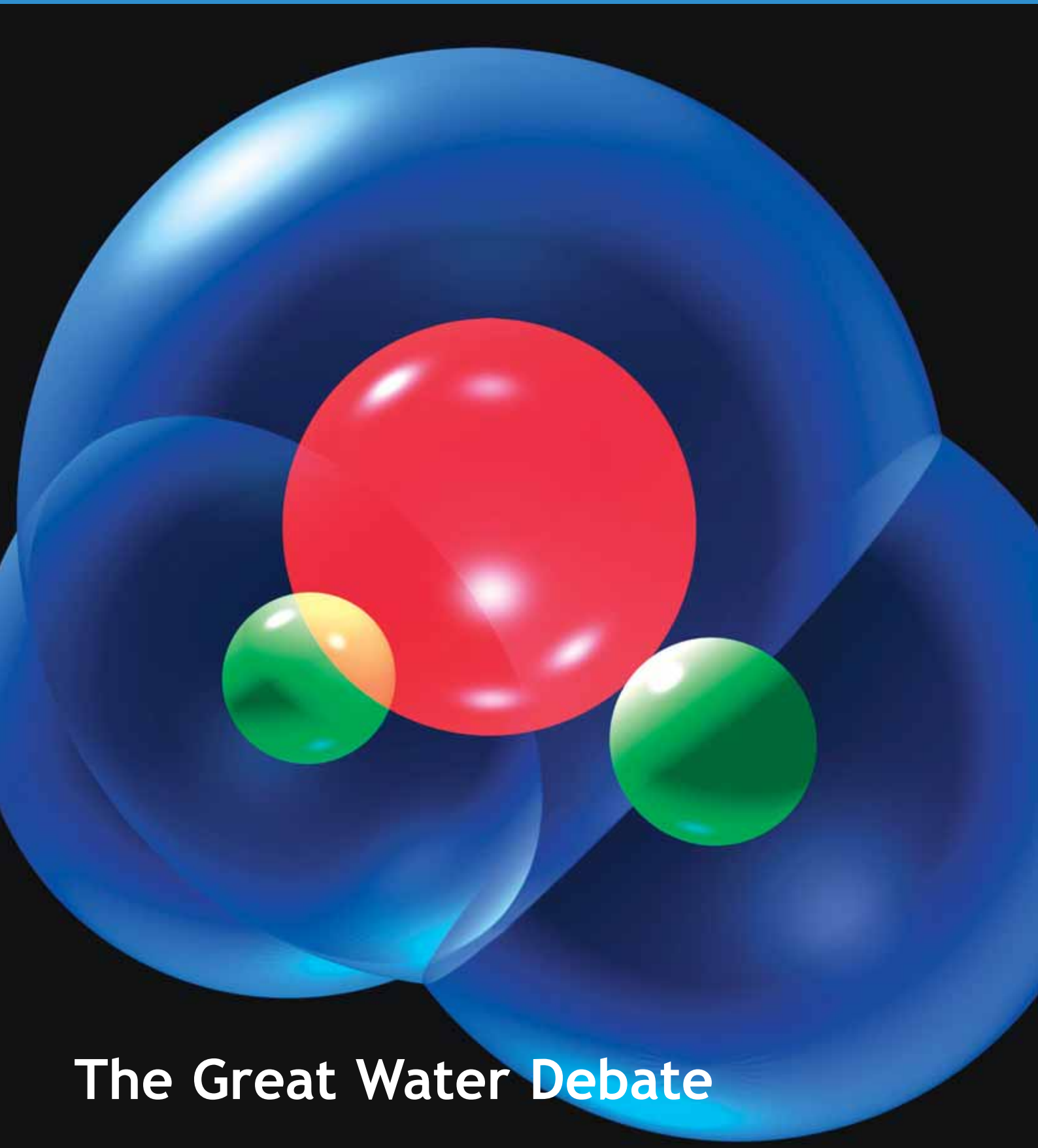
Volume 51 Number 3 Autumn 2005

Journal of the Irish Dental Association

Iris Cumainn Déadach na hÉireann



The Great Water Debate

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1 in 3

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Strontium salts work by blocking dentinal tubules forming a barrier to painful stimuli.[5]

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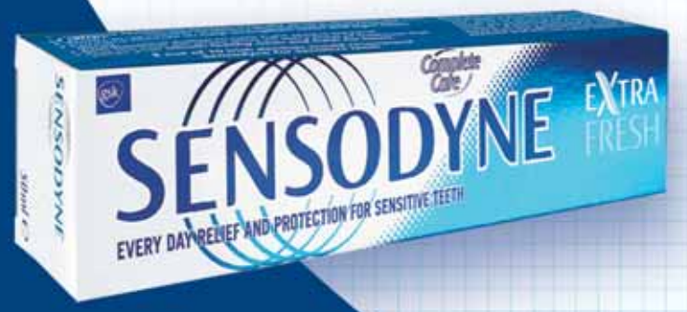

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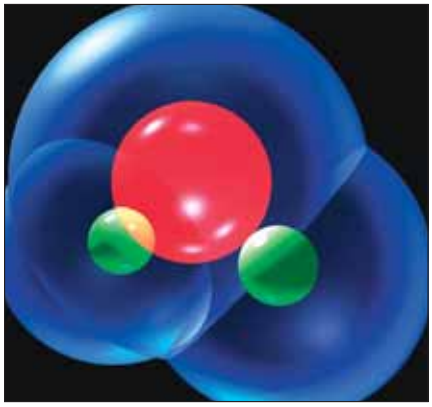
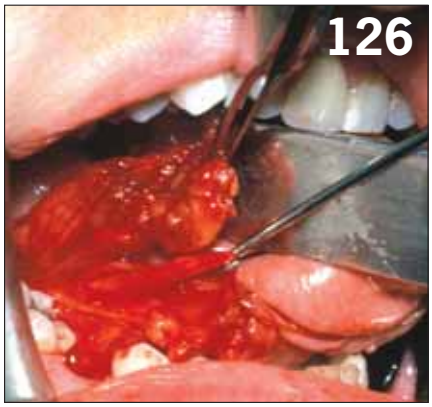
SENSODYNE

Original Experts in Sensitivity

Contents



Cover: Molecular model of a water molecule H_2O: although microbial contamination of water in Irish dental unit water systems is within the EU average, dentists here are keen to receive guidelines and advice on best practice in this area.



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Editorial

Welcome to your Journal

The *Journal of the Irish Dental Association* is our Journal. It is important that we are proud of it. It is essential that we support it and try and make it reflect our views and make the Journal alive. It must appeal to the members of the Association at all levels and reflect and voice our differences, as well as our similarities. Dr Aisling O'Mahony has been Editor for three years and has made tremendous strides in developing the Journal. It looks completely different from when she started. She has managed to do this despite a significant clinical and family commitment. She deserves our praise and support. We all can remember the phone-calls, the letters and the promises to deliver by the deadline. Well done Aisling, you deserve the rest!

Why did I agree to become Editor? This is a question I ask myself daily. It is probably because I believe strongly in peer review, the need to have an open and questioning mind, the arrogance of not just simply agreeing to accept but to challenge what is being done today, a desire for agreed standards and to always look for improvement.

What am I planning? It is essential to develop a team, who will work closely together. The team must reach other practitioners, specialists, health boards and consultants and encourage clinicians, scientists, nurses, technicians and others from different disciplines to write.

We need your scientific material. All scientific papers (research, case reports, educational material) will be submitted for peer review

The Journal has a Working Editorial Board made up primarily of the Editor, the Deputy Editor (Dr Dermot Canavan) and the Editorial Assistants (Dr Therese Garvey, Dr Niall Jennings, Dr Tom Feeney, Dr Christine McCreary, Dr David Clarke, Ms Tina Gorman, Director of Nursing) and the publisher's in-house editor (Daniel Attwood).

All members of the Irish Dental Association, nurses, hygienists, technicians and patients are encouraged to write and suggest constructively how the Journal can be improved. The Journal would like to thank all those who were members of the Editorial Board for the last few years for their help and please do not fret, we will be asking you to continue as referees.

Our plan is to have: (1) a scientific section subject to peer review to include research, continuing education, review articles and general interest abstracts; (2) a business section; (3) a news section to include European news; (4) a social section; (5) a diary of events section; (6) the clinical quiz; and, (7) clinical guidelines for practitioners. It is planned that articles will become available on the Irish Dental Association website. It is envisaged that we will try and encourage debate on articles and offer clinicians top tips on papers presented. We hope to encourage the Irish Dental Association, the Dental Council, the dental schools and the Faculty of the Royal College of Surgeons in Ireland to submit material and enter our debates.

The Working Editorial Board strongly believes that the Journal must maintain and build on its scientific approach. It is not possible to accept all papers and some will be disappointed. It is planned that with editorial support, many more of us will submit our work for publication and consider the Journal of the Irish Dental Association as a suitable vehicle.

Thank you for your time.

Professor Leo FA Stassen
Editor

Articles in this issue

- **Attitudes of Irish and European dentists to water quality of dental unit water systems.**

and

- **Microbial contamination of dental unit water systems**

  This pilot questionnaire study showed that Irish dental practitioners:
  - are keen to receive European guidelines/advice on how to safeguard their dental unit water systems, which are within the norm for Europe, although behind the standard set in the USA;
  - are willing and will welcome access to microbiological testing of their water systems;
  - have natural concerns about Health and Safety and the cost implications;
  - will benefit from further training and education in this area;
  - will welcome further debate in this area.

- **Management of drooling by transposition of the submandibular ducts and excision of the sublingual glands.**

This retrospective study highlights the problems our patients have with drooling and how surgery may help:
- Drooling is a considerable problem for some patients and difficult to manage.
- Dental care is paramount to oral health.
- Conservative including medical treatment is the first option.
- A multidisciplinary team is essential, surgery may benefit some patients but should be based on sound physiologic principles.

News

Orthodontic report criticised

A report on the provision of public orthodontic services in Ireland has called for immediate action to be taken to provide adequate orthodontic services to the public. The report, which was compiled by the Oireachtas Joint Committee on Health and Children, says that action must be taken now "to ensure no further children are denied the orthodontic treatment they need".

The authors are critical of the both the country's training provisions and the delivery of orthodontic services since 1999 and say little has improved since a previous report was published in 2002.

However, the profession's reaction to the report has been negative. For example,the Dental Council disagrees with the report's claim of deteriorating orthodontic services. "The alleged deterioration in the service is a fallacy," said the Council's Registrar, Tom Farren. "More patients than ever are now in active treatment." This is a view shard by and Dr Josephine Mahon, President of the Orthodontic Group, who felt the report failed to recognise the improvements in the provision of orthodontic treatment in the public service in the last five years. "The report states that there are only 15 specialists working within the health service, when in fact there are now 40 - this number will rise to 53 by the end of this year - which will be 50 per cent of all the orthodontists in the country," she said. "The waiting lists are reducing and are under control in all but two health board areas. The report gives the impression that the orthodontic service is in crisis when in fact a steady progress to meet goals is being made."

There was also widespread surprise that the views of key players within orthodontics were not sought before publication of the report. "The Dental Council is amazed that, as the body with ultimate responsibility for specialist training in Ireland, its views were not sought," said Tom Farren, "Equally amazing is the fact that the Irish Committee for Specialist Training in Dentistry (ICSTD), the body that assesses and monitors training, was not contacted by the Oireachtas Committee nor were its opinions canvassed." A similar view was expressed by Dr Marielle Blake, the head of the Orthodontic Advisory Committee, and Dr Mahon who said that the opinions of neither of their of their groups were sought.

Among the report's recommendations is for the establishment of a national uniform standard of grading orthodontic need. It recommends that the International Index of Orthodontic Treatment Need (IOTN) be adopted as a benchmark for determining an individual's need for treatment.

Despite feeling that the report will make little or no difference to orthodontic care, Dr Blake agrees with this recommendation. "In the interest of equity and fairness the guidelines need to be standardised nationally," she said. "We should work towards this. In the interim, a nationally agreed guideline policy would be more equitable than the current situation." The idea of introducing a national grading standard is also welcomed by Dr Mahon, although with reservations. "No matter what grading system is introduced, there will be complaints about some people not receiving treatment," she said. "Currently the public orthodontic service can only cope with the most serious problems, which is about one-half of the expected need." The shortage of trained orthodontists and the lack of adequate training opportunities are also cited as a major concern by the report. It states that the training systems in place are inadequate and suggests a "less

Sensodyne receives IDA accreditation

GlaxoSmithKline Consumer Healthcare's Sensodyne toothpaste has become the first and only sensitive toothpaste to be approved by the Irish Dental Association.

The brand is the market leader in the sensitivity category in this country and this new status will underline the on-going high levels of dental endorsement and recommendation experienced by Sensodyne.

To support the IDA accreditation Sensodyne will be supported by extensive trade activity underlining the key message "Sensodyne is the only sensitive toothpaste approved by the Irish Dental Association".

Dr Gerry McCarthy, President of the Irish Dental Association, with Liz Rowen, Oral Care Marketing Director of GlaxoSmithKline, at the signing of the official contract that saw Sensodyne receive IDA accreditation.

News

restrictive" approach to training as well as the removal of the duopoly that the country's two dental hospitals enjoy in training orthodontic specialists. "This exclusivity has presented an enormous problem for manpower planning and delivery of the country's orthodontic service," says the report. "The position adopted by the Dental Council on the issue of training is not sustainable and not capable of serving the needs of the country."

But, as Dr Mahon explains: "A less restrictive approach to training would damage the value of these qualifications and training. Patients deserve the very best and any lessening in training standards would affect the quality of treatment. I would like to think that we as orthodontists would strive to ensure the very highest standards in orthodontic training."

The report also suggests that regional orthodontic units be re-established (as they were in some areas prior to 1999) and be permitted to develop collaborative training and research programmes with dental training schools in other EU countries.

However, Dr Blake has reservations about such an idea: "Maintenance of optimal standards of training is crucial. Governing bodies need to uphold standards of training to reduce the possibility of two-tier training pathways for the public/private sector. The training pathways proposed by the report would not be considered for any medical specialty."

This is a view echoed by the Dental Council. "The Dental Council and not the ICSTD determined that orthodontic specialist training should be centred in the academic institutions but with a significant role for the regional consultants. The system has worked well with the majority of regional consultants co-operating in the provision of training," explained Tom Farren. "The current training arrangements have greatly increased the supply of specialist orthodontists in Ireland. Sixteen specialists have completed training in Trinity College during the past three years. A new facility is being built at the Cork dental school and training of orthodontic specialists will commence there later this year or early in 2006."

The President of the Orthodontic Group also makes several other observations about the report's lack of vision: "About two years ago legislation was introduced to allow for the training of orthodontic auxiliaries. Auxiliary personnel would be recruited from the dental nursing grade and undergo a year's training to learn how to carry out routine procedures under the supervision of a specialist," she said. "If such personnel were introduced, it would greatly help in the provision of service, but there was no consideration given to this in the report."

In addition, she says, no suggestions were made about introducing a co-payment scheme for orthodontic treatment in private practice, as is done in Norway and Germany. "This would allow the hospital services to concentrate on the most severe problems and those with less severe problems but still needing treatment to be treated in private practice. Unfortunately, the Health Act does not allow this," she explained. "The report also underestimates the need for oral and maxillofacial surgeons.There should be at least 25 such surgeons in this country to support the orthodontic service, without which the orthodontists cannot deliver a comprehensive service to their patients."

Professor honoured by American Dental Association

Doctor John Clarkson, Professor of Community Health at the Dublin Dental School and Hospital, will be made an honorary member of the American Dental Association at a special ceremony later this year.

The award is an honour conferred by the ADA's board of trustees on individuals who have 'made outstanding contributions to the advancement of the art and science of dentistry'.

Mortgage provider appointed by IDA

Omega Financial Management has been appointed by the Irish Dental Association. The financial services company has been appointed to provide IDA members with discounted mortgage packages.

For further information contact John O'Connor on: free-phone 1850-260261 or email info@omegafinancial.ie.

News

Tobacco and the oral health professional

The World Health Organisation in conjunction with the World Dental Federation has produced an advocacy guide for oral health professionals on the detrimental effects of tobacco smoking.
Tobacco is the second major cause of premature death in the world – it kills some 4.9 million people every year – or one every 6.5 seconds. It is predicted that 10 million people will die from tobacco use every year from 2020 if more action is not taken.
Tobacco is a risk factor for oral cancer, adult periodontal diseases and congenital defects such as cleft lip and palate in children whose mother smokes during pregnancy. Tobacco use suppresses the immune system's response to oral infection, retards healing following oral surgical and accidental wounding, promotes periodontal degeneration in diabetics and adversely affects the cardiovascular system.
The guide provides facts on tobacco and tobacco control initiatives, as well as discussing the role of dentists and other oral health professionals in tobacco control. It recognises that helping smokers to quit is part of the role of health professionals including dentists and those involved in oral health.

The clear link between oral disease and tobacco use provides an ideal opportunity for oral health professionals to become involved in tobacco control initiatives, including smoking cessation programmes. As Dr JT Barnard, Executive Director of the FDI, said:
"It is my sincere hope that this guide for dentists and oral health professional organisations will be helpful in increasing awareness and in facilitating tangible engagement in tobacco control on the individual patient level as well as in the broader political context."
Urgent and concerted action is needed to reduce the disease, suffering and premature death that occur as a direct result of tobacco use. The guide explains that the dental team has a significant role to play in this area. "Dentists have regular contact with patients, are the first to see the effects of tobacco in the mouth and are the only health professionals who frequently see 'healthy' patients. Dentists are thus in an ideal position to reinforce the anti-tobacco message, as well as being able to motivate and support smokers willing to quit," explains the guide.
As a result, a guideline that provides clear advice for oral health professionals is included in the publication. It advocates the "4 As approach" – Ask (all patients should have their smoking status checked regularly); Advise (all smokers should be advised of the value of quitting); Arrange (refer motivated smokers to local smoking cessation services); Assist (support smokers who want to stop but are not prepared to be referred).
Such is the importance of getting all oral health professionals to be proactive in the worldwide drive to stop tobacco use, that the guide discusses how and why advocacy should be part of all oral health professionals' toolkit.
The advocacy guide is available from the websites of the FDI and the WHO: www.who.int/oral_health and www.fdiworldental.org.

BetterOralHealth.info

For the profession

For the dental professional, BetterOralHealth.info provides a variety of information, from clinical abstracts and articles, to advice on talking to and motivating patients. You'll also find downloadable patient handouts, plus information cards on key topics as a refresher for the dental team, not to mention regular online news and competitions, with the option to register your contact details to receive the latest updates.

For the patients

BetterOralHealth.info is a great resource to recommend to your patients. The website is divided into three specific areas – professional, patient and media – each one written with its audience in mind. The patient section provides all manner of oral health information, presented in an easy-to-read, appealing format. The site is easy to navigate and extremely informative, with everything from an interactive quiz to test your patients' knowledge on oral health, to advice on how to cope with being afraid of the dentist, avoiding problems such as plaque and gum disease, what to expect if you need a filling and how to prevent the need for treatment. Everything on the site has been peer reviewed by dental professionals, so your patients will be in good hands.

For the press

The media area of the website provides the healthcare press with summary sheets and key facts about key oral care related issues, along with articles covering the latest in dentistry and oral healthcare education.

Check us out at www.BetterOralHealth.info and register your email address to join Wrigley Oral Healthcare in Action and receive free oral care resources.

Chewing Orbit sugarfree gum helps prevent tooth decay by 40%[1]

www.BetterOralHealth.info

Reference 1. Szöke J, Bánóczy J, Proskin HM (2001) Effect of after-meal sucrose-free gum-chewing on clinical caries. *Journal of Dental Research* **80(8)**: 1725–29.

News

Master of the ICD

At the recent International College of Dentists annual meeting in Stockholm, Sweden, Dr Joe Lemasney was made a Master of the ICD after many years of outstanding service to the college. He was accompanied by his wife, Ethna, who is also a fellow of the college.

In his proposal speech, Dr Frank Shields, Regent for Ireland, outlined Joe's many professional achievements. These included a long and impressive list of academic attainments both in Ireland and the UK.

Joe has progressed through the ranks of the Irish Dental Association, culminating in becoming President in 1993. In 1995 he was elected as a member of the Irish Dental Council, eventually becoming President in 2000. Joe also was for a number of years an outstanding editor of the Journal of the Irish Dental Association.

On the European front, Joe has been a member of the EU-Dental Liaison Committee since the mid-1990s and became its President in 1999. He hosted the successful plenary meeting in Dublin Castle in 1999. Joe is still a member and has also served on the Dental Advisory Committee (a very important body in the area of training of dentists) until it was abolished by the Commission in recent years.

In proposing Joe as a Master of the ICD, Dr Frank Shields described how Joe's wife Ethna is also a dentist, as are three of his four children. Joe has been a long time servant of the International College, from his induction in 1984 in Florence by Professor Umberto Bar, to becoming President of the European Section of the International College, in June 2002. In June 2003, Joe hosted a successful annual meeting in Dublin.

The award of MICD was warmly received by those present in the Museum of Modern Art building. Joe has been a tireless worker on behalf of the college, has served with distinction, and this award was fitting tribute to the efforts he has put in over many years.

Dr Joe Lemasney accepting his honorary position of Master of the International College of Dentists.

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News

Unique cross-border dental outreach skills centre opens in the northwest

Dr Kevin Kennedy, Senior Clinical Dental Surgeon at the Health Service Executive in the northwest area, gets to grips with the training equipment at the Co-operation and Working Together (CAWT) northwest cross-border dental outreach skills centre sponsored by INTERREG IIIA. Also present are (from left) Jack O'Connor, Director, INTERREG IIIA, SEUPB; Dr Joe Mullen, Principal Dental Surgeon, HSE NW; Dr Nadar Farvardin, Principal Dental Surgeon, HSE NW; and Frances McReynolds, Chief Officer, CAWT.

Dentists and dental professionals based in the northwest of Ireland and also in Northern Ireland can now access professional training and education facilities nearer home with the opening of a unique training centre in Strabane, Co. Tyrone, Northern Ireland.

Rather than having to travel to urban centres in Dublin, Belfast or further to participate in undergraduate, postgraduate and professional development courses, local dentists and dental staff now have the option of accessing them in this new centre. This will save many dentists based in the border region of Ireland and Northern Ireland hours of travelling time when attending courses and thus less time lost to patient care. The town of Strabane in County Tyrone is situated in the heart of the NW border region and is thus very accessible from Donegal, Leitrim and Sligo in particular.

This innovative venture was made possible with funding from the EU's INTERREG IIIA programme under Measure 3.2 'Health and well-being', which was secured by Co-operation and Working Together (CAWT), the cross-border health and social care partnership. The INTERREG programme aims to address the economic and social disadvantage that can result from the existence of a border region.

The Health Service Executive in the NW worked in partnership with its Northern Ireland counterpart, the Western Health and Social Services Board (WHSSB), to develop this state-of-the-art cross border dental outreach skills centre in the NW area.

The stimulus for the project came from the need for dentists and their staff to access suitable training on an on-going basis. While some courses were already being delivered on a cross-border basis, there was a great need for a local facility in the northwest where didactic teaching alongside 'hands-on' training could be offered. This is where the North West Institute of Further and Higher Education (NWIFHE) in Northern Ireland became involved in making the vision a reality. The NWIFHE provided the necessary space in their Strabane campus for the specialised equipment and training facilities, which are now ready for use. It is planned to commence training in the new facility in September 2005.

One of the key players in making this project a reality, Dr Joe Mullen, Principal Dental Surgeon with the Health Service Executive in the North Western area said: "This shared dental skills outreach centre will lead to improvements in the quality and range of dental treatment in the long term, particularly for border communities. This is a first class facility which, in time, has the potential to become a centre for excellence."

Surgery Startup Offers...

Images for illustration purposes only.
Screen available as an extra
(price on application).

Option 1 - Sirona C8+ Package

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Option 2 - BA Handpiece Package Offer

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- 3 x Slow Handpieces BA-205 1:1
- 1 x Straight handpiece BA - 270
- 1 x 614 Midwest Air Motor

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Option 3 - Lease both the Packages...

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News

Old hand instruments needed

In order to address the need for dental instruments in developing countries, the British Dental Trade Association, organiser of International Dental Showcase 2005, is linking up with Dentaid, the dental charity striving to improve the world's oral health, to launch an instrument amnesty at this year's exhibition. There is a severe shortage of dentists in developing countries and the ones that are working are drastically under-resourced. The level of care they are qualified to offer is significantly higher than their equipment allows; no light, no drill, no suction, difficult working conditions and very importantly a limited range of instruments.

In order for Dentaid to respond to the overwhelming demand for dental kits from charitable projects, we need your help to overcome shortages of certain types of instruments. It is likely that there is a huge selection of instruments sitting in the bottom of cupboards in dental practices across the country not being used. Certain types of instruments are in shorter supply than others - particularly extraction forceps, elevators, mirrors, scalpel handles and syringes. Please donate your instruments on the Dentaid stand, located in the entrance area at this year's exhibition, 6-8 October 2005.

PLEASE ENSURE THE INSTRUMENTS DONATED HAVE BEEN PROPERLY STERILISED.

For further information on the instrument amnesty, visit www.dentaid.org.

Hand instruments are needed by the dental charity, Dentaid, to help dentists working in developing countries (pictures courtesy of Dentsply Ash Instruments).

Business news

Smile for life

At the launch of the Listerine 'Smile for Life' campaign it was revealed that an estimated 93 per cent of the Irish population suffer some degree of gum disease and that this is the biggest cause of tooth loss in adults.

The campaign, sponsored by Listerine mouthwash, has been developed to encourage greater oral health awareness and the adoption of Listerine's three step routine: brush, floss and rinse (with a clinically proven therapeutic mouthwash), which according to a new clinical study can reduce plaque by up to 52 per cent.Roseanne Dunne, Marketing Development Manager, explained: 'The Smile for Life promotions have proved to be an excellent vehicle from which to launch the campaign to the public. Studies demonstrate that flossing and rinsing with a mouthwash can provide a dramatic and significant improvement in the health of both the gums and teeth. Just two minutes, twice a day, can make all the difference."

Listerine has also launched a free information leaflet, called 'Smile for Life - a guide to keeping a healthy smile', which contains information on oral care and diet, preventative measures and a guide to Listerine's three step routine.The Listerine range of essential oil mouthwashes are the only mouthwashes to be accredited by the Irish Dental Association.

For a free copy of a Smile for Life Leaflet, write to: Listerine's Smile for Life campaign, PO Box, 7808, Dun Laoghaire, Co. Dublin.

Business news

Major dental trade exhibition

A trade exhibition aimed at dentists and their teams is to be held in Dublin on October 21-22, 2005. The show, Identex, which will take place at The Pavilion at Dublin's Leopardstown Racecourse, is Ireland's largest dental equipment, materials and services exhibition. The exhibition begins at 2pm on Friday, October 21, and runs until 9.30pm on Saturday October 22.

All major dental dealers and suppliers will be exhibiting at the 12,000sq.ft. venue, including equipment and supplies being distributed by Ardagh Dental Supply, Irish Dental Equipment, Henry Schein, Morris Dental, McCormack Horner Odontological Supplies, O'Neill Dental and Promed together with the international names of 3M Espe, J & S Davis, Coltene/Whaledent, Dentsply, Oral B, Voco, Kodak Dental Systems, Kerr Hawe, McDowell & Service Dental Laboratory and W&H UK to mention a few. As an added incentive for visitors to the exhibition, McGuirk's Golf in conjunction with Identex will be offering visitors to the exhibition a 20 per cent reduction on many of its products. In addition to the dental products, Wines Direct will be present at the exhibition and visitors will have the opportunity to sample some of the wines.To avoid delay and a cost of €20, dentists and their teams have the opportunity of pre-registering on aidi@iol.ie.

Snoring solutions

Solutions 4 Snoring, makers of Sleepwell, a mandibular advancement splint, has announced a Dublin date for its seminar programme 'Snoring – a role for the GDP'.

Presented by Dr Ama Johal, the seminar has already attracted over 300 dental practitioners since it began in Britain in April.

From the five seminars held between April and June, 97 per cent of attendees assessed the seminar as good/very good, while 99 per cent said that they would recommend the course to a colleague.

The seminar will provide coverage of all aspects of sleep-related breathing disorders, including how to assess patients and, if appropriate, how to prescribe and fit a mandibular advancement splint.

The Dublin seminar will be held in Dublin's Jury's Hotel on October 13.

IRISH DENTAL ASSOCIATION

Colgate

Oral Health Month

FIGHTING TOGETHER FOR BETTER ORAL HEALTH

*During September, **Colgate** and the **IDA** will join forces with dental professionals to fight together for better patient oral health.*

***Colgate Oral Health Month 2005** will take place during the month of September. Colgate is looking to partner with dental professionals in delivering key oral health messages to patients. Colgate will provide educational materials and patient samples to support the communication of these messages.*

New and exciting plans for 2005 include an interactive continuing professional education programme that will look at communication strategies for delivering effective preventative advice, and therefore improving patient compliance.

*To register for **Colgate Oral Health Month 2005** please call **01 403 9860**. 2004 participants automatically qualify with no need to call.*

Business News

Look out for the crocodile!

The theme for marketing the International Dental Showcase 2005, which takes place at the NEC, Birmingham on October 6 to 8, is based on the unique symbiotic relationship between the crocodile and the plover bird (crocodile bird).

The Egyptian plover bird and the crocodile have a mutually beneficial relationship. For other birds that land in the mouth of a crocodile there is likely to be one very unfortunate outcome. This is not the case for the plover.

Food becomes stuck between the crocodile's teeth causing the teeth to rot. This probably creates a certain amount of pain for the crocodile and endangers their one great survival gift. When the crocodile feels the need for a tooth clean it sits with its mouth wide open basking in the sun. For the past 2,500 years there have been reports that the Plover bird recognises this as an invitation and responds by flying into the mouth of the crocodile, eating the food stuck between the teeth and the leeches in the lining of the mouth before flying away again. The plover gets a meal and the crocodile gets its teeth cleaned.

The theme was chosen to market International Dental Showcase 2005 to highlight the presence of dentistry even in the most unlikely circumstances. The plover bird is effectively the dentist to the crocodile but only really requires an appetite for the food between the teeth to complete the course of treatment. In the human world, dentists need the support of all the dental related products and services and where better to find them all than at International Dental Showcase?

Register now on the official dental showcase website: www.dentalshowcase.com.

Color-Style Prophylaxes Set

Trycare's latest prophylaxes set

Trycare has launched its new Color-Style Prophylaxes Set. The new equipment includes many popular prophylaxis instruments, including a complete set of Gracey curettes, a sickle scaler H6/7, a Gracey sickle scaler 204S, a probe head M2.5 and a universal handle for probes, mirrors and explorers. Suitable for ultrasonic cleaning and autoclaving, the set is supplied with a stainless steel wash tray, which holds eight instruments, and incorporates two silicone rubbers and an instrument retainer to hold them secure during the cleaning cycle and transportation. Every item is also available separately.

Go to www.trycare.co.uk for more information.

Six shades of...

Variolink II, the dual-curing luting composite from Ivoclar Vivadent, is now available in six shades and three degrees of translucency including transparent. It is used with IPS Empress pressed ceramic system and composite restorations. Visit www.ivoclarvivadent.com for more information.

Nobel Biocare opens up aesthetic and implant dentistry

At Nobel Biocare's world conference recently, the company launched 560 new products aimed at allowing dentists and laboratory technicians to take advantage of the growing opportunities in aesthetic dentistry.

The new solutions are aimed at minimising chair time, improving productivity and maximising successful and lasting outcomes.

Heliane Canepa, President and CEO of Nobel Biocare, explained: "Aesthetic dentistry is the fastest growing dental sector... At Nobel Biocare we recognise that patients are no longer prepared to accept invasive time-consuming and costly procedures. Every innovation launched at our World Conference has been achieved by recognising that the patient is in the driving seat."

The company also launched a range of literature designed to help educate patients and enable them to make informed decisions in consultation with their dentist.

Further information is available on www.nobelbiocare.com.

Typing problems solved

U-scribe delivers a unique service to the medical profession based on proven technology that allows dental and medical professionals to outsource dictation and transcription requirements either in their entirety or in part. The service delivers transcriptions back to the sender's in-box in a matter of hours.The company guarantees a 24-hour turnaround, fully encrypted and confidential service.

U-Scribe can be contacted on 01 602 4742.

Pharmaceutical giant opens in Ireland

The Grunenthal Corporation, which specialises in analgesics and anti-infectives, has opened a dedicated office in Ireland.

Here, Pfizer (in close collaboration with Grunenthal) has historically held the licence for the analgesic, Tramadol, under the name Zydol. However, to mark its arrival in Ireland, Grunenthal will see Zydol handed back to it.

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Microbial contamination of dental unit water systems

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Precis
A study of water and tubing samples from dental practices revealed microbial loads that exceeded the European guidelines for drinking water in many cases.

Abstract
Introduction: dental unit water systems (DUWS) may serve as a reservoir for biofilms that contribute to high numbers of bacteria in the water used during dental treatment. These microbes are predominantly harmless but potentially pathogenic organisms can also be present in the biofilm. This may pose a potential health risk for patients and dental personnel.
Aim: to determine the microbial levels of DUWS in dental practices.
Materials and method: a cross-sectional study of water and tubing samples from 30 general dental practices (15 health board and 15 private surgeries) was undertaken as part of a pan-European investigation of the microbial qualitative and quantitative aspects of DUWS.
Results: microbial loads ranged from 100 to 104 cfu ml-1 and exceeded the European guidelines for drinking water in many cases. The available evidence suggested the presence of isolates most likely belonging to families of aquatic and soil bacteria. It was not possible to draw distinct conclusions correlating microbial loads with dental unit parameters, including age of the unit, water source and chemistry and presence or absence of anti-retraction devices. Opportunistic or true pathogens were not detected. Yeasts were observed in samples from three units although further analysis confirmed that these were not Candida albicans. A decontamination strategy applied to one of the units eliminated the yeasts completely.
Conclusions: dental practitioners must be knowledgeable regarding microbial contamination and biofilm formation in dental unit waterlines. There is a need for development of European evidence-based guidelines and reliable control regimes for microbial contamination of DUWS.
This work was supported by the EC (QLK4 -00097-2000).

Introduction

The quality of the dental unit water system (DUWS) is of considerable importance given that patients and dental staff are regularly exposed to water and aerosols generated from the dental unit. Patients include groups who are highly susceptible to infection and others who may be carriers of pathogens. Concern has arisen regarding the capacity for rapid development of biofilms along the wall of the long narrow bore tubing that furnishes the dental handpieces with water. These biofilms serve as sources of contamination for the water passing through the tubing, so the quality of water delivered at the distal outlet may not be the same as the source water supplying the unit.
Numerous studies on the issue of contamination of water in dental units have been published[1-6], which demonstrate the presence of microorganisms typically derived from the environment[5], water supplies and the oral cavity[6]. The American Dental Association has suggested <200 cfu ml^{-1} as a target limit for bacterial numbers in dental water[7]. In Europe there are currently no evidence-based guidelines available to dentists for the control of DUWS contamination. Risks arising from DUWS are relatively unknown and recommendations include the implementation of anti-retraction devices[8] and thorough flushing of lines at the beginning of each day and between patients.

Aim

This study was undertaken as part of a pan-European project aimed at determining existing patterns of microbial contamination of DUWS in dental practice. In each of seven EU member states

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(Denmark, Germany, Greece, Ireland, Netherlands, Spain, UK), between 20 and 50 surgeries were selected to represent different types of DUWS and different types of water supply relevant to their country. Paper-based surveys of recruited practitioners were performed in order to determine dentists' attitudes, their existing policies for DUWS decontamination and relevant information regarding their dental units. Factors such as dental unit age and type as well as water chemistry are believed to influence the development and extent of microbial contamination in DUWS[9].

In Ireland, 30 dental surgeries were chosen to represent typical DUWS used in practice, including bottle, tank and mains-fed units, supplied with hard, soft, deionised and distilled water. DUWS were analysed qualitatively and quantitatively with the aim of determining the presence and numbers of microorganisms, including environmental isolates, pathogens and oral bacteria. The presence of oral bacteria serves as an indicator of back-siphonage along DUWS devices and the potential for DUWS as a vehicle for human cross-infection[6]. Potential threats such as this stress the need for standardised, evidence-based and cost-effective methods of DUWS microbial detection and decontamination.

Materials and methods

Survey of dental practices

Thirty surgeries (15 health board and 15 private practices) participated in this study. DUWS samples were recovered from three points: (i) water from the 3-in-1 syringe distal outlet, designated the water-line (WL) sample; (ii) water from the air-rotor line, the aerated water (AW) sample; and, (iii) a section of the tubing supplying the 3-in-1 syringe for biofilm analysis. Samples were taken at the end of a morning surgery session. Water was run to waste for 30 seconds from the 3-in-1 syringe distal outlet before filling up the plastic bottles with 100 ml of (i) water sample from the 3-in-1 syringe distal outlet; and, (ii) sample of water from the air rotor water line. The samples were transported to the microbiology laboratory in coolboxes. Water and biofilm samples were processed according to the method described by Walker *et al*[1, 14].

Quantitative and qualitative analysis

Total viable counts (TVC) of water and biofilm were used as the definitive measure of total microbial contamination of the water passing through the DUWS. This was compared to the American Dental Association standard for dental water[7] the European standard for potable water[10]. Samples of water and biofilm were plated on a range of selective and non-selective agar media as outlined by Walker et al.[1] Specific strains of Escherichia coli, Pseudomonas fluorescens, Candida albicans, Streptococcus sanguis, Actinomyces naeslundii and Fusobacterium nucleatum were used as comparative reference strains throughout the study. Water and biofilm samples were analysed for the presence of Legionella and Mycobacterium at the Centre for Applied Microbiological Research (CAMR), Porton Down, Salisbury, UK, using standard protocols for detection of these bacteria[12, 13] and were analysed for the presence of blood traces using commercially available Hemastix test strips (Bayer plc. Newbury, Berkshire, UK).

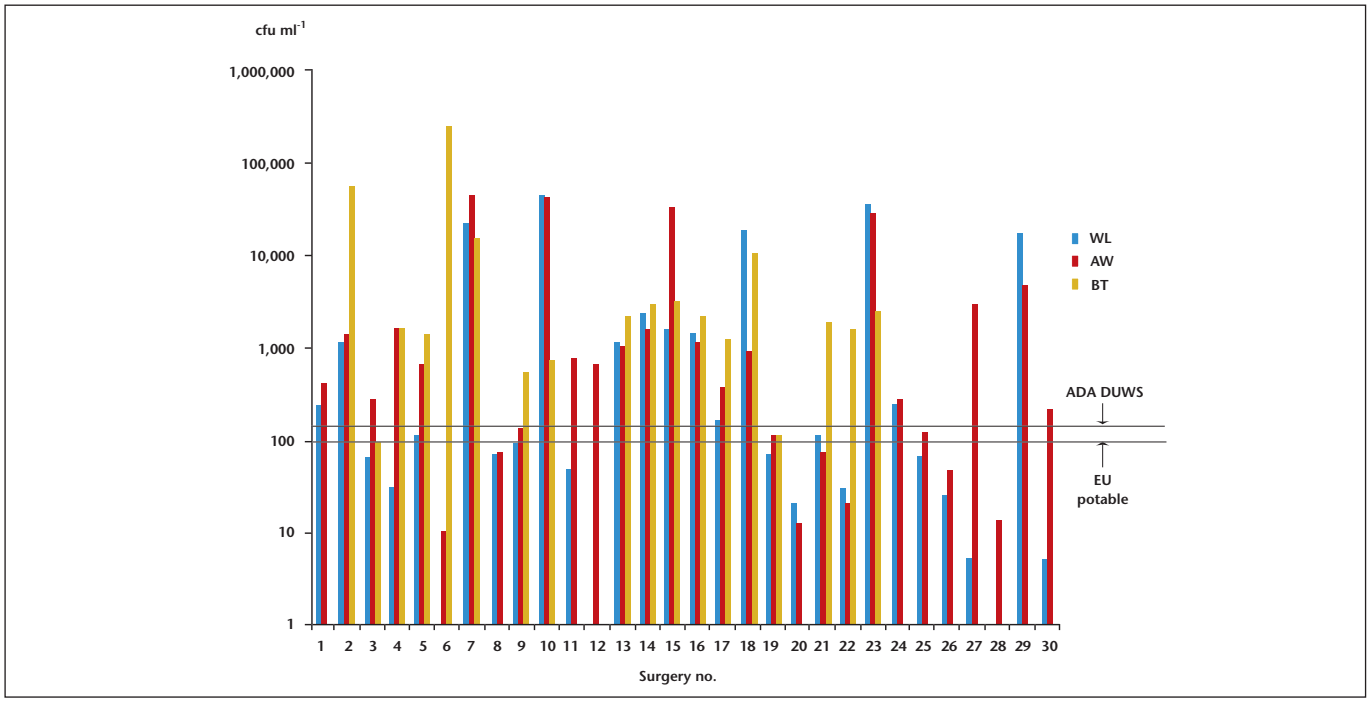

Figure 1: Total viable counts (TVC) of water samples from DUWS in dental operatories. The current EU potable water and ADA DUWS water guidelines are indicated as horizontal lines on the bar chart.

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Results

Bacterial contamination of DUWS

Thirty water-line (WL), 30 aerated water (AW) and 23 water-line biofilm (BF) samples were assessed. Geometric means of $4.8x10^3$ (range 10^0 to $4.4x10^4$); $5.4x10^3$ (range $1.0x10^1$ to $4.3x10^4$) and $1.5x10^4$ (range 10^0 to $2.4x10^5$) were recovered from WL, AW and BF samples, respectively. Originally it was intended to use R2A agar for detection of the "environmental" isolates. The project partners agreed subsequently that incubation on yeast extract agar (YEA) for up to 48 hours would be a suitable alternative[14]. Colonies grew well within 48 hours. The study objective was not to identify specific microorganisms in the samples, but to estimate the microbial load. However, the available evidence (based on morphological, microscopic and biochemical analyses) suggested the possible presence of Pseudomonas, Flavibacterium, Moraxella, Aerobacter, Micrococcus and Staphylococcus among the "environmental" isolates.

Some of the isolates commonly isolated from DUWS were pigmented (yellow and pink). In several cases, microscopic observations (Gram stains) of single discrete colonies revealed the co-existence of at least two different bacterial types. A possible explanation could be the production of polymer or capsular material enabling the bacteria to adhere to each other and to facilitate colonisation of the DUWS tubing.

Figure 1 illustrates a comparison of TVC from the participating surgeries that have been assigned code numbers (1 to 30) for the purpose of clarity and to maintain confidentiality. Samples from 87 per cent of the surgeries tested were contaminated above the EU drinking water standards. TVCs appeared to be highest for WL, AW and BF samples from surgeries 7, 10, 15, 18 and 23 and for WL and AW samples from surgery 29. TVCs were not affected by variables such as age of the unit, water type (i.e. hard, soft, distilled, deionised, purified) water source (mains-fed, bottle-fed), sanitisation practices and the presence or absence of anti-retraction devices in the hand-pieces. For example, at the time of testing, unit 7 was greater than 10 years old and unit 10 was less than one year old, yet both demonstrated high TVC. In addition, unit 10 was disinfected monthly while surgery 7 did not practice disinfection of the unit. Interestingly, TVC was negligible in WL samples from surgeries 6 and 12, whose lines are not flushed nor the units disinfected. No correlation was observed between TVC and water source or type, or with the presence or absence of anti-retraction devices. There were no significant differences in TVC levels in samples obtained from health board and private practices.

Opportunistic or true pathogens such as Escherichia coli, Pseudomonas aeruginosa and Legionella pneumophila were not detected. Mycobacterium (non-pathogenic species) was found in six surgeries. Isolates recovered from blood agar were not confirmed as oral streptococci. Yeasts were detected in the aerated water samples from three private practices, reaching levels of $2.8x10^2$ cfu ml^{-1}, $1.1x10^2$ cfu ml^{-1} and $1.7x10^1$ cfu ml^{-1} (representing approximately 25 per cent, four per cent and two per cent respectively, of the total bacterial population in these units). However, the absence of a germ tube[11] ruled out the probability that these organisms were Candida albicans. A decontamination strategy was applied to one of the yeast-contaminated units, which involved flushing the lines with a one per cent sodium hypochlorite solution. The TVC was reduced and the yeasts were eliminated completely.

Hemastix testing for traces of blood in DUWS samples involved examining a colour reaction when the water sample was incubated on a test strip. Based on comparisons with a colour-coded chart, samples from seven units were recorded as having possible non-haemolysed blood traces. However, hemastix testing did not appear to be entirely definitive and it is possible to obtain false positive results if the lines are heavily populated with high levels of bacteria.

Discussion

This survey was part of a Europe-wide effort to determine existing patterns of DUWS bioburden, to identify controls and generate guidelines with which DUWS waters must comply[14]. This paper describes a study of water lines from 30 dental units.

Results suggest that the water lines are quite heavily populated with bacteria, with few units free of contamination. The levels of bacteria recovered in 87 per cent of cases exceeded the accepted European standard[10] (100 cfu ml^{-1}) for potable water with the majority of species belonging to families of aquatic and soil bacteria. It may even be the case that the viable counts were underestimated, for example, (i) if the microorganisms were dead or dormant; (ii) inhibited by residual chlorine or low nutrient levels in the water; (iii) had insufficient recovery time; or, (iv) were unable to grow on the culture media. In addition, the samples were taken at the end of morning surgery sessions and after 30 seconds flushing (highest counts would be expected first thing in the morning), which could also underestimate the level of contamination in the planktonic phase from waterlines. However, the authors believe it to represent a best case situation and the situation most likely presented to patients. Pigmented bacteria (yellow and pink types) were commonly recovered from the water samples; pigmented forms may pose increased health risks for medically compromised patients[15].

Factors inherent to the dental unit, ranging from age and make to frequency of usage, water source, type, presence or absence of anti-retraction/check valves and position of the water bottle, are reputed to account for variability in bacterial distribution and numbers[9]. However in this study, little consistency could be seen between the total viable counts and the unit parameters. While no correlation could be drawn between bacterial numbers and water source (whether it was a municipal supply or self-contained system) it is possible that the environmental isolates originated from the source water and formed biofilms along the walls of the

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tubing supplying the water at the distal outlet. The influence of flushing and disinfection was questioned as high levels of bacteria were recovered from several units that were reported as routinely flushed and/or disinfected. It is likely that flushing reduces, at least temporarily, microbial counts in the waterlines but may not reduce the accumulation of adherent biofilm in the tubing. This may be a consequence of the fact that biofilms often contain bacteria with carbohydrate-containing material[16], which physically protects them from disinfectant action. Decontamination procedures can also increase the risk of release of organisms from biofilms and increase the numbers of bacteria in the water phase. Smith et al.[17] suggested that dental units should, in fact, be re-designed to minimise the build-up of biofilm.

The fact that yeasts were present in the water distribution system of three of the surgeries tested posed some concern. Certain species e.g. Candida albicans[11], could be implicated in waterborne infection of immunodeficient individuals; fortunately the yeasts recovered during this survey were not identified as Candida albicans. There was no other evidence of opportunistic or true pathogenic strains and typical oral streptococci were not found in the samples, indicating no back-siphonage of such bacteria in the lines. The authors regard this as an encouraging finding. However, Walker et al.[1] warned that no DUWS can be considered "microbiologically clean" - biofilms may seed the water with bacteria and vice versa. The concern is whether these bacteria are potentially pathogenic. Therefore, dental practitioners must be vigilant and every effort must be made to ensure water of potable quality emerges from DUWS.

Conclusion

Microorganisms recovered from the DUWS were not identified as pathogenic or potentially so, yet the presence of high bacterial counts clearly indicated that the water in most cases was not of EU potable standard. It stresses the need for continued evaluation, increased knowledge and long-term solutions for controlling DUWS microbial contamination.

Acknowledgements

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Attitudes of Irish and European dentists to water quality of dental unit water systems

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Precis
A survey revealed that dental practitioners would welcome regular microbiological water tests and clear advice on cleaning/disinfection of the water supply in their dental units.

Abstract
Background: dental unit water systems (DUWS) are used in dental practices to provide water to irrigate the oral cavity. Dental surgeries across the European Union (EU) use DUWS that may be prone to microbial contamination.
Objectives: to determine Irish dental practitioners' attitudes to perceived risk from working with DUWS and their protocols for the management of biofilm in their DUWS and compare these with other European dentists.
Design: a questionnaire was used to determine DUWS types in use, practitioners' attitudes to risks associated with using DUWS and their DUWS management protocols.
Results: there were six different types of DUWS, 40 per cent of which were >5 years old, 42 per cent of DUWS were fed by purified or distilled water. Only four per cent of practitioners carried out microbiological analysis on their water, but 38 per cent indicated that they cleaned or disinfected their DUWS. One-hundred per cent of practitioners were not aware of national/international guidelines for microbial contamination of DUWS but 77 per cent were concerned about DUWS water quality.
Conclusions: the majority of practitioners were working with equipment that is <5 years old. The majority of DUWS were not treated but practitioners were concerned about dental unit water quality and would welcome regular microbiological water tests and clear advice on cleaning/disinfection of the water supply in their dental units. Practitioner attitudes and behaviours were broadly similar in the other European countries studied.

This work was supported by the EC (QLK4 -00097-2000).

Introduction

The water in DUWS is used as an irrigant during dental procedures and as a coolant for high-speed drills. However, the water delivered from these devices has been shown to contain high numbers of bacteria[1-3]. In the USA, a level of 500 colony forming units (CFU)/ml of air-tolerating, free-living bacteria is the upper limit for drinking water[4]. The American Dental Association (ADA) has suggested a standard of 200 CFU/ml, equivalent to that required for dialysis water, as the upper limit for bacterial load for DUWS[5]. The EU has yet to set an equivalent standard for DUWS but the EU guideline for tap water is that it should be delivered at <100 CFU/ml[6]. However, DUWS deliver water that can contain as much as 1.6×10^8 CFU/ml[7]. Such high numbers can result from numerous factors including ambient temperatures and stagnation but primarily from the presence of biofilms accumulating on the inner surface of narrow-bore water tubing[3,8,9]. A biofilm is a reservoir of bacteria adhering to the inner surface of the water line[10]. Biofilms are complex communities of mainly bacterial species embedded in a highly-hydrated polysaccharide matrix exhibiting temporal and spatial heterogeneity. The biofilm can be on average 30-50 mm thick, it can contain a variety of bacteria, amoebae and fungi and is

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covered by a polysaccharide layer which increases its resistance to chemical agents[11]. During almost every visit, the patient and the dental healthcare staff are exposed to the water from DUWS systems that may harbour high numbers of micro-organisms, including pathogens. There is a potential occupational association of dental personnel to pathogens as dentists have been to shown to have a significantly higher antibody titre to L. pneumophila than other equivalent employment sectors[12-13]. There is also a potentially increased risk of exposure to tuberculosis[14-15]. P. aeruginosa has been responsible for patient infection due to a cross-infection incident whilst at a dental surgery[16]. However, while the pyocin typing of the P. aeruginosa from the patients and waterlines were the same, it does not mean that they were the same strain as pyocin typing has poor powers of discrimination. These medical devices have the potential to harbour opportunistic or frank pathogens[17-18] and Legionella pneumophila, Mycobacterium spp, Pseudomonas aeruginosa, Candida spp have been isolated from DUWS. A fatality relating to exposure to Legionella through aerosols from DUWS has been reported[17]. Particular care is needed to minimise microbial exposure to those patients who are immunocompromised as this group is more prone to infections than non-immunocompromised patients[11]. The presence of pathogens has further implications when one considers the risk of cross-infection due to the failure of the 3-in-1 hand piece anti-retraction valve[19]. The carriage of pathogens by asymptomatic patients has implications for cross-infection due to malfunctioning of the water line handpiece anti-retraction valve[19-20].

There have been few studies of dentists in the primary care setting on their level of knowledge and attitudes towards the microbial water quality of the DUWS with which they work on a daily basis. There is limited research on the extent of any perceived risks in primary dental care and there are few evidence-based guidelines to control bacterial numbers in DUWS.

Aims

The aims of this preliminary study were to determine the types of DUWS used by dental practitioners in Ireland, their current patterns of use of disinfection strategies for DUWS, the attitudes of dental practitioners to DUWS contamination and control and compare them with attitudes and practices across Europe.

This study was part of a larger study devised to assess the quantity and range of bacterial contamination in DUWS and included dental practices in Denmark, Germany, Greece, Ireland, the Netherlands, Spain, and the United Kingdom. The co-ordinating partner was the Centre for Applied Microbiological Research (CAMR) in the United Kingdom.

The overall objective of the project was to provide evidence-based, practical guidelines for dental practitioners for the routine control of microbial contamination in DUWS in Europe.

Materials and methods

DUWS were selected for study in dental practices in Denmark, Germany, Greece, Ireland, the Netherlands, Spain, and the UK. This report will focus on the results from the practices in Ireland and comparison will be made with the overall European results. The practices selected were a convenience sample, taken from within one hour's drive of a microbiology laboratory as they also participated in a microbiological study of DUWS. They represented typical practices and included those with DUWS supplied by bottled water, mains water, header tank systems and those fitted with disinfection devices.

The risk-assessment questionnaire was delivered by one of the authors to selected dental practitioners who agreed to participate in the study. The questionnaires were collected one week later.

Dentists were asked to respond to questions designed to determine:

1. the type and age of DUWS
2. the water supply to the DUWS
3. their protocol for cleaning/disinfecting the DUWS
4. the cost of treating the DUWS
5. their opinion about the potential microbial hazard from the dental unit water
6. their willingness to be informed and follow simple advice for the proper maintenance of the DUWS
7. their estimate about the amount of time and money needed to treat their DUWS.

Results

Forty-three dentists were approached to participate in the study and 30 agreed to do so. The questionnaire was distributed to 30 practitioners and 26 replies were returned. Fifteen of the replies were from health board practitioners and 11 were from general dental practitioners.

The dental units (Q1 –Q4)

Nineteen of the dental units were manufactured by A-dec and the remaining seven were manufactured by variety of companies (KaVo, Marus, Dentech, Belmont and Fedessa). Sixteen of the dental units were less than five years old with most of the remainder being older than five years. Two of the respondents stated that their units had anti-retraction devices while 16 did not know whether their units had anti-retraction devices or not.

Water supply to the units (Q5-Q7)

Eighteen of the units had a bottle-fed water supply and the remaining eight had a mains water supply. The majority (14/26) of respondents were not able to provide information on the nature of the chemistry of the water supply to their units. One respondent had undertaken microbiological testing of his/her water.

Cleaning of the DUWS (Q8-Q12)

Twenty-four respondents changed the tip of the 3-in-1 syringe and 11 flushed the water line between patients. Ten practitioners cleaned or disinfected the water lines of their dental unit. The frequency of this activity varied considerably: from between patients for two respondents to annually for one respondent. In 13/18 of reported answers, the dental nurse was the person most likely to carry out this task. Ten respondents specified the products or processes used to clean/disinfect the DUWS, this included bleach, Bio 2000, Orotol or changing the water. Given the potential toxic effects of some of these agents and that their appropriate use is for suction systems it is likely that there may have been a degree of misunderstanding of this question.

Information on cleaning DUWS (Q13-Q15)

Only four respondents had received guidance on cleaning/ disinfecting the water lines in their dental unit and this information was provided by the manufacturers. All respondents were unaware of national/international/EU guidelines for DUWS.

Cost of DUWS treatment (Q16-Q17)

Four respondents quantified the amount of money they spent treating their DUWS per month, the amounts varied from €6.35 to €20.00. Of the seven who specified the amount of time they spent treating the DUWS per month the time varied from half-an-hour to the entire weekend.

Attitudes towards water in DUWS (Q18-Q21)

Seventeen practitioners expressed concern about the quality of the water flowing through their dental unit and one practitioner reported that his/her patients had expressed concern about the quality of the water flowing through the dental unit.
Six practitioners agreed that the quality of the water delivered by their dental unit is the same as that put in. Ten practitioners felt that the water deliver by the dental unit was a potential hazard to themselves and their patients and seven felt it was a potential hazard to their staff.

Evaluation of DUWS (Q22-Q24)

All respondents stated that they would welcome clear and simple advice to ensure the water in their dental unit is of a high microbiological quality and 25 practitioners said they would welcome regular microbiological testing of the water in their dental unit. All respondents agreed that they would follow advice on cleaning/disinfecting of the water supply in their dental unit.

Attitude towards expenditure on DUWS (Q25-Q26)

Five respondents specified how much money they would be prepared to spend on a proposed control regime for their DUWS, the amounts varied from €12 to €50 per month. In terms of time they would be willing to spend on a proposed control regime, the amount of time specified by eight respondents varied from 10 minutes to overnight. The majority of respondents, 17/26, felt that the DUWS should be treated on a daily basis.
The responses to some of the questions are compared to those from the other European participants in the study in Table 1.

Question	Ireland (n=26)	Europe (n=410)
Types of DUWS (n)	6	36
DUWS > 5 years old	40	67
Mains water supply	31	66
Hard water supply	0	42
Practitioner microbial analysis	4	3
Practitioner clean/disinfect DUWS	38	25
Unawareness of guidelines	100	98
Water quality concern	77	65

Table 1: Comparison of results of Irish questionnaire with questionnaire responses in other European countries; Denmark, Germany, Greece, The Netherlands, Spain, United Kingdom, (per cent of those who responded to individual questions*).
*Not all respondents answered all questions.

Discussion

The questionnaire was developed in the UK for an earlier study on DUWS. The response rate was 87 per cent, while the response rate for the EU study as a whole was 59 per cent. The sample size was small (26) and was concentrated within a circumscribed area. The location of the practices was selected as being within one hour's drive of the microbial testing laboratory. The small sample size can be at least regarded as a pilot study and a degree of caution should be exercised in extrapolating the entire results for the entire Irish dental practicing population. However, it should be viewed being part of a larger Pan-European study of microbial evaluation of 237 DUWS in dental practices across Europe[21].

The dental units (Q1 –Q4)

The majority of the dental units, 73 per cent (19/26), were of one type; this was influenced in part by the fact that the health board had recently equipped with this type of dental unit. Across Europe there were 36 types of dental unit. This may be a result of the fact that a much greater pool of dentists were available for the study and also different types of dental unit may have been available in different parts of Europe. Sixty per cent (16/26) of the units in the Irish section of the study were less than five years old, compared to 40 per cent in the rest of Europe.
As part of a subsequent study, 5cm of tubing was to be removed for biofilm sampling. All practitioners who responded had an appropriate amount of tubing for sampling. Forty-three per cent (11/26) of the respondents were able to identify whether they had an anti-retraction device and of this cohort two practitioners

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were able to state positively that their DUWS had an anti-retraction device. Anti-retraction valves prevent suckback in the DUWS. An air turbine handpiece not fitted with an anti-retraction valve has the potential to aspirate 1ml of microbial laden fluid containing an average of $5.4x10^4$ micro-organisms back into the patient's mouth[21]. The use of anti-retraction valves is recommended to prevent the aspiration of contaminated oral fluid and reduce the risk of cross-infection[22-24].

Water supply to the units (Q5-Q7)

Overall, the majority of units were supplied using a bottle-fed water supply. This is in contrast to the responses from the rest of Europe where the majority of units had mains-fed water supply. In the UK, all the DUWS were fed by independent water reservoirs reflecting the requirement of the local water authorities that potential back-siphonage incidents be reduced by removing DUWS from the mains water. Countries such as the Netherlands, Greece and Denmark have more than 98 per cent of DUWS supplied by mains water. In this context, the application of disinfectants is more complex. When responding to the question on the chemistry of the water supply, of the 50 per cent (6/12) who were able to give a response to this question, none stated they had a hard water supply (7200 ppm $CaCO_3$). This was in contrast to the rest of Europe where 42 per cent of DUWS had a hard water supply. A supply of hard water may result in a calcium layer being deposited on the inner pipelines and valves, providing an even greater ratio of surface area to volume for biofilm growth and possibly contributing to early valve failure[25].

A minimal percentage of practitioners, four per cent (1/26), in Ireland and three per cent in Europe, had undertaken microbial testing of their water supply. Difficulties in undertaking a microbial analysis, cost factors or a lack of awareness of how it could be carried out may have contributed to this finding.

Ninety-two percent (24/26) of respondents reported that the tip of their 3-in-1 syringe was changed between patients. The cross-infection measures undertaken by the other two practitioners were not reported.

Cleaning of the DUWS (Q8-Q12)

Forty-four per cent (11/26) of respondents flushed the water-line of their dental unit between patients. The remainder may not have done so because of the perceived time delay involved in a busy practice. While flushing the DUWS for two minutes before treating the first patient in the morning and for 20-30 seconds between patients can reduce the number of micro-organisms in the DUWS[26-27], it may not reduce the bacterial count unless unrealistically long times are used[28-29]. It takes at least three minutes flushing to eliminate the micro-organisms from a three metre water-line. Nevertheless, the British Dental Association recommends that DUWS flushing is an expedient interim measure until more effective methods are introduced[27].

Although 44 per cent (11/26) of respondents stated that they flushed the water line of their dental unit between patients, only 38 per cent (10/26) of respondents stated that they cleaned their DUWS in some manner. This is comparable with 45 per cent of European practitioners who stated that they cleaned their water lines.

Although 38 per cent (10/26) of respondents stated that they cleaned their DUWS in some manner, 46 per cent (12/26) of respondents actually carried out an exercise to clean out the water-lines. This may have been a matter of interpretation as for two of the respondents flushing of the water-lines between patients appeared to them to be sufficient for cleaning the water-lines.

Seventy-two percent (13/18) of those who responded stated that the dental nurse cleaned or disinfected the water-line. One respondent stated that an unspecified company carried out this exercise.

There may have been some confusion in these responses as to whether the practitioners meant they were cleaning the suction or water-lines as some of the cleaning agents cited are appropriate for cleaning suction lines.

Information on cleaning DUWS (Q13-Q15)

Although only 15 per cent (4/26) of practitioners stated that they had received guidance on cleaning or disinfecting their water-lines, 23 per cent (6/26) of practitioners stated that they had received guidance from some source, mainly manufacturers. This discrepancy may be due to a difference in interpretation of direct guidance as opposed to following the manufacturer's instructions. There was a very low level of awareness of guidelines for dental unit water systems with 100 per cent of Irish practitioners and 98 per cent of practitioners in the other European countries being unaware of such guidelines. While there are no EU guidelines per se on water quality in DUWS, there are guidelines for drinking water[6] and there are US guidelines for DUWS water quality[5]. That there are as yet no EU guidelines for DUWS is noteworthy. This EU-funded study may contribute to the development of such guidelines.

Cost of DUWS treatment (Q16-Q17)

Only 46 per cent (12/26) of respondents answered the question on the amount spent on DUWS treatment per month, it may be that the non-respondents were health board employees and not directly involved in funding surgery maintenance. Of those who did respond, four (29 per cent) were able to specify the amount they spent monthly on DUWS treatment.

Twenty-seven per cent (7/26) of practitioners were able to state specifically how long was spent treating their water systems per month. The amount of time varied from 30 minutes to the process being carried out over the weekend. As with the cost of DUWS there was a low response rate. This is comparable to

the wider EU study where approximately half of all dentists do not spend any money (51 per cent) or time (45 per cent) treating their DUWS. This may have been less a reflection of the employment status of the respondents but more that they delegated the cleaning of the DUWS. The dental nurse carried out the cleaning of the DUWS in the vast majority of cases.

Attitudes towards water in DUWS (Q18-Q21)

Seventy-seven per cent (17/22) of respondents who expressed an opinion expressed concern about the quality of water flowing through their dental unit, this compared to 65 per cent of respondents in the other European countries surveyed. Although 65 per cent of European dentists expressed a concern about the quality of water flowing through the dental unit, half of them believed that the quality of water delivered by their dental unit was the same as the water that was put into it. This perhaps indicates that more education and information about microbial growth and the risks from the growth of opportunistic pathogens in the DUWS is required to be disseminated to dentists across the EU. These findings may also have implications for the training of dentists and other dental staff.

Conversely, only one Irish practitioner reported that patients had expressed concern regarding the quality of the water flowing through the dental unit. This may be a reflection of a high level of trust on the part of the patients, a lack of awareness on their part or other issues preoccupying the patients when they attend their dental practitioner. In the other EU countries studied, 96 per cent of patients were not at all concerned about the quality of the dental unit water, these views may reflect the confidence that they have in their dentists to reduced risks in general when they visit the dentists. Similarly, the majority of dentists (65 per cent) did not perceive the water in the DUWS as a hazard to them or their staff.

Fifty-four percent (14/26) of respondents expressed an opinion on the water delivered by their dental unit. Of those who expressed an opinion, six felt that the water delivered by the unit was the same as that put in, while eight did not.

Thirty-eight per cent (10/26) of practitioners felt that the water delivered by the dental unit was a hazard to them, compared to 46 per cent (12/26) who did not. Twenty-seven per cent (7/26) felt the water was a hazard to their staff, compared to 46 per cent (12/26) who did not. With regard to patients, 38 per cent (10/26) felt the water was a hazard to patients and the same percentage felt that it was not a hazard to patients. In the other European countries, 35 per cent of dentists perceived the water in the DUWS as a hazard to them or their staff.

Evaluation of DUWS (Q22-Q24)

All practitioners stated they would welcome advice to ensure that the water in their dental unit was of a high microbiological quality and 96 per cent (25/26) of practitioners stated they would welcome regular microbiological testing of the water in their dental unit. All practitioners stated they would follow advice on cleaning disinfecting of the water supply in their dental unit.

Attitude towards expenditure on DUWS (Q25-Q26)

There was a range of answers to the question on the expenditure in terms of time and money per month a proposed control regime. Two of the respondents felt their employer - the health board - should pay for the control regime, five specified an amount, while four felt whatever was required should be expended on this exercise. Seven didn't know or didn't reply.

In terms of time taken, there were only nine responses, which may be an indication of the level of awareness of the time required. The majority of respondents felt that DUWS treatment should be undertaken daily.

Some of the respondents expressed concern as to what action would be taken if pathogenic micro-organisms were detected. Specific concerns existed regarding who would need to be notified, what would happen his/her practice as well as possible implications for themselves/staff in terms of personal health.

Conclusions

There is consistent opinion amongst the sample of dental practitioners surveyed regarding maintenance of their DUWS. There is some concern about dental unit water quality. Practitioners would welcome regular microbiological water tests and clear advice on cleaning/disinfection of the water supply in their dental units. Practitioner attitudes and behaviours were broadly similar in the other European countries studied.

Acknowledgements

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DUWS questionnaire

Introduction summary to the microbial risk assessment of dental unit water systems in general dental practice project.

The objective of the project is to determine existing patterns of microbial contamination and develop improved treatment regimes for dental unit water systems (DUWS) in general dental practices (GDP). All dental surgeries across the EU use DUWS systems. Currently, there is little knowledge of either the degree of microbial contamination or of its qualitative nature. Risks arising from DUWS, including occupational exposure from such systems across Europe, are therefore unknown. This project will broaden the knowledge base on the risk that DUWS pose to dental personnel and patients. To help achieve this substantial microbiological analyses of DUWS

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will be carried out in GDPs as well as evaluation of disinfection strategies in the laboratory and GDP. The project will provide new substantial knowledge on: total microbial contamination in different DUWS in general dental practice; determination of pathogens present in DUWS; improved methods for controlling microbial contamination in DUWS; the development of pan-European, evidence-based guidelines for control of microbial contamination in DUWS. The countries taking part are Denmark, Germany, Greece, Ireland, Netherlands, Spain and the United Kingdom.

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Dental unit water system questionnaire

Your water system

1. What type of water supply does your dental unit have?
[ ] Mains tap water
[ ] Bottled fed
[ ] Tank fed
[ ] Don't know

2. What type of water is supplied to your dental unit.
[ ] Hard
[ ] Soft
[ ] Don't know
[ ] Other (please specify e.g. distilled or deionised

_____)

3. Have you ever undertaken microbiological testing of your dental unit water?
[ ] YES
[ ] NO
[ ] Don't know what this is

4. Do you clean/disinfect the water lines in your dental unit?
[ ] YES
[ ] NO
[ ] Don't know what this is

5. If yes, how frequently do you clean/disinfect the water lines in your dental unit?
[ ] Daily
[ ] Weekly
[ ] Monthly
[ ] Annually
[ ] Other, please explain

Which member of the dental team carries out the cleaning/disinfecting of the water lines in your dental unit?
_____

6. Please list the product(s) you use to clean/disinfect water lines in your dental unit?
_____

7. Have you ever received guidance on the cleaning/ disinfecting of the water lines in your dental unit?
[ ] YES
[ ] NO

8. If yes, where did you get this information?
Manufacturer:
Local Health authorities:
Other (please specify):

9. Are you aware of national/international or EU Guidelines for dental unit water systems?
[ ] YES
[ ] NO
If yes, please summarise what they are:
_____
_____
_____
_____

Attitudes to DUWS Risk Assessment

10. How much money do you spend treating your DUWS system per month?
_____

11. How much time do you spend treating your DUWS system per month?
_____

12. Are you concerned about the quality of water flowing through your dental unit?
[ ] Very Concerned [ ] No Opinion [ ] Not Concerned

13. Have your patients expressed concern about the quality of water flowing through your dental unit?
[ ] Always [ ] Never

Do you agree with the following statements?

14. The quality of water delivered by your dental unit is the same as the water that is put into the unit?
[ ] Strongly Agree [ ] No Opinion [ ] Strongly Disagree

15. The water delivered by your dental unit is a potential hazard:
a) to you?
[ ] Strongly Agree [ ] No Opinion [ ] Strongly Disagree

b) to your staff?
[ ] Strongly Agree [ ] No Opinion [ ] Strongly Disagree

c) to your patients?
[ ] Strongly Agree [ ] No Opinion [ ] Strongly Disagree

16. Would you welcome clear and simple advice to ensure that the water in your dental unit is of a high microbiological quality?
[ ] Definitely Yes [ ] Definitely No

17. Would you welcome regular microbiological testing of the water in your dental unit water supply?
[ ] Definitely Yes [ ] Definitely No

18. Would you follow advice on cleaning/disinfection of the water supply in your dental unit?
[ ] Definitely Yes [ ] Definitely No

19. If a control regime were proposed, how much money would you be prepared to spend per month?

20. In your surgery the optimum interval for treating the water supply would be:
a) daily [ ] Strongly Agree [ ] Strongly Disagree
b) weekly [ ] Strongly Agree [ ] Strongly Disagree
c) monthly [ ] Strongly Agree [ ] Strongly Disagree
d) other (please specify)
_____
_____
_____

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Management of drooling by transposition of the submandibular ducts and excision of the sublingual glands

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Precis
Management of drooling by transposition of the submandibular ducts and excision of the sublingual glands. Retrospective study (21) of severe drooling showing improvement with surgery.

Abstract
Statement of the problem: persistent drooling is common in patients with neurological impairments such as cerebral palsy. Although it may be induced by an excess of saliva, it usually results from incontinence secondary to impaired cerebral control of oro-facial function. Various techniques, both medical and surgical, exist to combat the problem. The patient should have a course of conservative management initially (head position, education and training, suction aids, bio-feedback and support). Non-surgical managements and medical treatment should start as early as possible. Surgery has a place, when conservative and medical treatments (drugs/botulinum toxin) have failed.
Purpose of the study: patients subjected to some of the more radical surgical methods may develop complications of the procedures themselves, it is important therefore that any intervention is based on sound principles. Physiology predicts that the most benefit would be derived from diversion of submandibular rather than parotid salivary flow (Fig. 1).
Materials and methods: to assess the effect of bilateral transposition of the submandibular ducts combined with excision of the sublingual glands as a treatment for drooling, a retrospective survey of 21 patients was undertaken by contacting their carers and reviewing the clinical notes.
Results: sixteen out of 21 patients had good to excellent control of their drooling with minimal side-effects and low morbidity.
Conclusion: drooling should be managed with a team approach using non-surgical management in the first instance. Surgery has a place and can be beneficial with few long-term side effects. Patients require long-term paedontic/dental follow up to maintain a healthy oral cavity.

Introduction

Drooling (sialorrhoea) is defined as the unintentional loss of saliva or other oral contents from the mouth. It is almost universal in early life, but persistence beyond the age of four years in the awake state is considered abnormal. Although it affects those with many neurological disorders including myasthenia gravis, muscular dystrophy, and mental retardation, it is most commonly associated with cerebral palsy and is estimated to affect between 10-34 per cent of affected children.[1] A disturbance in the complex mechanisms of swallowing, together with a lack of orofacial motor control, results in chronic drooling in these patients.[2] Far from being a mundane problem, this distressing condition has psychosocial and physical consequences. Persistent drooling lowers self-esteem and leads to reduced social interaction. Despite constant care and bib changing, perioral maceration and wet clothing are common. Often these already socially stigmatised people may be shown less physical affection, which furthers their sense of isolation. Aspiration pneumonia and even fluid depletion may supervene.[3]

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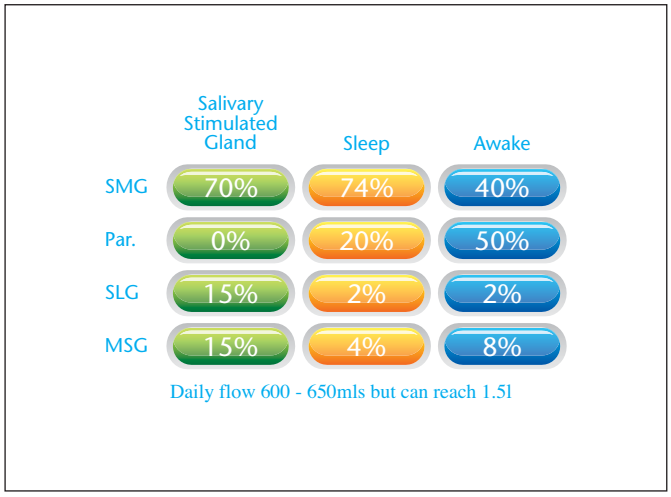

Figure 1: Physiological principals

Figure 2: Head Positioning Technique (requires parental, carer and therapist support)

Various treatments have been proposed to minimise its effects. Positioning techniques (Fig. 2), hypnotherapy, radiotherapy, pharmacological treatments and sensorimotor treatments, as well as surgical procedures have all been described.[4-8] No one option is universally successful.

The goals of surgical correction are to either decrease or eliminate salivary flow, or to alter the site of flow to maximise swallowing. Historically a number of surgical approaches have been advocated: sectioning the efferent parasympathetic supply to the gland,[9] ligation[10] or rerouting (sialodochoplasty) of the salivary ducts,[11,12] excision of salivary glands,[13] or a combination of the above.[14] Each technique has its own merits and pitfalls. In this paper we examine the rationale, procedure and outcome for our chosen surgical technique: bilateral diversion of the submandibular ducts and removal of the sublingual glands.

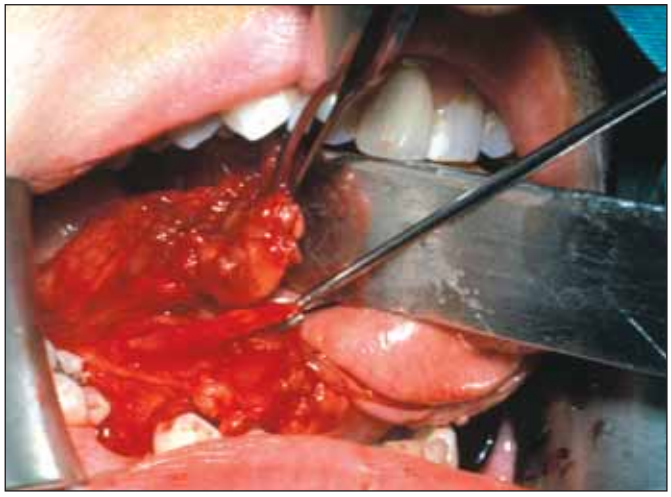

Figure 3: Sublingual gland, submandibular duct and lingual nerve identified

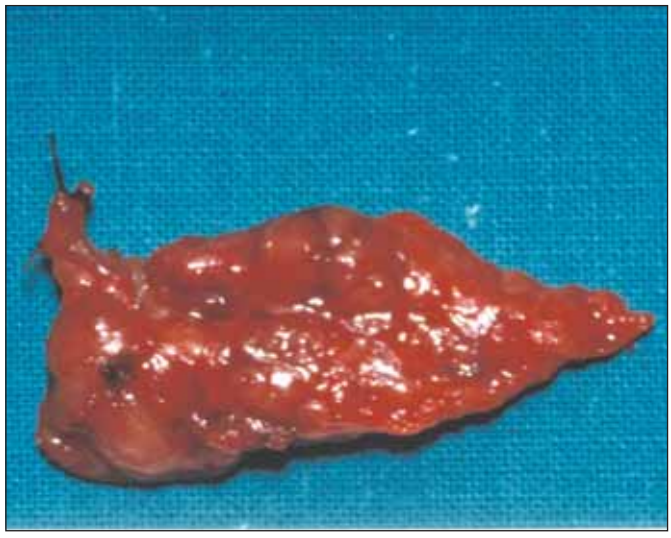

Figure 4: Sublingual gland dissected free

Patients and methods

The case records of all patients who underwent bilateral diversion of the submandibular ducts and removal of the sublingual glands for treatment of persistent drooling over a 30-month period were reviewed. Details analysed included pre-existing disability, previous treatments, postoperative course and complications, in addition to descriptive data. The patient's parents or carers were contacted to assess the long-term outcome (>12 months).

Surgical technique

In each case the operation was done under general anaesthetic with the patient in an anti-Trendelenberg position. After the infiltration of vasoactive local anaesthetic into the surgical site, a mucosal island was raised around the papilla of the

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Table 1: Subjective assessment of drooling

	Before operation	After operation
Dry-mild	1	9
Mild-moderate	1	4
Moderate-severe	7	5
Severe-profuse	12	3
Total	21	21

Table 2: Assessment of the carers' perception of outcome using Crysdale's criteria

Criteria	No. of patients
Excellent	6
Good	6
Fair	4
Poor	5

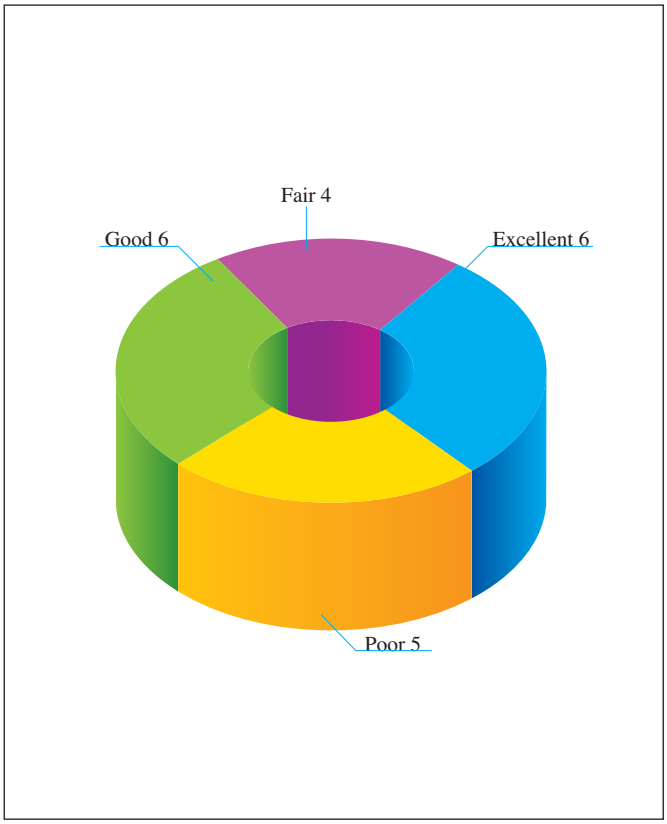

Figure 5: Crysdale and White Criteria 1989

submandibular duct and the incision extended 3cm posteriorly along the medial floor of mouth. The course of the submandibular duct was then identified with the aid of sharp dissection and meticulous haemostasis until the point was reached where it is crossed by the lingual nerve (Fig. 3). After the sublingual gland has been delivered (Fig. 4), a submucosal tunnel was created with an artery forceps to the base of tongue, medial and deep to the anterior pillar of fauces in the vallecula. The patency of this tunnel was maintained using a Howarth's periosteal elevator, and the submandibular duct was gently passed through it facilitated by a suture inserted into the mucosal cuff circumscribing the submandibular papilla. By doing this precise and atraumatic location of the duct to the base of tongue was possible. The duct orifice was left free and the procedure then repeated on the other side.

Results

Twenty-one of the 27 patients identified were contacted successfully. There were nine males and 12 female patients, whose ages at operation ranged from three to 61 (mean 18), 10 were under 10-years-old. Seventeen of the patients had cerebral palsy, and one patient each had high spinal cord injury, epilepsy and Rett's syndrome (Rett's syndrome is a complex neurological disorder, characterised by repetitive hand movements, which affects 1-in-10,000 female births.) The 61- year-old patient was not neurologically impaired but was operated on for intractable drooling of no identifiable cause despite investigation and conservative management.

In nine cases anti-muscarinic agents had been prescribed unsuccessfully, most commonly scopolamine in the form of hyoscine patches. One patient had had speech therapy in an attempt to improve oral musculature control.

The operation lasted between 60 and 120 minutes (mean 82) with 14/21 being completed within 75 minutes. Ten patients were operated on as day cases, eight were discharged the first postoperative day, two were discharged on the second postoperative day, and one after four days because of the home circumstances.

Haemorrhage and swelling of the floor of mouth with a subsequent risk of compromise of the airway is a recognised complication of such operations. Although five of the patients had minor postoperative bleeds, none required surgical intervention and or developed compromise of the airway. No parent or carer reported postoperative swelling within the floor of the mouth

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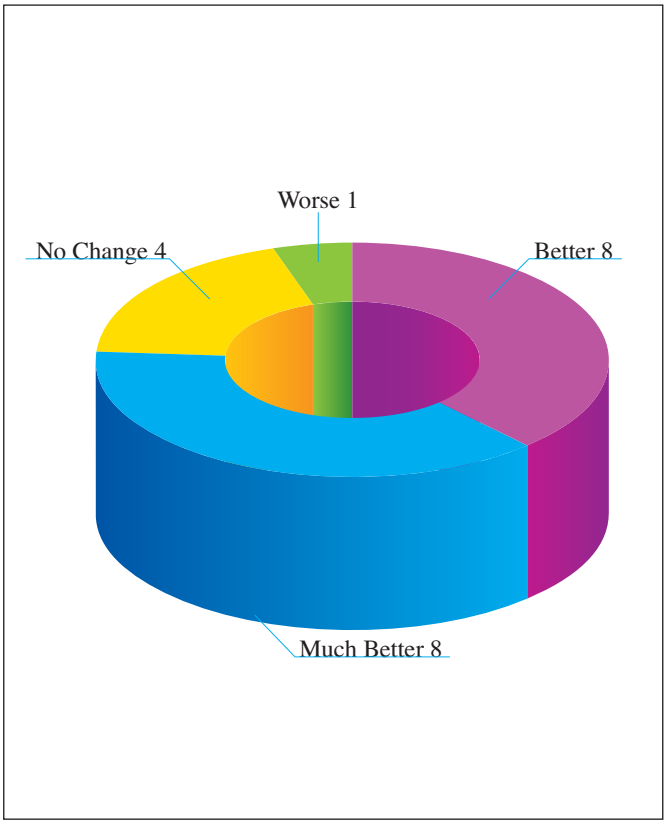

Figure 6: Bailey and Wadsworth Criteria 1985

Figure 7: Physiology of swallowing

Criteria	No. of patients
Much better	8
Better	8
No change	4
Worse	1

Table 3: Assessment of the carers' perception of outcome using Bailey and Wadsworth criteria

or the submandibular triangle. There was no case of damage to the lingual nerve, nor has it been reported by other authors publishing results of this procedure. Although this may be the result of careful dissection, it is likely that this particular group of patients fails to recognise or communicate any change in sensation. Other potential complications result from reduced salivary flow, including xerostomia and caries. We found no sign of either in our series, although a significant increase in the prevalence of caries has been reported previously.[15]
Postoperatively, all patients were reviewed within one month, and again between three and six months, before discharge. Analysis of the outcomes recorded at these visits highlights a universal problem for all studies of drooling - that of measurement. Parents or carers and clinicians will often assess the degree of preoperative drooling and any change noted postoperatively according to the frequency of changes of bib and clothing, making this a qualitative assessment of the patient's drooling. In this study parents or carers were contacted by telephone and asked to provide a subjective assessment of the severity of drooling according to the categories shown in Table 1. This assessment was made a mean of 21 months after surgical intervention. For 17/21 patients, 12 months or longer had elapsed since the operation, while 8/21 had had the operation more than two years previously. While 12 felt that drooling was severe to profuse preoperatively, only three assessed drooling of this severity postoperatively. Because previous workers have attempted to measure qualitative outcomes more specifically, our telephone questioning included two further assessments. Using Crysdale and White's criteria[16] for grading the outcome of surgery (Table 2, Fig. 5), we found that 12 care givers thought that there was an excellent or good outcome, and using Bailey and Wadsworth's system[11] (Table 3, Fig 6) of much better, better, no change or worse, 16 patients showed improvement.

Discussion

Pathological sialorrhoea can be of two types - hypersecretion and neuromuscular dysfunction. The former is relatively uncommon but may be caused by inflammatory, toxic or gastrointestinal disorders. Almost all cases of chronic drooling have at least some degree of neuromuscular dysfunction.
Pronounced dysfunction of oral muscle coordination that hampers the initiation of the swallowing sequence has been identified in children with cerebral palsy and infrequency as well as inefficiency of the swallow contributes to drooling (Fig

Scientific

7). Other contributory factors have been identified, the most important being position of the head, sitting posture, decreased oral sensory awareness, anterior open bite, and reduced patency of nasal airway.[6,7] Though it is important that these factors are identified, one study showed that there was only a 10 per cent improvement in drooling when these factors alone were addressed.[6] Conversely, these attendant factors make it difficult to eliminate drooling completely without inducing xerostomia. The goals of treatment should therefore be to reduce excessive drooling and minimise its possible consequences.

Surgery is only one of the therapeutic options available to the clinician. Biofeedback techniques and behaviour modification have been shown to be effective in the remediation of drooling in children with cerebral palsy.[4] However, long-term concentrated training programmes for highly motivated people would be required to achieve maximum control. Within the context of cerebral palsy, this is rarely achievable.

Anticholinergic drugs have also been used as the primary medical treatment for chronic drooling.[5] Although they are effective, drooling is rarely abolished and side effects often lead to discontinuation of treatment.

For many people, the persistence of drooling despite attempts at a more conservative approach necessitates some form of surgical intervention. The Wilke procedure,[17] bilateral transposition of the parotid ducts and bilateral excision of the submandibular glands, has traditionally been popular. Although effective, it is relatively radical, results in bilateral neck scars, and has a [16] per cent incidence of ductal stenosis.[18] Modification of the Wilke procedure where unilateral[10] or bilateral ligation of the parotid duct[14] replaces transposition has been reported to be technically easier but equally effective. Its success relies on atrophy of the gland, and complications such as chronic sialadenitis and orofacial swellings can develop. Neurectomy has significant otological morbidity with a predictable return of salivary flow secondary to regrowth of parasympathetic fibres.[19]

Transposition of the submandibular ducts was first described by Laage-Hellman in 1969[20] and was later named sialodochoplasty when it was reported by Cranin and Bennett.[21] Since then a number of studies have attested to its consistent long-term results. Ethunandan and Macpherson showed an improvement in 16 out of 19 patients reviewed after a mean of 3.2 years.[22] In 1989 O'Dwyer and Conlon reported an improvement rate of 13/16 with a follow-up range of 6-69 months. O'Dwyer and Conlon's 15-year findings corroborated these earlier results, with patients whose drooling was categorised as mild, moderate or severe preoperatively showing "improvement" in 100 per cent, 95 per cent, and 85 per cent of cases respectively.[23] Fifty parents of the 53 patients who underwent the procedure were happy with the outcome. Burton et al. found that 17 of their study group of 20 maintained their improvement at a mean follow-up time of three years and seven months.[24]

According to physiological principles, efforts to control salivation should be directed towards the submandibular glands and not the parotid glands because the former produce 72 per cent of saliva in the resting state.[24] Both these glands produce largely serous saliva which is of most importance in the stimulated environment. The two per cent of saliva produced by the mucus-secreting sublingual glands can readily be compensated for by the minor salivary glands. Because it is well established that persistent drooling in patients with neurological impairment is not caused by excessive salivary production but results from a defective oral phase of swallowing, it is logical that the submandibular ducts should be transposed into the posterior oral cavity where the involuntary phase of swallowing takes over. At this site gravity may also aid clearance of saliva into the pharynx. Relocation of the submandibular duct reroutes salivary flow; it not only bypasses the specific defects in the oral phase of swallowing but also reduces the morbidity associated with ligation of the duct. It has been postulated that saliva that comes into contact with the base of the tongue may initiate a swallow reflex.

Hotaling et al. sought to assess long term function of the submandibular glands after bilateral diversion of the ducts.[26] Their study of six patients evaluated by technetium scanning confirmed that at least one of the two glands maintained function in all cases at a mean of 43 months postoperatively.

Transposition of the submandibular ducts without removal of the sublingual glands of necessity damages the 15 or so sublingual ducts and is associated with an incidence of mucous extravasation cyst (ranulas) of the floor of the mouth ranging from eight to 12 per cent.[11,16,27,28] Should they occur further operation may be necessary. Most authors who advocate transposition of the submandibular ducts therefore recommend simultaneous excision of the sublingual glands.[15,22]

Drooling causes several unfortunate medical and psychosocial outcomes for the affected patients. Its correction improves self-esteem and is a comfort to patients, parents, and carers alike. Crysdale and White stated that 'the ideal outcome in the management of the neurologically impaired patient with drooling is elimination of drooling whilst maintaining a moist healthy oral cavity'.[16] This balance can be difficult to achieve with many techniques, but to date seems to be achievable with bilateral diversion of the submandibular ducts and excision of the sublingual glands. Our results show good to excellent control of this distressing condition with minimal side-effects and low morbidity. Patients with drooling should be managed in a multi-disciplinary team with therapists, neurologists, paedodontists/dentists and maxillofacial surgeons combining their skills to deliver sustained care for this deserving group of patients.

Scientific

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Abstracts

Incisors

Study of calcium hydroxide apexification in 26 young permanent incisors

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This study was carried out in order to observe the effectiveness of apexification in young permanent incisors. The sample comprised 26 young permanent incisors with necrotic pulp and open apices. The time taken to obtain apical closure, its form and size were analysed in order to find out if closure was influenced by existing pathology or size of apex. The treated teeth were compared with their corresponding contralateral teeth.
The test of McNemar and ANOVA was used and a result of P=0.05 was considered significant. Teeth with pre-treatment apical shapes that were convergent or parallel all resulted in physiological apical shapes after treatment. Eight teeth had divergent apical shapes before treatment. Of these, one had a physiological shape, five ended with rounded apices and two teeth had straight apices post-treatment. Apical closure was obtained in 100 per cent of the cases studied, of these 88.4 per cent needed three to four sessions of calcium hydroxide treatment (an average of 3.23 sessions) in order to obtain apical closure, the average time employed was 12.19 months.
Clinical symptoms resolved in all teeth that presented with symptoms. Preoperative symptoms did not affect outcome. Pathology of the tooth before treatment does not influence the time needed to obtain apical closure.

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Implants

Failed dental implants – clinical, radiological and bacteriological findings in 17 patients

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Aim
The aim of this study was to evaluate the reasons for implant failure in two oral and maxillofacial units in Helsinki. Seventeen patients, who lost 30 implants, were included in this study.

Material and methods
The patients and implants were studied clinically, radiologically and microbiologically.

Results
Most patients did not have any symptom indicating failure; hence, the failures were noticed mainly by the clinicians when instability of the fixture or of the prosthetic reconstruction became obvious. Radiolucency around the fixture was the most frequent radiological finding. Twenty per cent of the fixtures were located in insufficient bone. Ninety-seven per cent of the bacterial cultures were positive, Streptococcus milleri being the most commonly identified aerobic and Fusobacterium nucleatum the most commonly anaerobic bacteria.

Conclusion
The most critical time for success is immediately after prosthetic loading. Hence, implants should be placed in the optimal position to facilitate prosthetic reconstruction and loading.

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Volume 33 (3); Pages 212-217.

Abstracts

Endodontics

Effectiveness of single- versus multiple-visit endodontic treatment of teeth with apical periodontitis: a systematic review and meta-analysis

C. Sathorn, P. Parashos and H.H. Messer

Aim
The clinical question this review aimed to answer is: does single-visit root canal treatment without calcium hydroxide dressing, compared to multiple-visit treatment with calcium hydroxide dressing for one week or more, result in a lower healing (success) rate (as measured by clinical and radiographic interpretation)?

Methodology
Central, Medline, Embase and Health Star databases were used. Reference lists from identified articles were scanned. A forward search was undertaken on the authors of the identified articles. Papers that had cited these articles were also identified through Science Citation Index to identify potentially relevant subsequent primary research.

Review methods
The included studies were randomised controlled clinical trials (RCTs) comparing healing rate of single- and multiple-visit root canal treatment in humans. The outcome measured was healing of radiographically detectable lesions. Data in those studies were independently extracted.

Results
Only three RCTs were identified and included in the review, covering 146 cases. Sample size of all three studies was small; none demonstrated a statistically significant difference in healing rates. Risk differences of included studies were combined using the inverse variance-weighted method (RDPooled = 6.3 per cent; 95 per cent CI: 20.3 7.8).

Conclusion
Based on the current best available evidence, single-visit root canal treatment appeared to be slightly more effective than multiple visit, i.e. 6.3 per cent higher healing rate. However, the difference in healing rate between these two treatment regimens was not statistically significant (P = 0.3809).

International Endodontic Journal. June 2005. Volume 38, Issue 6; Pages 347-355 doi:10.1111/j.1365-2591.2005.00955.x

First molars

Scanning electron micrograph analysis of hypomineralised enamel in permanent first molars

B. Jalevik, W. Dietz and J.G. Noren

Summary
First molars with cream- to yellow-coloured demarcated opacities of the enamel, often in combination with severe loss of substance, are common in many child populations. The aetiology is obscure.

Aim and method
The aim of this study was to study the ultrastructure of the enamel of 10 affected teeth by means of scanning electron microscopy (SEM) in order to gain a better understanding of the clinical appearance and treatment problems of this condition, and to find some clues to its aetiology.

Results
The basic enamel structure with enamel rods and interrod zones was found in porous parts of the enamel, as well as in normal parts, but the packing of the hydroxylapatite crystals seemed to be looser and less well organised in the porous parts. The border between normal and hypomineralised enamel was usually distinct, and followed the direction of the rods. The preserved basic structure indicates normal function of the ameloblasts during their secretion phase, but impaired function during their maturation stage.

Conclusion
Considering the poor etch profile, it seems reasonable to recommend removal of all affected enamel surrounding the cavity, if possible, and to use a glass ionomer filling with its chemical bonding to tooth substrate, when restoring first molars with remaining affected enamel.

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Interview

The Dean speaks out

Professor Noel Claffey the new Dean of the Dublin Dental School and Hospital, plans to introduce some radical changes to the school's current teaching and research policies. But it is not just policies within the school that the new Dean wants to see changed.

Noel Claffey may be softly spoken but he does not mince his words. The new Dean is not impressed with the Government's priorities when allocating funds for public dental services, especially when he sees the most needy in Irish society suffering. "Special care dentistry is horrendously under-resourced," he says. "The dental services that care for physically and mentally handicapped people in this country must be significantly expanded, and it must be done now." Desperately needed funds, instead of being prioritised for the needy, are being directed into areas that, in many cases, are simply serving the interests of an increasingly vain society. The recent spotlight on orthodontic treatment is a prime example. "Fifty years ago it was ok for a politician to have gaps in his teeth, now it isn't. And that's only the tip of the vanity iceberg." Orthodontics, argues Claffey, should not be a health service priority. "They need to take some of the emphasis from orthodontics, which is after all primarily an aesthetic thing, and put more resources into the care of the most vulnerable in society. I'm talking about people with disabilities who are suffering in pain because they cannot access dental services. That's just not acceptable."

The lack of a dental advisor to Government is exacerbating the problem. "We have no Chief Dental Officer in the Department of Health and Children and that is a disaster. The Government isn't listening to what the dental profession is saying because there is nobody there to tell them," says Claffey. "It is not serving the interests of the profession or the people of Ireland if we have nobody in the Department of Health speaking out about the dental health of the nation."

Inadequate resources

The lack of specialist orthodontists in the public sector highlights another pressing problem that Claffey, in his position as Dean, can influence. Training specialists, including orthodontists, is the role of the country's two dental schools. These two establishments - and only these two - are permitted to train dentists and specialists in Ireland. But this is not the reason why there is a shortage of some specialists, despite what the findings of a recent Oireachtas report suggest. "The Dublin Dental School and Hospital would be delighted to train more orthodontists, but we need the staff and the facilities to do it. At the moment we have just one orthodontist teaching and there is just one other in Cork," explains Claffey. "That person has to carry responsibility for undergraduate orthodontists and post-graduate orthodontists and that's just impossible. We need the funding and we need the people."

The economic downside

Indeed, the problem of inadequate funding is perhaps the most startling in a country that has enjoyed such considerable economic growth. "There is also the problem that the disparity in salary, particularly in the early years, between academia and private practice is substantial." Until the situation is remedied and the salaries of public sector employees mirrors that of the private sector, trained specialists will continue to go into private practice at the expense of the public services, says the new Dean.

Clearly politics cannot fail to impact on Claffey's professional life, but his priorities lie elsewhere. First and foremost, Noel Claffey is an academic with a passion for dentistry. Unusually, the 55-year-old Dean intends to remain involved in the clinical side of the busy Dublin Hospital. "I am active in both the academic and the clinical side of dentistry. That would be a little unusual for a Dean here," explains Claffey. "I hope always to lead by example both in clinical and research terms, but that doesn't mean I am going to abdicate my responsibility as Dean."Of course, with the school and infrastructure now in place thanks to the work of his immediate predecessors, Claffey is free to concentrate on the primary aim of delivering on the hospital's three founding functions - providing teaching, treatment and

Interview

If I achieve just one thing as Dean it would be…
"…The continued pursuit of excellence in education methods and clinical teaching methods as they relate to patient care. But of course research would come a very close second."

research. And it is the teaching and research aspects of the hospital that Claffey has plans for. "In certain aspects of dental research and in educational matters in dentistry, Ireland has a good international standing. But I would like to see things improve further. All my life I have strived to make sure that these areas have improved and I hope to continue to do that." But Ireland's economic boom will make achieving that goal problematic. The Tiger economy may have been good for some, especially those in private practice, but it has left the academic world struggling to attract people into this traditionally lower paid sector. "It is more difficult to get people interested in academia; people don't want a relatively low wage for 15 or 20 years before they start to make a decent salary. This is going to be a difficult problem for us to solve in the future," explains the Dean. "I hope that engendering enthusiasm in our undergraduates will eventually lead to more people following the academic path. We also need to facilitate a growth in the numbers at lecturer level and enable them to feel that whatever financial loss they are taking is not too large."

But there are also more deep-rooted problems in the Dublin School and Hospital that Claffey needs to resolve. "It is also my feeling that we have too many chiefs and not enough Indians in the school. We have far too many at very senior level in this school and I would hope to balance that out with a growth in lower level clinical academic staff."

Research and teaching

Research is clearly something close to Claffey's heart. "I want to engender more interest in research amongst my colleagues." The School already has several eminent researchers but the Dean's aim is to grow that number and to see the scope of research widened. How? "By the positive reinforcement of academic curiosity and encouraging a willingness to carry out that research."

The Dean also wants to see a review of the problem-based learning aspect of the curriculum. "Nothing should remain static and we need to evolve the curriculum in line with evidence-based dental education. The evolution in curricula should be directed towards increasing the quality of our product, i.e. dental students, hygienists, dental nurses and post-graduate degree holders." This, he says, will mean getting staff involved in the critical analysis of educational methods. Such an aim is not as difficult to achieve as it may first appear. "Because of our very progressive curriculum we already have a very good name internationally for our educational methods," he explains. "And now it is time to see those evolve on an evidence-based platform."

The Dean has clearly identified several issues affecting not only the school but the wider dental profession. However, he has also identified many of the solutions. It is now a matter of bringing the two together within his five-year term.

The road to becoming Dean

Coming full circle, Professor Claffey studied dentistry at University College Dublin and learnt his professional skills at the Dublin Dental School and Hospital. Some 30 years later, he is now Dean of that school.

After qualifying, Noel followed in his elder brother's footsteps and moved into practice in the mid-70s. "I liked practice because it offered me the chance to be creative and work with my hands. It also offered the chance to interact with people as well as allowing me the opportunity to continually improve my skills. Dentistry allows one to strive for perfection…although, of course, it is never achieved!"

However, academia called and Claffey was encouraged back into the university by his tutors and colleagues who were impressed by his academic record and passion for dental research. There was also another aspect of practice work that failed to spur Noel to remain in his brother's shadow. "Going through my entire life drilling and filling was a daunting prospect for me," he admits. After two years in practice, Claffey answered his calling and returned to the academic side of the profession to study periodontology in Dublin. Four years later, he joined the Irish diaspora and left Ireland for America. Over the next 15 years, he gained the positions of Visiting Professor, Associate Professor and, in 1986, full Professor of Loma Linda University in California. Today, in recognition of his academic works, he retains the title of Adjunct Professor at the Californian University. He is also a member of University's Society of Scholars – a position he was granted because of his published research. Returning to Ireland and his home city of Dublin in 1988, the mild mannered Claffey became senior lecturer and consultant at the city's dental school, which is attached to Trinity College. In 1991, he became Associate Professor at Trinity and the Dublin Dental School and Hospital. Five years later, the Professor of Periodontology was awarded a Fellowship of Trinity for his research at the hospital.

In May 2005, Professor Claffey accepted the pinnacle position of Dean of the School and Hospital – a position he will hold for the next five years.

Practice Management

Delivering a better service through mobile technology

Implementing technological solutions in the medical sector has always been a challenge. This challenge is further heightened with issues focusing on the type of technology to use and patient confidentiality. However, it is undoubtedly true that if the correct technological solution is found it can deliver multiple gains both to patients and to end users.

One sector of the medical profession, the Shared Services - Eastern Region Health Authority (SSER), has found such a solution that has enabled it to provide a more efficient service. The SSER provides 'back office' support services to the Eastern Regional Area and the Area Boards within the geographical area of counties Dublin, Kildare and Wicklow. Dietician services are provided throughout the region and dieticians have to travel to health centres and local GP surgeries throughout this vast area. Physically carrying clients' records to each location has proved to be highly impractical. However, direct access to clients' files is a must for the dieticians. It was a problem that the SSER needed to resolve as it was leading to a range of problems across the provision of its services.

A mobile solution was clearly needed that would allow real-time access to patients' electronic files, while maintaining the high security standards that would be required by the data protection laws. The challenge that the team in Vodafone faced was how to assist the Authority in delivering such an efficient and secure system.

The solution was to use the Vodafone Mobile Connect data card and extend the Virtual Private Network all the way to a dietician's laptop, with full encryption of client data. With this solution, client data remained on the servers and the dieticians could simply access this information if and when they needed it, on their laptop in whatever

Practice Management

location they were treating the patient. The solution represented a great improvement on the traditional paper-based system and the feedback to date has been extremely positive. Requests have already been received to widen the solution to access other applications.
Speaking about the decision to deploy the wireless technology, Eoin Darcy, Senior Project Manager, E-Services Unit of SSER E-Services Unit, said: "Given the importance of the data held, it was essential for us to find a robust and efficient solution that complied fully with data protection laws. The solution represents a great improvement on our traditional paper-based system and the feedback from our users to date has been extremely positive. Requests have already been received by us to widen the solution to access other applications. We're confident that using this technology will deliver significant long-term gains for the Eastern Regional Area."
The Vodafone Mobile Connect datacard slots into the side of any laptop and provides remote access to a company's Local Area Network (LAN), office email and business applications from a laptop while on the move. It is easy to use and provides a simple, integrated and secure means of accessing information and data anytime, anywhere, enabling users to work more productively and effectively when on the move. Commenting on the Authority's use of the mobile technology, Owen Gibney, Government Account Manager in Vodafone Ireland, said: "We were delighted to have been able to assist the Authority to find a solution to meet their mobile communications needs. This use of the Mobile Connect datacard is just one of a number of examples of ways in which Vodafone has been working with the public sector to increase efficiencies, boost productivity and improve peoples' working lives."
The completion of the roll-out of Vodafone's Mobile Connect datacards to dieticians in the Eastern Regional Area has provided them with secure, real-time access to client data while on the move. Using the Vodafone's network and datacard, dieticians employed by the SSER can now avail of real-time access to client records when working from regional health centres or GP surgeries. For thousands of patients, including those with anemia, arthritis or diabetes, this service has made a great difference to their lives. Time spent in clinics has been drastically cut and dieticians now have complete access to their entire client's records and therefore can provide a more detailed prescription.
Advanced technology has worked hand-in-hand on many occasions with medicine. Mobile technology solutions such as this can also work in partnership with medicine and provide a real difference to the quality of service and to patients' lives.

Practice Management

Personal pensions

Once the summer holidays are over and the kids go back to school, our minds start to drift towards seasonal topics such as Halloween, Christmas and of course, tackling the annual Revenue tax return.

Most accountants will tell you that October and the first two weeks of November are the most stressful and busiest times of their year. Whilst the rule states that annual returns must be sent to the Revenue by October 31, the average accountant must feel that every one of his/her clients believe that the return must be made on October 31 each year!

But for those of you who have private practice income, one conversation that you might have with your accountant will concentrate on how much your tax liability for the previous calendar year is, and ways in which you might be able to reduce the amount of tax you pay. One of the most common ways is via the payment of a Personal Pension Contribution (or AVC), which can be "thrown back" to the previous calendar year in order to reduce the tax payment due in that year.

This in itself is a reasonably easy concept to understand but it does raise its own challenges, such as once the investment has been made, what does one do with the money for the next number of years? At this point, many investors start to get a negative feeling about the whole idea about paying money to some faceless insurance company that is likely to give them very little control over where the investments are made and, to cap it all, give them very little idea of how much money they are going to charge them for the privilege of looking after their money.

Is there any wonder therefore that most self-employed professionals look upon this type of financial planning as primarily a method of keeping 42 per cent of their income out of Mr Cowen's clutches and not as a valuable method of helping the client achieve their ultimate goal of financial freedom?

What most lump sum personal pension plan investors do not realise, however, is that they do indeed have a choice as to whether they control where their money is invested and, indeed, have a full right to know exactly what charges and fees are being deducted from their investment on a regular basis. No longer do they have to accept that their pension monies are simply to be viewed as a hit or miss investment and that it doesn't matter how the investment performs because it only cost them 58 per cent of the investment in the first place. An examples of this new found freedom is of syndicates formed to purchase specific "bricks and mortar" investments whereby the investor is fully appraised not only about what type of property is involved but where it is, who the tenant is, the conditions of the lease and the specific yield relating to that particular product.

That said, the vast majority of monies have been and are still invested in the internal funds of the life assurance company and are referred to as "managed funds" or "equity funds". This is more by default than any other reason due simply to the fact that whilst most Irish insurers will provide access to property investments, these are linked to commercial property rather than residential property and very rarely tend to provide the types of return that can be obtained outside of the product itself.

In my opinion, however, for many investors an unintentional restriction of the investment industry to primarily "equity based" investments is no bad thing and the reason for this is because most Irish personal pension plan investors hold assets outside their retirement planning vehicles that are linked to property. Whilst this will undoubtedly have provided significant returns over the past 10 years, the old adage of don't put all of your eggs in one basket still holds very true.

If most pension fund monies are invested in often very poor performing, expensive insurance company funds and yet we agree that exposure to equities is prudent from a balancing ones portfolio point of view, are there any alternatives? Yes is the basic answer. For example, recent developments in both contract structure and the legislation that governs the conduct of this type of investment now allows not only access to other equity linked investment media within the personal pension plan itself but also a certain level of gearing is now available.

For example, it is now possible, to access an investment that offers a link to the major world stock market indices (i.e., no management of the funds is present – don't forget the vast majority of fund managers do not exceed the performance of the indices themselves, yet you are paying them to manage your money) with a 100 per cent capital guarantee on your money. In addition, certain products will permit a gearing of the investment with interest payments being made from pre-tax money. Now the good old personal pension plan is becoming a little more interesting.

So the next time you are looking at your personal pension plan statement with a furrowed brow asking yourself the question "notwithstanding the tax relief I have received, is this investment providing real value for money for me?" Pick up the telephone to your adviser and challenge him/her on the points raised in this article.

Michael Gowen, QFA
Financial Planning Manager
Tel: 01-6148000

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Thomas Steen Nielsen
General manager/Heka Dental

Heka Dental – Scandinavia's #1 Dental Chair & Unit Producer

In 1975 my father Stein Nielsen launched Heka Dental® as a supplier of equipment solutions to the Scandic nations.

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We are confident that in partnership with the excellent team at The Dental Equipment Centre – Cork, that Irish dentists will not only get a superb product with an extra long life span, but also first class service & support in the process.

Thank You for Your Time.

22423

Practice Management

Dentists and self-administered retirement trusts

Unlike typical pension schemes where your money is invested in off-the-shelf products by a life assurance company, a self-administered retirement trust (SART) gives the beneficiary total control over the choice of investment made, which, unlike the typical pension scheme, can include investing in property.

SARTs can only be established where an employer/employee relationship exists. For example, an owner/director of a limited company is entitled to establish a SART for him or herself, because he/she is an employee of that limited company.

As dentists are typically self-employed, this avenue is not normally available to them. However, it's not uncommon for a dentist's spouse to work in the practice as a salaried employee and this presents an opportunity for the dentist (as employer) to establish a SART for his/her spouse (as the employee). This will ultimately benefit them both, as it provides an opportunity for the dentist to make substantial transfers from practice income, tax free, to the spouse's SART, thus substantially reducing the amount of income tax the dentist pays.

Amounts that the employer/dentist can transfer to a SART

The amounts that a dentist can transfer to an employee's SART are expressed as a percentage of the employee's salary (nb salary includes any bonus and benefit-in-kind). As a general guide, the amount that can be transferred to a SART for an employee aged 50, is over 200 per cent of salary; if he/she is aged 45, the amount is over 150 per cent; and for an employee aged 40, the amount is over 125 per cent.

What can SARTs invest in?

SARTs can invest directly in all types of property or equities. Here we take property as an example. Under the terms of the 1972 Finance Act, it is possible for SARTs to invest in any property (residential or commercial), free of Income Tax or Capital Gains Tax. In addition, all rental income and capital growth is tax free, i.e. no income tax or capital gains tax whatsoever is payable.

There is no restriction on the type or location of property that can be purchased and as such it is totally unlike the various "Urban Renewal/Seaside Resort" schemes where quite often, a premium on the property value is paid for the benefit of the tax relief.

For example, most people invest in property with their after-tax salaries, thus reducing the amount available for investment by 42 per cent. By using SARTs, 100 per cent of tax-free funds can be made available for property investment. The following example will highlight this:

A SART purchases a property for €500,000 for a period of 10 years, assuming a modest growth rate of say seven per cent per annum, in comparison to €500,000 taken in salary and invested after tax in a property at the same growth rate and over the same period. This would show that the property value within the SART would increase to €674,000, compared to €484,000 for the property outside the SART. This example highlights the huge difference in growth that can take place when an investment is made within a SART. (We have assumed that income tax rates stay consistent throughout the ten-year period)

An additional advantage with SARTs is that the 2004 Finance Act allows bank borrowing to finance the purchase of property.

A summary of the legislation relating to SARTs

1 An employee is allowed to purchase property within a SART, which is established on his/her behalf by the employer.
2 Funds to purchase the property can now be transferred from the employer to the employee's SART tax-free, through the employer's profit and loss account as a trading expense, therefore reducing income tax in the year of payment. In addition, the employee is also exempt from income tax for the transfer.
3 The SART is totally tax-exempt and does not pay any income tax on rental income received from the property, or capital gains tax on any property growth.
4 SARTs are individually approved by the Revenue, and the only rule is that the property investment must always be at "arm's length" (i.e., where all investments must be with third parties).

Summary

Although dentists may have believed that a SART was an avenue previously unavailable to them, it can be seen from the above that it is possible for them to avail of its advantages by establishing one for their spouse who works in the practice. Establishing a SART allows considerable scope for tax and financial planning and provides the opportunity to invest substantial funds in property in a very tax efficient way.

Michael Gowen, QFA
Financial Planning Manager
Financial Engineering
Tel: 01-6148000

Practice Management

LED Light-Curing Units

THE DENTAL ADVISOR evaluates and rates dental products and equipment by objective clinical and laboratory protocols. Clinical evaluations, comprehensive long-term evaluations, product comparisons and specialty reports are published ten times per year.

This month's feature of
THE DENTAL ADVISOR
is taken from the
July/August 2004 issue,
Vol. 21, No. 6.

Editors
John W. Farah, D.D.S., Ph.D.
John M. Powers, Ph.D.

Email
info@dentaladvisor.com

Web site
www.dentaladvisor.com

Several generations of LED (light-emitting diode) light-curing units have been introduced over the last few years. The 1st-generation of LED lights generally were low in intensity and did not cure materials completely. The diodes were designed to activate CQ (camphorquinone) initiator around 460 nm. However, alternative photo-initiators used in bleach shades and incisal (translucent) shades of composites and in sealants and bonding agents are not activated by these "blue light" units. The 2nd generation of LED light-curing units (bluephase, Elipar Freelight 2, L.E. Demetron 1, radii, Allegro, SmartLite iQ, the CURE) have a single, high-powered diode with multiple emission areas. These units have a large surface area of emission and high-energy output. The 3rd generation of LED light-curing units (UltraLume 5) have two or more diode frequencies and emit light in different ranges to activate CQ and alternative photo-initiators.While most dentists (over 60%) are still using quartz-tungsten-halogen (QTH) light-curing units with the remainder using LED (less than 20%) and plasma-arc (less than 20%) light-curing units, the convenience of the LED units is making them increasingly popular.

Advantages

- Battery powered • Portable – compact, lightweight
- Energy-efficient – long battery life • Low emitted heat
- Durable – diodes last 5,000 hours

Disadvantages

- Narrow spectral range – most units only work with CQ initiator
- Heat generated in chip

Clinical Notes

Light emission

- Glass-fibered tip – less spread of radiation with increasing distance and more uniform distribution of power over the irradiated area
- Small plastic lens in front of the uncovered diode – light may not be uniformly distributed
- Uncovered diodes – output pattern varies the most with tip-to-tooth distance and is probably the least uniform
- Observe the pattern of light distribution over an area and relate this pattern to how far to hold the tip away when exposing

Openings or gaps in light unit housing

- Openings may allow disinfectant fluids to enter the unit and possibly degrade the electronics over time – clean with care

Weight (exclusive of battery)

- Indicator of an internal heat-sink capability – greatest detriment to diode life is overheating
- Increased diode temperature results in decreased output
- More expensive units use internal fans or large metallic components to draw heat away from the diode as the light is used
- Less expensive units shut themselves down to avoid overheating

Heat – In curing unit and in tooth

- High-power units get hot internally, having the potential to damage a patient's lip, tongue, or cheek
- Units heat at target based on "photo-thermal effect" resulting in a rise of intrapulpal temperatures with no infrared energy present
- Run unit through a number of sequential, repeated exposures and sense temperature to gauge amount of heat at housing and tip

Practice Management

Smartlite iQ (DENTSPLY/Caulk)

Allegro (Den-Mat)

THE DENTAL ADVISOR Recommends: Smartlite iQ (98%), Allegro (97%), L.E.Demetron 1 (96%) and Elipar Freelight 2 (94%)

Product	Company	Cordless	Built-in Radiometer	Weight	Extra Battery	Spectra Wavelength Range, nm*	Cost	Clinical Rating
bluephase	Ivoclar Vivadent	Yes**	Yes	9.5 oz.	Yes	430-490	$1,350	ce
Coltolux LED	Coltene Whaledent	Yes	No	2.2 oz.	No	450-470	$767	ce
Elipar Freelight 2	3M ESPE	Yes	Yes	7.8 oz.	No	430-480	$1,350	94%
Flashlite 1001	Discus Dental	Yes	Yes	3.6 oz.	No	465-475	$695	na
Smartlite iQ	DENTSPLY/Caulk	Yes	Yes	8 oz.	No	430-475	$1,230	98%
L.E.Demetron 1	SDS/Kerr	Yes	Yes	12.9 oz.	Yes	450-470	$1,333	96%
radii	Southern Dental Industries, Inc.	Yes	Yes	5.4 oz.	No	440-480	$695	ce
Allegro #033959000	Den-Mat	Yes	Numeric value	12 oz.	Yes	415-490	$995	97%
Allegro #033960000	Den-Mat	Yes	No	12 oz.	No	415-490	$695	na
the CURE	Spring Health	No	No	1.5 oz.	n/a	450-490	$499	ce
TPC Uni-LED	TPC Advanced Technology	No	No	2.7 oz.	No	450-490	$359	na
UltraLume 5	Ultradent	No	No	12 oz.	n/a	375-500	$999	na

**As reported by the manufacturer.*
***This product has an optional AC cord.*

Editors' Note: The Allegro is now available with a glass tip as well as two acrylic tips.
na = not available, ce = currently evaluating
Costs are listed for comparison only and are not used to calculate the ratings; all costs shown in US dollars.

Battery

- Lithium-ion - longer charge, no memory effect, 40% more capacity than Ni-Cad
- Nickel-metal-hydride (Ni-MH) - less memory effect and greater capacity than Ni-Cad
- Nickel Cadmium (Ni-Cad) - older technology, must use battery until drained before recharge or develops a "memory effect"

Corded vs cordless units

- Corded units - no recharge time, no worry about battery
- Cordless units - must have a ready supply of batteries for operation. Most well-made units on the market today will have enough power (on a full charge) to work for an entire day without the need to recharge, but placing the unit onto its recharger between patients will help maintain maximum battery power. It is a good idea to select a light that comes with an extra battery or optional AC cord

Ergonomics

- Pencil grips - easy use of many controls with one finger
- Gun - familiar, requires adjusting controls with two hands
- Cordless units - battery size, weight, and positioning affect unit balance and ease of use
- Corded units - balance between unit and cord weights affects holding comfort
- Investigate the ability to place tip easily in difficult-to-reach regions

Curing time

- Shorter curing times may be possible - depends on intensity of light-curing unit, composite, and shade
- Do a test cure with your own materials to ensure proper curing time

Intensity Readings

- Wide variation in output values among lights for given manufacturer
- Radiometers only give a relative indication of output for that light over time
- Comparison of output values between LED and other light types is not valid
- Difficult to determine area over which output is being generated - thus many numbers are not appropriate

Classifieds

Classified advert procedure

Please read these instructions prior to sending an advertisement. Below are the charges for placing an advertisement for both members and non-members. Advertisements will only be accepted in writing via fax, letter or email (fionnuala@irishdentalassoc.ie). Non-members must pre-pay for advertisements, which must arrive no later than November 7th, by cheque made payable to the Irish Dental Association. If a box number is required, please indicate this at the end of the ad (replies to box number X). Classified ads placed in the Journal are also published on our website www.dentist.ie within 48 hours, for 12 weeks.

Ad	**members**	**non-members**	
Length of ad	up to 25 words	€75	€95
Length of ad	26 to 40 words	€90	€110

Non-members must send in a cheque in advance with their ad

The maximum number of words for classified ads is 40. If the ad is in excess of 40 words, then please contact:

Rebecca Markey
IFP Media, 31 Deansgrange Road, Blackrock, Co Dublin
Tel: 01-2893305 Fax: 01-2897546 Email: rebecca@ifpmedia.com

Full-time positions vacant

Associate wanted to join modern multiple practice in Ballinasloe, Co Galway. Tel: 086-8095809.

Associate dentist required for busy north Dublin practice, only five minutes from Dublin airport, to replace departing colleague. Full book in excellently equipped, well established practice. Tel: 087-9973132.

Dental associate required for long-established busy dental practice in southeast to replace departing colleague. Full-time position for immediate start. Four surgeries, OPG, hygienist, VT, full support staff. Two hours Dublin/two hours Cork. Tel: 087-2507830 or email rogersdental@eircom.net.

Full-time associate required for busy north Dublin surgery to replace departing colleague. Start September 2005. Full book, newly equipped surgery including OPG. Tel: 086-3844129.

Full-time associate required for modern practice in Carrick-on-Shannon, Co Leitrim. Established book, digital OPG. Hygienist. New premises. Contact Peter: 086-1608426.

Associate required with view to share for established, busy, east coast Co. Wicklow practice. Easy commute from Dublin. Tel: 087-2748584.

Experienced dental surgeon required to replace departing colleague. Excellent opportunity to join long-established modern practice. Tel: 086-8557173 for details.

Dental associate wanted to join long established northside (Dublin 9) dental practice. Contact +353-1-8572120 or +353-1-8373714.

Experienced associate wanted for busy Dublin 6 practice to cover maternity leave from October 2005 to February 2006. Tel: 086-6024243 after 6pm.

Dental associate wanted, full-time, modern practice, west Dublin. Tel: 086-2245017.

Experienced dental surgeon required to replace departing female colleague. Long established dental practice Midland town. Full book. September start. Tel: 086-8536342 any evening after 8.00pm.

Dental associate sought for established practice in County Wexford. Well established practice in modern building. Phone: 087-2054077 after 6pm.

Co Galway. Associate required for busy modern practice in Clifden, Galway (one hour from Galway city). Tel: 087-9972877 (evenings).

Associate required for Dublin 2 practice with a view to partnership. Tel: 087-2322384.

Associate dentist wanted for very busy, purpose-built practice in a rapidly expanding town one hour south of Dublin. Fully computerised, digital x-ray including latest OPG, and fibre optics. Contact: 086-1984592 (day) 0502-47330 (evenings).

Enthusiastic dentists required for full-time positions in newly equipped surgeries in the picturesque coastal town of Harwich. Comfortable and friendly surrounds with good remuneration. Positions available from August 2005. For further info Tel: 0944-7740067895. Email sayeedparker@hotmail.com.

Unique exciting opportunity to join thriving dental practice 10 minutes from Galway City. Full book, excellent support staff. Tel: 086-8205838.

Associate dental surgeon and dental hygienist vacancies in long-established multiple practice Co Fermanagh, Ulster Lakeland. Private and NHS. Full range, restorative, implants, cosmetic etc. Starting date: August 2005. Tel: from Republic of Ireland 048-677-21459 or 048-663-22983, fax 02866-387277.

Senior dental surgeon required - special needs HSE, northeast area. Permanent post. Candidates should be registered with the Irish Dental Council and have three years' experience in public health/hospital dentistry. Salary €68,157 - €87,020. Informal enquiries - 042-9332287.
Application forms - 046-9076452.

Dental associate required to cover maternity leave October onwards, full or part-time in a busy north Cork, two-surgery practice. Tel: 063-81088 (day)/087-7671515 (evening).

Positions vacant part-time

Newbridge. Experienced dentist required Wednesday and Thursday. Must have good ability in endo/restorative. Refs essential. Start mid-August. Tel: 045-441812 evenings.

Dental hygienist required for sessions in busy modern practice in west Galway. Tel: 087-9972877 (evenings).

Dental hygienist required in well-established dental practice in Drogheda one day per week. Full appointment book. Tel: 041-9846333 daytime or 041-9830586 evenings.

Dental associate wanted two days per week in Cork city suburbs. Tel: 021-4966379/087-6294454.

Part-time associate required in Ennis for 2/3 days per week. Modern premises, full days, taking over from departing colleague. Tel: 065-6821547.

Cork county. Locum dental associate for six-month maternity cover from December. Three days per week. Optional late evening and Saturdays. Tel: 087-7414060 (evenings).

Dentist required for private company work. 1-2 sessions per month. Regular guaranteed service required. Replies to Box No. J305.002.

Part-time associate required for busy Galway city centre practice. Apply with CV to Dr Vincent O'Connor, 14 Eglinton Street, Galway, Email:vincentoc@eircom.net.

Part-time associate required Dun Laoghaire practice. Private and Social Welfare. Monday and Thursday 8am-6pm. Potential for further days. Start Oct 05. Contact Tara 01-284 2344.

Dental associate required for permanent part-time position in a very busy north Cork two-surgery practice, half-hour from Limerick three-quarters of an hour from Cork. Immediate start available. Reply: 063-81088 (day)/ 087-7671515 (evening).

Classifieds

For sale

Cork city centre. Long-established single-handed general dental practice in very attractive leasehold premises, with parking for principal. Excellent equipment including OPG. Potential to expand. Phone: 087-6390009.

Dublin city three miles. Thriving area; three surgeries, OPG. Leasehold full planning. Excellent loyalty. Long established. Huge new patient numbers. Flexible options. Price negotiable. Contact: 086-8075273.

Waterford. Very busy dental surgery for sale. Three-bed house (Freehold) with garden. Free parking. Adjacent to shops, schools and church. Tel: 086-3478431 or 051-384250.

Practice for sale in busy mid-west town. Quick sale desired. Email kortho@oceanfree.net for further details.

Midlands (Carlow region). One-man dental practice for sale. Well established. Fully private and PRSI. Large potential for expansion in rapidly growing area. Excellent opportunity. Tel 087-6826840 after 7pm only.

Position sought

Friendly, vocationally trained UCC graduate seeks full-time position in the Cork region. Commencement date August/September '05. Tel: Elizabeth 086-8680156 after 5pm.

German doctor orthodontist (MSc), age 39, offers his service to an Irish dentist/colleague up to approx. 10 days per month. Payment acc. to agreement. Preferably in a town with good flight connections. Contact: email: rheu@arcor.de or tel: 00 49 172 5204330.

Experienced dentist seeks associate position in the Dublin area. Tel: 0044-78-54071877 evenings.

Associate with six years' experience seeks part-time position in busy practice Portlaoise/Kildare region. Available for immediate start. Willing to travel. References available. Tel: 087-9819918.

Irish Manchester graduate seeks position in either Dublin or Galway. I am also an experienced orthodontic assistant. Tel: 0044-7967-202229 evenings.

Experienced dentist seeks associate position in Tipperary, Limerick or North Cork area. Tel: 087-6324044.

Experienced dentist, 15 years qualified, previous private practice owner, seeks locum/associate position in a quality orientated practice, Dublin city/area. Tel: 086-3477450.

Two dentists seeking associate positions in the Dublin area. Previous experience as VTs and associates in the UK and currently working as locums in Ireland. Available to start in September. Tel: 087-6289357 or 059-8634419 (evenings).

For rent/lease

Specialists: Referral-only surgery available to rent on a sessional basis in south Dublin. Tel: 087-6329204.

Dental centre, Drogheda, for lease. New purpose-built dental centre on Drogheda's prestigious southside. Ample parking. Adjacent to three-doctor medical centre, large primary school, supermarket, crèche, restaurants and pub. For further information contact Dr Joseph Murphy on 087-9650362.

Part-time (five half-day sessions per week) practice for sale or rent in good area of Tallaght. Dentist approaching retiring age. Replies to Box No. J305.001.

Newly-built private clinic. Long established practice in Dublin 10. Rooms/suite to rent. Tel: 01-6266334.

Autumn 2005 quiz

A 29-year-old single, female patient presented with three such lesions to the dental school. One affecting the right maxilla, one the left lower alveolus and the third right lower molar area. She has a history of chronic renal disease for which she is undergoing dialysis. Clinically the teeth were mobile. What is the likely diagnosis? What investigations would you undertake?

Submitted by
Dr Gary Leonard B.Dent. Sc FFDRCSI and Dr Andrew Norris
BDS MFDS

Answers to:
Autumn 2005 Quiz
IDA House
10 Richview Office Park
Clonskeagh Road
Dublin 14

The answer to the Summer 2005 Quiz:

'What is the abnormality shown in the picture opposite?' is:
The healing powers of the mouth are truly remarkable. You would normally see Wharton's ducts in this view of the floor of the mouth, but they are missing! This patient has had bilateral submandibular gland, sublingual gland and floor of mouth clearance for malignancy.

Thanks to all those who entered the summer competition, however, there was no winner.

Diary of events

September 2005

Sixth International Orthodontic Congress and Third Meeting of the World Federation of Orthodontists
Date: 11-15 September 2005
Venue: Paris, France

Discover Your Roots -Twelfth Biennial Congress, European Society of Endodontology
Date: 15-17 September 2005
Venue: Trinity College Dublin, Ireland
For further information contact anne@abbey.ie or www.abbeyconference.com.

Medicine 2005
Date: 19-22 September 2005
Venue: Minsk, Republic of Belarus

BaltMedica, International Exhibition of Medical and Laboratory Equipment, Pharmaceuticals, Dentistry, Optics and Wellness
Date: 22-24 September 2005
Venue: Vilnius, Lithuania
For further information contact medica@liteexpo.lt.

Karma Dental - Contemporary Bondodontics "Aesthetics with minimal invasion and adhesion"
Date: 30 September 2005
Venue: Great Southern Hotel, Dublin Airport
One-day lecture by Dr Raymond Bertolotti. For further details tel: 01-8376296 or email karma@eircom.net.

October 2005

International Dental Showcase
Date: 6-8 October 2005
For further details go to www.dentalshowcase.com

ADA - American Dental Association Annual Meeting
Date: 7-10 October 2005
Venue: Philadelphia, Pennsylvania, USA

Czech Annual International Congress - Prague Dental Days 2005
Date: 12-15 October 2005
Venue: Zofin Palace, Prague, Czech Republic
Includes an extensive scientific and social programme. Registration is from €350 for non-member dentists to €30 for accompanying people. For more information go to www.dent.cz.

Identex
Date: 21-22 October 2005
Venue: The Pavilion, Leopardstown Racecourse, Foxrock, Dublin 18
Contact General Secretary, tel/fax: 041 9838210 or email: aidi@iol.ie.

Global Mission of Advanced Implantology - Insights and outlook
Date: 22- 23 October 2005
Venue: Pacifico Conference Center, Yokohama, Japan
Contact Global Oral Implant Academy, email info@goia.org.

Oral Cancer - The Patients Journey
The Faculty of Dentistry, Royal College of Surgeons in Ireland
Date: 27-28 October 2005
Venue: Faculty of Dentistry, Royal College of Surgeons in Ireland
Queries to facdentistry@rcsi.ie.

IAPD Frontiers of Paediatric Dentistry
Date: 31 October to 5 November 2005
Venue: Sydney, Australia
Hosted by the Australian and New Zealand Society of Paediatric Dentistry. www.iapd2005.com or info@iapd2005.com.

November 2005

Association of British Oral and Maxillofacial Surgeons Annual Meeting
Date: 9-11 November 2005
Venue: Alexander Hotel, Dublin
Sponsored by Astra
For further information contact Dr David Ryan
email: davidryan@dental.tcd.ie

Health Board Dental Surgeons Seminar
Date: 16-18 November 2005
Venue: Newpark Hotel, Kilkenny
For further information contact Joan Bracken,
tel: 01-2830499
email: joan@irishdentalassoc.ie.

Greater New York Dental Meeting
Date: 25-30 November 2005
Venue: New York, USA

December 2005

First International Workshop of the International Cleft Lip and Palate Foundation
Date: 3-6 December 2005
Venue: Balaji Cranofacial Hospital & Research Institute, 30, K.B. Dasan Road, Teynampet, Chennai, India.
For details contact www.cleftworkshop.com.

March 2006

The Twelfth International Dental Congress Of The Egyptian Clinical Dental Society
Date: March 22-24, 2006
Venue: Cairo, Egypt
Themes include: anesthesiology, emergencies, endodontics, flouridation, implantology, oral medicine, oral surgery, orthodontics, pedodontics, psychology, prosthodontics, radiology, geriatric dentistry, operative dentistry, prevebtive dentistry, and dentistry and systenic diseases. A comprehensive dental exhibition will run concurrently with the congress. For more information go to www.egycalendar.com/ecds12.

April 2006

Irish Dental Association Annual Scientific Conference
Date: 27-28 April 2006 Pre-conference courses Wednesday, April 26, 2006
Venue: Ballsbridge, Dublin
Dublin Dental Hospital - hands-on and live surgery demonstrations

Dear colleagues,

It is September and it is time to look forward to the Public Dental Surgeons Conference. This year we return to ever-popular Kilkenny. The number of delegates that attend continues to increase, and we hope that even more will travel following last year's successful conference.

This year we have an excellent line up of speakers covering a wide range of topics. Dentists should note that this year's conference has been awarded 11.25 accreditation points.

Wednesday starts off with solicitor, Una Doyle, a specialist in medical claims, talking on consent and written records. This will be followed by a talk by solicitor, Susan Moriarty, clinical claims manager for the Clinical Indemnity Scheme of the States Claims Agency.

The latest update on endodontics will be given by Dr Paul McCabe, specialist in endodontics.

After lunch there will be a talk by Kevin Malone, Professor of Psychiatry at St Vincent's Hospital, on learning to deal with stress. This will be followed with a talk on dealing with patients' pain by Dr John O'Brien, specialist in oralfacial pain.

As a new addition, HSE Senior Clinical Dental Surgeon (Paed), Dr Gerry Buckley, will do a table demonstration on rubber dam and stainless steel technique. This will be held along with the trade show.

Thursday morning starts with Dr Blainid Hayes, Consultant in Occupational Medicine, Beaumont Hospital, talking on needlestick injury management with an update on new protocol. The next lecture on special care dentistry will be given by Professor June Nunn from the Dublin Dental School and Hospital, dedicated to the memory of Dr Nico Droog who died earlier this year. After coffee Dr David Craig, Head of Sedation and Special Care Dentistry, GKT Institute London, is speaking on practical conscious sedation. Professor Martin Kinirons will finish the morning programme with a talk on the outcome of the traumatised incisor. After lunch, Dr Claire Healy, Specialist Register in Oral Medicine and lecturer in human diseases will speak on an overview of mucosal disease. The final talk is by Aidan Browne, National Director of Primary, Community and Continuing Care, on the Health Services Reform Update.

Friday morning, Michael Gilbride, Consultant Oral and Maxillofacial Surgeon, Mid-Western Regional Hospital Limerick, is speaking on oral cancer and the role of the dental practitioner. The day's final lecture is by Asim Sheikh, barrister and lecturer in legal medicine on clinical negligence and risk management.

These topics I believe will be of interest to general dental practitioners as well as public dental practitioners. All are welcome, either on a daily basis or for the full seminar.

The venue is the Newpark Hotel, which has recently been refurbished. Further details about the hotel can be found at www.newparkhotel.com.

A sincere thank you to the committee and the staff of IDA House who have worked so diligently to make this Conference a success. We look forward to seeing you!

Dr Anne Crotty, President Elect PDS Group

IRISH DENTAL ASSOCIATION ANNUAL SCIENTIFIC CONFERENCE

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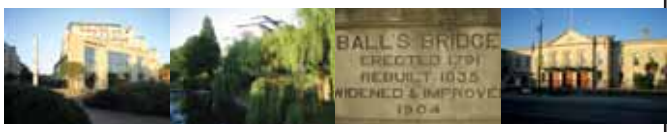

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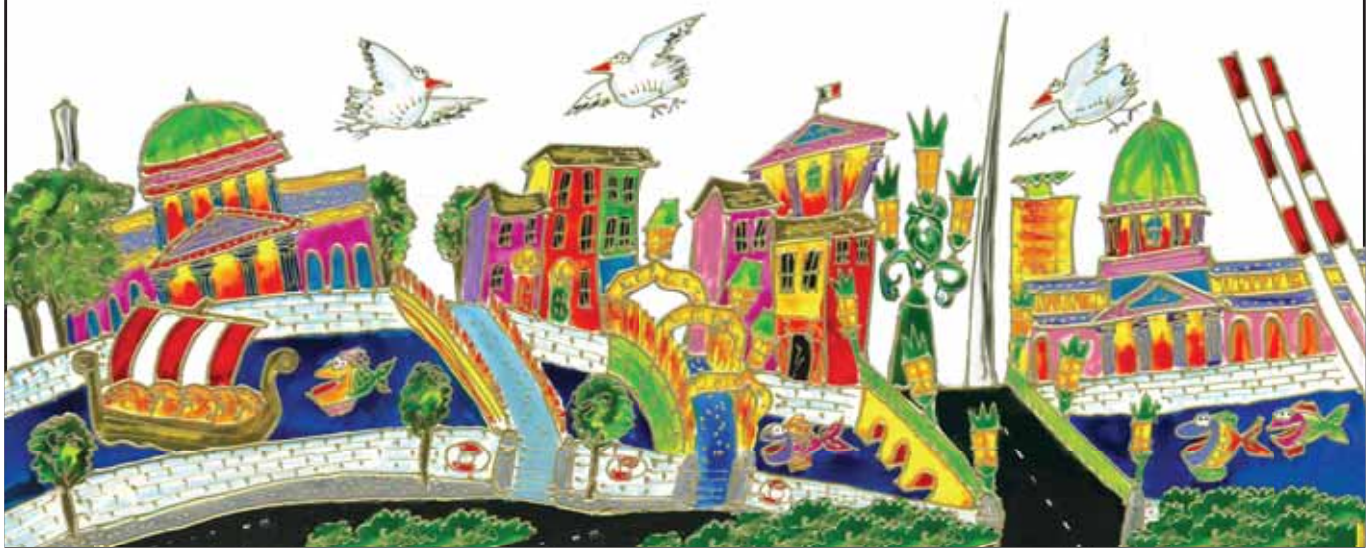

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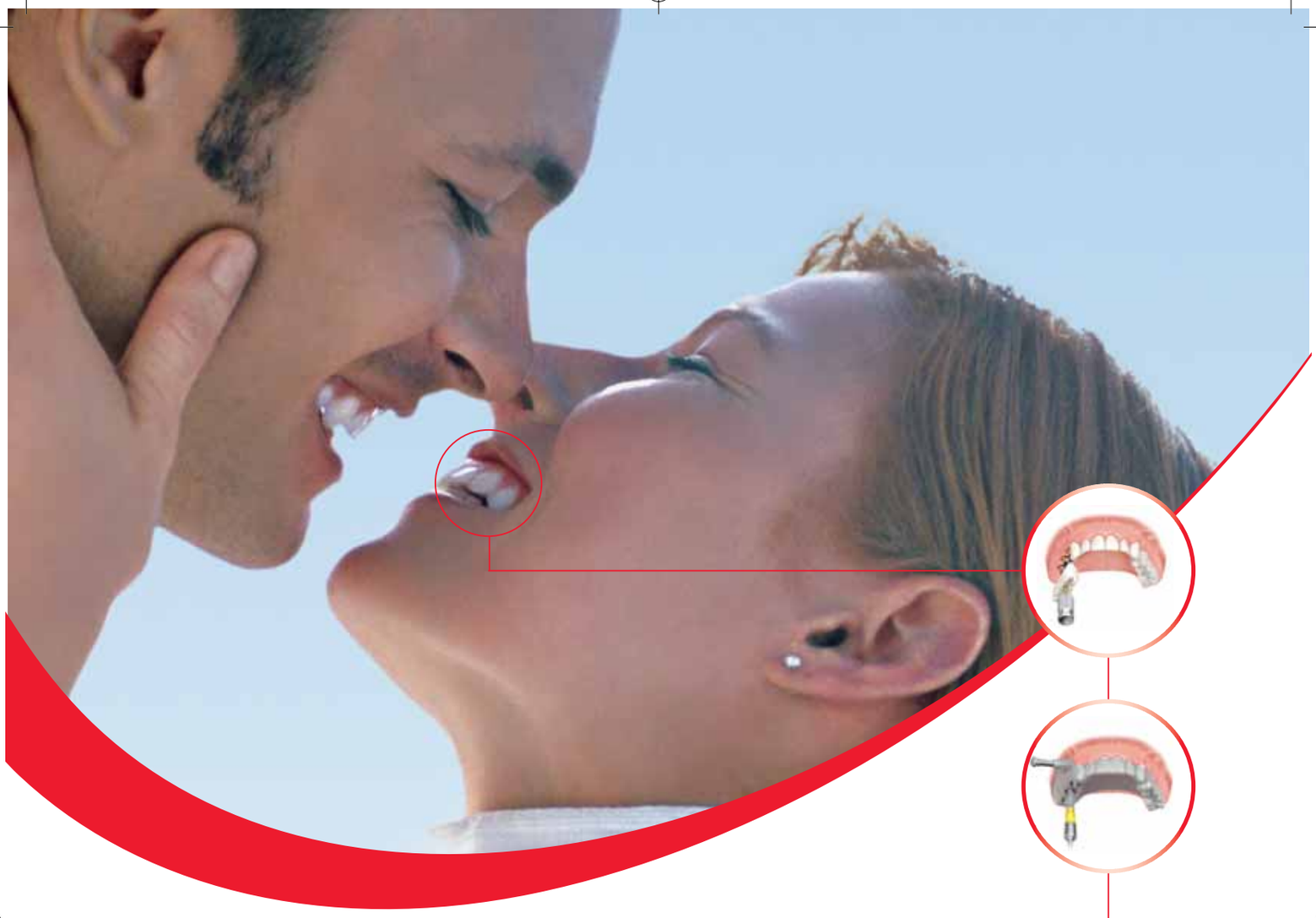

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