IDA
irish dental association

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

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Bonded by the light

Clinical tips: light curing

CONTENTS

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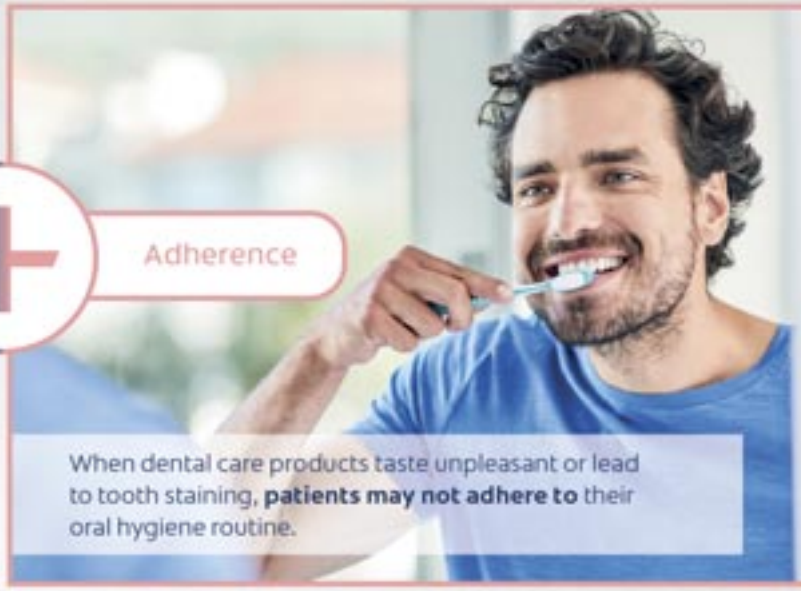

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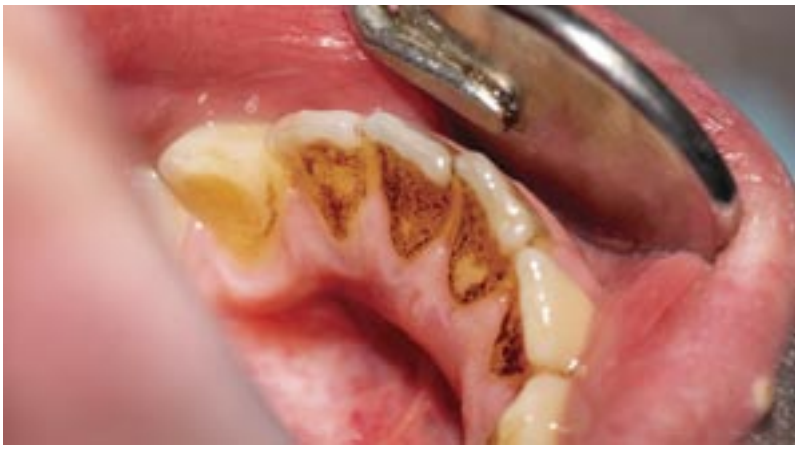
* Plaque bacteria, with twice daily four weeks of continued use. + Claim applies to PerioGard® Gum Protection toothpaste.
1. Brushing with regular fluoride toothpaste. Chapple I, et al. Clin Periodontol 2015;42(Spec Iss):S71-S76. **2.** Vs 0.12% CHX without anti-stain technology. Fine D, et al. (2019). (CRO-2018-05-CHX-ED). **3.** With continued use. Hu D, et al. JADA 2019;150(4 suppl): S32-S37. **4.** Vs. CPC alone. Rösing CK, et al. Braz. Oral Res. 2017;31:e47. **5.** Vs a competitive mouthrinse with essential oils in an alcohol-free base. Langa GPJ, et al. JADA 2021;152(2):105-114. **6.** Data on file. Colgate-Palmolive Company, 2022.
Colgate® Brand, Toothpaste, UK Dentist Survey, 2021.

PROFESSIONAL ORAL HEALTH

Dr Cristiane da Mata
Honorary Editor

A new era for dentistry?



The WHO resolution on oral health is a landmark moment for dentistry and oral health – is change finally on the way?

GV Black, the father of operative dentistry, once said in a lecture: "The day is surely coming and perhaps within the lifetime of you young men before me, when we will be engaged in practising preventive, rather than reparative, dentistry". Black already knew back then the importance of prevention, suggesting ways to avoid the trapping of food in pits and fissures through "extension for prevention".[1]

Whereas dentistry has evolved a lot since then, and extension for prevention is a concept no longer used, oral health worldwide does not seem to have followed at the same speed. From the introduction of local anaesthesia, the use of fluoride to prevent caries and smart toothbrushes, to 3D printing and digital radiography, dental materials and technology have come a long way, but the oral health of a great portion of the population is still in a poor state.

Almost 150 years since Black's lecture, dental caries, a largely preventable disease, is still a major public health problem worldwide. The treatment of choice is still drilling and filling, and this is not accessible to all. The result at an individual level is pain, tooth loss, and poor quality of life. At a population level, the economic burden is substantial, including lost days at work, hospital admissions for treatment under general anaesthesia (GA), and high expenditures on dental treatment.

A recent study compared the global burden of 291 diseases and injuries, and found that untreated dental caries in permanent teeth was the most prevalent of all conditions in 2010, affecting 35% of the population worldwide.[2] More than 3.9 billion people suffer from oral diseases, including caries, periodontal diseases, and cancers. Not surprisingly, oral diseases disproportionally affect poor and socially disadvantaged populations.

Landmark

For this reason, the approval by the WHO of a resolution on oral health, which took place last year, is a landmark to be celebrated. It recognises the burden of oral disease at a global level, and urges WHO member states to have a plan in place to, among other things:

- address key risk factors for oral disease shared with non-communicable diseases such as cardiovascular disease and cancers;
- integrate oral health into national health policies;
- enhance the professional workforce capacity to deliver quality care;
- move to minimum intervention approaches; and,
- raise awareness of the importance of good oral health and a functional dentition.

Bringing oral health into the spotlight was a first step. Now, the WHO will have to draft a global strategy to inform the development of an action plan by 2023. This action plan has to include clear, measurable targets, to be achieved by 2030.

The idea is to 'leave no one behind', by improving access to care and prevention, reducing disease burden, and addressing risk exposure factors such as sugar, while encouraging community participation.

Challenges

It all sounds very positive, but we cannot deny it is a considerable challenge. Major reforms in service delivery will be needed, and the importance of community engagement cannot be underestimated. Those living with oral diseases, who would benefit the most from these reforms, are the ones whose voices are not heard when planning for change. Another major challenge that needs to be taken seriously is fighting sugar industry lobbying. The link between sugar and dental caries has been long established and public health policies to tackle sugar consumption have to play a central role in this oral health strategy.

There is still a long way to go, but if efforts and resources are put into place globally, dentistry could be heading towards a new era, and the way dental services are delivered could change dramatically. And maybe, somewhere down the road, hopefully not 150 years from now, GV Black's prophecy might be fulfilled.

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PRESIDENT'S NEWS

Dr Caroline Robins
IDA President

Movement on staff shortages and VAT

New IDA President Dr Caroline Robins sets out some priorities for the coming year.

It is a great honour to take on the role of IDA President and represent the membership for the coming year, particularly as the Association's first non-Irish President. I was born in New Zealand, and graduated from the University of Otago in 1995, before moving to Ireland in 1999. I worked in the Dublin Dental Hospital before setting up my own practice in Co. Carlow.

Staff shortages

As someone who once had to navigate the process of registering as a foreign-trained dentist in Ireland, I am acutely aware of the issues involved. We are dealing with a recruitment crisis across the dental professions at the moment, and one of my priorities as President will be to address this, and to work with all stakeholders, including the dental schools and the Dental Council, to find solutions that will work for everyone.

The reasons for the current staff shortages are complex. The number of graduating dentists per year and the proportion of international students is one factor, and we do need to look at numbers. However, this is not the only contributing factor. The nature and demographics of dentistry have changed enormously in recent years. Dentistry is now a much more female profession, and female professionals are more likely to be impacted by issues around childcare and domestic responsibility. Quality of life is also a factor, and the pandemic has made many of us re-evaluate our work–life balance.

In addition, working from home has changed the working day and patients can attend the dentist far more easily. We are also seeing increased demand for cosmetic dental procedures due to the Zoom phenomenon, and an apparent increased awareness of the importance of oral health.

In addition, many graduate dentists are choosing to engage in other aspects of the health industry rather than general dentistry as we may have understood it in the past. All of these factors are contributing to a quantitative lack of person hours in all sectors of the profession. We need to critically look at the number of graduates from each dental school, as well as address the accessibility and frequency of Dental Council examinations for non-EU/EAA-trained dentists. We also need to improve accessibility for hygienists and auxiliary staff trained outside Ireland.

As a result of the IDA raising these issues, the Department of Health recently announced that it will review dental school numbers, and also undertake a dental workforce plan. I welcome these developments, which show the value of our advocacy role as the voice of Irish dentistry. Next we will engage with the Department in ensuring that these welcome initiatives are expedited. We also plan to engage with the Dental Council to try to find solutions to the issues that have arisen around registration of foreign-trained dentists, such as the lengthy delays currently experienced by those trying to complete the process. We appreciate that some of these issues are complex too, and will do all we can to help resolve them. The key to solving these problems is in collaboration towards the common goal of improving oral health for all.

The same can be said of our efforts to resolve the crisis in the DTSS, where I hope that constructive negotiations will begin soon that will produce a new scheme to meet the needs of dentists and their most vulnerable patients.

VAT

Our discussions with Revenue on the issue of VAT liability are also ongoing, and have been constructive. If VAT is to be applied on the payments received from associates, this would fundamentally alter the way that the business of dentistry is carried out in Ireland, and the nature of the relationships between dental practitioners. This would also inevitably lead to rising costs for patients and make access to dental care more problematic in many parts of the country. The IDA has been working hard to demonstrate these potentially catastrophic effects to Revenue. We believe that Revenue officials see that this is a complex issue, for which a workable solution must be found, and we are hopeful that we will soon have a positive outcome.

Your association

With so many vital issues on the agenda for dentistry in the coming months and years, it has never been more important to be a part of your professional organisation, and I urge those of you who are not members of the IDA to consider joining. Dentists traditionally work alone or in small groups, and so the support and collegiality of a professional association cannot be underestimated. Membership of the IDA also carries considerable financial benefits, as well as providing access to excellent CPD, employment law and HR advice, and many other services. Most importantly, there is strength in numbers, and our best hope of success in the current negotiations, and those to come, is in having the support and input of the whole of the profession behind us.

During the pandemic, we lost many opportunities to connect and work together. Now that restrictions have been lifted, I hope to meet as many of you as possible in the coming year to hear your concerns, and to strongly encourage you to get involved in the Association in any way you can.

Mouth Cancer Awareness Day 2022

Mouth Cancer Awareness Day 2022 will take place on Wednesday, September 21. More information will be available closer to the time at www.mouthcancer.ie.

HSE Dental Surgeons Seminar 2022

The HSE Dental Surgeons Seminar is back! October 13 and 14 will see the return of the Annual HSE Dental Surgeons Seminar – the first in three years. The event will take place at the Midlands Park Hotel, Portlaoise. Full programme to follow.

Library of CPD webinars online

Did you know that as a valued member of the IDA, you can still view the majority of our CPD webinars on the 'Members Only' section of the IDA website – www.dentist.ie? There is a wealth of information in these webinars and members can log on at a time and day that suits them to view. Log on to www.dentist.ie and go to CPD.

Webinars autumn 2022

Interested in giving a webinar? The IDA CPD Committee is now putting together the online CPD programme for autumn/winter 2022. If you are interested in presenting a webinar for the next series, please contact elaine@irishdentalassoc.ie.

Health and safety inspections

The Health and Safety Authority is currently conducting inspections in dental practices around the country. To prepare for these inspections, and to ensure that you are compliant with regulations, tune into the IDA webinar on the topic, which is available to purchase on our CPD platform.

The Bioclear method – hands-on restorative course

Following on from the successful sold out course in February, Dr Claire Burgess will return to Dublin on Friday, September 30, to give the Bioclear course in conjunction with Optident. This day-long course proved very popular with attendees when Dr Burgess gave the course earlier this year. To book, contact aoife@irishdentalassoc.ie or go to www.dentist.ie.

Costello Medal recipients 2022: Cameron Price (left) and Donald Ademaj of the Dublin Dental School and University Hospital.

Costello Medal 2022

The 2022 recipients of the Costello Medal, representing the Dublin Dental School and University Hospital, were Donald Ademaj and Cameron Price.
The title of their presentation was 'Environmental sustainability policies in healthcare: a global qualitative review of policy content and production'.
The presentation examined if, when and where scans of environmental sustainability policies have been published, and investigates the types and content of published sustainability policies, and their applicability in healthcare and potential future research avenues.
This year the poster demonstrations were adjudicated by visiting lecturer Prof. Michael Lewis of Cardiff University, and Dr Caroline Robins, IDA President. The Costello Medal was presented at the IDA Annual Conference in Galway in May.

Hands-on endodontic course

Dr Bob Philpott, in association with Dentsply, will present a full-day hands-on endodontic course in Fota, Cork, on Friday, October 7. Full details and booking forms to be forwarded soon.

Basic life support/sedation

Do you offer sedation at your practice? If so, you and your dental team need to keep up to date with specific medical emergency training for sedation. The Dental Sedation Immediate Life Support (ILS) course is designed especially for dental practices that offer sedation, and you and your team should update your skills every two years. Courses will take place in Dublin, Cork and Galway.
General basic life support (BLS) courses will also take place separately in Dublin, Cork and Galway.
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Quiz

Submitted by Prof. Michael Lewis

Antimicrobial resistance

Questions

1. Name three antibiotics that can be used to treat an acute dentoalveolar abscess.

2. Which of the following dental conditions require treatment with an antibiotic?
   - A. Dry socket
   - B. Acute pulpitis
   - C. Prophylaxis for the surgical removal of a tooth
   - D. Re-implantation of a tooth
   - E. None of the above

3. How long has it been since a new antibiotic was developed?
   - A. Between one and five years
   - B. Between six and ten years
   - C. Between 11 and 15 years
   - D. Between 16 and 20 years
   - E. Over 20 years

4. Give one strategy to reduce antibiotic resistance.

Answers on page 155

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Coltene tool for endo retreatments

If you're looking for a product for safe, efficient and good value endodontic retreatments, Coltene believes its Hyflex Remover is an essential piece of the puzzle. According to the company, Hyflex Remover can be used to clear away gutta-percha mechanically, with no solvent required. This is often a tricky part of the process, and Coltene states that the file will do the job while respecting anatomy with its non-cutting tip. Coltene states that it has designed the wire to be very thin, for the kind of non-invasive, conservative endodontics dentists want to deliver.

COLTENE

Also available from Coltene are MicroMega K-files. One dentist, Dr Ammar Al Hourani (pictured above), says: "For the last four years, I've been using both the K and H handfiles by MicroMega, and they have become my go-to K-Files. I have been very impressed by the file manufacturing design, cutting efficacy and stiffness of the file, which makes them my file of choice".

For those who are hoping to make a good impression, Coltene states that its Affinis impression material helps to facilitate efficient teamwork between the dental practice and the lab. According to Coltene, the material does this because it has exceptional flow properties, optimal working time and excellent readability, which reduces the risk of errors, and therefore saves time and money on readjustments and remakes.

Dental Care Ireland's spring education event

Dental Care Ireland's Dentists' Education Weekend took place on Saturday, April 23, in Galway's The g Hotel. Facilitated by Dr Jennifer Collins, Clinical Director at Dental Care Ireland, the weekend provided an opportunity for practical training, networking and peer discussion.

Dr Collins said: "After the success of our education weekend last year, we took our hands-on event west where we hosted over 20 dentists in Galway City. This event focused on upskilling our dentists on all things anterior composites. Dr Ambrish Roshan, our main speaker, was excellent; his knowledge and passion really shone through and the feedback from our clinicians has been incredible".

Over 20 dentists attended from Dental Care Ireland practices across the country to hear from a panel of speakers including: Dr Ambrish Roshan, anterior composite masterclass; and, Dr Noel Kavanagh of Dental Protection and supported by Ivoclar.

At the Dental Care Ireland Dentists' Education Weekend were (from left): Dr Rachel Goggins (Westport); and, Dr Teresa Fitzgerald (Castlebar).

Speaking at the opening of the event, Colm Davitt, CEO, Dental Care Ireland, said: "At Dental Care Ireland, we invest in both our practices and our people for the long term. Since our last education event, our organisation has again grown substantially in size. With 28 practices nationwide, it is the quality and professionalism of our teams that sets us apart".

VivaScan makes a digital impression

Looking for an easy way to make first digital impressions? Ivoclar states that its VivaScan device is a good tool for the job. According to the company, the all-new VivaScan is a compact and intuitive intraoral scanning solution for dentists who wish to enter the world of digital dentistry. Due to its standalone design, Ivoclar believes the device can be easily and effortlessly integrated into a daily practice routine, deliver compelling scanning results and a more efficient workflow.

VivaScan's makers state that it is a compact, powerful intraoral scanner for the dental practice, offering a flexible scanning experience. Because of its lightweight design (only 230g), VivaScan flexibly fits into the routine workflows of dentists, according to the company. VivaScan can be used as a mobile, portable system. It has been designed by Ivoclar to only require a single cable to connect to a laptop. Additional cables that could get in the way during the scanning process are thus not required.

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Environmental sustainability from Henry Schein

Henry Schein Ireland and Henry Schein UK have recently obtained ISO 14001 certification, an internationally agreed standard that sets out the requirements for an environmental management system (EMS). The certification also includes Optident, a Henry Schein company. The requirements are determined by the International Organisation for Standardisation (ISO), which helps organisations to improve their environmental performance through more efficient use of resources and reduction of pollution and waste.

To achieve ISO certification, a series of audits were conducted for Henry Schein's integrated management system. The audits confirmed that the company is meeting the compliance obligations for ISO 14001, and is operating in a responsible and sustainable manner.

Additionally, the company states that it has implemented the required processes to ensure that it is effectively managing its environmental aspects and risks, and is taking steps to reduce its impact. The standard also requires that the company continues to monitor and set objectives to continue to reduce its impact on the environment.

Vicki Snow, Regulatory & Quality Director, Henry Schein UK, Ireland, South Africa, and the Nordics, said the company believes in protecting the well-being of people and the health of our planet: "We are dedicated to acting in a socially responsible manner to positively address environmental concerns, and the ISO 14001 certification reinforces our commitment to be a driving force for sustainability in our operations and the supply chain".

Colgate Caring Dentist Awards 2022

The IDA is delighted to announce that the Colgate Caring Dentist Awards will continue in 2022. Applications are now open for patients to nominate their dentist and/or dental team.

The IDA will forward information to dental practices for you to use on your social media platforms and communicate to your patients over the next few months.

Get the tuxedos/party dresses dry cleaned and the dancing shoes polished for a night to celebrate on Saturday, November 19, at the InterContinental Hotel, Dublin. Further details to follow.

To nominate a dentist or dental team for an award go to www.colgatecaringawards.ie.

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Delighted to re-connect

The first IDA Annual Conference post Covid was a great opportunity to learn and socialise.

The atmosphere at the IDA Annual Conference in May was fantastic, as members, speakers and trade representatives mingled and celebrated the opportunity to get together at the first in-person conference since 2019. As ever, the Galmont Hotel in Galway provided a super venue for pre-conference courses, trade show, lectures and socialising.

Learning together

Thursday's pre-Conference courses covered a wide variety of topics. Drs Aisling Donnelly and Greg Creavin took delegates through the best ways to maximise success in endodontic treatment. Prof. Markus Blatz offered cutting-edge research on CAD/CAM ceramics in aesthetic dentistry, and Dr Jim Grisdale gave a course on crown lengthening for predictable aesthetic and functional restorative results. Digital photography for the dental practice was covered in focus:RAW, a course given by Drs Minesh Patel and Ambrish Roshan, while Dr Nik Sethi took delegates through Flow – a posterior composite simplified workflow presented by Bioclear. Compliance in the increasingly regulated world of dentistry was also covered by Drs Ahmed Kahatab, Michaela Dalton and Marie O'Grady, ably chaired by Dr Eamon Croke.

Setting the agenda

The Association's AGM on Thursday evening set the agenda for the coming year, passing motions on issues of importance to dentistry and oral health. Incoming President Dr Caroline Robins set out her priorities, and Dr Eamon Croke introduced the theme for the 2023 Conference, 'Shining brightly', which will celebrate the Association's Centenary.

Our colleagues from the dental trade were also back this year, and delegates had plenty of opportunities to chat with them and see the latest innovations in dental equipment and technology, and to relax at the trade show party on Thursday evening.

Friday evening of course is reserved for the Annual Dinner, and this year's felt particularly special, as the first chance to come together, eat, drink and be merry for the first time in so long.

The best of international and homegrown dentistry

On Friday and Saturday, the parallel lecture programme offered a superb line-up of speakers from home and abroad, covering a wide range of cutting-edge topics.

Prof. Walter Renne is a full-time professor and Assistant Dean of Innovation and Digital Dentistry at the Medical University of South Carolina. He is director for the preclinical CAD/CAM course and has published several studies on scan and milling accuracy using various systems. He spoke at length about the use of 3D printers and how he uses them. He uses both an SLR camera and an intra-oral scanner prior to the CAD/CAM smile design work itself. He noted that for restorations, it is possible to 3D print a crown for 50c (US) and that some 3D crowns wear better than milled materials, but not as well as ceramics.

IDA Presidents past and present. Back row (from left): Dr Martin Holohan; Dr Kieran O'Connor; Dr PJ Byrne; Dr Michael Galvin; Dr Eamon Croke; and Prof. Leo Stassen. Front row (from left): Dr Robin Foyle; Dr Clodagh McAllister; Dr Caroline Robins; Dr Ena Brennan; and, Dr Barry Harrington.

Prof. Markus Blatz of the University of Pennsylvania School of Dental Medicine sought to bust the myth that you can't bond zirconia. He outlined his APC (air-particle abrasion, primer with MDP, and composite) concept as a method that can create long-term success in restorations, buying time for patients who are not ready for implants or can't afford them. He explained how his method works, and gave advice on materials and techniques to get the best results. Ultimately, he said, the combination of the best scientific evidence, clinical expertise, and an awareness of the patient's needs and preferences, guarantees the best outcomes.

Oral surgeon Dr Niamh Boyle talked about keeping things simple when it comes to dental extractions. She outlined some of the reasons why dentists refer patients to her for complex extractions, including patient anxiety, a need for multiple extractions, and multiple complications. She pointed out that the aim should always be minimal pain and tissue trauma, and a good result. She discussed ways of dealing with common problems that can arise, such as failure of anaesthesia and dental anxiety. She spoke of the importance of taking a detailed patient history that includes all medications. She encouraged delegates to improve their extraction skillset, saying 'if you can't sew, don't cut'!

Prof. Lars Rasmussen of the University of Gothenburg in Sweden spoke on osteoporosis and the risk factors for medication-related osteonecrosis of the

Dr Clodagh McAllister hands over the chain of office to Dr Caroline Robins.

Dr Grace Kelly speaking on dental anxiety and its management.

Dr Caroline Robins (centre) with the team from Colgate (from left): Paul Munro; Lou Smee; Jonathan White; and, Stephanie Gribben.

From left: Sarah Kinsella, Sarah Dennehy and Lisa Murphy of Listerine.

Prof. Markus Blatz spoke on cutting-edge CAD/CAM restorations.

Mary Culliton, Facilitator, Dental Complaints Resolution Service.

Dr Michael Galvin was this year's winner of the President's golf competition.

jaw (MRONJ). Osteoporosis is a systemic disease that is very common in ageing populations, and more common in women than men. There are a range of treatments for osteoporosis, but he focused on bisphosphonates, which are a significant risk factor for MRONJ.

Dental care for people taking bisphosphonates must take into account the length of time a patient has been on the drug, and what they are taking it for (osteoporosis or malignant disease). Prof. Rasmussen also gave tips on managing treatment to reduce risk, such as checking soft tissue closure after extractions. He also outlined some research on implants in patients taking bisphosphonates, which shows that implant survival rates are better than previously thought.

Dr Slaine McGrath, a dentist based on London, finished the day on Friday with a fascinating presentation on growing the dental practice using social media. Slaine uses Instagram to promote her practice, and has been extremely successful in building patient numbers, enabling her to choose the treatments she likes to do, and even move locations without losing patients. She said that making social media work for you means putting in the work – uploading 'before and after' photos regularly, responding to messages, and keeping the account up to date. She talked about identifying a target audience and tailoring content to suit them, and the techniques and equipment needed. She also showed dentists how to use Instagram analytics to track usage and followers, and make the most of your account. She advised people to start a business profile, engage with others on the site, start posting, and showcase your best work.

Patient-friendly dentistry

The lectures continued on Saturday, as Dr Marielle Blake, a consultant orthodontist in the HSE and in private practice, spoke on her experience using Invisalign in practice. She gave advice on scanner type and technique, saying that the initial learning curve when scanning is very steep. She also spoke about the importance of explaining what's involved to the patient, including what is expected of them in terms of fitting and cleaning aligners. She said that the benefit of scans is that you can explain the treatment plan stage by stage, but that it's important to be realistic with patients about what their expectations should be. She showed clinical photographs of several of her cases, explaining what she had learnt from each.

She said that Invisalign is the way of the future, and that in 10 years' time, 50% of cases will be aligners.

Dr Grace Kelly of Cardiff University School of Dentistry outlined a number of techniques to manage dental anxiety, from behavioural management, and technology such as virtual reality modelling, to hypnosis, acupuncture, and sedation. She used real-time audience polls to find out what techniques delegates had used/found helpful, and how confident they felt dealing with anxious patients. Research shows that up to 20% of patients in Ireland experience dental anxiety, on a wide spectrum from mild anxiety up to dental phobia, so this is something all general dentists need to be aware of. She advocated for more training in managing anxiety, especially at undergraduate level.

Drs Gillian Smith and Jennifer Connolly gave a shared presentation on removing the barriers for autistic patients in general practice. Jennifer spoke of her experience as a parent of an autistic child, the importance of inclusion, and the need for dentists to take a progressive approach. Gillian has adapted her practice to specialise in caring for patients with additional needs, and she outlined some of the changes she has made, which begin with the first phone call to the practice, and continue right up to the dental visit and treatment. She emphasised the need for a team approach to find a plan that works for each individual patient. They finished by talking about work that is currently taking place in collaboration with AsIAm on an autism-friendly accreditation system for dental practices (which would make dentists the first healthcare group in Ireland to adopt such a system).

Dr Saoirse O'Toole is a Clinical Lecturer in King's College in London, a visiting Associate Professor at University College Dublin, and is in private practice in Dublin. In a two-part lecture, Saoirse first gave some updates on the medical comorbidities, diagnosis and monitoring of tooth wear. She focused particularly on the latest evidence regarding gastro-oesophageal reflux

disease (GORD), outlining research on its links to bruxism, sleep apnoea, obesity and asthma. She also discussed her own work to develop a diagnostic tool for extra-oesophageal reflux to be performed in the dental surgery. In the second part of her presentation, Saoirse spoke about the opportunities and caveats of digital monitoring to track tooth wear. She discussed the accuracy of intra-oral scanners for measuring tooth wear, and said that while scanners have improved significantly, the software involved has not, but better software will hopefully resolve problems in the future. She introduced WearCompare, a free digital software she has developed to quantify tooth wear, which she hopes will contribute to improving the situation.

The team from IDA House (from left): Marie Walsh; Roisín Farrelly; Fintan Hourihan; Elaine Hughes; and Aoife Kavanagh.

Dr Noel Kavanagh and Dr Nuala Carney.

Honing their photography skills with Dr Minesh Patel (left) were Dr Kumar Gauran Karra; Dr Marcella Torres Leavy; and Dr PJ Byrne.

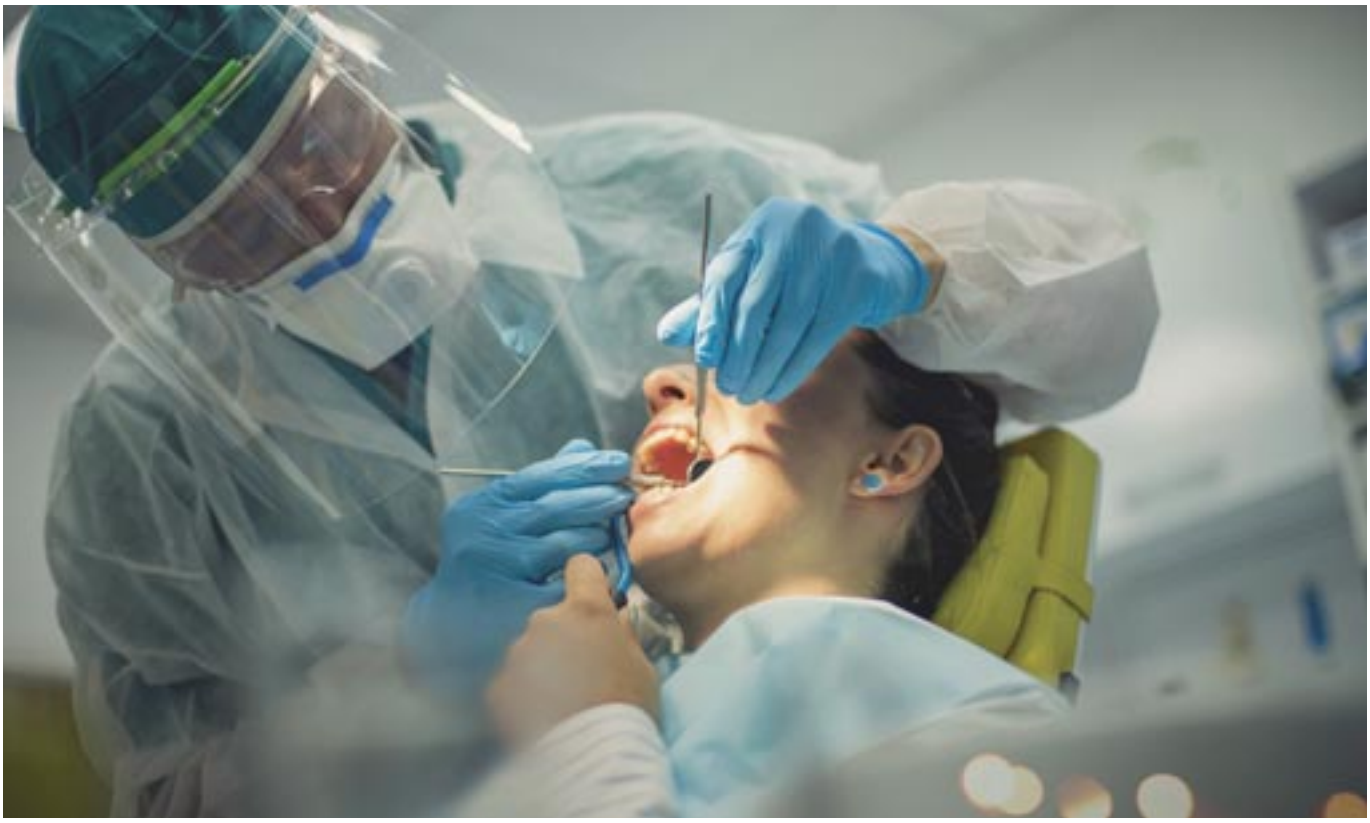
From left: Dr Ambrish Roshan and Dr Minesh Patel show Dr Will Rymer the best techniques in dental photography.

Dr Sarah McMorrow and Dr Nik Sethi.

This year's pre-conference courses gave dentists the opportunity to learn new skills.

Workforce challenges in post-Covid Europe

The CED held its first in-person General Meeting in Porto in May.



The recent Council of European Dentists (CED) General Meeting in Porto was the first in two years, and was a welcome return to in-person discussions between the dental associations of Europe.

As part of CED internal affairs, delegates adopted the CED Final Accounts for 2021 and the CED Budget for 2023. The Statutes were amended to limit the time served as Treasurer to three years for two consecutive terms, and the maximum term on the Board was set at four mandates of three years.

In his opening address, CED President Dr Freddie Sloth Lisbjerg mentioned a wide range of topics common to all countries, including:

- issues of substitution and delegation within dental teams;
- the changing roles of partnerships, groups and corporate models;
- young staff, workforce challenges; and,
- ever-evolving equipment as dentistry continues to develop in the digital age.

Dr Nuala Carney
Dr Kieran O'Connor

IDA CED Representatives

There was a statement of solidarity regarding dentists from Ukraine, noting the shortage of medicines there and the challenges raised by considering allowing access to registration across the EU, while continuing to maintain the requirements of dental education and qualifications. All countries are suffering the impact of the crisis in Ukraine, with increased inflation, destabilisation and rising energy costs. There is no doubt that these things will impact on dental practices, many of which have only just regained momentum after the Covid-19 crisis.

Support for CED members in recent months has included: surveys among member states on VAT issues (Irish Dental Association); dental specialties (Germany); interviews for media (Spain and UK); and, correspondence with the Lithuanian authorities.

New policy statements

In addition to updates on the work of CED Working Groups and Task Forces, the General Meeting adopted two policy statements: 'e-skills for dentists' and 'Dentistry and patient safety during the ongoing Covid-19 era'.

The CED statement 'e-skills for dentists' focuses on the digital transition in

dentistry, and the importance for dentists of broadening their understanding of how dental applications, telemedicine, digital workflow models, digital health information and artificial intelligence (AI) equipment are evolving and affecting traditional dental practice. The role of e-skills in the patient-dentist relationship in matters of communication, consent and data protection is becoming increasingly important and ever more complex. There is a recognition that dentists will need to continually upskill in this area right through their practising lifetime, just as with their clinical skills.

The updated CED statement 'Dentistry and patient safety during the ongoing Covid-19 era' reflects the importance of vaccination and aims to capture the current pandemic status quo and its impact on dentistry. There is a recognition of a change in focus at EU level from emergency measures during the two years of Covid-19 to stabilisation now, with a focus on vaccinations. The European Centre for Disease Prevention and Control (ECDC) has a new mandate focusing on non-communicable diseases. The CED is collaborating with the European Medicines Agency as part of the healthcare professionals organisational policy officers group. The Working Group on Oral Health informed us about the IMMUNION project, which aims to increase the uptake of vaccination in the EU via communication, training, media coverage and PR. There will be a webinar on June 28, which members can access – please contact the IDA if you are interested. The One Health Initiative between doctors, vets and dentists is seeking to form a consortium that will set up a project to train the healthcare workforce in the One Health approach; this will include multi-professional education on antimicrobial resistance – ever an ongoing healthcare challenge.

AI and aligners

AI and aligner orthodontic systems are hot topics in almost every jurisdiction and there was considerable debate around the regulation of these enterprises. Aligners being printed and manufactured with no dental input – and treatment plans being drawn up by unqualified personnel – are significant issues. These companies have very significant resources and are likely to strongly resist attempts to limit their market and marketing. Discussion took place around how to influence legislation that might make access more difficult, and to try and ensure that patients are made aware of the risks of engaging with non-dentally trained providers, often remotely.

Workforce issues

Of particular interest were workforce issues, as some countries reported national or local shortages of dentists, while others saw numbers increase; this was reflected in the initial discussion on a CED policy paper on workforce challenges that will be prepared for adoption during the November 2022 General Meeting. The issue of public and private dental schools is still very alive on mainland Europe and we were made aware of 'educational tourism', where there is a brain drain from poorer to richer countries.

There was discussion around the challenges for young dentists of trying to gain experience in new models of practice, which are often very different to the traditional mentoring/apprentice-type associate model of traditional practice. Concerns were expressed at the level of support and mentoring available to young dentists as they develop their skills, and the challenges they face in some scenarios (although not all) with aggressive commercial focus. There was a range of views expressed concerning the various corporate models that exist in different jurisdictions and a recognition that this model is part of the future of dentistry and we need to work with it rather than against it. As ever, there are differing views across the various associations on how the dental team should be structured and what tasks can be delegated.

Pictured at the CED General Meeting in Porto recently were (from left): Dr Robin Foyle; Fintan Hourihan, IDA CEO; Dr Kieran O'Connor; and, Dr Nuala Carney.

Sustainability and global health

The CED will be supporting a project on 'Sustainability in Dentistry' based in the Dublin Dental Hospital. We look forward to hearing more details of this in the coming months.

The delegates also heard from Prof. Dr Pål Barkvoll, President of the Association for Dental Education in Europe (ADEE), who focused on the possible collaboration on the WHO global oral health strategy and the study 'Mapping and assessment of developments for one of the sectoral professions under Directive 2005/36/EC – dental practitioner', carried out by Spark Legal Network. We are awaiting an update on the results of the study, which examined dental school curricula across the various countries and will hopefully provide recommendations on minimum standards that should apply, in line with the Professional Qualifications Directive. In addition, Ivana Ligusová, President of the European Dental Students Association (EDSA), presented on the EDSA's activities, impressing the delegates with her enthusiastic and detailed presentation outlining the broad range of issues that the EDSA is involved in.

IDA presentation

Fintan Hourihan, IDA CEO, gave a presentation at the meeting on 'Communicating with MEPs – a national perspective'. Fintan's presentation showed how the CED and national dental associations can work together, and the different roles at different stages of the advocacy process. It also showed how advocacy takes place in different locations, i.e., Brussels, Strasbourg and within national parliaments, and with governments and regulatory authorities. He concluded that the CED provides us with great advocacy tools and showed how working together we are definitely stronger!

It was, as ever, a stimulating and fruitful two days of conversations and sharing of experiences and challenges regarding the provision of dental services to our patients from many different perspectives. We would like to convey our appreciation to the Portuguese Dental Association for their generous hospitality.

Ethical fingerprints

Balancing commercial, personal and ethical demands in dentistry can be a challenge.

We leave traces on the things we touch. As a result of a range of popular television crime dramas, we are no strangers to the concept of fingerprint identification as a means of establishing who was where and what they did.

Fingerprinting has a surprisingly long history; the Ancient Babylonians recorded in clay the 'prints' of arrested felons. In the modern era, since the 1890s fingerprints have been used in evidence to tie an individual to a place or an action (interestingly, one of the first cases that turned on fingerprint evidence, that of Henri Scheffer in France in 1902, involved a murder on the premises of a dentist). The point is that the marks we leave can cause us trouble.

Our 'ethical fingerprints' also leave marks on what we touch. As well as potentially causing problems for us, they can cause trouble for our patients too.

An ethical framework

Ethics can be thought of as the framework of principles accepted by an individual or a group as guiding acceptable, expected conduct. It is a complex area involving the concepts of conscience, belief systems, right and wrong, and codes of behaviour. We may do our best to behave ethically but we are all human. Sometimes people do the 'wrong' thing through self-interest, convenience, pressure, or succumbing to temptation. Circumstances can also lead to an individual doing a bad thing for what seems like a good reason. We have all seen (and enjoyed) films where the 'baddies' get their comeuppance as a result of the 'goodie' doing something that is not merely ethically questionable, but is just downright bad – but somehow, we don't mind this because it seems okay 'under the circumstances'.

So it is possible to recognise something as 'bad', while at the same time excusing or even condoning it. From this, it is not too much of a stretch to suggest that given the right circumstances we are all capable of straying. Is it more moral to observe the rules or to help a loved one in need? Does it depend? This is the stuff of ethical dilemmas, which often involve choices that are not simple.

In clinical practice there is an expectation that we will put our patients' best interests first, but does that mean sacrificing our own? As a business a practice needs to stay solvent, and it is in nobody's interests if the practice is not run in a sustainable fashion. Dentistry straddles a tricky fault line. There is a need to combine effective healthcare with a commercially efficient operation. The demands of these two potentially conflicting drivers can create an intense ethical pressure on the clinician.

Commerce versus ethics

In the commercial field, goods and services can be thought of as falling into three categories: search; experience; and, credence. 'Search' purchases are those where a consumer makes the purchase based upon the known usefulness of the item, e.g., a car or a kettle. 'Experience' purchases are, as the name suggests, based upon previous knowledge and exposure to that good or service, e.g., a meal or hair appointment. 'Credence' purchases are where the consumer has limited understanding of the details or benefit of what is recommended, and has to rely upon the advice of the technical expert. This 'information asymmetry' makes the consumer reliant upon trusting the expert.

This may be good for the expert but with such settings there is the risk of temptation to provide less than ideal recommendations. A faulty computer, for example, might not need quite as much work as has been suggested, and the consumer is at the mercy of the integrity of the provider.

In the dental setting it can sometimes manifest as either under-treatment, where the patient really requires an intervention that is complex, time-consuming, or technically challenging, but only receives much simpler treatment, or over-treatment, where the intervention suggested is more than the situation really warrants. Where one party has the upper hand in terms of information, there can be a temptation to act in his or her own interest. A practitioner keeping a business

Dr Martin Foster
BDS MPH DipHSM

Martin is Dentolegal Consultant at Dental Protection

afloat can be torn between putting patient interests first and the demands of running a business successfully. There can be a conflict between the interests of the parties, which needs to be recognised.

Beware of distorting factors

There are 'distorting factors' at play within ethical decision-making. These can include imperatives to hit certain targets, to upsell, to increase throughput or concentrate on high-value treatments. Working at a loss will obviously be unsustainable for any business but commercial viability should not come at the cost of ethical sacrifice as there are risks for both patients and clinicians.

One risk is from raised expectations and the patient not having the full picture regarding options. Credence involves trust and the information asymmetry mentioned above can create circumstances where patient choice can be distorted.

The public is hugely influenced by advertising and marketing. There are ever-increasing expectations around 'aesthetic' dentistry. Some patients feel that this will have transformative effects and improve not just their smile but their opportunities, life choices and popularity. Impressive as your dentistry might be, meeting these sorts of aims is a bit of a tall order. Although you may not want to deflate their dreams, it is important to manage patient expectations with very clear communications. What we know is that failure in communication is a predominant factor in the vast majority of dental complaints and claims.

A particular risk from the demands brought to the practice by patients is that of patient-led care with a focus on high-value treatment. With a willing consumer, the provider of credence purchases can easily, and inadvertently, move into the realm of over-selling, over-promising and over-treatment. The combination of wanting to accommodate a patient's wishes, stretching our technical skills and needing to pay the bills can be a powerful mix. It can lead to going along with, or even encouraging, unwise patient choices. The result can be beautifully executed over-treatment or a 'disappointment gap' between expectation and delivery. Dentists are subject to the realities of business, but need active ethical awareness to eliminate behavioural bias and be aware of hidden temptations.

Keeping it ethical

So how does a clinician keep their fingerprints ethical? Start by asking yourself what is driving a clinical decision. Is it clinical need, the patient, you, the practice or financial pressures? Are expectations realistic in terms of treatment outcomes, comparative benefits and your own abilities? Is what is proposed a good thing, being done for the right reason, and is this the best option for this patient at this time? When discussing treatment, stop to consider if the advice presented is accurate and fair, if alternatives, risks and benefits have been presented clearly, and that you are satisfied that what is proposed is within your ability, in the best interests of the patient, and is what you would want for yourself.

Our ethical fingerprints reflect our behaviour and choices. Behaviour is susceptible to the pressure of circumstances and none of us are immune to temptation. The risk of our decisions being distorted by various pressures can be reduced simply by recognising this.

Light curing

Inadequate light curing of composite resin can lead to less than optimal outcomes.

Background

The debate regarding composite resin's shorter than expected service life is ongoing. The properties of this restorative material seem to only have a minor effect on restoration longevity, and the major reasons for failure can be attributed to the patient and the skills of the operator. Inadequate light curing (photopolymerisation) of the resin is also an important contributing factor in less than optimal patient outcomes involving posterior resin composite restorations.[1]

The concern for the general dental practitioner is in keeping up to date with changes in the chemistry of the resin composites, together with the advancements being made in light curing technology. Several factors affecting curing are under the clinician's control, and the following tips aim to inform the practitioner on those aspects that may interfere with light curing, and consequently affect restoration longevity.

1. Irradiance

Irradiance (also expressed in units of mW/cm^2) is the radiant power incident on a surface and describes what the resin receives. A 2mm increment of composite should receive 16,000mW/cm^2 radiant exposure to be adequately polymerised, but energy quality (distance from resin and orientation of the tip) and material properties (opacity and shade) must be taken into account. For complete conversion, sufficient light must reach all extremes of the resin composite, both in terms of width and depth of the restoration. Therefore, the diameter of the light curing tip should be taken into consideration (**Figure 1**).

REMEMBER

- Know the following points relating to your light curing unit (LCU), when new:

– the light intensity in mW/cm^2;
– spectral output;
– if the beam has a uniform output across the light tip; and,
– the diameter of the light beam.

- Always consult the resin manufacturer's recommendation regarding radiation times, bearing in mind that these are often based on ideal clinical situations and not taking into account limitations within the oral cavity that may result in collimation with distance and incorrect light orientation.
- Position the light tip as close as possible (without touching) and parallel to the surface of the resin composite being cured (**Figure 2**).
- Increase exposure time for darker composite shades.

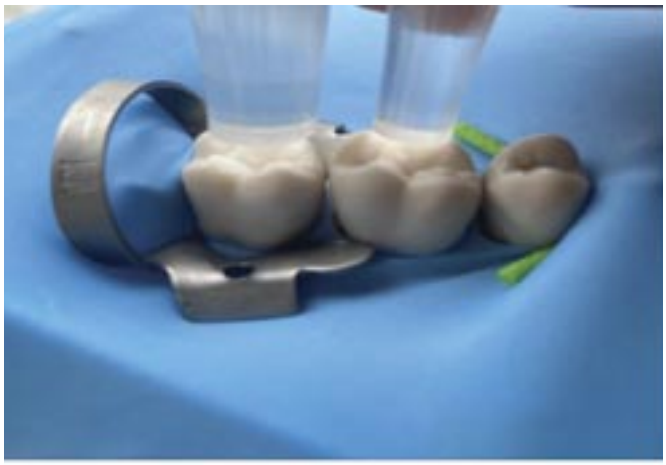


FIGURE 1: The diameter of the light tip needs to be taken into account, particularly when curing a wide mesio-occlusal-distal (MOD) cavity with a bulkfill composite.

2. Exposure times

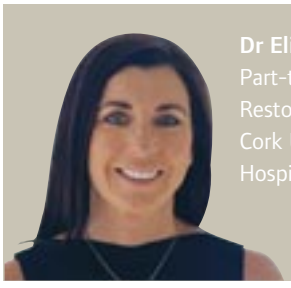
Some new LED LCUs with very high-power diodes recommend very short curing times; however, short exposure times may not allow the activation chemistry in the resin-based composite (RBC) to function efficiently, resulting in inadequate polymerisation. Increased radiant emittance values (particularly associated with the more recently developed high-powered LED LCUs) and increased exposure times can result in a temperature rise within the composite resin layer during resin polymerisation, as well as within the pulp chamber, increasing the risk of soft and pulpal tissue damage.[2]

REMEMBER

- Use external cooling from an airflow when exposing for longer times, or when using high-output LCUs.
- Do not sweep or move the LCU when photo-curing resin composite, e.g., when light curing multiple restorations stabilise and maintain the tip of the LCU over the resin composite throughout the exposure.

3. Spectral wavelength matching

In recent years there have been significant developments and changes to the photo-initiators used in composite resins. Different photo-initiators can have



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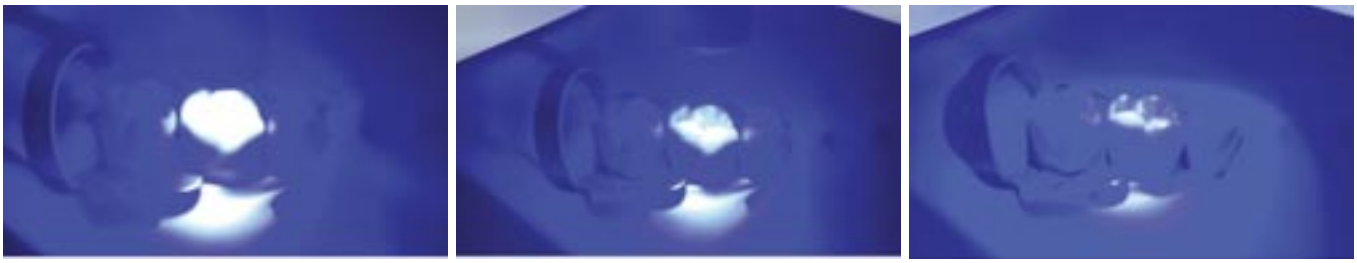

FIGURE 2: Light tip held at increasing distance from target. Note how the light intensity decreases with increasing distance, and how the area exposed to light increases with increasing distance.

different peak absorption spectra and different types of curing light emit light at different wavelengths.

REMEMBER

- Ensure that the wavelength of the light (check technical specifications) and the peak absorption of the photo-initiator (check resin manufacturer's instructions) are compatible. If not, consider purchasing a new, broader-spectrum LCU.

4. Depth of cure

- As light is transmitted through the material, the extent of light loss due to reflection, absorption and scattering can be significant, resulting in partially or evenly uncured RBC at the base of the restoration. The RBC closest to the light source polymerises and hardens first.
- In order to calculate the time needed to cure a 2mm increment of composite, use the formula below. If using a curing light with intensity of 1,000mW/cm^2:

Dose/intensity of the light = Maximum curing time
16,000/1,000 = 16 seconds

REMEMBER

- Conventional dental composites should be placed in 2mm increments to allow sufficient light penetration and polymerisation.
- Supplementary light exposures are recommended in clinical situations that may limit ideal light access, e.g., matrix bands, intervening tooth structure, soft tissues.

5. Safety

The dental team can be exposed to harmful amounts of blue light on a daily basis when light curing, and it is important that they are aware of the potential retinal damage as a result of relatively short exposures. All LCU manufacturers supply and recommend the use of protective blue blocking orange filters to protect the eyes from the bright blue light.

REMEMBER

- Protect the eyes sufficiently when ensuring and maintaining the correct position of the light while curing throughout the working day.

6. Maintenance of LCUs

LCUs must be maintained to maximise performance. It is recommended to check the irradiance of your light at least every six months. A simple device from Ivoclar Vivadent called the Bluephase Meter II is readily available and considered sufficient (**Figure 3**).

FIGURE 3: Bluephase Meter II for light irradiance monitoring.

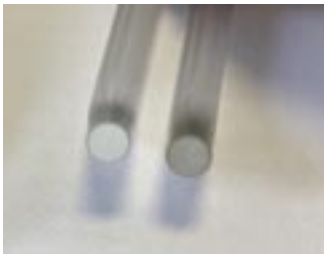

FIGURE 4: Comparison of an old and new light tip.

FIGURE 5: Radiometer readings from the same light curing unit, but comparing the old and new tips illustrated in Figure 4. Significant drop in output can be seen.

REMEMBER

- Inspect and clean the LCU before use to ensure that it is on the correct setting, in good working order, and free of defects and debris (**Figure 4**).
- Regularly monitor and record the light output over time, with the same measurement device and light guide. Repair or replace the LCU when it no longer meets the manufacturer's specifications (**Figure 5**).
- Always use protective polyethylene disposable sheath coverings to prevent cross-contamination and adherence of RBC materials and bonding agents to the end of the light tip.

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2. **Gomes, M., DeVito-Moraes, A., Francci, C., Moraes, R., Pereira, T., Froes-Salgado, N., *et al.*** Temperature increase at the light guide tip of 15 contemporary LED units and thermal variation at the pulpal floor of cavities: an infrared thermographic analysis. *Oper Dent* 2013; 38 (3): 324-333.

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MEMBERS' NEWS

GP Group AGM raises vital issues

This year's GP Group AGM discussed staff shortages in dentistry, the crisis in the DTSS, and upcoming dental legislation, among other issues.

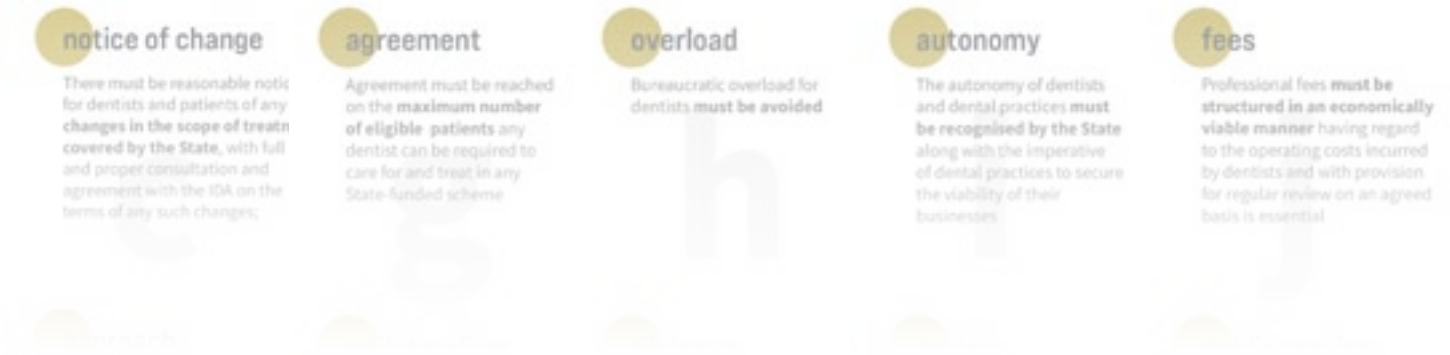
The AGM of the IDA's General Practitioner (GP) Group took place on May 14 at the Annual Conference in Galway. A panel consisting of Dr Will Rymer, GP Committee Chair, Dr Caroline Robins, IDA President, Fintan Hourihan, IDA CEO, and Roisín Farrelly, Manager of the IDA's Communications and Advisory

Association feels that progress is being made on this issue, and while success is not guaranteed, there is reason for optimism that a workable solution is in sight. His advice to dentists was to await the results of the discussions before making any changes to their practice. He referred members to the recent IDA


DTSS numbers of contract holders
1582
1647
1631
1604
1644
1654
1279
1200


IDA
irish dental association
The following principles apply to any scheme or approach developed by the State


clarity of scope
There needs to be clarity around scope of treatment coverage for patients and dentists
regular review
Any changes in the scope of treatments covered must be reviewed regularly


notice of change
There must be reasonable notic
for dentists and patients of any
changes in the scope of treatn
covered by the State, with full
and proper consultation and
agreement with the IDA on the
terms of any such changes;
agreement
Agreement must be reached
on the maximum number
of eligible patients any
dentist can be required to
care for and treat in any
State-funded scheme
overload
Bureaucratic overload for
dentists must be avoided
autonomy
The autonomy of dentists
and dental practices must
be recognised by the State
along with the imperative
of dental practices to secure
the viability of their
businesses
fees
Professional fees must be
structured in an economically
viable manner having regard
to the operating costs incurred
by dentists and with provision
for regular review on an agreed
basis is essential

Public holidays – what you need to know

Dentists frequently contact the IDA's advisory services with questions about public holiday entitlements.

A number of public holidays take place throughout the year. Indeed, many of us will have enjoyed the extended long weekend encompassing two public holidays, St Patrick's Day and the additional public holiday on March 18, in recognition of the efforts of the general public, volunteers and workers during the Covid-19 pandemic, and in remembrance of people who lost their lives due to the

- a paid day off on the day of the public holiday;
- a paid day off within a month of the public holiday, on a day decided by the employer;
- an additional day of annual leave; or,
- an additional day's pay.

Software designed to take the stress out of daily practice life.

Transform your business with our cloud-based software, putting patients and simplicity at the heart of your practice.

Save money and stay secure, without the need for hardware or servers - all your data is stored securely on the cloud.

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Oral care principles for older adults: Part 2

Learning outcomes:

- understand the relevance of state of dependency on treatment planning for older adults;
- be familiar with the risk management for older patients taking bisphosphonates, anti-angiogenic and anticoagulant medications; and,
- recognise the need for atraumatic procedures in patients at risk of osteonecrosis.

Introduction

In the first article in this series, general principles of treatment planning for older adults were addressed. However, beyond purely dental considerations, clinicians will need to consider the wider ramifications of the social and medical status of older adult patients. In medically compromised older adults, the response to oral pathogens is compromised by immunosenescence (i.e., age-related diminished immune response) and reduced saliva flow. Furthermore, any surgical treatment may be compromised if the patient is taking anticoagulants, anti-angiogenics, bisphosphonates or immunosuppressants. In this paper, the focus will be on the potential for medical morbidity to compromise oral health and some medication-related challenges for the dentist in providing dental care for these patients.

Relevance of frailty and dependence

Depending on their social and medical circumstances, older adults can be defined as 'robust', 'frail' or 'dependant'. This, in turn, presents different levels of risk for oral disease and its treatment. A variety of frameworks that categorise older adults according to social and medical status are available. The Canadian Study of Health and Aging (CSHA) framework **(Table 1)** categorises older adults into levels of dependency, and this is useful when planning care, bearing in mind the status of the patient. The incidence of dental caries and periodontal disease tends to be higher in patients categorised in CSHA levels 4, 5, 6 and 7. Their risk of dental disease is elevated because:

- their capability to undertake oral hygiene procedures diminishes as they become more frail, cognitively impaired and dependent;
- they are reliant on carers to undertake oral hygiene procedures, particularly CSHA levels 6 and 7, where the patient is housebound or in residential care;
- they frequently consume refined carbohydrate-laden food and have decreased consumption of fibre and protein;
- they have increased comorbidity, and concurrent systemic chronic diseases; and,
- they take daily multiple medications (polypharmacy), potentially leading to hyposalivation.

In the case of frail, immunocompromised older adults, the potential for respiratory pathogens to colonise dental plaque has been demonstrated, and there is significant risk of this precipitating bacterial pneumonia and death (El Solh *et al.*, 2004). The potential for this to happen is much higher in patients with:

- poorly controlled diabetes mellitus;
- impaired swallowing reflex;
- dementia/moderate to severe cognitive impairment;
- Parkinson's disease; and,
- post stroke/cerebrovascular accident.

The patient shown in **Figure 1** was an 81-year-old male patient who had an impaired swallowing reflex following a recent stroke and had moderately advanced cognitive impairment. His health had deteriorated rapidly over the previous 18 months. As shown, there was a high level of plaque around all

Medically compromised patient: clinical decision-making scenario (Figure 1). Extract all remaining teeth?

- Try to undertake non-surgical periodontal treatment and maintain the existing natural dentition?
- Retain some teeth to facilitate retention of partial dentures.

There is probably no "correct" answer.

- The patient is severely medically compromised, so they are unlikely to respond positively to non-surgical periodontal management and maintain good periodontal health.
- Extracting all remaining teeth eliminates the risk of bacterial pneumonia caused by oral pathogens, but he may not be able to tolerate complete replacement dentures. This may compromise his chewing and diet.
- Extraction of some teeth and provision of transitional removable partial dentures may be a good compromise, given that the patient has not worn a denture previously.

These options need to be discussed with the patient's carers/family and medical team. None of the options are risk free. As the patient is cognitively impaired, he may not be competent to give consent for treatment, and suitable arrangements for this need to be considered and applied appropriately. The final decision will be collectively agreed with carers.

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Table 1: The Canadian Study of Health and Aging dependency framework (adapted from 'Oral health: caring for older adults', FDI, 2019).

LEVEL OF DEPENDENCY	DEFINITION
No dependency: CSHA levels 1 and 2	Robust people who exercise regularly and are the most fit group for their age.
Pre-dependency: CSHA level 3	People with chronic systemic conditions that could impact oral health but, at the point of presentation, are not currently impacting oral health. A comorbidity whose symptoms are well controlled.
Low dependency: CSHA level 4	People with identified chronic conditions that are affecting oral health but who currently receive or do not require help to access dental services or maintain oral health. These patients are not entirely dependent, but their disease symptoms are affecting them.
Medium dependency: CSHA level 5	People with an identified chronic systemic condition that currently impacts their oral health and who receive or do not require help to access dental services or maintain oral health. This category includes patients who demand to be seen at home or who do not have transport to a dental clinic.
High dependency: CSHA levels 6 and 7	People who have complex medical problems preventing them from moving to receive dental care at a dental clinic. They differ from patients categorised in medium dependency because they cannot be moved and must be seen at home.

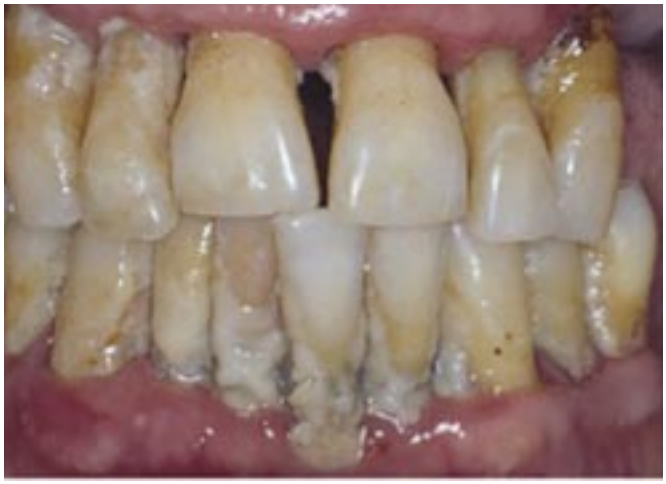


FIGURE 1: 81-year-old medically compromised male, high level of periodontal disease and missing teeth.

remaining teeth, extensive bone loss and grade 2 mobility. He had not previously worn any form of denture.

Relevance of commonly prescribed medications to dental care

In all patients, it is vital to take a comprehensive social and medical history. This includes accurate details of any medications the patient may be taking. Bear in mind that some older patients may be cognitively impaired and not fully aware of what medications they are taking and the dosage. In such cases, contacting the patient's general medical practitioner is advised.

Many older patients at risk of cardiovascular disease take medications that compromise the pathways that control bleeding. These include:

- anticoagulants, e.g., warfarin (Coumadin), and novel anticoagulants/direct oral anticoagulants (DOACs), e.g., rivaroxaban (Xarelto) and dabigatran (Pradaxa); and,
- medications that interfere with aggregation of blood platelets, e.g., clopidogrel (Plavix) or aspirin.

Patients likely to be taking these medications include those with a history of:

- stroke/cerebrovascular accident;
- myocardial infarction;
- ischaemic heart disease;
- heart valve surgery; and,
- renal dialysis.

This is particularly relevant if planning surgical procedures such as dental extractions. Care must also be exercised when administering inferior dental block anaesthesia, as the risk of haematoma is elevated when administering the anaesthetic.

The risk of prolonged bleeding is elevated in cases of more invasive procedures (e.g., multiple extractions, elevation of mucoperiosteal flaps, placing of dental implants), than more minor procedures (e.g., uncomplicated single extractions). If the patient is only taking this medication (e.g., heparin) in the short term, it is sensible to delay surgical procedures for a period of time after the patient stops taking the medications and their blood clotting returns to normal (as measured by the international normalised ratio (INR)). In cases where the medication is being taken long term, then it is recommended to liaise with the patient's medical team.

The patient should not be asked to stop their medication without guidance,

Table 2: Precautions when planning surgical care in patients taking anticoagulant, antiplatelet, bisphosphonate or anti-angiogenic medications.

MEDICATION	RISK	RISK MANAGEMENT
Vitamin K antagonist, direct oral anticoagulant (e.g., warfarin, apixaban) Anti-platelet (e.g., clopidogrel)	Prolonged bleeding, haematoma Higher risk of prolonged bleeding with multiple extractions, surgical extractions, implant surgery	■ Check INR 24 hours before surgical procedure ■ INR >4: try to delay treatment, liaise with medical practitioner to alter medications and reduce INR ■ INR between 2 and 4: low risk of prolonged post-surgical bleeding, careful technique, monitor; no need to stop medications ■ INR 2 or less: very low risk of prolonged post-surgical bleeding; no need to stop medications
Bisphosphonate (e.g., Fosamax, Actonel, Boniva, Zometa, Aredia) Denusomab (e.g., Prolia, Xgeva) Bevacimuzab (e.g., Avastin)	Osteonecrosis of the jaw	**Non-malignant disease/osteoporosis** ■ <5 years' duration of intake: lower risk of MRONJ, surgical procedure can be done with care ■ ≥5 years' duration of intake: higher risk of MRONJ, avoid surgery if possible; if not, atraumatic surgical technique and primary closure **Malignant disease** ■ High risk of MRONJ; avoid surgery ■ Check time of most recent dose; risk level drops if the drug used has a short half-life

and this should only be considered if there is a high risk of bleeding with invasive surgical procedures, e.g., surgical extraction. Warfarin, which is a vitamin K antagonist, has a five- to seven-day half-life, whereas the active life of DOAC medications is much shorter.

Accordingly, if required, the timeframe between stopping the medication and undertaking an invasive surgical procedure will be longer if the patient is taking warfarin. Details of risk management when surgical treatment is needed are given in **Table 2**.

Medication-related osteonecrosis of the jaw (MRONJ)

Medication-related osteonecrosis of the jaw (MRONJ) is the term used to describe the failure of bone to heal post surgical procedures, and such a diagnosis is made when healing of bone post surgery is delayed for more than eight weeks **(Figure 2**). It can be a very difficult condition to manage, as removal of necrotic bone may result in a new cycle of adjacent bone becoming necrotic. MRONJ is associated with drugs taken to manage /prevent bone metastases related to malignant disease and osteoporosis (**Table 2**). These drugs impede osteoclasts and vary significantly in duration of action, with the bisphosphonate family of drugs (e.g., Fosamax) having a half-life of 10 years, and antiresorptive monoclonal antibodies (e.g., Prolia) having a half-life of approximately six months.

The clinician needs to determine how long the patient has been taking one of these medications and, if the patient is no longer taking the medication, how long ago was the most recent dose. In this regard, the family of drug is important, as the risk of MRONJ is less if the drug taken has a short half-life. The clinician needs to be aware of the risk when planning dental care,

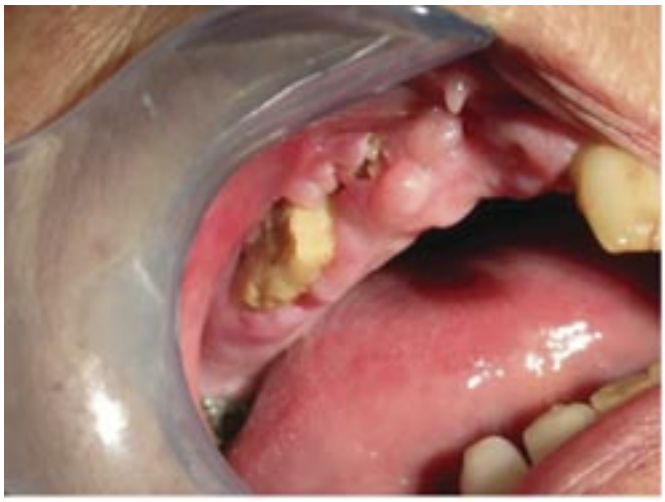
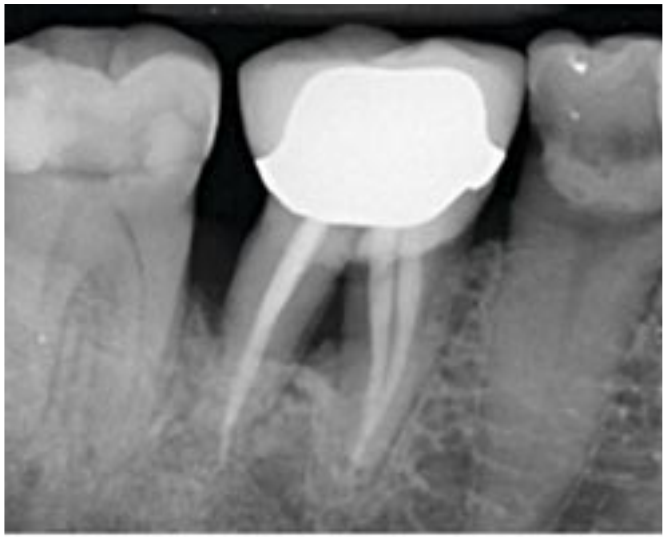


FIGURE 2: 68-year-old patient with a history of prolonged bisphosphonate medication. She had dental extractions in the right maxilla, and the extraction sites have failed to heal after two months. Note the exposed necrotic bone.

and take steps to mitigate this risk depending on the risk stratification of the patient. This includes:

- avoiding surgical procedures if possible – retaining structurally compromised teeth or roots that are not infected; or,
- if it is not possible to avoid surgical procedures, then:



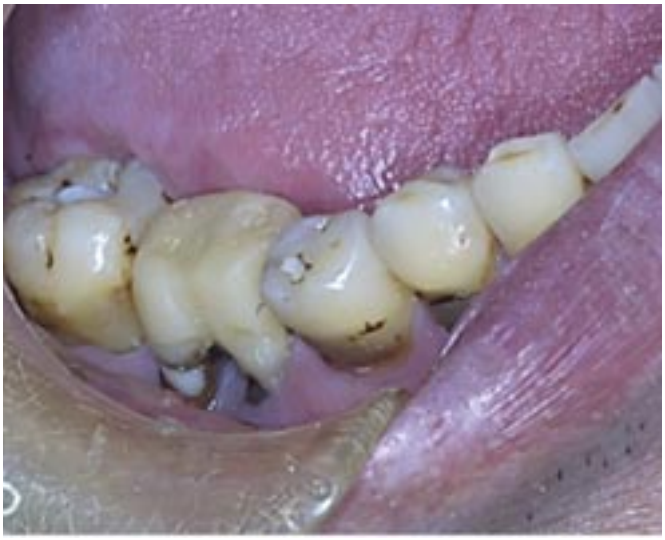


FIGURE 3a (left): Pre-treatment radiograph of 46 with full coverage crown in situ – significant bone loss associated with chronic periodontal disease.
FIGURE 3b (right): Tooth has been restored with a direct composite resin restoration retained on a fibre-reinforced composite resin post.

– improve oral hygiene before the surgical procedure;
– use antibacterial mouthwashes before the procedure;
– perform atraumatic surgical technique; and,
– use surgical wound closure to cover exposed bone.

There is a dose-related risk, and the likelihood of MRONJ is approximately 100 times higher in patients taking high-dose medications for treatment of malignant disease than in patients taking medications for managing/preventing osteoporosis. This is because the doses are much higher and taken more frequently when used to manage malignant disease (e.g., multiple myeloma, prostate, breast, lung and kidney malignant tumours). Furthermore, they may also be taking a glucocorticoid, which is thought to further increase the risk of MRONJ.

The mode of administration of the drug, i.e., oral or intravenous, does not appear to influence the risk of MRONJ. Where patients are taking these drugs for management of osteoporosis, there is a chance that they will be taking the drugs over a prolonged period of time. Current guidelines suggest that risk levels for MRONJ with bisphosphonates rise if they are taken continuously for five or more years.

In cases with a high risk of developing MRONJ, preserving a compromised tooth is preferable to extraction. **Figures 3a** and **3b** show an elderly male patient who has been taking bisphosphonate medication for more than five years. His mandibular right first molar (46) had been endodontically treated and restored with full coverage porcelain fused to metal crown some years previously.

This tooth had fractured with loss of the crown, and the prognosis for a replacement was limited due to loss of tooth structure. His medical history indicated that extraction of this tooth posed a high risk of MRONJ. Accordingly, a conservative approach to management was taken and the tooth was restored with a directly placed composite resin retained on a fibre-reinforced composite resin post. This restoration is still in place some three years after placement, and he continues to be reviewed.

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Diagnostic pathway of head and neck cancer patients in Ireland: audit of patterns of first attendance 1983-2019

Précis

Many Irish head and neck cancers (66%) are advanced at diagnosis. General medical practitioners are generally (75%) the first healthcare professional attended. The dental referral pathway remains under utilised.

Abstract

Objectives: This audit explores patterns of head and neck cancer (HNC) patient presentation in primary care in Ireland over four decades and reflects on the possible impact of a 10-year national HNC awareness campaign.

Materials and methods: Trends in patient presentation and diagnosis are presented for 920 HNC patients across three time periods: 1983-1990; 2010; and, 2018-2019. Descriptive analysis was undertaken using SPSS-v27 on basic demographic details, tumour-related details and primary care referral patterns.

Results: Patients were generally male (71%), aged 54+ (71%), and 84% were diagnosed with squamous cell carcinoma (SCC). Larynx, tongue and tonsil were the most common sub-sites. General medical practitioners (GPs) were the first healthcare contact for 75% of cases, with only 13% referred by general dental practitioners (GDPs). This pattern remained consistent across four decades. The GDP's role was higher for tongue, floor of mouth and intra-oral tumours (30-47%), with some increase seen in recent years. While symptomology varied by site, symptom burden remained high across the decades with 99.9% exhibiting 1+ National Institute for Health and Care Excellence (NICE) 'red flag signs' of HNC, suggesting considerable diagnostic delay despite a 10-year national campaign to raise public and professional awareness.

Conclusions: This audit highlights the role of GPs in HNC diagnosis, but reveals suboptimal use of the dental pathway. The high symptom burden reported suggests considerable diagnostic delay. Increased and sustained efforts are required to raise public and professional awareness, encourage regular dental attendance, upskill healthcare professionals in opportunistic screening, and ensure appropriate responses to symptomatic patients.

Key words: Head and neck cancer (HNC), mouth/oral cancer, referral and diagnostic pathway, general medical practitioner (GP), general dental practitioner (GDP), awareness, diagnostic delay, symptoms, National Cancer Registry Ireland (NCRI), early detection.

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Introduction

Head and neck cancer (HNC) is a diverse disease incorporating malignant tumours of 17 sub-sites that play a vital role in many aspects of normal everyday life: talking, smiling, eating, swallowing. HNC incidence is increasing worldwide with 700,000+ new cases (3.9% of cancer registrations) and 350,000+ deaths (3.8% of cancer deaths) recorded in 2018.[1] In Ireland, over 700 people are diagnosed with HNC annually, with 202 cases of mouth cancer, 162 of laryngeal cancer, and 147 pharyngeal cancers.[2] HNC incidence rates increased by 119% in females and

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Table 1: Overview of 920 HNC cases X year X sex, age, histology, referral, symptoms.

Variable	Sub-groups	2018/19	2010	1983-90	Total
Sex	M	268 (73%)	132 (72%)	256 (69%)	656 (71%)
	F	99 (27%)	51 (28%)	114 (31%)	264 (29%)
Age	15-44	14 (4%)	18 (10%)	19 (5%)	51 (6%)
	45-54	77 (21%)	41 (22%)	96 (26%)	214 (23%)
	55-64	130 (35%)	54 (30%)	101 (27%)	285 (31%)
	65-74	102 (28%)	46 (25%)	117 (32%)	265 (29%)
	75+	44 (12%)	24 (13%)	37 (10%)	105 (11%)
Histology	SCC	327 (89%)	154 (84%)	285 (77%)	766 (84%)
	Lymphoma	7 (2%)	7 (4%)	30 (8%)	44 (4%)
	Salivary gl.	14 (4%)	12 (7%)	19 (6%)	47 (5%)
	Other[a]	19 (5%)	10 (5%)	36 (9%)	65 (7%)
Referral source[2]	GP	282 (77%)	149 (81%)	153 (66%)	584 (75%)
	GDP	49 (13%)	20 (11%)	35 (15%)	104 (13%)
	Pharmacy	0 (-)	0 (-)	-	-
	A&E/ENT	23 (6%)	11 (6%)	44 (19%)	94 (12%)
	IP/consultant	13 (4%)	3 (2%)	232/370[b]	Total = 782
Main presenting	Ulcer	24 (7%)	16 (8%)	71 (19%)	111 (12%)
complaint	Hoarseness	37 (10%)	23 (13%)	18 (5%)	78 (8%)
	Dysphagia	37 (10%)	16 (9%)	56 (15%)	109 (12%)
	Pain	88 (24%)	37 (20%)	141 (38%)	266 (29%)
	Neck node	98 (27%)	55 (30%)	24 (6%)	177 (19%)
	Lump/swelling	52 (14%)	23 (13%)	32 (10%)	107 (12%)
	Other[c]	31 (8%)	13 (7%)	28 (8%)	72 (8%)

a Other: Merkel cell, sarcoma, melanoma, anaplastic carcinoma, medullary carcinoma, neuroendocrine, BCC, histiocytoma, mesoepithelioma, schwannoma
b Referral source: 1983-90 source recorded for 232/370
c Other symptoms: Dental issue, lip/face lesion, white lesion, stridor, globus, haemorrhage, excess phlegm, incidental X-ray finding, cough, dyspnoea, blocked nose.

76.3% in males from 2001 to 2010.[3] HNC cases in Ireland are projected to increase by 2,045 (+65%) in males, and by 67% in females.[4] Incidence of mouth cancer has recently increased by 3.3% per annum in women, while oropharyngeal cancer in men increased by 2.5% annually. HNC is still more common in males, particularly laryngeal cancer (7:1), followed by cancer of the mouth and pharynx at 3:1.[2,5]

HNC is a major public health issue due to the high mortality (c.50%) and immense morbidity associated with this disease. In Ireland, four people die every week from HNC and over 2,600 people are living with the consequences:[6] disfigurement; speech impairment; dysphagia; dry mouth; mucositis; rampant caries; trismus; fibrosis; pain; and, osteoradionecrosis.[7,8]

Early detection of HNC improves outcomes and quality of life. Stage of disease at presentation is the single most important prognostic factor in HNC; average five-year survival rates fall from 80% for localised disease, to 30% when regional or distant metastases are present.[9] Patterns of late presentation for HNC have shown little change in four decades, with c.70% of all HNC patients still diagnosed with advanced disease in Ireland and internationally.[2,10,11] This study explores: (i) HNC presentation patterns in primary care in Ireland from 1983-2019; and, (ii) the possible impact of a national HNC awareness campaign on referral patterns.

Materials and methods

The diagnostic pathway for 920 Irish HNC patients was explored across three specific time periods, combining a clinical audit of 550 consecutive new patients referred to the dental oncology clinics in Cork University Dental School and Hospital (CUDSH) and the Dublin Dental University Hospital (DDUH) in 2010 (n=183) and 2018/2019 (n=367), with a retrospective chart review of 370 HNC cases recorded by the Southern Tumour Registry (STR), the forerunner to the National Cancer Registry Ireland (NCRI), for historical comparison.[10,12]

Descriptive analysis was undertaken using SPSS-v27 on basic demographic details, tumour-related details, and primary care referral patterns. Ethical approval was not required as clinical audits involve nothing beyond normal clinical management.

Results

HNC incidence was consistently higher in males, ranging from 69-73% in this series. HNC was recorded in 6% of people under 45 years, with 60% in the 55- to 74-year range. The most common morphologies were: squamous cell carcinoma (SCC) (84%); salivary cancers (5%); and, lymphomas (4%). Main sites were: oral cavity (40%); larynx (19%); pharynx (16%); and, salivary glands (10%) (**Table 1**).

Patterns of referral/presentation

Referral source was available for all patients from 2010/2018-2019, with lower levels of detail available for 1983-90, equating to 85% of the entire cohort (782/920). General medical practitioners (GPs) were the most common referral source (75%) and 12% were diagnosed following self-presentation to accident and emergency or ear, nose and throat (ENT) departments, casualty or inpatient

Table 2: Patterns of referral in 2010 and 2018/2019.

	2010 (n=183)								2018/2019 (n=367)							
SITE	GP		GDP		Hospital[a]		Total		GP		GDP		Hospital		Total	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Lip/face	12	(92%)	0		1	(8%)	13	(7%)	31	(97%)	0	(-)	1	(3%)	32	(9%)
BoT	9	(75%)	1	(8%)	2	(16%)	12	(7%)	27	(87%)	2	(6.5%)	2	(6.5%)	31	(8%)
Tongue	14	(67%)	6	**(29%)**	1	(5%)	21	(11%)	19	(41%)	18	**(39%)**	9	(29%)	46	(13%)
FOM	7	(70%)	3	**(30%)**	0	(-)	10	(6%)	6	(46%)	4	**(30%)**	3	(23%)	13	(4%)
Palate/mouth/upper/ lower gum	8	(53%)	7	**(47%)**	0	(-)	15	(8%)	7	(27%)	16	**(62%)**	3	(12%)	26	(7%)
Salivary	18	(100%)	0	(-)	0	(-)	18	(10%)	33	(89%)	1	(3%)	3	(8%)	37	(10%)
Tonsil	15	(88%)	1	(6%)	1	(6%)	17	(9%)	46	(94%)	1	(2%)	2	(4%)	49	(13%)
Oropharynx	11	(85%)	1	(8%)	1	(8%)	13	(7%)	11	(61%)	6	**(33%)**	1	(6%)	18	(5%)
Nasopharynx	6	(86%)	1	(14%)	0	(-)	7	(4%)	11	(79%)	1	(7%)	2	(14%)	14	(4%)
Hypo/piriform	8	(80%)	0	(-)	2	(20%)	10	(5%)	17	(94%)	0	(-)	1	(6%)	18	(5%)
Larynx	31	(89%)	0	(-)	4	(13%)	35	(19%)	57	(89%)	0	(-)	7	(11%)	64	(17%)
Nodes	7	(78%)	0	(-)	2	(22%)	9	(5%)	12	(86%)	0	(-)	2	(14%)	14	(4%)
Other sites[b,c]	3	(100%)	0	(-)	0	(-)	3	(2%)	5	(100%)	0	(-)	0	(-)	5	(1%)
All cases	**149**	**(81%)**	**20**	**(11%)**	**14**	**(8%)**	**183**	**(100%)**	**282**	**(77%)**	**49**	**(13%)**	**36**	**(10%)**	**367**	**(100%)**

a In-patient, other consultant, ENT/A&E b Accessory sinus (2010) c Thyroid 3; middle ear 1; vagus 1 (2018/2019)

stay. One in seven (13%) were referred by a general dental practitioner (GDP), ranging from 15% in 1983-90 to 13% in 2018/19 (**Table 1**). Referral patterns show marked inter-site variation. In 2010 and 2018/19, patients with lip, salivary gland, base of tongue, tonsil, pharyngeal, laryngeal and nodal cancers were referred almost exclusively by GPs or hospital doctors. In 2010, 30% of tongue/floor of mouth cancers and 47% of gum and palate/mouth cancers were initially detected by GDPs (**Table 2**). However, in 2018-19, the role of GDPs increased, referring 62% of gum/palate/mouth, 39% of tongue, 33% of oropharyngeal and 30% of floor of mouth cancers.

Presenting symptoms

One-third presented with pain (24-38%), one-fifth with enlarged cervical nodes (19%), 12% attended regarding ulcers, swelling/lumps and dysphagia, and 8% reported hoarseness (**Table 1**). Almost one-third presented with nodal involvement in 2010/2018-19, with a lower rate of nodal swelling reported by patients from 1983-90 (6%); however, lymphadenopathy was subsequently detected in 21% of this cohort. This concurs with national and international reports of approximately one-third of HNC patients having nodal disease at time of presentation.[10]

Oral cavity cancer symptoms were predominantly ulceration, pain, swelling, dysphagia, and/or nodal involvement. Dental issues were generally associated with floor of mouth and gum/mouth lesions. Tongue base and pharyngeal cancers mainly presented with dysphagia, sore throat and 'neck lumps'. Laryngeal cancers presented classically with hoarseness. Salivary gland cancers typically presented as a lump/gland swelling. Nasopharyngeal cancer symptoms included: nasal obstruction; epistaxis; swelling; ear pain; and, lymphadenopathy.

Discussion

This audit provides an overview of the characteristics and referral pathway of Irish HNC patients between 1983 and 2019. NCRI data confirms that this audit subset is a representative sample of Irish HNC patients regarding gender, age, histology and primary site. Patients were predominantly male (71% versus 73% NCRI). Only 6% were <50 years (14% NCRI), and 71% were over 55 years at diagnosis (NCRI: 69% aged 60-65 years).[6] SCC was the dominant histopathology (84% versus 86% NCRI), followed by salivary gland (5% versus 7% NCRI). Oral cavity, pharyngeal and laryngeal cancers were almost exclusively SCC. Main sub-sites recorded were larynx, tongue and tonsil, which concurs with NCRI data.[5]

GPs are generally the first point of contact for HNC patients internationally, ranging from 91% in the US to 70% in Canada and 50% in the UK.[13-16] The relatively lower level of GP referrals in the UK may be related to the access to dental care provided by the National Health Service (NHS) there. In this series, 87% of patients were diagnosed by GPs or medics, with little variation over four decades. While dentists have ready access to and significant training in examining this area, relatively few patients (3-29%) present to their dentist when they experience HNC symptoms.[13,14,16,17] This concurs with reports that HNC patients tend to be infrequent dental attenders.[10,16,18] In this series, only 13% of cases of HNC were detected by GDPs. However, a more significant dental role was seen for tongue/floor of mouth (30%), and gum, palate and other mouth cancers (47%), particularly in the recent 2018/19 cohort, due perhaps to the annual Mouth Cancer Awareness Day (MCAD) campaigns.

Conversely, in the UK, 43% of oral cancer patients presented to their dentist.[17] Higher dental pathway utilisation in the UK may be due to their traditionally higher rates of dental attendance, with recent polls showing that 61% of people attended an NHS dentist in the previous two years, and 24% attended private dentists, leaving only 15% without dental provision.[16] This contrasts starkly with national reports that approximately 60% of dentate individuals in Ireland "occasionally/never" visit dentists, while 91% of edentulous persons aged 65+ never attend.[19,20] Although 80% of Irish adults qualify for free annual dental examinations, many do not avail of this benefit, non-attendance being highest among medical card holders. Factors associated with low engagement with dental

Table 3: Suspected cancer – NICE guidelines for oral cancer recognition and referral.[21,22]

Consider a suspected cancer pathway referral (for an appointment within two weeks) for oral cancer in patients with either:	Consider an urgent referral (for an appointment within two weeks) for assessment for possible oral cancer by a dentist in patients who have either:	Consider a suspected cancer pathway referral by the dentist (for an appointment within two weeks) for oral cancer in patients when assessed by a dentist as having either:
▸ unexplained ulceration in the oral cavity lasting for more than three weeks; or, ▸ a persistent and unexplained lump in the neck [2015].	▸ a lump on the lip or in the oral cavity; or, ▸ a red or red and white patch in the oral cavity consistent with erythroplakia or erythroleukoplakia [2015].	▸ a lump on the lip or in the oral cavity consistent with oral cancer; or, ▸ a red or red and white patch in the oral cavity consistent with erythroplakia or erythroleukoplakia [2015].

services are also associated with increased HNC risk: male gender; low socioeconomic status; increasing age; long-term tobacco use; symptom denial; nervousness; and, low access to free care.[16]

The high symptom burden reported in this series suggests considerable diagnostic delay. While early-stage HNC is generally asymptomatic, all patients bar one were overtly symptomatic, exhibiting one or more National Institute for Health and Care Excellence (NICE) 'red flag signs' of HNC (**Table 3**).[21] Patients predominantly presented with persistent pain, ulceration, dysphagia and/or nodal involvement, indicative of advanced disease. This is in line with NCRI reports that 66% of Irish HNC patients present in Stage III/IV, and 38% of mouth and 54% of pharyngeal cancers present in stage IV,[5,6] impacting on prognosis, treatment costs, long-term functional impairment and morbidity.

Diagnostic delay may arise due to delayed patient presentation or failure of the clinician first consulted to recognise the sinister nature of the lesion and to organise timely and appropriate referral. Patients frequently self-manage symptoms, considering them innocuous, and are reluctant to 'bother' the practitioner;[10,22] reports suggest an average patient delay of approximately four months for HNC and 3.5-5.4 months for oral cancers.[14] Low public awareness of HNC risk factors and warning signs is well documented. In Ireland, 94% of participants (n=2,926) attending HNC events in CUDSH and DDUH in 2010 reportedly never received any information on HNC, 97% had no knowledge on self-examination and limited knowledge of risk factors.[23,24] Similarly, symptomatic patients attending an 'urgent suspicion of cancer' clinic in Scotland, who were subsequently diagnosed with HNC, had little knowledge of red-flag symptoms of HNC, and one-third had 'no concern' about their symptoms.[25]

Patient delay may be compounded by professional delay in some instances due to misdiagnoses, inappropriate prescribing, multiple referrals, imaging/procedural work, and lack of patient and professional awareness of signs and symptoms of HNC.[14,16] Studies in medical/dental students and practitioners in the US, UK and Ireland reported poor knowledge of HNC. Almost 70% of Irish GPs reported lack of training and low confidence in examination/diagnosis of oral malignancies, highlighting an important educational gap.[26]

Educational campaigns to raise public and professional awareness of HNC have long been advocated.[3,7,10,22] In 2009, Mouth Head & Neck Cancer Awareness Ireland (MHNCAI) was established to promote public/professional awareness of HNC through national and community-based campaigns. Irish Mouth Cancer Awareness Day (MCAD) was launched in September 2010 with 25,000+ free oral cancer examinations undertaken between 2010 and 2014.[24,27] Details of the significant role of Irish GDPs in providing free examinations and information on multimedia campaigns highlighting avoidable risk factors, warning signs and importance of early detection are available on www.mouthcancer.ie. While it is difficult to gauge the impact of media campaigns on individual behaviour, the number of internet searches in Ireland increased significantly between 2010 and 2013 ($p<0.001$), peaking mid-September, coinciding with the annual MCAD event.[28] The increased dental role in oral cancer detection in the 2018/19 cohort suggests that the annual MCAD campaigns are improving education, engagement and awareness.

Despite efforts to raise public and professional awareness, encourage regular dental attendance, upskill medical/dental professionals, and advocate opportunistic screening and appropriate responses to symptomatic patients, HNC diagnostic delay remains a significant barrier to improved outcomes. Patients continue to present with advanced disease, waiting until symptoms become impossible to ignore. Despite the slight increase in intra-oral cancers diagnosed by GDPs in 2018/19, the dental referral pathway remains under utilised. While awareness campaigns can change knowledge, attitudes and beliefs, translating this knowledge into behavioural change requires a comprehensive, long-term, multi-faceted approach, and an understanding of the determinants of health and health behaviour theory. Educational and fiscal actions are required to:

(i) encourage greater GDP engagement by acknowledging the intrinsic value of time spent on patient education and risk factor modification;
(ii) develop a nationwide culture of lifelong dental attendance among the general public to improve access to and utilisation of the dental pathway; and,
(iii) reduce widespread acceptance of poor oral health as the 'norm', which should enhance early detection and lead to sustained benefits.

Conclusions

This audit provides valuable insight into primary care diagnostic/referral pathways for HNC in Ireland over four decades, an area where there is a paucity of research. It highlights the continued importance of GPs in HNC diagnosis, and the under-utilisation of dental and pharmacy teams. However, it is encouraging to note increased detection of mouth cancers by GDPs in 2018/19. It provides site-specific symptomology, which may be beneficial to attending physicians, and highlights the degree to which patients delay presentation. It highlights the need to further increase public awareness of HNC and improve the process by which cancer symptoms are recognised and actioned in primary care, to facilitate timely presentation and appropriate diagnostic/referral decisions, and enhance outcomes. Future awareness campaigns must be designed to deliver sustainable, measurable benefit.

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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. In Ireland, over 700 people are diagnosed with HNC annually. What percentage of these are classified as 'mouth cancer' (NCRI, 2020)?

- ○ A: 15-25%
- ○ B: 25-35%
- ○ C: 35-45%
- ○ D: 45-55%

2. In this study, what percentage of tongue or floor of mouth cancers, and of gum, palate and other mouth cancers, were initially detected by a GDP?

- ○ A: 10-30%
- ○ B: 20-40%
- ○ C: 30-50%
- ○ D: 40-60%
- ○ E: 50-70%

3. What percentage of Irish 65+ year-old edentulous individuals "occasionally or never" visit a dentist (National Survey of Adult Dental Health, 2007)?

- ○ A: 20-40%
- ○ B: 40-60%
- ○ C: 60-80%
- ○ D: 80-100%

A review of the oral cancer referral pathway system in Dublin Dental University Hospital

Précis

The 'open door' policy adopted by the Dublin Dental University Hospital appears to be efficient in reducing delay in the clinical pathway to treatment for oral cancer.

Abstract

Introduction: The incidence of oral and oropharyngeal cancer in Ireland is increasing, with approximately 503 cases diagnosed annually. A delay in diagnosis for oral cancer leads to advancement in tumour staging, which increases the risk of mortality up to two-fold. Early detection contributes to the reduction of morbidity and improvement of survival rates.

Aim: This review aims to assess the sources of referral and evaluate the efficiency of DDUH's oral cancer referral pathway system.

Methods: A retrospective search was carried out through the hospital's electronic dental records (EDRs) of patients from January 1 to December 31, 2019. Patients who received a histological diagnosis of oral cancer from biopsies carried out were identified and their EDR accessed.

Results: In 2019, there were 65 confirmed diagnoses of oral cancer in the Dublin Dental University Hospital (DDUH), of which the majority (89%) were assessed within two weeks. A large proportion (89%) received the diagnosis within a month of the referral date. The primary cause of delay in the clinical pathway is the delay in patients presenting to primary care. Only 50% of patients with symptoms synonymous with oral cancer presented to primary care within four weeks.

Conclusion: The 'open door' policy adopted by the DDUH is beneficial in terms of direct access and reducing waiting time, and allows for early detection of oral cancer, which helps to reduce morbidities and improve the overall survival rates in oral cancer cases.

Key words: Oral cancer, patient delay, referral pathway, Dublin Dental University Hospital

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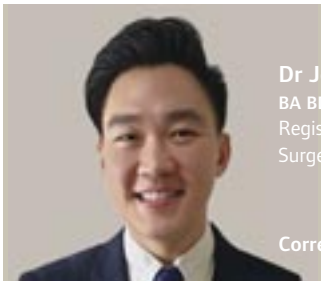
Introduction

In global reports, oral cavity and oropharyngeal cancers are grouped collectively and represent the sixth most common cancer in the world.[1] With approximately 503 cases diagnosed annually in Ireland, its incidence is reportedly on the rise.[2] The five-year survival rate for all patients is approximately 51%, although dependent on the stage of cancer.[2] Oral cancer cases are most commonly oral squamous cell carcinoma (OSCC). The major risk factors include tobacco and alcohol consumption, in which the synergistic effects have been well documented.[3] Heavy consumption of both products increases the risk of oral cancer 16-fold as compared to those who abstain.[4] Aetiological factors also include betel use, immunosuppression, infective agents such as Candida, viruses and, in cases of lip carcinoma, exposure to sunlight.[3] Oral cancer can also be associated with the transformation of premalignant lesions including leukoplakias, erythroplakias, submucous fibrosis and oral lichen planus.[5] Furthermore, it is increasingly documented that human papillomavirus (HPV) is a risk factor for oropharyngeal cancer.[6] Oral malignant neoplasms also include



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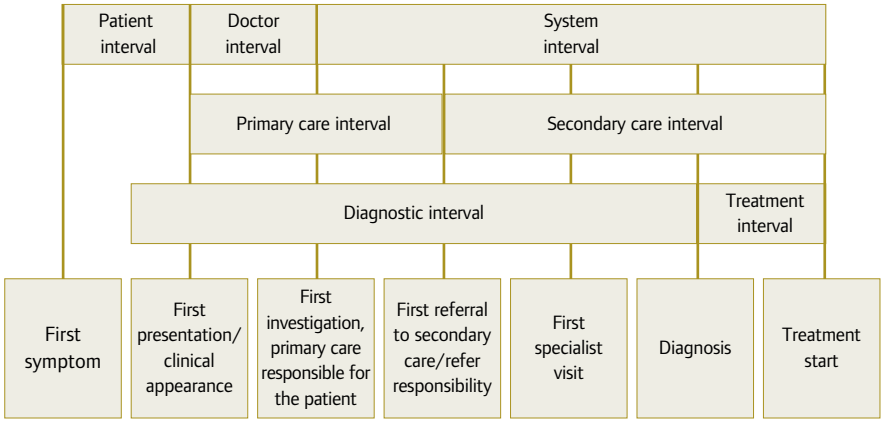

FIGURE 1: Milestones and intervals from first symptoms until start of treatment.[12]

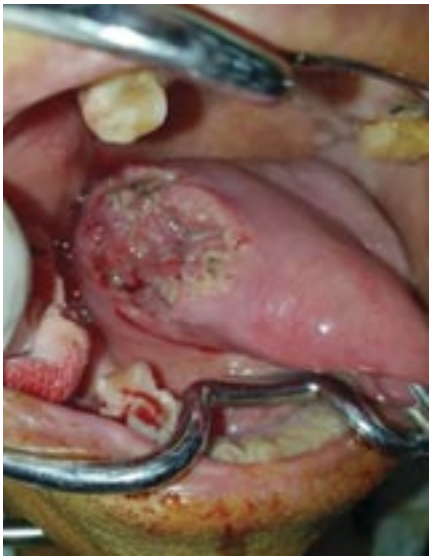

FIGURE 2: Highly suspicious ulceration on right lateral border of the tongue.

melanomas, salivary gland tumours, lymphomas, Kaposi's sarcoma, odontogenic tumours, and metastatic neoplasms (from breast, lung, kidney, stomach, liver and prostate).[3] Poor prognosis for oral cancer is mostly due to late presentation of the disease. It is accepted in the literature that a delay in diagnosis for oral cancer leads to advancement in tumour staging, which increases the risk of mortality up to two-fold.[7] Furthermore, advanced diseases require more radical surgeries, which result in increased levels of morbidity.[8] Hence, the early detection of oral cancer contributes to the reduction of morbidity and improvement of survival rates for such cases.[9]

The research in pathways to cancer diagnosis is complex and non-homogenous due to the different methodological approaches and definitions of time intervals.[10] As such, an international Consensus Working Group (CWG) commissioned by Cancer Research UK and the Department of Health in England has introduced the Aarhus checklist, a guideline intended to facilitate the standardisation and uniformity of studies in cancer diagnosis.[11] This guideline included recommendations for definitions of the time points and intervals used in the study. In addition, a Danish study introduced categories for delays in the clinical pathway, which include patient delay, general practitioner (GP) delay and system delay (**Figure 1**).[12] Patient delay is defined as the point from first symptom to the first contact with the primary care practitioner. GP delay is defined as the time interval between first contact with the patient and investigations and/or referral to a specialist/hospital. System delay is defined as the time interval between first investigations and the start of treatment. These definitions provide a more consistent framework for assessing the referral pathway system in the Dublin Dental University hospital (DDUH).

The DDUH is a teaching dental hospital located in Dublin, Ireland, which includes a multidisciplinary team providing secondary care for oral cancer patients. It adopts an 'open door' policy whereby suspected oral cancer patients could be assessed through various referral pathways and works closely with the National Maxillofacial Unit at St James's Hospital, which provides tertiary care for oral cancer patients. Such pathways include referrals from general medical practitioners (GMPs) and general dental practitioners (GDPs), as well as self-referrals into the accident and emergency (A&E) department. Thus, with the importance of early detection of oral cancer, the aim of this review is to assess the sources of referral and to evaluate the efficiency of the DDUH's oral cancer referral pathway system.

Methods

A retrospective search was carried out through the hospital's electronic dental records (EDRs) of patients from January 1 to December 31, 2019. Patients who received a diagnosis of oral or oropharyngeal cancer from biopsies carried out were identified and their EDR accessed. The patients' age, gender, and details of alcohol and tobacco use were recorded. The dates of the patients' onset of symptoms, first appointment with a GP, referral to the DDUH, first assessment at the DDUH, biopsy and definitive diagnosis delivered to patients were also recorded. From these records, time intervals between onset of symptoms and first appointment with GP, first appointment to referral, referral to assessment at the DDUH, assessment to biopsy, and biopsy to the definitive diagnosis were tabulated and recorded.

Results

From January 1 to December 31, 2019, there were 65 confirmed diagnoses of oral cancer in the DDUH. These cases presented via various referral pathways including the A&E department, oral and maxillofacial surgery (OMFS) and oral medicine clinics, and patients periodically reviewed in the DDUH for premalignant conditions. Sources of referral included GDPs, GMPs and self-referrals. Patients with suspicious clinic presentation of oral cancer were offered immediate biopsy within the same appointment (**Figure 2**). At the follow-up appointment, the patients were informed of the definitive diagnosis and were urgently referred to the Maxillofacial Unit at St James's Hospital for treatment within the same day.

Of the 65 patients, there were 25 females (38%) and 40 males (62%) (**Figure 3**). The mean age was 65 years for both females (range 11 to 86) and males (range 25 to 87). Thirty-two patients (49%) were current or ex-smokers, which included seven of the 25 females (28%) and 25 of the 40 males (63%) (**Figure 3**). Of the 65 confirmed diagnoses, 61 (94%) were of OSCC, three were cases (5%) of lymphoma and one (1%) was a case of polymorphous adenocarcinoma. In terms of the referral pathway, six patients (9%) self-referred to the A&E department, seven (11%) presented to A&E with GMP referral, 32 (49%)

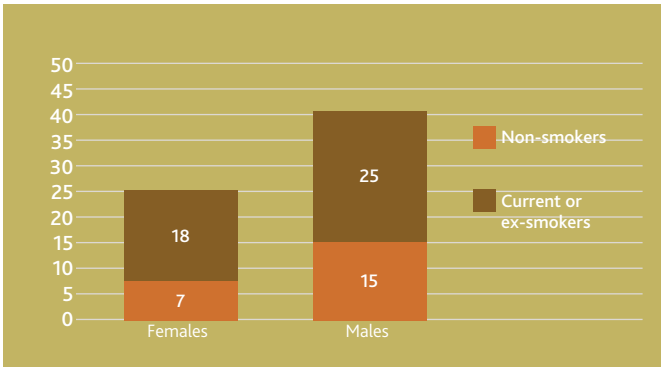

FIGURE 3: Demographics of gender and distribution of smokers.

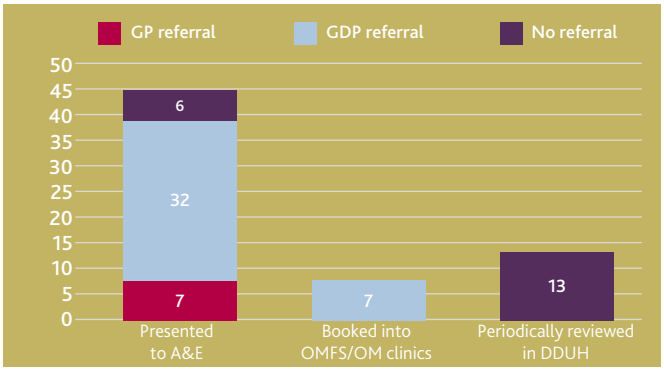

FIGURE 4: Distribution of patients through the referral pathways and sources of referrals.

presented to A&E with GDP referral, seven (11%) were booked into OMFS or oral medicine clinics with GDP referral, and the remaining 13 (20%) were patients periodically reviewed in the DDUH. Of the 46 patients who were referred to the hospital by a GP, seven (15%) were referred by their GMP and the remaining 39 (85%) by their GDP (**Figure 4**).

Among the 52 patients who sought treatment after first noticing signs and symptoms, 13 (25%) sought treatment within two weeks, 13 (25%) sought treatment within two to four weeks, and 26 (50%) sought treatment after more than four weeks. The signs and symptoms recorded from patients included: non-healing ulcers; white or red patches; lumps; pain; dysphagia; persistent cough; or, sore throat. Forty-eight patients first visited a GP regarding their symptoms. Two patients (4%) were prescribed antibiotics by their GMP and were not referred to the DDUH. These two patients were among the six patients who self-referred to the A&E department. Thirty-eight patients (79%) were referred within three weeks of the first appointment. Of these, 34 were referred on the same day. Eight patients (17%) were referred after three weeks. Furthermore, 41 patients (89%) attended within two weeks while the remaining five (11%) attended only after two weeks or longer. The five patients (11%) who were assessed after two weeks were due to longer waiting time for appointments with OMFS and oral medicine clinics, or only visited the A&E department after two weeks.

With respect to timing of biopsy procedure, 63 of the 65 patients (97%) had a biopsy procedure within a week. Fifty-two (80%) were carried out on the same day. Thirty-nine patients (60%) received a diagnosis within a week of the biopsy procedure, 14 (22%) within one to two weeks, and 12 (18%) within two to four weeks. Furthermore, of the 46 patients referred to the DDUH, five (11%) received a diagnosis more than a month after referral, while the remaining 41 (89%) received a diagnosis within a month (**Table 1**).

Discussion

The ratio of males to females in our sample of 65 patients is 1.6 to 1, which is similar to the global epidemiological ratio of 1.5 to 1.[1] The higher frequency of risk habits participation in males could be a contributing factor to this difference, as seen in our results whereby there were more male smokers or ex-smokers (63%) compared to females (28%). In addition, the mean age of 65 years is similar to previous studies and is a reflection of the increased risk of developing oral cancer with age.[1,13]

The National Institute for Health and Care Excellence (NICE) in the UK updated its cancer guidelines in 2015 to include recognition and referral guidance for suspected oral cancer cases. This includes a recommendation for GMPs to refer patients to a GDP within two weeks if they have an unexplained persistent mouth ulcer for three weeks, unexplained persistent neck lump, a lump on the lip or in the oral cavity, or for signs consistent with erythroplakia or erythroleukoplakia.[14] One systematic review reported that nearly 50% of symptomatic oral cancer patients presented to GMPs, suggesting the crucial role of GMPs in the diagnosis of the disease.[15] Similarly, the Health Service Executive (HSE) in Ireland updated its guidelines in 2015 regarding the early

Table 1: Distribution of patients for various timelines from first signs and symptoms to definitive diagnosis.

Patients who sought treatment after first noticing signs and symptoms	**N**	**%**
Within two weeks	13	25
Within two to four weeks	13	25
After four weeks	26	50
Patients referred after first presenting to GP		
Within three weeks	38	79
After three weeks	8	17
No referrals made	2	4
Patients who visited the DDUH after referral from GP		
Within two weeks	41	89
After two weeks	5	11
Patients receiving biopsy procedure after assessment in the DDUH		
Same day	52	80
Within a week	63	97
After a week	2	3
Patients receiving definitive diagnosis after biopsy procedure		
Within a week	39	60
Within one to two weeks	14	22
Within one to four weeks	12	18
Patients receiving definitive diagnosis since referral from GP		
Within a month	41	89
After a month	5	11

detection and referral for head and neck cancer in primary care.[16] It recommends urgent referral for unexplained and persistent clinical features suggestive of cancer similar to the NICE guidelines or specialist opinion. Our results reflect that the majority (79%) of the referrals were made within three weeks, suggesting that both GMPs and GDPs in Ireland are aware of and adhering to the guidelines. This also indicates that GP delay is not the main contributor to the overall delay in the referral pathway, as the majority of the referrals were made within the recommended time interval.

An Irish study reported that only a low percentage of medically trained non-consultant hospital doctors (NCHDs) examine the oral mucosa of high-risk patients, and the majority are not confident due to a lack of knowledge of and clinical exposure to the prevention and detection of oral cancers.[17] Studies in the UK also report similar findings regarding the lack of knowledge and confidence in the diagnosis of oral cancer among GMPs.[18,19] The results of our study illustrated that only a minority (15%) of the referrals were made by GMPs, which may reflect a similar lack of awareness of this open door policy and referral pathway in the DDUH. In addition, two patients who visited their GMPs after noticing signs and symptoms were only prescribed antibiotics and were never referred on. The low number of referrals made by GMPs may also be due to patients first presenting to GDPs after experiencing signs and symptoms within the oral cavity. In addition, this study did not consider the direct referrals made by GMPs to the National Maxillofacial Unit at St James's Hospital. However, an incorporation of oral cancer training and clinical exposure in the medical curricula may improve diagnostic skills and confidence among medical professionals. This should include thorough oral examination in general physical examination as most oral cancer cases are reported to be detected once symptomatic, despite the accessibility and non-invasiveness of an oral examination. Thus, with an increasing incidence of oral cancer in Ireland, this highlights the need for improved education on oral cancer among medical professionals.

Half of the patients only visited a GP four weeks or more after noticing signs or symptoms, suggesting that patient delay in presentation to primary care contributed significantly to the overall delay. This is similarly reflected in recent studies whereby patient delay is usually the most significant factor in a delay to diagnosis and treatment.[9,20] Patient delay may be due to a myriad of factors such as lack of awareness, fear, or denial. In Ireland, Mouth, Head & Neck Cancer Awareness Ireland was formally launched in 2010, which aimed to involve and inform the public as well as care providers at primary, secondary and tertiary levels. Mouth Cancer Awareness Day (MCAD), which has been held yearly since 2010, involving both GDPs around Ireland and the two dental schools in Dublin and Cork, aims to increase awareness among the public as well as to educate dental practitioners. It was reported that the MCAD held in 2011 was well received, with 7,731 attendees.[21] Events such as these appear to be beneficial in increasing awareness among both the general public and dental practitioners, and additional resources should continue to be allocated amidst the increasing incidence of oral cancer in Ireland.

With an 'open door' policy adopted by the DDUH, patients are welcome to attend the A&E department with or without a referral letter regarding suspicious clinical features and will be assessed by an NCHD and specialist. Referral letters sent to the OMFS and oral medicine department are triaged as very urgent, urgent, or non-urgent based on the information provided, dictating the duration before which the patient is assessed. This has enabled a large proportion (89%) of patients to be seen within two weeks and the majority (80%) to receive an immediate biopsy procedure within the same appointment. The patients who received longer waiting times were not triaged as very urgent due to the lack of information provided on the referral letters. This highlights the importance of GPs providing thorough information on the referral letters to prevent any further delay. Such information should include: the duration, size and location of the lesion; signs; symptoms; and, presence of lymphadenopathy. In addition, this 'open door' policy has enabled the majority (89%) of patients to receive a diagnosis within a month of referral. This is in accordance with the Faster Diagnosis Standard guidelines by the National Health Service (NHS) in the UK, which aim to give patients the cancer diagnosis within 28 days of referral.[22] Hence, this policy increases the efficiency of the pathway by reducing delays, allowing for earlier diagnosis of oral cancer and improvement of survival rates. It was also reported in a systematic review that GDPs may lack skills or confidence in performing biopsies, and may be unfamiliar with varying clinical patterns of oral cancer.[15] Thus, upon suspicion of oral cancer, the immediate referral to secondary care such as the DDUH allows direct access to specialist care and is a feasible alternative approach to primary care. This standard also aligns with the updated NICE and HSE guidelines from 2015, in which patients are recommended to be sent for assessment for oral cancer within two weeks.

Conclusion

Most general dental and medical practitioners are carrying out timely referrals to secondary care, as recommended by the HSE guidelines, of within three weeks. However, only a minority of referrals were made by GMPs, which may suggest a lack of awareness and screening, or of examinations being carried out. Patient delay in terms of presentation to primary care is reported to be the main contributor to the overall delay in the clinical pathway to treatment. As early detection of oral cancer helps to reduce morbidities and improves survival rates, more emphasis should be placed on increasing public awareness, as well as improving training among medical professionals on oral cancer. Early detection can be achieved by noticing typical presentations of oral cancer, allowing timely referral at early stages of the disease. In addition, more resources should be allocated to research to understand and address the different factors contributing to patient delay. There are limitations to this review, which include the small sample size and the fact that the sample is entirely taken from the DDUH patient cohort, which may not be representative of the rest of Ireland. However, the referral pathway for the DDUH appears to be efficient, as the 'open door' policy allows for direct access to specialist care and timely diagnosis, reducing the overall waiting time and delay in the clinical pathway to treatment, and leading to better outcomes.

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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. Which is the most common type of oral cancer?

- ○ A: Oral squamous cell carcinoma
- ○ B: Melanoma
- ○ C: Lymphoma
- ○ D: Polymorphous adenocarcinoma

2. Which is the major risk factor for oral squamous cell carcinoma?

- ○ A: Candida
- ○ B: Oral lichen planus
- ○ C: Smoking
- ○ D: Sunlight

3. Which type of delay contributes most to the overall delay in oral cancer diagnosis?

- ○ A: GP delay
- ○ B: Patient delay
- ○ C: System delay
- ○ D: None of the above


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Health outcomes in people two years after surviving hospitalisation with Covid-19: a longitudinal cohort study

Huang, L., Li, X., Gu, X., Zhang, H., Ren, L., Guo, L., et al.

Abstract

Background: With the ongoing Covid-19 pandemic, growing evidence shows that a considerable proportion of people who have recovered from Covid-19 have long-term effects on multiple organs and systems. A few longitudinal studies have reported on the persistent health effects of Covid-19, but the follow-up was limited to one year after acute infection. The aim of our study was to characterise the longitudinal evolution of health outcomes in hospital survivors with different initial disease severity throughout two years after acute Covid-19 infection and to determine their recovery status.

Methods: We did an ambidirectional, longitudinal cohort study of individuals who had survived hospitalisation with Covid-19 and who had been discharged from Jin Yin-tan Hospital (Wuhan, China) between January 7 and May 29, 2020. We measured health outcomes six months (June 16-September 3, 2020), 12 months (December 16, 2020-February 7, 2021), and two years (November 16, 2021-January 10, 2022) after symptom onset with a six-minute walking distance (6MWD) test, laboratory tests, and a series of questionnaires on symptoms, mental health, health-related quality of life (HRQoL), return to work, and healthcare use after discharge. A subset of Covid-19 survivors received pulmonary function tests and chest imaging at each visit. Age-matched, sex-matched, and comorbidities-matched participants without Covid-19 infection (controls) were introduced to determine the recovery status of Covid-19 survivors at two years. The primary outcomes included symptoms, modified British Medical Research Council (mMRC) dyspnoea scale, HRQoL, 6MWD, and return to work, and were assessed in all Covid-19 survivors who attended all three follow-up visits. Symptoms, mMRC dyspnoea scale, and HRQoL were also assessed in controls.

Findings: A total of 2,469 patients with Covid-19 were discharged from Jin Yin-tan Hospital between January 7 and May 29, 2020. Some 1,192 Covid-19 survivors completed assessments at the three follow-up visits and were included in the final analysis, 1,119 (94%) of whom attended the face-to-face interview two years after infection. The median age at discharge was 57.0 years (48.0-65.0) and 551 (46%) were women. The median follow-up time after symptom onset was 185.0 days (IQR 175.0-197.0) for the visit at six months, 349.0 days (337.0-360.0) for the visit at 12 months, and 685.0 days (675.0-698.0) for the visit at two years. The proportion of Covid-19 survivors with at least one sequelae symptom decreased significantly from 777 (68%) of 1,149 at six months to 650 (55%) of 1,190 at two years (p<0·0001), with fatigue or muscle weakness always being the most frequent. The proportion of Covid-19 survivors with an mMRC score of at least 1 was 168 (14%) of 1,191 at two years, significantly lower than the 288 (26%) of 1,104 at six months (p<0.0001). HRQoL continued to improve in almost all domains, especially in terms of anxiety or depression: the proportion of individuals with symptoms of anxiety or depression decreased from 256 (23%) of 1,105 at six months to 143 (12%) of 1,191 at two years (p<0.0001). The proportion of individuals with a 6MWD less than the lower limit of the normal range declined continuously in Covid-19 survivors overall and in the three subgroups of varying initial disease severity. A total of 438 (89%) of 494 Covid-19 survivors had returned to their original work at two years. Survivors with long Covid symptoms at two years had lower HRQoL, worse exercise capacity, more mental health abnormality, and increased healthcare use after discharge than survivors without long Covid symptoms. Covid-19 survivors still had more prevalent symptoms and more problems in pain or discomfort, as well as anxiety or depression, at two years than did controls. Additionally, a significantly higher proportion of survivors who had received higher-level respiratory support during hospitalisation had lung diffusion impairment (43 [65%] of 66 vs 24 [36%] of 66, p=0.0009), reduced residual volume (41 [62%] vs 13 [20%], p<0.0001), and total lung capacity (26 [39%] vs 4 [6%], p<0.0001) than did controls.

Interpretation: Regardless of initial disease severity, Covid-19 survivors had longitudinal improvements in physical and mental health, with most returning to their original work within two years; however, the burden of symptomatic sequelae remained fairly high. Covid-19 survivors had a remarkably lower health status than the general population at two years. The study findings indicate that there is an urgent need to explore the pathogenesis of long Covid and develop effective interventions to reduce the risk of long Covid.

Lancet Respiratory Medicine. 2022. S2213-2600(22)00126-6. **doi:** 10.1016/S2213-2600(22)00126-6. Epub ahead of print. **PMID:** 35568052; **PMCID:** PMC9094732

Mathematical tooth proportions: a systematic review

Akl, M.A., Mansour, D.E., Mays, K., Wee, A.G.

Abstract

Purpose: The aim of this systematic review was to evaluate and compare three commonly used proportions that include the golden proportion, golden percentage, and recurring esthetic dental (RED) proportion to identify which of the mathematical formulas, if any, can be used to provide predictable and repeatable aesthetic clinical outcomes.

Methods: A comprehensive search of electronic databases that included EBSCO, ProQuest, SCOPUS, Science Direct, Wiley, Google Scholar and PubMed was conducted using the terms: 'golden proportion', 'golden percentage', and 'Recurring Esthetic Dental (RED) proportions' alone or in concurrence with one or both ensuing terms: 'tooth proportions' and 'esthetic tooth proportions'. In addition, the following journals were hand searched for relevant articles: Journal of Prosthodontics, Journal of Prosthetic Dentistry and Journal of Esthetic and Restorative Dentistry. Related citations were also considered.

Results: Tooth proportions varied substantially in the natural dentition. No studies revealed findings that supported the use of one mathematical formula to predict aesthetic success. The golden proportion is present between the central to lateral incisor in some cases, but rarely between the lateral incisor and the canine. When compared to the other proportions, the golden percentage provided better starting points for tooth shape and size, but only when values were adjusted to consider other factors such as ethnicity and/or facial proportions.

Conclusion: Mathematical formulas did not provide consistent results that would allow for their use as a standardised guide for aesthetically pleasing smiles. Although the golden percentage may be a good starting point if the percentages are adjusted on a case-by-case basis, generalised aesthetic ideals cannot be determined by a mathematical formula and are open to interpretation by both the clinician and the patient.

Journal of Prosthodontics 2022; 31 (4): 289-298.

Oral status and dementia onset: mediation of nutritional and social factors

Kiuchi, S., Cooray, U., Kusama, T., Yamamoto, T., Abbas, H., Nakazawa, N., et al.

Some modifiable risk factors for dementia are closely related to oral health. Although eating and speaking abilities are fundamental oral functions, limited studies have focused on the effect of malnutrition and lack of social interaction between oral health and dementia. We investigated the mediating effects of nutritional and social factors on the association between the number of teeth and the incidence of dementia. This six-year cohort study used data from the Japan Gerontological Evaluation Study targeting older adults aged 65 years and above. The number of teeth (exposure) and covariates in 2010 (baseline survey), mediators (weight loss, vegetable and fruit intake, homeboundness, social network) in 2013, and the onset of dementia (outcome) between 2013 and 2016 were obtained. The Karlson-Holm-Breen mediation method was applied. A total of 35,744 participants were included (54.0% women). The mean age at baseline was 73.1 ± 5.5 years for men and 73.2 ± 5.5 years for women. A total of 1,776 participants (5.0%) had dementia during the follow-up period. There was a significant total effect of the number of teeth on the onset of dementia (hazard ratio, 1.14; 95% CI, 1.01-1.28). Controlling for nutritional and social mediators, the effect of the number of teeth was reduced to 1.10 (95% CI, 0.98-1.25), leaving an indirect effect of 1.03 (95% CI, 1.02-1.04). In the sex-stratified analysis, the proportion mediated by weight loss was 6.35% for men and 4.07% for women. The proportions mediated by vegetable and fruit intake and homeboundness were 4.44% and 4.83% for men and 8.45% and 0.93% for women, respectively. Furthermore, the proportion mediated by social networks was 13.79% for men and 4.00% for women. Tooth loss was associated with the onset of dementia. Nutritional and social factors partially mediated this association.

Journal of Dental Research 2022; 101 (4): 420-427.

Social mobility and tooth loss: a systematic review and meta-analysis

Celeste, R.K., Darin-Mattsson, A., Lennartsson, C., Listl, S., Peres, M.A., Fritzell, J.

This study systematically reviews the evidence of the association between life course social mobility and tooth loss among middle-aged and older people. PubMed, Scopus, Embase, and Web of Science were systematically searched in addition to grey literature and contact with the authors. Data on tooth loss were collated for a four-category social mobility variable (persistently high, upward or downward mobility, and persistently low) for studies with data on socioeconomic status (SES) before age 12 years and after age 30 years. Several study characteristics were extracted to investigate heterogeneity in a random effect meta-analysis. A total of 1,384 studies were identified and assessed for eligibility by reading titles and abstracts; 21 original articles were included, of which 18 provided sufficient data for a meta-analysis with 40 analytical datasets from 26 countries. In comparison with individuals with persistently high social mobility, the pooled odds ratios (ORs) for the other categories were as follows: upwardly mobile, OR = 1.73 (95% CI, 1.53 to 1.95); downwardly mobile, OR = 2.52 (95% CI, 2.19 to 2.90); and persistently low, OR = 3.96 (95% CI, 3.13 to 5.03). A high degree of heterogeneity was found (I2 > 78%), and subgroup analysis was performed with 17 study-level characteristics; however, none could explain heterogeneity consistently in these three social mobility categories. SES in childhood and adulthood is associated with tooth loss, but the high degree of heterogeneity prevented us from forming a robust conclusion on whether upwardly or downwardly mobile SES may be more detrimental. The large variability in effect size among the studies suggests that contextual factors may play an important role in explaining the difference in the effects of *low SES in different life stages*.

Journal of Dental Research 2022; 101 (2): 143-150.

Quiz answers

Questions on page 114.

1. Antibiotics used to treat acute dentoalveolar abscess:
Amoxycillin
Phenoxymethylpenicillin
Erythromycin
Clindamycin
Co-amoxiclav
Metronidazole

2. None of them.

3. E. Over 20 years

4. Strategies to prevent antibiotic resistance:
1. Prevent infections (vaccination).
2. Surveillance of antibiotic-resistant infections.
3. Develop new antibiotics and diagnostic tests.
4. Promote the judicious use of antibiotics (antimicrobial stewardship).

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Associate dentist required in a busy private dental practice in Galway City. Please apply with CV to dentistgalway2022@gmail.com.

Modern, well-established and very busy practice in Ennis, Co. Clare, looking for an experienced dental associate full/part-time. Established patient book, excellent earning potential, up-front bonus and excellent support staff. Contact gbrowne.ennis@gmail.com.

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Part-time associate required for busy practice in Bray. Friendly staff and patients. Replacing departing colleague, two to three days per week, commencing in June. 50% remuneration. Please send CV to jonathandentalfisher@outlook.com or call 01-286 2137 for further information.

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Donegal Town. Established practice seeks dentist with implant experience for full-time employment. OPG/ceph and CBCT facilities. Friendly, hard-working staff. Practice is progressive and has a good local and county reputation. Contact siomurr@hotmail.com.

Orthodontist or dentist with special interest in orthodontics wanted for busy multi-disciplinary practice. Full book. OPG, ceph and CBCT facilities available. Friendly, hard-working staff. Practice has excellent local and county reputation. Contact: siomurr@hotmail.com.

Part-time dentist required for private practice located in north Dublin. Supportive team. Great earning potential. Apply with CV to dublinsmilecenter@gmail.com.

Dentist required for busy Dublin 13 practice. Private, fully computerised, CBCT, excellent support staff, present incumbent relocating, accommodation available for overseas candidates. Contact orthodebond@gmail.com.

Dentist required to assist busy orthodontic practice in West Cork. Part-time role. Experience desirable but not essential. Reply to info@browneortho.ie.

Experienced dentist to replace departing colleague June 2022. Practice is all private, computerised, digital X-ray, scanner. Opportunity to join progressive practice for an excellent communicator with minimum two years' experience who is willing to take a medium- to long-term view. Contact info@fingerpostdental.ie.

Full/part-time dentist and orthodontist required. Exciting opportunities for enthusiastic, self-motivated and experienced dentists in D8-D1 areas. Modern, well-equipped practices. Fully computerised. Email diamondsmilejobs@gmail.com.

We're looking for a dentist in D4 with an interest in facial aesthetics and high-quality dentistry to join our team. Minimum three years' experience. Modern digital practice, X-ray/OPG/intra-oral scanner. Great team with lovely patients. Contact Dentistjobd4@gmail.com.

Full/part-time dentist required to replace departing colleague for a busy practice in Arklow. Practice is fully computerised. Highly supportive team. Great earning potential. Email CV to annedental@hotmail.co.uk or call 086-398 8981.

Paul O'Boyle seeks enthusiastic dentist to join his team at Riverside Dental Practice. Busy, modern, air-conditioned, computerised, scanner, great opportunity. Further details at https://1drv.ms/p/s!Au2G9pTl1owEvSmRy6Sl-z1MbnSY?e=Ot2eiJ or contact poboyleriverside@gmail.com.

Dentist required for our busy, modern, private practice. State-of-the-art equipment with digital scanner. Position suits an enthusiastic associate who wishes to develop with a progressive team. Excellent earning potential. Great support team. Contact: northdublindentalassociate@gmail.com.

Highly motivated and ambitious dentist required to join amazing team. Successful candidate will have a chance to develop as a world-class dentist. Extensive support network, best equipment available, opportunity for guidance in advanced cases. Three years' experience minimum. Portfolio essential. Contact daniel@docklandsdental.ie.

Following our colleague's departure, we invite an experienced dentist to join our team. Progressive, all private, two-surgery practice in Drogheda. Three days per week. Well equipped. Recent substantial investment in technology upgrades. Excellent supportive staff. Email CV to angelamkearney@gmail.com.

Long-established busy NHS and private four-surgery practice in Strabane. Full NHS transfer list available with excellent private opportunities. Computerised and digital radiograph software. Contact robinsonsdp@gmail.com.

Dentist required at Central Dental Clinic Lucan. Modern, progressive clinic with a friendly environment and strong support team. We are looking for an enthusiastic dentist with a minimum of two years' experience. CV please to office@centraldentalclinic.ie.

Dental Care Ireland Sligo Town has a great opportunity for a dentist to join our established modern practice. This is a part-time, flexible opportunity. Strong book, private/PRSI, supported by our skilled and friendly support team. Contact careers@dentalcareireland.ie.

Dental Suite has a great opportunity for a dentist to join a modern practice. Full- or part-time position. Strong book, private/PRSI/GMS. Contact maddendentalclinic@gmail.com.

Full-time dentists needed in northern Alberta, Canada. Annual salary range €90,000-€150,000 with benefits such as retention bonus, health insurance, malpractice insurance, work visa sponsorship for non-Canadian citizens and an Alberta Dental License. Two-year contract required. Contact OAA2214@GMAIL.COM.

Dentist wanted to replace our departing colleague. Full strong book. Learn new skills and enjoy dentistry. Routine, implants, ortho, sedation, facial aesthetics. Modern practice and equipment. Apply by CV to churchstdental@gmail.com.

Alexandra Dental is seeking to hire a team of the best dental professionals for our new clinic in Tralee. Opportunity to lead a 100% private clinic, with new equipment and a complete support system in place. Contact paulmeagher@alexandradental.ie.

Dental Care Ireland – we have a great opportunity for a dentist to join our modern practice in Limerick City. Full- or part-time options are available. Private/PRSI only, full established book and fully supported by our experienced team. Contact careers@dentalcareireland.ie.

People person dentist wanted part-time or full-time. Busy, digital, three-chair practice. 3Shape scanner, etc. Excellent support team. Private/PRSI. Wicklow. September start. Contact info@dentalhub.ie.

Dentist position available, full- or part-time basis in a busy, fully private south Co. Dublin multi-surgery practice. Digital, OPG, iTero. Remuneration paid weekly. Ability to perform anti-wrinkle treatments a plus. Contact alex@whitesmiledental.ie.

Dental Care Ireland South East – high earning opportunities. Flexible full- and part-time options within our established modern practices. Strong patient books, supported by our experienced and friendly support teams. We look forward to hearing from you. Contact careers@dentalcareireland.ie.

Part-time position for competent dentist in award-winning practice in north east – one hour from Dublin/Belfast. Immediate start. CV to Bernie at mbcar06@gmail.com.

Part-time position for competent dentist in Dublin city centre. CV to contact@freedomdental.ie.

Ideally full-time but part-time considered for busy, non-corporate, modern dental practice in the midlands. Full book, primarily private, excellent support from experienced dentists and staff, generous remuneration. Interested candidates please send CV to bddentalreception@gmail.com.

Rare opportunity for an experienced dentist to join our team each Friday. Would suit an excellent general dentist interested in prosthodontics/restorative or endodontic/surgical. Fully private, computerised, excellent support staff. Digital X-rays, CEREC, hygienists and thriving book. Contact sarahjane@dundrumdentalsurgery.ie.

Experienced dentist required for part-time position in a busy private practice in Cork. Fully computerised, digital radiography, iTero scanner. Excellent support staff and full-time hygienist. The ideal candidate would provide facial aesthetics. Send CV to Carrigalinedentalpractice@gmail.com.

Full-time dentist required for modern, computerised, and expanding Balbriggan practice. €130k minimum salary guaranteed with higher earning potential. Own nurse and any equipment required supplied. Excellent support staff. Email your CV to northdublindentalclinic@gmail.com.

Donegal. Dentist required for busy modern practice. Full/part-time. Computerised. Digital X-rays. Excellent staff. Private/PRSI/medical card. Email twintowndentist@gmail.com.

Enthusiastic and caring dentist required to replace departing colleague in modern, well-established practice, 15 minutes from Galway City. Four-day working week to help achieve ideal work/life balance! Start July 2022. Please apply with CV to info@athenrydentists.ie.

Dental Care Ireland north Dublin – we have a high-earning opportunity currently available within our modern, established practice. Strong book, flexible part- or full-time options available and fully supported by our skilled, friendly clinical team. Contact careers@dentalcareireland.ie.

We're looking for an experienced dentist to join our well-established dental clinic in Maynooth, Co. Kildare. Full-time hours available. Private/PRSI patient base. Relocating to new clinic within Maynooth towards end of 2022. Contact michelle@boynedental.ie.

Dentist required for a busy, well-established practice in Dublin 9. PRSI and private. Computerised, digital X-rays, OPG, hygienist and sedation. Minimum three years' experience. Position is with a view to partnership. Email jpdental100@gmail.com.

Cork. Part-time dentist required to cover six-month maternity leave from August in Clonakilty and Innishannon. Modern, busy practice. Computerised, digital X-ray, OPG. Experienced nursing assistance. Enquiries/CV to info@hartesdental.ie.

Dentist required for a busy, established private practice in Limerick. Excellent friendly staff, modern clinic with high earning potential. Full/part-time. Email dentistjob2022@gmail.com.

Long-established, busy, digitalised practice in Dublin 22 looking for a full-time, committed dentist to join our team. Email CV to practicemanager221@gmail.com.

Dental Care Ireland Galway – we have a high-earning opportunity currently available within our modern, established practice. Strong book, flexible part- or full-time options available and fully supported by our skilled, friendly clinical team. Contact careers@dentalcareireland.ie.

Part-time dentist wanted to work Thursdays, Fridays and Saturdays for busy computerised dental practice in Sandyford. Private and PRSI patients, great staff. Please email CVs to blackglendental@gmail.com.

Dentist required for an established, modern clinic in Sligo Town. Part- or full-time applicants. Flexible days/hours. Strong, fully private book. Excellent earning potential. 50% split plus joining bonus. Email CV to hello@winestreetdental.com.

Orthodontist or dentist with a special interest in orthodontics – friendly, multidisciplinary practice in Letterkenny. CBCT/ceph/OPG/Primescan. Hygienist, general dentistry, radiology and prosthodontics offered. Popular, busy practice. Contact siomurr@hotmail.com.

Locums

Very busy practice in Ennis, Co. Clare, looking for an experienced part-time (Monday/Tuesday/Friday) dental associate as a locum from July to September 2022. Excellent earning potential and support staff. Email gbrowne.ennis@gmail.com.

Independent, established, fully computerised practice, digital X-rays/OPG and good remuneration. Three years+ experience for locum dentist with view to part/full-time position in a relaxed, bright, spacious environment. Friendly atmosphere, with excellent staff and two hygienists. Contact reception@castlemilldental.ie.

Full-time locum dentist required for six months' maternity leave with view to part/full-time position. Commencing August, 50% remuneration, no GMS. Contact wicklowdentist@hotmail.com.

Specialists/limited practice

Specialist – Smiles Dental is looking for specialist and special interest dentists to join our fully private, well-established practices across Ireland. Flexible on days, hours and location. Established patient book, excellent earning potential! Contact sophie.collier@bupadentalcare.co.uk.

Orthodontists – Smiles Dental is looking for specialist orthodontists to join us as we have exciting opportunities available across various locations. We can offer a full patient list, high earnings and a great working environment! Contact sophie.collier@bupadentalcare.co.uk.

Orthodontist required to join our well-established orthodontic practice in Midleton, Cork, two days per week. Full book and long waiting list. On-site lab, excellent nursing support and very organised practice manager. Excellent remuneration. Clinical support available for new graduate. Contact vacancies@corabbeyortho.ie.

Orthodontist or dentist with special interest in orthodontics wanted for busy multi-disciplinary practice. Full book. OPG, ceph and CBCT facilities available. Friendly, hard-working staff. Practice has excellent local and county reputation. Contact: siomurr@hotmail.com.

Dental specialists to join our existing specialist team in Killarney. Large referral base. Flexible hours. Great pay and conditions. On-site CBCT, sedation, Trios, etc. Contact tomas.allen@kingdomclinic.ie.

Opportunity for specialist/dentist with special interest to join our well-established paediatric dental practice in Galway. All specialties considered, but ideally suited to a paediatric dentist. Long waiting list. Friendly, hard-working team, computerised, nitrous oxide sedation, free parking. Contact dentgalwayjob@gmail.com.

Endodontist and orthodontist required to join existing dental specialist group in Bray, Co. Wicklow. Please apply with brief CV to dentalspecialist76@gmail.com.

Specialist orthodontist position available at Pembroke Orthodontics – locations in south east Leinster. State-of-the-art facilities with iTero Scanners, ceph/CBCT. Multidisciplinary support from experienced orthodontists and other specialists, orthodontic therapists and admin/nursing team. Excellent remuneration. Contact bbarrett@pembrokedental.ie.

Qualified orthodontist required for a busy orthodontic practice in Dunboyne, Co. Meath. CV to dunboyneorthodontics@gmail.com or call 01-825 5682.

Dental Care Ireland has some exciting, high-earning opportunities for specialist dentists and dentists with special interests (orthodontics, endodontics, periodontology, oral surgery). Flexible options. Locations including Dublin, Cork, Galway, Limerick, Mayo, Meath and the south east. Contact careers@dentalcareireland.ie.

Busy Cork orthodontic/general practice (Main Street Dental Care, Midleton) requires orthodontist to replace well-established retiring specialist colleague. Currently one day a week required (flexible) with opportunity to increase. Please email npdent22@gmail.com.

Orthodontist or dentist with a special interest in orthodontics – friendly, multidisciplinary practice in Letterkenny. CBCT/ceph/OPG/Primescan. Hygienist, general dentistry, radiology and prosthodontics offered. Popular, busy practice. Contact siomurr@hotmail.com.

Dental nurses/receptionists/managers

Kerry Endodontics is seeking a dental nurse. Part/full-time. This is a new practice limited to endodontics opening in Killarney in June 2022. Fully refurbished, computerised practice. Experience preferable, not essential. Please send CV to reception@kerryendodontics.ie.

Dental nurse required for a busy, friendly warm and supportive dental practice in Charleville, Co. Cork. Three to four days per week. If you would like to join our highly motivated and progressive team, please email ncdreception2@gmail.com.

Position available for dental nurse in a busy orthodontic practice in Clonmel, Co. Tipperary. Experience desirable but not essential. Please send CV to admin@clonmelorthodontist.ie.

Dental nurse wanted for friendly, growing general dental practice in Terenure, D6W. Chairside and reception. Part-time leading to full-time. Contact dublinsouthdental@gmx.com.

Dental nurse required for a busy, friendly, warm and supportive dental practice in Killiney, south Dublin. Email application to amar.thiyab@killineydental.com.

Exciting and rare opportunity for a motivated dental nurse to join a dynamic, experienced team. Busy, modern, award-winning, computerised practice in Co. Meath (35 minutes north of Dublin). Part-time position, commencing summer 2022. Contact dentaljobireland1@gmail.com.

Positions available for dental nurse and trainee dental nurse in a busy prosthodontic practice in Oranmore, Co. Galway. Experience desirable but not essential. Please send CV to info@susanbutlerdental.com.

Full-time dental nurse required urgently in Dunboyne, Co. Meath. Immediate start. Please send CV to dunboyneorthodontics@gmail.com.

Part/full-time nurse to join Greenlea Dental Centre, a friendly general practice in Dublin 6W. Experience preferred. Please email olivia.plunkett@gmail.com.

Experienced dental nurse required to cover maternity leave in a busy dental practice in Swords. Friendly staff, no weekends, some reception work may be required. Qualification and Exact software experience preferred. Contact accounts@boroimhedentalpractice.ie.

Hygienists

Part-time hygienist required for busy practice. Modern, well-established, trained staff, computerised, KaVo PROPHYflex, Cavitron. PRSI and private only. Contact niallmcrty@gmail.com.

Dental hygienist required for busy, well-established north Dublin dental practice. Full/part-time position available. Excellent facilities and support team. Contact northdublindentalassociate@gmail.com.

Part-time hygienist for Cork City practice. Friendly staff in place. To replace departing colleague. Flexible days/hours. Contact info@shandondental.ie.

Navan, Co. Meath. Enthusiastic hygienist required for maternity cover from mid April. Monday, Friday and Saturday mornings available. Busy, fully private book. Modern, computerised practice with excellent support staff. Three referring dentists and periodontist. 50% remuneration. Contact gh@bridgeviewdental.ie.

Specialist clinic looking for an experienced dental hygienist to join our team part-time. Full appointment book and private patients only. Excellent

interpersonal skills, ability to effectively communicate with patients and dedicated to providing high-quality care to our patients. Contact hannonc@burlingtondentalclinic.com.

Hygienist required for busy, well-established dental practice in Ballincollig, Cork. Two to three days per week. Contact info@guineydental.ie.

Hygienist required for busy, well-established, modern dental practice in Mayo, two days per week. Fully computerised, Cavitron. PRSI and private only. Excellent remuneration. Contact errisdental@gmail.com.

We are looking for a hygienist in Dublin 4 to join our busy team. Excellent facilities, lovely team and patient base. Two to three days per week. Contact dentistjobd4@gmail.com.

Caring, enthusiastic hygienist sought. Initially three full busy days, with option and flexibility to progress to full-time within three months as we relocate to a brand new clinic. Modern, fully computerised, excellent support team. Start August 2022. Excellent public transport links. Contact morgan@blackrockdental.ie.

Part-time dental hygienist required for large Cavan Town practice. Full book and flexible hours. Facial aesthetic training and support if interested. Apply with CV to churchstdental@gmail.com.

Hygienist required two to three days per week. Very busy book. Clonmel, Co. Tipperary. Contact dentistdanoconnell@hotmail.com.

Kilrush, Co. Clare. Hygienist required three days per week, private patients, modern surgery, well established, new equipment, flexible hours. Contact niallmcrty@gmail.com.

Position available for dental hygienist two days per week, flexible. Very busy private practice. Contact milltowndentist@gmail.com.

Hygienist required in Dublin 14. Very busy. Hours negotiable. €50/hr for suitable candidate. Apply to info@rathfarnhamdental.com.

Hygienist required to join happy, hard-working team. Excellent rate of pay, busy book and fantastic support staff. Free parking on site. Contact info@walkinstowndentalcare.com.

Full book available for someone enthusiastic about patient care. 40-minute appointments, great patients and equipment (computerised, air-flow, intra-oral camera, etc.). Full training provided in world-class preventive care. Full-time and part-time role. Contact ed@seapointclinic.ie.

PRACTICES FOR SALE/TO LET

Co. Wicklow. Two-surgery ground floor practice for immediate sale with OPG, intra-oral X-ray. Priced to sell. Contact in confidence by email at steven@medaccount.ie.

Limerick. Top-class, private, well-established, very busy practice. Modern/walkinable premises with good room to expand. Digitalised, computerised, excellent equipment. Good profits – low rent. Very strong new patient numbers. Principal available for transition. Contact niall@innovativedental.com.

Busy two-surgery dental practice with hygienist. Established 1997 in north Mayo town. Private/PRSI only with great potential to expand. Principal available for transition period. All offers considered. Contact lnoonan2@msn.com.

Very busy practice in Donegal. Well-trained, professional staff. Computerised. Large new patient numbers. Long established. Excellent growth potential. Two to three surgeries. Hygienist present. Contact dentistdonegal@gmail.com.

Orthodontic practice, Dublin. Excellent location. Three surgeries, with full planning permission to extend further within building. Modern, computerised and digitised. Direct sale or associate with long-term view. Transition phase negotiable. Contact with CV mark@mccn.ie.

EQUIPMENT FOR SALE

NSK iClave plus autoclave, four and a half years old, with USB connector, €2,400. Good working condition, refurbished. Medisafe Pico Plus Flush Washer Disinfector as spare parts dispenser €500. Contact yoursmile2612@gmail.com.

MyRay Hyperion X5 Air, digital panoramic system, three laser-guided positioning, in excellent condition. Original price €15,000, selling for €8,000. Contact info@dermadoc.ie.

Independent practitioner

Dr Keith Redmond is a general practitioner in Sutton in Dublin.

Can you tell me about your background?

I grew up in Finglas in Dublin, and graduated from Trinity College in 1996. I immediately went, with I'd say 80% of my class, to England, and worked in London for two years in a very busy NHS practice. It was frenetic stuff, but I gained an enormous amount of experience. I came back to work with Dr Paddy O'Brien in Clontarf, but he unfortunately passed away soon afterwards and the practice was closed down. However, I was lucky enough to be able to buy a practice in Sutton, and I've been here ever since.

What led you to get involved in the IDA and how did that involvement progress?

I kept my IDA membership up even though I was in England. When I came home, I used to go to the local IDA meetings, and got to know Art McGann and Enda Concannon, who were stalwarts of the IDA in the area. Enda encouraged me to get involved, and I was drafted into a position on the Council, where I found myself on negotiating teams with the Department of Social Protection and the Department of Health, which was a steep learning curve. I did that for about a year, but then the practice took off and so I reigned in my activity with the IDA. I do still attend meetings, however.

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

I think just knowing you're not on your own, especially when it comes to dealing with the HSE or the Government. Even though we have limited gains, we do get some gains, the most recent being the increase in fees for the medical card. It's not ideal, but it's certainly better than what was there. Those things would not have happened without the IDA campaigns and dentists pulling out of the contract.

It's really difficult for dentists because we're so siloed in our little rooms. It's difficult for us to find the time for the IDA as well, but it's important in a bigger sense to stay involved and engaged in what it's trying to do.

What are the big issues you think the Association needs to focus on?

I know that they are focused on getting some kind of Scheme that would be far better than the medical card scheme. Whether they'll have any success in that I don't know. I'd be quite pessimistic, but they should obviously be engaging with that as much as they possibly can. I think the IDA is sensible in that we've all learned a lesson from the crash in recognising how low a priority we are for Government. We've now built, over the last 12 years, successful private practices, and there's a refreshing aspect to that. It allows you flexibility with materials and flexibility with procedures, and effectively allows you to provide better care for patients. Obviously, there are people who get left behind with that, who can't afford it. But at the same time, from the dentist's point of view, I would imagine there's going to be a reluctance to join any new Government scheme.

The IDA should also focus on engaging with the universities and the Dental Council to increase the domestic and foreign supply of dentists, hygienists and therapists. Our focus should be on removing all barriers to registration and increasing the frequency of the State exam for foreign graduates. Also, the IDA should publicly push for more dentists and hygienists to be graduated by TCD and UCC, and potentially call for other institutions to graduate them too, for example the RCSI.

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

I think they should focus on independent practice. I think they should disengage with the Government, and let political pressure build from the ground up, from the constituents. That's how the medical card prices were changed recently. The constituents applied pressure, and that's the only thing that's going to work.

Keith lives in Dublin with his wife Sarah and three children – two sons aged three and five, and a new baby daughter – so life is very busy. When he's not working, or spending time with the family, the former county councillor still has some involvement in local politics.

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