International mercury treaty signed
Minamata Convention bans products, Agrees to amalgam phase-down

International mercury treaty signed

Minamata, Japan: Certain products containing mercury will be banned from 2020, according to a new international treaty signed by governments in Minamata in Japan last week. The regulations apply to the production and trade of batteries, cosmetics and fluorescence lamps containing the toxic material, among other products. Amalgam dental fillings are not affected by the ban.

However, the treaty agreed on a number of provisions on the phasing down of the controversial dental material. The Convention, which was proceeded by five intergovernmental negotiation rounds and set in place for adoption at a meeting in Geneva in January, was signed by 87 countries.

Governments now have three years to develop and implement national strategies to reduce or eliminate the production and industrial use of the toxic metal. Mercury emission from large-scale industrial plants, the main source of mercury pollution worldwide, will also be controlled.

Dental associations reacted positively to the decision, which will permit the use of amalgam as a restorative dental material for the years to come. Dr Stuart Johnston from the British Dental Association, who took part in the negotiations on behalf of the FDI World Dental Federation, commented: “We are delighted that the Minamata Convention allows the dental profession continued access to a key restorative material. Dental amalgam is safe and effective: it has been in use for over 150 years and no studies have shown its harmful effects.” He said that despite amalgam not being banned by the treaty, the decision is a positive step forward.

The treaty also agreed to make mercury amalgam dental fillings not being banned by the treaty.

Regeneration with diamonds

New research suggests that nanodiamonds could be used to promote bone growth as they bind rapidly to both bone morphogenetic protein and fibrin. According to the US scientists, the by-product of conventional mining and refining operations can be inserted non-invasively through injection or an oral rinse.‡

GC opens new headquarters

GC International has recently opened its new head office in Lucerne in Switzerland. The newly established international branch of dental products manufacturer GC will be guiding the international affairs of GC Asia, GC Europe and GC America in the future. GC Corporation will continue to operate independently from Japan.

Mouthwash made from neem bark

The International Association for Dental Research (IADR) has recognised a dental student from Myanmar for his research on the clinical effectiveness of mouthwash made from the bark of the neem tree, which is traditionally used in traditional South-East Asian medicine.

The study by Mg Ye Htut Oo, a final-year student at the University of Dental Medicine, Yangon, found that the plant-derived mouthwash is just as effective as conventional mouthwash. Moreover, it was more effective at reducing plaques. The prize was awarded during a meeting of the IADR’s Asia Pacific divisions in Australia, New Zealand, China, Japan, Korea and South-East Asia that was held from 21 to 25 August in Bangkok.

Desensitising confirmed

A study conducted by dental researchers in Taiwan has provided new evidence that toothpaste containing the amino acid arginine and calcium carbonate can contribute to a significant reduction in dentine hypersensitivity. In the study, almost 98 per cent of the participants reported reduced hypersensitivity after having used the toothpaste for eight weeks.

The study involved 18 male and 25 female adults with dentine hypersensitivity and caries-free teeth. In order to evaluate the clinical efficacy of desensitising toothpaste, which is considered the most cost-effective and easiest treatment for most patients, the participants were asked to brush their teeth twice a day with Colgate-Sensitive Pro-Relief toothpaste, containing 8 per cent arginine and calcium carbonate, for eight weeks. Comparative dental examinations at baseline, and after four and eight weeks of product use found that there were no adverse effects on the oral soft and hard tissue. Forty-two participants (97.7 per cent) reported significantly reduced hypersensitivity.

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NEW TECHNOLOGY TRENDS IN DENTAL PRACTICE
Paul Feuerstein, DMD
08:00 PM (EST)

DIABETES AND PERIODONTAL DISEASE MANAGEMENT
Luciana M. Shaddox, DDS, MS, PhD
08:00 PM (EST)

Participants will learn:
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• To use digital and 3D radiography and associated implantology
• How to understand high tech diagnostic aids and digital impression/CAD systems
• To make intelligent purchase decisions

An introductory look at new caries detection systems (including early detection/CAM/BRA), 3D digital radiography (Conbeam), digital impression systems and lab CAD/CAM.

Among other topics, the aesthetic potential of modern CAD/CAM materials, as well as digital impression taking and guided implantology were discussed. Furthermore, two presentations demonstrated for the first time how modern digital technology can be applied to orthodontics.

The event also featured a number of workshops, where attendees gained hands-on experience of the latest technologies in fields like computer-aided implantology. The benefits of the new technology for dental laboratories were presented during a parallel session on the second day of the conference, which, according to the organiser, was attended by over 50 technicians from the region.

SINGAPORE: Boosting a new record attendance of more than 570 dental professionals, the Centre for Advanced Professional Practices (CAPP Asia) hosted its CAD/CAM and Digital Dentistry International Conference in Singapore last week. The event, held for the second consecutive year at the Marina Bay Sands hotel, presented the latest developments and trends in different fields of digital dentistry, such as imaging and dental CAD/CAM.

“Computerisation and advanced technologies have become the future of dentistry and we have to make an effort to stay abreast of the latest technologies,” Singapore Dental Association President Dr Kuan Chee Keng told Dental Tribune Asia Pacific in an interview. “The CAPP Asia conference is a good example of that.”

A spin-off of the successful congress series held by CAPP in Dubai in the United Arab Emirates annually since 2006, the event was supported by over 50 industry players from around the globe. During the show more than 55 brands were presented by leading manufacturers in the field, according to the organiser. It said that plans are already underway for the next show to be held in October next year, with dates and times to be announced in the upcoming weeks.

CAPP’s ninth Dubai edition is scheduled for May 2014. The organisation added that it will also host the Dental Technicians Forum at the upcoming International Dental Exhibition & Meeting in Singapore.

High interest in CAPP Asia meeting
A new study conducted by researchers in New Zealand has highlighted that dental workers may hold a key role in reporting child maltreatment. As the majority of injuries occur in the head and neck area, therapists, who are the most common type of health professional to see children up to the age of 14 in New Zealand, are in the best position to report physical abuse.

The study, which was conducted at the University of Otago, involved 320 registered dental therapists from New Zealand, who completed a questionnaire in which they were asked how frequently they had suspected and reported child maltreatment over the past year. The researchers found that 55 had each suspected up to 10 cases of physical abuse, while 87 had suspected up to 10 cases of child neglect. Moreover, 101 participants had suspected up 10 cases of dental neglect.

According to Dhara Tilvawala, the final-year Bachelor of Dentistry student at the university who led the study, the therapists primarily reported bruises and physical signs of abuse to the head and neck area, including cigarette burns, and children who seemed overly fearful when the clinician tried to examine their mouths. Tilvawala said that 50 to 70 per cent of injuries occurred in the head and neck area.

Fears of reporting someone mistakenly, unfamiliarity with the signs of child abuse and fear of violence to themselves from caregivers were among the barriers to reporting. The greatest barrier, however, was that dental therapists were unsure of where to report suspected cases. According to Tilvawala, 60 per cent said that they would report directly to the Child, Youth and Family service, while others preferred to turn to an official or to discuss the matter with a colleague. Only a few said that they would report the matter to the police, she said.
Dear reader,

It is not presumptuous to call the recent adoption of the Minamata convention a historic decision. Never before has such an international alliance of policy makers and experts rallied against the industrial use of a single substance.

For dentists, this decision, although containing provisions on how to phase down the use of amalgam, will not change a lot. Recent developments in dental technology are already aiming at prevention of dental diseases and the use of alternative materials that are much easier to handle and more friendly to the environment. In 2020, when most of the products mentioned in the convention will be banned from being produced and traded, amalgam will hopefully be something that most dentists consider a thing of the past.

Until then it remains important to remember that there are several effective ways to deal with the remains of the material, ranging from amalgam separators to full-scale recycling. Unfortunately, these measures are still not common in dental practice, both in developed and developing countries.  

Yours sincerely,

Daniel Zimmermann
Group Editor
Dental Tribune International

Immediate implant placement

The immediate implant placement therapeutic concept is one of the most debated and controversial topics in current dental practice. Several systematic reviews have analysed its efficacy in comparison with the delayed implant placement protocol and have clearly established that both achieve similarly high survival rates. Moreover, several well-designed experimental and clinical studies have shown that similar levels of osseointegration can be achieved with high predictability with both protocols.

There is, however, controversy as to whether immediate implant placement in a fresh extraction socket may pose an aesthetic risk for the patient, mainly through the loss of the buccal bone contour of the maxilla, and recession of the peri-implant mucosa and exposure of the implant neck. These events occur more frequently when implants are placed in the anterior maxilla, where the buccal bone plate is usually thin, and above all when implants are placed too buccally.

Several authors, however, have demonstrated excellent long-term aesthetic results even in the anterior maxilla, provided the implants are placed in sites with thicker buccal ridges and in the optimal 5-D implant position or when the physiological changes occurring in the alveolar ridge after tooth extraction are compensated for using slow resorption bone replacement grafts and/or soft-tissue grafts.

All these procedures require thorough knowledge and skills in these surgical techniques and in the use of regenerative biomaterials and autogenous grafts. A lack of knowledge and expertise may increase the probability of post-surgical complications and therefore it may also implicate a higher risk for the patient. In the hands of experienced and knowledgeable clinicians, it may be worth the risk because the achievement of good outcomes in a single therapeutic intervention could clearly be advantageous and comfortable for the patient.

Prof. Mariano Sanz is currently Professor of Periodontology at the Complutense University of Madrid in Spain. He can be contacted at mariano.sanz@uam.es

Contact Info

Contact Info

Principles of MID

Nowadays, everyone seems to be talking about minimally invasive dentistry (MID) and many patients now appreciate that only as much hard tissue is removed during dental restoration as needed. MID, however, is only successful when restorations survive for a long time. What use is a small filling if it becomes insufficient after a short amount of time? Or, why should one attempt to completely remove (partially) defective restorations?

Especially with perfectly matching tooth-coloured materials this makes no sense at all. When 80 per cent of the restoration is intact, e.g. facing a chipping of the proximal ridge, there is no reason to completely remove any restoration. Moreover, the risk of intraoperative injury to sound tooth hard tissues during removal of resin-based composites or ceramics is irresponsibly high.

Modern repair strategies help to avoid these mistakes. Only through the combination of excavation, deficit-oriented preparation, longevity and reparability, are we able to work responsibly with almost perfect aesthetic materials. Please think about this for a second.

Prof. Roland Frankenberger is Director of the Department of Restorative Dentistry at the Philipps University of Marburg’s School of Dental Medicine in Germany. He can be contacted at frankenberger@med.uni-marburg.de.

Immediate implant placement
AWDC 2015 — A big opportunity for Thai dentistry

Finally, the FDI World Dental Federation has granted Bangkok the opportunity to host its 165th Annual World Dental Congress (AWDC) in 2015. Praise and credit must be given to the Dental Association of Thailand, who continuously applied to organise this event for years. It will be an opportunity for the international community to learn about Thai dentistry, especially in the area of dental public health, education, and services, which are well organised.

About 15,000 registered dentists in Thailand, more than one-third, serve the country’s population under the Ministry of Public Health at community or governmental level. The government’s universal Coverage scheme covers a number of dental services, including oral health promotion and the prevention of oral diseases, at public hospitals countrywide. All ten dental schools in Thailand are focusing on preventive dentistry by providing their students with experience in the field of community dentistry to prepare them to be public health dentists in the future. In addition, dental competency has been fully integrated into the six-year dental curriculum so that graduates can confidently begin practising dentistry once having completed the national dental licensure assessment.

It must be noted that currently half of the dentists in Bangkok work in private practices. A high number of well-equipped dental clinics are run by Thai dentists who received their training at acclaimed dental institutions around the world. They serve no Thai people but also an increasing number of medical tourists who come to the country to receive treatment.

The Dental Association of Thailand has been organising its biennial dental congress and trade exhibition for many years. Approximately 5,000 to 5,000 dental professionals usually attend these meetings. The exhibition has increasingly attracted companies and dealers from around the world and received a great response from Thai dentists, who are eager to upgrade their practices.

The 2015 FDI AWDC will provide a great opportunity for Thai dentists to gain exposure to the advanced knowledge of well-known experts and world authorities in dentistry, who will be coming to Thailand as speakers, panellists, and delegates from developed and developing nations with the goal of exchanging their knowledge with other participants from around the world. It will be the largest international dental congress for Thai dentists to obtain ideas on how to improve the quality of oral health care for the population.

Although most Thai dentists do not attend professional presentations given in English on a regular basis, the scientific programme for the Bangkok AWDC presented by world-class speakers will most likely encourage the participation of more regional dentists.

The dental expo will be a showcase for new products and materials, and there will be a competition between all exhibitors for the solution that offers the greatest benefit for the patient in terms of quality and cost-effectiveness. This will motivate the dental community challenge for the organiser of the Bangkok AWDC. Since 2015 is the year by which the ASEAN Economic Community will be established, this will offer an important opportunity for dental professionals throughout the region to come together to host the congress in partnership. Thailand will be welcoming dentists from around the world to enjoy the country’s unique culture and beautiful landscapes in addition to visiting the congress.
European dental implant market limited by financial uncertainty
Countries in Eastern Europe poised for highest growth

Carmen Chan
Canada

The dental implant market, consisting of implants, abutments, and other devices, in Europe was valued at approximately €1.18 billion (US$1.6 billion) in 2012. Until the end of this year, the market will continue to contract slightly. It is expected to recover, however, and reach a value of just under €1.60 billion (US$2.5 billion) by 2021.

Germany reigns as the largest market, worth over US$500 million in 2012—almost the equivalent of France and Spain combined. Overall, these two countries have the lowest growth rates, with both suffering from either low GDP growth or high unemployment rates along with overall concerns regarding unsustainable national debt levels.

Demand for dental implant treatment continues to be fuelled by the ageing population. The US Census Bureau forecasts that the population aged 65 and older in Europe’s seven key markets will grow at an average compound annual growth rate of approximately 1.5% until 2021, whereas the total population will only grow at approximately 0.5% per year. As people age, their oral health tends to deteriorate, resulting in edentulism, for which implant restoration is increasingly becoming a recommended treatment option.

For most European patients, dental implant procedures are considered elective and need to be paid out-of-pocket by patients. As a result, financial considerations are among the most important factors influencing patients’ decision to undergo these treatments. The unstable economy has resulted in increased patient hesitance to seek dental implant treatment and in higher preference for lower-risk and less costly traditional procedures and products, such as traditional loading (instead of immediate functional loading) and screw-retained abutments (over cement-retained ones).

Aside from the economy, countries such as Sweden and the Netherlands have experienced drastic shifts due to changes in government reimbursement. In the past year, both countries’ markets have suffered declines due to governments proposing changes to reimbursement. This uncertainty regarding dental implant treatment coverage has fuelled physician and patient reluctance to perform and undergo procedures.

The current dental implant market is defined by a never-ending number of competitors in the marketplace. Competition will become increasingly fierce with the recent merger of DENTSPLY Friadent and Astra Tech Dental to form DENTSPLY Implants, placing the company in direct competition with market leader Straumann for the top spot. While physicians and other competitors still perceive the two as separate brands, DENTSPLY Implants’ wider product portfolio and greater focus on the implant business will likely change this. Furthermore, smaller competitors are currently penetrating the market with a

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DETROIT, USA: Researchers from the US have linked the growing number of adults under the age of 45 with oropharyngeal cancer to the human papillomavirus (HPV). From a review of cancer data spanning a 36-year period, the researchers observed a substantial increase in young adults with cancer of the tonsils and base of the tongue. In addition, they noted a wide deviation between Caucasians and African-Americans.

The researchers used data on more than 1,600 patients aged 36 to 44 who had been diagnosed with invasive oropharyngeal squamous cell carcinoma between 1973 and 2009. Overall, the study revealed a 60 per cent increase in cancers of the base of the tongue, tonsils, soft palate and pharynx in people younger than 45 during the period. While the rate of oral cancers decreased by 52 per cent among African-Americans, it increased by 113 per cent among Caucasians.

However, compared with Caucasians and other races, African-Americans had a lower five-year survival rate. The five-year survival for the whole study group was 54 per cent.

According to the researchers, 50 to 65 per cent of patients underwent surgical resection for their tumours. Patients who had both surgery and radiation therapy had the highest five-year survival rate, they said.

Although the growing incidence of oral cancer has been largely attributed to the sexual revolution of the 1960s and 1970s and changes in sexual practices, the current study of people born during this period suggested that other factors may contribute to this development.

“The predominance of oropharyngeal cancer in this age group suggests either non-sexual modes of HPV transfer at a younger age or a shortened latency period between infection and development of cancer,” explained Dr Farzan Siddiqui, lead author of the study.

According to the American Cancer Society, an estimated 56,000 people in the US will contract oral cavity and oropharyngeal cancers in 2013, with about 8,500 people dying of these cancers.

The study was conducted at the Henry Ford Hospital in Detroit. Data was obtained from the Surveillance, Epidemiology and End Results database. The findings were presented at the 55th Annual Meeting of the American Society for Radiation Oncology in Atlanta, USA, in September.

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Carmen Chan is a Senior Market Research Analyst at Millennium Research Group, a global market intelligence provider based in Toronto in Canada.
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Biolase could become the next Intuitive Surgical
An interview with the company’s CEO Federico Pignatelli

Federico Pignatelli

In a recent statement, US-based provider of dental and medical lasers BIOLASE announced that it has reached an acquisition deal with Camber Capital Management in Boston in the USA has purchased US$5 million worth of the company’s common stock. DTI had the opportunity to speak with CEO Federico Pignatelli about what this means for the company, mistakes of the past and the reasons that the company’s WaterLase technology has the potential to revolutionise dental surgery.

DTI: Mr Pignatelli, your company seems to have been struggling recently, according to some analysts. What is your company’s position right now, and what does the recent sale of shares to Camber Capital mean for your business?

Federico Pignatelli: The confusion arises from the fact that we grew 40 to 50 per cent a year for two years and in 2013 our growth has slowed down to “only” 15 to 20 per cent. We believe that BIOLASE will grow strongly in the years to come. We just needed to raise our capital with a few million dollars in order to improve our balance sheet. This capital raise, combined with our US$8 million Comerica Bank credit line, will give us enough capital to continue our plan of business expansion.

Also, as we approach the fourth quarter we see net income and positive cash flow returning and we are expecting this positive development to continue in 2014. So we feel very positively about where BIOLASE is right now.

Do you think lasers and particularly WaterLase will be the technology of choice in dentistry for the future?

If you think about it, dentistry has not really changed very much since the dental drill was invented by the Egyptians 7,000 years ago. The principle of removing tissue by the Egyptians 7,000 years ago, WaterLase technology for dental surgery, which means that it now cuts as fast as a conventional dental drill, sometimes even faster. Furthermore, it allows impressive return on investment and the system’s extensive clinical advantages in comparison with conventional dentistry.

In fact, only two and a half years ago, WaterLase technology for the very first time broke the speed barrier, which means that it now cuts as fast as a conventional dental drill, sometimes even faster. Furthermore, it allows impressive treatment and cutting of soft tissue, which is something a dental drill cannot do. These additional options mean that dentists no longer need to refer patients to a specialist for these tasks, thereby boosting revenue in the practice.

Friends, colleagues, clients, and even our benchmark competitors, such as Sirona’s CEREC, WaterLase is protected by over 100 patents, which will allow us to protect our competitive advantage. The adoption cycle of new technologies is growing increasingly shorter and more advanced technologies like WaterLase will rapidly find their way into dental practices. Dentists that do not upgrade their practices will likely begin to lose patients, become uncompetitive and lag behind. You cannot fight technology; you cannot fight innovation. If you do, you are doomed to be left out of the market.

Why do you think lasers and particularly WaterLase will be the technology of choice in dentistry for the future?

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R-dental awarded for universal registration material

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Detecting and managing potentially malignant disorders of the mouth are among the most challenging tasks for dental professionals worldwide. At the 2015 AWDIC in Istanbul, DTDI had the opportunity to speak with FDI presenter Prof. Stephen Porter from the UCL Eastman Dental Institute in London about new risk factors, prevention strategies, and why actor Michael Douglas is not a good poster boy for avoiding the risk of mouth cancer.

**DTI: A recent study on Turkish dental patients in central Anatolia has shown that only one in two people are aware of oral cancer. Are these results representative of most people’s knowledge about the condition nowadays?**

Prof. Stephen Porter: It is not uncommon for individuals not to be aware that cancer can arise in the mouth. Indeed, there are a number of examples where patients without cancer who attend clinics that specialise in mouth cancer are unaware of the possibility. This trend regarding a lack of awareness occurs across the globe, although it varies between countries.

**With celebrities like actor Michael Douglas struggling publicly with the disease, do you think awareness of malignant diseases of the mouth is increasing?**

Undoubtedly, it will increase. When a celebrity announces that he or she has a particular disorder, there is often an upsurge of referrals by concerned individuals. In the UK, this was perhaps best illustrated when Freddie Mercury declared that he had HIV. There was a substantial rise in the number of persons seeking advice and/or testing for the disease in the aftermath.

A fair number of famous people have had oral cancer, including Sigmund Freud, Ulysses S. Grant and TV producer Aaron Spelling to name but a few. In the UK, journalist and first husband of TV cook Nigella Lawson John Douglas is not a good poster boy for avoiding the risk of mouth cancer.

**DTI: In its 2008 policy statement, the FDI stresses the importance of dental professionals in the detection of oral cancer and patient education. To what extent are dental professionals fulfilling this role?**

The majority of patients ultimately found to have oral cancer will have been identified by a dentist or other dental professional. Dentists are fulfilling this role to a great extent. However, dental professionals are in a unique position to be able to provide advice about oral cancer prevention, for example tobacco and alcohol cessation, and information on where additional advice can be obtained, for example to help tobacco cessation services.

**The current role of thumb is that the more people smoke and drink, the greater the risk of mouth cancer. The same applies to alcohol. There are some nuances as regards the type of tobacco or alcohol that may affect risk but these are rather not of notable concern when communicating a disease prevention message. Of significance is that the risk of cancer developing if someone smokes and drinks is much higher than if someone only smokes or only drinks (i.e., there is a synergistic rather than additive effect).**

Of course, many dentists will indicate that they have no experience of having seen oral cancer or having managed any patient who has previously had such disease. However, there are some simple rules. If a lesion is solitary, has been present for more than three weeks and has no local cause, the patient should be referred. Any lesion that strikes a dental professional as odd and/or destructive warrants referral.

**DTI: The nightmare scenario is that a clinician may be unable to see the cancer. Why do you think this might happen?**

Unfortunately, the Michael Douglas case may perhaps have confused the exact role of the human papillomavirus (HPV) in mouth cancer. Certainly, it can cause mouth cancer and it can be acquired through orogenital contact, but there is no evidence that such contact will lessen any subsequent risk of contracting mouth cancer.

**Oral cancer figures are rising worldwide. What are the reasons for this, and does the FDI have any criteria for an epidemic, as it has been called in some media reports?**

An epidemic is defined as new cases of a disease in a given human population over a particular period, if it has an emotive element to it. Oral cancer certainly is on the increase in the developed world, although the number of new cases is falling in some parts of the globe, notably parts of India.

The rise in some countries is gradual but sustained. Smoking tobacco and/or drinking alcohol are the two factors that traditionally have given rise to mouth cancer. In addition, individuals are now acquiring cancer-causing (oncogenic) types of HPV, probably via orogenital contact. This burst of infectious disease, or indeed sexually transmitted infection, is not a new phenomenon, but it has become much more manifest in the last 50 years. So, what is new is probably best described to be consistently associated with the duration or type of treatment of the lichen planus, nor the age or sex of the patients, nor their alcohol or tobacco habits. The good news, perhaps, is that 98 to 99 per cent of patients with oral lichen planus will not contract mouth cancer.

**Oral cancer certainly is on the increase in the developed world.**

It has been suggested that 1 to 2 per cent of patients with oral lichen planus will develop mouth cancer, but this risk is highly unpredictable because it does not appear to be consistently associated with the duration or type of treatment of the lichen planus, nor the age or sex of the patients, nor their alcohol or tobacco habits. The good news, perhaps, is that 98 to 99 per cent of patients with oral lichen planus will not contract mouth cancer.

Isolated white or red patches on the oral mucosa (sometimes termed “leukoplakia”) and “candidiasis” are some obvious manifestations that can be mistaken for signs of HPV, but these are usually uncommon, and certainly less common compared with oral lichen planus.

**What if other factors besides smoking, drinking and HPV are currently being investigated, and what is their malignant potential?**

People chew betel nut preparations (e.g. paan masal and gutka) in parts of India, Pakistan, Bangladesh and surrounding areas. These cause a lesion of the oral tissue, termed “submucous fibrosis”, which carries a high risk of causing oral cancer of possibly 50 per cent.

There is no evidence that a particular frequency of dental examination will lessen the risk of mouth cancer.

**There is no evidence that a particular frequency of dental examination will lessen the risk of mouth cancer.**

Is there any evidence that regular screenings can help prevent oral cancer?

There is no evidence that a particular frequency of dental examination will lessen the risk of mouth cancer. However, the more regularly a person is examined, the greater the chance that emerging malignant or potentially malignant disease will be detected and that any lesion present will be small.
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14 Trends & Applications

CAD/CAM technology: Setting the standard and achieving success

DENTAL TRIBUNE Asia Pacific Edition

As a full-time general dentist, CAD/CAM technology is a subject that has been of significant interest to me. I incorporated CAD/CAM into my practice more than 10 years ago and have been a proponent of the technology and its efficiency ever since.

I began with CEREC 3, and then graduated to CEREC 5D. After successfully incorporating S-D technology into my practice, I was excited to see some new faces emerge in the CAD/CAM marketplace. E4D, Ivoclar and Lava COS were all options to consider for digital capture, but only the E4D Dental System and CEREC offered both scan and mill capability in the office.

When the time was right for me to upgrade to the newest technology, the E4D Dentist System by DHD Technologies was just a better fit—literally and figuratively. The software, support, training and results were more in line with my practice goals and vision, and I felt more confident in the longevity of the hardware. While both systems can produce high-quality restorations, I felt that I would be better supported in achieving restorative success with the E4D Dentist System. I made my decision to switch late in 2010 and have never looked back. Since then, research and development in CAD/CAM restorative materials have exploded. We have a wide variety of material options to choose from to meet all of our restorative and aesthetic demands.

My peers routinely ask me about how to use technology most effectively to cope with rising costs and lower margins. I often answer by saying that they need to integrate chairside CAD/CAM into their practices. I am confident that chairside CAD/CAM is the future of restorative dentistry, not only from a technical perspective, but also in terms of profitability and marketing.

Simple economics

Over the last five years, my practice has doubled in revenue. In 2010 it grew 18 per cent, while other practices were struggling to break even. It consistently produces more than $1 million on a four-work-day week, with an average collection rate of 98 per cent. It maintains an overhead of about 55 per cent and normally attracts more than 50 new patients per month.

I am able to do all of this while participating with more than 15 preferred provider organizations (PPO), as well as several reduced-fee plans and two union plans. I attribute the success of the practice to five key factors (Table 1).

Although every factor plays a critical role in the growth and success of a practice, technology has the most significant impact on my practice’s ability to generate high-quality restorative dentistry in a more efficient and less stressful way. My practice utilizes networked office management software with computers in every operatory, office and support area. In addition to digital radiography, we regularly use intraoral cameras, diode and erbium lasers and, most importantly, chairside CAD/CAM technology. Durability to provide high-quality dentistry with ease and reliability relies on the integration and utilization of all of these different technologies, with CAD/CAM being at the centre of our restorative treatment appointments.

The decision to purchase and implement new technology can be challenging. In a PPO practice, where fees can be as much as 50 per cent lower than in a fee-for-service office, the decision can be even more intimidating. With a lower potential profit margin, added capital expenditures can have more of an impact on your bottom line.

I considered several factors when choosing to add CAD/CAM to my technology armamentarium. Quality, fit and durability of the restorations were the primary focus of my clinical decision. The profitability, practical application and return on my investment were the primary focus of my business decision.

Control and aesthetics

Aesthetics was a significant concern as well. Would I be able to achieve optimal aesthetics with the available materials with same-day CAD/CAM dentistry?

Would the materials available offer enough variety to handle complicated aesthetic challenges?

After I completed some additional clinical training in CAD/CAM aesthetics, including staining and glazing IPS Empress and IPS e.max ceramic (Ivoclar Vivadent), and now the simplified polishing of LAVA Ultimate (5M ESPE), I was surprised by how easy it was to achieve great aesthetics. I now find myself tackling the more challenging cosmetic cases on my own because I have more control when characterizing is done chairside.

The E4D Dentist System also offers the option to have your restorations designed and/or milled offsite using the E4D SKY network. For an additional fee, you can actually send your case to DHD Technologies in expert designers to have your designs or milling completed if you choose. This is a great service for dentists who are new to the technology, as they’re just getting into more advanced restorative/cosmetic cases or want to maximize utilization while still keeping a full schedule.

In addition, the E4D Dentist System (Dentalogic Version 4.5) can import and export open file formats (.sit), providing additional options for utilizing a variety of digital services from laboratories and services through the E4D SKY network.

Not only can it match the esthetics, strength and durability of traditional indirect restorative methods, but CAD/CAM technology can also provide a significant and immediate financial advantage over traditional impression-based dentistry. It allows a dentist to produce and deliver restorations in one visit.

It reduces overhead by eliminating external fabrication fees and reduces the costs associated with impressions and provisionalization as well as reducing chairtime for patients. Every patient visit costs a practice time and money. Each time a patient is seated we use perishable goods, expend valuable chairtime, utilize staff time and must track and manage scheduling. The average crown delivery visit requires 50 minutes of chairtime and costs a practice more than $US50 in overhead expense.

Table 1: Five key factors to practice success

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical skill</td>
<td>Proficiency in clinical, diagnostic and communication skills for the practitioner and team</td>
</tr>
<tr>
<td>Team</td>
<td>Highly skilled, motivated, well-trained and easily adaptable individuals</td>
</tr>
<tr>
<td>Systems</td>
<td>Clear and effective protocol for clinical, administrative and financial practice management</td>
</tr>
<tr>
<td>Marketing</td>
<td>Effective marketing and advertising to generate awareness of new patients</td>
</tr>
<tr>
<td>Technology</td>
<td>Cutting-edge technology to increase efficiency and productivity</td>
</tr>
</tbody>
</table>

Table 2: The economics of single-visit vs. multiple-visit indirect restorative dentistry

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Traditional Restorative Treatment</th>
<th>CAD/CAM Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visits (time)</td>
<td>150 min</td>
<td>155 min</td>
</tr>
<tr>
<td>CEREC cost</td>
<td>$250</td>
<td>$0</td>
</tr>
<tr>
<td>Materials cost</td>
<td>$100</td>
<td>$80</td>
</tr>
<tr>
<td>Staff cost</td>
<td>$40</td>
<td>$70</td>
</tr>
<tr>
<td>Average fee</td>
<td>$1,722 (841 each)</td>
<td>$1,722 (860 each)</td>
</tr>
<tr>
<td>Production per hour (fee/time)</td>
<td>$608.56</td>
<td>$745</td>
</tr>
<tr>
<td>Total profit (fee minus cost)</td>
<td>$1,572</td>
<td>$1,502</td>
</tr>
<tr>
<td>Time/day (min)</td>
<td>15 min</td>
<td>45 min</td>
</tr>
</tbody>
</table>

*Figures based on the time span of 2 hours. The total charge for the two-hour time span was $2,157.

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It is critical to maximize the efficiency with which you provide dentistry in order to remain profitable, and one visit is more efficient than two. The economics of single-visit vs. multiple-visit indirect restorative dentistry is obvious and impactful.

In addition to an increase in total profit and hourly productivity, the dentist has 50-45 minutes of additional downtime to produce more dentistry, provide hygiene exams and perform administrative duties.

Beyond the financial return on investment are the intangible and immeasurable benefits that same-day dentistry provides. If a patient does not need a temporary, he or she is certainly less likely to call you over the weekend to have the temporary re-cemented.

If a second visit is not necessary to insert a restoration, then the potential of cancelling, changing or not showing for the appointment is eliminated. This reduces stress and opens up valuable time in your schedule to produce more dentistry profitably.

Marketing same-day dentistry

Wherever I am speaking with dentists or team members about practice management and increasing production, marketing strategies invariably become a topic of discussion. I usually suggest that the best marketing techniques focus on addressing the concerns that our patients have regarding dentistry. Fear, money, time and discomfort are common barriers to dental treatment. CAD/CAM addresses the issue of time quite well, but for most patients every dental visit represents time away from work, family members or other important tasks. By providing same-day restorative treatment you are saving your patients precious time.

People don’t like going to the dentist. It’s not personal. It’s just not pleasant. Have you ever had a colonoscopy? Not a great memory. Now imagine the thought of a colonoscopy that took not one, but two visits and required you “wear a temp between each visit that may fall out.”

It is much easier for patients to accept treatment if they can fit it into their budget, as well as into their schedules.

Show patients that you value their time and that you have made a significant time/money investment in your practice in order to facilitate the ease and efficiency with which you can provide treatment, and I will show you a great marketing strategy.

Not only is time a major determinant to treatment acceptance, but so is fear. When patients are told that they need a crown, these are the thoughts and images that come to mind: An awful tasting impressions materials or temps that fall out during an important meeting, ugly gray lines near the gum lines around old crowns. Think about how powerful a marketing tool it is to be able to tell them that in your practice:

• they don’t need any impressions,
• they don’t have to wear a temp,
• there is no metal under the crown so they won’t have gray lines,
• and the entire procedure can be done in one visit, during which they will have 50-45 minutes to catch up on work, return e-mails or just relax and watch TV (I have TVs in all of my operatory areas).

When that patient leaves with a brand new crown and goes back to work or out with friends, he (or she) is going to talk about what a wonderful and convenient experience he just had in your office. “No, I don’t have to go back. My dentist can do crowns in one day.” That’s how to market your practice, and that’s the most significant return on your investment that CAD/CAM has to offer.

By offering CAD/CAM, you are able to address two common and significant barriers to treatment acceptance: same-day dentistry is a powerful marketing tool, as well as an effective way to increase the frequency with which your patients choose to move ahead with restorative dentistry.

Although the decision to implement new technology into your practice can be stressful and challenging, reduced productivity due to outdated technology should be of greater concern.

Make an investment in your office, your team and your practice, and the results that you see will far outweigh the financial concerns that are preventing you from making a huge leap forward and a difference in your dentistry.
A new name for our winner: Proface will from now on be called Facelight

Caries seen differently: Illuminating opened cavities with the Facelight light probe clearly reveals dentine infected with caries. This innovative method supports selective, minimally invasive excavation and minimises the risk of caries recurrence!

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Restoring anterior teeth with thin veneers

New materials like IPS e.max Press Impulse provide improved aesthetics

Dr Rafael Palaciño Sande
Spain

With the advent of new materials such as lithium disilicate, very thin veneers can now be fabricated that require only minimal removal of natural tooth structure. The IPS e.max all-ceramic system from IvoRoc Vivadent covers all the current all-ceramic indications and is suitable for use with the CAD/CAM and press techniques.

The wide assortment of IPS e.max Press products comprises ingots in four levels of translucency (HT, LT, MO and HO) and Impulse ingots in three different values (Value 1, 2, 5) and two opal shades (Opal 1 and 2). These materials are particularly useful for fabricating single-tooth restorations when dental enamel has been damaged or stained. An example for this is described in detail in the following case report.

Clinical case
A 39-year-old patient consulted our clinic for improving the appearance of her anterior teeth (Fig. 1). Apart from slight periodontal problems, we diagnosed connective-tissue transplants, a mandibular open bite (Fig. 2), and open bite (Fig. 2). A radiographic examination confirmed the fundamental periodontal problem and showed periapical infections surrounding teeth 51 and 52.

Based on these findings, a two-stage treatment plan was suggested, starting with the elimination of dental caries and the infection. Also, periodontal curettage and planing of root surfaces were performed to control the underlying disease. The existing malocclusion was corrected with orthodontic treatment.

The second stage focused on aesthetics and started with a clinical, radiological and photographic analysis (Figs. 3 & 4). An impression was taken and the maxillomandibular relationship was recorded by means of an arbitrary facebow. The gum line was adjusted with the help of connective-tissue transplants. The mandibular tooth arch was bleached. Finally, the ultra-thin veneers (< 0.5 mm) made of IPS e.max Press Impulse Opal 2 were placed.

After the teeth had been thoroughly analysed, a wax-up was fabricated, which was subsequently used to create a mock-up. A 2 mm thick perforated tray matrix was placed in the patient's mouth. Then the provisional material was cured and the matrix was removed. Excess composite was trimmed away with rotary instruments. Subsequently, the temporary restorations were characterised with staining and glazing materials.

Laboratory work
The dental laboratory technician made a cast from the dissected impression using Class IV plaster. After the models had hardened, the preparation margins were defined (Fig. 9). The veneers were waxed up and then removed from the die and invested. Subsequently, they were reproduced with IPS e.max using the press technique. The veneers were divested (Fig. 10), finished and individually characterised (Fig. 11a). The

Try-in and cementation
In the second clinical phase, the veneers were tried in and cemented in place. At first, the temporary restorations were removed and the prepared teeth were cleaned. Each veneer was tried in individually to ensure correct fit. Next, the proximal fit was checked by positioning one veneer correctly and then

Impression
The heavy/light dual-phase impression was taken with a customised tray, which was coated with an adhesive to increase the adhesion of the impression material to the tray. Using the double-cord retraction technique, the first retraction cord (size 000) was individually packed into the sulcus of each prepared tooth. A second continuous retraction cord (size 00) was then placed on top. With this method, the gingiva is completely displaced from the prepared dental hard tissue, blood and saliva, which could affect the precision of the impression adversely. The heavy/light dual-phase impression technique makes use of impression materials of different viscosities. Accordingly, a heavy body material was loaded into the tray, while a light-body material was syringed around the prepared teeth (Fig. 8). The

Preparation
For proper reduction of the vestibular tooth surface, a depth marker was used. This bur cut orientation grooves with a depth of 0.3 mm. The incisal edge was reduced with a diamond bur (0.6 mm). In addition, the instrument was used to remove the ridges between the grooves and completely level out the surface. The proximal and gingival areas were prepared with the same diamond.

A retraction cord was placed along the gingival margin to protect the gingiva during the preparation procedure. The marginal and proximal areas were prepared and then polished. The entire preparation surface was completely smoothed with a polishing disc and a medium-grit polishing paste. All grooves and edges were eliminated. The silicone matrix was inserted to check the correct dimensions of the prepared teeth (Fig. 7). Then, the retraction cords were removed.

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The precision of the impression was checked and temporary restorations were produced chairside. For this purpose, a two-component composite resin was mixed and syringed into the previously fabricated silicone matrix. Once the composite resin had an ideal consistency, the matrix was placed in the patient's mouth. Then the provisional material was cured and the matrix was removed. Excess composite was trimmed away with rotary instruments. Subsequently, the temporary restorations were characterised with staining and glazing materials.

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Excellent readability

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The adhesive cementation procedure was divided into three stages: pretreatment of the veneers, conditioning of the prepared teeth, and placement and finishing of the veneers. A rubber dam was placed with a retentive clasp for each preparation. The veneers were tried in with the Variolink Try-In pastes. Subsequently, they were rinsed with a water jet and dried with oil-free air. For optimal cleaning results, Ivoclean (Ivoclar Vivadent) was applied for 20 seconds and then cleaned with a water jet.

ExciTE F adhesive (Ivoclar Vivadent) was applied shortly before the veneers were placed. The adhesive was applied thickly on enamel and dentine, and carefully scrubbed in for at least 10 seconds. The excess was dispersed to a thin layer with a weak stream of air. Pooling had to be avoided in the process. A shiny surface showed that the tooth was completely sealed. The excess was removed with a water jet and dispersed. The margins were isolated with Liquid Strip glycerine gel (Ivoclar Vivadent), which is supposed to prevent the formation of an oxygen-inhibited layer during polymerisation. It also enables the luting material to cure properly. Subsequently, the restorations were cured for 90 seconds from all sides.

The excess was removed with the help of a scalpel, fine-grit burs and silicone polishers were used at the palatal margin. Finally, the rubber dam was removed and the occlusion was inspected (Fig. 11). After the treatment was finished, the patient received instructions on how to maintain her restorations. She was scheduled for a recall examination one month after treatment (Figs. 14a & b).

Conclusion
The topic of aesthetics continues to gain importance in dentistry. The development of innovative materials such as IPS e.max Press Impulse allows clinicians to use new techniques for non-invasive preparation of the teeth. Furthermore, they offer aesthetic benefits and eliminate the previous quality difference between the press-on and the layering techniques.

Specialist knowledge of the adhesive cementation of lithium disilicate restorations gives dentists the professional edge needed to address the challenges associated with this type of treatment. The treatment protocol is widely established today. However, it is of utmost importance for dentists and dental technicians to perform their work with great precision. In order to jointly have a positive impact on the results, both parties must be familiar with the entire procedure. Teamwork and a meticulous approach during the individual treatment phases are required to achieve better aesthetic outcomes.

Acknowledgement
I would like to thank Roberto Portas Moure for the excellent dental laboratory work and the patient for her confidence in us and her patience during the treatment. 

A list of references is available from the publisher.

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I recently had the honour to attend the 6th ANZ Invisalign forum at the Intercontinental Hotels and resort in Natadola, Fiji, as a speaker. In the short history of this unique forum, it is the first time that it was organised as an “orthodontists only” event. With 180 participants it had a fantastic turnout.

The theme this year was “a forum designed exclusively for orthodontists to push the boundaries of your unique skill-set.” The keynote speaker of this year’s conference was Dr Willy Dayan, who flew all the way from Toronto in Canada with his lovely wife Ellen, who herself is a restorative dentist. Dayan presented three comprehensive lectures that tried to look at Invisalign from different perspectives. For example, his presentation on “think like plastic, feel like a tooth” shed light on how orthodontists can convert their ‘fixed braces’ mindset and biomechanics over to the clear aligner system.

The scientific programme was strongly supported by seven local speakers: six specialist orthodontists (who are top Invisalign users in Australia) and an associate professor of oral hygiene. They gave presentations on how to start up and build an Invisalign practice, evidence-based Invisalign treatment, as well as the latest innovations of the Invisalign System and how to achieve excellent clinical results with. Oral hygiene and orthodontics was also discussed. My presentation was on how to confidently prescribe extraction treatment plans, as well as how to diagnose and treat Class III cases with Invisalign.

The scientific programme was set in an easy going pace with three half-day lectures. With everyone attending the conference staying at the same conference location, there was no excuse on skipping any lectures. The attendance was overwhelming and the overall feedback was excellent. Social events are the very heart of any Invisalign forum. This time the organisers threw an immaculately beach dinner party at the Intercontinental’s Kama Beachfront.

The overall vibe of this conference, being an orthodontist only event, had everyone in their “learning comfort zone”. Ideas and clinical tips were shared all around, even during breaks, and the atmosphere was just great. I cannot wait for the next conference to be announced.

Dr Eugene Chan
Singapore

An excellent event

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We at Premier believe that technological innovation is fundamental to delivering useful products for the dental profession. Often, the sources of these ideas are active practitioners who step forward with very useful innovations which we help mold into a successful product. Dental product life cycles, although historically long-lived, are undergoing rapid changes. To lead these changes, Premier has many partners with expertise in many areas: orthodontics, including world-class research capabilities in adhesive materials and modern manufacturing; facilities to provide innovative products into the dental practice.

Traxodon® is a recent innovation that is experiencing global success. This addition to our list of new products offers a new T-LOC™ Triple Tray® impression trays, Premier® Implant Cement® and CompCore® AP dual-cure core build-up material. Traxodon offers predictable retraction and hemostasis prior to impression making, cementation, bonding procedures or where stabilization and retraction are required. Traxodon can be dispensed directly from the sleek container into the sulcus or can be used in combination with a Premier Retraction Cap for maximum tissue absorption. The selective paste dispenses soft tissue and works synergistically with the intrinsic properties of aluminum chloride to create friction. Fluid is absorbed while Traxodon occupies the sulcus. After two minutes, Traxodon is rinsed away, leaving an open, retracted sulcus.

Another exciting product line from Premier includes Enamel Pro® prophylaxis paste, the useful prophylaxis paste formulated to deliver ACP (Amorphous Calcium Phosphate). Enamel Pro creates ACP when it contacts the patient’s teeth and saliva. Scientific data supports that Enamel Pro activity gives greater luster for whiter, brighter teeth. Enamel Pro is gluten-free and removes stains and polishes quickly without splatter. It is available in five flavors and multiple grits.

Additional products delivering ACP include Enamel Pro® Varnish and Enamel Pro® Gel. This unique suite of products offers cutting-edge technology and several benefits to your hygiene armamentarium.

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References

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