

DENTAL HEALTH

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THE JOURNAL OF THE BRITISH SOCIETY OF DENTAL HYGIENE AND THERAPY



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MISDIAGNOSIS?

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REVIEW

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Promoting health, preventing disease, providing skills

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DENTAL HEALTH

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What Gen Z Taught Me



As a mother of two 'Gen Z' sons, I am fairly cognisant of the differences between these digital natives and me! There is no doubt that my maternal role has certainly informed my approach to treating patients of this generation. I understand that for my younger patients it is not just their oral health that I need to consider; I also need to have an awareness of such topics as aesthetic treatments, energy drinks and TikTok trends!

In general terms, Gen Z is hyper-connected, visually driven, wellness-focused and fiercely aware of how they present themselves to the world - especially through their smiles. And while some habits may raise clinical red flags, their values are reshaping what it means to provide preventive care. Many readers, and colleagues, are of course from this generation. For those of us who are older, it is clear that we can learn from you - and adapt our approach to meet current needs.

I recently came across an article which delved into the factors contributing to Gen Z's self-consciousness about their smiles, including the impact of social media and the prevalence of photo editing tools.¹ The author also discussed the growing interest in cosmetic dental procedures among this generation. This group of patients is very well informed and before they even enter our surgeries, they have often done their research and watched before-and-after videos on such treatments as whitening, composite bonding and invisible aligners. At times it feels that they are more informed than me! They care deeply about how their teeth look² and, in my experience, sometimes more than about how they function. Their aesthetic drivers can come at the expense of healthy habits: irregular interdental cleaning, brushing too aggressively or over use of at-home whitening kits.

However, in my opinion, one of the biggest areas of concern is vaping. This fashionable habit has become one of the most pressing oral health threats among teens and young adults.

A recent study³ explored the knowledge and attitudes of young adults (ages 18–24) towards the oral health effects of e-cigarette use. The findings indicated a lack of awareness among this demographic about the potential harm of e-cigarettes. Reassuringly, however, it was also found that many of the participants expressed a willingness to discuss the oral health effects with dental professionals. I can absolutely relate to this: when I do ask my young patients if they smoke or vape, they are often surprised by the question. They do not often associate vaping with the harms of traditional smoking. Further discussions usually reveal that they are unaware of any potential harm,^{4,6} or that there is currently a lack of evidence regarding the long-term effects of electronic cigarettes. Although it has been found that health concerns do motivate the younger generation

to quit e-cigarettes⁷, I sometimes feel that their sense of immortality often overcomes any sense of risk. In such instances, for me, short, honest conversations around staining of their teeth and how vaping affects their breath tend to land more effectively. Shifts in the conversation - from *"this is bad"* to *"this impacts how your smile is likely to look in the not too distant future"* - are more likely to resonate. Preventive care then becomes part of their beauty routine, just like skincare or haircare. I would be interested to hear readers' thoughts and approaches.

At first, I'll admit - I rolled my eyes at filtered smiles and DIY flossing hacks on social media! But Gen Z has taught me that their attention to detail, self-image and wellness can be powerful tools if channelled correctly. They want connection and options but above all, they want to understand *why* something matters before they commit to changing a habit.

As dental hygienists and therapists we are in a unique position to shape their lifelong relationship with oral health. And if we listen closely, Gen Z might just help us grow as much as we help them.

Note: The Tobacco and Vapes Bill 2025 has now progressed from the House of Commons and is presently undergoing its 2nd reading in the House of Lords with the intention of becoming law by the end of the year. For progress access:

<https://bills.parliament.uk/bills/3879>

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Heather

Heather Lewis

FROM THE PRESIDENT

BY RHIANNON JONES

It has been a busy few months for me in my new role as your President. I feel like I am getting to grips with most of it and am excited for the year ahead. We have some fantastic projects in the pipeline and our working groups are all busy working together to improve and strengthen our Society.

I am pleased that we continue to be included in discussions that affect our daily work, such as the consultation and preparation of the new **Scope of Practice** document. I was also delighted to speak on behalf of the Office of the Chief Dental Officer (England) at the BDIA show where the Minister of State for Care was present and indeed joined our panel for a few

moments. Our friend, and past Acting Secretary, Sarah Murray delivered a succinct summary of the Exemptions Mechanism and I will take this opportunity to remind you that the **Standard Operating Procedure** that she expertly produced can be found on the website. I was also honoured to be invited to be a panellist at the GDC's Leadership Network event where I was happy and willing to take questions from the audience regarding our role in the future of oral care in the UK.

I was so excited to announce the publication of the **Medical Conditions Guidance Sheet** which was researched and written by Emma Slade-Jones and kindly reviewed and edited by Professors' Lewis and Chapple. I am aware that it will be shared widely, (despite it being a member-only benefit), but in the true spirit of collegiality, we are pleased that so many people find it useful. I remind members that as anything changes or guidance is updated, the document will remain 'live' and therefore ask that you always check the online document. A printed version could be out of date the moment the ink is dry!

The **Oral Health Summit** programme is now complete and booking has been open for just over a month. Please take a look at the event at <https://profile.eventsair.com/oral-health-summit-2025/programme> I hope that you can see the work that has gone into the creation of such a unique event and the value of having two important conferences brought together. We have an extensive trade exhibition, world class speakers and a choice of sessions to attend, including workshops. Edinburgh is an incredible city and I hope that you have time to also be a tourist and explore the old streets and historical landmarks.

The business of BSDHT continues as the new elected members find their feet and settle into their roles

alongside me. We are working on our financial budget at present and exploring ways to make the Society stronger but also sustainable for the next generation. We are mindful of the financial pressures on businesses and individuals and will do our very best to ensure the Society invests and engages wisely.

I have enjoyed seeing the Spring regional meetings underway and hope that you have managed to attend the one in your area. If you have never attended, please consider the next one. I am always re-energised by attending and feel confident that the eCPD that you gain is of the highest quality.

I look forward to the next few months and hope that we can continue to deliver member benefits that are of true value and support you in your sterling work.



Rhiannon Jones



BY HEATHER LEWIS

PENINSULA DENTAL SCHOOL SECOND STUDENT SCIENTIFIC CONFERENCE

On Wednesday 26 March the Peninsula Dental School held their Second Student Scientific Conference. It was my absolute privilege to be invited as the external judge of the DTH and BDS year 3 group presentations based on their research projects. Each group had prepared both a poster and a PowerPoint for oral presentation.

Throughout the afternoon my fellow judges and I were privy to a snapshot of the research journeys that these amazing young people had undertaken. Four groups of DTH students and eight groups of BDS students were given ten minutes to present the scoping review findings from their research module, before being submitted to ten minutes of questioning from the judges, in front of a packed lecture theatre. Simultaneously, outside the doors, their posters were on display and also being judged.

There was an amazing energy in the room and each group of talented and inspirational students is to be commended for the quality of their work and achievements to date.

In competing for the *Best Presentation Award*, the four groups of DTH students presented on the subjects of: Tooth regeneration using synthetic materials; Barriers faced when implementing

sustainable practices in dentistry; Delivering oral hygiene advice to patients with Parkinson's disease within dental settings; The role of maternal periodontitis on the foetal development.

I was delighted that the DTH students were successful in both categories:

Best poster Award:

Title: Barriers faced when implementing sustainable practices in dentistry – a Scoping Review

Students: Fern-Elise Bridges, George Farrier, Farista Fazly, Nikita Mittal, Justyna Piotrowska, Tatiana Topor

Third place in Oral presentation:

Title: Delivering Oral Hygiene Advice to patients with Parkinson's disease within Dental Settings: A Scoping Review of Current Practices and Evidence-Based Approaches

Students: Abdulrazaq Idris-Opeloyeru, Katie James, Anya Make, Shraddha Rana, Emma Routley, Grace Vincent

The event was a resounding success and it was inspiring to witness the efforts that all the students had put in – a truly collaborative event.

I congratulate Ms. Prashanti Eachempati, Organiser Chair, and Morag Powell, Lecturer Dental Therapy and Hygiene and Year 3 DTH Lead on a hugely successful event.



More than 1 in 4 present with active caries¹⁻⁴

Are you aware of your patients' caries risk factors?



Anna, 61

 Exposed roots



Josh, 15

 Orthodontic appliances



Mason, 6

 Frequent snacking



Carole, 28

 Prescription medications

Assess their caries risk, and consider prescribing high fluoride to increase caries control⁴



22,600 ppm Fluoride



0.619% Sodium Fluoride



1.1% Sodium Fluoride

High Fluoride products for in-office and at-home^{*,†}

Be confident prescribing Colgate® Duraphat®, the brand your patients know and trust[^]



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*Colgate® Duraphat® 5000 fluoride toothpaste for patients 16 years of age and over at increased caries risk. †Colgate® Duraphat® 2800 ppm high fluoride toothpaste for patients 10 years of age and over at increased caries risk. ^YouGov Omnibus for Colgate® UK, data on file June 2015. Claim applies only to the Colgate® brand. **References:** 1. Oral Health Survey of Adults attending dental practices, 2018, Public Health England, published 2020. 2. National Dental Epidemiology Programme for England, Oral health survey of 3-year-old children 2020: a report on the prevalence and severity of dental decay, Public Health England. 3. National Dental Epidemiology Programme (NDEP) for England: oral health survey of 5 year old school children 2024, Office for Health Improvement and Disparities. 4. Child Dental Health Survey 2013, England, Wales and Northern Ireland National statistics, published 2015. 5. Tavss et al. Am J Dent 2003;16(6):369-374. 6. <https://cariescareinternational.com/wp-content/uploads/2020/03/CCI-Practice-Guide.pdf>. Last accessed July 2024.

Name of the medicinal product: Duraphat® 50mg/ml Dental Suspension. **Active ingredients:** 1ml of suspension contains 50mg Sodium Fluoride equivalent to 22.6mg of Fluoride (22,600 ppm F⁻). **Indications:** Prevention of caries, desensitisation of hypersensitive teeth. **Dosage and administration:** Recommended dosage for single application: for milk teeth: up to 0.25ml (=5.65mg Fluoride), for mixed dentition: up to 0.40ml (=9.04 Fluoride), for permanent dentition: up to 0.75ml (=16.95 Fluoride). For caries prophylaxis the application is usually repeated every 6 months but more frequent applications (every 3 months) may be made. For hypersensitivity, 2 or 3 applications should be made within a few days. **Contraindications:** Hypersensitivity to colophony and/or any other constituents. Ulcerative gingivitis. Stomatitis. Bronchial asthma. **Special warnings and special precautions for use:** If the whole dentition is being treated the application should not be carried out on an empty stomach. On the day of application other high fluoride preparations such as a fluoride gel should be avoided. Fluoride supplements should be suspended for several days after applying Duraphat®. **Interactions with other medicines:** The presence of alcohol in the Duraphat® formula should be considered. **Undesirable effects:** Oedematous swelling has been observed in subjects with tendency to allergic reactions. The dental suspension layer can easily be removed from the mouth by brushing and rinsing. In rare cases, asthma attacks may occur in patients who have bronchial asthma. **Legal classification:** POM. **Product licence number:** PL 00049/0042. **Product licence holder:** Colgate-Palmolive (U.K.) Limited, Goldsworth Place, 1 Forge End, Woking, Surrey, GU21 6DB. **Price:** £22.70 excl VAT (10ml tube) **Date of revision of text:** July 2024.

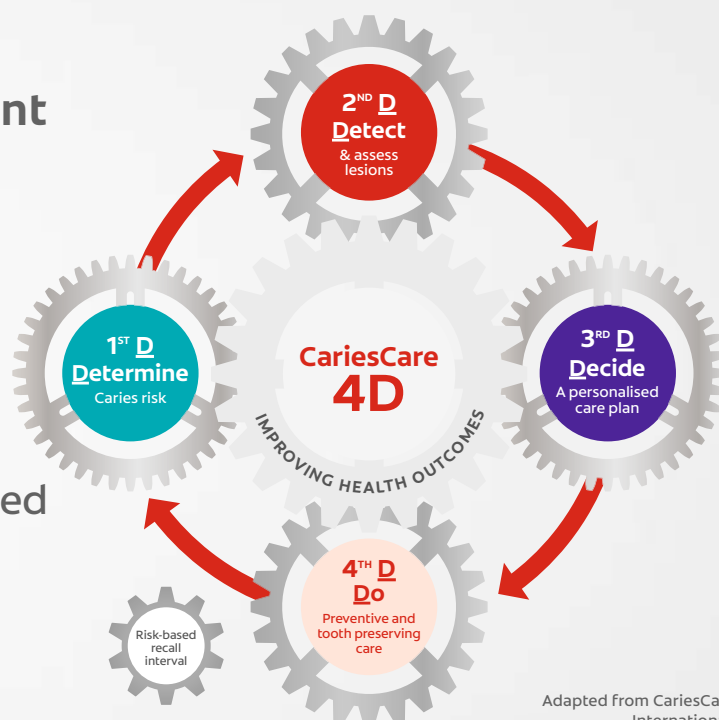
Assessing caries risk

CariesCare International⁶ promotes a patient centred risk-based approach to caries management

CariesCare Practice Guide:

A 4D process to help prevent and control caries⁶

- 1ST D Determine** caries risk
- 2ND D Detect** and assess
- 3RD D Decide** on a personalised care plan
- 4TH D Do** preventive and tooth-preserving care



Download our CariesCare Guide* adapted to help you deliver UK evidence-based caries care for your patients

*Adapted from CariesCare International.

Name of the medicinal product: Duraphat® 2800 ppm Fluoride Toothpaste. **Active ingredient:** Sodium Fluoride 0.619 %w/w (2800 ppm F⁻). **Indications:** For the prevention and treatment of dental caries (coronal and root) in adults and children 10 years of age and over. **Dosage and administration:** Adults and children 10 years of age and over: Use daily instead of normal toothpaste. Apply a 1cm line of paste across the head of a toothbrush and brush the teeth thoroughly for one minute morning and evening. Spit out after use; for best results do not drink or rinse for 30 minutes. **Contraindications:** Individuals with known sensitivities should consult their dentist before using. Not to be used in children under 10 years old. **Special warnings and precautions for use:** Not to be swallowed. **Undesirable effects:** When used as recommended there are no side effects. **Legal classification:** POM. **Marketing authorisation number:** PL00049/0039. **Marketing authorisation holder:** Colgate-Palmolive (U.K.) Limited, Goldsworth Place, 1 Forge End, Woking, Surrey, GU21 6DB. **Recommended retail price:** £5.10 (75ml tube). **Date of revision of text:** July 2024.

Name of the medicinal product: Duraphat® 5000 ppm Fluoride Toothpaste. **Active ingredient:** Sodium Fluoride 1.1%w/w (5000 ppm F⁻). 1g of toothpaste contains 5mg fluoride (as sodium fluoride), corresponding to 5000ppm fluoride. **Indications:** For the prevention of dental caries in adolescents and adults 16 years of age and over, particularly amongst patients at risk from multiple caries (coronal and/or root caries). **Dosage and administration:** Brush carefully on a daily basis applying a 2cm ribbon onto the toothbrush for each brushing. 3 times daily, after each meal. **Contraindications:** This medicinal product must not be used in cases of hypersensitivity to the active substance or to any of the excipients. **Special warnings and precautions for use:** An increased number of potential fluoride sources may lead to fluorosis. Before using fluoride medicines such as Duraphat, an assessment of overall fluoride intake (i.e. drinking water, fluoridated salt, other fluoride medicines - tablets, drops, gum or toothpaste) should be done. Fluoride tablets, drops, chewing gum, gels or varnishes and fluoridated water or salt should be avoided during use of Duraphat Toothpaste. When carrying out overall calculations of the recommended fluoride ion intake, which is 0.05mg/kg per day from all sources, not exceeding 1mg per day, allowance must be made for possible ingestion of toothpaste (each tube of Duraphat 500mg/100g Toothpaste contains 255mg of fluoride ions). This product contains Sodium Benzoate. Sodium Benzoate is a mild irritant to the skin, eyes and mucous membrane. **Undesirable effects:** Gastrointestinal disorders: Frequency not known (cannot be estimated from the available data); Burning oral sensation. Immune system disorders: Rare (≥1/10,000 to <1/1,000); Hypersensitivity reactions. **Legal classification:** POM. **Marketing authorisation number:** PL00049/0050. **Marketing authorisation holder:** Colgate-Palmolive (U.K.) Limited, Goldsworth Place, 1 Forge End, Woking, Surrey, GU21 6DB. **Recommended retail price:** £7.99 (51g tube). **Date of revision of text:** July 2024.



SPOTLIGHT ON...



Emma Bingham, congratulations on your recent promotion. I'm sure many of our readers will be inspired by your journey and would like to know more...

DH: Can you tell us a bit about your career pathway to becoming a Professor in Dental Hygiene and Dental Therapy?

EB: Well, dentistry was not always at the top of my list of careers when I was younger! All I knew was that I enjoyed science and wanted a job that involved helping people. I looked at health-related careers and initially I was drawn to pharmacy but I also researched working as a dietitian and paramedic (I'd still love to drive an ambulance!). As I got closer to completing my A levels, I didn't feel ready to go to university. This led to a few meetings with our School Careers Advisor. He took time to listen to what I was interested in and luckily for me, he was great friends with a local dentist who was looking to recruit two trainee dental nurses. Much to my mum's horror, having never shown an interest in dentistry - at least nothing beyond cleaning my own teeth that is - and the fact that where I was going to be working was our family's dental practice, I started working full time and attended my local college in the evenings to gain my national certificate in dental nursing.

One day the practice owner mentioned that he thought I should look into training to be a dental hygienist and dental therapist. He had friends who were dental hygienists and dental therapists and he arranged for me to shadow them. Although I thoroughly enjoyed working as a dental nurse, I was interested in being involved in more direct patient care. I applied and received an acceptance from Sheffield and in April 1999 began their 27-month diploma programme. On graduation, I began working in two practices in Chesterfield, Derbyshire, one of which was the practice where I had worked as a dental nurse.

After nearly three years of working in practice, quite out of the blue I received a letter from Sheffield explaining that they were expanding their diploma programme and increasing student numbers to 30 students each year. To do this they were looking for more clinical tutors. Although I thoroughly enjoyed working in practice, I was

tempted. I had an informal conversation with the Programme Director and was invited to an interview a couple of weeks later. I was offered a role which involved a part-time clinical tutor position and a part-time dental hygienist position at the Charles Clifford Dental Hospital. In May 2004 I started my academic career. It was daunting, and I can remember some of those very first lectures that I delivered, not least because trying to fathom an overhead projector (if you're old enough to remember what one of those is!) brought me out in a cold sweat! After around a year of working at Sheffield, I was promoted to Programme Coordinator which involved a lot of roles but predominantly I was looking after the day-to-day running of the programme and designing timetables. In 2010, I then became the Programme Lead and Head of Unit for Dental Hygiene and Dental Therapy, which meant that I had overall responsibility for the programme and staff line management. Most recently I was promoted to professor; largely my day-to-day job role stays the same but with some additional responsibilities.

DH: Is this a unique post? Are there any other professors in dental hygiene and therapy?

EB: Yes, it is unique in the UK however we do have some Associate Professors. Although I'm incredibly pleased and proud to be the first Professor in Dental Hygiene and Dental Therapy, it feels bittersweet. There are so many dental hygienists and dental therapists in academia who are worthy of this title. So many of these have supported me on my journey to where I am now. It is disappointing that more are not recognised for the tremendous work that they do. In other countries there are dental hygienists and dental therapists who are professors! I hope we follow suit.

DH: Can you share some of your local, national and international achievements that you believe influenced the selection panel to promote you to professor?

EB: This is a tricky one as other than finding out I was successful I didn't

receive any further feedback from the panel. I'd say some of my achievements and highlights include:

- Leading a team in delivering high-quality education and student experience shown by positive student feedback, GDC inspection reports and external examiner feedback.
- Developing the innovative near-peer teaching scheme which Kate Peysner and I recently authored an article about for BSDHT's collaboration with the International Journal of Dental Hygiene.
- Developing partnerships and collaborations with other university departments and external organisations including working with our local oral health promotion team to arrange for students to deliver oral health training to care home carers on an annual basis which received NICE recognition.
- I initiated and developed Patient Groups Directions for the administration and supply of local anaesthetic and topical fluoride treatments within the Sheffield Teaching Hospitals NHS Foundation Trust.
- In 2021 I was awarded a Fellowship by the Faculty of Dental Trainers, The Royal College of Surgeons of Edinburgh. The Fellowship is the highest reward for individuals who have demonstrated a clear commitment to excellence and a high level of commitment in the field of dental education and training.
- I have been actively involved with the BSDHT since 2010 when I undertook a newly created website feeder role. This role mostly involved researching and uploading material to the BSDHT website and I wrote 50+ review articles.
- I am the current BSDHT tutor rep and have been for the last 10 years, providing the link between BSDHT and UK-wide tutors.
- I have been an invited dental expert on several working groups and revalidation committees and worked with and for dental companies, NHS organisations, GDC and other universities.

- I have been an external examiner at six institutions and was Chair of the Royal College of Surgeons dental hygiene and dental therapy examinations.
- I have led several programme visitations for international institutions. These visitations have provided a platform to highlight the features of dental hygiene and dental therapy training in the UK to a global audience.

DH: What do you find most exciting about recent advancements in hygiene and therapy?

EB: I think it is an exciting but challenging time at the moment, with recent changes in the NHS allowing us to open courses of treatment utilising skill mix and facilitating the principles of direct access. More recently the supply and administering certain medicaments training (exemptions) being released has been a huge step forward too. However, alongside these advancements, I still feel that dental hygienists and dental therapists are not being utilised to their full potential. It's a sorry state of affairs when reading news reports related to dentistry, we are seeing queues of people trying to access dental care, GA dental extractions costing over £40 million per year and people resorting to removing their teeth with DIY tools! There is so much more we could do to help with these crises.

DH: In what ways will you use your new platform to advance our profession?

EB: I'm hopeful that this promotion will help to raise the profile of dental hygiene and dental therapy further. I've received quite a few emails and messages from colleagues in other institutions asking for help and support with their cases for promotion, so if I can provide mentoring to others, I'd be more than happy to help.

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READERS FORUM

Decadence or Core Business?

Our society is fundamentally built on membership, with its members driving its purpose and direction. However, what constitutes our 'core business'? At its heart, our professions are dedicated to the prevention of non-communicable diseases, the promotion of oral health and the advancement of oral health literacy and equity across all communities. To achieve this, there is an urgent need for research led by dental hygienists and dental therapists, focusing on oral health and our critical role in the delivery of oral healthcare.

If we diverge too far from this mission, we risk increasing our dependence on other dental occupations. More importantly, key stakeholders—including the government and our patients—may begin to question our relevance, impact and necessity, ultimately asking: why is this small group of dental professionals needed at all?

The March issue of *Dental Health*, included an additional industry collaboration insert entitled: *Enhancing the Patient Experience*. It was disappointing to observe the limited reference to, or citation of, the *BSP implementation of European S3 - level evidence-based treatment guidelines for stage I-III periodontitis in UK clinical practice* and Public Health England's *Delivering Better Oral Health: An Evidence-Based Toolkit for Prevention*. While not all dental hygienists (DHs) or dental therapists (DThs) will

have access to air polishing or air powder delivery systems, it is particularly notable that these methods are not referenced in the S3 guidelines published by the British Society of Periodontology (BSP). This omission underscores the need to maintain a strong focus on what constitutes our 'core business' and to align more closely with societies and organisations that prioritise research. Establishing and strengthening these connections is essential to ensuring that our professions have a credible voice when engaging with stakeholders, government bodies and funding agencies, thereby securing sustained investment in oral health.

This is precisely why research produced by, and for, dental hygienists and dental therapists is critical. By generating evidence-based insights that directly inform our practice as dental hygienists and dental therapists, workforce planning and policy development, we can strengthen our profession, advocate for necessary reforms and ensure our contributions are both recognised and valued. Investment in research, and dental hygiene and dental therapy academics, is crucial juxtaposed to education. Workforce development is not only beneficial but essential to securing the future of our professions and the quality of care we provide.

The British Society of Dental Hygiene and Therapy must acknowledge and urgently address the growing crisis in DH and DTh undergraduate training and research, ensuring the sustainability and advancement of our professions.

Leon Bassi

MSc, Dip Paed Dent (DT) RCS Edin, Dip DH, DTh, FHEA, FDTFEd (RCS Edin)

CALL FOR SUBMISSIONS

The BSP and BSDHT Outstanding Clinical Team Case Report Prize

The BSP and BSDHT are delighted to announce a joint prize to be awarded at The Oral Health Summit in Edinburgh in November to the team of oral healthcare professionals who demonstrate excellence in the planning and treatment of a patient through a whole team approach. The prize will take the form of a cash award of £500, together with a certificate for the winning team.

To find full details on submission requirements and how to apply, visit the OHS website for more details:

profile.eventsair.com/oral-health-summit-2025.

The deadline for abstracts is 10 October 2025, with the full report due by 27 October 2025.



THE DEVELOPMENT OF S3 GUIDELINES ON DEEP CARIES MANAGEMENT

A COLLABORATIVE INITIATIVE

ABSTRACT

This article outlines the development of *the S3 Guidelines on Deep Caries Management*, a collaborative effort involving multiple European dental organisations. The European Dental Hygienists Federation (EDHF) was invited as an external stakeholder to contribute to the expert panel. On behalf of EDHF, BSDHT was asked to represent dental hygienists and dental

therapists. The initiative aims to provide evidence-based recommendations for practitioners managing pulp exposure and response. This paper discusses the steering group's formation, working groups, key topics from the guideline methodology, and next steps leading to the consensus conference in June 2025.

KEY WORDS

Deep caries, dental hygiene, pulp exposure, evidence-based dentistry, clinical guidelines, endodontology

Introduction

The management of deep caries remains a critical challenge in restorative dentistry. In response, leading European dental organisations - including the European Federation of Conservative Dentistry (EFCO), the Organization for Caries Research (ORCA), the European Society of Endodontology (ESE), and the Deutsche Gesellschaft für Zahnerhaltung (DGZ) - initiated the development of the *S3 Guidelines on Deep Caries Management*. The EDHF was invited to participate as an external stakeholder, ensuring that dental hygienists (DH) and dental therapists (DT) have a voice in this important process.

Steering Group Formation

The project is overseen by a steering group consisting of:

- Organization for Caries Research (ORCA)
- European Society of Endodontology (ESE)
- European Federation of Conservative Dentistry (EFCO)
- Global Antimicrobial Research Dental (GARD)
- European Academy of Paediatric Dentistry (EADP)

However, the EADP later opted out of the initiative, leading to a focus solely on permanent teeth and did not include deciduous teeth.

Working Groups

The development of the guideline is structured around four working groups (WGs), each responsible for evaluating different aspects of deep caries management:

WG 1 (Prof. Bjørndal & Prof. Baysan):

- Effectiveness of stepwise or selective caries removal versus non-selective removal in managing deep caries in vital permanent teeth
- Review accepted in Caries Research

WG 2 (Prof. Paris & Prof. Schwendicke):

- Effectiveness of different cavity liners compared to no cavity lining in managing deep caries in vital permanent teeth
- Review pending editorial decision

WG 3 (Prof. Neuhaus & Prof. Duncan):

- The effectiveness of partial pulpotomy compared with full pulpotomy in vital permanent teeth with non-traumatic pulpitis. (Originally: Effectiveness of direct pulp capping compared to partial or full pulpotomy.)
- Review published in International Endodontic Journal (2024)

WG 4 (Prof. Schwendicke & Dr. Kosan):

- Effectiveness of calcium hydroxide versus hydraulic calcium silicate cements (HCSCs) for direct pulp capping
- Review pending editorial decision

Methodology and Consensus Development

The development of the guideline follows a rigorous methodology, incorporating systematic reviews and expert consensus. At the initial meeting, held on 5th March 2025, Prof. Ina Kopp, an experienced guideline methodologist, provided an overview of the S3 guideline development process. Key methodological considerations include:

- Definition of a clinical practice guideline
- Management of conflicts of interest (COIs)
- Involvement of patient representatives
- GRADE Evidence-to-Decision Framework for assessing certainty of evidence.

Despite efforts to engage patients in the process, outreach to a patient forum did not yield participation.

Upcoming Consensus Conference

The next phase of the initiative is the consensus conference scheduled for 12th June 2025, to be held online from 9:00 AM to 4:00 PM (CET).

Objectives for the Conference:

- Resolve outstanding questions

- Finalise recommendations
- Achieve consensus among participating organisations

Pre-Conference Preparations:

- Draft recommendations and background text will be distributed in May 2025
- Participants will be encouraged to review materials thoroughly to facilitate meaningful discussions
- Literature search updates for 2024/2025 will be incorporated
- Recommendations, evidence reports and methodology documents will be prepared

Each participating society, including the EDHF, will have one vote in the consensus process. In case of unavailability, voting rights may be delegated to another representative.

Conclusion

The *S3 Guidelines on Deep Caries Management* represent a significant step in evidence-based dental practice. The involvement of multiple organisations ensures a multidisciplinary approach, integrating the perspectives of dental hygienists and therapists. With the upcoming consensus conference, this initiative will provide clear, research-driven recommendations for the management of deep caries in permanent teeth.

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BSDHT Council would like to invite any interested BSDHT members to apply for the role of council observer.

It has been agreed that the work of the BSDHT Council would be more transparent to members if meetings were open to invited observers.

A number of members of the Society may attend full Council meetings purely as observers. Applicants will be accepted on a first come basis and no expenses will be paid.

**Council will meet on Tuesday 9th September 2025
at Bragborough Hall**

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DG MUTUAL GIVING PEACE OF MIND

I am 'Nick', a 35 year old self-employed dental therapist and I live with my partner 'James'. Last summer, I was up a stepladder painting the outside of our house. Unfortunately, my foot slipped when I was five rungs up from the bottom of the stepladder. Thankfully, 'James' was indoors and heard me call out his name as I fell and he rushed outside to find me sprawled on the footpath in considerable pain.

After quickly assessing the situation, 'James' called an ambulance and I was taken to hospital where it was found that I had broken bones in both my right hand and foot, which meant that I could not work in practice for six weeks and two days.

Four years previously, I had taken out a policy with **dg mutual**, an expert income protection insurer. This was the first time that I had made a claim. I found the whole procedure very straightforward. The **dg mutual** office staff were sympathetic to my situation and could not have been more helpful. My claim was settled within a week. You think you are never going to be ill or have an accident, however, my recent experience has shown that in an instant you may find yourself unable to treat patients due to an injury.

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I was so impressed with the service that I referred my brother, an osteopath, to also take out a policy with **dg mutual**. I was thrilled to receive a **Golden Ticket** - an **£800** referral bonus - when his member application was approved and his first subscription received.

This advertorial is based on a member's experience. (Names have been changed)

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BACK PAIN

AN EPIDEMIC OF MISDIAGNOSIS?

Persistent low back pain (PLBP), often suffered by dental clinicians, is currently the leading cause of disability worldwide.^{1,2} Astounding and horrifying in equal measure, this is also perplexing! There have been huge scientific advancements over the last century - including better medications, more refined surgical techniques and powerful diagnostic imaging - yet the rates of PLBP continue to rise. Why is this? Could the answer be found in the management of these patients?

A Structural Focus

Carragee et al.³ investigated 200 participants *without* a history of back pain. They were all given an MRI scan and subsequently monitored over a period of five years. Any participants who developed significant back pain during this period had their imaging repeated 6-12 weeks after onset. Around a quarter of the participants subsequently went on to develop back pain and received further MRI scans. Contrary to the assumption that the participants' symptomatic scans would look much worse than their initial (pain-free) imaging, researchers found that in 84% of cases, the scans showed either unchanged or *improved* results *after* the pain started. Furthermore, only 4% of the participants' scans showed "clinically significant findings". That is, changes related to pain which involved compression of nerve tissue causing pain and neurological symptoms into the legs.

Ten years later, Brinjikji et al. included 3000 participants in their study each of whom were put through an MRI tunnel. They found that 30% of participants had disc bulges by the age of 20; 60% had disc bulges by the age of 50 and, overall, 80% of these had degeneration of the discs; 84% of participants had disc bulges by the age of 80 and 50% had fractures in the small bones of the vertebrae. The most fascinating finding is that not a single participant in the study reported any back pain.⁴

These studies (and many others like them) demonstrate that structural changes can and do exist in most of the pain free population^{3-4,5,6} but also raise questions as to why this is the case? Surely degenerative, bulging discs are signs of damage and damage to the body causes pain? It appears things are much more complex than we thought.

Sorry, Descartes!

To make sense of these findings, we first need to consider how we have arrived at the conclusion that pain is obviously related to structural damage.

The Dutch philosopher and polymath, Rene Descartes' (1596-1650) influence on Western medicine cannot be understated. His most influential assertion lies in the separation of mind

and body, often referred to as subject dualism. According to Descartes, the brain houses the mind and soul, with the mind composed of an entirely different substance to that of the body. The body, governed by mechanical and physical laws, should be broken down into its component parts.⁷

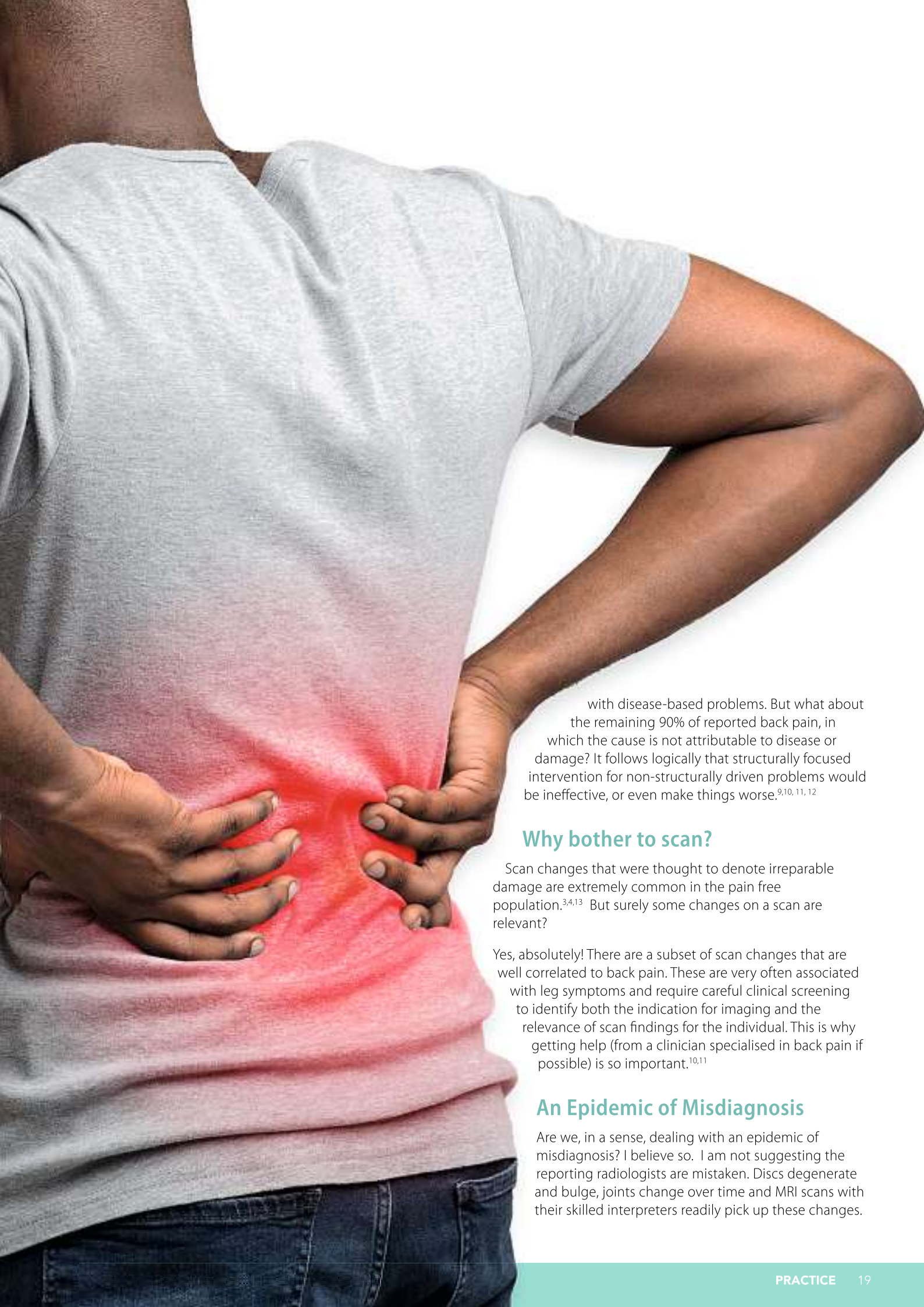
Preceded by the philosophy of the Renaissance and followed by the mechanisation of the Western world through the industrial revolution, Descartes was both a product of his time and the producer of a referential framework in the West that would come to present itself to the modern mind as plain common sense. His distinction between mind and body helped make it that, like the world around it, the body became mechanised too; that is, treated for all intents and purposes, as if it *is* a machine.^{7,8}

Descartes also produced the first pain diagram. Despite being hundreds of years old (not to mention flying in the face of all current neuroscience), the diagram is still used today in some medical settings and provides us with what we all, prior to further analysis, consider as the self-evident explanation of pain. That is, linear cause and effect; pain equals damage.

The achievements of Western medicine are nothing short of miraculous. The ability to highlight a specific pathology, apply targeted treatment and restore health deserves our complete reverence. Descartes provided a framework of breaking the body down to parts. Western medicine enables us to treat the diseased part with incredible accuracy, but is this the best way to view back pain?

Evidence over the last couple of decades shows that less than 10% of back pain can be put down to specific structural or pathological causes.^{1,9} That is, in around 90% of cases, back pain is not caused by damage to the body. However, by middle age, 80% of people *without* pain are revealed to have degenerative discs on MRI scans.⁴ Massive shifts in science are at best confusing and at worst seem wrong. We find ourselves, in medicine, in a gap between what we know and what is *delivered* in practice.

Western medicine is profoundly competent at dealing with pathological back pain. Simply put, the disease model helps



with disease-based problems. But what about the remaining 90% of reported back pain, in which the cause is not attributable to disease or damage? It follows logically that structurally focused intervention for non-structurally driven problems would be ineffective, or even make things worse.^{9,10, 11, 12}

Why bother to scan?

Scan changes that were thought to denote irreparable damage are extremely common in the pain free population.^{3,4,13} But surely some changes on a scan are relevant?

Yes, absolutely! There are a subset of scan changes that are well correlated to back pain. These are very often associated with leg symptoms and require careful clinical screening to identify both the indication for imaging and the relevance of scan findings for the individual. This is why getting help (from a clinician specialised in back pain if possible) is so important.^{10,11}

An Epidemic of Misdiagnosis

Are we, in a sense, dealing with an epidemic of misdiagnosis? I believe so. I am not suggesting the reporting radiologists are mistaken. Discs degenerate and bulge, joints change over time and MRI scans with their skilled interpreters readily pick up these changes.

The error lies in the attribution of pain to these changes in the majority of cases. Occam's Scanner, if you like.

The problem, in my estimation, lies both in the interpretation of the findings and the lack of their contextualisation. There is huge variety in how scan results are delivered to people, ranging from a careful contextualisation of the findings based on the person's story and symptoms, to a brief chat, or even text, for the patient to later view on Patient Access and then Google every terrifying sounding Latin word!

Two points are worth returning to: the majority of pain free people by middle age show 'degenerative' changes on MRI⁴; less than 10% of back pain is due to structural damage.⁹ This means, people are given a diagnosis (story) to explain their symptoms, with the subtext of 'you are in pain because your back is irreparably and progressively damaged' based on findings that are likely nothing to do with their pain! This well intended, albeit outdated interpretation of imaging is still extremely common. The more we understand pain, courtesy of advancing neuroscience and immunology, the clearer it becomes just how catastrophic this narrative of damage is to our body's systems that are tasked with keeping us safe.¹³⁻¹⁶

How Pain Works

Pain is much more complex than it appears at first glance and is not actually a very good measure of tissue damage. We

now understand the phenomenon as a multi-system output, involving brain and body, the job of which is to protect us from potential damage, more so than to report damage to us.^{14,16} It is worthwhile remembering that in cases of acute pain, pain and damage are often well correlated, but this becomes less so the longer pain persists.^{14,17}

When the danger receptors in the tissues of our body register a threat that could be harmful, a complex process occurs whereby information is relayed through the nervous and immune system, to the brain. Here, the system needs to decide in milliseconds, based on the information available, if the threat detected is worth the effort of responding. Considering that a missed threat for much of human history could have meant certain death, the system is wired to over, rather than under-respond.¹⁶ So we have an input from the danger receptors in the tissues (nociception) and an output from the brain and immune system if a threat is deemed probable (pain).^{15,17}

It is important to be aware that the process is vastly more complex and less linear than this, however, I hope this serves well enough to illustrate the basics. For those interested in a deeper look at pain, I would suggest typing Prof. Lorimer Mosely into Youtube.

The important message here is that both the sensitivity of danger receptors in the tissues and the processing of this in

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the brain and immune system are influenced dramatically by what that pain means to us. The greater the perceived threat, the greater the output of pain.^{13-14,16,18}

So, it's all in my head?

This understandable and extremely common response from people hearing the neuroscience of pain brings us back to Descartes. It is a false dichotomy. It is not all 'in the head', but it heavily involves our brain, inseparably connected to everything we feel. It is also worth noting the majority of this processing happens way outside of our conscious awareness.¹³

Once the narrative of damage takes hold, the brain and immune system mobilise to further protect the area now damningly defined as damaged. There is an increase in sensitivity, meaning smaller stimuli are more likely to be assessed as dangerous. There is also an upregulation of muscle tone, with increased fatigue, inflammation and liability to spasm.¹⁵

The system can only take so much before, often in spectacular fashion (and very often with ample other warnings ignored) it forces you to stop, by way of pain. Demand outweighs capacity. The body says no! Factors such as stress, low mood, poor sleep, obesity, deconditioning, over protective behaviours, or other illnesses overload the system. This may explain why severe and debilitating pain can occur without injury, or from the most seemingly innocuous trigger, like picking up a dog's bowl. Sadly, the movement or activity associated with the onset of pain is taken as the cause, and from that experience we often come away with beliefs such as 'bending is dangerous... lifting damaged me... this exercise isn't safe'.

Evolving Hope

With new science comes new hope. If most pain, even when severe, is not due to irreparable damage, then in the right conditions, at the right time, with the right help, there is no structural reason things cannot improve. This is profoundly exciting.

An approach that has massively shaped my practice is Cognitive Functional Therapy (CFT). CFT is a psychologically informed and evidence-based physiotherapy intervention that I think Descartes would have hated! This truly holistic and person-centred approach works to address both mind and body, helping people re-engage with a meaningful life, whilst reducing or resolving pain along the way. A large high-quality study in the Lancet in 2023 showcased the efficacy of the approach compared to usual care.¹⁹

If any reader suffers from PLBP, take a look at the RESTORE trial website. Luckily for those in pain, the team behind the approach is currently implementing an accreditation pathway, meaning competent delivery of CFT will continue to become more and more widely available.

With careful screening for pathology and approaches that combine the best of traditional medicine with the advancements of the new science, real change is possible. Persistent pain can improve or even resolve entirely. In the majority of cases, you're sore but you're safe.

Author: Conor Creedon is a back pain specialist physiotherapist, working in the NHS. He is the founder of the Lifestyle Medicine for Persistent Pain Program, which aims to deliver high quality, education-based intervention in a primary care setting for people with chronic pain conditions.

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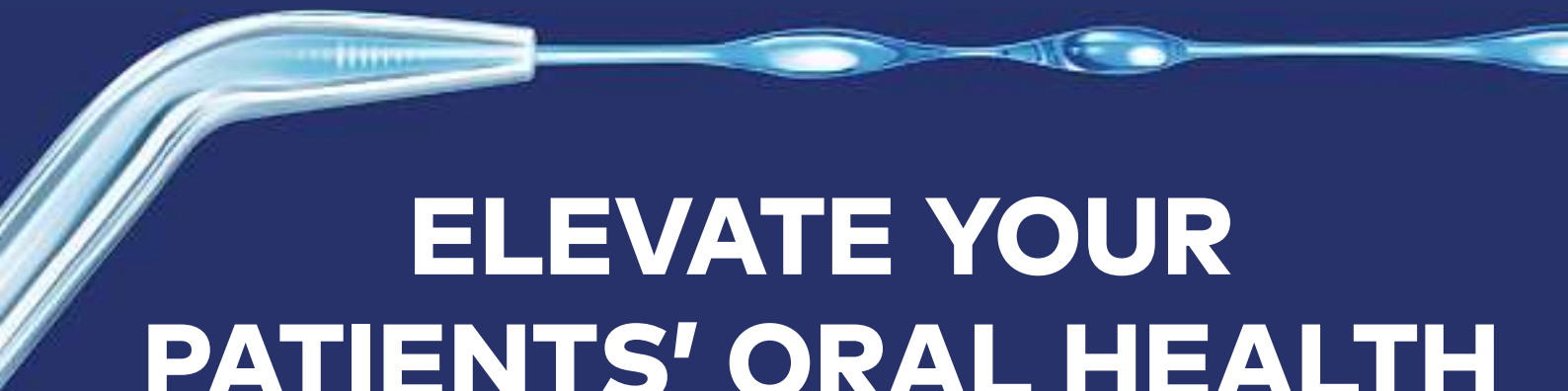
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BY NINA FARMER

MAKE EVERY CONTACT COUNT

Making every contact count (MECC) is an NHS initiative with which readers will be familiar.¹ Its goal is to encourage health professionals to have conversations, give advice and inform patients about health and wellbeing topics, such as smoking cessation, alcohol consumption and healthy eating. Starting these conversations, and being able to signpost patients to suitable resources, is all part of holistic care.²

Dental professionals are in a fortunate position to help patients in this way. We see our patients regularly, notice changes in them and recognise when something is not quite right: they trust and listen to us when we offer them advice about their health. Dental hygienists and therapists absolutely CAN make every contact count!

In this article, the author shares examples of some oral and general manifestations related to nutrient deficiencies that she has observed in her dental patients.

Vitamin B Complex

B complex is a group of eight vitamins and deficiency is not uncommon. Often called the 'anti stress' or 'energy' vitamins, their role is the conversion of nutrients into energy by supporting enzyme activity, reducing fatigue and supporting brain and central nervous system function. With so many of our patients tired and stressed it is little wonder that it is so common!

■ **Figure 1:** Angular Cheilitis



■ **Figure 2:** Geographic Tongue



What might you see?

- Angular cheilitis (Fig 1): this may be due to low B2 (Riboflavin) or B12 (Cobalamin)³
- Glossitis: the tongue may be red at the tip, or more widespread and glossier. This can be due to low B12 or B9 (folic acid). A red and inflamed tongue is linked to low B12⁴
- Geographic tongue (Fig 2): currently thought to be caused, on occasions, by low levels of B9, B12 and zinc^{5,6}

Who is at risk?

- Patients with restrictive diets, such as vegetarianism and veganism
- Highly stressed patients
- Patients with a high alcohol intake which affects the metabolism of the B vitamins
- Patients taking certain medications including proton pump inhibitors (PPI)⁴ and oral contraceptive pills (OCP)⁷ which can affect absorption
- Patients with digestive issues. B vitamins are synthesised and absorbed in the small intestine and for this reason alone it is important to sign post these patients. Supplementation may need to bypass the digestive tract either sub lingual under the tongue or via intramuscular injection

Vitamin C

Vitamin C (ascorbic acid) is vital in the production of collagen. A powerful antioxidant, a deficiency will impact wound healing and the function of the immune system.

What might you see?

- Bleeding gums: In milder forms, swollen and bleeding gums have been reported due to low vitamin C status.⁸ Scurvy, the main known symptom of severe vitamin C deficiency, is thankfully rare
- Poor wound healing: deficiency of vitamin C may delay healing⁹
- Petechiae or purpura: insufficient levels of vitamin C can impact collagen which can lead to compromised blood vessel walls, causing either petechiae, small red spots that occur when capillaries rupture, or purpura, larger red spots that occur when capillaries rupture. This is sometimes present on the floor of the mouth

Who is at risk?

- Smokers: tend to use up more vitamin C than non-smokers. The anti-oxidant properties manage the free radicals in the inhaled chemicals. Smokers need 35 mg more a day than the recommended daily allowance for a non-smoker⁸
- Patients on restrictive diets: they tend to be lacking in fruits and vegetables. Ideally, they should aim to

consume 30-40 portions of fruit and vegetables per week to obtain the required amount of vitamin C

- Highly stressed patients
- Patients suffering from malabsorption issues such as irritable bowel disease¹⁰

Iron

Iron is a key component of haemoglobin within red blood cells which are vital for the transportation of oxygen around the body. This provides the cells with energy: symptoms of fatigue are often reported when iron is low. Iron also plays an important role in the immune system and a deficiency will impact the risk of infections.¹¹

What might you see?

- Pale tissues: a patient's inner eyelids and nailbeds can look pale pink or almost white in colour
- Low energy: a patient will often report feeling exhausted¹²
- Sore tongue: often accompanied by a metallic taste or glossitis¹³
- Headaches: sometimes mentioned along with a shortness of breath and palpitations¹²

Who is at risk?

- Patients on a restrictive diet
- Patients with digestive issues as iron is absorbed in the small intestine
- Women suffering from heavy menstruation or endometriosis
- Patients with Celiac disease, particularly those that are undiagnosed
- Regular blood donors
- Elderly patients
- Parasites and infections as the bacteria use Iron as a substrate

If you suspect your patient is suffering from an iron deficiency, it is best to guide them to their GMP in the first instance. It is unsafe to supplement without knowing the underlying cause. Women who do not menstruate should take care when supplementing with iron as it is stored in the body and can become harmful if recommended levels are exceeded. There are often other deficiencies, or other underlying health issues undetected, and a diagnosis can be life changing for the patient.

Omega 3

Resolvins derived from Omega 3 fatty acids have been found to help resolve the inflammatory processes.¹⁴ An emerging body of clinical and experimental evidence has focused on the underlying molecular mechanisms of

resolvins and particularly Resolvin E1 (RvE1) in periodontitis. Recently, RvE1 has been directly correlated with the resolution of inflammation in periodontal disease.¹⁵ Essential fatty acids also support the central nervous system.¹⁶

What might you see?

- The patient may have dry flaking skin
- The patient may have flaking and peeling nails
- The patient may have Keratosis pilaris - a bumpy rash often found on the tops of the arms

Who is at risk?

- Patients on restrictive diets such as low fat, vegetarian and vegan
- Patients consuming a diet high in processed food containing large amounts of hydrogenated fats

Ideally, these patients should consume fish twice a week. Other sources of Omega 3 include chia seeds, walnuts and flaxseed.

Magnesium

Magnesium is vital for wellbeing, it plays a role in over 300 processes in the body, one of the most important being the production of adenosine triphosphate (ATP) for cellular energy.

A deficiency will impact its role in: blood sugar balance; bone health; hormones; and the central nervous system.

What might you see?

- Flickering eyelash and / or flickering tongue at rest, which you may notice bouncing under the suction tube during treatment
- Restless leg; or ticks and muscle cramps may be observed

Who is at risk?

- Highly stressed patients
- Patients on some medication: over 100 drugs have been found to decrease Magnesium levels.¹⁷ PPIs and OCP are on that list

- Patients with a highly processed diet

It is recommended that these patients consume green leafy vegetables, nuts, seeds and beans.

There is some evidence that magnesium can be absorbed transdermally¹⁸ so magnesium flakes for a bath or foot bath could be recommended.

Zinc

Zinc is vital for wound healing and healthy epithelial cells, both important for skin and mucosal barriers. It also supports the immune system, growth and development, blood sugar balance and many more processes.¹⁹

What might you see?

- Smell and taste: deficiency of zinc may result in disturbances to a patient's sense of smell and taste²⁰
- Ulceration: Ulcers typical of recurrent aphthous stomatitis may manifest (Fig 3)
- Nails: white flecks on all or most nails may also be noticed

Who is at risk?

- Children due to increased needs with growth

- Pregnant and lactating mothers
- Patients taking iron supplements
- Elderly patients
- Patients with malabsorption
- Patients consuming a processed diet

It is helpful to begin a conversation about the types of foods patients are eating and encourage them to introduce more zinc containing foods such as, shellfish, lamb, nuts, seeds and wholegrains.

Vitamin D

Vitamin D (cholecalciferol) is involved in immune and inflammatory processes and bone health due to its role in calcium absorption. There is good evidence that vitamin D is needed for well-being.

A systematic review by Malik et al 2023 concluded that despite the need for more research, 'qualitative synthesis of the evidence suggests that vitamin D supplements improve oral health outcomes, particularly periodontal health'.²¹

What might you see?

- Fatigue and bone pain: The patient

■ **Figure 3: Aphthous Stomatitis**



may report feeling regularly unwell and potentially slow wound healing

- Clubbed nails: these are rounded and often grooved down the middle of the thumb

If you ask the patient to place their thumb nails together facing each other and look through, you should see a diamond shape, and this is called the 'window of Schamroth'. A clubbed nail will not be able to produce this shape. It is important to note that clubbed nails can also be a sign of other underlying health conditions.

Who is at risk?

- Office workers
- The elderly
- Patients with darker skin
- Patients who have little exposure to sunlight
- Patients with certain medical conditions such as autoimmune diseases

It is always wise to signpost the patient to their GMP for testing. Alternatively, they can test at home: <https://www.vitaminDtest.org.uk/> This NHS lab provide the patient with their results and signpost as necessary.

Vitamin D is a fat-soluble vitamin, so it is stored in the body and a baseline should be detected to ensure safe supplementation.

Closing thoughts

As a nutritional therapist I am quite comfortable talking about nutrition with my patients and I always talk from a food first perspective.²² I only advise nutritional supplementation when I know the full history and a baseline from functional testing, either privately or through the patient's GMP.

TOP TIPS:

- Familiarise yourself with the signs and symptoms listed above and ask probing questions that may help to fill in the gaps
- Look closely at the patient's medical history- are there any gut health issues?
- Ask about their current stress levels
- Discuss their diet
- However, be mindful when discussing diet with patients. When talking about food groups, try to discuss what to add in to make it better and not what to remove: the patient's relationship with food is often unknown to us and we do not want to unknowingly contribute to disordered eating.
- Signpost accordingly, either to the patient's GMP or to a nutritionist

Author: Nina qualified in 2013 as a dental therapist from Sheffield Dental School and has worked to her full scope since graduating. Nina soon developed a passion for well-being and a holistic approach with her patients and returned to studying and graduated as a nutritional therapist in 2019. Nina loves bringing her passions together, whether it is in the dental surgery with patients or providing workshops, lectures and articles for dental professionals or the general public. Due to a love for teaching and helping others, she completed a post graduate diploma level 7 in Clinical Education, Coaching and Mentoring in November 2024.

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CAREER-ENHANCING BECOMING A RESEARCH DENTAL HYGIENIST

For 20 years my career revolved around the familiar rhythm of NHS primary care. However, the daily grind of patient appointments, while rewarding in its own way, sometimes left me feeling like I was treading water. The constant pressure to meet targets, the limitations of resources, and the gnawing feeling that I could be doing more for my patients occasionally led to a sense of stagnation.

A move to a clinical tutor role at the University of Sheffield in 2021 proved to be the catalyst for change when the academic environment sparked a curiosity. It unexpectedly exposed me to the world of research, an area I had never previously considered. When the chance arose to work as a clinical research hygienist on the ENHANCE-D trial, I jumped at it! My first research trial was a journey into the unknown that would challenge my preconceptions and ignite a passion for research.

Enhance-D

ENHANCE-D is a large NIHR-funded randomised controlled trial evaluating the effectiveness of different smoking cessation support packages delivered by dental professionals.^{1,2} The trial's focus on smoking cessation resonated with me. I had seen first-hand the devastating impact of smoking on oral health and general well-being, and the potential for dental professionals to play a crucial role in helping patients quit.

What makes ENHANCE-D particularly exciting is that dental care professionals can be principal investigators. While this is not my current role, this opportunity is a significant step forward for the profession and recognises the value of dental care professionals' perspectives, experiences, knowledge and skills in research.

Training and calibration

My first taste of research was a training session at Newcastle Dental School to calibrate our use of the various indices in the participant periodontal assessments. This was not just 'brushing up' on

familiar techniques; it was about ensuring consistency and accuracy across all those involved in data collection. We practised: assessing clinical oral dryness; marginal gingival index; plaque index; recession; periodontal probing depths; bleeding on probing; and clinical attachment loss. We also learned how to collect biological samples, including subgingival plaque and mucosal cells using a buccal brush. It underscored the importance of standardised protocols in research, ensuring that the data collected are reliable and valid.

The training also highlighted the ethical considerations in research. We discussed the importance of consent, participant confidentiality, and data protection; a reminder that while research focuses on collecting data, it must also respect the rights of participants.



Out in the field

Once training was complete, our task was to visit dental practices across Yorkshire and the Humber, and conduct baseline and six-month follow-up assessments. The practices were responsible for delivering the smoking cessation interventions and providing any necessary periodontal treatment.

The initial phase involved contacting participating practices, introducing ourselves, explaining the study protocol, and scheduling appointments for assessments. This required a significant amount of organisation and communication. We had to coordinate our schedules with the practices, ensure that we had all the necessary equipment and materials, and maintain meticulous records of our assessment.

Visiting the different dental practices was eye-opening. Each had its own unique culture and workflow. Some were incredibly organised and efficient when it came to incorporating research into their day-to-day work which helped facilitate participant recruitment to the trial, others found it a struggle. Integrating research trials within primary care dental practices brings a range of obstacles. Specifically, the time demands associated with participant recruitment, the rigorous process of gaining informed consent, and subsequent data collection pose significant challenges to the allocation of practice resources and, additionally, the loss of valuable surgery time. Furthermore, the diversity of patient populations within practices introduces variability in participant willingness, which can complicate recruitment efforts. The length of data collection appointments impact practice workflow and patient availability and requires meticulous planning and resource management. Although participating in research might appear to be a challenging business decision, ENHANCE-D addressed this by offering financial support to practices, compensating to some extent for lost clinical time and resources.

Recruiting participants for the trial presented its own challenges. The criteria stipulated those recruited needed to have at least Stage II Grade B periodontitis who were also smokers. Identifying and recruiting such patients required close collaboration with the dental practices. Once participants were identified by the practice, we arranged sessions to attend to undertake the assessments for data collection.

Conducting the assessments was the most hands-on part of the research. It was a chance to apply the skills I had learned in training and to interact directly with participants. As the practices had recruited them to the trial, they ensured all the necessary explanations and paperwork were completed, and consent was obtained. However, most patients had never taken part in research before, so we were often asked questions which helped us engage with participants, build rapport and show the value of research more generally. Given its methodical nature and need for accuracy, data collection was time-consuming. Having the time to talk, making sure patients were comfortable, and getting to know them was key.

One of the most rewarding aspects of the research was the opportunity to network with other dental professionals.

Sharing experiences and discussing different approaches to patient care and recruitment helped to expand my knowledge.

The research also exposed me to the challenges of conducting clinical trials. Recruiting participants, managing data, and coordinating with multiple practices required a significant amount of effort and attention to detail. I gained a newfound appreciation for the work that goes into conducting clinical research and the importance of collaboration and teamwork.

Reflections

My first experience as a research hygienist has been transformative. It has broadened my horizons and opened up new career possibilities. I have learned so much about research methodology, ethical considerations, and the importance of evidence-based practice. I have also discovered a new appreciation for the role that DH&DTs can play in advancing dental research. For me, it has been a newfound freedom.

The world of research may have seemed daunting at first, but I am now convinced that it is an area where DH&DTs can make a significant contribution. We have the clinical skills, patient interaction experience, and the dedication to improve oral health that are essential for successful research. In addition, we can offer different perspectives and ideas to the research agenda. I encourage other hygienists and therapists to explore the world of research. It is a challenging but ultimately rewarding experience that can enrich your career and make a real difference in the lives of patients. Those interested in opportunities to get more involved in oral health research may wish to join the mailing list for the new NIHR-supported incubator for oral health research which is led from University of Sheffield and Newcastle. The incubator aims to provide support to strengthen oral health research across the UK and to ensure its application in policy and practice, ultimately improving oral health outcomes.³ I am excited to see where this new path will lead and would recommend it to others.

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POSTGRADUATE EDUCATION ADVANCING ORAL HEALTH THROUGH LIFESTYLE MEDICINE AND POSITIVE PSYCHOLOGY

There is a significant gap in the availability of specialised postgraduate courses tailored specifically for dental hygienists. Personal experience, and the observations of colleagues, highlight the struggle to access educational opportunities that would enhance our clinical skills, foster professional relationships and encourage personal growth.

Postgraduate education is vital in keeping clinicians abreast of the latest advancements in dental techniques, technologies and research. However, many dental hygienists are often limited to basic continuing education programmes that fail to provide the depth or breadth needed for comprehensive skill enhancement. It is clear that many dental hygienists and therapists are eager for more structured, advanced educational experiences.

This gap in postgraduate education is not just about the content but also the format. Many existing programmes were not designed with the unique challenges faced by dental hygienists in mind. As essential members of the dental care team, we require a nuanced understanding of integrating advanced practices into our daily work while also being equipped to educate patients effectively. This realisation led me to contemplate the potential for developing specialised courses that would address these specific educational needs. Motivated by my findings, I embarked on a mission to create a series of postgraduate courses.

The vision was clear: to provide high-quality, evidence-based educational experiences that would enhance clinical skills and promote collaboration and networking among professionals. I began by researching existing educational frameworks, identifying best practices and engaging with thought leaders in the field. This groundwork laid the foundation for a curriculum that would integrate lifestyle medicine and positive psychology, two increasingly relevant pillars in dental practice.

The courses are designed to foster a sense of community among learners, enabling them to build relationships with their peers. Postgraduate education is not solely about

acquiring new knowledge but also about connecting with others with similar challenges and aspirations.

Participants have expressed appreciation for the depth of content and the emphasis on real-world application. They have reported increased confidence in their abilities and a renewed passion for their profession, highlighting the importance of ongoing education in fostering a sense of purpose and commitment.

A Comprehensive Approach to Patient Care

The increasing prevalence of non-communicable diseases (NCDs) poses significant challenges to global health systems, which are projected to incur costs of \$47 trillion by 2030.¹



The rise in NCDs, including cardiovascular diseases, diabetes, cancer, respiratory diseases and mental health disorders, necessitates innovative educational approaches in healthcare. Lifestyle medicine, a discipline that focuses on preventing and treating diseases through lifestyle modifications, offers a promising solution. Below is an outline of the *Diploma in Oral and Positive Health Level 7* and the *Certificate in Lifestyle Medicine Coaching Level 5*, highlighting their role in equipping dental professionals with the necessary skills to address these challenges. By integrating lifestyle medicine and positive psychology principles, these programmes enhance patient care while fostering professional development and social connection among healthcare providers.

The Diploma in Oral and Positive Health

Designed to integrate the pillars of lifestyle medicine, positive psychology and oral health, this unique combination enables dental clinicians to enhance their clinical practice by adopting a holistic approach to patient care. The programme's clinical element ensures that learners are equipped with the latest evidence-based practices, enabling them to provide informed patient recommendations.

The Certificate in Lifestyle Medicine Coaching

Specifically developed to offer clinical and non-clinical team members an opportunity to delve into lifestyle medicine and coaching, this qualification empowers dental professionals to coach patients in making informed lifestyle choices that can significantly impact their overall health and well-being.

The educational framework In both programmes, introduces learners to evidence-based learning methodologies, academic writing and referencing. This foundation fosters critical thinking and ensures graduates are well-prepared to engage with contemporary research and clinical practices. The upcoming cohort will commence in September 2025, reflecting the ongoing commitment to education in this vital area of healthcare.

Certificate in Mentoring and Coaching (Level 5)

Our collaboration with the Irish Dental Hygienists Association (IDHA) and the British Society of Dental Hygiene and Therapy

(BSDHT) has led to the successful accreditation of their mentoring and coaching team for the IDHA and the BSDHT, due to be completed shortly. This partnership underscores our commitment to enhancing professional standards within the dental community.

Summary

Identifying the gap in postgraduate education for dental professionals has been a transformative journey. By addressing this need, we can empower dental professionals to excel in their roles, build meaningful professional relationships, and, ultimately, enhance patient care. As I look to the future, I remain committed to expanding these educational offerings and advocating for our profession's advancement through lifelong learning.

The Diploma in Oral and Positive Health and the Certificate in Lifestyle Medicine Coaching represent significant advancements in the professional development of dental practitioners. By combining lifestyle medicine and positive psychology, these programmes enhance clinical competencies and foster a supportive learning environment that promotes social connections among peers. As the burden of non-communicable diseases continues to rise, equipping dental professionals with these critical skills is essential for improving patient care and promoting overall health within communities.

Author: Siobhan is an accredited course provider with Eduqual, an organisation dedicated to promoting high-quality education.

Contact: for further information about either of the courses or to read participant testimonials please visit www.siobhankelleher.com

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SUPPORTIVE PERIODONTAL THERAPY CONFUSION AND HIDDEN POWER

Supportive periodontal therapy (SPT) is the professional care we provide to a patient following resolution of their periodontal disease following a course of active periodontal therapy. The aim of SPT is to maintain the outcome of the therapy. A typical recall interval between therapy sessions is between 3 and 12 months, depending on the patient's susceptibility and any associated risk factors.¹⁻⁴ Treatment of periodontal diseases is effective but periodontal health is sometimes difficult for patients to maintain.

Context

Figure 1 shows a patient's anterior teeth and gingivae at initial presentation and Figure 2 at the 3-month review after the completion of active periodontal therapy. Ongoing SPT complements their homecare and self-delivered plaque control.

Confusion

The above presentation is not uncommon, but is confusing as the high bleeding score recorded at this patient's three-monthly review suggested that their plaque score was



■ **Figure 1:** Initial presentation



■ **Figure 2:** Review at 3 months following completion of active periodontal therapy

not consistently below 20%, which contradicted the patient's assertion that they had meticulously followed the advice given regarding brushing and interdental cleaning. If the patient is to be believed, then the clinical presentation makes it look as if the therapy is providing no benefit, or that plaque even at this low level still exceeds the patient's threshold for inflammation. It also makes it difficult to establish if the periodontal tissues are stable or if they are regressing into active disease.

Insight

Over 30 years of practice it has been my experience that, for many patients, their homecare and self-performed plaque control did not improve sufficiently: it generally remained the same as it was when they initially presented with periodontal disease. At times, the patient's inability to make improvements was to be expected, despite their positive intentions and ambitions. In the early years of my practice, some patients would become extremely insistent that they had indeed made improvements and that improvement had indeed been applied daily with consistency. As a clinician, my experience is not uncommon, only a minority of patients comply with SPT recommendations.⁵⁻⁹ The majority of patients generally meant well and had good intentions however consistent improvements never really happened. The reality

was a transient series of intermittent partial improvements, the anchor to which was the SPT session.

As my experience grew and my relationships with patients changed, so did the nature of discussions during an SPT session. The hidden power of SPT is in these discussions and can be summarised as:

- Accept what the patient tells you as fact
- Maintain a positive and encouraging spirit
- Express surprise at the bleeding
- Use topic-specific words
- Allow the patient to dictate the terms of future SPT session

Accept what the patient tells you as fact

This keeps the session on professionally cordial grounds, it is also a requirement if you want to meet the objectives of effective communication.¹⁰ It is natural not to make oneself look like a fool and as such it is normal for patients to give preferential answers, even if they are not true: to offer answers that look and sound right even if they are a lie. It is considered to be part of an elaborate self-preservation function of the memory.¹¹

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Maintain a positive and encouraging spirit

Communication and relationship skills are complex and sometimes difficult to understand. It is rare for patients to get to the heart of the matter directly and spontaneously. The objective of these discussions is to keep them going to allow patients to offer clues, and then to ask them to elaborate. It helps the communication and relationship to allow some responses to go without acknowledgement. As the communication continues patients often change what they previously said.¹²

Express surprise at the bleeding

The frequent lack of acknowledgment of both direct and indirect expressions by the patient is helpful for the communication and the relationship. However, it poses a threat to the professional service being provided. The implications of the realities have to be addressed at some stage during the session. This works best by presenting the desirable clinical features first and slowly moving onto the undesirable ones. Open statements are helpful, for example: 'I wasn't expecting to find this much bleeding'. One of the potential threats of poor professional service is litigation. Clinicians' awareness of the advice that legal teams are giving to potential clients may be helpful.

Use topic-specific words

Topic-specific words are considered essential to patient-centred care.¹³ In using topic-specific words the essential clinical information is shared without ambiguity.¹⁴ They also offer the added benefit of allowing the negative elements of the communication to take place objectively. Once again open-ended statements are helpful, for example:

"If you are to achieve your objective of not losing teeth we'll have to look more carefully at this bleeding."

Allow the patient to dictate the terms of future SPT session

If the communication and relationship is perfectly-pitched what often happens is that the patient slowly reveals the reality – often, in small steps. Some examples of what they say include: "I haven't been as consistent as I would have liked"; "I'm so tired by the time I get home that a quick whizz with my brush is all I can manage"; "The only thing that makes me clean my teeth better is knowing I'm coming back here". The general pattern tends to be an excellent improvement in homecare for a week or so following the recent SPT session. This is followed by a return to baseline which is often toothbrushing and no interdental cleaning. Then there is a redoubled effort (to include interdental cleaning) in the days or weeks running up to the next SPT session.

I end the SPT session by asking the patient when they would like to return. They know my preference is an interval of three months but, nevertheless, I always ask. This makes them feel more involved and gives them agency. The engagement powers their psychology in the positive direction and helps

them continue making whatever improvements they can.¹⁵ Following a brief conversation we settle at an interval of about three months. I've found that, as a general rule, as long as I see patients at three monthly intervals it has a sufficient psychological impact on them (and their homecare) to keep the outcome of the active periodontal therapy reasonably well maintained – with the odd hiccup!

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COMPOSITE BONDING TOP TIPS FOR DENTAL THERAPISTS

Composite bonding is a vital skill for dental therapists with the potential to increase diverse clinical opportunities and significantly improve patient satisfaction. With our expertise and access to patients, in both dental hygiene and dental therapy settings, we are uniquely positioned to offer these transformative treatments.

Over the years, I have performed hundreds of composite bonding cases, from stent-guided methods to advanced freehand techniques. I would encourage my fellow clinicians to explore and master this rewarding skill. Every case presents a new challenge from which we can learn and hone our skills.

The following information, albeit condensed and brief, provides a clear and practical overview of the tools, techniques and workflows involved, while emphasising real-world applications and ethical best practices. This 'guide' is designed to help consistently provide high quality restorations. Composite bonding offers incredible opportunities for dental therapists to expand their skill set and enhance patient care, and this resource will walk you through the essentials.

Getting comfortable with composite as an aesthetic material takes time and practice, and that is completely normal. When I first started, it was over a year after my training courses before I felt ready to take on a full composite case. I spent that time honing my skills on family and friends, which was a great way to build confidence in a low-pressure setting. My very first case was my sister, a 'straightforward' edge bonding procedure. It was certainly a relief to work with someone supportive. We booked a longer session, which gave us plenty of time to make the amendments required in a relatively stress-free environment.

If you are just starting out, my biggest piece of advice is to dive in: sign up for courses, practice on willing volunteers, and don't be afraid to offer free treatments or work at cost to gain experience. I have included a couple of courses I found helpful at the end of this article. Also, if you have the chance, try to attend mentorship days or shadow someone experienced in clinical treatments. Watching someone with experience, in action, is an amazing way to pick up tips and tricks that you cannot always learn from a textbook. Keep practising, stay curious, and you will get there!

What you need to know

Composite bonding is a relatively quick, cost-effective procedure to offer our patients, offering reparability and minimal damage to underlying teeth. We have fantastic access



to patients to be able to offer such a treatment e.g., hygiene maintenance patients or those interested in teeth whitening. However, this treatment does require precision and careful patient selection to ensure success and longevity.

Some advantages to this treatment option for dental therapists include:

- Diverse clinical workload
- Enhancement of income potential
- Maintain and improve restorative skills
- Experience the gratification of patient satisfaction from aesthetic outcomes

Preparation and Tools

Essential Instruments

Ideally this would include:

1. Dr. Monik instrument set (you can get alternative cheaper options to this – and not the whole set is required – I mainly use the MV2, MV3)
2. Optrasculpt (non-negotiable)

3. Optragate for isolation
4. Sand blaster
5. Signum
6. Anterior and clear matrix strips
7. IPR strips, PTFE tape
8. Flexi discs
9. ASAP polishers
10. Glycerin gel

Composite Options

- Nano-hybrid composites: Venus Pearl (B1/BL/BXL/OB) and Empress IPS Dentine (BL-L/BL-XL)
- Flowable composites: Venus Diamond Pearl (BXL)

Speaking from experience, Venus Pearl is the best composite to work with out of the two, having the best handling properties especially when heated. However, Venus composite does not polish as well as Empress which I find has the best 'natural' appearance when finished. I use the dentine shades as they are more opaque.

Techniques: Freehand vs. Stent-Guided

Freehand

I was very much a stent guided user at the start, mainly due to my uncle being a dental technician. We would work closely on cases and experimented with different types of stent materials. It comes with its challenges (including a lab fee on top!) but, for me, it was a fantastic way to get started and certainly an efficient way of managing my time. I still use this technique today on difficult cases and lower teeth mainly. I changed to freehand for the following reasons:

- Less gingival inflammation post-treatment
- No laboratory fees
- Fewer materials required
- Lower fracture rates due to reduced shrinkage risk

I currently use freehand for most of my cases. Not only is it more cost effective, the placement is immaculate and I can completely control the workflow, depth and shape. However, it is (for me) more time consuming.

Stent-Guided

- Reproducible results
- Ideal for repairing future fractures
- Requires initial wax-up for patient visualization during consultations, which is a great sell during consultations
- Higher precision in anatomy and occlusion
- More time efficient

Patient Journey

Consultation workflow:

Assessment:

- Detailed dental history and oral hygiene evaluation
- Check occlusion and perform a hard tissue exam (the patient should be dentally fit from a recent examination)

Goal Setting:

- Discuss aesthetic desires and manage expectations
- Identify any red flags such as unrealistic goals or clenching habits

Mock-Up and Planning:

- Offer a mock-up using old composite to visualise results
- Take photos and notes to document and refine the treatment plan

Key Considerations

- Highlight any potential risks e.g., tooth wear, debonding and discoloration
- Use ethical selling to align patient expectations with achievable outcomes
- Consider any 'red flags' regarding the patient e.g., are they committed to maintenance?

Placement Workflow

Preparation:

- Sandblast the teeth with Aluminium oxide 27-29 micron at a 45- degree angle. It is very messy so high-volume suction, and a damp tissue held palatally to catch the excess, are required
- Etch and bond following manufacturer guidelines (I scrub both the etch and bond with micro brushes. I also floss the etch to clear the contact points)

Composite Application:

- I prefer metal anterior matrices
- I heat my composite for better placement and due to the shrinkage rates of curing composite being improved following heating¹
- Layer composite incrementally, curing after each layer. (I prefer flowable composite interdentally to help improve the marginal seal – I run this around the margin using a probe)

Shaping and Polishing:

- Start with primary shaping and refine secondary anatomy using flexi discs
- Polish with ASAP polishers and glycerine gel for a glossy finish

Top tips

Try and use the following in order when thinking about the anatomy of the tooth and shaping the composite:

1. Function – occlusion/ledges
2. Outline shape – incisal/embrasures/interproximal shape
3. Buccal bulk – looking down the long axis of the tooth
4. Primary anatomy - mesial/distal ridges
5. Secondary anatomy - grooves between ridges
6. Surface and polish

We are skilled clinicians. We have a fantastic idea of what teeth should look like, so do not panic too much about immaculate textbook anatomy. Sometimes it is not possible due to natural slants in the mouth, irregularities with spaces, asymmetry etc. There needs to be some compromise. Sit the patient up and look from the front. Then look from the sides. Grab yourself a pencil and mark any areas you feel need adjusting. Ask your nurse, get an opinion and work from there. More importantly, look down the tooth occlusally. This will allow you to assess the bulk. You can look at marking symmetry towards the end when polishing to finalise. Only then give the patient a hand mirror.

Post-Treatment Care

Instructions for Patients:

- Avoid dark-coloured foods or drinks
- Refrain from biting hard objects or engaging in habits like nail biting
- Wear retainers or nightguards as recommended (an impression for a new retainer will be required)

Review Schedule

- Book follow-up appointments 4-6 weeks to check for wear and ensure patient satisfaction. This allows time for patients to become accustomed to their 'new' teeth
- Repeat the polish process and discuss the needs or any changes with the patient at the review

Conclusion

Composite bonding is both an art and a science, requiring technical precision and patient-centred care. By mastering the workflows, tools and patient interactions, dental therapists can provide exceptional and consistent aesthetic treatments. It also allows an alternative financial income and helps with expanding our clinical skills. There is also nothing better than patient satisfaction when the final result is revealed!

Author: Luke qualified from Barts and the London in 2009, gaining distinction in both dental hygiene and dental therapy. He was also awarded the 'Old Londoners' award for most supportive student. In 2019 he opened his dental

clinic, Dental Health and Aesthetics in Leigh-on-Sea, Essex. His team offers a range of restorative dental treatments, alongside periodontal maintenance and aesthetics treatments, including facial aesthetics.

Recently, he has completed writing his own practical composite training course, exclusively for dental therapists. Focused on composite bonding, dental therapists will enhance their scope and advance their clinical skills enabling the delivery of high-quality, consistent and predictable composite veneers for patients. The team will also be offering mentorship days. For more details please do not hesitate to get in touch.

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BY LATHA DAVDA

ORAL NICOTINE POUCHES A SCOPING REVIEW

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PER PAPER**AIM**

A review of the literature was conducted to collate the latest evidence on oral nicotine pouches (ONPs) and their relevance to oral health professionals.

LEARNING OUTCOMES

This review paper will help the readers to give evidence based information and advice to their patients who may be using oral nicotine pouches.

LEARNING OBJECTIVES

The review will enable the readers to:

- Understand the contents of ONPs and the variations in the sale of ONPs in UK
- Understand the effects of nicotine on oral and general health
- Appreciate the changes in the oral tissues in ONP users
- Gather relevant information from ONP users and tailor their advice

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ABSTRACT

Oral health professionals are required to give smoking cessation advice to patients, mainly to reduce their potential risk of developing mouth and oropharyngeal cancers. A recent trend has been for patients to use alternatives such as: oral nicotine pouches (ONPs) with or without tobacco; e-cigarettes, nicotine gums; lozenges; sprays; or sublingual tablets to avoid the harmful carcinogens released during smoking tobacco. ONPs appear to provide a convenient, alternative 'nicotine hit' in environments where smoking is not permitted. This review of the literature on oral nicotine pouches informs

the readers of the contents and the variety of ONPs available in the UK and highlights the lack of legislation around their sales. ONPs appear to reduce the risk of cancer, however, the non-regulated, nicotine content of the pouches makes them highly addictive. ONPs cause histopathological changes in the oral mucosa and the long-term effects are unknown. ONP users should be informed of the risks to their health and signposted to approved smoking cessation services for alternative therapy until more research on ONPs is available.

KEY WORDS

Oral nicotine pouches, white patches

Background

Smoking tobacco increases the risk of developing cancer, including oropharyngeal cancer, cardiac diseases and pulmonary diseases.¹ Oral health care professionals have a duty of care to offer smoking cessation advice, along with advice about other lifestyle changes that reduce the burden of oral diseases in the population. In an effort to reduce the harm caused by cigarette smoking, some users have switched to smokeless tobacco products such as snuff, chewing

tobacco and pouches placed in the buccal or labial sulcus. Dental professionals should encourage patients to switch to tobacco free products such as: vapes; nicotine patches; nicotine gum; lozenges; nasal sprays; and sublingual tablets.

A recent trend has been the use of intra oral nicotine pouches (ONPs), with or without smokeless tobacco (tobacco containing ONPs are known as Snus). These are useful in environments where smoking is prohibited or as an aid to quit smoking. ONPs currently do not form part of smoking

cessation strategies in UK.² Although ONPs may suggest they pose no potential harm they do contain nicotine which is highly addictive. Studies have demonstrated that regular use of ONPs increases the risk for diseases such as: cancers; Parkinson's; birth defects; oral submucosal fibrosis; periodontal diseases; cardiovascular disease; and type 2 diabetes.³ In the UK, use of ONPs is an emerging problem.

Nicotine is a strong alkaloid drug that can be absorbed through the oral mucosa, lungs, skin or gut.¹ It is a major active molecule released from the tobacco leaves along with more than a thousand other chemicals in a cigarette smoke. It is highly addictive and can lead to nicotine poisoning resulting in sweating, vomiting, mental confusion, reduced pulse rate and difficulty in breathing.⁴

Only 2.7% of past, or present smokers, or e-cigarettes users, are currently aware of ONPs as an alternative to smoking, while 4.4% are actively consuming these products.⁵ Moreover, ONPs fall outside the remit of Tobacco and Related Products Regulations (TRPR) 2016,⁶ as they do not contain tobacco. They are not regulated by the Medicines and Healthcare Products Regulatory Agency (MHRA)⁷ and currently come under General Product Safety Regulation (GPSR). However, in the USA, in late 2020, the US Food and Drug Association (FDA) did regulate ONPs and classified them as 'tobacco-free nicotine' (TFN) under the definition of: "...any product made or derived from tobacco or containing nicotine from any source, that is intended for human consumption."⁸ This was because the reports stated that adolescents displayed a high interest in ONPs due to their resemblance to food products and flavourings. There are significantly more producers and distributors of Snus and ONPs in Europe than the USA.³ The lack of regulation, marketing strategies - which use fruit flavourings targeting younger populations - easy online access and a lack of knowledge among health care professionals about these products may lead to an increase in the use of ONPs.

There is some evidence available about the various types of nicotine pouches, their use and impact on the oral mucosa, but none relevant to the clinical practice of dentistry. Some of the published research has been funded by the tobacco industry which manufactures these pouches. The aim of this scoping review⁹, therefore, was to conduct a review of the literature on oral nicotine pouches (ONPs) with or without tobacco and collate its relevance to oral health professionals.

Material and methods

A literature search was conducted on the data bases of PubMed Central and Google Scholar in March, 2025. The search words used were "oral nicotine pouches", "oral health", "dental health" with search criteria set to full texts and publications from 2020 to 2025. The search resulted in 329 and 35 publications respectively. After reading the titles, 21 articles were selected and full texts read. Most literature was around harm reduction of ONPs in comparison with other nicotine products in the market. Only articles specific to ONPs and their oral impact, and nicotine and its oral impact, were selected. Some articles were hand searched from citations. A total of 11 articles were included in this review. Three older

articles published in 2012, 2013 and 2015 were included from the reference lists as being relevant to understanding the impact of nicotine on the human body.

Results

There is very little published literature about ONPs and their relevance to the practice of dentistry. Most publications focused on the toxicity analyses of the ONP's content, including nicotine and the added flavourings, and the use of ONPs as part of tobacco harm reduction strategies. There were few studies on either ONP users' experiences and preferences, and any oral changes in users, or their addictive nature and lack of regulation.

ONPs: composition

Oral nicotine pouches (ONPs) were sold initially as smokeless tobacco products by tobacco companies.³ They were particulate or powdered tobacco bagged in pouches called Snus, that could be placed under the lip or in the buccal sulcus. The ONP released nicotine and other chemicals that were absorbed by the oral mucosa. The current formula is tobacco-free, but may have nicotine mined from tobacco leaves or contain synthetically produced nicotine. The ONPs produced by the British American Tobacco (BAT) company are made up of a permeable outer pouch material, usually viscose fibres, and the content is mainly composed of water and microcrystalline cellulose matrix holding a filling agent, salt, taste additives, flavourings and pharmaceutical grade nicotine.¹⁰

ONPs: user characteristics and motivation

A survey of a representative adult population in Great Britain between 2020-2021 (n=25,698), found that one in 400 adults used nicotine pouches, and the prevalence was rising. Prevalence was greater in young and middle-aged men who also used other nicotine products and had a history of smoking.⁶ A cross-sectional web survey of 118 (66% female) current users of ONPs¹¹ reported that the flavourings, such as mint and tobacco, were key factors in their selection of brand. The users reported adverse effects including: soft tissue abnormalities (48%); loss of taste (41%); stomach upset (39%); sore mouth (37%); sore throat (21%); and nausea (9%). Moreover, 74% of ONP users also smoked cigarettes while 53% used E-cigarettes.

ONPs: variations

ONPs have been marketed in the USA since 2016 and in Europe and the UK since 2019.⁶ They are sold as individual pouches in colourful containers displaying the flavours and strength (Fig.1). ONPs with tobacco (Snus) are prohibited in several countries including the UK. The key differences and similarities of Snus and ONPs are listed in Table 1.

Nicotine and its impact on the human body and oral tissues

Nicotine has both local and systemic physiological reactions in humans: it can cause irritation and a burning sensation in

■ **Table 1:** Comparison of Snus and ONPs

Property	SNUS	ONP
Content	Air or sun-cured tobacco, salt, water and food-grade flavourings	Plant based fibres with flavourings, pharmaceutical grade nicotine or nicotine extracted from tobacco and other ingredients
Brands	More than 152 brands. Common: top brands Skoal, Camel, Copenhagen, Grizzly, Lundgrens	More than 228 brands. Commonly: ZYN, On!, xQS, Klint
Flavourings	Limited flavours Most liked were mint followed by fruit flavours	Multitudes of flavours such as fruit, dessert, citrus, mint, coffee, berry, wintergreen, increasing the choice for consumer and making it attractive for the young users
Safety	Harm from tobacco-specific nitrosamines, nicotine and flavouring agents such as triacetin, benzyl alcohol, menthol, cooling agent WS-23 are documented	Local oral soft tissue abnormalities and alteration of sensation and taste have been reported, along with addiction to nicotine. No long-term studies available
Nicotine content	Concentration can vary from 3 to 32 mg per pouch	The maximum recommended nicotine per pouch in UK is 20mg, however, this can exceed to 120mg/pouch

Sources: Mallock et al, 2024¹², Miluna-Meldere et al. 2024b¹³, Shaikh et al. 2023³, Azzopardi et al. 2022¹⁰, Salokannel et al. 2021¹⁴, Mishra et al. 2015.¹



■ **Figure 1:** Oral nicotine pouches in a container (A). Colourful display of flavours and strength displayed by a brand for online sales (B).
IMAGES COURTESY OF STOCK.ADOBE.COM AND AMAZON.COM

the mouth and the throat, increased salivation and nausea. It also increases pulse and respiratory rates, and blood pressure and reduces coronary blood flow. Its main impact is on the peripheral and central nervous systems. It releases dopamine in the brain, triggering pleasurable responses.⁷ Severe poisoning can cause tremors, prostration, cyanosis, convulsions, collapse and coma. A lethal dose of 30-60mg of nicotine in adults, and around 10mg in children, may result in death due to paralysis of respiratory muscles and central respiratory failure.¹ Nicotine can promote early cancer cells to grow by causing DNA mutations. It also increases the risk of metastasis in tumours through its property of angiogenesis. It has been shown to induce pancreatic adenocarcinoma, lung cancer and render

tumour cells resistant to chemotherapy in mice.¹ It causes immunosuppression and delayed wound healing by decreasing the migration of fibroblasts and inflammatory cells to the inflamed site and decreased epithelialisation and cell adhesion. Nicotine can modulate cell proliferation and trigger apoptosis in normal cells and in human cancer cell lines and affect most organs, resulting in cancer.

An in vitro study of popular brands of cigarettes and pipe tobacco found that the average amount of nicotine in cigarettes ranged from 6.17 to 28.86 mg; a gram of pipe tobacco contained 30.08 to 50.89 mg.⁴ However, regulations require tobacco companies to label on the pack the amount of nicotine in each cigarette. Unlike cigarettes, because

ONPs are unregulated, only a few brands currently label the nicotine content that a person is likely to absorb.

Analysis, by gas chromatography with flame ionisation and liquid chromatography-tandem mass spectrometry, of the contents of 46 commercially available ONPs showed that the nicotine content ranged from 1.79 to 47.5 mg/pouch.¹² Tobacco-specific nitrosamines (TSNA) which are known carcinogens were found in 26 products. There was a lack of clear labelling of the nicotine content on 29 products and nicotine strength was ambiguous.¹² This study highlighted the lack of quality control and regulation in the labelling of these products. It also demonstrates that if ONPs are used as part of a harm reduction strategy, the patients are still consuming unknown and often higher levels of nicotine than through a cigarette, thereby increasing their addiction.

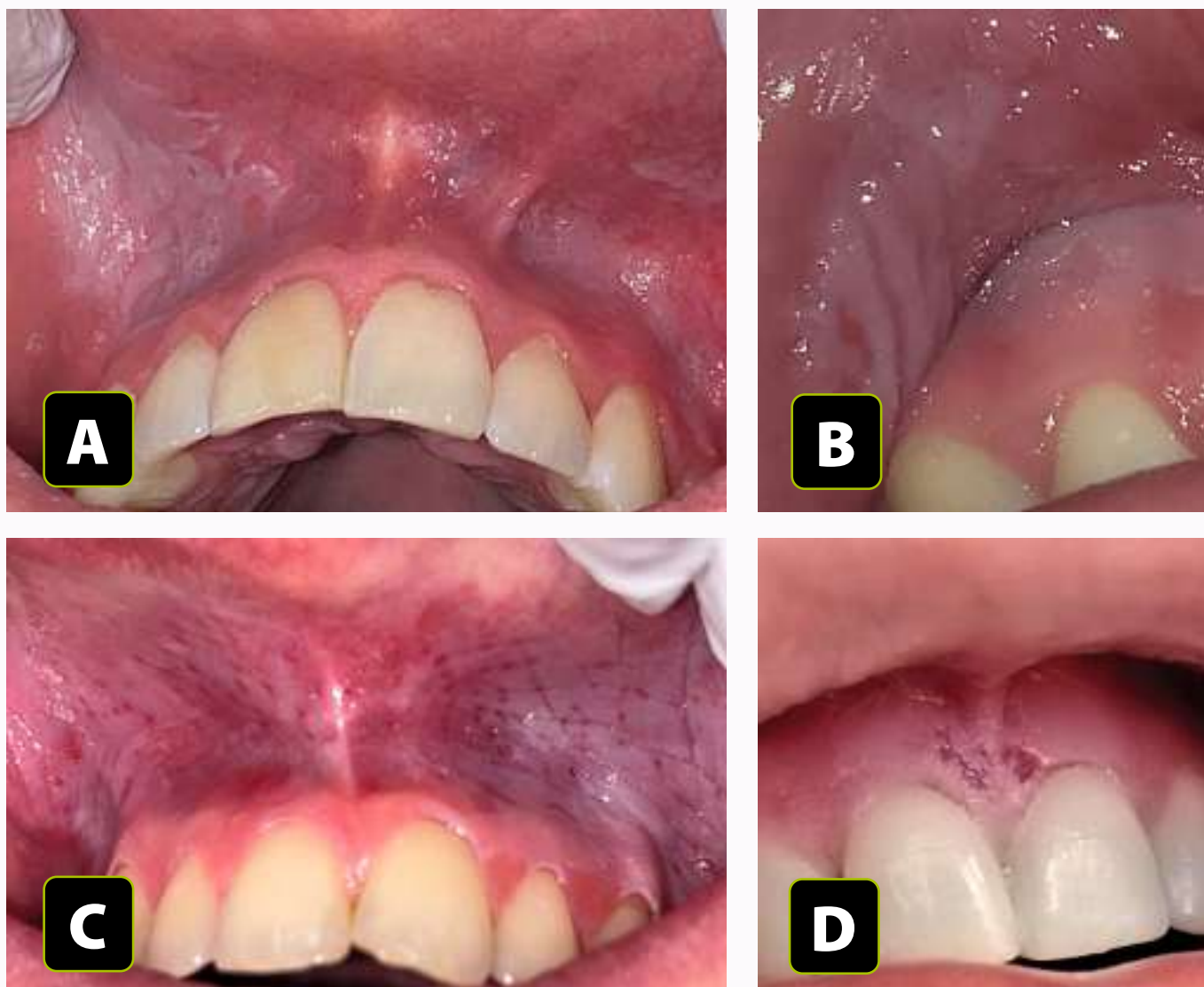
An in vitro study conducted on human gingival fibroblasts found a total of 56 flavourings in five different ONPs, nine of which were known cytotoxins. The results suggest that these agents could cause cytotoxicity, inflammation and

oxidative stress response leading to local abnormalities of the buccal mucosa where the pouch is held.¹⁵

ONPs: role in harm reduction strategies

ONPs that do not combust or contain tobacco leaf have been used as a part of strategies to reduce harm from tobacco, or as part of smoking cessation strategies.¹⁶ These appeared to have the potential to reduce harm from tobacco and its carcinogens as demonstrated by multiple human biomarker studies and in vitro toxicological assessment. However, Nicotine is highly addictive and animal studies have shown that nicotine dependence can be transmitted maternally and grand-maternally by epigenetic mechanisms, casting doubts on the harm reduction strategies suggesting use of ONPs in pregnant women.¹⁷ Traditional nicotine replacement therapies are intended to last short to medium term and ONP users may continue to use them long term and therefore have higher risk for potential side effects.⁷ A protocol for a systematic review of ONPs against other tobacco and nicotine products has just been launched by Cochrane

Figure 2: Oral soft tissue abnormalities in patients using ONPs can range from white irregular patches mimicking leukoplakia (A); wrinkling of mucosa (B); extensive diffuse white patch grid pattern matching the pouch or white gingival margins, inflamed minor salivary gland openings (C); and gingival blisters (D). Image courtesy DPHC.



and the results may further inform health professionals and regulators.¹⁸

ONPs: oral manifestations

A histopathological analyses of the white patches resulting from chronic use of nicotine pouches (n=50) revealed parakeratosis with acanthotic epithelium, intraepithelial and connective tissue oedema, and chronic inflammatory infiltration with lymphocytes and macrophages.¹⁹ Oral abnormalities varied from: a slight wrinkling of the buccal mucosa to extensive white patches, including gingival margins; inflammation of minor salivary gland ducts; erythematous patches; and gingival blisters (Fig. 2). Other oral side effects included dry mouth, soreness and a strange sensation in the jaw. A large number of bacteria linked to periodontal diseases were found in the saliva of ONP and other tobacco product users.¹⁹

Recommendations

Oral health care professionals should record the use of ONPs, and whether or not they contain tobacco. They should record the number of pouches the patient uses per day, the duration of use and the amount of nicotine consumed per pouch. They should discuss the reasons why they are used by the patient. If the patient is using these as an aid to quitting smoking, they should be signposted to approved smoking cessation services. Any oral soft tissue abnormality should be photographed and documented in the notes and the patient followed up 3-6 monthly. Most soft tissue abnormalities are likely to resolve when the use of ONP is decreased or discontinued. However, unresolved soft tissue abnormalities should be referred for biopsy.

Conclusion

The use of oral nicotine pouches, with or without tobacco, is increasing and their sale is currently unregulated in the UK. Oral health care professionals should have an awareness of the emerging evidence of the impact of ONPs on oral and general health. Users should be informed of the side effects of nicotine on their health and signposted to approved smoking cessation services for alternative therapy until more research on ONPs is available.

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A 65-year-old lady attends for a routine supportive peri-implant care appointment and reports she is having some bleeding when brushing. Her medical history is clear. An intra oral examination reveals visible signs of inflammation, bleeding on probing and suppuration around her implant. There is also an increase in probing depths compared to previous examination data.



IMAGE COURTESY OF JULIETTE REEVES

Q1. What further investigations are required for a definitive diagnosis?

Q2. What is the diagnosis?

Q3. What is the first approach to treatment?

Q4. What is the end point for treatment success?

This quiz was kindly donated by Helen Minnery, Past President BSDHT.

SEND YOUR ANSWERS TO THE EDITOR BY 31ST MAY. PLEASE INCLUDE YOUR ADDRESS.

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ANSWERS TO CLINICAL QUIZ MARCH 2025

The winner is: **Nicolle Harrison**

Q1. Name three potential signs of mouth cancer.

A1.

- An ulcer or white or red patch anywhere in the mouth that does not heal within three weeks.
- A lump or swelling anywhere in the mouth, jaw or neck that persists for more than three weeks.
- Difficulty swallowing, chewing or moving the jaw or tongue.
- Numbness of the tongue or other area of the mouth.
- A feeling that something is caught in the throat.
- A chronic sore throat or hoarseness that persists for more than six weeks.
- Unexplained loosening of teeth.

Q2. In which two areas of the mouth is cancer most commonly found?

A2. Floor of mouth and lateral border of the tongue.

Q3. Name three risks for development of mouth cancer.

A3.

- Tobacco use is the main cause of mouth cancer.
- Drinking alcohol to excess can increase risks four-fold.
- Drinking and smoking together can make mouth cancer up to 30 times more likely to develop.
- Transmission of HPV may become a major risk factor within the next decade
- Exposure to the sun may result in cancer of lips and face.

References

The Mouth Cancer Foundation

Healthcare experts highlight concern over increasing cases of dry mouth

Dry mouth can significantly impact a patient's quality of life, leading to discomfort, difficulties in eating, speaking, bad breath, reduced social interaction and an increased risk of dental issues such as tooth decay, and gum disease.

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The survey's findings emphasise the need for HCP's to be vigilant in identifying at-risk patients and providing appropriate management strategies. As the prevalence of this condition rises, it's more crucial than ever for professionals to discuss the symptoms with their patients and recommend effective solutions.

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Eastern	Sat, 11th Oct 2025	Holiday Inn Colchester Abbots Lane, Eight Ash Green, Colchester CO6 3QL	Amanda Kestell	easternsecretary@bsdht.org.uk
London	Thurs, 25th Sept 2025	TBC	Udita Patel	londonsecretary@bsdht.org.uk
Midlands			Joanna Ericson	midlandssecretary@bsdht.org.uk
North East	Thurs, 17th Sept 2025	ONLINE	Sarah Hunter	northeastsecretary@bsdht.org.uk
North West			Jessica McGenn	northwestsecretary@bsdht.org.uk
Northern Ireland	Monday 22 Sept 2025	Marlborough Clinic Belfast, 1 Marlborough Park, Belfast BT9 6XS	Gill Lemon	northernirelandsecretary@bsdht.org.uk
Scottish	NO EVENT (OHS in Edinburgh)		Kirsty Sim	scottishsecretary@bsdht.org.uk
South East	Autumn	AGM only (no trade)	Sam Doyle	southeastsecretary@bsdht.org.uk
Southern	Sat, 11th Oct 2025	Solent Hotel & Spa, Rookery Avenue Whiteley, Fareham Hampshire , PO15 7AJ	Karen Poulter	southernsecretary@bsdht.org.uk
South West & South Wales	Fri, 26th September 2025 (Evening event)	Arnos Manor Hotel, 470 Bath Road, Bristol , BS4 3HQ	Lynn Chalinder	swswsecretary@bsdht.org.uk
South West Peninsula		AGM only (no trade)	VACANT	southwestsecretary@bsdht.org.uk
Thames Valley		AGM only (no trade)	Keileigh Ireston	thamesvalleysecretary@bsdht.org.uk

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1ST JUNE FOR
JULY ISSUE

The Editor would appreciate items sent
ahead of these dates when possible

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