First vaccine for treating gum disease

Daniel Zimmermann

HONG KONG/LEIPZIG, Germany: Scientists at the University of Melbourne, Australia, have announced that they have partnered with CSL Limited and Sanofi Pasteur, the country’s largest biopharmaceutical companies, to further develop and commercialise a vaccine for the treatment of gum disease. The programme, which has been ten years in development, involves bacterial peptides and proteins that trigger the immune response to periodontal inflammation. The vaccine is currently being tested in mouse models and is expected to progress to clinical trials soon, the researchers said.

The new vaccine approach is targeting the “ring leader” of a group of pathogenic bacteria called P. gingivalis that cause periodontitis. According to a US-based consortium for P. gingivalis research, elevated levels of the organism were found in the majority of periodontal lesions, as well as in low levels in healthy sites. In addition, the organism also produces a number of enzymes that have been shown to interact with and degrade host proteins.

Although the bacterium can be eliminated through periodontal therapy, it is often found in recurrent infections.

“Periodontitis is a serious disease and dentists face a major challenge in treating it, because most people will not know they have the disease until it’s too late and the infection has progressed to advanced stages,” says Prof. Eric Reynolds, CEO of the Cooperative Research Centre for Oral Health Science and the Head of the University of Melbourne’s Dental School. “This new approach will provide dentists and patients with a specific treatment.”

Traditional periodontal therapy involves manual scaling and cleaning, and even surgery with instruments or dental lasers in an effort to contain the bacterial infection. Reynolds said their new line of vaccine products will possibly prevent the progression of the disease, rather than managing its symptoms and damaging consequences.

Sanofi Pasteur has an option to an exclusive worldwide licence to commercialise the intellectual property associated with these products.

A new vaccine could help to replace traditional periodontal treatment methods. (DTI/Photo Dmitry Naumov)

Asian dental markets show potential

A new report by Research and Markets, a market analyst company from Dublin in Ireland, has found that dental markets in the Asia-Pacific region exhibit a huge potential for growth due to low market penetration and high demand for modern and sophisticated technology and equipment.

An increasing aging population coupled with a rising awareness for oral health, high aesthetics and improved dental treatments have also boosted the growth in this segment, the report states. In addition, a growing disposable income, an increasing edentulous population and rising numbers of retired baby boomers have impacted the growth of the industry positively.

Overall, the dental industry remained one of the most attractive segments of the healthcare industry with an estimated size of about US$18.8 billion in 2008, according to the report.

India to extend BDS courses

The Dental Council of India has announced to introduce a five-year Bachelor of Dental Surgery course as well as Post Graduate diploma courses. The extended offering is supposed to help internationalise dental education in India and solve the faculty problems in dental colleges.

US dentists delay new acquisitions

More than 80 per cent of dentists in the US indicate to have delayed new acquisitions because of the recession, a survey by the American Dental Association has found. While almost 50 per cent delayed buying new equipment, only 5 to 9 per cent reported to have laid off personnel.

A new acquisition could help to replace traditional periodontal treatment methods. (DTI/Photo Dmitry Naumov)

Aussi dentists oppose dental scheme reform

Dentists in Australia are reported to lobby the federal government to dump plans for Denticare, a US$5.57 billion universal dental scheme developed by the Australian National Health and Hospitals Reform Commission earlier this year. The scheme would entitle patients to receive cover either free through public dental services or one of a series of private plans.

Instead, the Australian Dental Association (ADA) is pushing for a targeted scheme modelled on the Commonwealth Dental Program dumped by the Howard government in 1996. It is supposed to be funded through a new tax on sugar, sugary sweets and soft drinks, ADA officials said.

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Countries in Asia less than average in health care spending

Daniel Zimmermann
DTI

LEIPZIG, Germany: Asian countries have been found to spend less of their GDP’s for health care than most other countries in Europe and the U.S. According to a new health care report by the Organisation for Economic Co-operation and Development (OECD) in Paris, only New Zealand provided more money for health care than the average of all observed countries. Japan, Korea and Australia, however, spent less than the OECD average of 9.2 per cent of GDP.

The US currently spends more on health care than any other country—almost twice as much and a half times greater than the OECD average. The average in health care spending for the countries observed was below the OECD average of US$2,984, adjusted for purchasing power parity. Luxembourg, France and Switzerland also spend far more than the OECD average. At the other end of the scale, health-care expenditure in Turkey and Mexico is less than one-third of the OECD average.

The latest edition of Health at a Glance demonstrates that all the countries observed could do better in providing good quality health care. Key indicators presented in the report provide information on health status and the determinants of health, including the growing rates of child and adult obesity, which are likely to drive higher health spending in the coming decades.

Based on new data on access to care, the report demonstrates that all OECD countries provide universal or near-universal coverage for a core set of health services, except the U.S., Mexico and Turkey.

Malaysians reject public dental services

Claudia Salwiczek
DTI

HONG KONG/LEIPZIG, Germany: Anuala Lampur’s Deputy Director of Health Dr Ahmad Bujang has urged Malaysians to have their teeth checked once or twice a year and children at least every six months, despite the present problem in government dental services. Given the current dental status of Malaysians, dental checks are important, as early detection of dental diseases like caries or gingivitis allows for more effective treatment, he said.

Dr Bujang was responding to a statement released by the Ministry of Health in November claiming that only 6 per cent of adults in the country use government dental services.

Public dentistry in Malaysia falls short compared to other countries in the region, especially in rural areas, where only 60 per cent of dental officer posts are filled. According to latest government figures, the current ratio of public dentists to the population is only 1:15,245, while the ratio for both public and private dentists combined is 1:7,941. This leaves patients to wait for long periods for treatment, as public dental clinics operate according to appointments.

The Ministry of Health has announced that it will address the problem by employing re-tired and foreign dental officers, while also improving the service scheme of public dental officers in order to retain those already employed in government service. In the long run, the government aims to achieve the projected target ratio of 1:4,000 by facilitating dental education in Malaysia and abroad.
Asia will assure future growth, 3M’s Buckley says

Daniel Zimmermann
DIT

NEW YORK, NY, USA/LEIPZIG, Germany: George Buckley, Chief Executive Officer of 3M, has announced that his company intends to take advantage of more overseas opportunities in regions like Asia Pacific in the coming business year. Speaking to investors in New York in early December, he said that he expects revenues to grow by 11 to 15 per cent in emerging markets like China and India. Owing to the worst economic downturn in 80 years, the company’s US sales suffered significantly this year.

Despite the outlook of a slow economic recovery, Buckley outlined his company’s ongoing commitment to investing in its core businesses while continuing to focus on cash generation in light of the still uncertain global economy. 3M, with US headquarters in St. Paul in Minnesota, offers a wide array of dental products through its division 3M ESPE, including adhesives, dental cements and products for restorative and aesthetic dentistry.

According to latest estimates, 3M sales are expected to reach between US$24.5 and US$25.5 billion in 2009, with organic sales volumes growing by 5 to 7 per cent and currency effects adding 2 to 5 per cent to sales for the year. The company also expects that 2010 earnings will be between US$4.85 and US$5.00 per share, a slight increase compared to 2009.

Waiting lists in dental clinics trouble S’pore

Daniel Zimmermann
DIT

HONGKONG/LEIPZIG, Germany: Representatives of the Ministry of Health and the National Dental Centre (NDC) in Singapore have rejected criticism about long waiting lists for special dental procedures in governmental dental clinics. In a public letter posted on the Singapore Dental Association’s website in December, Dr Kwa Chong Teck, Executive Director of the National Dental Centre, and Chief Dental Officer Patrick Tseng said that for patients seeking elective specialist treatment, the NDC generally offers an appointment within two weeks. They admitted, however, that there is a waiting list of patients requiring elective crown and bridge work, root canal treatment or dentures.

In Singapore, special dental treatments are subsidised only when patients are referred from governmental dental clinics. The national medical saving scheme, called Medisave, which is supposed to help individuals set aside part of their income to meet future personal or immediate family’s hospitalisation, only covers one-day surgical procedures.

The Ministry of Health has rejected demands to extend the scheme for private clinics to reduce waiting times. Recent feedback on delayed procedures came from patients asking for non-emergency elective treatments, such as braces and dentures, a government official said. She added that heavy subsidy without means-testing for these procedures will inevitably lead to long queues.

“Medisave should be treated as a financial reserve so that treatment needs are met,” Dr Anagar Cheng, a consultant dental surgeon at a private dental clinic in Singapore, told Dental Tribune Asia Pacific. “The key is to identify those dental treatments that should be regarded as needs versus the non-urgent optional treatments like tooth whitening, which should be taken out of the equation. There is no doubt that governmental clinics will be able to cope with the public demand with time.”
We wish all our readers a successful new year 2010...
Researchers at Rice University in Houston in the US have received a US$2 million grant from the US National Institutes of Health for the development of a new test for detecting oral cancer. The test, which utilises latest LED and nano microchip technology, aims to provide an accurate diagnosis in less than 50 minutes and can be performed in the dental office. Additional tests for the detection of cardiovascular diseases and HIV are also in development, the researchers said.

Oral cancer affects about 500,000 people per year worldwide, and most cases are diagnosed in the late stages. If oral cancer is detected early, the prognosis for patients is excellent, with a five-year survival rate of more than 90 per cent. Unfortunately, the actual five-year survival rate for oral squamous cell carcinoma is only about 50 per cent, amongst the lowest rates for all major cancers.

“We want to provide an accurate diagnosis for oral cancer using a minimally invasive test that requires no scalpel or off-site lab tests,” said principal investigator Prof. John McDevitt, Rice’s Brown-Wiess Professor of Chemistry and Bioengineering. “The payoff for this could be tremendous because oral cancers today are typically diagnosis much too late in their development.”

According to McDevitt, the test is being developed in collaboration with other scientists from universities in the US and the UK.
NEW YORK, NY, USA/LEIPZIG, Germany: The US-based manufacturer of soft-tissue dental lasers AMD LASERS has announced the launch of its new International Center for Laser Education (ICLE) in Indianapolis in the US. The centre, which is headed by laser expert Dr Glenn van As, will offer education for the most popular lasers in dentistry through video, hands-on courses, and an interactive laser forum. ICLE claims to be the first laser company to offer affordable laser education to dentists worldwide.

Several variants of dental lasers are already in use, with the most common being diode lasers, carbon dioxide lasers, and yttrium aluminium garnet lasers. Latest studies have proven that laser applications for dentistry range from surgery to cosmetic procedures and even treatment of periodontal and peri-implantitis infections. The cost of a dental laser is between US$8,000 and US$50,000.

“Until now, most laser courses have been expensive and not specific enough in content to really assist dentists in understanding the safety, efficacy, and proper use of dental laser technology,” said Dr van As. “Just as AMD LASERS has made cutting-edge laser dentistry a reality for dentists, ICLE intends to revolutionise laser dental education through courses of unprecedented quality, accessibility, and affordability.”

According to Dr van As, ICLE’s courses will be suitable for both experienced clinicians and dentists new to laser dentistry. The forum will allow dentists to ask questions, post technique videos, and share laser experiences, he added.
Directa presents new solutions for Class II cavity preparations

Daniel Zimmermann
DTI

LEIPZIG, Germany: Placing a matrix band to attain a good contact point and avoiding interproximal overhang after excavation for Class II fillings has always been a time consuming and laborious procedure. Directa has announced to offer a unique and easy solution for this procedure by combining a separating plastic wedge with a stainless steel matrix. The Fendermate is available in regular and narrow width and for left or right application and will be colour coded for better identification.

According to the Swedish company, the combined matrix and wedge are inserted as one piece. The new technology contours and complements the curvature of the patients tooth and holds its shape without having to use a retentive ring that inhibits access to a cavity. The contact point is created by the dual curvature of FenderMate so that further burnishing will not be necessary.

With the combination of FenderMate and FenderWedge, Directa also offers a tissue friendly approach for the preparation and filling of Class II cavities.
The unprecedented success of Dental Salon Chile

SANTIAGO DE CHILE, Chile: The sixth annual edition of Dental Salon Chile has nothing to envy from the best Asian, American or European expos in terms of quality and professionalism. Lodged now for the first time in the modern fairgrounds of the Espacio Riesco, the Dental Salon offers ample quarters, modern facilities and many comforts to the visitor. But probably the most surprising feature is the high quality design of spaces, isles and booths, an influence that expo organizer Miguel Wechsler says he has assimilated from attending shows such as IDS in Germany and GNYDM in New York.

Wechsler has radically changed the look and feel of Dental Salon Chile, which until 2008 took place in cramped grounds. The Espacio Riesco by comparison, ten minutes away by car from downtown Santiago and for which Wechsler now provides free buses every 15 minutes, is a large concrete structure from which huge, colourful billboard-size banners promoting the Salon hung outside welcoming the visitor.

The Chilean businessman says that he has invested a lot of time and resources in organising this 2009 Salon, but that the projected growth statistics for the dental industry in Chile support his effort. Chile is actually a small country, but has developed a quality infrastructure, and its economy is one of the most prosperous in all of Latin America. Wechsler says that the dental market in Chile is growing between 20 and 30 per cent per year.

Chilean dentists and researchers are renowned in Latin America as high-standard professionals, with a tendency to buy expensive, high-quality American and European instruments, products and equipment, which is not the case with other colleagues in the region. It is estimated that there are over 11,000 practicing dentists in the country today, a number that increases by 12 per cent every year.

The reason for this increase is that until recently state-controlled universities graduated a reduced number of dentists, but the new private universities have radically changed this dynamic, churning out large numbers of dentists every year.

Wechsler says that the 2010 Dental Salon will have an international German Pavilion, and that he’s in negotiations with the Swiss industry for the same purpose. At the IDS in Germany he was talking with representatives of the American Pavilion, who are also interested in the Chilean market.

Actually, the director of the Dental Salon is so confident in the Chilean market that he is exploring the possibility of organising expos in Peru, Bolivia, Paraguay and Argentina.

“When the international industry sees the quality of this Dental Salon Chile they are happily surprised,” Wechsler says. “Because they recognise that it has been modelled after successful American and European expos. They recognise that it is a highly organised and professional effort, and many ask me if I would consider doing something similar in other countries of the region.”

Message from the president

In September I was bestowed the great privilege—and responsibility—of representing the international world of dentistry as its elected leader. Throughout the last few months, I have met FDI members and delegates at their national and regional events around the world, such as the Annual Meeting of the Portuguese Dental Association and International Association for Dental Research (IADR), the World Congress on Preventive Dentistry. In doing so, I am struck by the vast reach of this great organisation. Whether it’s collaborating with fellow Council and Committee volunteers on the many FDI projects in development, participating in important international governmental meetings, or spending time with staff at the head office to better understand the day-to-day workings of the organisation, I am continually impressed with how each of one FDI’s many parts contributes to our achievements as a whole.

One of the questions I was asked repeatedly when meeting people for the first time as Dr Roberto Vianna, FDI President—as opposed to Dr Roberto Vianna the dentist, professor, dean or entrepreneur—was: what do you think about amalgam, during this upcoming two-year term? My answer to this question is that my vision for the FDI is to be true to the FDI vision: bringing together the world of dentistry, representing the dental profession of the world, and stimulating and facilitating the exchange of information across all borders with the aim of optimal oral health for all people. The FHI vision is a collective one, developed by and for our members, and should serve as the guiding light to our representatives, elected delegates, partners and supporters, and individual volunteers that dedicate time and energy to advancing the profession, whether within the organisation, scientifically, educationally or socially.

Volunteer commitment is an essential component of a strong FHI. I hope you will join me in recognising the contribution of long-standing FDI volunteer, Dr Peter Swain. Dr Swain will be “retiring” from the FDI next year, after more than 40 years of tireless service in a variety of roles across the organisation. His spirit of giving time through volunteering is an example for others to follow. His work is greatly appreciated and will be missed. And as we say thank you to Dr Swain and reflect on the years he has dedicated to FDI, we welcome seven new and one returning member(s): Barbados Dental Association, Association Brésilienne des Chirurgiens-Dentistes, Sociedad Dental de El Salvador, European Federation of Orthodontics, European Dental Students’ Association, National Children’s Oral Health Foundation, and the Guam Dental Society. This month we take a closer look at the European Dental Students’ Association: the eagerness of this group of dental students to get involved in volunteer and advocacy activities related to oral health promotion promises a bright future for dentistry.

As the sum of many diverse parts, FDI is only as strong as its relationships and in this respect, I hope that my service as FDI President can help strengthen existing bonds and build new bridges for the organisation. Some connections might come through increased cross-Council collaboration, external partnerships with neighbouring NGO NGOs dedicated to health promotion, or a forum for intra-member communication and exchange. In November, FDI took part in a significant meeting co-hosted by the World Health Organization and United Nations Environmental Programme and participated in the 2009 Greater New York Dental Meeting, with a progressive continuing education programme entitled, Dental Curves: Can the Paradigm of Care Shift?

Looking ahead to 2010 there are many exciting opportunities on the horizon, starting with our own FDI website. Invite you to watch for the new front page and user-friendly knowledge, coming this January. Then in February the FDI Committees will convene for mid-year meetings at our beautiful head office in Geneva. In the meantime, my warmest wishes to you and your loved ones for a happy and fulfilling New Year.

Dr Roberto Vianna
FDI President

FDI participates at WHO/UNEP meeting on future use of materials for dental restoration

FDI World Dental Federation participated in a joint meeting of the World Health Organization (WHO) and United Nations Environmental Programme (UNEP) on 16-17 November in Geneva, Switzerland. Experts from around the world were invited to the meeting to assess the scientific evidence available on the use of restorative materials, including dental amalgam, and the implications of using alternatives to amalgam in dental restorative care.

FDI President, Dr Roberto Vianna, and Executive Director, Dr David Alexander, attended the meeting, presenting a unified position for dentistry based on the resolution on amalgam drafted and passed at General Assembly during the 2009 FDI Annual World Dental Congress (AWDC) in Singapore. In a presentation entitled “Dental restorative materials in clinical practice versus the dental profession”, Drs Vianna and Alexander argued that no ban or phase-down of mercury used in the dental profession should occur before a true alternative to dental amalgam is widely available in all communities. This FDI position is based upon several FDI/WHO bridges might come through increased cross-Council collaboration, external partnerships with neighbouring NGO NGOs dedicated to health promotion, or a forum for intra-member communication and exchange. In November, FDI took part in a significant meeting co-hosted by the World Health Organization and United Nations Environmental Programme and participated in the 2009 Greater New York Dental Meeting, with a progressive continuing education programme entitled, Dental Curves: Can the Paradigm of Care Shift?

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FDI President

FDI supporting member: The European Dental Students’ Association

The European Dental Students’ Association (EDSA) was accepted as an FDI Supporting Member at General Assembly during the 2009 Annual World Dental Congress in Singapore. EDSA entered the Council of More Information about EDSA, including the contact details for the members of our Executive Committee and information about the upcoming meeting and congress, can be found on the EDSA website (www.edsa-web.org).

More information about the EDSA Global Mercury Partnership and FDI’s official Statement on Position following the WHO-UNEP meeting in Geneva is available at the FDI website (www.fdiworldental.org).
The FDI website (www.fdiworldental.org) will have a new look beginning January 2010, featuring a simplified navigation structure and menu tabs so that FDI's members and partners can access relevant information about the organisation's history, structure, projects, activities, and Annual World Dental Congress more easily.

Some features of the new FDI front page will include:

• Direct links to current FDI projects and activities
• Quick Links to the members section, latest news stories, FDI publications and a sign-up form for the Worldental Communiqué
• Updated front page menu (to simplify website navigation)
• Expanded Congress & Events section, including a section to highlight FDI members’ events
• Media section, with a direct link to press releases, archives and press contact information
• Improved Search functionality
• Contact Us tab in the front page menu with FDI address and phone number in Geneva

For more information, contact the FDI at media@fdiworldental.org.

The relocation from Ferney-Voltaire (France) to Geneva ran smoothly thanks to the notable efforts of FDI staff and in particular, Ms Lawrence Jossiff, who managed the logistics of the move, ensuring that no small detail was overlooked. In an effort to offset the very significant costs associated with the relocation, the FDI created the Sponsor-a-Window Programme, whereby participants could adopt one of the 54 windows that offer a 360-degree view from the Geneva office. Thanks to the generosity of numerous donors, FDI has raised a total of 250,000 euros to date (more details coming soon).

As with many businesses and activities around the world, the FDI has been struggling to weather the economic storm. We face particular challenges – as a non-governmental, charitable organisation – to maintain existing channels and develop new avenues of revenue at a time when budget cuts and belt-tightening are standard practice. Nevertheless, we are well poised to move into 2010 under the financial discipline of our new Finance and Operations Director, Mr Jérôme Estignard, who has brought to his role the same level of detail and attention to detail that he brought to his previous post as the Finance Manager of the World Dental Congress (AWDC) in London.

Following the AWDC in 1974, Dr Swiss was invited by Dr Leatherman to assist with the organisation of future FDI congresses. He also continued his commitment with the FDI as a speaker at several FDI congresses and as a member of the Commission on Dental Education & Practice (1985) and the UK delegation, becoming National Secretary in 1994. His particular interest in international dental ethics developed in the 1980s, following his appointment as Dental Secretary of the Medical Defence Union in 1982. Dr Swiss became a member of the FDI Ethics Committee, and in 2010, was elected Chairman. In 1998 he chaired the 5th International Congress on Dental Law & Ethics and in 2007 he coordinated the production of the FDI Dental Ethics Manual.

In 1999 the FDI became urgently in need of an Editor of FDI World and turned to Dr Swiss, who agreed to take on the role for two years. Later, in 2006, when the FDI was seeking a part-time Practice Committee Coordinator, once again it turned to Dr Swiss for his assistance. Dr Swiss has brought an invaluable amount of support to the FDI and the Committee. He ended his contract with the FDI earlier this year, but has agreed to continue volunteering his time to the Committee until after the 2010 mid-year meeting.

In contemplating his involvement with the FDI, Dr Swiss said he has seen the FDI develop and improve. “Until about 20 years ago, the focus of the FDI was largely on the interests of the developed countries and its congresses were attended predominately by participants from these member associations,” said Dr Swiss. “More recently, however, the FDI has expanded its work to cover a much wider area of the world and now has some of its major influence in the developing countries”. Over the years, Dr Swiss has attended 27 FDI congresses, beginning with the 1974 World Dental Congress. He feels the time has now come for him to stand back and watch others to continue the great work of the FDI.
Increased media coverage and the availability of free web-based information have led to heightened public awareness and thus to a dramatic increase in patients’ aesthetic expectations, desires and demands. Today, a glowing, healthy and vibrant smile is no longer the exclusive domain of the rich and famous and most general practitioners are forced to incorporate various aesthetic treatment modalities in their daily practice to meet this growing demand.

The treatment modalities of all health-care services are aimed at the establishment of health and the conservation of the human body with its natural function and aesthetics. The concept of minimally invasive (MI) treatment was initially introduced in the medical field and was adapted in dentistry in the early 1970s with the application of diamine silver fluoride. This was followed by the development of preventive resin restorations (PRR) in the 1980s and the atomic restoration technique (ART) approach and Carisolv in the 1990s. The major components of MI dentistry are the use of air abrasion, laser treatment or sono abrasion to gain cavity access and excavate infected or carious tooth tissue through selective caries removal or laser treatment, cavity restoration by applying ART, PRR, or sandwich restoration, and the use of computer controlled local anaesthesia delivery systems with emphasis on the repair of a failed restoration rather than its replacement. Thus far, the focus of MI dentistry has been on caries-related topics and has not been comprehensively adopted in other fields of dentistry. Dr Miles Markley, one of the great leaders of preventive dentistry, advocated that the loss of even a part of a human tooth should be considered a serious injury and that dentistry’s goal should be to preserve healthy and natural tooth structure. His words are much more relevant to today’s aesthetic dental practice, in which the demand for cosmetic procedures is rapidly increasing. With the treatment approach trend towards the more invasive protocols, millions of healthy teeth are aggressively prepared each year in the name of smile makeovers and instant orthodentics, neglecting the long-term health, function and aesthetics of the oral tissues.

The need for a new concept

Contemporary aesthetic dentistry demands well-considered concepts and treatment protocols that provide a simple, comprehensive, patient-friendly and MI approach with an emphasis on psychology, health, function and aesthetics (PHEA; Fig. 1). The need for a holistic concept and basic treatment guidelines was expressed by concerned practitioners, aesthetic dentistry associations and academies around the world for the following basic reasons:

- Owing to an increased aesthetic demand, aesthetic dentistry is becoming an integral part of general dentistry. The aesthetic outcome of any dental treatment plays a vital role in the patient’s treatment satisfaction criteria.
- Social trust in dentistry is degrading, owing to the trend of fulfilling the cosmetic demands of patients without ethical consideration and sufficient scientific background (the more you replace, the more you earn; more is more mentality).

In this article, I introduce a concept and TP for minimally invasive cosmetic dentistry (MICD), in order to address these facts properly and integrate the evidence-based MI philosophy and its application into aesthetic dentistry.

Defining MICD

As the perception of aesthetics and beauty is extremely subjective and largely influenced by personal beliefs, trends, fashion, and input from the media, a universally applicable definition is not available. Hence, smile aesthetics is a multifactorial issue that needs to be adequately addressed during aesthetic treatment. MICD deals both with subjective and objective issues. Therefore, in this article I define MICD as “a holistic approach that explores the smile defects and aesthetic desires of a patient at an early stage and treats them using the least intervention options in diagnosis and treatment technology by considering the psychology, health, function and aesthetics of the patient.”

The core MICD principles are:

1. application of the sooner-the-better approach and exploration of the patient’s smile defects and aesthetic desires at an early stage in order to minimise invasive treatments in the future;
2. smile design in consideration of the psychology, health, function and aesthetics (Smile Design Wheel®) of the patient;
3. adoption of the do-no-harm strategy in the selection of treatment procedures and the maximum possible preservation of healthy oral tissues;
4. selection of dental materials and equipment that support MI treatment options in an evidence-based approach;
5. encouragement of the keep-in-touch relationship with the patient to facilitate regular maintenance, timely repair and strict evaluation of the aesthetic work performed.

The main MICD benefits include:

- promotion of health, function and aesthetics of the oral tissues and positive impact on the quality of life of the patient;
- preservation of sound tooth structures (banking the tooth structure), while achieving the desired aesthetic result;
- reduction of treatment fear and increased patient confidence;
- promotion of trust and enhancement of professional image.

The MICD treatment protocol

In my experience, the TPs that are currently in use in aesthetic dentistry are mostly based on more invasive techniques and procedures. With the use of such protocols, cosmetic dentists are knowingly, or unknowingly, heading towards the over-utilisation of invasive...
technologies in their practices, which is becoming a professional and ethical concern. The basic aim of the MICD TP is to guide practitioners in achieving optimum results with as little intervention as possible. The intervention level of the treatment in MICD depends on the type of smile defects and the aesthetic needs (objective measurement and subjective perception) of the patient.

The basic framework and pathway of the MICD TP are illustrated in Figures 2 and 5. It is to be noted that the TP in medical and dental sciences must be dynamic in nature and should be flexible to incorporate evidence-based facts. I have therefore outlined the MICD core principles that are required to achieve the optimum results in terms of health, function, and aesthetics with minimum intervention and optimal patient satisfaction. However, it is the practitioner’s duty to incorporate all the necessary guidelines, protocols, and regulations of the authoritative concerned (state or affiliated professional organisations) into the MICD TP. Phase I: Understand
In the first step of Phase I, the perception, lifestyle, personality, and desires of the patient are evaluated. The primary goal of this first step is a better patient–dentist understanding. As the aesthetic perception of the dentist and the patient may differ, it is imperative to understand the subjective aesthetic perception of the patient. Various types of questions, personal interviews, and visual aids can be used as supporting tools. In this step, the practitioner should ask the patient to complete the MICD self-smile evaluation form. The information obtained will help estimate the perceived smile aesthetic score (a-score) and will be used as the base-line data in the evaluation step.

Next, diseases, force elements, and aesthetic defects of the patient are explored. Information on the medical and dental history, general health and specific health (oral-facial) of the patient is collected and should be flexible to incorporate supporting tools. In this step, the practitioner should ask the patient to complete the MICD self smile evaluation form. The information obtained will help estimate the perceived smile aesthetic score (a-score) and will be used as the base-line data in the evaluation step.

In the following step, the data collected is analysed in relation to the accepted normal values of an individual’s, race, and age (RSA) factors. The aesthetic components of the smile are analysed in detail grouped into macro- and micro-aesthetics (dentals, functional, and aesthetic). The aesthetic parameters are below the accepted level. Aesthetic enhancement is required to improve the aesthetic parameters. Grade 1: The aesthetic parameters are below the accepted level. Aesthetic enhancement is required to improve the aesthetic parameters. Grade 2: The aesthetic parameters of oral health and function are within normal limits; however, the aesthetic parameters are below the accepted level. Aesthetic enhancement is required to improve the aesthetic parameters. Grade 3: The aesthetic parameters of oral health and function are below the normal limits. An establishment treatment is mandatory prior to aesthetic enhancement.

From the above, the practitioner will obtain a smile aesthetic grading in terms of the patient’s health, function and aesthetics, as well as a complete overview of the smile aesthetic problems and solutions, macro- and mini-smile defects.

The patient’s PHFA factors are the four fundamental components of aesthetic dentistry and must be respected to achieve healthy, harmonious, and beautiful smiles. The design step depends on the information obtained from exploration and analysis. The information on psychology is subjective in nature; however, health, function, and aesthetic analysis provides the objective information that will guide the design with the various established and basic principles of smile aesthetics and also the feasible and practical aspects of the aesthetic desires of the patient. The aesthetic mock-up, manual tracing, digital makeover and smile catalogues are some of the popular tools used in this step. A new smile, alternative designs, types of treatments involved, complexity, possible risk factors and complications, treatment limitation, and tentative costs should be established during this step.

Phase II: Achieve
As per the TP, which is finalised during the presentation step, all necessary preventive and restorative procedures are performed. Once the case is stable in terms of health (controlled disease) and function (balanced occlusion) and good oral health, the patient is requested to re-evaluate his or her smile in terms of aesthetics with the help of the MICD self-smile re-evaluation form. This is important, because in some cases patients may be dissatisfied with the results of the establishment treatment involving the patient or his or her idea of further aesthetic enhancement. In MICD TP, the treatment complexity depends on the professional capability and experience of the practitioner, simple and practical methods are used to categorise the MICD treatment complexity:

Grade 1: Treatment that may require consultation with a specialist (preventive, simple oral surgery, endodontics/periodontics/implants, short orthodontics); Grade 2: Treatment that requires the procedural involvement of other dental specialists (complex endodontics/periodontics/orthodontics) but not oral and maxillofacial surgery or plastic surgery; and Grade 3: Treatment that requires the procedural involvement of oral and maxillofacial surgery or plastic surgery.

With the aid of this simple grading system, any practitioner can determine the complexity of the treatment involved for the accomplishment of a new smile design for an individual patient and can plan for the necessary multidisciplinary support.

The last step of this phase is the most important in MICD TP because in this step the patient is presented with an image of his or her future smile. Visual aids, such as a smile catalogue, aesthetic mock-ups, manual sketches, digital images, picture, designed makeovers or animations can be used as presentation tools. The results of the design step are systematically presented to the patient with professional honesty and ethics. All pertinent queries of the patient related to the proposed smile need to be addressed during presentation. The treatment complexity, its limitations, the risks involved, possible complications, treatment cost estimation and maintenance responsibility must properly be explained to the patient. The patient is thus involved in finalising the treatment plan before he or she signs the written informed consent form before proceeding to Phase II.
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the SRA factors and the emphasis on oral health and function of oral tissues (naturally-mimetic smile enhancement)

wants subjective desires of the patient, which may not be in harmony with the SRA factors (cosmetic smile enhancement)

During any want-based aesthetic treatment, where healthy oral tissue is treated with no direct benefit to health or function, the treatment modalities should be within the scope of non-invasive (NI) or MI procedures. The patient’s cosmetic desires alone should not be the rational for the treatment. Do no harm! should always be the credo pertinent to all dental treatment procedures. Phase III Keep in touch

Regular maintenance, compliance and timely repair play a crucial role in the long-term success of aesthetic enhancement procedures. Hence, MICD emphasizes the keep-in-touch concept and encourages patients to go for regular follow-up visits. Responsibility for maintenance is grouped into two categories:

- Self-care: Patients are advised to continue their normal oral hygiene procedures. If necessary, special care and precautionary methods are given, as well as protective devices. Self-care should focus on regular tooth brushing, flossing, the use of prescribed protective devices and other pertinent professional advice for maintaining general health.
- Professional care: The oral habits, health of the oral tissues, and the functional and aesthetic status of the work performed are well documented during each follow-up visit, and necessary maintenance repair jobs are carried out.

Evaluating is the final step of MICD TP. Any ‘completed’ treatment without a proper evaluation is considered incomplete in MICD protocol. The following components need to be evaluated:

- Global patient satisfaction: After receiving aesthetic dental treatment, the patient is requested to complete the MICD exit form, in which the patient evaluates his or her new smile, gives a second perceived smile aesthetic score (b-score), and indicates his or her global satisfaction score. The b-score is compared with the previous a-score. This process helps determine the patient’s actual satisfaction status in MICD, this is the main parameter for evaluating a patient’s aesthetic satisfaction.
- Clinical success: Clinical success is a multifactorial issue: Selection of proper cases (the patient), restorative materials, TPs and their correct and skilful application are the key factors for clinical success. Therefore, MICD TP suggests self-evaluation of the following four factors (4Ps) using the MICD clinical evaluation form:
  - Patient factors: regular maintenance status, compliance issues and attitude of the patient towards aesthetic treatment;
  - Product factors: bio-compatibility, mechanical and aesthetic quality of the products used for the treatment;
  - Professional factors: existing knowledge and skills, and attitude towards developing these.
- Detailed clinical documentation of the case during maintenance and evaluation can provide various cues to the practitioner in the evaluation of his or her clinical success in terms of case planning, material and protocol selection, as well as his or her existing restorative skills.

I believe that a thorough attitude towards developing these.

Detailed clinical documentation of the case during maintenance and evaluation can provide various cues to the practitioner in the evaluation of his or her clinical success in terms of case planning, material and protocol selection, as well as his or her existing restorative skills. I believe that a thorough evaluation can support any practitioner in initiating practice-based research and keep up-to-date with the recent trend of evidence-based dentistry (Figs. 4a–b).

MIDC treatment modalities

Various types of treatment modalities are available in MICD. Their effective use depends on the level of smile defects, type of smile design, proposed treatment type and the treatment complexity grade. There is only one principle in selecting treatment modalities in MICD: always select the least invasive procedure as the choice of the treatment.

The two categories of MICD treatment are NI and MI treatment (Table 1). However, conventional invasive treatment modalities may also be required, depending on the complexity of the case.

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<tr>
<th>MDC treatment options</th>
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<td>Treatment modality</td>
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<td>Tooth whitening</td>
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<td>Re-mineralisation of white spots</td>
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<td>Short orthodontics</td>
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<td>Non-preparation veneers</td>
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<td>Enamel augmentation</td>
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<tr>
<td>Oral appliances</td>
<td>MI/NI</td>
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Table 1

Conclusion

MI dentistry was developed over a decade ago by restorative experts and founded on sound evidence-based principles. In dentistry, it has focused mainly on prevention, re-mineralisation and minimal dental intervention in caries management and not given sufficient attention to other oral health problems. I believe that the MI philosophy should be the mantra adopted comprehensively in every field of the dentistry. For this reason, I have explained the MICD concept and its TP, which integrates the evidence-based MI philosophy into aesthetic dentistry, in the hope that it will help practitioners achieve optimum results in terms of health, function and aesthetics with minimum treatment intervention and optimum patient satisfaction.

Acknowledgements

In formulating the MICD TP, I discussed the concept with several national and international colleagues in order to ensure that it is simple, practical and comprehensible. I would like to extend my gratitude to Dr Akira Senda (Japan), Dr Duhrer Derschi (Switzerland), Dr Hisashi Hisamitsu (Japan), Dr Oliver Henneberg (Singapore), Dr Dims Kosunthrae (Greece), Dr Mahi L. Singh (USA), Dr Byuichi Kondo (Japan), Dr Bos San Kwan (Korea), Dr Pratibha Thakur (India), Dr Vajyaratnam Vijayakumar (Sri Lanka), as well as Dr Shubh R. Adhikari, Dr Rahul Man Shrestha, Dr Binod Acharya and Dr Dinesh Rimal of Nepal, for their valuable comments, advice and feedback.

Editorial note: A complete list of references and the MICD forms are available from the publisher.
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Complete maxillary implant prosthodontic rehabilitation utilising a CAD/CAM fixed prosthesis

Dr Neo Tee-Khin, Dr Ansgar C. Cheng, Dr Helena Lee & Ben Lim
Specialist Dental Group Singapore

Endosseous implant treatment has been widely reported as a highly predictable treatment modality with a low percentage of clinical complications.1

Traditional implant prostheses are commonly fabricated using acrylic resin teeth supported by a metal framework. Significant space is designed at the tissue surface of the prosthesis to enhance oral hygiene maintenance. However, application of this prosthetic design in the maxillary arch is occasionally aesthetically inadequate and speech may be compromised.

Conventional porcelain-fused-to-metal restorations require the placement of labial restoration margins below the free gingival margin in order to mask the hue and value transition between the sub-gingival implant sub-structures and the supra-gingival crown restorations. From a periodontal point of view, sub-gingival placement of restoration margins is related to adverse periodontal tissue response.2,3 A result, restoration margins are best placed coronally from the free gingival margin.4,5

Porcelain-fused-to-metal restorations are commonly used in the posterior teeth because of their well-documented long-term clinical track record.4,9 CAD/CAM ceramic-based materials are prescribed nowadays, owing to their demonstrated promising physical properties4,6 and clinical longevity.5

This article describes the clinical application of high-strength zirconium oxide restorations in the prosthodontic management of an edentulous maxilla with a failing implant prosthesis.

Clinical report

A 62-year-old female with an implant-supported maxillary prosthesis was evaluated at the Specialist Dental Group in Singapore. She presented clinically with a maxillary fixed complete denture supported by six endosseous implants (NobelReplace, Tapered Groovy, Nobel Biocare). The prosthesis had acrylic resin teeth supported by a gold alloy metal framework. The implant at the patient’s maxillary right canine area was exposed. No symptoms were reported by the patient (Fig. 1).

An occlusal examination revealed a stable maximal inter-cuspation position with insignificant centric relation to maximal inter-cuspation slide at the teeth level. A canine-guided occlusal scheme was noted. No para-functional habits were reported. Sub-optimal maxillary lip support was noted. A significant amount of dead space was identified between the intaglio surface of the prosthesis and the maxillary soft tissue. Upon removal of the maxillary prosthesis, all the maxillary implants were found to be osseo-integrated. The patient desired to correct the failing implant, restore lip support, masticatory function and facial aesthetics.

The overall treatment plan included removal of the implant at the maxillary right canine area, replacement of a new implant at the maxillary right canine region and fabrication of a full-arch zirconium oxide-based ceramic restoration in the maxilla. Under local anaesthesia, the implant at the maxillary right canine area was removed surgically (Fig. 2) and a new 15 mm-long regular platform implant was placed (NobelReplace, Tapered Groovy). The new implant was submerged and primary wound closure achieved. Her existing prosthesis was re-inserted during the healing period to serve as a provisional prosthesis. Once osseointegration was achieved a few months later, the new implant was exposed and the maxilla was ready for prosthodontic rehabilitation after a few weeks of soft-tissue healing.

Six implant-level impression copings (NobelReplace) were placed onto the maxillary implants. High-viscosity, vinyl polysiloxane material (Aquasil Ultra Heavy, DENTSPLY DeTrey) was carefully injected around all the impression copings. A stock tray loaded with putty material (Aquasil Putty, DENTSPLY DeTrey) was seated over the entire maxillary arch to make the definitive impression. A jaw-relation record at the treatment vertical dimension was made with a vinyl polysiloxane material (Regisil PR, DENTSPLY DeTrey). The maxillary and mandibular definitive casts were mounted arthrokinematically in the centre of a semi-adjustable articulator (Hanau Wide-vue, Tele-dyne Waterpik) using average settings.12,13 The custom zirconium oxide abutments with gold-alloy fitting surface (Procera, Nobel BioCare) were CAD/CAM fabricated according to the prosthesis design.

The development of the planned definitive maxillary restoration was carried out using a CAD/CAM process. The maxillary...
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definitive cast with the custom full-ceramic abutments were scanned (Zeno Scan, WIELAND Dental+Technik), and the prosthesis framework was designed using a software program (D700, 3Shape). The framework was milled in zirconium-base material (Zeno Zr Bridge, WIELAND Dental+Technik) with a milling machine (Zeno 4030 M1, WIELAND Dental+Technik). The prosthesis framework was sintered according to the manufacturer’s recommendations. Subsequently, overlying low-fusing, tooth-coloured porcelain material (IPS e.max, Ivoclar Vivadent) was manually applied onto the exterior to create proper anatomic form (Fig. 3). Low-fusing, gingival-coloured porcelain material (IPS e.max) was applied to create proper lip support (Fig. 4).

During the delivery clinical session, the old prosthesis was removed and the new custom abutments were torqued to 32 Ncm (Fig. 5). The new prosthesis was tried-in to verify colour, occlusion, lip support, teeth form, and comfort. Upon confirmation of the patient’s acceptance, the implant abutments were sealed in gutta-percha (Fig. 6) and the prosthesis was cemented in resin-modified glass-ionomer luting agent (RelyX Unicem, 3M ESPE).

The patient was evaluated two weeks post-operatively. Anterior guided occlusal schemes were verified intra-orally before and after prosthesis cementation (Fig. 7). The patient reported no discomfort and she had been functioning well with the new restorations. No abnormal clinical signs were noted.

Discussion
Osseo-integration is a well-documented and predictable clinical treatment option. On the other hand, management of implant failure is also a clinical reality. In this clinical report, the failure of one implant at a crucial location indicated the need for re-fabrication of the whole implant prosthesis.

As the patient desired a high level of aesthetics, full-ceramic restorations were selected. By prescribing tooth-coloured ceramic abutments and full-ceramic restorations, prosthesis margins were made at the gingival level and gingival retraction procedures were eliminated during impression and prosthesis insertion.

Full-arch prosthetic rehabilitation using fixed prostheses usually requires longer-term provisional restoration in order to facilitate a predictable treatment outcome. In this patient, the existing maxillary prosthesis served as a long-term provisional restoration for verifying her adaptability and multiple professional clinical adjustments of provisional restorations were not required. This treatment sequence increased the margin of safety in the execution of the definitive full-ceramic restoration. Intra-oral verification of the new treatment occlusal scheme and detailed in situ clinical adjustment of the restorations on the day of prosthesis insertion still formed the essential foundation for proper treatment execution. In any major prosthetic treatment, the patient should be informed of the potential financial and time implications should the need for re-fabrication of the restorations arise.

Conclusion
The functional management of an edentulous maxilla using a full-ceramic implant-supported maxillary prosthesis has been reported. New CAD/CAM-based restorative materials were used in treating this case. The use of high-strength full-ceramic restorations enhances overall aesthetic predictability and long-term functional outcome.

Editorial note: A complete list of references is available from the publisher.

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"HIV tests should be offered in every dental practice"

An interview with Dr Catrise Austin, VIP Smiles, New York

Dr Catrise Austin

According to the latest figures from the United Nations Organisation UNAIDS, more than 34 million people worldwide are living with the HIV virus. Since it can take up to ten years before a person progresses towards AIDS, early testing can be a life-saving factor. New tests for HIV checks in dental practices have recently been developed. Dental Tribune Asia Pacific met with Dr Catrise Austin, who maintains a dental practice on 57th Street in New York City, to speak about HIV testing in her practice and how such testing could help to create a heightened awareness of the disease amongst patients.

Dental Tribune Asia Pacific: Dr Austin, could you tell our readers the reason you decided to offer free HIV tests to your patients?

Dr Catrise Austin: The idea for offering free HIV tests to my patients arose earlier this year once I had learnt that

- The test is called OraSure Quick and it relies on antibodies in the blood system. It uses an oral swab, which we take under the upper and lower lips and place in a developing solution directly at the beginning of our dental appointments.
- The results are available within 20 minutes and we can start with normal treatment immediately after we have done the test.
- Unfortunately, I often encounter scepticism from some of my colleagues about the comfort level and the way to introduce the test to a patient in a dental setting. I tell them every time that the test is very easy to apply without making the patient feel uncomfortable. I guess that like most new ideas it takes some getting used to, but it will be successful because we are helping to save people’s lives. So, we hope to get more dentists all over the world interested in offering this type of test.

We are fully trained and prepared in case a test is positive. If a patient tests positive, we counsel him or her immediately and help him or her call their primary health physician to schedule a confirmatory test. It is important to us that the test that we offer is a screening test only and not a confirmed test. If a patient does not have a physician, we usually refer him or her to one of the clinics in the New York City area with which we have a partnership.

There are thousands of people in the US and more around the world who are unaware that they are HIV/AIDS infected. Do you think that regular checks in dental practices could help to create more awareness of the disease?

That is something I would like to see happening as more dentists begin administering the test. It is time to recognise that we should be concerned with the patient’s holistic health not only his or her oral health.

I am the first dentist in New York to offer the test and I would love to be the trail-blazer and help to make the test the standard of care in dental practices around the world. The greatest joy for me is when a patient says that he or she would have never undergone this test if it were not for me.

Thank you very much for the interview.

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“Is it time to recognise that we should be concerned with the patient’s holistic health not only his or her oral health”

Doctors other than medical doctors can offer HIV testing in their practices. I said to myself why not add another service to our existing checklist of lesions or cavities and give patients the opportunity to know their status in a different setting. I saw this as a unique opportunity for me as a dentist to diagnose HIV in its early stages.

Unfortunately, the virus is still highly prevalent. In New York City alone, there are 94,000 confirmed cases and it seems that the number of infections is not improving in 2009/2010.

Why should dental offices test for infectious diseases like HIV/AIDS or Tuberculosis in the first place?

My opinion is that HIV tests should be offered in every dental practice because the oral cavity is one of the first places that shows signs of HIV infection. You can detect signs of herpes and other sexually transmitted diseases in the mouth as well, and so we look for lesions and other signs or symptoms of the disease.

I am currently not aware of other tests that may diagnose diseases other than HIV/AIDS; it would be fantastic if we were able to diagnose everything through the mouth.

How does the test work?

The test is called OraSure Quick and we look for antibodies in the blood system. It uses an oral swab, which we take under the upper and lower lips and place in a developing solution directly at the beginning of our dental appointments.

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