate. We need dentists to see the value of membership – not just for access to continuing education topics but to provide a communications and support network and access to key stakeholders within the oral health industry. That value was clearly visible and I hope valued during the recent struggle to create a vaccination schedule. Dentists voiced their individual need to influence their own destiny, which was enabled by their membership of the IDA – the representative organisation for dentists in the Irish oral healthcare system.

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The Sustainability in Dentistry policy launched by the FDI World Dental Federation in 2017 states *"Dentistry as a profession should integrate sustainable development goals into daily practice and support a shift to a green economy in the pursuit of healthy lives and well-being for all through all stages of life."*[1]

What does this mean for dental practices and how should dental teams go about it? The UK based Centre for Sustainable Healthcare have developed a How-to Guide for dental teams wishing to take action to make their practice more sustainable.[2] This includes how they can reduce the environmental impact of waste plastic from a number of sources, including oral hygiene products. They also suggest ways to limit the purchase of plastic and plastic-packaged items along with encouraging plastic recycling to reduce the plastic 'burden'.

At Colgate-Palmolive, we are really proud that Colgate is in more homes than any other, so we can and we will create a healthier, more sustainable future for all.

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Highlighting a few of the key actions relating to oral care:

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Scan for further information on our 2025 Sustainability & Social Impact Mission or visit:
www.colgatepalmolive.com/core-values/sustainability/sustainability-2025-our-strategy-for-the-future

References:
1. www.fdiworlddental.org/sustainability-dentistry (accessed Feb 2021) **2.** www.sustainablehealthcare.org.uk/what-we-do/sustainable-specialties/dentistry (accessed Feb 2021)

Christina Havalder of Colgate and Prof Leo Stassen, then President of the IDA, present Dr O'Reachtagain with the trophy as the 2019 Colgate Caring Dentist of the Year.

Orantown Dental Centre's Nicola Lane, Dr Aideen Buckley and Katherine Costello.

Dr Freda Guiney accepted the overall team award on behalf of her clinic.

The Colgate team (from left): Tom Farrelly; Christina Havaldar; Raul Sanchez; Stephanie Gribben; Paul Munro; and, Danni Amoah.

Master of ceremonies Anton Savage and Lauren McClory (representing Dr Patrick Rooney) share a lough.

They're back

In recent times, celebrating anything has been unlikely. However, planning is underway for a return to celebrating dentistry in Ireland with the Colgate Caring Dentist Awards.

The IDA, in association with sponsors Colgate, has announced that the Caring Dentist and Dental Team of the Year Awards for 2021 are to proceed. An awards ceremony will take place in the latter part of 2021 subject, naturally, to all elements of the Awards being in accordance with HSE guidance regarding Covid-19.

Dental teams all across the country will be ready to party and enjoy all their achievements by December, and we hope that we can celebrate in style at a major awards ceremony in Dublin. While the date is to be confirmed, the Awards Gala Ball is normally staged in late November or early December at a major city venue.

Once again, patients will be invited to nominate their dentist or the dental team through the Awards' online presence at www.colgatecaringawards.ie. Over more than a decade now, in a series of guises, this programme has highlighted outstanding healthcare provided to dental patients in Ireland. Every year, the judges are struck by the outstanding acts of care and compassion carried out by dentists and their teams. The judges have seen and commended lives saved by the spotting of cancer, children with special needs helped in ways that their parents couldn't believe was possible, and a victim of domestic violence given safe haven. Then there is the enormous appreciation evident in so many entries of the gratitude of patients for what they consider to be the exceptional care received – but which so many dentists consider normal.

In recent times, dentistry has faced the new and entirely unexpected challenge of providing oral healthcare in a global pandemic. In the extraordinary circumstances of the last year, the Association and Colgate are confident that patients will, once again, tell us the stories of how their dentist and local dental team cared for them or their loved ones. Watch out for more information from the Association and Colgate in the near future.

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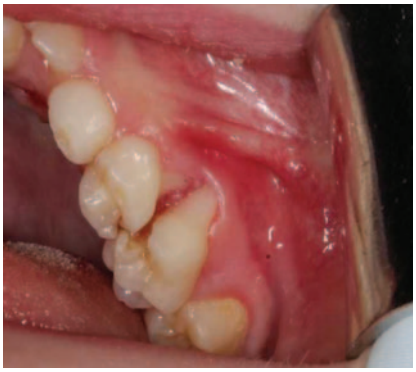
Quiz

Submitted by Dr Charlotte McCarra.

Case description

An eight-year-old boy with autism presented for dental assessment. A history of pain was reported in the upper left quadrant. On examination, extensive cavitated caries was present in the upper left first and second primary molars (64, 65). The distobuccal root of 64 and mesiobuccal root of 65 were exposed (**Figure 1**).



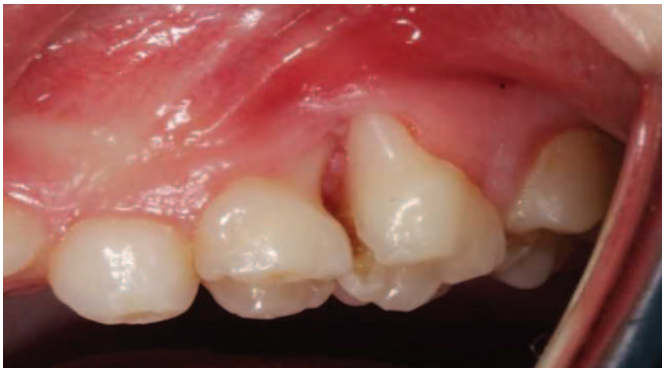


FIGURE 1: The distobuccal root of 64 and mesiobuccal root of 65 were exposed.

Questions

1. What is the most likely cause of the above lesion?
   (a) Localised aggressive periodontal disease
   (b) Factitious injury
   (c) Langerhans cell histiocytosis (LCH)

2. What is the recommended treatment?

Answers on page 102

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Important survey on healthcare workplaces

Dr Angela Mazzone.

Members are invited to complete a survey by academics in Dublin City University (DCU) investigating the work-related experiences of dental healthcare professionals in both the private and public sector. The survey is part of a research project investigating the work-related experiences of healthcare professionals. It aims to identify opportunities to improve the workplace culture, and will contribute to informing evidence-based programmes aimed at building a better working environment.

This research study is being conducted by Dr Angela Mazzone and Prof. James O'Higgins Norman of the National Anti-Bullying Research and Resource Centre (ABC) at DCU. If you have any questions regarding the survey, you can contact antibullying.project@dcu.ie.

Responses are non-identifiable and data will be anonymised and aggregated with data from other participants. The survey results will be used for writing papers for publication in scientific journals, and for presenting research study findings at academic conferences. This survey will take about 15 minutes to complete. **CLICK HERE.**

IDA webinars autumn/winter series 2021

Are you interested in giving a lecture/presentation to IDA members? The CPD Committee is currently putting together the autumn/winter series of webinars, and if you are interested in giving a presentation, then please contact Elaine on elaine@irishdentalassoc.ie.

Electronic edition of *Journal*

Dentists who would prefer to receive the *Journal* by email rather than in print can choose to do so by making that choice on the Irish Dental Association website, www.dentist.ie. While the *Journal* (in hard copy) is free to all members, any other dentist can register to receive the electronic edition at no cost or subscribe to receive the hard copy at a cost of €120 or £100.

Defibrillator – discount for IDA members

The Dental Council will be announcing new guidelines very soon for medical emergencies in the dental setting. All dental practices will be advised to have an automated external defibrillator (AED) on the premises. The IDA has negotiated a preferential rate for members to purchase an AED from Heart Safety. Contact Dave Greville on 1850 432 787, or info@hearts.ie, with proof of your 2021 IDA membership.

Medical oxygen – discount for members

The IDA has negotiated a discount for IDA members on medical oxygen and refills for dental practices. Contact Pat Crowley at Irish Oxygen on 021-454 1821, with proof of your 2021 IDA membership.

IADR award for Hal Duncan

In celebration of the International Association for Dental Research (IADR) Centennial in 2020, the IADR Centennial Emerging Leaders Award was created to recognise young investigators who will lead the research field and the Association into the next century. Twenty exceptional dental researchers from around the world were awarded this honour, including the Dublin Dental University Hospital's Dr Hal Duncan for his work in pulp biology and regeneration.

Dr Alison Dougall elected IADH President

The International Association for Disability and Oral Health (IADH) is celebrating its 50th year and is delighted to announce the Presidency of Dr Alison Dougall, who is the first IADH president from Ireland during those 50 years.

Alison is a well-known international leader in the area of disability and oral health. She has over 25 years' experience in this field and is a respected clinician, educator, researcher and patient advocate. Alison trained in special care dentistry at the Eastman Dental Institute and following her role as Clinical Director for Community and Special Care Services in the UK, she moved to Ireland 15 years ago, where she is currently Director of the Doctorate Training Programme at Trinity College Dublin and Consultant for Medically Compromised Patients at Dublin Dental University Hospital. In 2017 she was voted HMI Health Leader in Ireland for her pioneering work developing care pathways for people with inherited bleeding disorders.

Alison has always been passionate about the need for training of the workforce to improve attitudes towards disability and diversity, and to improve the quality and scope of care for people with disabilities. She was responsible for leading the International IADH taskforce, with experts from over 28 countries, which produced the consensus curriculum guidance for training in special care dentistry at both undergraduate and postgraduate levels. She will chair the Scientific Committee for the forthcoming IADH Conference in Paris 2022, further details of which are available at www.iadh2022.org.

Those interested in finding out more about disability and oral health in Ireland can become an affiliated member of the IADH and enjoy all member benefits by joining the Irish Society for Disability and Oral Health. Please visit www.isdh.ie for more details.

Stopping the invasion

Dr Jeanette MacLean is looking forward to addressing Irish dentists at the IDA Conference and spreading her message about the benefits of minimally invasive treatment in children.

Jeanette is an advocate for minimally invasive dentistry and is the owner of Affiliated Children's Dental Specialists in Glendale, Arizona, in the United States. She is a Diplomate of the American Board of Pediatric Dentistry and a Fellow of the American Academy of Pediatric Dentistry. She believes non-invasive treatment has many advantages when treating children, not least of which is helping young people avoid dental fear and develop a good relationship with their dentist: "To put it simply, minimally invasive treatments are particularly beneficial to paediatric patients because they can often reduce, delay or altogether eliminate the need for local anaesthetic and surgical tooth preparation (i.e., shots and drilling).

The dental treatment is better tolerated by the child and less likely to induce a fear of the dentist, but rather help them build a positive relationship with their oral healthcare provider. It also helps reduce, delay, and/or eliminate the need for sedation, which can help reduce cost and risk, while increasing access to care".

Personal experience with one of her own children also influenced her work around minimally invasive techniques: "My daughter had to have surgery under general anaesthesia at just nine months old. This dramatically impacted the way I empathised with parents regarding the use of sedation to treat their children's tooth decay. I also experienced a medical emergency with a special needs child who was undergoing IV sedation in my office. He recovered; however, it made me question what I was doing and how I could do things differently and better for my patients and their families. This began my journey to minimally invasive dentistry and adopting treatment techniques such as silver diamine fluoride, SMART (silver modified atraumatic restorative treatment), the Hall technique, and resin infiltration".

It made me question what I was doing and how I could do things better for my patients and their families.

These techniques were not part of Jeanette's formal dental education, which primarily focused on the surgical management of caries, but they have helped her address a number of issues which are important to her, she says: "Shifting to more non-surgical interventions has enabled me to reduce my use of sedation, increase access to care (by increasing the volume of patients I am able to see), reduce the cost of the care, and improve the efficacy of care".

IDA Annual Conference

Jeanette is one of the speakers at this year's digital IDA Annual Conference, Online World: In-person dentist. Her presentation will run on Saturday April 17. She will be speaking on icon resin infiltration and the etch bleach seal technique.

We are noticing an increase in poor hygiene, poor diet, and more tooth decay, as families quarantine and work and learn from home, with easy access to the pantry and less regimented routines of sleep, bedtime and oral hygiene.

She gives an overview of her presentation: "Unsightly congenital enamel defects and acquired white spot lesions can be troublesome for many patients. Historically, these blemishes have been treated with invasive and costly resin bondings and veneers. Dealing with enamel defects can prove particularly troublesome for young patients, which when left untreated, often become a source of embarrassment for the patient. Or worse, some lesions may progress to cavitations, particularly post-orthodontic white spot lesions. This course will review two simple and painless options to manage enamel defects. Icon resin infiltration and etch bleach seal can improve or even completely reverse the appearance of congenital enamel defects and white spot lesions, while preserving tooth structure and repairing the patient's natural enamel".

While the pandemic has been a worrisome time for the public and for dentists, one advantage that Jeanette sees is that online conferencing allows people to attend and speak at conferences all over the world: "During 2020 when all dental conferences were either cancelled or shifted to a virtual platform, I was able to deliver information on these topics to a much broader audience. The webinars I provided reached over 30,000 viewers from a global audience, which was quite remarkable to me. Many of the webinars had record-breaking attendance, record numbers of attendees viewing the content live, as well as views of on-demand content. It is not unusual for me to receive calls and emails from dental professionals from all over the world on a daily basis. It can feel overwhelming at times, but it is also rewarding to feel like I'm making a positive impact on the dental profession. My happiest moments are when dentists tell me that I changed the way they practise".

Oral health and Covid-19

Covid-19 has of course affected Jeanette's day-to-day dentistry and she had to close her practice for two months in 2020. She explains that lockdowns are having an impact on oral health in a way that perhaps many have not thought about: "We reopened at the end of May 2020. We are seeing a reduced volume of patients and increasing the time between patients. We continue to have a high demand for appointments and families eager to come into the office. We are noticing an increase in poor hygiene, poor diet, and more tooth decay, as families quarantine and work and learn from home, with easy access to the pantry and less regimented routines of sleep, bedtime, oral hygiene, etc."

Of course, oral health problems did not just suddenly appear with the onset of Covid. Jeanette believes in affordable access to dental care for all. She is also concerned about the easy availability of high-sugar foods, which is an issue both in Ireland and the US. She wants to raise awareness of diet (high sugar and processed food consumption) and its impact on oral health: "In the US, in particular, there is an obesity epidemic and many constantly snack and sip all day, destroying their teeth. There's a Starbucks or convenience store on practically every corner, with easy access to high sugar and highly processed foods".

The party planner

Jeanette is married and a mother of two. She hopes to visit Ireland one day, as both she and her husband have Irish ancestry. She likes to spend her spare time with family and friends, and says if she wasn't a dentist, she would be a party planner: "I go over the top for birthdays and holidays and love to decorate! Halloween is my all-time favourite. My house gets decorated inside and out, we make elaborate costumes, and host a huge pumpkin carving party".

Colm Quinn
Journalist with Think Media

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References: 1. Merry A. et al. AFT-MX-1, a prospective parallel group, double-blind comparison of the analgesic effect of a combination of paracetamol and ibuprofen, paracetamol alone, or ibuprofen alone in patients with post-operative pain. Department of Anaesthesiology, University of Auckland, New Zealand 2008. *compared with the same daily dose of standard paracetamol or ibuprofen alone.

Easolief Duo 500 mg/150 mg film-coated tablets Each tablet contains paracetamol 500 mg and ibuprofen 150 mg. **Presentation:** A 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. 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. **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. Refer to summary of product characteristics for other interactions. **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. **Pack size:** 24 tablets. **Marketing authorisation holder:** Clonmel Healthcare Ltd., Clonmel, Co. Tipperary. Marketing authorisation number: PA0126/294/1. Medicinal product not subject to medical prescription. For retail sale through pharmacy only. A copy of the summary of product characteristics is available upon request. **Date prepared:** October 2019. 2019/ADV/EAS/117H.

CLONMEL HEALTHCARE

Dentists must protect against the 1,000-day stock market storm

With the huge shock to our systems the pandemic delivered last year, it is hard to believe that the correction in global stock markets in the spring of 2020 only lasted 100 days.

Markets rebounded through the summer and into the winter, as you can see in **Figure 1**. Could anyone have thought last April, with the S&P 500 minus 30%, that the MSCI world index (global equities) would be plus 15.9% by year end! The speed of last spring's recovery poses the question: "If a lockdown pandemic where we cannot go out and spend money doesn't hurt stock markets, what will?" Well as sure as eggs are eggs something definitely will. We just don't know when, why or how.

The problem we have is that with the 'risk-free' rate (interest rates and bond yields) at 0% or below we have very little alternative to the equity markets to invest in. And the way stock markets have performed of late, there is also a 'fear of missing out (FOMO)' attached to not investing.

Managing risk better

As a result of zero interest rates, either peoples' attitude to risk or their investment expectations have to change. The historical model of inflation plus 3% as an investment return is much harder to achieve now than it was 10 or 15 years ago. Yet in many cases this hasn't quite rung true yet with investors. Most people when asked what risk/return expectation they have would respond "low-risk, 3-5% per annum would be fine". At the present time, 3-5% growth is not achievable with low risk – even 1% would be difficult. The trade-off investors have is to either increase their risk to achieve return or maintain their existing risk level and reduce return expectations.

The way we think about suitable portfolio design for investors also has to change. The client assessment at the moment is worked out on the basis of market volatility over time, i.e., are you willing to take or tolerate risk? Therefore, portfolio design is worked out on the basis of how comfortable you feel about volatility. It should be worked out on what average return you require over time rather than the amount of volatility you're willing to live with.

One of the dangers of zero interest rates is that salesmen come along offering snake oil or silver bullets that don't exist. They promise investors rates of return that are unrealistic attached to risk levels wholly inappropriate for that investor.

John O'Connor

John is Managing Director of Omega Financial Management which are an approved supplier for Irish Dental Association members.

INDEX PERFORMANCE – NET RETURNS (%) (DEC 31, 2020)

					ANNUALIZED			
	1 Mo	3 Mo	1 Yr	YTD	3 Yr	5 Yr	10 Yr	Since Dec 29, 2000
MSCI World	4.24	13.96	15.90	15.90	10.54	12.19	9.87	6.01

FIGURE 1: Cumulative index performance 2005-2020.

Be prepared for the downturn

Peak to trough downturns can be significant and can last a long time, generally much longer than we saw in 2020. A fall in markets lasting two to three years really tests the mettle of all investors. The crux of it is, if you don't ride out the drawdown you crystallise the loss, making the downturn a cost to you rather than just an interim fall in wealth valuation. Avoid turning a 'mark to market' drop into an actual portfolio loss.

The market plunge in the spring of 2020 was the sharpest fall since 1987 but it was also the fastest recovery. With three-quarters of your portfolio invested in global equities, a 30% market drop will give you a 20% fall in your wealth in a 12-month period. It would be worse than that if markets fall by 50%, where an investor's growth portfolio will fall by 30% or more. The focus should not be on the day-to-day moves but rather how long will I have to endure the slide before it comes back.

The 1,000-day downturn

As the market recovered so quickly, in barely 100 days, it has been suggested that the 2020 correction could lull people into a false sense of security. Investors should be prepared for a 1,000-day downturn. If you base your portfolio design on such a fall you are more likely to be able to ride out negative movements and so avoid turning negative valuations into actual losses. Having that attitude may also give you the opportunity to buy in at cheaper market prices, at the right times. For the regular monthly saver/investor, downturns give a great opportunity to buy into markets at lower prices, allowing them to reduce the average investment cost.

Plan ahead if you are taking income

If you are taking an income from your portfolio or your approved retirement fund (ARF), plan ahead so that you can withdraw funds over the next two to three years without overly disrupting the portfolio. If you can plan ahead then you can afford to take the extra risk. If you don't then you are running the risk of having to crystallise losses at the worst time, which is the surest way to destroy capital.

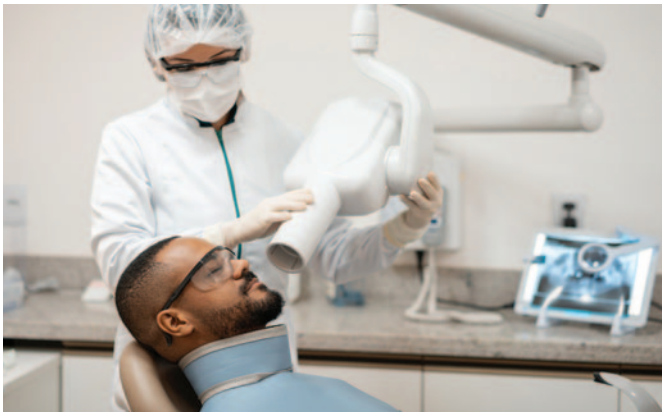
Financial planning, portfolio management and asset allocation are the holy trinity of good investment management. Be prepared with your portfolio and you will manage it well.

Dr Jane Renehan to chair radiation task force

Dr Jane Renehan has been appointed to chair a key Task Force on Radiation Protection within the Council of European Dentists (CED). This appointment represents a great honour and recognition of Jane's commitment and expertise as a member of the IDA delegation at the CED. The Task Force will be responsible for a range of issues and specific tasks, including:

1. Advocating for appropriate and proportionate education and training for dentists.
2. Advocating for science-based requirements based on the EURATOM Directive related to equipment.
3. Consultation and collaboration with other bodies and stakeholders active in this area, for instance DG ENERGY, EURAMED (European Alliance for Medical Radiation Protection Research), IAEA, etc.
4. Monitoring and possible participation in activities under the SAMIRA Action Plan.

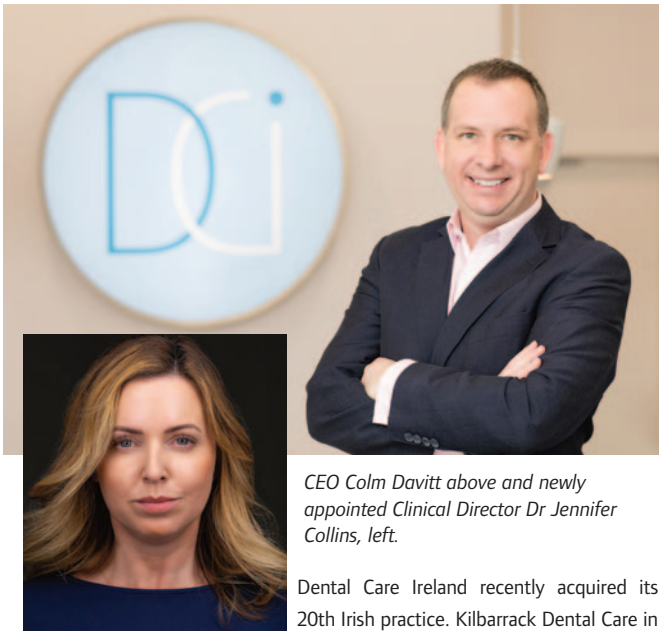
The IDA is delighted that Jane has agreed to accept this role as radiation protection has for many years been an area of particular interest and there will be a direct benefit to the IDA membership from her involvement in this Task



Force. Currently, the Dental Council, HIQA and the Department of Health are reviewing the profession's requirement around undergraduate and postgraduate training/CPD in radiation protection and medical ionising radiation.

In accepting this invitation from CED President Dr Marco Landi, Jane will step down from her role as Chair of the CED Working Group on Dental Materials & Medical Devices, although she will remain as a member of this Working Group.

Dental Care Ireland opens 20th practice



CEO Colm Davitt above and newly appointed Clinical Director Dr Jennifer Collins, left.

Dental Care Ireland recently acquired its 20th Irish practice. Kilbarrack Dental Care in Dublin 5 is the group's sixth acquisition in the last 12 months, along with Ennis Dental in Co. Clare, Wellington Quay Dental Centre in Co. Louth, Virginia Dental Surgery in Co. Cavan, Farnham Street Dental Surgery in Cavan Town, and two former Centric Health practices in Dublin.

Dental Care Ireland states that it will invest in upgrading and rebranding the practices in 2021, while providing management and administrative support to practice teams in operations, finance, quality and compliance, HR and marketing. According to CEO Colm Davitt: "Over the last six years, we have acquired some exceptional dental practices, and helped them to reach their full potential. Our significant track record in the Irish market, as well as a strong support team in Dublin, has enabled us to continue our expansion despite the challenges of the last 12 months. Our ultimate aim is to provide a Dental Care Ireland practice in every single county, so we have ambitious plans to grow the organisation further in the year ahead".

New appointment

The group has also appointed Dr Jennifer Collins to the new role of Clinical Director. Jennifer joined Dental Care Ireland in 2019 as Lead General Dentist at Northumberland Dental Care in Dublin 4. In addition to this role, she will now provide clinical support and training to clinicians across the Dental Care Ireland group.

Dentsply Sirona

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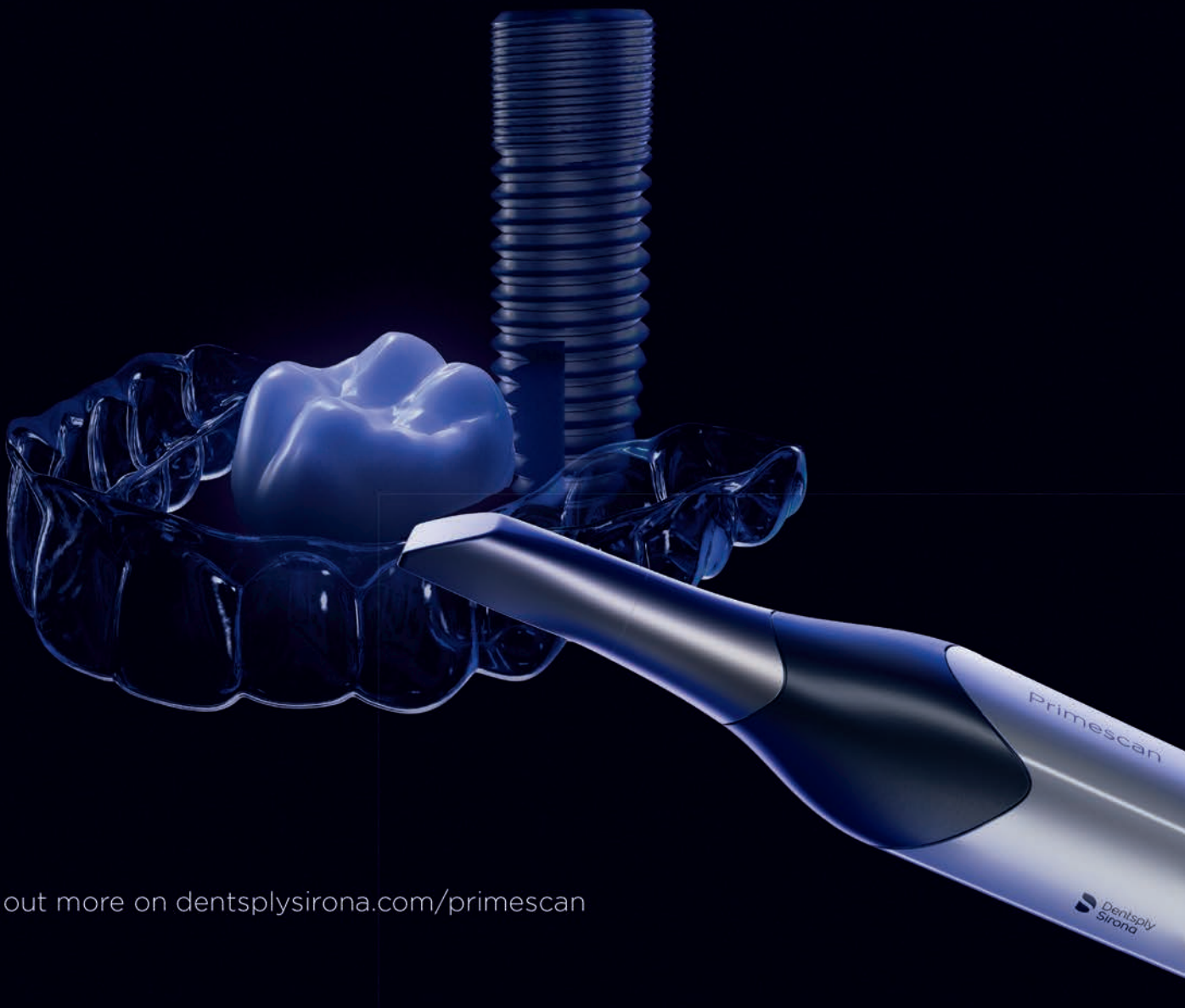

Find out more on dentsplysirona.com/primescan

Autoclavable stainless steel sleeve now available for Primescan

Primescan comes with three different sleeve options.

According to Dentsply Sirona, Primescan, the company's intraoral scanner, ensures high-quality digital impressions and exceeds minimum recommended hygiene guidelines. The company states that this is the only scanner that provides a variety of disinfection and sterilisation procedures with three different sleeve options. The new stainless steel sleeve with a disposable window is now available, and Dentsply states that it can be reprocessed in an autoclave, completing the comprehensive hygiene concept of Primescan. The new stainless steel sleeve is available now and can be purchased separately. The company says the stainless steel sleeve, with a scratch-resistant sapphire crystal window, can be reprocessed with wipe disinfection, hot air sterilisation or high-level disinfection. It says the plastic sleeve is an alternative for the highest hygiene requirements and can be disposed of after each use, and all sleeves have a completely closed viewing window to prevent liquid from entering during scanning.

For Dr Daniel Aniol, dentist from Bornheim, Germany, sterilisation is more important than ever because of the new environment in which dentists are working: "Safety and flexibility in the way we work are of central importance to me and my practice team. The ability to choose from a variety of reprocessing methods with Primescan is an important benefit of the system".

More information about Primescan can be found at www.dentsplysirona.com/primescan.

Dentsply Sirona continues to empower women in dentistry

Dentsply Sirona states that it is strongly committed to the advancement and needs of women in dentistry. Choose to challenge, the motto of this year's International Women's Day, underlines the importance of equal rights in an ever-changing world. Each year, Dentsply Sirona states, the company supports various programmes and events that encourage women's professional development and celebrate women's achievements.

The goal is to empower dental professionals to give patients a healthy smile.

World Oral Health Day

To mark World Oral Health Day in March, Dentsply Sirona stated that the company is focusing its energies on innovative product solutions and clinical education for dental professionals. The company says that the goal of these efforts is to empower dental professionals to give patients a healthy smile.

Last year, almost 7,300 courses (mainly online) were held in 80 countries with a total of more than one million participants. Using educational technology, Dentsply Sirona says it more than doubled the number of dental professionals participating in clinical education as compared to 2019.

More information about webinars and on-demand courses is available at https://www.dentsplysirona.com/education.

Covid stress causes one in five Irish people to spend less time on teeth

Covid-19 has impacted on Irish people's oral health, with pandemic-related stress causing one-fifth of people (20%) to devote less time to their teeth.

The Wrigley Oral Healthcare Programme Mind Your Mouth! survey, commissioned by Mars Wrigley in partnership with the Irish Dental Hygienists' Association (IDHA), was published recently to coincide with World Oral Health Day on March 20. The research among 1,000 people in Ireland across age, gender, region and socio-economic groupings provided unique insights into the impact of Covid-19 on the nation's oral health and oral health habits.

Some 20% of respondents said Covid-19-related stress meant they were brushing and flossing less, and almost one-third (30%) said they were experiencing teeth clenching and grinding since the pandemic began. Of those who were grinding and clenching their teeth, 60% attributed this to Covid-related stress.

Conversely, 38% of people surveyed said that Covid-19 saw them change their oral health habits for the better, with 15% flossing more and almost one-quarter (23%) brushing more. Some 19% said the reason that they changed their oral health habits was because they had more free time.

The survey also shows that more broadly, there are very high awareness levels across age groups on how to maintain good oral health – 76% of respondents said they are aware of the role that regular flossing and chewing sugar-free gum plays in supporting oral health. Similarly, almost half (44%) agree that there is a link between chewing sugar-free gum and good oral health.

IDHA President Linda Phelan (left) and Dr Catherine Waldron celebrate World Oral Health Day.

Commenting on the findings, Dr Catherine Waldron, postdoctoral oral health researcher, said: "The fact that some people are spending more time brushing and flossing is to be welcomed, as are the very high awareness levels of the benefits of brushing, flossing and chewing sugar-free gum to support good oral health. However, the Wrigley survey also shines a light on the impact of pandemic-related stress on our nation's oral health. The message is clear: even during the pandemic, people should visit their dental hygienist and, in between appointments, brush, floss and chew sugar-free gum regularly to maintain good oral health".

Radiation inspection reports published

HIQA recently published the first dental radiation inspection reports. Inspectors noted that good levels of compliance, or substantial compliance, with the regulations were found in all four dental practices assessed.

However, there were areas for improvement mentioned in all inspections. For example, in three out of the four inspections, there was an absence of available written protocols on the conduct of standard x-ray procedures. Another frequent finding was that information relating to radiation exposure did not always form part of the patient's dental record.

Dr Jane Renehan of Dental Compliance Ltd says: "The recently published reports were very thorough in the level of assessment carried out by HIQA inspectors".

Jane observed an emphasis on four specific regulated areas:

- practice governance and management arrangements;
- medical physics expert (MPE) and diagnostic reference levels (DRLs);
- written protocols for every type of standard procedure; and,
- education, information and training.

HIQA has indicated that in the coming weeks dental practices will start to receive their individual self-assessment questionnaires. This process will be rolled out nationally throughout 2021. Jane explains that the first step in this process happens when the practice will be contacted by HIQA to grant access to an online portal. Once this is established, a self-assessment questionnaire will be issued to the practice owner.

Information relating to radiation exposure did not always form part of the patient's dental record.

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FDI issues statement on dentistry and Covid-19 vaccination

In light of the continuing severe impact of Covid-19 on global health, society and economies, and the essential role of vaccines in fighting the pandemic, the FDI has issued a statement reiterating the vital role of dental healthcare professionals, both in providing essential healthcare, and as potential vaccinators. The FDI statement carries five key principles related to dentistry and Covid-19 vaccination:

1. Dentists, other oral health professionals and support staff are frontline providers of an essential healthcare service. Including them in priority vaccination groups is therefore important for avoiding oral health workforce dropout and jeopardising access to care.
2. Equitable access to Covid-19 vaccinations is needed for the health of people globally, including vulnerable populations and healthcare workers. To this end, FDI Council fully supports initiatives to improve access to vaccines in underserved localities, such as the COVAX facility being co-led by GAVI, WHO and CEPI.
3. Efforts should be made to enable dentists to administer Covid-19 vaccines when possible within national legislation and regulations, and with minimal disruption to oral healthcare services. Several countries have already confirmed that dentists will be permitted to administer Covid-19 vaccinations, including in countries where dentists have not previously been permitted to give vaccines.
4. Dentists are well positioned to provide evidence-based information about vaccination and may receive questions from their patients about Covid-19 vaccines. Health authorities and national dental associations should ensure that dentists, their team members, other oral health providers and dental students have access to accurate, up-to-date information on the vaccines available in their country or locality, and the specificities of the vaccination programme in place.
5. Given the expected large number of vaccine approvals and high population uptake in the near future, there may be a higher number of suspected adverse drug reactions than in normal times. Dentists can play an important role in pharmacovigilance programmes. Health authorities and national dental associations should ensure that dentists are well informed of national pharmacovigilance systems and methods for reporting suspected adverse events.

The FDI Council expressed its sincere thanks to all oral health professionals, national dental associations and other members of the global oral health community for their dedication in responding to the ongoing crisis.

For access to practical resources and more information on the outbreak, go to the FDI Covid-19 Resource Library – https://www.fdiworlddental.org/covid-19-outbreak-guidance-for-oral-health-professionals.

Dental Protection podcast

Dental Protection has launched a podcast series called Risk Bites. According to the indemnity provider, these are short, bite-sized episodes of 10-20 minutes, that explore important areas of dentolegal risk for Irish dental practitioners.

Dental Protection states that a team of in-house experts, including Dr Noel Kavanagh and Dr Martin Foster, discuss a range of topics and provide helpful advice and practical tips. Topics covered so far include: explaining what discretionary indemnity means; dental records; three-part consent mini-series; social media; confidentiality (including GDPR recap); and, protection for HSE dental staff. According to the company, these podcasts will help you to keep yourself and your patients safe, and provide the best care possible.

To subscribe or listen to these podcasts, please visit: dentalprotection.org/ireland/podcast or search for Dental Protection in your preferred podcast player.

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*Compared to Invisalign aligners made previously from single layer .030 inch EX30 material

1. Pacheco-Pereira C, Brandelli J, Flores-Mir C. Patient satisfaction and quality of life changes after Invisalign treatment. Am J Orthod Dentofacial Orthop. 2018 Jun;153(6):834–41.

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IDA irish dental association

Volume 67 Number 2
April/May 2021

MEMBERS' NEWS

The year of living dangerously

After a year of living with Covid-19, dentists and their Association have many reasons to be proud, and to look ahead to a better future.

Changes in private practice

Private dentists have managed to keep their practices open and, apart from an initial two months when they were confined to providing emergency treatments, they have been able to provide the full range of dental care and treatments safely and successfully.

Interestingly, online bank Revolut recently announced that whereas consumer spending in Ireland had fallen in the past year, it had seen a 35% increase in spending on dental care. The latest estimates suggest that the

should take credit for, considering the year we have just experienced.

State schemes

In the Public Dental Service we have seen the impact that the movement of dentists to contact tracing and testing has had on everyday services for children and special care patients. That impact may not be fully recognised or apparent for some time to come, but if nothing else it has shown that there is a new awareness and appreciation of the skills and expertise of the Public Dental Service within the higher echelons of the HSE.

The most dramatic change has been the virtual collapse of the DTSS. **Figure 1** illustrates the numbers of DTSS contracts held over a number of years, from 2010, when 1,582 contracts were held, to 1,847 in 2015. It has fallen off in more recent years, but if we look at 2019, we see that there were 1,654 contracts held, an increase of just 10 on the previous year. However, if we look at the figures for 2020, we see that the number of contracts held has now fallen dramatically to 1,279. That includes approximately 30 clinical dental technicians. However, I believe that this number is significantly overstated because a number of dentists have told us that when they have checked the HSE database they see contacts and contract holders still listed who are no longer operating the scheme. I believe therefore that we may be looking at fewer than 1,000 dentists actively providing care to medical card patients and that is a huge change.

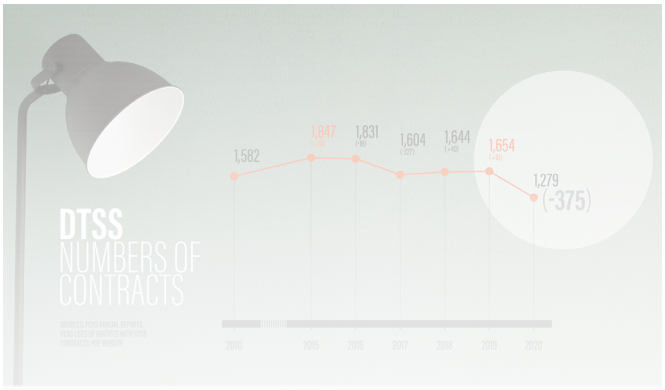

FIGURE 1: The DTSS contracts held from 2010 to 2020.

We want to have a replacement for the scheme, not to simply tinker with the existing scheme. The Department of Health has said that there will be

solutions to be imposed on dentistry, and that we would try to shape the future and ensure that dentistry was leading in terms of any recommendations on patient safety and quality, so we set up the QPSC.

Over the past 12 months there has been a huge rise in the level of activity by the Committee. A significantly greater number of working documents have been produced in the past year and that reflects a huge amount of time and effort by all the members of the Committee. These documents were considered and approved by the Management Committee, which would normally meet five to six times per year. The Committee met 25 times in 2020, very often at weekends to fit around the meeting

close connections with representatives of the trade, with hygienists and nurses, and these are platforms that we need to strengthen in the years ahead. We have strong relationships with other healthcare unions, which have been particularly helpful in more recent discussions around vaccination. We also have international relationships that are proving to be particularly helpful in sharing information and documentation, in particular the Council of European Dentists (CED) and the World Dental Federation (FDI).

I also want to make particular reference to the HPSC because it was ultimately shown to be one of two regulatory authorities that directly impacted on dentistry throughout the pandemic, along with the Dental Council, which ultimately turned to the HPSC for guidance. It was particularly important that as an Association we reached out to the HPSC at an early stage, in particular to Prof. Martin Cormican. We said that we wanted to engage with him to reflect the views of dentistry, and we put forward credible and persuasive colleagues. To his credit, he was willing to listen. I think what we have now seen is that guidance for dentistry published by the HPSC is realistic and pragmatic. It has identified and verified risk without looking at hypothetical risk, and we have guidance that is very different from guidance in neighbouring jurisdictions. The credible and professional manner in which the Association engaged with the HPSC has been one of the greatest successes of the past year.

Clearly, communication is key and is a cornerstone to our guiding and leading our members. Social media is part of the overall communication policy for every organisation. However, we are mindful of the fact that it can be a toxic channel

consider that at a conservative estimate there are at least 250,000 patient engagements with dentists every week, we can see that there is huge potential for dentists to build alliances with the community.

I think it is also important to say that the challenge of establishing oral health within general health continues. It is something that we have made some inroads with in the last while but much more room exists to develop and build alliances across the healthcare professions.

Dealing with the State

How will we develop the relationship between dentistry and the State? This is not just a philosophical question. It is an important consideration.

Many professions have limited involvement with the State, such as the financial, legal, engineering and many other professions, but within the health professions it varies considerably. We have the choice of looking to see if we want to develop a partnership approach. Do we believe that independence is best served by confrontation or is there a third approach, which is seeking to build the independence of dentistry while working with the State?

Clearly there is some need to have a relationship with the State. Ultimately, the Oral Health Policy is the litmus test that will decide what form this future relationship takes. I do not think we should shirk from confrontation, but I do think that we need to be able to engage in a businesslike, courteous and professional way. We should demand and give respect.

Altered state

As the Covid-19 pandemic continues, the dentist-patient relationship depends on effective communication and compassion more than ever before.

Written over 100 years ago, *The Machine Stops* is a science fiction novella by E.M. Forster. It depicts a world where humans are socially distanced, confined to their rooms, totally reliant on technology (the machine) through which they experience the real world. Their expectations match their daily expectation of life and they are content. It is only when the machine stops that their lives are thrown into turmoil. The Covid-19 outbreak has upended everything; it has in a sense stopped the machine.

Expectations and experiences have changed and as dentistry finds its path to the next normal, dentists are ethically obliged to adapt and adopt new ways of working. In contrast, patients do not quite know what to expect. They will be aware of PPE requirements but less familiar with the issues practices face with regard to challenges posed by aerosol-generating procedures, operational capacity, and prioritisation of care.

A patient-centric approach to care has set expectations among patients of personalised care. 'Treat every patient as though they were the only person in the building' was the first piece of non-clinical advice I was given on day three of my professional career.

Ethical impact

The dentist-patient relationship is a deontological (Kantian) construct. This is how it has always been in normal times. The exigency of the pandemic combined with the scarcity of resources, including PPE, called for a different approach in many parts of the world. The focus went away from the duty to the individual, to the need to consider the greatest good for the greatest number. It was now about utilitarianism and required a recalibration of patient expectations.

Altered expectations

The patient experience has changed in the last 12 months. Gone is the handshake, having survived cultures and civilisations for thousands of years. It was previously a ritual to indicate trust, friendship and openness, and has now been replaced by alternative gestures – elbow-nudging, salutes, thumbs-up and, in the case of one particular patient, the iconic Vulcan salutation of Mr Spock. (PPE may hinder non-verbal communication but my patient was astute enough to recognise a puzzled frown across my nurse's forehead; he went on to explain its origin and history dating back to the opening episode of the second series of *Star Trek* in 1967.)

It is not easy to substitute such traditions. A quasi-apology in advance can reset expectations and at the same time acknowledge the break with tradition. For example, to say 'Sorry I won't shake your hand because….' anticipates how a patient might feel, thereby controlling the expectation barometer. Other examples include giving patients advance notice of what to expect on arrival at the practice, for example, temperature checks, social distancing or the clinical aspects of their visit, thereby pre-warning them if there are any restrictions in place about what procedures can and cannot be undertaken. Anything said in advance to a patient will be perceived as an observation; anything said after an event will be seen as an excuse.

Some practices have prepared short videos on their website and encouraged patients to watch these before they arrive. This approach may be compared to Kurt Lewin's three-step change model – unfreeze, change, refreeze. Some leading researchers in the field suggest that there are three types of expectation:

1. The desired service – a level that the patient hopes to receive.
2. Adequate service – this is the minimum tolerable level. Patients will have recognised that the desired service is not always achievable, particularly during times of crisis.
3. Predicted service – a probabilistic assessment of the level of service a patient thinks they are likely to receive.

Dr Raj Rattan
MBE BDS MFGDP(UK) FFGDP(UK) PgDip MDE

Raj combines his work in general dental practice with his role of Associate Dean in the London Deanery. He is also a Senior Dento-Legal Consultant for Dental Protection and has worked with them since 1993.

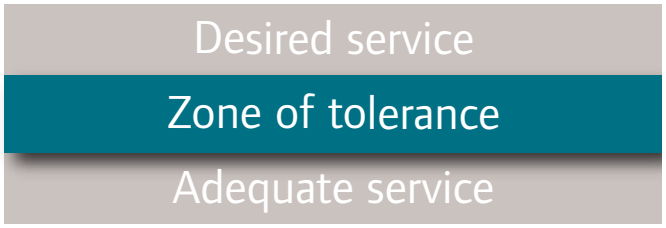

FIGURE 1: The zone of tolerance.

The gap between one and two (**Figure 1**) has been described as the zone of tolerance (ZOT; Zeithaml, Berry and Parasuraman) and the predicted service is likely to lie within that zone. The model represents the range of expectations and acceptable outcomes. The width of the expectation zone of tolerance is inversely proportional to the degree of importance. The wider the zone, the less the importance.

It is clear from reported complaints to Dental Protection and from conversations with colleagues that patients have demonstrated a very narrow ZOT in some aspects of their dental visits, for example infection control and the wearing of PPE, and a wider zone when it comes to cancelled or postponed appointments. As we head towards the next normal, there are early indications that this zone is starting to narrow as patient expectations rise when it comes resumption of dental services.

Expectancy-disconfirmation paradigm

Efforts at re-setting expectations are important because they impact on patient satisfaction. The expectancy-disconfirmation theory applies:

1. When a patient visits a practice, they do so with a pre-set level of expectation determined by prior experience. A new patient may have expectations influenced by comments made by whoever has recommended them. Information and images on marketing literature and websites will also play a part in determining expectations. In the Covid-19 context, media images of healthcare workers in PPE will help set expectations.
2. These expectations are the standard against which the dental team and the practice will be judged.
3. When these expectations are met, confirmation occurs.
4. Disconfirmation arises when there is a difference between expectation and outcome.
5. If the outcome is better than expected, there is positive disconfirmation. Negative disconfirmation arises when the outcome is below the pre-set level of expectation. Positive disconfirmation attracts compliments and encourages recommendations, and negative disconfirmation does the opposite.

Back to basics

In his 2015 lecture, delivered as part of the W.L. Gore Lecture Series in Management Science at the University of Delaware, Prof. Parasuraman, a leading authority in his field, relates his experience when he visited a hotel. On arrival, he was presented with a pillow menu, which offered a choice of nine different pillows. He was not expecting this and his initial reaction was "Wow, this is great". He had "never seen anything like this before". He went on to explain that this early experience immediately improved his perception of the hotel and raised his expectation of his stay.

His experience of the basic services was less complimentary as he recalled that "almost everything that should not go wrong in a hotel did go wrong". This included a failure to make the promised wake-up call. His disappointment had been exaggerated because of the raised expectations set by the initial encounter.

This is a clear reminder that innovation has little value unless basic needs are met, such as the backlog of incomplete treatments and urgent care for existing patients, as well as coping with additional demand from other patients whose own practice has limited capacity.

Summary

In their paper, 'Concordance between patient satisfaction and the dentist's view', published in the *Journal of the American Dental Association* (April 2014), Riley *et al.* report that there were "large discrepancies between patients' lack of satisfaction with regard to several domains of communication". They concluded that "some dentists need to better assess their patients' expectations…".

This stresses the importance of effective communication when managing patient expectations when the norm is no more and when we and our patients have to accept an altered state. As the Covid-19 pandemic continues, the dentist-patient relationship depends on effective communication and compassion more than ever before, and when face-to-face contact may be limited, remote consultations remain an alternative means to demonstrate both, to ensure that the machine does not stall.

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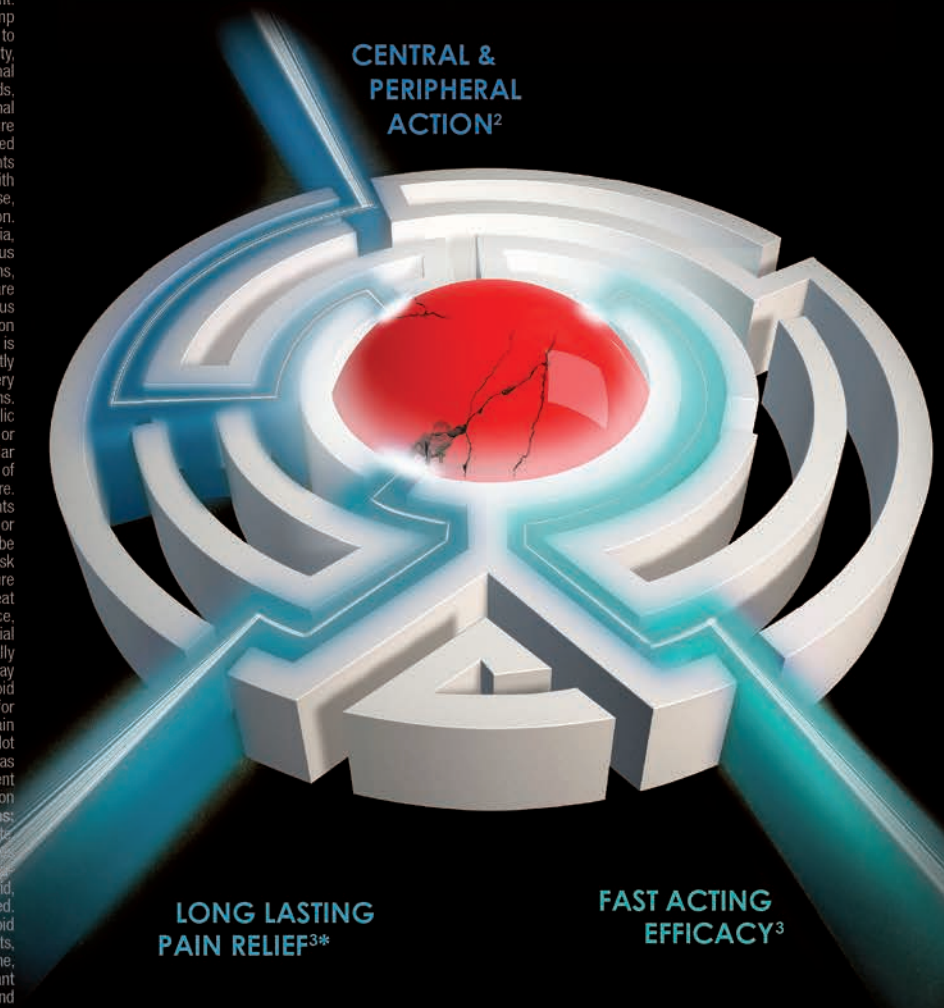

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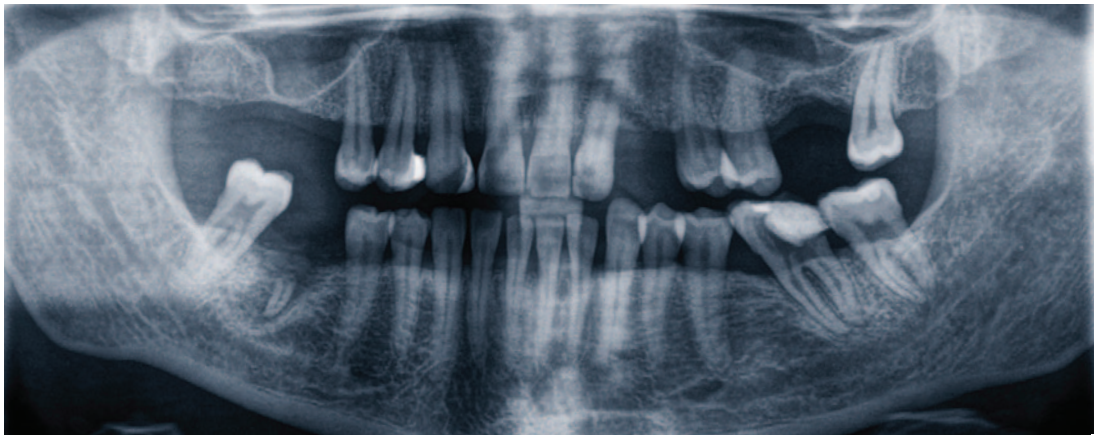
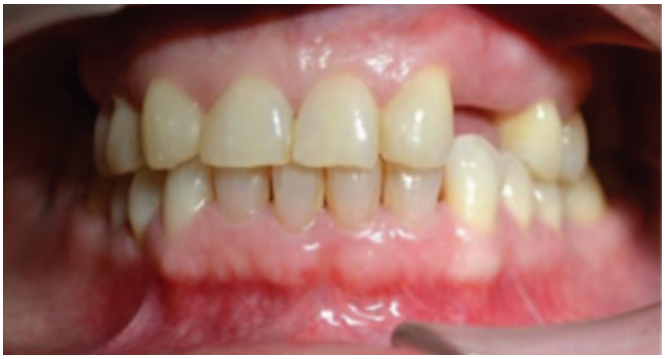


FIGURE 1: Orthopantomogram sent with referral letter.

FIGURE 2: Clinical photograph of anterior teeth showing appearance of gingival tissues immediately following periodontal probing; there is an absence of bleeding in a never smoker, although some reformed calculus is visible.

Application of the new periodontal classification: part 3

The third in our series on the implementation of the 2017 World Workshop classification of periodontal and peri-implant diseases and conditions in daily practice looks at two cases from Cork University Dental School and Hospital.



Introduction

The World Workshop on the Classification of Periodontal and Peri-implant Diseases and Conditions was convened in 2017 and resulted in the publication of a new classification system in 2018.[1] This replaces the formerly used 1999 (Armitage) Classification.[2] The complete Workshop proceedings are available to clinicians for free online via the European Federation of Periodontology (EFP) website.[3]

The new process for diagnosing and classifying cases of periodontitis incorporates staging and grading of each case.[4] At its simplest, the stage represents an interpretation of periodontitis severity and complexity of management of the case. The grade provides supplemental evidence on the historic rate of disease progression, and can help to identify cases where risk factors exist and/or where expected outcomes of therapy may be less favourable.[5]

Diagnostic decision trees may be of value to practitioners in applying the new classification in daily practice. The current series utilises the decision tree published by the British Society of Periodontology (BSP),[6] as this arguably represents the simplest approach to classifying periodontitis cases.

CASE 1

This case assimilates patient history, and clinical and radiographic findings, from a 50-year-old female patient who attended the Cork University Dental School and Hospital (CUDSH) for prosthodontic assessment, in order to establish options for replacement of the upper canine space (**Figures 1-2**). To assist readers in understanding the new classification system, the rationale for the clinical diagnosis of her periodontal condition is presented.

Although other clinical diagnoses are present in this case, only periodontal assessment and diagnosis have been included for the purpose of this paper. The case is an example of the difficulties associated with applying the classification system and subsequent staging and grading categories within the

Cristiane da Mata
Lecturer in Restorative Dentistry, Cork University Dental School and Hospital.

Martina Hayes
Senior Lecturer in Restorative Dentistry, Cork University Dental School and Hospital.

Prof. Anthony Roberts
Professor of Restorative Dentistry, Cork University Dental School and Hospital.

Corresponding author: Prof. Anthony Roberts, Cork University Dental School and Hospital, Wilton, Cork
E: a.roberts@ucc.ie T: 021-490 1165

scheme to a patient and their biological and pathological processes. The patient was referred to the CUDSH by her general dental practitioner to discuss treatment options for the replacement of the space in the upper left canine region. The dental hygienist in the general dental practice had provided a course of non-surgical periodontal treatment three months before the patient was seen in the CUDSH.

Case presentation: patient history

Table 1: Overview of case presentation.

Patient:	50-year-old female
Presenting complaint:	Pain lower left quadrant
Medical history:	5mg Tritace (Ramipril) once a day for management of hypertension
Smoking status:	Never smoker
Family history of periodontitis:	Patient unaware
Other risk factors:	No

Table 2: Summary of clinical findings.

Visual assessment:	Healthy pink gingiva with stippled appearance
Probing pocket depths:	<3mm at all sites
Clinical attachment loss:	1-4mm
Bleeding on probing:	8%
Plaque control:	Good
Tooth mobility:	None
Furcation involvement:	Grade 1 47
Tooth loss due to periodontitis:	None
Other factors of relevance:	No history of previously extracted 48 – a consideration when considering bone loss for last standing molars.

RADIOGRAPHIC FINDINGS

Bone loss present:	Yes
Pattern of bone loss:	Horizontal
Severity of bone loss:	10-50%
Distribution:	Generalised

Clinical findings

What is the diagnosis using the new classification?

The diagnosis in this case is:

- Stage III, Grade B; and,
- generalised periodontitis;
- currently stable.

How this diagnosis was reached

- This is a periodontitis case since clinical attachment loss is present at ≥2 non-adjacent teeth.
- This is generalised periodontitis as greater than 30% of teeth are affected by attachment loss/bone loss. The radiographic bone loss is due to periodontitis.
- Stage III was selected based on the site of the greatest bone loss severity, which has bone loss in the mid-third of the root (distal of the 47). Bone loss around the retained root (46) was not due to periodontitis and is therefore not considered.
- Grade B was selected based on calculation of the ratio of percentage bone loss at the worst-affected tooth divided by patient age. In this case, the ratio is 0.5-1.0 (50% [bone loss] ÷ 50 [age] = 1.0). Note the borderline categorisation where 0.5-1.0 is Grade B and >1.0 is Grade C.
- The disease is currently stable based on the absence of probing pocket depths (PPDs) ≤4mm and a bleeding on probing (BOP) of <10%, with no BOP at 4mm sites.
- Risk factor assessment: disease moderators were not present.
- The case could be defined as "clinical health on a reduced periodontium in a stable periodontitis patient". It is the opinion of the authors that this

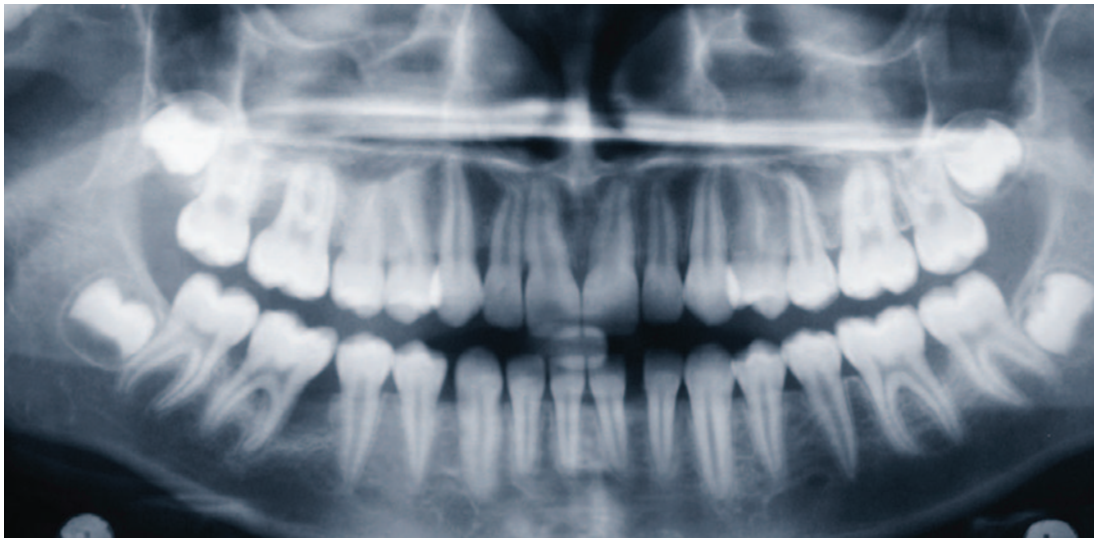


FIGURE 3: Orthopantomogram of patient taken at initial assessment.

FIGURE 4: Clinical photograph at initial presentation at CUDSH. Note minimal signs of inflammation with periodontitis identified on probing and subsequent radiographs emphasising the importance of periodontal probing.

denotation might undermine the ethos that once a patient is defined as being a "periodontitis patient", that they should remain in this category.

CASE 2

This case assimilates patient history, and clinical and radiographic findings from a 15-year-old female patient, who was referred to the CUDSH Periodontal Department by her GDP due to periodontal pocketing that had been identified during a routine recall appointment (**Figures 3-4**). To assist readers in understanding the new classification system, the rationale for the clinical diagnosis is presented.

Although other clinical diagnoses are present in this case, only periodontal assessment and diagnosis have been included for the purpose of this paper. The case is an example of the difficulties associated with categorising patients within the scheme. For example, the case illustrated is periodontitis with a molar-incisor predilection; however, in the authors' experience, this is not a 'typical' presentation, as 'usually' the central incisors and first permanent molars would be affected.

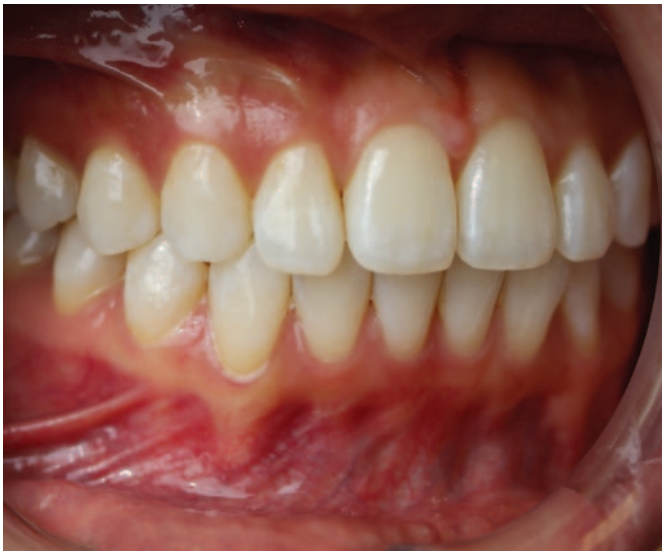
Case presentation: patient history

Table 3: Overview of case presentation.

Patient:	15-year-old female
Presenting complaint:	Referred by GDP due to the presence of periodontal pocketing
Medical history:	No significant medical history
Smoking status:	Non-smoker
Family history of periodontitis:	Yes (sister had previously been diagnosed with periodontitis molar-incisor pattern)

Table 4: Summary of clinical findings.

Visual assessment:	Overall good gingival colour and contour
Probing pocket depths:	1-9mm
Clinical attachment loss:	0-9mm
Bleeding on probing:	15%



Plaque control:	Good
Tooth mobility:	Nil
Furcation involvement:	16, 46
Tooth loss due to periodontitis:	Nil
Other factors of relevance:	Nil

RADIOGRAPHIC FINDINGS

Bone loss present:	Yes
Pattern of bone loss:	Vertical – associated with 16, 12, 36, 46
Severity of bone loss:	0-70%
Distribution:	Localised (<30%) and restricted to molars and incisors

Clinical findings

What is the diagnosis using the new classification?

The diagnosis in this case is:

- periodontitis molar-incisor pattern;

- Stage IV, Grade C; and,
- currently unstable.

How this diagnosis was reached

- This is a periodontitis case as clinical attachment loss is present at ≥2 non-adjacent teeth.
- This is a periodontitis molar-incisor pattern case as only incisors and molars are affected by attachment loss/bone loss. This could be determined as localised periodontitis but given the predilection of molars and incisors alongside the strong genetic predisposition, then periodontitis molar-incisor pattern has been determined.
- Stage IV was selected based on the site of greatest bone loss severity (based on the radiographic assessment: approximately 60% radiographic bone loss at tooth 46 equating to the middle third of the root).
- Grade C was selected based on calculation of the ratio of percentage bone loss at the worst-affected tooth divided by patient age. In this case, the ratio is >1 (70% [bone loss] ÷ 15 [age] = 4.7).
- The disease is currently unstable based on the presence of PPDs ≥5mm.
- Risk factor assessment: genetic predisposition.

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Pit and fissure sealants – an update

Abstract

Purpose: To evaluate evidence on pit and fissure sealants available since the publication: Pit and fissure Sealants: Evidence-based guidance on the use of sealants for the prevention and management of pit and fissure caries (2010) and assess whether there is a need to adapt current practice, considering the Covid-19 pandemic.

Process: Search Strategy: PubMed, Cochrane Library, Guideline International Network and Medline through PubMed databases were searched from January 2010 to June 2020. The guidelines that were used as a basis for the original guideline were also searched for updates. Ninety-six relevant papers were identified. *In-vitro* studies and review papers were excluded, and the 35 remaining studies were critically appraised, with results from relevant studies tabulated including the strength of the evidence.

Results

1. Pit and fissure sealants are effective and should be placed on first and second permanent molars.
2. Non-operative cleaning of fissures using a toothbrush or bristle brush is recommended. Mechanical preparation of fissures is not recommended.
3. Patients should be recalled at six-month intervals, or more frequently based on caries risk level.
4. Fluoride application can be considered when pit and fissure sealants cannot be satisfactorily placed and patients recalled within three to six months depending on caries risk level.

   Further research is required to establish:
5. The use of self-etching agents.
6. The use of a bonding agent when placing sealants.

Conclusions: Processes should be put in place to ensure regular updating of guidelines.

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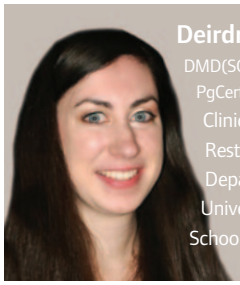
Introduction

The pits and fissures of teeth are susceptible to dental caries.[1-6] It is well known that sealing these surfaces with a resin or glass ionomer sealant can reduce the amount of caries an individual will experience. This decrease in incidence is due to reducing fissure depth allowing easier mechanical cleansing and the physical reduction of the surface area of the tooth that is exposed directly to demineralisation. Ideally, each tooth should be sealed "as soon as sufficiently erupted" to allow a genuine prevention of caries formation. If patients are seen when a tooth is insufficiently erupted, a sealant may not adequately bond due to the presence of crevicular fluid causing moisture contamination from the surrounding gingiva; however, if patients are seen long after tooth eruption the caries risk increases.[7]

A suite of evidence-based guidelines[8] were published jointly by the Oral Health Services Research Centre (OHSRC) University College Cork (UCC), the Health Service Executive (HSE) and funded by the Health Research Board (HRB) (Grant No. S/A013) – Pit and Fissure Sealants: Evidence-based guidance on the use of sealants for the prevention and management of pit and fissure caries (2010), from here on referred to as "the Guideline".



Deirdre O'Neill
DMD(SOTE) MFD(RCSI) PgCert TLHEd
Clinical Supervisor, Restorative Department, Cork University Dental School and Hospital

Junaid Nayyar
BA BDentSc(TCD) MFDS(RCSEd)
Supervisor in Restorative Dentistry, Dublin Dental University Hospital

Prof. Martin Kinirons
BDS(NUI) FDSRCS(Eng) FFDRCS(Irl) PhD(QUB)
Emeritus Professor in Paediatric Dentistry, Cork University Dental School & Hospital

Mairead Harding
BDS(NUI) MFGDP(UK) MDPH PhD FDS RGPS(Glasg) PgDipTLHEd
Senior Lecturer Dental Public Health, Deputy Director OHSRC, Cork University Dental School and Hospital

Corresponding author: Deirdre O'Neill E: deirdre_oneill1@yahoo.co.uk

Evidence-based guidelines are systematically developed statements designed to help administrators, practitioners and patients make decisions about appropriate healthcare for specific circumstances.[9] The Guidelines published were a landmark, as this was the first time that there was strong evidence-based guidance for dentists in terms of dental public health policies in the Republic of Ireland.

The pit and fissure sealants Guideline[8] was developed using the ADAPTE process,[10] which provides a method of adapting clinical practice guidelines from one organisation or context to another. For the update of the guideline, similar search terms were used in a literature review of relevant material. In addition, the guidelines which were used in the formulation of the Irish Guideline (2010) were consulted.

At the time of publication, it was recommended that an update should be carried out in 2013. As such there is a need to identify the existence of any new evidence since 2010.

For the revision on pit and fissure sealants Guideline, the updated document 'Evidence-based clinical practice guideline for the use of pit and fissure sealants: A report of the American Dental Association and the American Academy of Pediatric Dentistry'[11] was also included.

Process

A literature search was conducted searching the following databases: Medline through PubMed and Cochrane Library databases. The following guideline databases were also searched for any relevant guidance or publications: Guidelines International Network site;[12] and, European Academy of Paediatric Dentistry site.[13] Search terms including "resin sealants, dental sealants, fissure sealants, glass-ionomer sealants, pit and fissure sealants, and occlusal caries prevention" were used. Searching also involved combinations of the search terms using "AND" and "OR" Boolean operators. Lastly, "snowballing" was used to find more papers, meaning that the references of relevant papers were examined for additional evidence. The time limits were set from the previous Guideline in January 2010 to June 2020.

The 2008 ADA guidelines,[2] which were used as a satellite for the current Irish Guideline were themselves updated in 2009 and most recently again in 2016.[11] Additionally. the Cochrane collaboration also published an update in 2013[1] and 2017[14] on the use of sealants in the prevention of dental decay.

A total of 95 papers were identified. Inclusion and exclusion criteria were then applied. *In-vitro* and non-clinical studies were excluded, while current guidelines, studies on sealants, and randomised controlled trial clinical studies were included. Papers were then critically appraised using the critical appraisal skills programme checklists.[15] This process resulted in 35 papers that were selected and appraised, and the summary of each paper recorded in an evidence table.

This method permitted an overview of all the new evidence relating to each particular section in the Guideline. All of the identified papers were read in duplicate with relevant information collated into an evidence table.

Finally, the reviewers' conclusions of the study were recorded. This organisation of the studies indicated whether new research was available and if it affected the existing recommendation. The papers are discussed under the original headings used in the Guideline:

1. How effective are sealants?
2. Should fissures be prepared before placing sealants?
3. What is the best way to achieve moisture control?
4. Is self-etch better than etch-and-rinse?
5. Should I place a bonding agent before placing a fissure sealant?
6. When should I apply topical fluoride?
7. When should I use glass-ionomer fissure sealants?

Results

How effective are fissure sealants?

A full-mouth, randomised control clinical trial was carried out by Hilgert *et al*.[16] in a school-based environment, with a sample size of 242 children. They found that, for high-risk individuals, placement of resin sealants resulted in a similar caries experience rate as low-risk individuals without any sealants (91% vs 92%). However, they also found that supervised tooth brushing resulted in a similar caries experience for both high-risk and low-risk groups. The effectiveness of the sealants depends on why the individual has been placed in a high-risk category. If the reason for the high-risk is deep plaque retentive fissures, then sealants are going to be significantly effective. In this study, the patients were deemed high-risk based solely on fissure depth. Kumaran,[17] Chen and Liu[18] and Prathiba *et al*.[19] each carried out split mouth randomised clinical trials on retention rates between resin sealants and glass-ionomer (sample sizes 40, 57 and 120, respectively). Results indicated the resin sealants were significantly better retained than glass-ionomer. Despite this, glass-ionomer materials were shown to have more of a caries preventive effect than their low retention rate would suggest. This is likely due to some glass ionomer material persisting in the fissures and possibly having a positive effect due to fluoride release.

Key point to learning: sealants are effective in preventing pit and fissure caries and should be placed in high caries-risk individuals. In the American Academy of Pediatric Dentistry Recommendations: Best Practices manual, it explains that caries risk assessment should be a routine part of the dental examination, and may be completed using various questionnaires such as the Caries-Risk Assessment Tool (CAT).[20] The manual advocates that the dental clinician must have a pragmatic approach to placing a sealant material, which they deem appropriate for the level of isolation which can be achieved.

Should fissures be prepared before placing sealants?

It is important to remember that the aim of placing a sealant is not to retain the sealant but for the prevention and management of pit and fissure caries. Dhar and Chen[21] showed that while retention rates were higher in teeth that had mechanical preparation of enamel carried out, the caries rate was also higher. This is due to the removal of a sound layer of enamel resulting in a shorter path for caries to affect dentine.

Key point to learning: non-operative cleaning of fissures prior to sealing using a toothbrush or hand piece-driven bristle brush is recommended. Drilling of fissure prior to placement of sealant is not recommended.

What is the best way to achieve moisture control?

There is no new research to consider for the recommendation regarding the optimum method to achieve moisture control for placement of sealants. Any method that results in a dry field when placing the sealant can be used, giving consideration to ease of placement, patient co-operation, and operator preference.

Is self-etch better than etch and rinse?

Small sample size studies carried out by Nogourani *et al*.[22] and Karaman *et al*.[23] give a slight indication that etch and rinse sealants have a higher retention than self-etch adhesive sealants; however, the authors of the respective studies agree further research is needed to confirm this.

Key point to learning: etch and rinse using 37% phosphoric acid is still the gold standard for achieving resin sealant retention.

Should I place a bonding agent before placing a fissure sealant?

McCafferty and O'Connell,[24] in a full-mouth, randomised clinical trial of 103 patients, showed that there was some benefit to using a bonding agent; however, they concluded that the effect was only noticeable in the palatal fissure of upper FPMs and no difference was achieved in the lower FPMs. An investigation was carried out by Moreira *et al.*[25] to observe the effect an intermediary layer may have on caries risk and sealant retention. Their study compared retention results of teeth sealed with different sealants with or without an adhesive layer, and with or without fluoride application at different levels of tooth eruption. They found the teeth with the most successful retention of sealant were those that were fully erupted, regardless of the method of sealant application. A study by Rishika *et al.*[26] suggests that there is enhanced retention of pit and fissure sealants following enamel deproteinisation and intermediary bond layer; however, the study duration was one year.

Key point to learning: due to a lack of robust evidence, the use of a bonding agent cannot be suggested at this time when placing sealants.

When should I apply topical fluoride?

There are often difficulties in maintaining adequate moisture control in children. This is especially true for younger children, anxious children, children with challenging behaviour, and children with special needs. In these cases, other preventive strategies should be available, such as fluoride varnish application. Fluoride varnishes aid remineralisation of early enamel lesions and can help slow the rate of progression of caries that has extended into dentine but not yet cavitated (Marinho *et al*.[27]).

Chestnutt *et al.*[28] proposed that a six-monthly application of fluoride varnish is comparable to the caries preventive rate of fissure sealants. They randomly allocated 1,016 children into two groups: one that received resin sealants (Delton FS); and, one that had topical fluoride varnishes (Duraphat 22,600ppm (Colgate-Palmolive)). Both groups were examined every six months, the resin sealants were reapplied if necessary, and fluoride varnishes were also reapplied every six months. They found that over 36 months dentine caries had developed in 19.6% of resin-sealed teeth and 17.5% of teeth that had fluoride varnish applied to them.

Tagliaferro *et al.*[29] in a randomised controlled trial of 268 children, randomly allocated three groups, with both high caries-risk and low caries-risk children separated within each group. The three interventions were: oral hygiene instruction (OHI) alone (control group); OHI with fluoride varnish; and, OHI with glass-ionomer sealant. They showed that for high caries-risk children, biannual fluoride varnish application on occlusal surfaces of FPMs resulted in a 0.29 decayed missing filled (DMF) increment after two years (compared to 0.39 DMF increment for the control). However, a glass-ionomer sealant was the most effective at reducing caries with only a 0.06 DMF increment.

Key point to learning: fluoride varnish applied biannually is an effective preventive measure, but must be followed up with recalls.

When should I use glass-ionomer fissure sealants?

While glass-ionomer sealants are not retained as well as resin sealants, their real advantage is seen when their caries preventive effect is compared to resin sealants. Antonson *et al.*[30] in a 24-month clinical trial of children aged five to nine years with partially erupted first permanent molars showed that there was less marginal staining around glass-ionomer sealants, compared to resin sealants in teeth sealed with up to half of the occlusal surface covered by operculum. This study did not however state if these children were high or low caries risk and had quite a small sample size of 39.

Liu *et al.*[31] looked at teeth with deep fissures and/or teeth that had incipient caries visible even when the tooth surface was wet. They attempted to show a difference between resin and glass-ionomer sealants when it was known that the carious process was established in pits and fissures. The results showed that after two years, 4% of resin sealants had dentine caries compared to 7% for glass-ionomer sealants. The glass-ionomer sealants were placed using polyacrylic acid conditioning and a "finger-press technique". The study is of relatively high quality and assessed a sufficiently large sample size (n=280). Zhang *et al.*[32] carried out a study with a large sample size (n=405) with a 10% drop out after four years. The study included high caries-risk children only with a DMF score of ≥2. There was block randomisation carried out by a statistician who was not involved in interpretation of the results. Selection of patients, placement of sealant and assessment of sealant were carried out by different individuals. Portable equipment was used on site in five different primary schools. Resin sealants were placed with conventional methods (37% phosphoric acid etch and rinse), while glass-ionomer sealants were placed using polyacrylic acid conditioning and an atraumatic restorative treatment (ART) technique. The glass-ionomer sealants were light cured for 60 seconds after placement. Their results showed 98% teeth with no dentine caries for glass-ionomer sealants and 96.4% for resin sealants. The authors attribute the poorer performance of resin sealants due to the field setting that the sealants were placed in.

Key point to learning: glass-ionomer sealants may be used in circumstances such as: when there is insufficient moisture control; or, where the tooth is partially erupted. The caries preventive effect of glass-ionomer sealants is higher than their retention rate would suggest.

Discussion and conclusions

Since publication of the Irish Guideline, new studies have occurred that relate to the recommendations within the Guideline. After searching and appraising the literature, some recommendations remain unchanged; however, as the world adjusts to the global impact of Covid-19, dentistry as we know it must adapt accordingly. The virus SARS-Cov-2 or Covid-19 is a novel infectious respiratory disease, which ranges in presentation and severity of symptoms. As some patients may be asymptomatic on presentation for dental treatment, the risk of spreading of the virus is increased through close interactions of unknown carriers.[33] During usage of certain dental equipment such as the three-in-one syringe, there is a risk of transmissible droplets being transferred through the air to susceptible staff or other patients through aerosol generating procedures (AGPs).[34] At this time of the Covid-19 pandemic, it is important to recall the definition of evidence-based guidelines. Evidence-based guidelines are systematically developed statements designed to help administrators, practitioners and patients make decisions about appropriate healthcare for specific circumstances.[9] Given the specific circumstances of the

Table 1: Recommendations for pit and fissure sealants.

1.	Pit and fissure sealants are effective and should be placed on first and second permanent molars. Sealant material of choice should be appropriate for the level of isolation which can be achieved.
2.	Non-operative cleaning of fissures using a toothbrush or bristle brush is recommended. Mechanical preparation of fissures is not recommended.
3.	Patients should be recalled at six-monthly intervals, or more frequently based on caries risk level.
4.	Fluoride application can be considered when pit and fissure sealants cannot be satisfactorily placed and patients recalled within three to six months depending on caries risk level.

Covid-19 pandemic, glass-ionomer sealants and their ability to bond to the tooth surface without etching, should be given greater consideration as they may offer us a safer option at present. It should however, not be overlooked that sealants placed must be reviewed for retention and maintanence.[1]

As a summary for general practitioners, the recommendations that remain unchanged are listed in **Table 1**. While there is some evidence that the use of self-etching agents and intermediate bonding agents can be beneficial, the findings were limited to four high-quality studies and consequently, further research is needed.

Ideally, a means of convening a guideline development group would be put in place, so that a timeline of an update for the Guideline can be agreed upon. This ensures that resources are available to the practitioner with the most up-to-date information, and that findings from new research can be implemented efficiently.

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CPD questions

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

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CPD

1. Recommendation for best practice includes the following measure directly prior to placing fissure sealants:

- ○ A: Mechanical shaping of fissures with a diamond bur
- ○ B: Placement of rubber dam isolation
- ○ C: Cleaning of occlusal surface with bristle brush and pumice
- ○ D: Use of bond as an intermediary layer

2. Pit and fissure sealants are an effective preventive measure for the following patients:

- ○ A: Children aged six to nine years with high caries risk
- ○ B: Adults with immunocompromised status
- ○ C: Adolescents with poor oral hygiene
- ○ D: All individuals who are assessed as being high caries risk

3. When is the best time to place fissure sealants?

- ○ A: When the child is six years old
- ○ B: When the tooth is sufficiently erupted to be isolated
- ○ C: When there are one or more permanent first molars partially erupted in the mouth
- ○ D: When there is an early enamel lesion in the occlusal fissure

Acute myeloid leukaemia: an update for dentists

Précis

This report highlights the oral manifestations of leukaemia. It illustrates the classification, the signs and symptoms, and the differential diagnoses of leukaemia that are relevant for a dental practitioner. There is also an example of a case report, which highlights some of the intra-oral presentations of acute myeloid leukaemia (AML).

Abstract

Many systemic diseases exhibit oral involvement. These intra- and extra-oral signs can have diagnostic weighting. Acute myeloid leukaemia (AML) is just one of a number of conditions that can present in the mouth. AML is a haematological malignancy, seen generally in the older population. Cervical lymphadenopathy and gingival enlargement, attributed to AML are the two most common signs that may present in a dental setting.

The case report also demonstrates that the treatment of systemic diseases can resolve the oral complications of the particular disease. In this case report, the treatment of the AML resulted in a resolution of the gingival hyperplasia.

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Introduction

Leukaemia is defined as a malignant, haematological proliferation of white blood cell precursors.[1] Lymphocytes are a subgroup of white blood cells, which originate from lymphoid progenitor cells. Red blood cells and platelets in comparison are derived from myeloid progenitor cells.

The myeloid progenitor cells also produce a subgroup of white blood cells called granulocytes, namely monocytes, neutrophils, basophils and eosinophils. The lymphoid and myeloid progenitors originate from self-renewing stem cells in the bone marrow.[2] Lymphoid cells mature into lymphocytes and regulate the adaptive immune response. They also regulate the production and life cycle of immunoglobulins.[3,4]

In a patient with leukaemia, the balanced ratio of white blood cells, red blood cells and platelets is disproportionate (**Figure 1**). The levels of white blood cells may be unusually high or low and the complete blood count values for red blood cells and platelets are also outside their normal remit. A bone marrow biopsy is a confirmative test for leukaemia. Cytological screening of the defective cells can provide additional information about the malignant cells and their nature.[1,4]

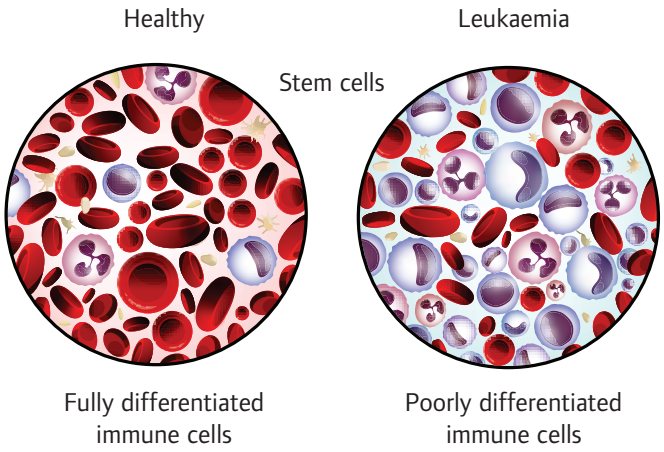

FIGURE 1: A schematic diagram depicting stem cell differentiation in normal and pathological processes.

Harriet Byrne
BA BDentSc (Hons) MFDS Dip PCD RCSI PgCert (ClinEd)
Oral and Maxillofacial SHO, St James's Hospital, Dublin

Hengjia Zhang
BDS
Cork University Dental School and Hospital, Wilton, Cork

Kaumal Baig
BDS NUI MFD RCSI DipPCD RCSI PgCert (Anatomy) PgCert(ClinEd)
Cork University Dental School and Hospital, Wilton, Cork

Caroline McCarthy
MFDS (Edin) FFD (OS) DClinDent (OS)
Cork University Dental School and Hospital, Wilton, Cork

Paul Brady
BDS, PhD, MFDS, FFDRCSI, MSc Con Sed, PGCert-TLHE
Cork University Dental School and Hospital, Wilton, Cork

Corresponding author: Harriet Byrne, Oral and Maxillofacial Department, St James's Hospital, Dublin 8. Email: Byrne.harriet@outlook.ie

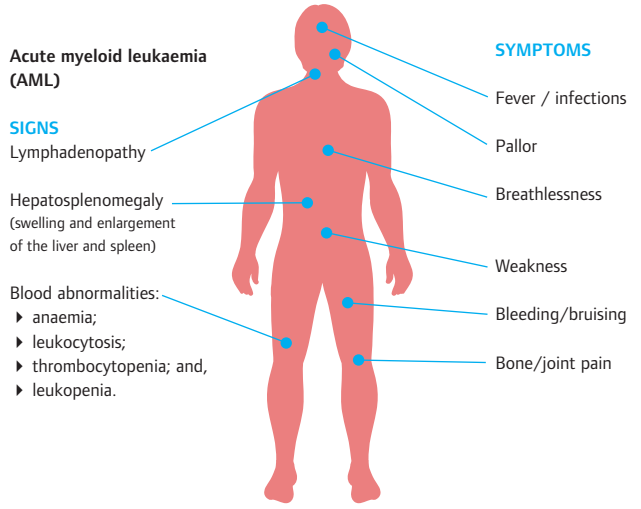

FIGURE 2: Systemic signs and symptoms of leukaemia.

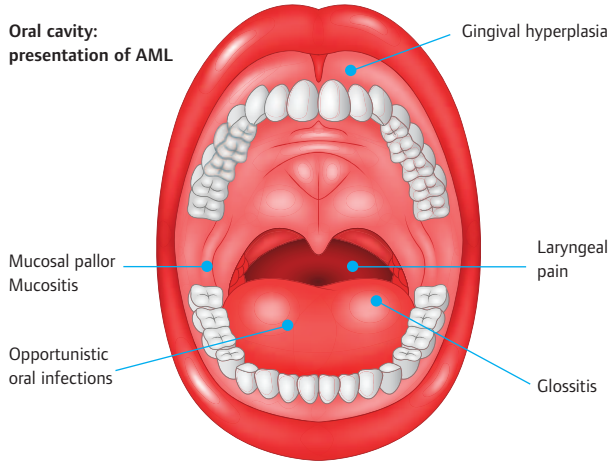

FIGURE 3: Oral signs and symptoms of acute myeloid leukaemia.[4]

A classification of leukaemia has been devised, which divides leukaemia into the nature of the disease, namely acute or chronic and the haemopoietic origin of the cells involved; either lymphoid or myeloid.[5] The four classes of leukaemia are as follows:

- acute lymphocytic leukaemia (ALL);
- acute myeloid leukaemia (AML – **Figure 2**);
- chronic lymphocytic leukaemia (CLL); and,
- chronic myeloid leukaemia (CML).[6]

Alternative classifications of leukaemia have been proposed, such as the French-American-British (FAB) classification and the World Health Organisation (WHO) classification, which are commonly used worldwide. In 2016, the WHO revised its classification of leukaemia, which incorporates both haematopoietic and lymphoid tumours. This classification addresses the clinical picture, the morphology, the immune-phenotypes, the cytogenetics, and molecular genetics of the defective cells.[7]

AML is more commonly seen in the older population, with peak incidence noted in the seventh decade. In comparison, ALL is more prevalent in the younger population, constituting 80% of childhood leukaemia. There is no known definitive aetiology for leukaemia. However, there are primary risk factors for both ALL and AML, which include genetic abnormalities, Down syndrome, Fanconi anaemia and chromosomal fragility.[2]

There are a number of secondary risk factors for leukaemia; these include high-dose radiation, therapeutic radiation and exposure to toxic hydrocarbons such as benzene. AML has a number of additional risk factors including smoking and haematological conditions such as: myelodysplasia; myeloproliferative disorders; myelofibrosis; aplastic anosmia; and, polycythaemia rubra vera.[2]

Chronic, long-standing leukaemia can take multiple years to reach a definitive diagnosis, whereas acute leukaemia can be fatal within a matter of weeks.[2]

Leukaemia can present with intra-oral findings (**Figure 3**) of the malignancy.[8] These signs may be of primary origin, which is a direct result of migration of the defective cells into the oral tissues. They may be of secondary presentation, which is a consequential complication of leukaemia. Tertiary presentation results in the direct effect of antineoplastic therapy.[4]

Oral signs and symptoms of AML

Additional signs and symptoms of AML may include lymphadenopathy, petechiae and the presentation of opportunistic bacterial, fungal and viral infections.[5]

CASE REPORT

A 53-year-old male presented to the Oral Surgery Department at the Cork University Dental Hospital with regard to gingival enlargement (**Figure 4**). He was referred by his haematologist, who was managing his myelodysplastic syndrome.

The medical history included insomnia, myelodysplastic syndrome, and hypertension. His medications included zopiclone and amlodipine. He denied smoking cigarettes or drinking alcohol.

On presentation, there were generalised gingival enlargement and gingival petechiae. The gingivae were erythematous, inflamed, and lobulated with a distinct lack of stippling. There were signs of oral mucositis, an area of ulceration on the dorsum of the tongue and a diffuse, soft red patch on the hard palate. Lymphadenopathy was not detected on presentation.

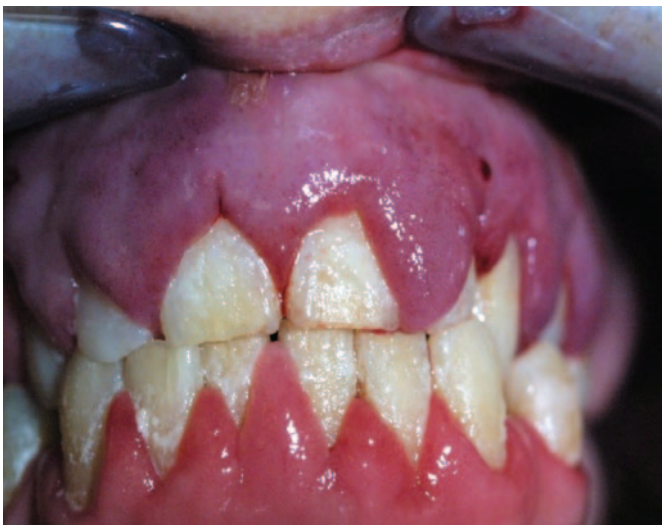

FIGURE 4: Gingivae on presentation to the Cork Dental University Hospital, depicting the leukemic infiltrate in the gingival tissues. Poor oral hygiene was also noted.

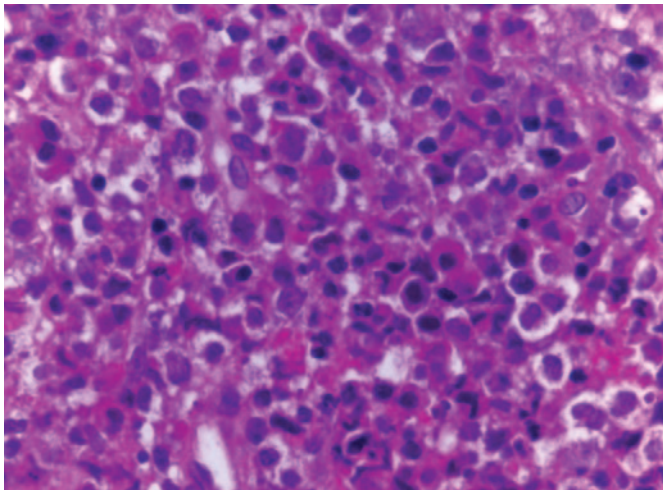

FIGURE 5: Microscopic view of the incisional biopsy from the gingivae.

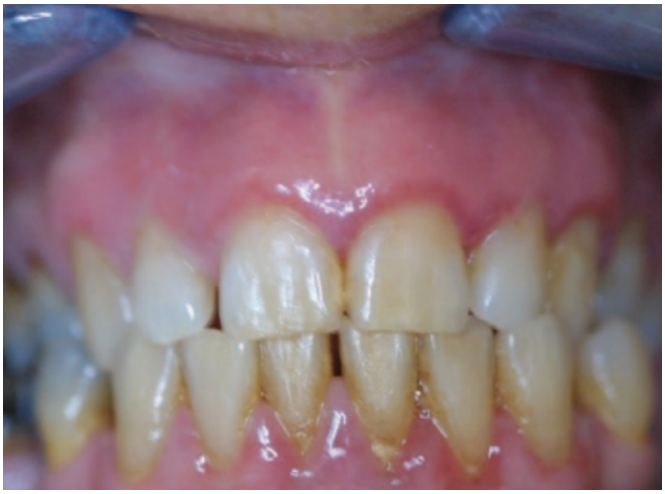

FIGURE 6: Gingival tissues following the first phase of chemotherapy.

Investigations

The following special tests were performed: a microbial culture swab of the dorsum of the tongue; an incisional biopsy of the hard palate; and, an incisional biopsy of the swollen, attached gingivae. A platelet infusion was arranged prior to the surgical procedures.

Differential diagnoses

Medication-induced gingival enlargement (calcium channel blockers), which the patient was taking and secondary metastatic deposits, were eliminated due to the histological appearance of AML.

Histology

The histopathology report of the erythematous patch on hard palate revealed an acute and chronic inflammatory response with fungal hyphae. There was no evidence of dysplasia. These results were indicative of oral candidiasis.

The second biopsy of the upper left attached, swollen gingival tissues revealed the presence of atypical cells with irregular cytoplasmic granules. This histopathological report is indicative of AML.

Normal gingival architecture does not have the presence of dense cytoplasmic granules, which are highlighted by the dark purple stain in **Figure 5**.

Treatment

The patient was prescribed amphotericin B and voriconazole for oral candidiasis. BMX mouth wash and analgesics were prescribed for the oral mucositis. BMX is a compounded medication, which contains nystatin, hydrocortisone and diphenhydramine.

There was a consultation with the haematologist and in conjunction with a bone marrow biopsy, the AML was treated with a chemotherapeutic regime. The chemotherapy regime included cytarabine and daunorubicin.

Outcome

After the first phase of chemotherapy there was a complete resolution of the gingival enlargement and oral mucositis. Frontal photographic view of the gingival tissues after the chemotherapy regime indicates smooth, pink, healthy gingivae (**Figure 6**). Note the presence of plaque-induced gingivitis. This highlights the dual effect of both inflammation and a systemic disease on the gingival architecture. Maintenance periodontal treatment and regular dental check-ups were performed by the general dental practitioner.

Discussion

AML is a malignancy of unknown aetiology. However, it can develop from a precursor of leukaemia such as myelodysplastic syndrome. AML can be diagnosed in any age group of the population but most notably in the older population.

AML can present initially in the oral cavity.[6-8] There are a number of oral findings that are commonly detected in the leukemic patient. Both direct and indirect physiological effects of leukaemia will render many patients neutropenic, anaemic, thrombocytopenic and myeloid-suppressed.[3,4] Consequentially, the prevalence of opportunistic bacterial, fungal and viral infections is abundant.[2,4,9-11] The most common opportunistic infection seen in patients with leukaemia is the herpes simplex virus 1 (HSV-1), which can be confirmed in conjunction with the clinical scenario using cytology and immunofluorescent antibody to HSV-1 and a viral culture. HSV can present as vesicles and areas of ulceration predominantly in the oral cavity, but can also present in the pharynx, eyes, face and lips. Herpetic gingiva-stomatitis is also common amongst this cohort.

Another oral complication of AML is the sequelae of thrombocytopenia. The signs and symptoms may be attributed to number of causes, namely myelosuppression, and the reduction of platelets and clotting capacity of the blood cells. Thrombocytopenia can be haematologically defined as a platelet count of 20,000/cu.mm or below.[12] Spontaneous intra-oral bleeding, mucosal petechiae and prolonged post-extraction bleeding times are prevalent amongst these patients.[4]

A retrospective study conducted by Hou *et al.* reported a variation in the oral presentation of leukaemia, depending on the form of the malignancy.[12] AML and ALL exhibited similar prevalence of oral and extra-oral involvement, notably lymph node enlargement (45%), gingival bleeding (43.2%) and laryngeal pain (37.3%). The most prevalent systemic symptom in all leukemic patients was fever (92.2%). As a result of the high prevalence of cervical lymphadenopathy, a full examination of these chains is recommended.

Lymphadenopathy that persists for more than six weeks, a lymph node that is 2cm or greater in size, widespread lymphadenopathy, or night sweats with associated splenomegaly, are significant according to the National Institute for Health and Care Excellence (NICE) referral guidelines for a suspected cancer (2005).

Hou *et al*. correlated a platelet count and consequential prevalence of gingival bleeding in patients, which was noted as their first sign of thrombocytopenia.[8] A total of 83% of patients with a platelet count less than 25,000mm^{-3} had gingival bleeding compared to 15% of patients with a platelet count of 100,000mm^{-3} or greater.[12]

Conclusion

The early detection of AML can be noted by the dental practitioner. This can directly influence both the morbidity and mortality of the malignancy, especially in the acute cases.[7] These cases may present to a dental setting with findings such as loss of appetite, loss of weight, persistent lymphadenopathy, and unexplained petechiae, laryngeal pain and gingival hyperplasia. If there is suspicion surrounding these findings, this should prompt a medical enquiry. The NICE guidelines 2017 for the referral of suspect cancer state that a referral process must be arranged for the patient to attain the appropriate medical appointment and seen within a two-week timeframe. AML may present in the dental setting and it is imperative to identify these clinical indictors.

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CPD questions

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

IDA irish dental association

CPD

1. Certain medication can induced gingival hyperplasia. Which of the following medication is a well-known cardiac medication that may cause gingival enlargement?

- ○ A: Amlodipine
- ○ B: Losartan
- ○ C: Furosemide
- ○ D: Valsartan

2. Oral candidiasis and petechiae may be an oral sign of leukaemia. They are classified as a:

- ○ A: Primary presentation
- ○ B: Secondary presentation of leukaemia.
- ○ C: Tertiary presentation
- ○ D: None of the above

3. There is no definitive aetiology for leukaemia; however, the following are associated as risk factors for the haematological condition except:

- ○ A: Fanconi anaemia
- ○ B: Myelodysplastic syndrome
- ○ C: Fanconi syndrome
- ○ D: Myeloproliferative disorders.

The potential future of the Covid-19 pandemic: will SARS-CoV-2 become a recurrent seasonal infection?

Murray, C.J.L., Piot, P.

There is growing optimism and hope that by virtue of ongoing immunisation efforts, seasonality (declining infections through August), and naturally acquired immunity, by spring and early summer 2021 in the US, there will be a substantial decline in the number of deaths and hospitalisations related to Covid-19. However, this optimism must be tempered by several important factors. The likelihood of achieving herd immunity against SARS-CoV-2 is low simply because not all individuals in the US are eligible to be vaccinated, and a quarter of eligible individuals will likely decline to be immunised. Moreover, the vaccines do not provide full immunity against infection, and the currently available vaccines are less effective against variant B.1.351, and possibly other variants. Accordingly, the public and health systems need to plan for the possibility that Covid-19 will persist and become a recurrent seasonal disease.

Journal of the American Medical Association. Published online March 03, 2021. doi:10.1001/jama.2021.2828

Covid-19 vaccines: global challenges and prospects forum recommendations

Boudjelal, M., Almajed, F., Salman, A.M., Alharbi, N.K., Colangelo, M., Michelotti, J.M., et al.

Perspective on November 4 and 5, 2020, the 11th Annual KAIMRC Global Forum was organised as a G20-related event entitled Covid-19 Vaccines: Global Challenges and Prospects: https://globalcovid19vaccines.com. It was a vital event that provided a hub for leading Covid-19 scientists, regulators, pharmaceutical representatives, funders and charities to learn about Covid-19 vaccines in development, discuss different vaccine candidates, make recommendations, highlight lessons learned and address appropriate plans for global distribution and pricing. Over 10,000 people from 94 countries attended the forum. The leading Covid-19 vaccines presented use different technologies including the following.

(a) Non-replicating viral vector-based vaccines, such as: the ChAdOx1 nCoV-19/AZD1222 vaccine developed by Oxford-AstraZeneca (van Doremalen *et al.*, 2020); the Sputnik V vaccine developed by the Russian Gamaleya Institute consisting of two components, a recombinant adenovirus type 26 (rAd26) vector and a recombinant adenovirus type 5 (rAd5) vector (Logunov *et al.*, 2020); and, the Ad26.COV2.S vaccine developed by the Center for Virology and Vaccine Research, at Harvard Medical School in collaboration with Janssen Vaccines and Prevention BV, Leiden (Mercado *et al.*, 2020).

(b) Nucleic acid, DNA- or RNA-based vaccines that include the mRNA-1273 vaccine that is being developed by Moderna (Anderson *et al.*, 2020), and a self-amplifying (saRNA) vaccine termed VGHsa111 developed by Imperial College, London, as well as another co-developed by Pfizer and BioNTech. An example of a DNA-based vaccine against Covid-19 is INO-4800, that is being developed by Inovio Pharmaceuticals Inc. (Smith *et al.*, 2020).

(c) Protein-based vaccines – CoV RBD219-N1 vaccine from Baylor College of Medicine, Texas that is based on a yeast-derived (*Pichia pastoris*) protein (Hotez and Bottazzi, 2020) and from Anhui Zhifei Longcom Biopharmaceutical Co. Ltd (Dai *et al.*, 2020).

Representatives from the Bill & Melinda Gates Foundation, the Bring Hope Humanitarian Foundation (BHHF), and the Coalition for Epidemic Preparedness Innovations (CEPI), presented their plans for distributing the vaccines to people in need around the world including those in low-income countries. They are also developing educational programmes to train health workers in immunisation procedures.

International Journal of Infectious Diseases. 2021; Feb 27:S1201-9712(21)00179-X. doi: 10.1016/j.ijid.2021.02.093. Epub ahead of print. PMID: 33652065; PMCID: PMC7912554.

Prior Covid-19 Infection and Antibody Response to Single Versus Double Dose mRNA SARS-CoV-2 Vaccination

Ebinger, J.E., Fert-Bober, J., Printsev, I., Wu, M., Sun, N., Figueiredo, J.C., et al.

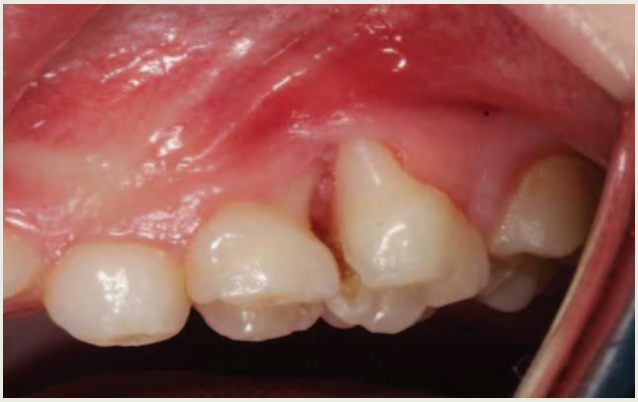
The double dose regimen for mRNA vaccines against SARS-CoV-2 presents both a hope and a challenge for global efforts to curb the Covid-19 pandemic. With supply chain logistics impacting the rollout of population-scale vaccination programmes, increasing attention has turned to the potential efficacy of single- versus double-dose vaccine administration for select

Quiz answers

Questions on page 64

1. Factitious or self-induced injury was the cause of the root exposure. Pain and likely food impaction caused this child to pick at the area to get some relief. There is an increased prevalence of factitious injury in children with autism.

2. Extraction of the first and second primary molars offers the most predictable option for this child considering his clinical findings and medical background.



individuals. To this end, we examined response to the Pfizer-BioNTech mRNA vaccine in a large cohort of healthcare workers, including those with versus without prior Covid-19 infection. For all participants, we quantified circulating levels of SARS-CoV-2 anti-spike (S) protein IgG at baseline prior to vaccine, after vaccine dose 1, and after vaccine dose 2. We observed that the anti-S IgG antibody response following a single vaccine dose in persons who had recovered from confirmed prior Covid-19 infection was similar to the antibody response following two doses of vaccine in persons without prior infection (P≥0.58). Patterns were similar for the post-vaccine symptoms experienced by infection-recovered persons following their first dose compared to the symptoms experienced by infection-naïve persons following their second dose (P=0.66). These results support the premise that a single dose of mRNA vaccine could provoke in Covid-19-recovered individuals a level of immunity that is comparable to that seen in infection-naïve persons following a double-dose regimen. Additional studies are needed to validate our findings, which could allow for public health programmes to expand the reach of population-wide vaccination efforts.

medRxiv [Preprint]. 2021; Feb 26: 2021.02.23.21252230. doi: 10.1101/2021.02.23.21252230. PMID: 33655279; PMCID: PMC7924304.

Estimated transmissibility and impact of SARS-CoV-2 lineage B.1.1.7 in England

Davies, N.G., Abbott, S., Barnard, R.C., Jarvis, C.I., Kucharski, A.J., Munday, J.D., et al.

A novel SARS-CoV-2 variant, VOC 202012/01 (lineage B.1.1.7), emerged in south-east England in November 2020 and is rapidly spreading toward fixation. Using a variety of statistical- and dynamic-modelling approaches, we estimate that this variant has a 43-90% (range of 95% credible intervals 38-130%) higher reproduction number than pre-existing variants. A fitted two-strain dynamic transmission model shows that VOC 202012/01 will lead to large resurgences of Covid-19 cases. Without stringent control measures, including limited closure of educational institutions and a greatly accelerated vaccine roll-out, Covid-19 hospitalisations and deaths across England in 2021 will exceed those in 2020. Concerningly, VOC 202012/01 has spread globally and exhibits a similar transmission increase (59-74%) in Denmark, Switzerland, and the United States.

Science. 2021; Mar 3: eabg3055. doi: 10.1126/science.abg3055. Epub ahead of print. PMID: 33658326.

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Enthusiastic dentist required to replace departing colleague in progressive practice in the sunny south east immediately. Principal dentist mentoring available if required. On-site acrylic laboratory and Trios intraoral scanner. Flexible hours available. Super position for the correct candidate. Contact: dillondental@gmail.com.

Dentists/orthodontist – Dentists in primary care setting – Dublin 24/north Dublin, Nobber/Navan, Laois/Offaly. Orthodontist for north Dublin. Email: unagaster@gmail.com/086-035 2933.

Experienced dentist needed to take over a full-time private book and work alongside two experienced dentists providing the full range of dental care. Digital practice with visiting clinical dental technician. Excellent equipment and support staff. Excellent earnings. Contact: info@rathdrumdental.ie.

Kilkenny city – dentist required two to four days a week for three to six months, with possible permanent position thereafter. Busy book, excellent staff, fully computerised. Family-friendly general dental practice. Contact: kkdentist21@gmail.com.

Looking for a general dentist with special interest in implants and/or facial aesthetics to join our Dublin clinic. Full-time and part-time opportunities available. Please send in your CV via email to: drsana@sitaramedicalclinic.com.

Kilkenny city, full-/part-time dentist to replace departing colleague, busy computerised practice. Contact: ayrfielddentalpractice@gmail.com.

A large private dental group is seeking a general and children's dentist. An exciting opportunity for a recent graduate as mentoring is provided. Contact: jobs@shieldsdentalclinic.ie.

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Dentists/orthodontist – Dentists in primary care setting – Dublin 24/north Dublin, Nobber/Navan, Laois/Offaly. Orthodontist for north Dublin. Email: unagaster@gmail.com/086-035 2933.

Dental technicians

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Southgate Dental are hiring a full-time dental nurse. Experience with Exact software is an advantage. Please send your CV to: ciarar@sgdental.ie.

Dental nurses for primary care setting or orthodontics. Positions in Dublin north/south city, Tullamore, Portlaoise, Longford, Meath. Email: unagaster@gmail.com/phone 086-035 2933.

Part-time dental nurse required for busy practice in Ongar Village, Dublin 15. Flexible hours, two and a half to three and a half days. Please send CV to: ongar.dental@gmail.com or contact Claire on 01-640 2733 for further information.

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Our IT guy

Dublin-based prosthodontist Dr Maurice Fitzgerald talks about helping the IDA to make the move online.

What is your professional background?

I graduated in Dental Science from Trinity College. I was in general practice for about three years, and then went back to the Dental Hospital in Trinity and did my prosthodontics training to become a crown and bridge specialist. I worked in Waterford for a couple of years as an associate specialist, then opened my own referral practice in Sandyford in 2010 in the height of the recession. That's where I've been ever since.

What led you to first get involved in the IDA?

I've been a member of the IDA ever since I graduated. I often went to branch meetings when I was working in general practice and when I was an associate. When I was in Waterford, I joined the South East Branch and was Branch President in 2009.

What is your involvement now?

When I moved back to Dublin, there were a few years where I was busy with the practice, but then slowly I got back into the IDA. I've been on the CPD Committee for about five years and on the Annual Conference Committee for the last three years.

How did you become involved in helping the IDA transition to online services?

I was always into building computers, and used to do part-time work for an IT company. I was very keen to get the IDA online and move away from face-to-face meetings, because it's hard to get out in the evenings and it's much easier to watch something online or watch videos. When the new CPD portal came in, I was involved with that. I wanted the IDA to record lectures because there's a lot of good lectures and talks being given and if you don't turn up to them, they're gone. We got the equipment and started recording lectures and training courses, and we had good uptake. But then, of course, Covid happened and that accelerated all the plans.

How did the IDA adapt?

The IDA needed a way of delivering information to dentists. They also needed a way to deliver up-to-date Covid news, which was changing on an hourly basis this time last year. We decided to start shooting videos, and myself and another dentist, Alastair Woods, recorded some back to work videos with help from the Quality and Patient Safety Committee. We were also trying to deliver the usual lectures on non-Covid topics. It's amazing how quickly it all took off. All the members seem to have transitioned at this stage to an online format and everything is done via Zoom. Hopefully, as things go forward, it'll be more of a hybrid situation where there's face-to-face and online, depending on your preference. The Annual Conference is online this year and a huge amount of effort has gone into an absolutely world-class line-up. I hope everyone will support us and register.

What has your involvement in the IDA meant to you?

Dentistry is a solitary endeavour, and it's nice to meet other dentists and see that they have the same issues and problems. It's important that you don't get stuck in your ways, thinking that your way is the only way things are done. And it's nice to meet up with people and pick up tips and tricks on dentistry, business and staffing issues. I think the IDA grounds you as a member of the profession rather than just a dentist practising on your own. I also enjoy lecturing and I get to do a little bit of that with the IDA.

What has been the single biggest benefit of IDA membership for you?

That solidarity as a profession is the biggest benefit. I also think it's important to partake in our professional body and to give back to the profession to make sure that there are people there for the young dentist coming up, to maintain the continuity of dentistry in Ireland.

How would you like to see the Association progress into the future?

I definitely think the biggest thing is to bring younger dentists in. There are some very enthusiastic younger dentists and with the transition to online, it's now going to be easier for them to see what's going on in the IDA. I would also like to see the membership in general engaging more, from a mutually beneficial point of view, not just as a negotiating body, but as an educational body as well. I think the online stuff is here to stay, and that means that your geographic location isn't as important as it once was, and just because IDA House is in Dublin doesn't mean that you can't have somebody from Donegal on a committee.

Maurice lives close to his practice in Dublin with his wife Ciara and two daughters, Isabelle and Kate, who are 11 and six. He still builds computers and enjoys fixing up old cars. He's looking forward to getting back to racing at Mondello Park once lockdown comes to an end. He also enjoys his one day a week teaching prosthodontics to undergraduates at the DDUH.

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