Stress fuels cancer spread

Scientists have linked the activation of a stress gene in immune-system cells to the spread of breast cancer to other parts of the body. The study, published in the Journal of Clinical Investigation, suggests that the gene, ATF3, may be the crucial link between stress and cancer, including the major cause of cancer death – its spread, or metastasis, Tson-Win Hai, professor of molecular and cellular biochemistry at the Ohio State University and lead author of the study, said: "If your body does not help cancer cells, they cannot spread as far. The rest of the cells in the body help cancer cells to move, to set up shop at distant sites. And one of the unifying themes here is stress."

P&G call for relaxed teeth whitening laws

Procter & Gamble is asking European regulators to loosen rules that stop its from selling teeth-whitening products. P&G’s Whitestrips contain between six and ten per cent bleach, and its 3DWhite mouthwash contains 1.5 per cent bleach. Under EU regulations, products in which the bleach or hydrogen peroxide content is between 0.1 and six per cent can only be offered by dentists. Products higher than six per cent are illegal in the EU. A P&G executive has said that the US group was pushing Brussels to ease the restrictions.

Dentist struck off for offering female circumcision surgery

A dentist has been struck off by the GDC after it was found that he conducted an inappropriate intimate examination on a woman and offered to perform female circumcision on two children. The allegations, when he talked with her about, exceptable for a registered dentist who use services.

Professor Field said: "I am looking forward to working with Mike Richards again and joining David Behan’s executive team, which has been making great strides in moving the CQC forward in a very positive direction." CQC Chief Executive, David Behan said: "It is important that the Chief Inspector of General Practice is trusted not only by his peers in primary care, but leaders, staff, and managers throughout the NHS. Steve Field is known and respected across healthcare and is the ideal person to lead our work in primary medical and dental services as well as to ensure that those services link well with other health services and with social care."

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Study boosts confidence in dental implants

Results from two of the largest international clinical studies performed to date with dental implants have just been published and demonstrate excellent clinical performance. Together, the studies have evaluated more than one thousand Straumann Bone Level implants in Europe, the US and Australia.

The studies both reported very high implant survival rates of more than 98 per cent with practically no bone loss around the implants.

The first study was a randomised controlled clinical trial (RCT) at 11 clinical centres in Europe, USA and Australia.

This RCT has evaluated 106 patients each treated with one implant and followed for three years. The investigators compared the outcomes of two different approaches – the first involving two surgical steps, in which the implant is covered with gum tissue (‘submerged’) during healing, and the second involving just a single step, in which part of the implant is left exposed (‘transmucosal’) thus saving a second surgical operation. Only a single implant was lost, yielding three-year implant survival rates of 98.1 per cent and 100 per cent for the transmucosal and submerged groups respectively.

Because bone loss around implants has been documented as a common undesirable effect of implant treatment, this study looked carefully at bone level changes. It showed that bone level was impressively stable over three years after implant placement, with mean decreases of less than 0.7 mm and 0.6 mm in the submerged and transmucosal groups respectively.

While RCTs demonstrate that products or treatments work well, they are usually conducted by specialists in selected and strictly-controlled populations. This study was performed by dental practices and University clinics that are highly specialised in dental implantology, which raises the question of whether its excellent results can be reproduced in daily dental practice. To answer this, a large study using the same implant was conducted in Europe and the US, in which the dentists had to follow the product guidelines but were able to use the implant as they would in normal daily practice. The strength of this type of investigation, which is known as ‘non-interventional study’ (NIS), is that it documents real-life situations, in which indications, patients and conditions all vary widely.

In this study, a total of 908 implants were evaluated in 558 patients who underwent dental practices in six countries, revealing an implant survival rate of 98.5 per cent after one year (the risk of failure is highest in the first year after implant placement). Besides the very high survival rates, the bone level remained very stable in the majority of cases. The investigators therefore concluded that treatment with Straumann Bone Level Implants yielded very successful outcomes in ‘real-life’ conditions.

Earnings down for dentists

The annual ‘Dental Earnings and Expenses’ report has now been published.

The report covers England and Wales 2011-12, and provides a detailed study of the earnings and expenses of full and part time self-employed primary care dentists who carried out some NHS work in England or Wales during 2011-12.

The report found that the average taxable income from NHS and private dentistry for Providing-Performer dentists was £112,800, compared to £61,800 for Performer Only dentists. For all self-employed primary care dentists this figure was £74,000.

The average gross earnings for Providing-Performer dentists were £558,400, compared to £96,200 for Performer Only dentists. The average total expenses for Providing-Performer dentists were £245,600, compared to £112,800 for Performer Only dentists.

Dentist hopes to clone John Lennon

In 2011, dentist Michael Zuk purchased John Lennon’s tooth at auction and has since made a line of DNA pen-dants from it. Now he has gone one step further, and given the tooth to scientists in the hope that they will be able to use the DNA and clone Lennon.

“I am nervous and excited at the possibility that we will be able to fully sequence John Lennon’s DNA,” he said. “With researchers working on ways to clone mammoths, the same technology certainly could make human cloning a reality.”

Welsh cancer patients ‘denied new drugs’

Cancer patients in Wales are more than four times less likely to receive a newer drug on the NHS than those in England, it is claimed.

The Rarer Cancers Foundation (RCF) said the Welsh government’s figures show the full extent of inequality in access to cancer drugs across the country. Health ministers in England set up a special fund worth £260m a year in 2010, to help pay for expensive new cancer drugs. In contrast, patients in Wales have to make individual requests for funding through their doctor if a new medicine has not yet been approved by the watchdog NICE.

Andrew Wilson, chief executive of the RCF, claims cancer patients in Wales are paying the price for a failure to fix the broken system. “The Welsh Assembly Government’s own figures reveal the extent of inequality in access to cancer drugs in Wales. Cancer patients are paying the price for a failure to fix this broken system.

“The needs of cancer patients are no less pressing on one side of a border than they are on another, nor are treatments any less effective. Urgent action is needed to end this inequality.”

A spokesperson for the Welsh Government said: “We care greatly about providing the best care for the people of Wales and our commitment is to provide evidence-based, cost-effective treatments fairly to everyone.

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Hello all and welcome to the latest edition of Dental Tribune UK. I hope you all had time to enjoy the summer and are back refreshed and ready to go for the rest of the year!

You may have noticed that DTUK has undergone a couple of changes, the biggest of which is how many times it is being published. With immediate effect, Dental Tribune UK will now be published monthly.

The editorial team will still strive to maintain the usual mix of high quality clinical and business articles, news and views. We have our new columnist, Amit Rai, who will be taking a regular look at the world of dentistry and giving his comments. Neel Kothari is as ever a regular feature, and you’ll still see plenty of news and analysis.

As always, if you’d like to give feedback or want to contribute with an article or clinical case study please get in touch.

This month the big news is the appointment of Professor Steve Field as the CQC’s Chief Inspector of General Practice. Now, we all know that any lead job at the CQC will make you about as popular as, well, an inspector on your doorstep from the CQC, and Prof Field will have his work cut out for him as he brings in a ratings system for inspected services and strives to provide consistency across all inspections, including those of dental practices.

Good luck to Prof Field!

Do you have an opinion or something to say on any Dental Tribune UK article? Or would you like to write your own opinion for our guest comment page?

If so don’t hesitate to write to: 
The Editor, 
Dental Tribune UK Ltd, 
4th Floor, Treasure House, 
19-21 Hatton Garden, 
London, EC1 8BA

Or email: lisa@healthcare-learning.com

Editorial comment

Letter to the Editor

Dear Editor,

Last spring it was widely reported that dangerous x-ray machines from China, which emit harmful x-rays both to the dentist operating the machine and the patient, had been bought by some dental practices. I had thought this would have been clamped down on by now by the authorities.

However, the BBC 1 programme “Fake Britain” recently reported that this is still occurring. These fake dental x-ray machines do not have the lead protection inside, so the patient’s whole face is exposed to radiation and the operator’s hands and body receive x-rays, which can cause cancer. The thyroid gland is particularly damaged by radiation.

The programme stated that all kinds of dangerous fake dental instruments are being sold to dental practices, including drills which could explode and shatter in a patient’s mouth while being used. The results could be horrific.

Why are these not being prevented from entering the country, and I wonder if any investigations being done by the authorities to check if dental practices have unknowingly bought dangerous fake dental equipment? This is necessary for the health of both dental staff and patients.

Best wishes,

A. Willis.
Ban lifted on healthcare workers with HIV

Healthcare workers with HIV will be able to return to practice, Chief Medical Officer Dame Sally Davies has announced.

Following independent scientific advice, the Department of Health will lift the ban on healthcare workers with HIV being able to carry out certain dental and surgical procedures. Strict rules on treatment, monitoring and testing will be in place to safeguard patients.

The regulations were brought in after the publicity associated with the death of an American dental patient in 1990, one of six dental patients in the US infected with HIV in an unresolved Florida case. Regulatory bodies in most countries responded to the case differently – the UK banned all HIV-infected healthcare professionals from undertaking exposure-prone procedures, leading to health workers becoming deskilled, losing their careers, or suffering in silence.

Since most dental procedures are classified as exposure prone, the ban had a devastating significance for dentists diagnosed with the disease.

This change will bring the United Kingdom in line with most other Western countries. Under the new system, patients will have more chance – around one in five million – of being struck by lightning than being infected with HIV by a healthcare worker. There is no record of any patient ever being infected through this route in the UK. There have been just four cases of clinicians infecting patients reported worldwide and the last of these was more than a decade ago.

The policy will be put in place from April 2014. Decided on a case-by-case basis, HIV-infected healthcare workers may be allowed to undertake certain procedures if they are on effective combination antiretroviral drug therapy (cART); have an undetectable viral load; and are regularly monitored by their treating and occupational health physicians.

The British Dental Association’s scientific adviser Professor Damien Walmsley said: “Dentists in the UK comply with rigorous infection control procedures to protect both patients and the dental team against the risk of transmission of blood-borne infections.

“The announcement brings England into line with nations including Sweden, France, Canada and New Zealand, and is good news for patients and HIV-positive dental alike. We look forward to seeing its implementation.”

Kevin Lewis, Dental Director at Dental Protection, said: “This is a huge victory for human rights. After decades of living in fear and dealing with prejudice, dentists can finally return to their professional calling, although regrettably it is too late for some to do so. Patient safety should be at the forefront of healthcare, but the original rules were introduced as a reaction to a mysterious and exceptional case, the likes of which we have not seen before or since.”

Allan Reid is a dentist with HIV and, as a result has been unable to practice since 2008. Speaking to Dental Tribune UK, he said the lift on the ban was “a great step forward. It’s the correct thing to do; there’s a massive body of evidence that healthcare workers don’t pass on the virus to patients, but the timescale from implementing the ban to lifting it has been huge.”

He is, however, concerned about the level of support healthcare workers will receive if they want to return to practice: “I’m worried about the number of careers that have been lost, and I hope the NHS will recognise what people have been through. It’s really important that those who want to go back into practice are re-trained and given full support.”

As for Allan, he is currently training as a consultant in public health, hoping he would very much like to go back to practicing dentistry – provided he is given the appropriate training to make up for five years that he has been unable to practise.
Two of the UK’s most respected education and academic organisations have joined forces to provide an innovative, technology driven MSc in Restorative and Aesthetic Dentistry. Healthcare Learning Smile-on, the UK’s pre-eminent healthcare education provider and the University of Manchester, one of the top twenty-five universities in the world, have had the prescience to collaborate in providing students with the best of everything – lecturers, online technology, live sessions and support.

The programme is designed to encourage the student to take responsibility for his/her own learning. The emphasis is on a self-directed learning approach.

The majority of the learning resources on this programme will be online. The masters will combine interactive distance learning, webinars, live learning and print.

Students will be able to communicate with a diverse multi-ethnic global community of peers, with who they will also share residential get-togethers in fantastic settings around the world.

This innovative programme establishes the academic and clinical parameters and standards for restorative and aesthetic dentistry. Students will leave with a world recognised MSc.

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FenderPrime Green (the long wedge) can be shaped to restorations.

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Clinical Innovations Awards 2013 Winner

FenderPrime

The rot runs deep

Stephen Hudson discusses modern dentistry

In my mind, there is a problem that the profession is not addressing, which can easily be displayed by the public and the legislation you are presently reading. I want you to scan though it and look at all the adverts for postgraduate courses.

What do you see?

You see lots of courses on how to do smile makeovers, ortho, veneers, implants and aesthetics.

What don't you see?

You see nothing on peri, rapport building, diagnostics, LA techniques, minimal intervention dentistry, carries removal or hands on RCT.

Not the fault of the Dental Tribune, because they have no control over the advertising sent to them. And while on a local level there is a fair bit of these latter courses offered though the deaneries, whenever I go on these courses, it’s always the same faces I keep seeing. And many of the courses are mediocre at best, with some notable exceptions of course.

And then I hear that at least one dental school has dropped the “treatment of a patient under exam conditions” from the finals exam. That makes no sense to me whatsoever. I just can’t comprehend the thinking behind that and am amazed that (assuming they have been told of this event) the GDC inspections have allowed it. I’m also hearing reports that graduates are leaving dental school never having done a molar endo, and never having made a F/F. Now I’m sure the powers that be know what they are doing, and it all looks a little short sighted from where I’m sat.

It worries me.

Now have a chat with any dental adviser from DFL or DDU and they will tell you how claims are rising, even with the governments actions on no win no fee. And barring the fact that “stuff happens” that we can’t predict, claims are rising because of two main factors.

Dentists are doing things they shouldn’t be doing on people they shouldn’t be treating; and dentists aren’t doing things on people they should be treating.

We are making a rod for our own backs, and the lawyers, often quite rightly, are getting very rich because of it.

Then we hear that some figures state that about 50 per cent of all claims are down to what one dentist says about another dentist’s work (usually without being in full awareness of all the facts) and there is a huge tsunami threatening to wash over the “profession”.

It’s a tsunami of our own making, and down to either our own greed and egos, or the fact that many practitioners, devoid of passion and things on people they should be treating.

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It’s a tsunami of our own making, and down to either our own greed and egos, or the fact that many practitioners, devoid of passion and...
And so I ask; where is the training?

There are 30,000 dentists in this country. Where is the mandatory national training pathway that we should be following? Airline Pilots can’t get off the ground without being tested every six months, and surgeons can’t operate without regular peer reviewed examination. Why does this not apply to us? Oh I know FGDP do a pathway of sorts, but it’s not cheap and has limited places.

Go into any lab in the country and ask them to show you the preps they are making crowns on. Look at the imps they are being sent. It will shock you; it certainly shocked me when I last did it. There aren’t many courses out there that get you to cut a posterior gold onlay prep in peer reviewed conditions. But there are plenty of courses to show you how to coat teeth with porcelain.

When I talk to the oral surgeons that I know, they tell me that at least 40 per cent of all the implants placed in this country are badly done. Forty per cent.

When I talk to the oral surgeons that I know, they tell me that at least 40 per cent of all the implants placed in this country are badly done. Forty per cent. If correct, that’s a staggering number and one that I am sure the indemnity providers are seriously worrying about. Whilst I know we have to start somewhere, we should not be doing treatments we are not competent to do. We shouldn’t be doing treatments that aren’t in the best interest of the patients, and we shouldn’t be doing such advanced treatments (some would argue any treatments) on patients we don’t have rapport with.

That’s not what dentistry is about.

We need courses that are comprehensive, that cover the basics and which cover the more advanced stuff. Failing to spot and treat peri-implant problems is one of the biggest case loads facing dental indemnifiers at the moment. Where are the nationally run hands on courses to correct this? Why are dentists allowed to place implants after a weekend course at Gatwick? Why do the GDC’s core subjects not cover anything to do with clinical dentistry? That’s obscene. Ok, you can handle a complaint, but how’s about having rapport skills so that the complaint never arose, and the clinical skills that meant your six veneers didn’t keep dropping off in the first place.

What I do know is that we, as a profession, will not correct this ourselves. We will spiral down into a hole of our own making until someone turns around and MAKES us change. And then we will likely end up like the USA where everything gets farmed out to specialists, increasing the costs, and increasing the inconvenience to the patient.

And you know what; I have no idea how to correct this. That’s my confession. It will take a smarter person than me to build a barrier against the incoming tsunami.

That’s the way it looks from here.

About the author
Dr Stephen Hudson BDS, MFGDP, MSc is a dental practice owner working in Chesterfield. When he qualified in 1995, he soon realised that the way most dentists practised their dentistry was slowly killing them, and decided he needed to try and do something to reverse this trend. This was why he set up the website www.gdpresources.co.uk.
The Sale of Goods Act 1979 (as amended) lays down conditions that all goods sold by a trader must meet, including those of the goods being “fit for purpose”. These three words have also been increasingly used to question the role of the CQC following the recently alleged “cover up” of their failure to spot problems within the University Hospitals of Morecambe Bay Foundation Trust.

The CQC began operating in April 2009, as the single regulator for health and adult social care, replacing the Healthcare Commission, the Commission for Social Care Inspection and the Mental Health Act Commission. This integrated approach gave rise to a generalist system of inspections and an inherent conflict of interest whereby the CQC was involved in both the identification and rectification of quality of care issues. Many commentators have said that this generalist system evidences the way in which the previous government actively sought to dis-empower clinicians in inspections - possibly because they would speak the uncomfortable truth. With the recent NHS reforms placing the emphasis right back on grass roots clinicians, perhaps this could change.

The events of Morecambe Bay have certainly cast the spotlight back on the CQC’s methods of inspections post-Francis. And Jeremy Hunt, health secretary, has touched upon what most of us have been thinking for years, how can the same inspector reliably inspect such different facili-ties as a dental practice, a GP surgery, a hospital and a care home?

Anecdotally, this is perhaps the reason many GDPs fear CQC inspections, sometimes referring to them as Close Quarters Combat (CQC) - defined as a type of warfare in which small units (one or two inspectors) engage the enemy (GDP teams) with weapons (clipboard and pen) at very short range.

Although many professions may jump to their own defence with cries of “uniqueness”, the practice of general dentistry is truly unique in that the investigation, diagnosis, prevention and treatment of disease all takes place within the same four walls, by the same clinician.

A cursory scan of the thread of comments provided by readers in response to the HSJ article Investigators reveal CQC ‘cover up’ over Morecambe Bay reveals some support for the CQC to conduct more unannounced inspections. However, many would argue that the “dawn raid” of services won’t really provide an indication of the quality of care being provided, but rather an indication of how well registered managers and their teams act under pressure.

It strikes many as rather ironic that the same regulator which advocates patient feedback and positively acting upon criticism has been blamed for not tolerating it, according to Dr Heather Wood, a former CQC inspector.

These are certainly tough times for the CQC as they have openly named the people, including former chief executive Cynthia Bower, present when the decision was taken to allegedly suppress a report identifying weaknesses in their inspections of the University Hospitals of Morecambe Bay Foundation Trust. However, as Hunt noted, this action is a “sign that the NHS is changing”. Time will tell whether this change is for the better, but irrespectively, we should all spare a thought for the families of the up to 16 babies and two mothers feared to have died in the maternity unit at the Barrow-in-Furness hospital between 2001 and 2012.

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Dentists who would like to carry out treatment under an NHS contract must be registered on the NHS England National Performers List, which was introduced on 1st April 2013 following the abolition of the PCTs.

The list was set up to provide additional reassurance to the public that health care providers like dentists were suitably qualified, trained including having appropriate language skills and that they had passed other requirements such as having a clear Disclosure and Barring Service check (the old eCRB check).

New Performers
A dentist who has never performed NHS treatment prior to 1st April 2013 must apply to be registered on the NHS England National Performers List.

A completed Performers List Application Form will need to be submitted to the Local Area Team in charge of the area the dentist wishes to work in together with the following documents:

a. Passport or photo driving licence  
b. Full registration with the GDC  
c. Graduation certificate  
d. Completion of Vocation Training Certificate or Certificate of Prescribed/Equivalent Experience  
e. Recent Occupational Health Report (if available)  
f. A detailed Curriculum Vitae or details of your work history  
g. Language Knowledge Certificate or alternative  
h. The outcome of a recent appraisal (if available)  
i. Work permit (if applicable)  
j. Evidence of membership of a recognised defence organisation  
k. Completed DBS form or existing eCRB (not more than three months old) together with further documents as may be required by the Disclosure and Barring Service in order to provide a DBS check  
l. Evidence of membership of a recognised defence organisation

If the dentist is making the application from outside of England then there are only six specialised Area Teams

If you are a dentist who currently performs NHS treatment or a dentist wishing to begin performing NHS treatment then this article provides a practical guide to assist

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On submission of the form to the relevant Local Area Team, it takes six to eight weeks until the dentist is added to the performer list if they are happy with the information provided.

Existing Performers

A dentist who performed NHS treatment prior to 1st April 2013 will have already been registered on a PCT performer list. These lists have now been amalgamated and have become the NHS England National Performer List. This list is accessible by all Local Area Teams (LATs) who now oversee the performance of dental contracts.

If a dentist wishes to move from one area to another they must contact the new LAT under which they wish to perform. NHS services will then be able to access their details on the National Performer’s List. Each LAT will have different requirements but they should all be able to facilitate the transfer of a dentist from performing under one LAT to another.

The new LAT will liaise with the old LAT and will carry out checks in relation to the dentist’s qualifications and records. The LAT the dentist is leaving will then give a declaration to the new LAT that there are no issues concerning the dentist and the dentist will then be able to perform NHS treatment under the authority of the new LAT. This should take around two weeks.

NHS England recognises that there is a need for a uniform approach to transfers and has drafted a new policy with an expected release date of 1st August 2013. Until then, dentists will have to simply follow the ad hoc transfer procedure required by each LAT.

At the time of going to press no policy has been published by NHS England, and having spoken to a number of LATs across the country, whilst they are aware of this policy and its imminent release, no policy has been issued as yet.

‘NHS England recognises that there is a need for a uniform approach to transfers and has drafted a new policy’
Intra-oral and panoramic images are not 3-D and clinicians can obtain only vague measurements from them owing to magnification changes due to positioning. In addition, they are not efficient for viewing certain pathologies. In response to these limitations, CBCT 3-D imaging technologies were developed. CBCT 3-D captures a volume of data and, through a reconstruction process, it delivers images that do not contain magnification, distortion and/or overlapping anatomy.

In recent years, CBCT 3-D has begun to make significant inroads into every discipline in our dental profession, expanding the horizons of clinical dental practice by adding a third dimension to cranio-facial treatment planning. CBCT uses advanced 3-D technology to provide the most complete anatomical information on a patient’s mouth, face and jaws areas, leading to enhanced treatment planning and predictable treatment outcomes. Essentially, this represents a paradigm shift, where measurements and anatomical relationships are precise and provide practitioners with a clear understanding of their patients’ anatomical relationships. According to dental practitioners using this technology, it helps them perform treatment more efficiently.

Regarding oral implantology, it is estimated that growth in implant-based dental reconstruction products will outstrip all other areas of dentistry, according to Kalorama Information. The traditional method of replacing a tooth with a dental bridge has been shown to be problematic, and more permanent solutions are urgently needed.

With a rapidly ageing population in the developed world and the resulting enormous demand for dental implants, the use of CBCT 3-D imaging is becoming increasingly important for accurate diagnosis and treatment planning.
need for dental restoration, a large number of companies have seen the opportunity to adopt these sophisticated dental techniques. And indeed, as some have predicted, the growth in dental implant based procedures has increased considerably in recent years.

As a result, there has been a rapid increase in the number of practitioners involved in implant placement, including specialists and generalists, with different levels of expertise. At the same time, a number of unusual complications associated with these procedures have arisen. A literature and web search revealed several published reports of such complications, which include implant fractures (Fig 1), impingement on adjacent teeth (Fig 2), perforation of the lingual undercut (Fig 5), sinus perforations (Fig 4) and implants displaced into the maxillary sinus (Fig 5).

The clinical management associated with some of these complications is difficult at times and considered very invasive. Therefore, while the quantitative relationship between successful outcomes in dental implant treatment and CBCT-based dental imaging is unknown and awaits discovery through large prospective clinical trials, I strongly believe that using CBCT- and 3D-based dental imaging is becoming a reliable procedure from a precautionary standpoint based on a series of recent preliminary clinical studies and case reports.

I also strongly believe that by taking 3D CBCT images prior to placing dental implants, many of the above-mentioned complications can be circumvented.

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About the author

Dr Dov Almog is a prosthodontist with more than 30 years of diversified professional experience in clinical, academic, and research environments. His publications include articles on CBCT, dental implants, carotid artery calcifications and practice management. In 2005, in acknowledgment of his research on incidental findings of carotid artery calcifications on panoramic radiographs, he received the Arthur H. Wuehrmann Award from the American Academy of Oral and Maxillofacial Radiology. Dr Almog currently serves as chief of the dental service for the VA New Jersey Health Care System of the US Department of Veterans Affairs.

Reference

Stem cells in implant dentistry

Dr André Antonio Pelegrine discusses regenerative medicine and its applications in implant dentistry

The human body encompasses more than 200 different types of cells, which are organised into tissues and organs that perform all the tasks required to maintain the viability of the system and reproduction. In healthy adult tissues, the cell population size is the result of a fine balance between proliferation, differentiation and cell death.

Following tissue injury, cell proliferation begins to repair the damage. In order to achieve this, quiescent cells (dormant cells) in the tissue become proliferative or stem cells are activated and differentiate into the appropriate cell type needed to repair the damaged tissue. Research into stem cell is inspired in the desire to understand how the tissues are maintained and repaired in adulthood and how so many cell types can be derived from human embryos.

It has long been observed that tissues can present a wide variety of cells and in the case of blood, skin and the gastric lining, the differentiated cells possess a short half-life and are incapable of renewing themselves. This has led to the idea that some tissues may be maintained by stem cells, which are defined as cells with a huge renewal capacity (self-replication) and the ability to generate daughter cells with the capacity of differentiation. Such cells, also known as adult stem cells, will only produce the appropriate cell matrix, Honigum yields highest ratings in both disciplines. We are very pleased to see that even the noted test institute »The Dental Advisor« values that fact: Among 50 VPS Honigum received the best »clinical ratings«.

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lines for the tissues in which they reside (Fig 1).

Not only can stem cells be isolated from both adult and embryo tissues, they can also be kept in cultures as undifferentiated cells. The embryo stem cells have the ability to produce all the differentiated cells of the adult. Their potential can therefore be extended beyond the conventional mesodermal lineage to include differentiation into liver, kidney, muscle, skin, as well as cardiac and nerve cells (Fig 2).

The recognition of the stem cell potential unearthed a new age in Medicine – the Regeneration Medicine Age. It has made it possible to consider that an otherwise lost organ or damaged tissue could be regenerated. Because the use of embryo stem cells stirs up ethical issues for obvious reasons, most scientific studies focus on the applications of adult stem cells, although these are not considered as versatile as the embryo stem cells, since most researchers regard them as multipotent, capable of giving rise to some types of specific cells/tissues, whereas the embryo stem cells can differentiate into any and all types of cell/tissue groups. With the advance of scientific research, some tissues were noted to have greater difficulty regenerating, such as the nervous tissue, whereas bone and blood, for instance, are considered more suitable for stem cell therapy.

In dentistry, the pulp from deciduous teeth has been thoroughly investigated as a potential source of stem cells with promising results. However, the regeneration of an entire tooth, also known as THIRD DENTITION, is a highly complex process, which despite some promising results with animals, remains very far from clinical applicability. The opposite has been observed in the area of jawbone regeneration, where there is a higher level of scientific evidence on its clinical applications. Currently, adult stem cells have been harvested from some tissues, such as bone marrow and fat.

Bone marrow is regarded as a hematopoietic organ, capable of producing all the blood cells.
Since the 1950s, when Nobel Prize winner Dr E. Donnall Thomas demonstrated the viability of bone marrow transplants in patients with leukemia, many lives have been saved using this approach for a variety of immunological and hematopoietic illnesses. However, the bone marrow contains more than just hematopoietic stem cells (which give rise to red and white blood cells as well as platelets, for example), it is also home to mesenchymal stem cells (which will become bone, muscle, and fat tissues, for instance) (Fig 3).

Bone marrow harvesting is carried out under local anesthesia using an aspiration needle through the iliac (pelvic) bone. Despite requiring a competent doctor to perform such task, it is not regarded as an excessively invasive or complex procedure. It is also not associated with high levels of discomfort either intra- or post-operatively (Figs 4a-b).

Bone reconstruction is a challenge in dentistry (also in orthopedics and oncology), since rebuilding bony defects caused by trauma, infections, tumors and dental extractions requires bone grafting. The lack of bone in the jaws may impede the placement of dental implants, thus adversely affecting patients’ quality of life. In order to remedy bone scarcity, a bone graft is traditionally harvested from the chin region or the angle of the mandible. If the amount required is too large, bone from the skull, legs or pelvis may be used. Differently from the bone marrow, the process involved in obtaining larger bone grafts is often associated with high levels of discomfort and, occasionally, inevitable post-operative sequelae (Figs 5a-c).

All the problems related to bone grafting have been encouraging the use of bone substitutes (synthetic materials, human or bovine donors). However, such materials show inferior results compared to autologous bone grafts since they lack autologous proteins. Therefore, in critical bony defects, ie those requiring specific therapy to recover its

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original contour, a novel concept to prevent autologous grafting, consisting in the use of bone-sparing material associated with stem cells from the same patient, has been gaining ground as a more modern philosophy of treatment. Consequently, in detriment of traditional bone grafting (with all its inherent problems), this new method of associating stem cells to mineralised materials allows, for the first time, the use of a viable graft with cells from the patient themselves without the need for surgical bone harvesting.

Despite the concept of using bone marrow stem cells for bone reconstruction, there were no studies, until recently, comparing the different methods available. Here we shall summarise a study developed by our research team, which consisted in the creation of critical bony defects in rabbits and subsequently applying each of the four main stem cell methods used globally, in order to compare their effectiveness in terms of bone healing. Fresh bone marrow (without processing); Bone marrow stem cell concentrate; Bone marrow stem cell culture; Fat stem cell culture (Figs 6-7).

In a fifth group of animals, no cell therapy method (Control Group) was used. The results showed that the groups in which a bone marrow stem cell concentrate (2) and a bone marrow stem cell culture (5) were used revealed the best bone regeneration results and that the control group showed the worst results. It was suggested that stem cells from the bone marrow would be more suitable than those from fat tissue for bone reconstruction and that a simple method of stem cell concentrate (which takes a few hours) revealed similar results to those obtained from complex cell culture procedures (which take on average three-four weeks). (Figs 8a-b)

Similar studies performed in humans have been reinforcing the finding that bone marrow stem cells improve the repair of bony defects caused by trauma, dental extractions or tumors. The histological images below illustrate the higher potential of bone-sparing materials when combined with stem cells for bone reconstruction (Fig 9). It is clear that the level of mineralised tissue is significantly higher in those areas where stem cells were applied. (Figs 10a-b)

Evidently, despite the bone marrow stem cell techniques for bone reconstruction being close to routine clinical use, much caution must be exercised before indicating such procedure, as it demands an appropriately trained surgical and lab team, as well as the availability of the necessary resources (see images taken during lab manipulation of marrow stem cells at São Leopoldo Mandic Dental School). (Figs 11a-h)

*Images courtesy of Gélulas Tronco e Implantodontia

**Dr. André Antônio Velgrine is a specialist dental surgeon in periodontology and implant dentistry (CFO) with an MSc in implant dentistry (UNB) and a PhD in clinical medicine (University of Campinas). He is an associate lecturer in implant dentistry at São Leopoldo Mandic dental school and coordinator of the peri-implantodontic-implant dentistry team at the University of Campinas in Brazil. He can be contacted at pelgrineandre@gmail.com.
Until very recently, my patients would have considered undergoing complete treatment including a ceramic crown or a bridge in one visit science fiction. The science of CAD/CAM technology has progressed at a staggering pace, enabling me to treat a case that represents a new level in the field.

This case report demonstrates a procedure that allows the treatment of a patient who has lost a tooth or had one extracted. In one visit, he or she can receive an implant using a while-you-wait, made-on-demand implant guide. Furthermore, modelling of the individual abutment or placing of a solid titanium abutment with a temporary crown, or a permanent ceramic crown, based on the indication and diagnosis, can be performed in the same visit.

The implant guide that is produced while the patient waits (CEREC Guide, Sirona) speeds up the entire process, owing to a precisely mapped location in a 3D CBCT scan using GALAXIS and GALILEOS Implant (both Sirona) visualisation software. Moreover, it also enables implantation using the flapless technique. Immediate fabrication and use of the implant guide is even more important in immediate implant placement after extraction of multi-rooted teeth, for which freehand implantation is extremely difficult.

In addition to CEREC Guide, we can order and use the CLAS-SICGUIDE (SICAT), made on the basis of a conventional impression, or OPTIGUIDE (SICAT), a stent that is manufactured without bite plates and impressions, requiring only a digital scan of the patient’s mouth with CEREC AC (Sirona) and a CBCT scan of the patient’s jaws (using GALILEOS or ORTHOPHOS XG 3D). Of all three guides that could be used, a pilot drill, sleeve in sleeve or completely guided stents, only CEREC Guide can be produced in-office immediately. CEREC Guide was used in the following case report.
Clinical case report
A 55-year-old male patient refused orthodontic treatment to move tooth 13 into proper position while making space for a replacement of tooth 12. The patient had been chewing on primary tooth 53, which was extracted about 14 days before implantation. Figure 1 shows the gap after extracting tooth 53. Tooth 12 was missing and tooth 13 had moved mesially into the space (Fig 2). Overall, the patient was healthy and had no hereditary disease.

In this case, we began the treatment by taking a conventional impression of the jaw in which we were considering placing an implant to replace a missing tooth. We used quick-setting plaster well suited to fabricating the stone model (Fig 5). We placed a reference body in the location of planned implantation on the stone model to determine the correct size (three sizes are available: small, medium and large).

The reference body should about against the adjacent teeth and fill the gap with the largest possible area but it should not become lodged between the adjacent teeth during placement. Once we had determined the optimal size, we wet the stone model with water and applied thermoplastic stent material softened with warm water to cover one to two adjacent teeth on each side ideally. The properly heated stent compound appears to be glassy/transparent, which by its transparency also indicates plasticity interval. Once the colour changes to opaque, setting has begun. While the stent compound was still warm and adapted to the stone model, we inserted the reference body (medium in this case; Fig 4). When the thermoplastic is still clear, it is possible to observe and review how the reference body relates to the edentulous space. Corrections can still be made until the material becomes opaque. Undercuts on the stone model can be blocked out before using, for example, a composite compound (not wax) to allow easier detachment of the thermoplastic stent material with the reference body from the model. Personally, I do not block out undercuts to ensure the most accurate mounting. Even in the ensuing test in the patient's mouth, one must hear the characteristic click sound.

Once satisfied with the placement and retention of the stent with the reference body in the patient's mouth, we captured a...
CBCT scan of the patient using GALILEOS or ORTHOPHOS XG 3D. One needs to ensure that the large fiducial-containing portion of the reference body faces orally as depicted in Fig 4 and not buccally in ORTHOPHOS XG 3D, as there may be a tendency to cut this portion off in its 8cm×8cm field of view. While waiting for the image to load on the PC, we scan the implant space layout on the model using an intra-oral scanner (CEREC AG) and software modelling of the proposed crown follows, in terms of suitable shape, size and location in the future implant position.1

Once the CBCT scan has loaded, we open the GALAXIS software and begin the planning. The first step is to insert the exported CEREC crown proposal in *.ssi format because this is the only CEREC crown proposal format that GALAXIS software can read (Fig. 9). The exact placement of the proposed CAD/CAM crown in the CBCT scan will allow precise read-out of borders between hard and soft tissue (Figs 6-8) and the digital implant placement under the crown in such a way that the future connection of the implant and crown using an abutment is prosthodontically possible (Fig. 9). After the digital implant had been imported into GALAXIS, we select to continue and edit the sleeve system. After selecting this option, a new dialog box marked “reference body” appears in this case owing to a dramatic conical apical narrowing of the roots of the adjacent teeth 14 and 15 in the intended implant space (Fig 10). Owing to the lack of space between these roots, we chose a 3.5/8mm implant (SwishPlus, Implant Direct). After digital implant placement, we confirm that the fiducials have been found and the reference body appears on the 2D and 3D images (Fig 12). In order to better visualise the interaction of the drill path and drill body with the implant, the final drill path and pilot drill path must be turned on in
the 2D views (Fig 15). The reference body must fit exactly within the drill path in order to be milled.

The most important part of CEREC Guide production is setting the D2 value. The D2 value, also known as the drill stop length, is the distance from the apex of the implant to the top of the guide. If we measure the length of the drill from its cutting tip to the drill stop, the D2 value will be that length minus 1mm, which is the thickness of the implant guide handle. In our case, for the 8mm implant, this value was 23mm (the 24mm drill minus the 1mm handle). The D1 value changes with the D2 value automatically (Fig 14).

In order to continue, we export this arrangement data back to the CEREC AC unit as a *.cmg or *.dxd file. After opening the correct file in CEREC Software 4.xx, the drill body proposal will appear in the milling preview (Fig 15). Now we can place the appropriate block size (in our case this was “M”) into the milling unit (MCXL on inLab MC XL, Sirona) and select “mill”. Milling time is approximately 12-16 minutes (Fig 16). We break the drill body out of the block and remove the sprue carefully.

Next, we remove the reference body from the thermoplastic stent and, using a scalper or bur at a very low speed; cut away a thin layer of the thermoplastic material from the bottom of the guide to allow the drill to pass through the guide. When snapping the drill body into the thermoplastic stent, it is important to ensure that the drill guide is inserted with the correct vestibulo-oral orientation (Fig 17).

Sirona produces specific guide handles for each block size (again in small, medium and large) and for several implant guide kits. In our case, we used the guide handles for Straumann for the next step because these handles are compatible with the Implant Direct implant used.

**Surgery**

We begin with anesthetising the tissue around the work area and placing the cleaned and disinfected CEREC Guide in the mouth, followed by the fit evaluation. The guide should feel secure and not move over the teeth. As we performed the flapless technique, we began by punching the tissue with the appropriate puncher (Fig 18). We then removed the guide and easily separated and removed the punched tissue (Fig 19). We placed the CEREC Guide back into position and continued with subsequent drills and guide handles.

Using the guide kit for Straumann (Sirona CEREC Guide Drill Key Set ST), we started with the M 2.2 handle and 2.2mm pilot drill (Fig 20), followed by the M 2.8 handle and 2.8mm drill (Fig 21). Finally, we removed the CEREC Guide and inserted the 3.5/8mm SwishPlus implant without the guide, that is, freehand (Fig 22).

**Temporary**

We screwed a solid abutment (Implant Direct; Fig 23) into the inner part of the implant, and covered the screw-hole with Teflon. This was immediately followed with an intra-oral scan. As scanning powder cannot be used for an unhealed soft-tissue margin, we used the new powder-free CEREC Omnicam camera. Next, we proceeded through the steps of CEREC Software 4.xx (Fig 24) to mill the temporary crown from a LAVA Ultimate block (3M ESPE; Fig 25). While it is acknowledged that dentistry is not Formula One, the patient was very satisfied with a total treatment time of 115 minutes.

**Conclusion**

This case report has demonstrated the workflow and manufacture of CEREC guides. Anyone interested in this procedure and its processes is invited to visit our training centre in the Czech Republic, where one can view patient surgeries live and participate.
Thriving on all-ceramics, Ivoclar Vivadent prepares for the future

Dental Tribune International recently visited the company’s headquarters in Liechtenstein

With double-digit growth last year, the materials, whose composition remains a well-kept secret, have also become one of the company’s most important drivers of economic success. Ivoclar Vivadent held an international expert symposium last year in Germany for the first time that was focused entirely on the system and the treatment results dentists are able to achieve with it in daily practice. According to Chief Sales Officer Josef Richter, the system still has much potential.

“With IPS e.max, it is fair to say that we started a revolution in the field of fixed prosthetics, as it provides a highly aesthetic and durable solution not only for single-tooth restorations but also for far more complex indications, like three-unit bridges,” he recently told Dental Tribune International.

In addition to the high market acceptance of its posterior child product, Richter said that his company performed above the competition last year with its entire portfolio, including removable prosthetics and filling materials. Sales of clinical equipment and luting cements like Multi-Link Autolink and Variolink II increased by over 10 per cent, he said, despite unfavourable conditions that make it more difficult for the company to operate in regions affected by the economic crisis, such as Southern Europe.

“Market reports from most of our offices show that fewer patients are currently visiting a dentist than potentially should, which is a matter of concern. As a result, we expect 2013 to be a difficult business year for the industry. However, expansion is still possible, if the market is growing slightly or at all,” he predicted.

“Driven by our core business and innovations, our goal is to come out higher than the market average next year.”

Among the recent developments Ivoclar Vivadent launched this year is Tetric EvoCeram Bulk Fill, a further development of its nano-hybrid composite line, which the company says was designed with a powerful initiator for use with the bulk-fill technique and for tooth restorations in the posterior regions that are difficult to reach. It also introduced Bio:universal KFG, a golden, high-expansion universal casting for milling and the tem-}

ceramics, for example. The IPS e.max CAD range has been expanded and now covers all possible indications, from light veneers to hybrid abutments and bridges with three or more units. To make it easier for customers to navigate their way through Ivoclar Vivadent’s extensive product offering, the entire portfolio was redesigned into three main categories: direct restoratives, and fixed and removable prosthetics.

The company has invested heavily in its infrastructure recently, with Euro 16m reported to have been spent on a new building expanding its headquarters in Liechtenstein, which is intended to increase storage capacity and hosts highest dental facilities where the latest developments are regularly put to the test under clinical conditions. Moreover, the manufacturing plants in nearby Bütsch in Austria, where Ivoclar Vivadent produces dental equipment, such as its Bluephase curing light, and in Amherst near Buffalo in the US have been expanded too. New sales offices and subsidiaries are planned in Russia and Ukraine, among other countries, a step that will expand the company’s already large reach in 120 countries.

“A few years back, we decided to specifically target emerging markets, which now helps us to compensate for moderate growth in established regions like Europe or North America,” Global Region Head Asia/Pacific Christian Brutzer explained. “In India, for example, we have grown from only 10 people in 2009 to more than 80.”

According to Brutzer, the emphasis on increased local presence has not only facilitated growth in most of these regions, but also dramatically changed the way the company is perceived there. Education according to its own standards is considered a key factor for long-term development, a concept that has found its way into customer relationships through the establishment of International Centres for Dental Education, which are intended to offer training to existing and future customers through lectures and practical courses. Currently, the company maintains 25 of these centres worldwide, with the largest one in Schaan itself, where training laboratories are occupied almost around the clock by dentists and technicians from all over the globe.

“All of our subsidiaries or sales offices currently provide some form of training. No other company in the market invests so much in education,” Richter said.

“The increase in solutions available on the market has led to confusion among many customers of what is right for them,” he continued. “Therefore, we want our customers to understand the fundamental advantages that come with buying a product from us. In this respect, we see an opportunity to provide them with confidence and peace of mind.”
Brand new website for one of the UK’s most established private dental training firms

One of the country’s most reputable and prestigious private dental training companies is set to launch a new website designed to give its prospective delegates access to the information and skills they need to provide the quality dental services needed for private practices.

Tipton Training, which is situated within the heart of Manchester, has been providing dental professionals from across the UK with the very best educational training for the best part of 25 years.

The new website will inform dental professionals of the additional learning they can undertake within the fields of restorative, implant and cosmetic and aesthetic dentistry.

Each course offers delegates practical training, combined with theoretical lectures and seminars, under the direct supervision of experienced lecturers and some of the UK’s leading practitioners.

In addition, the academy’s new website will feature a programme of web-based learning for dental professionals looking for a more flexible way of getting the knowledge they need to succeed.

Dr Paul Tipton, founder of Tipton Training, said: “One of our enduring qualities throughout the last 24 years has been our ability to keep up with the pace of change in dentistry. Revamping our website allows our delegates easier access to the information, research, skills and techniques required to progress in private dentistry.”

Dr Tipton goes on to explain that the academy’s purpose is to increase the levels of confidence and self-belief in its delegates, so that they have the skillsets required to excel in a forward-thinking profession:

“The truth is that dentistry is an extremely fast moving field. As technological advances are made and new ways of thinking are introduced, it’s paramount that dental professionals keep up to date with the latest techniques and make themselves aware of important progress within their field.”

“This means our courses are constantly evolving too. We strive to incorporate advancing knowledge and changing dentistry practices within the syllabuses we teach.

“A great example of this is our restorative course, which is now in its 24th year. Demand for this area of dentistry has dramatically increased over that last two decades. Our course content year-on-year prepares dentists to compete effectively”

Along with providing delegates with new dentistry skills and knowledge, Tipton Training can also share expert advice with dentists on how to structure their practices to attract new patients and improve profitability.

For further information about Tipton Training and their dental training courses, please visit www.tiptontraining.co.uk or call +44 (0)161 548 7848.

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Introducing GoodmanGrant Lawyers for Dentists

This July member of the dental press gathered at the St Pancras Renaissance Hotel for the announcement of a new specialist firm of dental lawyers. Goodman Grant is the result of a merger between Ray Goodman and John Grant former Head of the Dental Team at Cohen Cranmer. Both have an extensive career assisting dental professionals with their legal affairs and the team at Goodman Grant has a combined experience of more than 75 years.

The firm brings together the current Chairman of the NASDAL lawyers group and the immediate past Chairman of ADFP. Along with dedicated expert solicitors in all practice areas, Goodman Grant is able to provide its clients with extensive legal advice on all aspects of the dental industry.

With offices in London, Liverpool and Leeds, Goodman Grant is able to offer its unique, flexible and comprehensive advice to clients in all parts of England and Wales.

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Sparkle Dental Labs

High quality, home grown dental products from Sparkle Dental Labs Ltd Sparkle Dental Labs Ltd is a dental laboratory based in Yorkshire, with the aim of reintroducing the UKʼs missing dental technician trade. Ten years ago there were more than 12,000 dental technicians operating in the UK, today this figure stands at 5,200 technicians and is still depleting by more than 200 technicians a year. With this state of the art laboratory in Leeds, Sparkle Dental Labs hopes that it can attract a new generation of technicians to this dying profession.

With a high frequency of lab work now being referred to overseas laboratories, Sparkle Dental Labs are hoping to regain the interest of dentists in home grown products by ensuring that they are of the highest quality and are reasonably priced.

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Topdent Launch Virofex Pro Test – Protein Testing Kit

Topdentʼs all new protein testing kit, Virofex Pro Test is a unique and comprehensive disinfectant for the high level surface cleaning and disinfecting of non-invasive medical devices.

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This product is developed using the latest technology to determine residues at low concentrations (~1 µg). By using Virofex Pro Test, you can easily identify protein residues by visible colour change. This process provides an easy identification of protein residues on equipment.

The Virofex Pro Test kit is an essential cost effective solution for all dental surgeries and is available from either Dental Directory on 0800 885 5996 or from Topdent Products Ltd on 01335 259 871. For more information & demonstration units, please visit www.dentaldirectory.co.uk or www.topdent.co.uk

Most Effective ADIN Implants now available in the UK

Independently judged one of the most effective implants evaluated in a study by the New York University. ADIN implants are available in the UK from Trycare.

In their study, NYU measured the quality of new bone formation and bone contact of five different implant systems (ADIN, Astra, ICX, Nickecrom and IE) over a six week period. In the final study all showed high percentages of new bone formation after six weeks. ADIN system produced a similar results, though ADIN out-performed the other implants. The ADIN implant system is now up to three times more expensive, in various aspects. Therefore Trycare can reasonably claim that ADIN is the implant system which offers the most.

Trycare launches its new Coneutel elliptical implant system which allows for a stronger and stabler implant connection. The Coneutel elliptical implant has also been optimised to ensure that the entire system is perfect. The strength of this implant system is that it can be used as a one-stop alternative to many other implant systems.

Trycare Coneutel elliptical implant system offers a strong and solid conical-hex connection that is interchangeable with Nobel Active. This Morse Taper connection is designed to offer the patient a shorter treatment time and lower risk of failure. Without any doubt, Trycare Coneutel elliptical implant system is an innovation which offers you and your patients an excellent alternative.

For further information ask your local Trycare Representative, contact Trycare on 01274 855844, email dental@trycare.co.uk or visit the Adin.co.uk website

CB12

CB12 is a new, patented mouth rinse whose formula is proven to outperform existing mouthwash solutions and deliver superior results. CB12 contains a number of valuable ingredients including zinc acetate and chlorhexidine diacetate, which work together to neutralise the plaque forming plaque and the orange stain on teeth. CB12 also contains fluoride to help protect teeth and to help patients maintain a high standard of oral health.

While many ‘fresh breath’ products simply mask the odor of bad breath, CB12 attacks the problem at its source, neutralising the causative bacteria and preventing recurrence for up to 12 hours.

For more information on CB12 please visit www.cb12.com

Toureg CloseFit implants offer a strong and solid conical-hex connection that is interchangeable with Nobel Active. This Morse Taper connection is designed to offer the patient a shorter treatment time and lower risk of failure. Without any doubt, Toureg CloseFit implants is an innovation which offers you and your patients an excellent alternative.

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**Toureg CloseFit implants**

**Coneutel elliptical implant system**

All Day Bad Breath Protection with new, long-lasting CB12

In up to 90% of cases, bad breath is the result of oral bacteria breaking down food particles in the mouth. CB12 is designed to halt this process with a range of valuable ingredients including zinc acetate and chlorhexidine diacetate, which work together to neutralise the plaque forming plaque and the orange stain on teeth. CB12 also contains fluoride to help protect teeth and to help patients maintain a high standard of oral health.

While many ‘fresh breath’ products simply mask the odor of bad breath, CB12 attacks the problem at its source, neutralising the causative bacteria and preventing recurrence for up to 12 hours.

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**Topdent Launch Virofex Pro Test – Protein Testing Kit**

Topdentʼs all new protein testing kit, Virofex Pro Test is a unique and comprehensive disinfectant for the high level surface cleaning and disinfecting of non-invasive medical devices.

Virofex Pro Test has been designed and developed to verify the effectiveness of the market leading medical device disinfectant spray, Virofex.

Virofex Pro Test is an indicator, which can be used to verify the effectiveness of the surgeryʼs disinfection practices. Protein residues on medical equipment indicate that bacteria are present and there is a lack of adequate cleaning procedures. The Virofex Pro Test makes it easy for any practitioner to verify whether their medical equipment are the sign that the risk of infection is present.

This product is developed using the latest technology to determine residues at low concentrations (~1 µg). By using Virofex Pro Test, you can easily identify protein residues by visible colour change. This process provides an easy identification of protein residues on equipment.

The Virofex Pro Test kit is an essential cost effective solution for all dental surgeries and is available from either Dental Directory on 0800 885 5996 or from Topdent Products Ltd on 01335 259 871. For more information & demonstration units, please visit www.dentaldirectory.co.uk or www.topdent.co.uk

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BENEFITS

The CONELOG® Implant System offers a comprehensive prosthetic portfolio for all indications. The conical implant/abutment connection with its proven CAMLOG positioning through three grooves and cams provides maximum precision and user-friendliness. Rounding off its overall offer with an exceptional price-performance ratio, CAMLOG has become the trusted supplier of choice for numerous implant professionals. More information: www.camlog.com

CAMLOG offers benefits!

a perfect fit™