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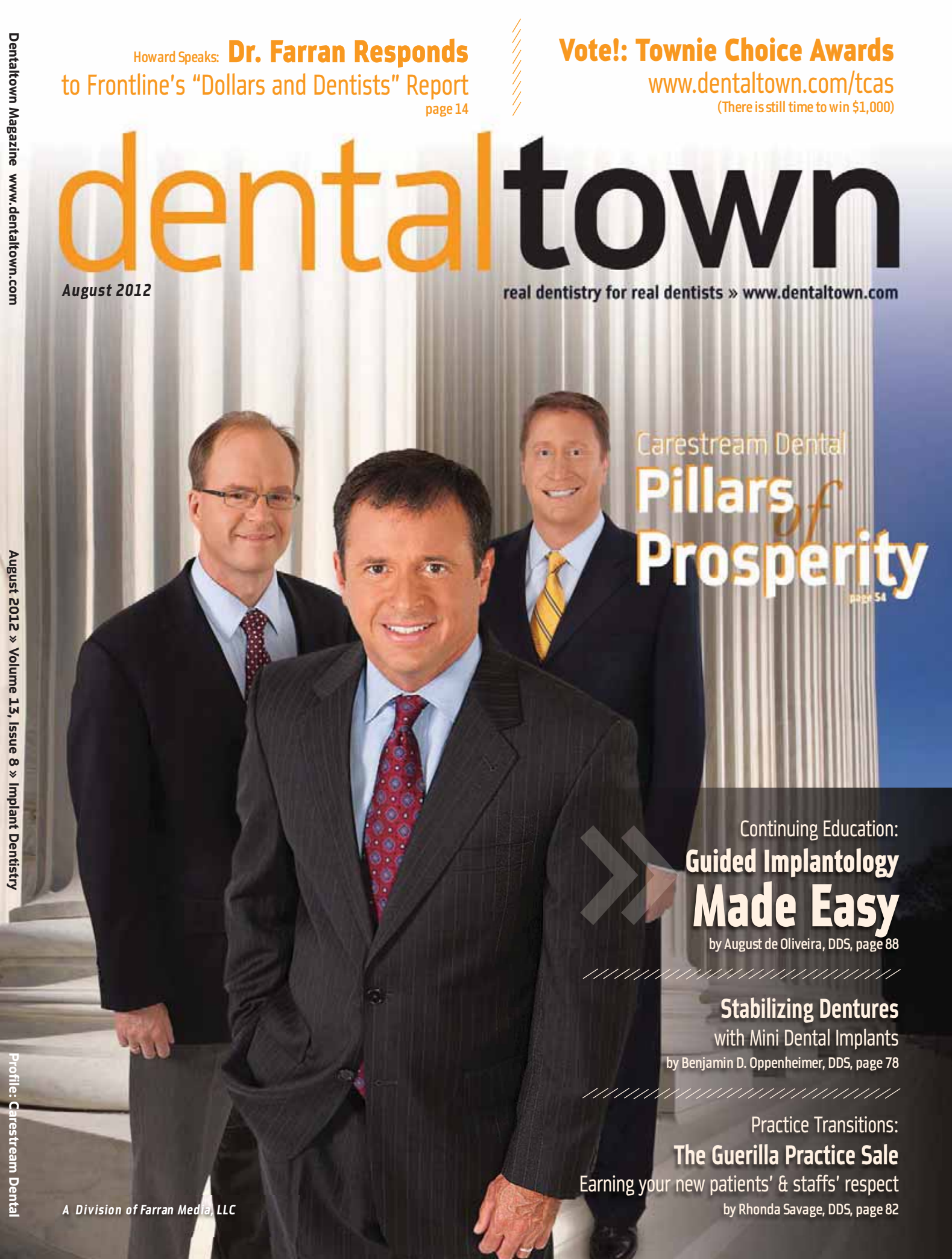

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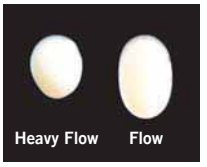

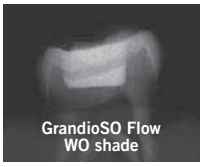

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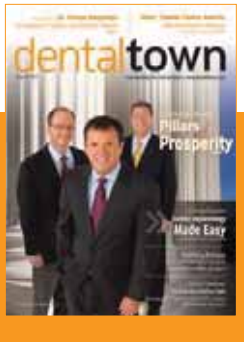

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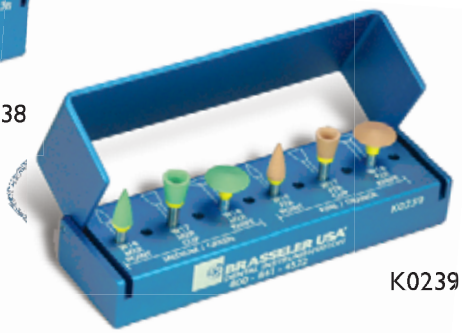

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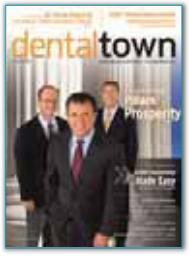

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CORRECTION

We strive to make our magazine clear and accurate, but occasionally an error slips by us. In our June issue, Dr. Umar Haque wrote "EQUIA: A True Amalgam Alternative" as part of our Point/Counterpoint series. We misspelled his name throughout the article. We apologize for our mistake.

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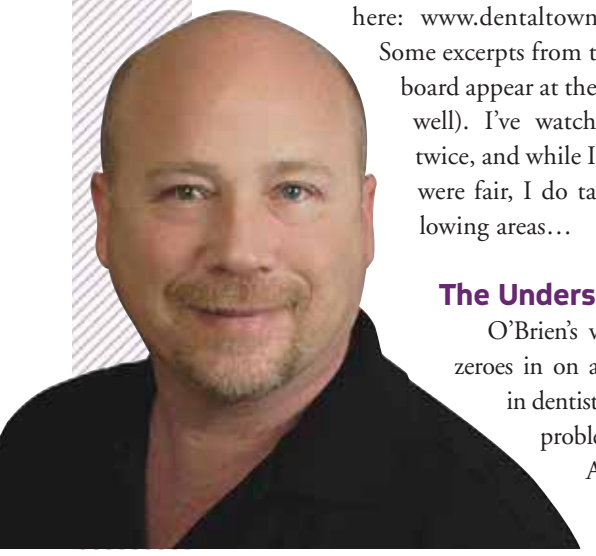
Response to Frontline: Addressing Symptoms, Not Problems

by Howard Farran, DDS, MBA, Publisher, *Dentaltown Magazine*

In 1997, *Reader's Digest* published an article by journalist William Ecenbarger, titled, "How Dentists Rip Us Off." In the story, Ecenbarger traveled to 50 different dental practices around the U.S. to assess "the consistency and fairness of American dentistry." He found such a discrepancy between each practice's treatment plans, it made dentists look like a bunch of clowns. Ecenbarger's report sent shockwaves throughout our sacred and sovereign profession, appalling just about every dentist I'd ever known up to that point in my professional career. They called the story "shady journalism" and said *Reader's Digest* was out to get dentists. My response was, "The author did a respectable job and showcased a weak spot in the art and science of dentistry. This is what he found. It is what it is. Deal with it! Let's move on together and get better as a profession!"

On the night of June 26, 2012, I prepared for a little déjà vu as I watched Frontline's Miles O'Brien report on corporate dentistry "filling the gaps in care" in a program called "Dollars and Dentists." By now I'm sure many of you are familiar with this particular report – a few dental associations have published public responses criticizing it, many have blogged about it and I'd guess many of you watched it, too. Right now, there's a nice message board thread about this program on Dentaltown.com (you can view the message board here: www.dentaltown.com/frontlineboard. Some excerpts from this particular message board appear at the end of this column as well). I've watched Frontline's report twice, and while I think some parts of it were fair, I do take issue with the following areas…



The Underserved

O'Brien's view of our profession zeroes in on an overwhelming crisis in dentistry. There is a grotesque problem with access to care. Affordability of necessary dental care is also troubling; all patient subjects in the program are Medicaid recipients suffering from painful rotting teeth, and there are just too many to count. Frontline shows people waiting in lines for days – all of them in pain – hoping to obtain relief through the efforts of real dental saints like Dr. Terry Dickinson and his crew of volunteer dental professionals. These are the patients – when there isn't a free clinic to go to and the pain gets to be too much for them – who go to the emergency room to get some relief for a couple days until the tooth starts throbbing again. This is very sad, indeed. It's the reason why *Dentaltown Magazine* publishes its "Do Good" issue every May, to highlight the heroes of charitable dentistry and encourage every single one of you to do your part and volunteer what you can – donating time or money – so the underserved in America and abroad have more opportunities to get the treatment they need. When you watch the opening sequence in the Frontline program, you can't help but feel bad for these people. It truly is desperate.

We meet one of the hopeful patients awaiting complimentary care, who volunteers his eating habits as he explains the right side of his mouth hurts so bad that he can't eat ice cream or chips or hamburger. Right off the bat, I became concerned about the angle this report was going to take. You see, caries is a disease that is *100 percent preventable,* which is not mentioned even *once* in the program! No wonder that poor young man's mouth hurts – he's eating garbage! Only once in the entire program is preventive care discussed, and only as support for why one of the charitable, Medicaid-based practices is successful. I find it unacceptable that Frontline only holds accountable the professionals who went to eight years of higher education, who studied and learned difficult clinical procedures in an academic pressure cooker, and who graduated more than $300,000 in debt because they chose to serve their fellow man. There is *zero* accountability of the patients who eat high-sugar, high-fat food, and who drink a Dr. Pepper when they wake up first thing in the morning. Frontline addressed the symptom, *not* the cause of the problem!

New York City Mayor Michael Bloomberg recently made headlines as he introduced legislation banning the sale of sugary drinks larger than 16oz. *I completely*

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agree with this move! If the people will not take responsibility for their actions – actions that lead to horrible tooth decay, obesity and diabetes – then the government is going to step in and fix the problem. To take it one step further, perhaps it is even time for a sugar tax. Maybe dentistry and diabetes should be paid for by a tax per pound of high fructose corn syrups.

On the other hand, perhaps I shouldn't be too surprised about prevention not being the focus or even mentioned on Frontline, considering the American Dental Hygienists' Association (ADHA) – the association in America that is supposed to be the one true champion of oral health prevention – took the opportunity to tout its controversial "mid-level dental provider" campaign instead of *prevention* in its public response to Frontline's report. Speaking of mid-level providers…

Mid-level Providers and Dental Therapists

"I don't know why anyone would want to oppose a very well-trained professional, treating someone who otherwise would not get treatment." – Christy Jo Fogarty, RDH, MSOHP, quote from "Dollars and Dentists."

To be perfectly honest, I have to agree with Ms. Fogarty who was featured in the Frontline report. The reason why comes down to the very simple concept of price segmentation. China is the classic example of price segmentation. China has 1.3 billion people. You have two-year dental schools for the 49 percent of their country that is rural and poor, and they have four-, five- and six-year programs for the 51 percent of China that lives in the big urban areas and can afford a higher quality of care. There is not a one-size-fits-all model of dental care in China, and there shouldn't be one in America.

One-size-fits-all is also the reason communism doesn't work. Karl Marx thought everyone should have integrity, purpose and meaning to get up every day to earn an equal share, but it was flawed. You can't have one guy work 80 hours a week and another guy show up to work every day two hours late and drunk on vodka and expect everyone to be happy to earn the same. There's no incentive for the first guy to work as hard as he does, and there's no incentive for the lazy drunk to actually pull his own weight if he knows someone else is going to pick up the slack. To have a one-size-fits-all, dentists-only model for 313,000,000 Americans is ridiculous. Just because something looks good on paper doesn't mean it works.

There are areas in Alaska the size of Rhode Island that don't have a single dentist. And when someone asks if we can send in some dental therapists because there's nobody up there, dentists go ballistic. We dentists think our system is superior, and I agree! It is! But what we all need to finally comprehend is *some* form of dental care is far better than *no form* at all. I think Frontline is spot on here; mid-level providers do have a place in this system.

Profitability and Bonus Systems

The Frontline program was critical of management of the corporate dental practices that had insisted on the billing of $15,000 per day. Nowhere in Medicaid's billing charts is a charge for a dentist to sit down with the patient's parents and explain what's going on in the mouth of their child. That cost has to be rolled into something. We all can't be charitable doctors all the time. We're sitting on a mountain of debt just to be able to provide patients with our services. We need to recoup our costs and we need to make a profit in order to keep our doors open. This goes for any dental practice. O'Brien's report goes on to demonize bonus systems of these corporate dental entities. This is sad for health care because a bonus system is standard in sales for every single business in America. If you paid salesman on a car lot an hourly wage, they'd all be sitting in the back playing cards. But when you pay them a percentage of sales, they'll stand out in 115-degree heat and pouring rain to entice you to buy a car. People

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Howard Live

Howard Farran, DDS, MBA, is an international speaker who has written dozens of published articles. To schedule Howard to speak to your next national, state or local dental meeting, e-mail colleen@farranmedia.com.

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always chase incentives, but whenever you introduce an incentive in health care, people question your motives. We all have bills to pay. I can see how the incentive can get out of hand, however, when dentists only see the bottom line instead of the patient sitting in front of them, that is wrong. You need a bustling practice, but you also need to keep your patients in mind. It's also why, as a non-Medicaid-only practice, you need to present treatment plan options with the pros and cons of each option. It's why you need to say, "OK, you can get a denture at this price today, but here are the limitations and problems you might face down the road. Or, you can finance implants, and this is what your quality of life will be in five, 10 and 20 years down the road."

All in all, Frontline's report didn't open my eyes to any specific atrocity other than this country needs an oral health public awareness campaign, and it needs it *yesterday!* So, because your associations and leaders are busy not representing you and squabbling over things that don't matter, what are *you* going to do to help improve the overall dental health of America? I've got an idea! How about you grow your dental practice so you can treat more people, because we are doing a terrible job explaining that the number-one disease in children – caries – is totally, without a doubt, preventable! There is also a lot of good, charitable work being done all over this country and abroad. I urge you all to get involved. Take a weekend each quarter at the very least and volunteer for people like Drs. Terry Dickinson and Jerome Smith. Get out of your comfort zone and change the life of someone who can't afford it. If you want big change, you need to start changing small things. Get Started. ■

From the Dentaltown.com Message Boards NEWS STORY: The Center for Public Integrity and Frontline Investigate Abuses in Dentistry

Townies discuss their take on the PBS Frontline "Dentists and Dollars" program.

jcgriffin
Member Since: 06/28/01
Post: 10 of 136

I have been saying for a long time that the biggest threats to the local, private dentist are the government and corporate dentistry. So watching PBS and the State Boards go after corporate dentistry was kind of like a Godzilla vs. Mothra kind of thing. Throw in the mid-level provider segment and this show was a good time for all. And, the guy from Aspen and the Kool Smiles CEO, why wouldn't they just say, "Sure, we give bonuses. But, we never compromise care to increase production. We just hustle our tails off and work smarter." Were they scared to say that if you work harder, you deserve more pay than those who don't? I know the nonprofit, non-dentist guy from Alabama was sure proud of the fact that his dentists made the same amount of money whether they saw zero or 15 patients per day. It seems like these days everyone is scared to admit that they work hard and make a good income. ■ Chris Griffin DDS

JUN 26 2012

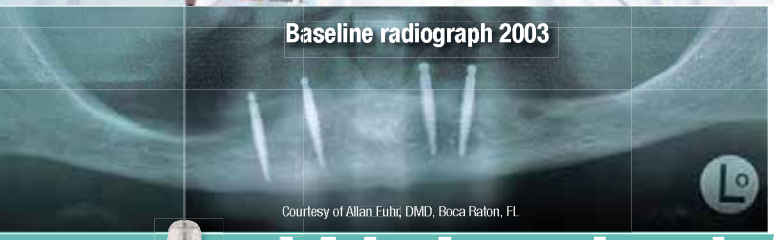
UnOrthodox
Member Since: 11/15/02
Post: 12 of 136

Too little info to work with… Not enough detail as to how the guy in Alabama can keep a high volume Medicaid mill going for cheaper then anyone else if you assume he is working at the same reimbursement as anyone else.

And no mention that every economic downturn means dental coverage for adults gets chopped for everything except exo and dentures, and decreases of covered services and reim-

JUN 27 2012

continued on page 20



Courtesy of Allan Fuhr, DMD, Boca Raton, FL

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*results will vary based on clinical situation

bursement rates for kids. Very little mention of causes of these problems (I know I haven't brushed my teeth since the Clinton administration). All I know right now is that if CareCredit doesn't think that someone is a good enough risk, I'm not signing them and that Aspen is a great referral source for me. ■

JUN 27 2012

ljsdds
Member Since: 06/14/02
Post: 15 of 136

I love Frontline, so this one was aggravating to watch. The journalist critiquing the fit of stainless steel crowns was over the top. They get one guy from UF that certainly is not a fan of FFS dentistry and they run the whole hour around him. I think it was disingenuous for him to say he has no idea why there are more cavities today. Maybe put a little ownership on the individual. Howard Farran said in a talk that if someone wants, they can essentially control being cavity free. This is true with home care and proper eating… essentially.

Pew and Kellogg had their hand in this – to their credit they are very powerful when it comes to manipulating journalists. They could show tons of traditional offices that do necessary dentistry and patients who are pleased with the results, but that would be boring. Dentists volunteering, involved in the community, doing great work… boring. No doubt corporate dentistry is a threat to values and ethics. That part to me was pretty fair, but I am sure there are good dentists doing good work even in that model. ■

JUN 27 2012

Louis Malcmacher, DDS, FAGD
Member Since: 06/20/01
Post: 33 of 136

When a dental therapist in Minnesota can say that she is trained on the level of a dentist, just in fewer procedures, I only think of one thing: this is our fault! I have written and talked about dentists' self-esteem for a long time. So many dentists only believe themselves to be tooth mechanics with no relationship to health, wellness, and the fact that we treat much more than just teeth. Maybe we will finally learn a lesson here. ■

JUN 27 2012

jruck720
Member Since: 12/19/11
Post: 36 of 136

I don't know how the Alabama nonprofit guy is keeping that overhead down, but it can't be magic. The highest overhead to him would be the dentists. So how are the dentists getting paid and how are the dentists getting paid enough to stay on top of those ridiculously high student loan payments? I would presume they are being paid by taxpayer dollars because the clinic qualifies as an underserved health center. So the main difference between corporate dentistry (Kool Smiles, Aspen, etc.) and big daddy in Alabama is how the taxpayer dollars are milked. Alabama big daddy says that Medicaid payments are adequate and satisfying. Well of course they are when they can pay you for not only the dental production, but also pay off the highest overhead in the practice… the dentist! Would have loved PBS to investigate that. ■

JUN 27 2012

hudley
Member Since: 09/18/02
Post: 54 of 136

They gave about 15 seconds of lip service to the lifestyle choices that the adult patient made: "I used to drink Coke after I brushed my teeth. That's bad! Don't do that." Most dental disease is a biofilm infection that is 100 percent preventable. The media isn't willing to consider that some of this problem is self-inflicted. ■

JUN 27 2012

Dr. Farran's ONE-DAY DENTAL MBA

Dear Townie,

I graduated from dental school in 1987 and if you told me then that in 25 years bonds would outperform stocks, I'd have said you were crazy. Yet look at what's going on today! If you were to put your money in a one-year CD right now, the banks wouldn't even pay you one percent interest for it. Now, more than any other time in my professional career, I would not want to be holding paper stocks, paper bonds – and I think anybody who puts their money in gold needs to get their head examined.

At any point in any of our nation's previous economic dilemmas you would notice the strong businesses – the ones that had the power to price – not only survived but flourished. Inflation always comes back with a vengeance, and the pendulum is going to start swinging that way, gang. When it does, and a gallon of milk doubles in price, the middle class will be decimated and many families will return back to poverty. But if you own the cow, you have the power to price and you can determine how much to charge for a gallon of milk, and they'll pay what you charge to get it.

The economy over the last five years has been brutal – in my local area alone more than 150 dental practices closed their doors for good – and we're nowhere near out of the woods yet. What you need right now is a stronger-than-strong dental practice with the power to price in order to survive this troubling economy – and my new DVD **"Dr. Farran's One-Day Dental MBA"** is your first step to ensuring you do!

Unlike any other dental consultant in the world, everything I teach I have already applied to my own thriving dental practice, Today's Dental. In good years we did great; in bad years we did better! I'm a firm believer of the aphorism, "A rising tide lifts all boats," which is why I'm pleased to present you with my very own tried-and-true business practices on my new DVD.

Now is not the time to be scared; now is the time to take action and really focus on your practice. I want you to know everything I know. There is no room for error anymore. You need to know how to keep your costs low and have a killer cash flow.

Take your first step, watch my new DVD with your spouse and your staff and let's keep all of our dental practices in the black for years to come!

Sincerely,

Howard

Howard Farran, DDS, MBA
Publisher, *Dentaltown Magazine*

P.S. Call 480-445-9712 or visit www.dentaltown.com/onedaymba to order your copy today.

This is *Your* Magazine… Thanks for Reading

by Thomas Giacobbi, DDS, FAGD, Editorial Director, *Dentaltown Magazine*

There are many dental magazines from which to choose, and I want to take this opportunity to share my appreciation for your support of *this* particular publication. In my opinion, we have the best magazine for general dentists in the marketplace. A recent national survey[1] of dental publications ranked *Dentaltown Magazine* number-two in cover-to-cover readership for magazines over 100,000 in circulation. The number-one position belongs to a publication that is so short it does not have a table of contents. What does cover-to-cover readership mean to me? It means you are taking the time to go through the entire magazine. It means you value the content that we produce every month and you don't want to miss a thing. It means you have an appreciation for the fact that we strive to provide useful clinical and management information, not just a few nuggets.

This month I want to take the time to recognize the people who make this achievement possible. First, our readers, who take the time out of their busy schedules to read the magazine. You have a stack of magazines on your desk every month and we appreciate the time that you spend with *Dentaltown Magazine.* Second, I would like to publically recognize the team at Farran Media that works all month long to produce each issue.

Benjamin Lund, Editor: Ben works full-time to manage the magazine and the content you consume every month. He coordinates and edits incoming articles, develops the magazine layout, communicates with our design team, plans issue themes and future issues, and much more.

Chelsea Knorr, Associate Editor: Chelsea provides exceptional content for the magazine – most recently the "Do Good" package in our May 2012 issue – and she is responsible for assisting with copyediting and other activities behind the scenes.

Krista Houstoun, Assistant Editor: Krista is the newest member of our editorial team. In addition to assisting Chelsea with copyediting, she manages the multitude of new product announcements and press releases that we receive every week. These are posted on our Web site and some are selected to appear in the magazine each month.

Amanda Culver, Creative Director: While Ben and his team are devoted to the content of the magazine, Amanda and her team concentrate on the *look* of it. As director of our creative team, Amanda puts her stamp of approval on everything that we do visually, from the design of articles in the magazine to our company logo and elements on the Web site.

Corey Davern, Graphic Designer: Corey is an integral part of Amanda's crew and he is one of the individuals charged with producing design projects.

1. *Kantar Media. "Healthcare 2012 Readership Data" Princeton: Kantar Media, 2012.*

   Kantar Media is a resource for communications agencies, media owners and brand owners. It provides single-source marketing and conducts media surveys.

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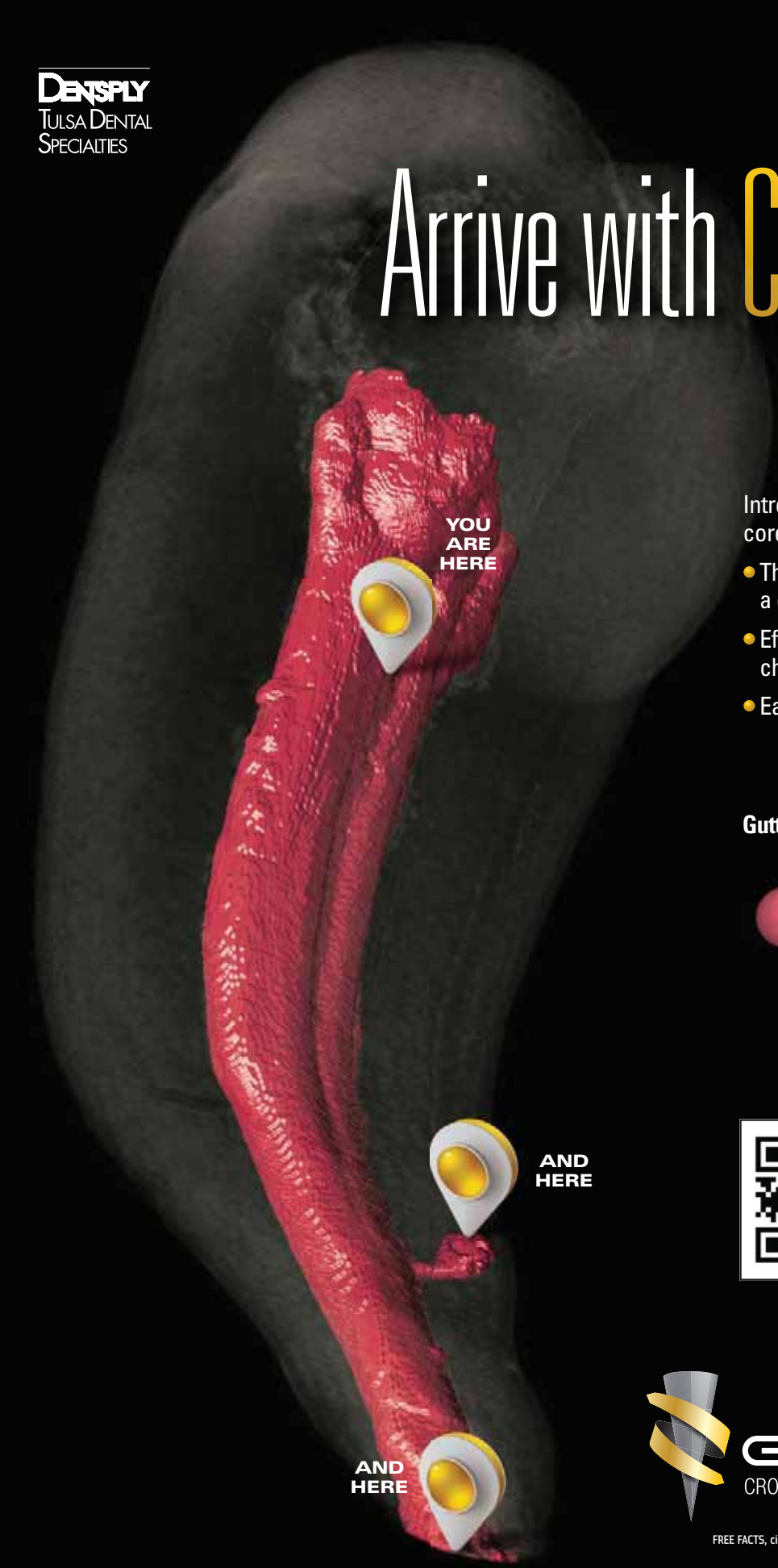

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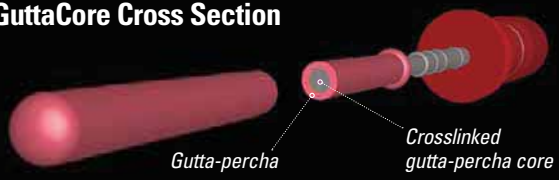

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Rx Only

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Devon Kraemer, Multimedia Specialist: Devon is a contributing designer in the magazine, and she spends a significant amount of her time producing many of the audio-visual projects, including CE courses.

Marcie Donavon, Circulation Director: Marcie makes sure that you get the magazine. She's why you are reminded to renew your subscription every once in a while. Yes, this is a free publication but postal regulations require us to keep your subscription up-to-date… otherwise you might not receive it!

Editorial Advisory Board: This group of volunteer clinicians shares its time and talents to review articles submitted for publication and they occasionally contribute original content. If you would like to be considered for this prestigious position, please send your CV to me (tom@dentaltown.com) or Ben (ben@dentaltown.com).

Of course there are many other individuals in our organization who make everything possible from sales of advertisements that pay for this free resource, to programming and maintenance of our Web site that is available 24/7/365 to members from all over the world. The contact information for every member of our organization is available to you on page 12. I'm sharing this information because I sincerely hope you will take this opportunity to send a thank you note to recognize their great work. Additionally, we would love to hear your feedback on the magazine. What do you like? What topics should we cover in future issues? When our updated digital version is available, when will you read it? Any topic is fair game and I would love to read your comments and suggestions. As always, I can be reached via e-mail: tom@dentaltown.com. ■

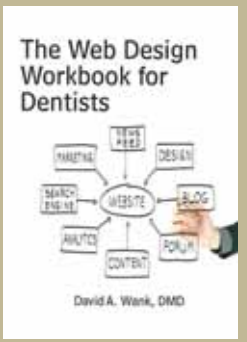
Things on My Desk

I have included some additional information to my column this month so I can share a couple of items that have recently been sent to me for feedback. If you have a new product, book or app that you would like me to review and share with our readers, send me a message via e-mail. Please understand that not all products will appear in the magazine and my comments are not available for viewing prior to publication.

The Web Design Workbook for Dentists

by David A. Wank, DMD

Cost: $279.99



Do you have a Web site or are you one of the many offices out there that does not have a presence on the Internet? This book was written by Dr. David Wank, a practicing dentist who owns a Web site and search engine optimization firm in Short Hills, New Jersey. His new book is 109 pages of terrific information that will help you get started with your first Web site, or provide topics for consideration during your next update. If you would like to learn more information, visit his Web site: www.shorthillsdesign.com.

Smile Guide Touch

www.digident.com

Cost: $99.00

Communicating cosmetic goals is accomplished many different ways: some dentists will use a simple wax-up or use composite to mock up a smile design directly on a patient's teeth. Others might use photo manipulation to change a pre-op image of a patient's teeth digitally. Enter Smile Guide Touch, a new app designed for the iPad. While this app does not currently allow you to manipulate your patient's images, it does provide the ability to preview 20 different anterior smile designs. If you are interested, check it out in the App Store.

What's New in Continuing Education?

by Howard M. Goldstein, DMD, Director of Continuing Education

Orthodontics and Restorative Triumphs
by Dr. Duane Grummons

keyword search
Restorative Triumphs

Non-cancerous Oral Diseases That Every Dental Professional Should Know
by Dr. Deborah Levin-Goldstein

keyword search
Non-cancerous Oral Diseases

Class II Direct Resins… Simple, Easy and Predictable
by Dr. Jason Smithson

keyword search
Class II Direct Resins

It is August, the dead of summer (or winter for those in the Southern Hemisphere) – a perfect time to stay indoors to further your dental education online!

There have been new releases added to Dentaltown's CE course listings in the last couple of weeks.

Orthodontics and Restorative Triumphs by Duane Grummons, DDS, MSD

This presentation celebrates great smile outcomes with a team approach. Clinical doctors learn best from colleagues' treatment approaches and cases. This course by noted orthodontist Duane Grummons helps the clinician distinguish and apply clinical good sense to achieve attractive smiles. The perfect smile entails beauty, functional comfort, symmetry, facial balance and TMJ stability consistent with the individualized facial morphology. Cases done using effective interdisciplinary approaches make it possible to attain all these things. This presentation celebrates great smile outcomes and is a great asset to both restorative dentists and orthodontists.

Non-cancerous Oral Diseases That Every Dental Professional Should Know by Deborah Levin-Goldstein, RDH, MS

This course is intended to provide dentists and dental hygienists with an understanding of common oral diseases that are non-cancerous in origin. The etiology, clinical manifestations, histologic appearance and radiographic appearance of a variety of diseases/conditions will be discussed. Information concerning herpes simplex infection and recurrent aphthous ulcers will be presented according to etiology and location. Treatment options will also be discussed for each disease/condition. Specific diseases and/or conditions to be discussed include: pemphigus vulgaris, benign mucous membrane pemphigoid, sjorgen's syndrome, lichen planus, systemic lupus erythematosus, candidiasis, herpes zoster, sialolith, paget disease, herpes simplex infection, aphthous ulcers and others.

A couple of months ago we released the best and most popular course there is on dental marketing – ***Dental Marketing Summit Series*** by Howie Horrocks and Mark Dilatush. This series is designed and delivered to assist any dentist with the total understanding necessary to promote dentistry properly, effectively and efficiently. Participants will receive personalized marketing plans and learn to get new patients in volume three of this course.

And from the Dentaltown archives… ***Class II Direct Resins… Simple, Easy and Predictable*** by Dr. Jason Smithson

Our most viewed course since 2009! This course describes a simple, easy and predictable technique to create beautiful, lifelike Class II direct resin restorations with the correct anatomical contours, emergence profiles and ideal proximal contacts. The technique uses basic composite shades and only two instruments and requires very little in the way of finishing or occlusal adjustment. All of this can be achieved in a timeframe which is realistic for the average GP.

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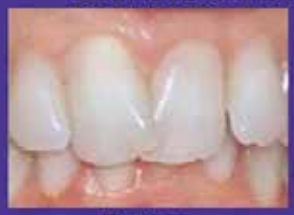

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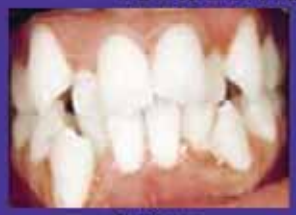

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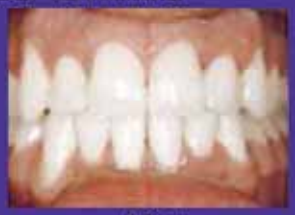

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The New World of Patient Referrals

by Jennifer de St. Georges

Early in my speaking career, my research showed 69 percent of new patients found their dentist as a direct referral from their friends, relatives, neighbors and co-workers. Simply put, all a dental practice had to do was make a good first impression, follow up and follow through, deliver more than patients hoped or expected, and not hurt them. Do this and you have the patient for life.

"A dentist is judged by everything but their quality of care" has been the cornerstone of my teaching from day one. JdSG's list of Top 20 Needs of Dental Patients has never listed quality as an identified patient need. How could it? Without a dental degree, by what criteria could a patient judge a dentist's quality of clinical expertise other than perception? So I rank a painless injection as the number-one need of patients from their dentists.

Americans rank fear of pain as their number-one reason for not visiting a dentist regularly. Fear of the needle ranks up with death, paying taxes and public speaking! How do dentists know their technique delivers a pain-free injection? Patients give you that feedback every single day! "Doctor, when are you going to give me the shot?" To which the doctor answers, "Jenny, I am confused, we have already done it!" Painless injections are the basis of a great patient/dentist relationship; essential to building a referral practice (with cleanliness and sterilization being tied at number two).

Practice Shoppers in the Old World

At the beginning of managing our practice, two kinds of patients caused me to be tongue-tied on the telephone. The first caller group wanted to know the doctor's age and where he went to school. The first part of the question was hard to handle because you never knew what the caller was looking for! Fifty percent of callers wanted a young dentist. They connected youth with recently graduated from dental school and up-to-date equipment and techniques. The other 50 percent wanted age, experience and gray hair! I learned if I had handled the call correctly when the caller either hung up or stayed on the line to make an appointment! Today, your Web site gives your community this data.

The second caller group thought it was their given right to schedule an interview appointment with the doctor, after which they would then decide if they would schedule a new patient examination. These tough patients certainly made me appreciate the referred patient who had bought doctor and practice before they made that first call!

Patients Whose Search is Based on Cost and Convenience

Today's patients (referred or not) utilize your Web site message and stated philosophy in ways we don't always expect. If *cost* is the guiding factor in their search, I assume discount dentistry, coupons or bundling procedures for a discount attract patients with this goal. My issue here has always been when the patient uses cost alone to make this health provider choice. We have a financial commitment between two parties. When patients feel the fees are too high, etc., this financial commitment has been broken and gives patients total permission to walk and start to shop again for the lowest financial bidder.

The practice whose message and philosophy is strongly based on *convenience* has another issue. In my opinion, I feel this approach educates patients to jump. When it becomes too inconvenient (for whatever reason) this patient feels it is OK to look for another dentist who is more convenient. Neither money nor convenience emotionally connects the new patient to the dentist.

However, when a practice Web site wants to educate the visitor that dentistry in this practice is painless, how is that achievable? I don't know. In many states, the Dental Practice Act states words like "painless dentistry" are not permissible. If you say you offer painless dentistry, you infer other practices do not. Actually, this could be true! But the law is the law. A dentist sells confidence and trust. Everything else is a byproduct of that sale.

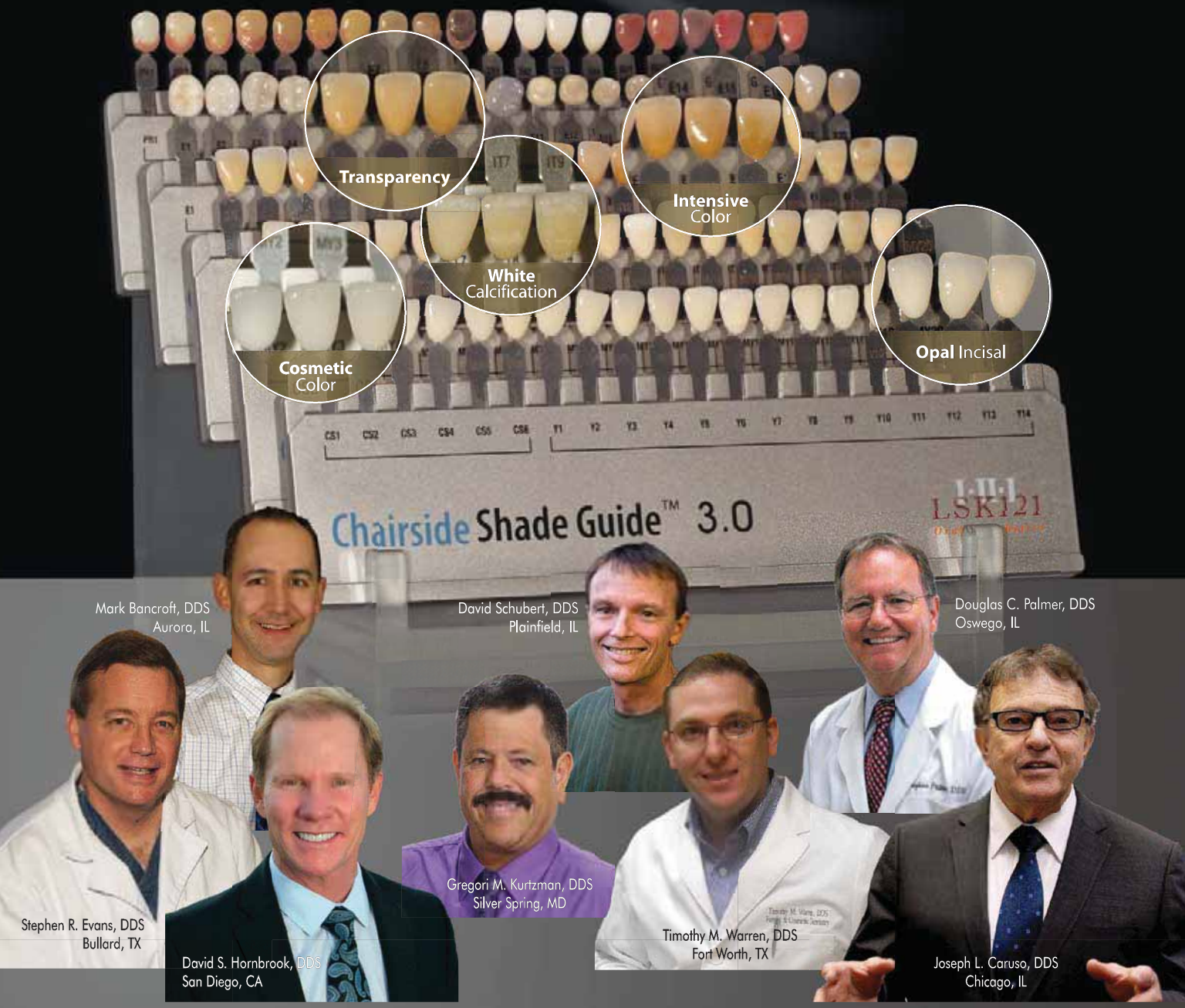
Practice Shoppers in the New World

I have never ever envisioned myself using the Internet (or Yellow Pages) to find a health-care provider. A couple of years ago, I noticed a small mole on my shoulder, dormant for 20 plus years, had quadrupled in size, it seemed, in 72 hours! I had an emergency. I was an emotional wreck. I needed help.

My dermatologist of record was unsympathetic. "We'll see you in four months," I was told. I told the receptionist

continued on page 30

How can you Become a **LEADER** in Shade Matching?



"Communication between the clinician and the ceramist is the most important aspect of delivering beautiful and lifelike restorative dentistry. A major factor in this success is the utilization of shade communication tools to transfer the information from the patient to the ceramist. Unfortunately, traditional shade guides lack the nuances seen in natural teeth and limit predictable use as a communication tool. Fortunately, there is now a new instrument in our armamentarium: the Chairside Shade Guide™ by LSK121. These hand-made custom shade guides, for both anterior and posterior teeth, are pieces of art and provide a level of communication that is limitless. I am very impressed."

David S. Hornbrook, DDS, FAACD
Private practice, San Diego, CA | International educator on restorative and aesthetic dentistry

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 continued from page 28

Internet Consumer Statistics

90% of online consumers trust recommendations from people they know; 70 percent trust opinions of unknown users. (Econsultancy, July 2009)

92% of Internet users read product reviews and 89 percent of people say that reviews influence their purchasing decision. (e-tailing group)

81% of respondents said they had received advice from friends and followers relating to a product purchase through a social site; 74 percent of those who received such advice found it to be influential in their decision. (Click Z, January 2010)

that I saw cancer in the mole. Four months was the reply. I immediately logged onto Yelp.com. My target was dermatologists in the San Francisco Bay Area. I looked for only four- and five-star-rated practices. I read each patient consumer write up carefully within this designated group. I noted and appreciated the practice with the lovely reception room and current magazines; the practice with helpful staff. I loved the doctor who actually let patients ask questions without interruption. While all these attributes/services are on my Top 20 Patient Needs List, I did not use my own list as my criteria for finding my dermatologist!

I focused only on one thing: I looked for patients who talked about a medical miracle! I found my dermatologist. Five miles away from home, Stanford trained, degrees and credentials galore. However, neither convenience nor training drew me to him. What drew me in was the mother writing of her teenage daughter's problem and resolution. Her teenage daughter had suffered from a major medical allergy for years, which had thwarted several doctors' expertise. Ten minutes into the appointment, the doctor had diagnosed her daughter's problem and prescribed the remedy. The remedy worked. I felt the mother had written from her perspective, a factual and well-balanced review. This was the testimonial I had been looking for. I made a decision to choose a medical provider based on a non-professional's interpretation of a medical miracle. With confidence, I called the practice the next morning. They scheduled me the same day. The doctor was everything the mother's testimonial had led me to believe, and more. The mole was benign and it was removed that day. He is now my dermatologist.

This personal experience has given me cause to rethink my preconceived and prejudiced concepts I have had over the years about the Internet and finding medical services. I can see how asking friends and neighbors for a dermatologist would have been very labor intensive, with no guarantee of being provided with any names at all. Five minutes on Yelp.com, I felt I had become an educated buyer. I grant you I did not personally know any of the posters. However, using common sense and reading carefully between the lines, I felt I learned a great deal. The experience taught me about how to use social media responsibly.

It is essential every dentist take a few minutes weekly to visit and review Internet activity about your practice. What are your patients saying to the world about you, your staff, your practice and your services? Please do not delegate this responsibility to your staff. This is your practice and your patients. You need to have a finger on the pulse of your practice and your community.

When any posting is less than 100 percent supportive of your services, reach out and post your side of the issue on the site. Also, contact the patient and address the issue with them personally. As well as promptly addressing issues, your weekly Internet visits gives you the opportunity to read about your happy patients, which puts life into perspective.

Summary

Today's patients have not stopped contacting their friends and neighbors for help in finding new medical service providers. They have just expanded their search methods for testimonials and information via the Internet. According to the ReviewPro.com June 2011 survey, favorable consumer postings far outweigh negative postings, 60 percent to 28 percent. Their June 2011 report concludes, "The need to monitor the social web for damaging content remains, but ReviewPro's research proves most people go online to share positive experiences. An opportunity in reputation monitoring involves collecting positive feedback and using it to identify areas of competitive advantage that can be emphasized in advertising and marketing communications."

Every dental practice should ensure their new patient registration form clearly delineates the difference between new patients who say they 'Googled' you (using location as their main criteria) from patients who chose you specifically because of the glowing testimonials posted online by your happy patients. We need to embrace the Internet as a friend – a friend who offers us a vehicle to spread good news faster! Experts tell us good news travels 15 percent slower than bad news. The vast majority of patients are buying confidence and trust. The Internet offers a great marketing tool to promote this. ■

Author's Bio

Jennifer de St. Georges has built a strong reputation for delivering her bottom-line and logical approach to solving complex management issues, in a highly motivating and humorous manner. Her live speaking programs, Webinars, articles, take home audio programs and implementation services have a loyal following. To book Jenny to speak or for more information call 800-393-2207 or visit www.jdsg.com.

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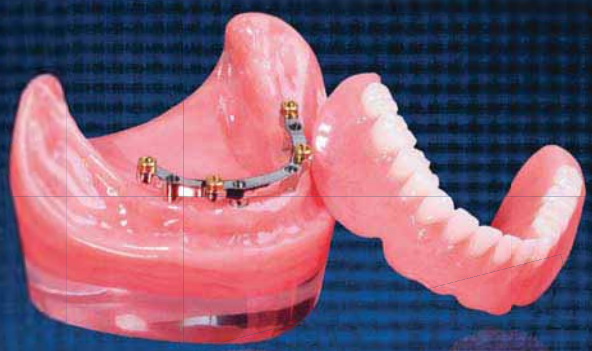

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High Precision Dental Laboratory	Torrance	CA	877-523-4241
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New Products

If you would like to submit a new product for consideration to appear in this section, please send your press releases to Assistant Editor Krista Houstoun at krista@farranmedia.com.

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The Three-Quarter Arch T-LOC Triple Tray design is ideal for incisors, canines and premolars. It captures all four canines to allow for observation of canine rise and incisal guidance and provides greater symmetry in aesthetic zone. Additionally, it benefits the patient's comfort by allowing the impression to be taken in a closed position. The tray walls are low and tapered to avoid contact with interfering hard and soft tissue and the ultra-thin webbing ensures accurate bite registration by allowing precise inter-digitation of opposing dentition. For more information, visit Premier Dental Products Company at www.premusa.com or call 888-670-6100.

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Dentaltown.com Message Boards...

There are many ways to find great discussions on Dentaltown.com. Some Townies choose to explore "Today's Active Topics," a tab on Dentaltown.com displaying the threads most frequented from day to day. Others choose to subscribe to specific topics, or certain posters. Here in *Dentaltown Magazine*, we provide readers with yet another way to find out what poignant threads are generated on our message boards. Herein, we've chosen a few relevant and timely threads to act as a jumping off point for further discussion.

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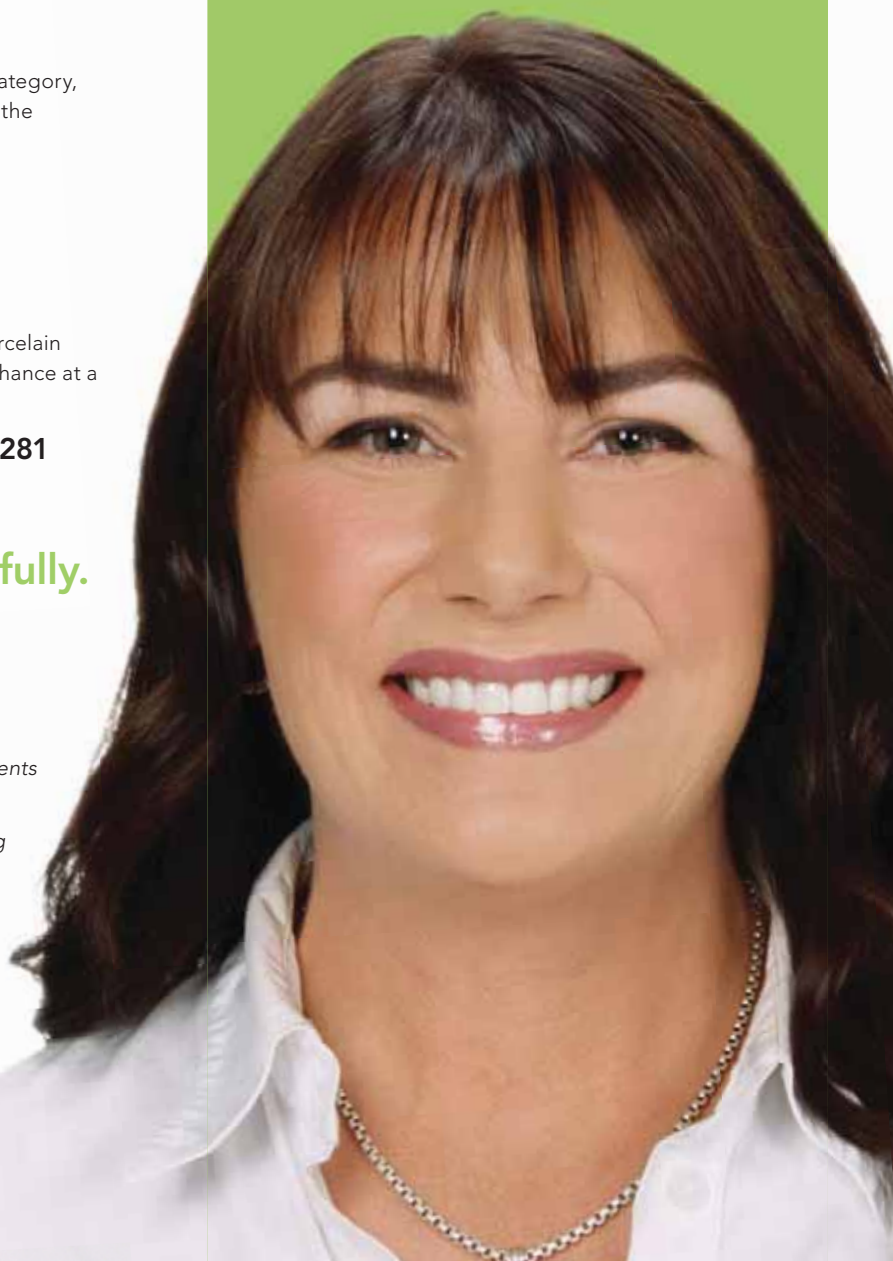

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Hybrid Denture

Check out this well-documented case replacing a full upper denture with a hybrid prosthesis.

rjhanks
Member Since: 09/16/09
Post: 1 of 21

I've done a few of these now and thought I'd post the process of the one I'm making now. It'll be a little easier to take pictures now that I'm not scared to death of what the outcome might be. This obviously isn't ideal for everyone, but I've found that they work really well in patients who are new denture wearers or patients who haven't lost much bone and don't need the buccal flange of a removable denture.

We plan on restoring the lower as well but the patient can't do them both at once. I'll post the case as each step comes along. Hopefully I can help some people with this process, as I kind of fumbled my way through my first few. The process that Glidewell has works really well. Total lab cost is $2,000 and includes everything as long as you're using a compatible implant with its inclusive system.

Fig. 1: Patient has been edentulous for more than 20 years. She hates her denture and only wears it when she is going to be around people. I can't blame her, at rest she shows about 7mm of the anterior teeth due to the contours of the denture. She has taken the denture to her bench grinder on several occasions and removed the entire buccal flange. Even with no buccal flange she is still excessively over-bulked. I'll get a pic of the denture next time the patient comes in. I thought it was pretty incredible how much bone was present considering how long the patient has been edentulous. We fabricated a mock denture/surgical guide/CT scan appliance with barium sulfate that worked really well for placement. I'll post pics of that later too.

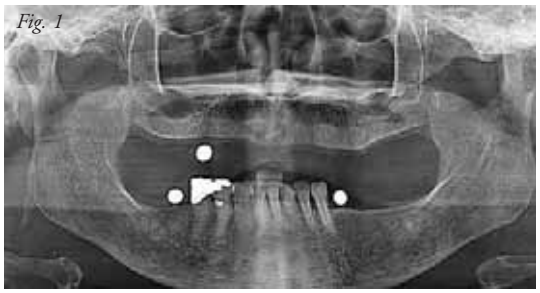


Fig. 1


Fig. 2

Fig. 2: Had a mock-up denture made with the teeth repositioned to ensure that we liked the position. It also doubled as our CT scan appliance with barium sulfate. Once the scan was taken, I also used this as my surgical guide. It wasn't very technical, I used the teeth to orient where I wanted the implants and drilled holes through the appliance. I basically only used this to mark the ridge and I freehanded from there.

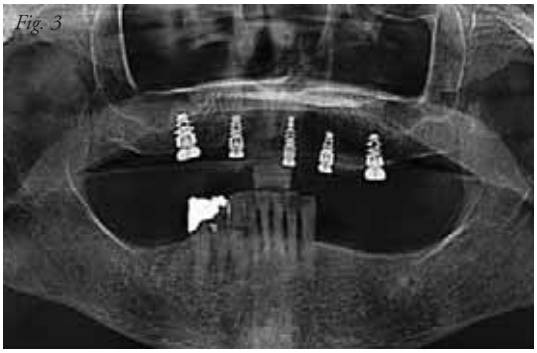
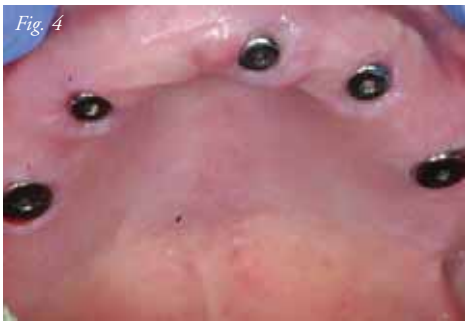


Fig. 3

Fig. 3: Placed five AB I5 implants. I'm not a huge fan of flapless surgery but the patient's ridge was so large with so much attached gingival, I was pretty comfortable with it. The only

augmentation needed was a sinus bump in the 3/4 area. Glidewell claims they only need four implants in the maxilla but that scares me. All-on-4 could become none-on-3 so easily in the maxilla, so I'd rather over-engineer a bit. We actually only charged the patient for four implants, but that fifth implant is going to help me sleep.



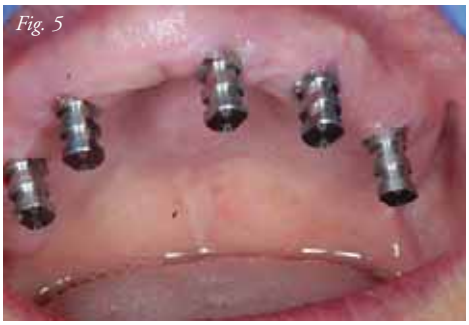


Fig. 4: One week post-op.

Fig. 5: One week post-op impression to begin hybrid denture fabrication. The AB impression transfers are really nice here. No screws to mess with, just snap them in and take them out with the impression.

Figs. 6 & 7: Done for the day. A five-minute impression with the clip impression transfers.

I think it's a total of six appointments, this being appointment number one. Next is bite rims and an anterior try-in that screws into two of the implants and has just the centrals set.

Questions and comments please, I still have a lot to learn too, so I'd like to learn a few things by posting this.

Case: Progression Images

Update to the case. I added the pic of the scan appliance in the first section. This appointment is for bite registration and setting of the maxillary centrals. Also adding a few pics of the verification jig from a different case to clear up some confusion. Will post the verification jig for this case when we get to that point.

Fig. 8: Appointment two: Wax bite with the two centrals in place. The tray is screwed into two of the implants, bite is taken, midline is marked and centrals are adjusted as needed. Then sent back to lab.

Fig. 9: Another view showing the non-engaging portion for the implants. Portion that is screwed into the implant is plastic so it has a little give just in case it's a little off still.

For more on hybrid dentures, visit these supplemental message boards:

Thommen System – Hybrid Fix Case
Search: Fix Case

Full Arch Immediate Load Denture and Hybrid
Search: Immediate Load

continued on page 38

 continued from page 37


Fig. 9

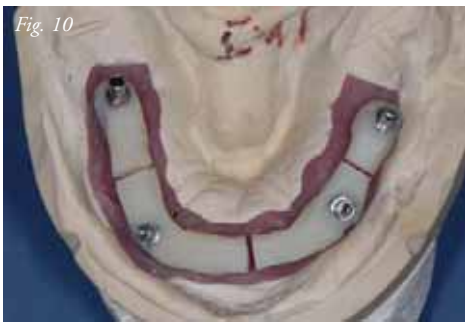


Fig. 10

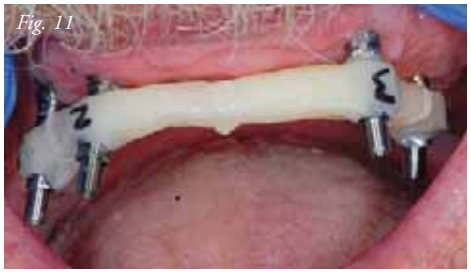


Fig. 11


Fig. 12

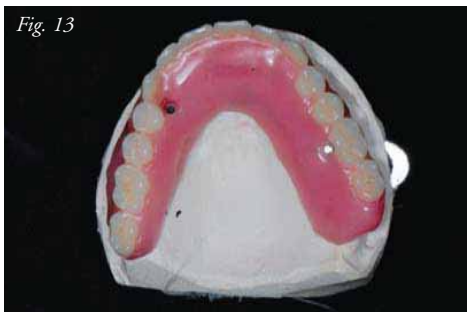


Fig. 13

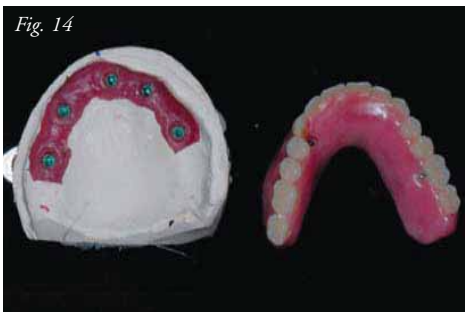


Fig. 14

Fig. 10: Verification jig (from another case). Non-engaging open tray impression copings. These are transferred into mouth, luted together and impression is taken.

Fig. 11: Another photo of jig in the mouth and luted together. Impression is taken with custom tray that is provided by the lab. I'll post photos of all of this when I get it for this actual case. This is appointment three and we are still on appointment two.

Fig. 12: Full wax try-in. Usually at this point they gave a verification jig as well. However, I didn't like the look of the centrals they had in the bite verification so I had them change the positioning and the size of the teeth. They were very horsey looking. Also, before I get flamed for having a non-cleansable denture, the flanges will be removed in the final processing.

Fig. 14: This goes to show why I took the impression at a one-week follow up. This is a long process and by the time we're ready to seat the final denture we will be at a point where the implants are well integrated.

More to come as the case progresses. I hope this is helping. ■

APR 7 2012

skiswim4life
Member Since: 03/06/11
Post: 4 of 21

What is the exact final prosthesis, screw retained or locators? ■

APR 14 2012

doctored
Member Since: 09/21/02
Post: 5 of 21

The final prosthesis is a screw-retained hybrid as I understand the OP's description. I have a question. It sounds like the scanned framework is fabricated from the last nade from an impression using a closed-tray technique with transfer copings that are not

continued on page 40

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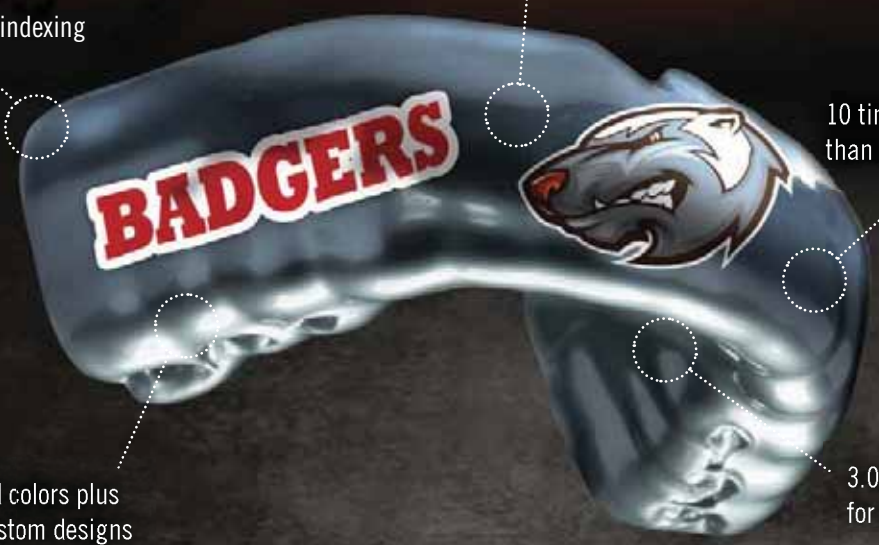

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 continued from page 38

fastened with screws. Do you have the patient in for verification of the framework passive fit with all I/A interfaces fully seated? I have not used a scanned and milled framework yet. When my lab casts a frame, I always do a try-in of the frame and often it has to be cut, indexed and soldered, especially if I use a closed-tray impression technique. The frame fits the cast but sometimes needs correction. If the cast is slightly inaccurate because of the use of "plug in" impression transfer copings, the frame will not fit passively. I have heard some clinicians say this is not really important, but I have also read that it is important especially with a restoration that is "loaded" so soon after the placement of the implants. This "spring" retain impression transfer could possibly be the best of both techniques. I have never seen it and it looks promising. It has the benefits of the open tray impression technique because you do not have to reinsert the transfers and the ease of a closed-tray technique. Thanks for posting. I have to look into this system. Which implant systems are compatible with the spring-retained impression transfers? ■ Ed

APR 15 2012

westonDMD
Member Since: 04/25/08
Post: 6 of 21

Final impression at one-week post op? Why? ■

APR 15 2012

rjhanks
Member Since: 09/16/09
Posts: 7 & 8 of 21

Yes, the final prosthesis will be screw-retained. The impression that I took is just a preliminary to begin setting teeth in wax. I just received the bite rims back that have the two centrals in place that screw into two of the implants only. Once this is done, I will have a verification jig with non-engaging open-tray impression copings. The jig is luted together with your material of choice (I use flowable at the suggestion of the lab), then you take the impression. This will give us a much more accurate impression than the first one we took. We then do a framework try-in as well just to be totally sure we have passivity. I probably should've waited until I was further along to post but I'll update with photos of each step as we go.

I took the impression at one week because it's not really a final impression and I wanted to get the process going. It will take a couple of months to get through all the appointments for the final prosthesis. I would've taken the impression the day of surgery but she was sedated and I didn't want to risk that. We also had great primary stability of all the implants, so I was comfortable doing it. ■

APR 15 2012

doctored
Member Since: 09/21/02
Post: 9 of 21

These cases are a lot of work, no doubt. I think I will use a scanned and milled framework on the next case that hopefully shows up. I hope you post the photos of the progress. What is the patient using now for a denture? ■ Ed

APR 15 2012

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Freaking Out!

A medical emergency can be a very unpleasant event. This story shared leads to many others.

hudley
Member Since: 09/18/02
Post: 1 of 29

Townies! I just had to call 911 for a patient in my chair! Oh my God, I've never been so scared. I delivered one carpule of Citanest to the patient on the lower left (Gow-Gates) and she got pretty numb in no time. Delivered a second carpule due to a past sensitivity to epinephrine (e.g., heart racing). After a minute or two she complained of feeling hot. I opened the window and sat with her, was talking with her, etc. Her eyes glazed over and she went limp, dropped her glasses. She went white as a sheet and slumped forward. She was a heavy-set lady and her chin went right down. She made some very weak choking sounds and her tongue stuck out. Classic syncope… but check out this twist: The patient is eight months post-op from a sleep apnea surgery. She had her lower jaw surgically moved forward to help keep her airway open. When she fainted, she slumped forward and her neck puffed all out like a double chin. My overactive imagination thought "allergic to prilocaine, anaphylactic shock." Thank God I didn't go for the EpiPen! I finally got her airway open and she came to. We had already called 911 and they were on their way (took them 15 minutes!). Her color came back immediately and she was obviously pretty embarrassed. Get this… the ambulance folks didn't know what I meant when I used the word "syncope." Also, they didn't know what prilocaine was. They didn't have their own stethoscope to check vitals. What the hell!?! Anyhow… long story short, patient is fine. I'm no worse for wear. But I wanted to talk about it because it scared the daylights out of me! Anyone else experienced something like this? ■ Alan

APR 30 2003

Jamie Italiane
Member Since: 02/26/03
Post: 2 of 29

Vasovagal responses can happen. I had one a few years ago after exo. She passed out and began vomiting. I evacuated the vomit with high-speed suction, took some smelling salts which I had taped to the tray arm of every operatory and this brought her right back. Did scare the crap out of me though. Sometimes it's hard to read a patients' anxiety. Anesthetic allergies are so rare. ■

APR 30 2003

mike_esposito_dds
Member Since: 02/27/01
Post: 5 of 29

Alan, take a deep breath and have a margarita on me!

You did the right things, nice to know you can react in an emergency with the proper sequence. As far as the EMS people go, this is your chance to give 'em all an in-service talk. Make sure the newspapers cover it too! Sometimes they are just looking for a local interest story.

I'm serious about the in-service for the emergency folk. Talk to their supervisor and relate what transpired. Don't come down heavy-handed, just relate that you are concerned that they be aware of all the dental complications etc., etc.

P.S. Did I tell you to start breathing again? ■ Mike

APR 30 2003

John Hackbarth
Member Since: 02/27/03
Post: 6 of 29

It's a freaky deal to have someone go out on you. I had to call 911 twice in one month a couple of years ago, the only times in my 27-year career. I should say I was feeling snake bit, but all turned out OK in each case. The really weird one was the guy who went into insulin shock. He

continued on page 44

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 continued from page 42

had reported on his history some TIAs, and had even talked about one happening while he was driving. We knew he was a diabetic. When the incident started, my hygienist gave him some coke and then a piece of candy. She then called after a couple of minutes. It really looked like he was having a stroke. We called 911 and gave him some O_2 but he was getting worse. They arrived in four minutes and gave him IV glucose and transported. When you've never seen something before it is not always clear what exactly you are dealing with. Also, word to the wise: Giving a diabetic sugar is not always enough. ■ John Hackbarth

APR 30 2003

drance
Member Since: 09/07/00
Post: 9 of 29

I can relate to your story. About 15 years ago, I was going to do a bridge prep on a patient that I had previously worked on (same anesthetic) with no problems. This time, after a lower block, he said he started to feel itchy on his arms. Then in the space of a couple of minutes he turned white and had a hard time breathing and became non-communicative. I called the MD downstairs and said I wanted to give an injection of epi, .5cc 1:10000. He said go ahead. I gave him one intra-orally and we were told that usually brings them around immediately. Nothing! Called the MD back and he said give him another, so I did. Slowly started to respond, but took a while. Then he started shaking and almost convulsing. By now I am a mess, the MD ended up coming upstairs, and said that was just from the epi, gave him a long-acting steroid. It probably took two hours for the patient to finally be able to get up and leave. Sent him off to an allergist for testing. Came back with all anesthetics fine to use! When I asked him for more details he did say that after he left the allergist, one spot did turn red. Sent him back again, and he was allergic to the anesthetic (or preservative) that I had given him. Ask me how keen I was at the next appointment! Called the MD in advance, and had the epi and Benadryl out in case. This time no problems. Now I make sure I always have the epi in a handy spot in case. ■ Michael

APR 30 2003

For more emergency-situation talk, check out these message board threads:

I Just Called 911 for My Patient
Search: 911

Sedation Emergency Scenarios
Search: Emergency

Albodmd1
Member Since: 03/21/00
Post: 10 of 29

OK, here's my story. Of all people, my first and only patient I had to call 911 for was my girlfriend! First year of practice, doing a RCT on her. Middle of the procedure, she starts saying how cold she is. We give her a blanket, but she becomes more restless. Take off the rubberdam, and then her eyes start to glaze over and roll back in her head. Vitals are strong but she's burning up with a fever. Call 911 and they take her to the ER. ER doc believes somehow a septicimia was induced and caused her temperature to spike. Still not sure what happened that day, but all turned out well. We eventually broke up, but not because of that incident! ■

APR 30 2003

super2th
Member Since: 04/14/00
Post: 11 of 29

Some 27 years ago I had a patient that began "shaking/shivering" after local lido injections. Her full body shivering just continued to get worse, she could hardly talk because her mandible was shaking so aggressively. I finally called the ambulance and we went to the hospital. After an hour or so the ER physician said, "Come here and I'll show you something weird." We would notice that she was fine until one of us walked into the room… then she would once again start shivering pretty violently… what an afternoon that was. ■

APR 30 2003

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There are many strong materials available as alternatives to the traditional PFM. What are dentists saying about their choices?

yooperdoc
Member Since: 09/07/11
Post: 1 of 27

For the past couple of years our office has been using BruxZir (and/or imitation) full zirconia crowns for molars and e.max for premolars forward as a general rule. We were trying out a different lab and a tech called me and asked why I didn't want e.max for a molar. He said that the compressive strength for the posterior is 400MPa and that e.max can get compressive strengths to 550MPa at 1.5mm when bonded, and down to 400MPa at 0.7mm. He said that the wear coefficient of e.max is similar to enamel and that zirconia is often glazed and polished to achieve better aesthetics and that, when this is done, it wears the opposing. He said that while zirconia has compressive strengths to 900MPa, that those are not really needed, and the aesthetics are, as we all know, not the greatest. He tracks his lab's remakes and after 15 years of 600 units/day he sees more problems with zirconia than with e.max. He said that e.max tends to break while we are adjusting them, and that once we bond them, they almost never (he said never) break. So basically he said while zirconia was stronger, e.max was strong enough.

As a side note, this gentleman said there are medical docs in Europe that were using zirconia for hip replacements and they have started removing them because of the specific heat range of the material and moisture levels in the body (not to mention the mouth) change the chemical composition of the material and promote zirconia fractures. The tech extrapolated this to the mouth and predicted that we would see bulk fractures in the next few years. He also said, to his knowledge, there is no three- to five-year study on zirconia restorations that shows they are a good restoration.

The other doc I work with and I have been very impressed with the zirconia marginal fit. We were just wondering if anyone else had any thoughts on the matter. ■

MAY 22 2012

Find additional zirconia vs. e.max discussion at the following message boards:

e.max Vs. BruxZir and Capteck
Search: Zirconia Vs. e.max

e.max Killed the Zirconia Star
Search: Zirconia Star

eeznogood
Member Since: 02/23/06
Post: 5 of 27

The CEREC crowd, which I'm a part of, has been doing e.max on posterior teeth, including second molars, since the product came out. It has worked too well to be ignored as a valid option. I always try to have at least 1.5mm on the occlusal, 2mm whenever possible. 2mm is what has been shown to be the best for strength, and yes, it needs to be bonded to achieve those high strength numbers.

Keep in mind that as Cerec users, we typically do monolithic e.max crowns with only staining and glazing. Almost never any cut back and building back up with regular porcelain.

e.max is definitely good enough and more aesthetic than zirconia.

As for your lab tech's arguments, it seems to me that most of it is stretching it… Who cares if a crown is more aesthetic or not on a second or first molar? Not many people. Cerec users like e.max mainly because it is a strong single-visit crown. That is the big convincing argument. Aesthetics is a plus, but not the major factor.

As for e.max not wearing the opposing tooth, that remains to be seen. Yes, zirconia crowns will do that, but I'm pretty certain that e.max will also.

In spite of all claims, opposing teeth will wear more when biting on porcelain – any porcelain. And if your lab tech is predicting bulk failures for the future of zirconia-based on unverifiable correlations, then there is not much weight to that argument either.

continued on page 48

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I would tell you that your lab tech is right when saying that full contour or monolithic e.max is strong enough in the posterior. All the rest that he said is a bit of a load of salesman arguments. ■

MAY 24 2012

19th Century Doc
Member Since: 05/22/05
Post: 6 of 27

"Good enough." Are you sure? I'm not saying it won't be, but maybe we should temper our certitude when making these kinds of statements.

I made a three-unit Zr bridge for a patient as a temp. Guy is a big time bruxer. He broke it after two months.

I'm quite certain I can find quotes about folks discussing how Zr is good enough.

But I hope you are correct... because I've done a bunch of e.max restorations on my patients too! ■ Phil

MAY 24 2012

Brad Blair
Member Since: 01/11/08
Post: 7 of 27

All the zirconia failures that I have had were Procera; porcelain over a zirconia core. Zero monolithic, but they haven't been around long enough.

e.max should be strong enough if you can get adequate thickness, which you can't always do. But as others have said, bonding a molar can be a real pain and conventional cementation of zirconia is a big advantage. ■

MAY 24 2012

CoachDDS
Member Since: 11/11/09
Post: 9 of 27

Phil, then I suspect something was wrong with the bridge... like structurally wrong... not on your end.

The force required to break zirconia both in tension and compression is pretty extreme, in fact I don't know that we as humans can generate that kind of force.

As far as e.max vs. zirconia, there's advantages to both. Zirconia is strong as nails and "generally" (just for you, Phil) won't break. It's also great at masking out a dark stump. e.max is much more aesthetic and can be very pretty, and it's bondable. You just have to reduce the tooth enough to have the space. Different tools in the toolbox. Take your pick. ■

MAY 24 2012

19th Century Doc
Member Since: 05/22/05
Post: 10 of 27

There was something wrong with it, Eric. It was too thin at the connector. That's because they needed to leave enough room under the pontic for a healing cap (implant was being placed). Still… it wasn't crazy thin.

My point being, these companies selling this stuff are generally full of it. Anyone who's been around long enough has memories of the "next great material" that proved crap… only years later, after it had already been used. Monolithic zirconia is sold as almost bullet proof. I'm here to tell you… it ain't.

Don't believe the hype.

I'm not saying don't use these materials. I'm saying use them judiciously. ■ Phil

MAY 24 2012

rgk
Member Since: 01/17/02
Post: 11 of 27

They all work and they all fail. e.max can fail too. Zirconia fails when limits are pushed. Phil's bridge broke at the connect. I doubt it broke right through the joint but probably were it flared into the next crown. Probably below the .7mm thickness. Now here is something to think about. Yes, an e.max should work in the right situation, but as mentioned, if it's too thin and cemented it will most likely break. If there are interferences it will break too. I offer both and have yet to have a failure with either. To be honest, I would rather do e.max over zirconia. The aesthetics are slightly better but, as mentioned, zirconia is

continued on page 50

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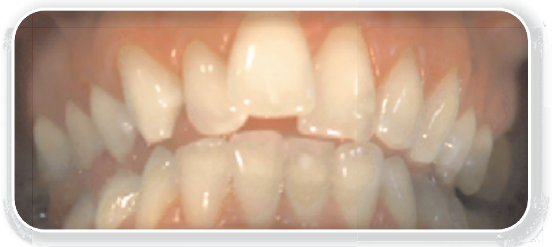

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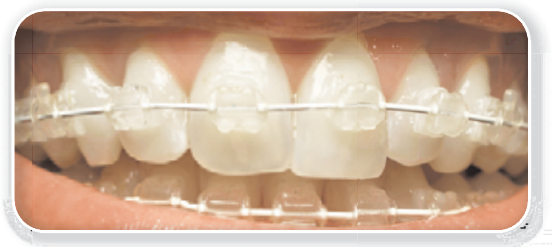

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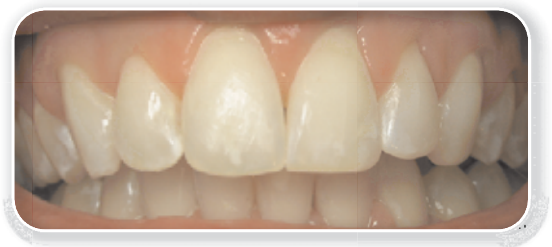

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 continued from page 48

making changes. Another factor is cost. e.max in general is a lower cost material to use then zirconia. Typically I let the doctor choose. If it's in a person who is a heavy bruxing patient, I would probably recommend full contour zirconia followed by e.max. If it's in a more aesthetic zone then e.max first, then zirconia. ■ Rick

MAY 24 2012

busterlou45
Member Since: 06/23/03
Post: 12 of 27

Do we really know anything until it is used over time? You can't just test things in the lab like real-world use would be. As it has been said, both materials have pluses and minuses. I've broken my share of Procera crowns to the point that they are no longer a tool in my toolbox. Not just debonding of layered porcelain, but quite a few fractured copings as well. e.max crowns seem to be very promising. They are lithium disilicate, I believe. Hmmmm. Where have I heard that before? Oh yeah, the revolutionary Empress II. I'm pretty sure this was the same material and it eventually became the bastard child of Ivoclar. Suddenly it was gone and nobody really talked about it. Much higher failure rates over time, I assume. Now the e.max is the same material… "but they figured it out" as I was told by the sales rep at a convention. OK, Ivoclar is a great company and I bought in… again. I love e.max but time will tell if that will continue. BruxZir crowns look promising and I'm doing more and more recently. I hear the BruxZir ones are better than the knockoffs… but again, who told me that? Sales guy. I have read other things as well to support it, but again, time will tell. ■

MAY 24 2012

19th Century Doc
Member Since: 05/22/05
Post: 14 of 27

Had to go in today (on a day off!) to section that zirconia bridge. It was definitely not less than .7mm thick. It was not as thick as I'd have liked it to be… but definitely more than .7mm.

I'm having a PFM bridge fabricated.

Like I said, when it comes to putting yourself on the line with these new materials… Caveat Emptor. ■ Phil

MAY 25 2012

uscdds95
Member Since: 10/05/06
Post: 16 of 27

I think a big advantage of BruxZir crowns are that you only need 1mm of occlusal reduction. Working on second molars, you don't want to prep too much or you will risk cold sensitivity and losing that valuable extra millimeter of retentive wall. ■

MAY 25 2012

rdsmith
Member Since: 06/21/06
Post: 21 of 27

We have been doing porcelain to zirconia since 1999. We have done thousands upon thousands, and for years we were one of Procera's biggest clients. The rate of fractures on these is barely higher than our PFMs but still so low that it doesn't even cause an eyebrow to lift. It all depends in framework design and handling.

As for FCZ and e.max… I would definitely go with e.max press over CAD (especially if your lab is using Sirona Inlab/Cerec) for margin and fit added strength from press, and you should know how they are milling their FCZ for the same reason. We have the in-lab and it works if your not using a microscope. FCZ has awesome margins when done with a good mill, wear is equal to e.max when polished and slightly less when glazed (though if you use e.max glaze on FCZ, won't it be the same? Hmm?) ■

MAY 25 2012

EndoSequence Precision Endodontic System

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EndoSequence is the first endodontic system to be fully synchronized from instrumentation through obturation and post placement. The constant tapered EndoSequence rotary files contain many patented features which provide efficiency and safety. EndoSequence BC Points and Fiber Posts are laser-verified to precisely match the shape (tip/taper) created by the files. Join the thousands of Townies that have discovered the host of benefits that EndoSequence brings to their practice.

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Unlike traditional gutta percha, EndoSequenec BC Points are subjected to a patented process of impregnating and coating each cone with bioceramic nanoparticles. The cones adhere to standards which are tighter-than-ISO tolerances and are laser-verified for tip and taper accuracy. Each EndoSequence BC Gutta Percha cone has undergone a proprietary stiffening process making them far easier to work with inside the canal. When used in conjunction with EndoSequence BC Sealer a monobloc can be achieved due to the fact that EndoSequence BC Sealer will both chemically and micromechanically bond to both dentin and the EndoSequence BC Points. EndoSequence BC Sealer and BC Points allow you to achieve three-dimensional bonded obturation with absolutely zero shrinkage.

EndoSequence Posts

Introducing the first fully synchronized prefabricated post system that matches the rotary instrumentation used to shape the root canal. No post drill is required, saving you time and preserving tooth structure. EndoSequence Posts are highly aesthetic and have a low modulus of elasticity, closely matching that of natural dentin. This ensures a uniform distribution of stress along the length of the tooth which helps to prevent root fracture.

A special thanks to the thousands of Townies who have incorporated EndoSequence into their practice! ■

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1. *Zhang W, Zhi L, Peng B. Effects of iRoot SP on Mineralization-related Genes Expression in MG63 Cells. JOE. 2010 Dec; 1978-1982*
2. *Zhang W, Zhi L, Peng B. Ex vivo cytotoxicity of a new calcium silicate-based canal filling material. International Endodontic Journal. 2010. 1-6*

ADA Statement on Comprehensive Dental Reform Act

The ADA announces it is pleased that Senator Sanders' bill recognizes that the barriers that impede too many Americans from attaining good oral health are numerous, and that addressing only one or a few of them will not appreciably improve what all agree is an unacceptable situation. The ADA has written to Sen. Sanders to express support for much of the bill and to offer suggestions intended to strengthen some provisions, but also to express the Association's continued opposition to expending precious federal dollars on unproven and unnecessary programs to expand the use of so-called midlevel dental providers.

Industry News

The Industry News section helps keep you informed and up-to-date about what's happening in the dental profession. If there is information you would like to share in this section, please e-mail your news releases to ben@dentaltown.com. All material is subject to editing and space availability.

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University of Illinois at Chicago College of Dentistry Golf Outing Scheduled

The 21st annual University of Illinois at Chicago (UIC) College of Dentistry Golf Outing, an event hosted by the College and the UIC Dental Alumni Association Board of Directors, will be held at Maple Meadows Golf Club, 272 Addison Road in Wood Dale, Illinois. The Golf Outing will be held on Wednesday, September 12. The fun activity also has proven to be a networking opportunity, as more alumni from Loyola, Northwestern and other dental schools have attended in recent years. Alumni from all dental schools and their friends are welcome to participate. Call Ana Lisa Ogbac of the College's Office of Advancement and Alumni Affairs at 312-996-0485, or e-mail her at aogbac1@uic.edu, for more information. Online registration is also underway at the College's Web site, http://dentistry.uic.edu/.

SmartPractice Announces New Leadership

SmartPractice President and CEO Curt Hamman is proud to announce the promotion of Dan Nahom to Executive Vice President and CFO. Nahom will now lead Accounting and Finance, Print Manufacturing, Acquisitions and Mergers, SmartPractice Japan and SmartPractice Denmark. Nahom joined SmartPractice in 2002 as Vice President of Finance and CFO. SmartPractice is a family-owned company serving health-care professionals with patient communications, giveaways, clinical supplies, office supplies and innovative glove solutions for more than 40 years.To learn more, visit www.smartpractice.com.

Sclar Announces Dates for the 2013 ISTM Comprehensive Dental Implant Surgery Training Conference

Participant feedback from the 2012 conference confirmed that the educational sessions were highly effective in exposing novice surgeons to a comprehensive implant surgery knowledge base, giving them confidence on how to proceed in developing an implant practice. Experienced surgeons gained in-depth knowledge on cutting-edge implant surgery and grafting techniques and evidence-based treatment protocols to achieve successful outcomes while minimizing complications. "We're already planning next year's conference to accommodate more learners," says Dr. Anthony G. Sclar, founder and educational director of The Sclar Center. The dates for 2013 are February 1-5.

Empire Joins Benco in Support of the Keep A Breast Foundation

Benco Dental partners with the Keep A Breast Foundation, a group which works to eliminate breast cancer via education, early detection and support. Benco supports by donating a portion of the proceeds for every box of natural extensions Earloop Masks and Nitrile Plus Gloves in bright fuchsia.

At the Fourth District Dental Society Meeting in Saratoga, New York, the Empire team designed a stand-up display of the specific gloves and masks decorated with fuchsia scarves. It offered contests to those who were willing to take the time to try the gloves and masks. Within minutes of the show opening, the booth became so busy they could hardly keep up.

Pillars of Prosperity

Carestream Dental's Brand Mainstays Drive Business and Yield Success

by Benjamin Lund, Editor
Dentaltown Magazine

RVG 6500

More than 800,000,000 dental images are captured each year with Carestream Dental products.

Carestream Dental has been operating as a standalone company providing imaging, software and practice management solutions to the dental profession since 2007, but its roots extend more than a century back. With ties to industry leaders such as PracticeWorks Systems, Trophy Radiologie and Eastman Kodak, Carestream Dental has been undergoing a rebrand campaign to firmly establish the company itself, its products and its people. This initiative included an ad campaign to raise awareness for the brand, new product launches to further the recognition, and, most recently, shedding the Kodak name from software and imaging equipment to align all products under the CS brand identity. Today, the company is excitedly looking toward the future. To learn more about Carestream Dental's past, present and future, *Dentaltown Magazine* spoke with U.S. President and CEO Patrik Eriksson, Chief Marketing Officer and Director of Business Development Dr. Edward Shellard, and Vice President of Clinical Affairs and Product Line Manager for Clinical Imaging Dr. Jeffery Brooks.

Gentlemen, thank you for taking the time out of your busy schedules to talk with us. Carestream Dental has been in the dental market for a long time. When and how did it get its start?

Eriksson: Carestream Dental is the result of many companies that have joined forces over time through partnerships and acquisitions, and we all work together as one company toward our common goal of redefining expertise for dental practitioners.

Carestream Dental's roots date back to 1896 when the world's first bitewing image was taken. Later, in 1919, the first modern dental X-ray film was introduced by Eastman. For the next several decades, our predecessors, Kodak and Trophy, continued to innovate in dental imaging – introducing extra-oral radiographic film, digital radiography sensors and systems, and more.

Despite our growth as a global company, we've kept our small-business feel in regard to our customers. This mindset drives us to always want to understand exactly what our customers are experiencing, and we work fast to respond and introduce new solutions that address their needs.

In January this year, Eastman Kodak filed for bankruptcy. Because Carestream Dental and Kodak were closely connected in name, how did Eastman Kodak's bankruptcy announcement affect you?

Eriksson: In 2007, the Kodak Health Group became an independent company called Carestream. As an independent company, we became solely responsible for manufacturing, selling and supporting our products and solutions; however, we continued to license the Kodak name for our products due to the brand recognition.

Then on September 1, 2010, we introduced the Carestream Dental brand and logo that represent the future of our company. At the beginning of 2011, we introduced our first product with the CS brand, the CS 9300, our flagship cone beam computed tomography (CBCT) unit, and stopped using the Kodak name on most of our products.

Eastman Kodak's bankruptcy has created an opportunity for us to share our company's history of innovation with customers, potential customers and others in the industry. It has allowed us to have conversations about who we are and what we offer, as well as create awareness for our brand by telling our story.

What is Carestream Dental's business philosophy?

Eriksson: We are focused on simplifying the lives of practitioners by providing them with tools that make their lives easier and improve the health of their patients.

Also key to our business philosophy is the desire to share our technology with people who cannot afford proper dental treatment. We regularly donate or loan our products to, and have members of our team serve during, various Mission of Mercy events nationally, Mercy Ships missions internationally and other service initiatives.

How does Carestream Dental set itself apart from its competition?

Eriksson: A key differentiator between Carestream Dental and our competitors is that we design, develop, manufacture, sell and support our broad portfolio of products. While we got our start offering imaging products, over the years we have expanded to also offer software and practice management solutions, including our robust collection of electronic services.

We build our imaging products from the ground up, and we develop our software in-house. We do this because we want to make sure that our products work seamlessly together and that we are ultimately providing integrated solutions for the integrated practices of today and tomorrow.

Brooks: Also, due to our strong, clinical foundation as a company, product development at Carestream Dental is clini-

Dr. Brooks with the CS 9300

Respondent Bios

Patrik Eriksson

- President and CEO of Carestream Dental in the U.S. for the last six years.
- Joined Carestream Dental team in 1995.
- Provides vision and leadership for company's equipment and software business.
- Holds Master of Science in Business Administration from Stockholm School of Economics in Sweden. Graduated from Advanced Management Program at Harvard Business School in 2010.

Dr. Jeffery Brooks

- Vice President of Clinical Affairs and Product Line Manager for Clinical Imaging.
- Oversees development of all imaging products and software from a clinical perspective.
- Earned DMD degree from the University of Mississippi School of Dentistry and certificate in oral and maxillofacial surgery from the University of Tennessee School of Dentistry.
- Serves as a clinical assistant professor at the University of Tennessee School of Dentistry.

Dr. Edward Shellard

- Chief Marketing Officer and Director of Business Development.
- Leads worldwide business development, key partnerships and acquisitions.
- Earned DMD degree from Case Western Reserve University and MBA from Pepperdine University.
- Has more than two decades of clinical and executive experience in dental profession.

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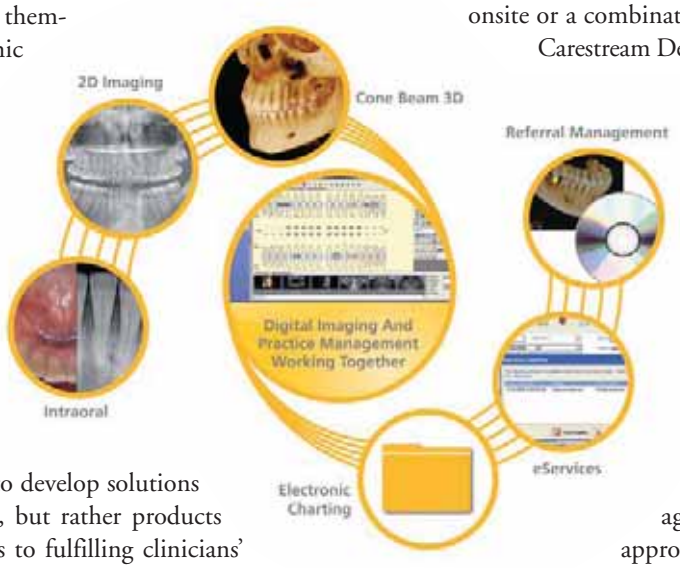
cally driven. We work to make sure that our customers get the full diagnostic potential out of all of our imaging solutions.

How is Carestream Dental branding itself today?

Eriksson: As a company, we are working to position Carestream Dental based on three pillars that describe our distinguishing characteristics in the industry – diagnostic excellence, workflow integration and humanized technology. Together, these create the Carestream Dental Factor (www.carestreamdental.com/factor).

Tell me about your team. What's the culture like at Carestream Dental?

Eriksson: Our team is made up of a diverse group of people. A portion of our team is clinically anchored, meaning they are long-tenured and experienced in the dental industry whether practicing themselves or teaching in an academic setting. Another part of our team is made up of seasoned business professionals who know how to strengthen and grow a company. Our team is rounded out by the younger people we bring into the mix to drive our company's innovation and push the status quo.



Our team is passionate about driving innovation in the dental industry. We strive to develop solutions that are not on par or subpar, but rather products that set the bar when it comes to fulfilling clinicians' diagnostic needs.

Not only is our team passionate about what we do every day, but we are comprised of individuals who are results-driven. We understand that dentists always want the best test results and treatment outcomes for their patients. Therefore, our team has a sense of purpose developing our products because we know that we are helping to improve patients' lives.

Now, let's talk products. Describe your research and development process.

Brooks: Carestream Dental products are designed by clinicians, for clinicians. Because we are clinicians ourselves, are friends with practitioners or are exposed to the technology in an academic environment, we have insight into the needs of the industry. We are also able to identify needs by having conversations with our customers directly, by way of their sales representatives or through our support channels.

Shellard: We enjoy working closely with dentists and want others to get involved in the development of our products, so we can continue to deliver solutions that provide more precise diagnoses, improved workflows and superior patient care.

Brooks: By working with dentists directly, we can identify the clinical gap. We then work to articulate the gap to our developers, which leads to the gap being closed.

Shellard: The process of product development is very focused. Once we're in the process itself, we use a series of gates – regulatory, manufacturing, legal/patents, marketing, sales and training – to manage the development.

What can a practice expect when it purchases a product from Carestream Dental?

Eriksson: When a product is purchased, our team installs the product in the practice and trains the entire team on how to use it. Training ensures that practices are using the product in the most optimal way, and it can be conducted online, onsite or a combination of the two.

Carestream Dental also offers its Advantage Plan, a comprehensive support program that meets the needs of any practice.

Our team has created a better customer experience for our end users by having only one company for them to go to for support, rather than having to identify the correct group to reach out to with questions. We have a help desk in Atlanta, Georgia, that has 250 specially trained agents. Customers can find the appropriate number to call by visiting www.carestreamdental.com/support. When customers call, they are routed to the correct skill group for their question. A support representative then works with customers to identify and diagnose what issue they are encountering. Our support representatives are experienced enough to understand doctors' needs.

We are very proud of our first-call resolution rate, which boasts a track record of resolving more than 85 percent of issues doctors or their teams have on the first call.

Think about the company's most significant accomplishment. Can you tell us all about it?

Eriksson: Our most significant accomplishment has been to give customers the ability to change patients' lives. One way we've accomplished this is by developing a focused-field 3D unit. Introduced in 2007, the CS 9000 3D extra-oral imaging system was the first of a new generation of 3D imaging systems created specifically for dental professionals. The system combines high-resolution, low-dose panoramic and

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Because I Am A TOWNIE

I Teach

Name: **John Nosti**
Townie Name: **John Nosti**
Member Since: **02/23/2004**
Occupation: **Cosmetic Dentist**
Location: **Mays Landing, NJ and Manhattan, NY**

I have lectured to dentists around the world, sharing my passion for cosmetic dentistry. My favorite place to share the latest techniques and methods is through the Dentaltown community. Because of Dentaltown I'm able to reach other professionals on an in-depth, individual level. By offering courses in both *Dentaltown Magazine* and Dentaltown.com and providing insights on specific cases on the Dentatlown.com message boards, I'm helping dentists create better smiles for their patients.

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3D imaging exams at an affordable price. With the CS 9000 3D, clinicians around the world are able to diagnose conditions that were not possible to diagnose in the past with 2D imaging alone. Not only does 3D imaging offer phenomenal image quality, but it greatly enhances practitioners' diagnostic ability. The unit also improves treatment planning and creates a better patient experience.

You claim seven out of 10 practitioners use your products globally – which of your products has the most market share? To what do you attribute Carestream Dental's successful penetration in dentistry?

Shellard: Both our analog (film) and digital (RVG) intra-oral imaging products are widely used across the industry, and we are market share leaders in CBCT globally. Altogether, our imaging products account for more than 800,000,000 of all dental images that are captured each year.

At Carestream Dental, we have a deep and intimate understanding of how practices work. Identifying the needs, frustrations and desires of practices, and then addressing them in the products and technologies that we develop, have led to our successful penetration in dentistry.

We gain this understanding through our voice of customer work, which is pivotal to all the products we develop. We make it a point to spend time in our customers' practices to watch how they work and learn what they'd like to see improved. We also collect customer input through surveys, thought leader meetings and an annual users' conference that we hold specifically for our dental general practitioners.

Carestream Dental was a pioneer in digital radiography in the early 1980s. How has the field changed since then, and how are you able to keep pushing the boundaries of digital imaging today?

Shellard: Since the advent of our RVG sensor in 1982 (the world's first digital intra-oral radiography sensor), the two biggest changes in the field have been that the technology is now more mainstream in practices, and there are many more competitors in the space. Digital is now a given in our lives. Not only do we work on computers now, but we also interact with other digital platforms such as our smartphones and digital tablets like iPads. Now, this is how we can look at images, too – directly on screens.

Carestream Dental continues to push the boundaries of digital radiography today by working to bring practices the very best image quality. Not only do our RVG 6100 and RVG 6500 sensors offer the same, best-in-class image quality radiographs in the industry (>20 lp/mm resolution), but our RVG 6500 system is also able to transfer images wirelessly and securely to operatory computers without sacrificing image quality.

Last year *The New York Times* published an article about the danger of X-ray radiation in dentistry. How has Carestream Dental addressed this concern?

Brooks: In my opinion, CBCT is the single, biggest breakthrough in dentistry as it allows practitioners to gain immediate access to accurate 3D images of anatomical structures, which are often critical to precise diagnoses, more effective treatment planning and increased case acceptance.

Carestream Dental advocates adherence to the ALARA Principle (as low as reasonably achievable), and we are committed to educating dental professionals about the benefits of CBCT, as well as how to use it safely for the maximum benefit of patients.

Carestream Dental seems to pride itself on workflow integration. How do your products best work together?

Shellard: We design our products, software and solutions to work with each other. When we first begin developing a new product or upgrading an existing product, we think about how it will fit in the dental practice and work with other products we already make. This is the key to our development process. Also, the extensive troubleshooting we do to ensure that our products work hand-in-hand is evident as soon as practices start using our solutions and experiencing an integrated workflow. We also create our solutions with open architecture as much as possible in an effort to try to make our products work with competitive products as well.

Dr. Shellard using the CS 1600 on a patient.

For more information about Carestream Dental, visit www.carestreamdental.com or call 800-944-6365. ■

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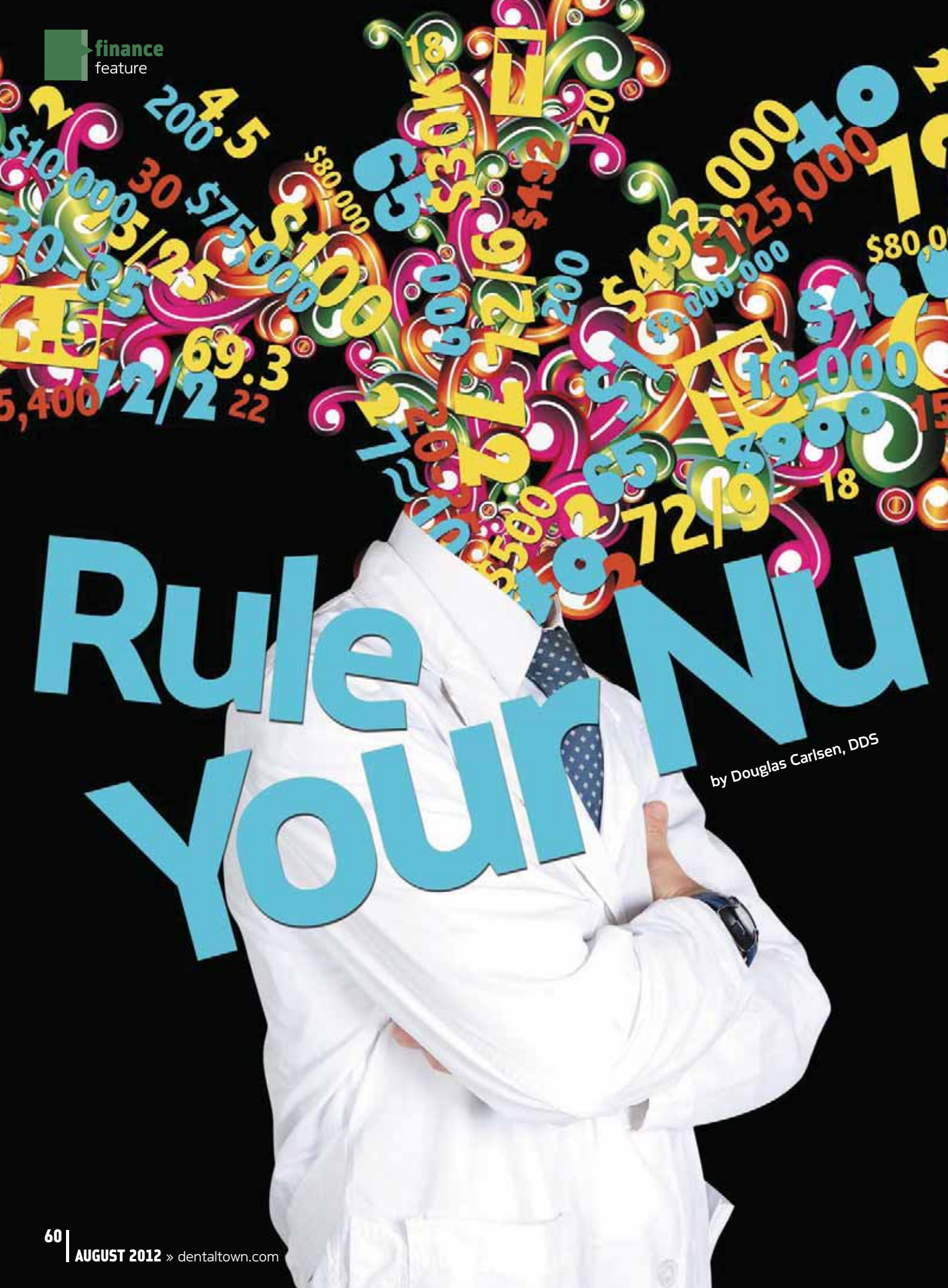
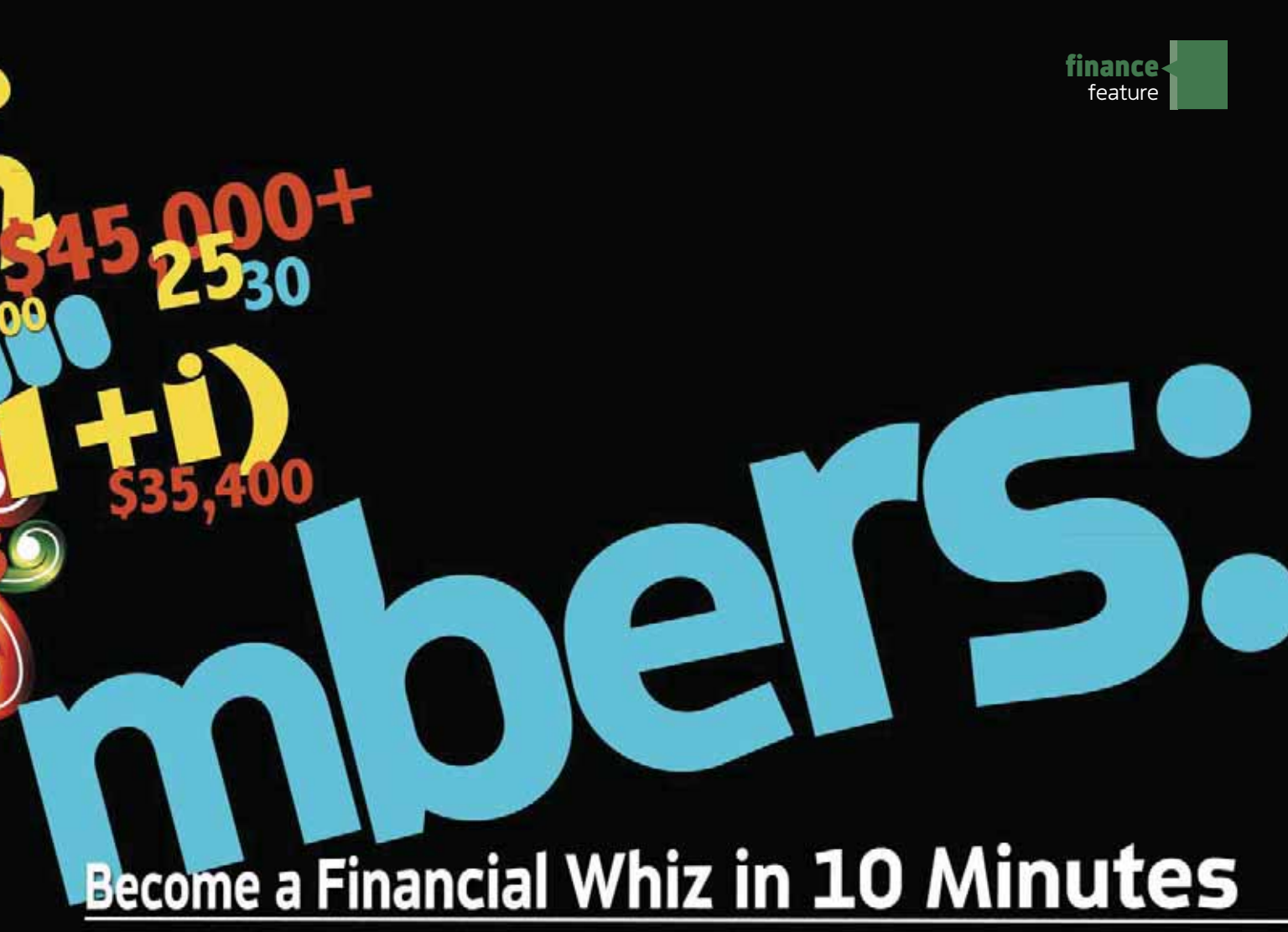


Rule Your Nu

by Douglas Carlsen, DDS



Become a Financial Whiz in 10 Minutes

The Rule of 72

Occasionally, while I drive about town, listening to local financial radio, a caller will ask about the Rule of 72. More often than not, the host "guru" will stutter something about "a complicated way to design investment strategy." Please steer clear of these salesmen.

The Rule of 72 is simple. It calculates the approximate number of years it takes money to *double* by dividing 72 by the growth or interest rate, expressed as a percentage.

For instance, if you were to invest $100, compounding interest at a rate of nine percent per annum, the "rule of 72" gives 72/9 = eight years required for the investment to be worth $200. Similarly, to determine the time it takes for the value of money to halve at a given rate, divide 72 by that number. Thus at three percent inflation, it should take approximately 72/3 = 18 years for the value of a dollar to halve.

The above Rule of 72 gives an *approximation* of the time needed for something to double. For you math geeks, a more accurate calculation is as follows:

T= ln 2/ln (1+i)

T is the time period; i is the interest or growth rate; ln is the natural logarithm. Remember logs? Man, that seems like a different lifetime! Like back when we used slide rules and had to use hand instruments.

The real magic number is 69.3, yet 72 divides well with many numbers and is fairly accurate for rates up to 15 percent.

The Rule of 72 and Compound Interest

My stepson Scott inherited $75,000 at age 25 that he put it into a *passively managed* (no market timing) Vanguard IRA. With interest compounding with a 75/25 mix of stock to bond index funds, he expects to receive seven percent per year real growth (in 2012 dollars) over the next 40 years.[1] This is the historical average after taking out inflation.

Using the Rule of 72, at seven percent per year, his money in real, or 2012 dollars, may double every 72/7≈10 years.

At age 65, after 40 years, his $75,000 might double four times to $1,200,000 in today's dollars.

1. *Annual Returns on Stock, T.Bonds and T.Bills: 1928 – 2011. From Federal Reserve database. It shows arithmetic mean of 11.2% annual growth for stocks and 5.4% for Treasury Bonds. Subtracting 3% annual inflation, we come up with 8.2% real return for stocks and 2.4% return for T-bonds. For a portfolio of 75% stocks and 25% bonds, we come up with an average return of 6.75%. Downloaded from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histret.html on May 31, 2012*

Inflation from 1913 to 2011 is found to be 3.0% according to information at http://www.inflationdata.com/inflation/consumer_price_index/historicalcpi.aspx

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As we'll see, it is safe to withdraw four percent per year from an account forever without running out of money. That's $48,000 income for life at age 65!

Scott has a huge head start for retirement, as long as he doesn't touch the money for many years.

Interestingly, if Scott has a financial adviser *actively manage* his $75,000, his overall growth rate would normally be at least two percentage points lower, according to Larry Swedroe.[2] He might expect five percent growth over those 40 years. 72/5 is approximately 14. His money would double three times instead of four, leaving him with $600,000 rather than $1,200,000. Yes, how your money is managed does make a difference over many years.

"Mid-pointing" to Find Total Loan Interest and Estimated Payments

Let's envision a visit to an auto dealer, trade-in in tow, to purchase a new Lexus RX. Your trade-in is worth $10,000. You talk the sales person down to $40,000. The total amount of loan is therefore $30,000. The salesman says you may finance at six percent interest over six years.

Here's how you can quickly approximate your loan payments to make sure there's no dealer shenanigans. Take the mid-point of the loan total, in this case, $15,000. That's your "average principle" during the term of the loan. Figure the total interest on that amount. In this case, six percent of $15,000 is $900. That's what you'll average in interest per year.

The loan is for six years, so total interest is $900 times six, or $5,400. Therefore, your total fee for the $30,000 loan is about $35,400. Divide by 72 months (six years) and you have payments of about $500 in your head, or $492 if you use a calculator. Either is close to the actual payments of $497 per month.

Note, the above is an approximation of real payments, yet if the dealer quotes a six year loan at six percent for $30K and comes back with $600 per month payments, you'll know something's wrong.

This mid-pointing method works well for practice loans, mortgages and any loan up to 30 years. Note that in real life, loans aren't "straight line" as was calculated above, with the interest payments much heavier at the start of the loan. The above method does come up with reasonable results, though, for interest rates up to about 12 percent.

Quick Online and Mobile Calculators (if numbers in your head cause acute torment)

Loan Calculators

Bankrate has an online mortgage calculator that can also be used for home, auto and practice loan calculations at www.bankrate.com/calculators/mortgages/amortization-calculator.aspx

For iPhone, use the free Zillow Real Estate Homes app.

Savings Calculators

For online savings calculations, go to www.bankrate.com/calculators/savings/simple-savings-calculator.aspx

For iPhone savings calculations, use the free MarkMoney app.

Combo Loan and Savings Calculator

For $3.99, MarkMoney has a loan and savings calculator app for iPhone.

The Four Percent Rule

William Bengen provides a seminal study of safe withdrawal rates during retirement in *Conserving Client Portfolios During Retirement*.[3] Bengen states that for taxed-deferred investments, it's safe to take out up to 4.5 percent per year with yearly inflation increases without running out of money for 30-35 years. For after-tax funds, it's a bit lower than four percent. Bottom line: Four percent withdrawals with yearly increase for inflation is almost always safe for retirees as long as one has at least 20 percent bonds and 20 percent stocks in one's portfolio.

2. *Larry Swedroe, The Only Guide to A Winning Investment Strategy You'll Ever Need, Truman Talley Books, New York, NY, 2005, pg. 242.*

3. *William Bengen, Conserving Client Portfolios During Retirement, FPA Press, Denver, CO, 2006.*

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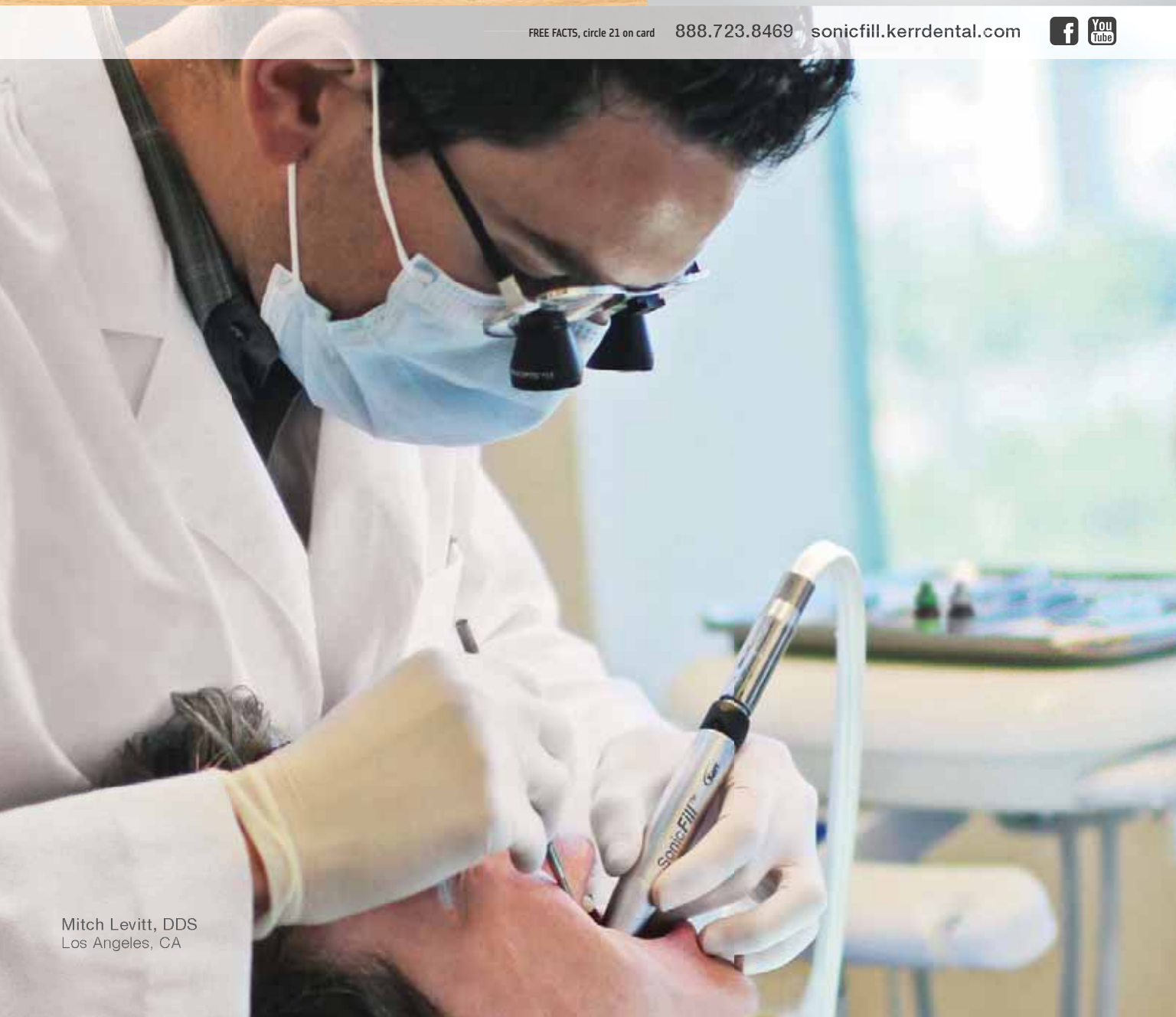

Mitch Levitt, DDS
Los Angeles, CA

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As I've indicated before, the average total savings needed for dentists who retire in their early to mid-60s is around $2,000,000. Using the four percent rule, a dentist may take out $80,000 per year safely for 30 years with a negligible chance of running out of money. Social Security, inheritance, sale of practice, and other variables often increase the yearly income total to between $125,000 and $175,000.

Interestingly, a dentist who retires at age 70 may not need $2,000,000 saved. Bengen shows on page 50 that for 20-25 years of retirement income, one can safely take out five percent per year. To get that $80,000 needed by an age 65 dentist, our 70-year-old only needs $1,600,000.

Monte Carlo software programs often indicate that with well-diversified allocations, more than four percent is safe to withdraw. Please check with your adviser about what your safe withdrawal rate will be.

Yes, the four percent rule is very conservative, yet provides dentists a safe way to predict what they may spend in retirement.

I've come across several dentists with $5 million saved at age 60-65 who know they can live on around $150,000-$175,000 per year, yet are afraid $5 million isn't enough. With the conservative four percent rule, they may have an income of at least $200,000 per year from savings with an additional $45,000+ from Social Security at their full retirement age.

I hope these quick tips make the financial morass out there a bit easier to negotiate. ■

Author's Bio

Dr. Douglas Carlsen has delivered independent financial education to dentists since retiring from his practice in 2004 at age 53.

For Dentists' Financial Newsletter, visit www.golichcarlsen.com and find the "newsletter" button at the bottom of the home page.

Additional Carlsen Dentaltown articles are at www.towniecentral.com. Search "Carlsen." Videos available at www.youtube.com/user/DrDougCarlsen. Contact Dr. Carlsen at drcarlsen@gmail.com or 760-535-1621.

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Among Family

by Chelsea Knorr, Associate Editor, *Dentaltown Magazine*

Drs. Kara Lembo and Lindsay Montgomery are sisters, 16 months apart, and owners of Lembo-Montgomery Cosmetic and Family Dentistry in Mooresville, North Carolina. They may be a practice in a small town, but these doctors have built a big-family feel.

How and why did you get into dentistry? What inspired your decision?

Lembo and Montgomery: Our choice of profession and passion for dentistry came through our parents. Dr. John J. Scherer, our father, has owned a dental practice in Northern Michigan for the last 36 years. And our mother is a hygienist in the family practice. Together, they both gave us the inspiration to truly make a difference. We had the opportunity to work alongside our parents at the family practice where we discovered how dentistry can offer a variety of services to people.

What steps did you take to start a practice from scratch?

Lembo and Montgomery: First we needed to find the right location that offered growth in the community and would allow both of us to provide a variety of services for all ages. Once we found our office space, we contacted Henry Schein and they designed our office. One of the great aspects of Henry Schein is it has a 3D computerization imaging of your office design. It also recommended what contracting company to use to build out the office design. Schein helped us with a contact at Pelton & Crane to design our chairs and cabinetry products. The project took four months to complete and we had a wonderful experience with everyone who was involved. We opened February 7, 2011.

What is your practice philosophy?

Lembo and Montgomery: To provide quality dental care in a state-of-the-art environment with careful attention to detail and personal respect to the people of our community. Also, we encourage our patients to be educated about the benefits of dentistry. This can improve their self-image and self-worth.

You two are sisters. Why did you decide to open a practice together?

Lembo and Montgomery: We decided to open a practice together simply because we are sisters who enjoy what we do and we believe in and trust one another. There is no sibling rivalry at all. We

Photography by Kim Hummel Photography

Name: Dr. Lindsay Montgomery

Graduate From: Marquette University School of Dentistry, 2003

Name: Dr. Kara Lembo

Graduate From: University of Detroit Mercy School of Dentistry,

Practice Location: Mooresville, North Carolina

Practice Size: Nine Operatories

Staff: One Hygienist, Two Dental Assistants, Two Financial Coordinators

2003 **Web site:** www.mooresville-dentist.com

Office Highlights

Bonding Agents
- GLUMA Comfort Bond and Desensitizer from Heraeus

Burs
- Komet S-Diamonds
- NeoDiamond Carbide Burs
- Meisinger Carbide Burs

Cements
- 3M ESPE RelyX Unicem 2 Automix and RelyX Luting Cement
- Calibra Dual-cured Resin Cement
- Inverse Resin Cement for Veneers

Implants
- BTI
- Straumann

Impression Material
- Aquasil PVS and Aquasil Digital

Infection Control
- Autoclave M11
- Hydrim
- KaVo Quattrocare
- Statim M3

Patient Financing
- CareCredit

Restorative
- 3M ESPE Filtek Supreme Ultra
- Embrace for Pit and Fissure Sealants
- Surefil Flow

Technology
- BIOLASE iLase Diode Laser
- CAESY Patient Education
- Canon Intra-oral Camera
- Dentrix Software G4
- Dexis Digital X-ray Sensor and Software
- Elements Obturation Unit
- Kavo Handpieces
- Smile Design
- Sybron Endo Rotary NiTi Twisted Files
- Symmetry IQ Peizon
- VELscope Vx Oral Cancer Screening Device

Whitening
- Ultradent Opalescence In-office and Take-home Kit

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are very close in our relationship as sisters and as business partners. We want each other to succeed and the best way to do so is to help each other.

Dr. Montgomery, you have a military background. What did you do in the Navy?

Montgomery: I was in the U.S. Navy for five years as a general dentist at the Marine Corps Base Camp Lejeune in Jacksonville, North Carolina. During my service, I was deployed overseas in Operation Iraqi Freedom in 2005, providing dental care to military personal and coalition forces. My experience as a general dentist in the U.S. Navy was rewarding since I was able to provide dental services to men and women in the Armed Forces ensuring they're in good oral health before deploying to combat. I was awarded the Navy and Marine Corps Achievement Medal for my efforts.

And Dr. Lembo, you had a practice before the Mooresville location. What did you learn from the first one? What did you do differently when you opened the second time around?

Lembo: I had a successful family dental practice for five years in Detroit, Michigan, prior to moving to

Dental Assistant Jenine Jones with Dr. Montgomery.

Dr. Lembo works with her dental assistant.

Barb Morris, financial coordinator, with a patient. at the front desk.

North Carolina. I learned how to be a businesswoman on my own, along with practicing dentistry. I wore many hats when I owned that practice and took on many responsibilities myself. The second time around when I joined my sister in starting a practice, I was not alone. I got to share the responsibility with someone else and interact with a colleague who was doing what I love to do.

What is a typical day in your practice like?

Lembo and Montgomery: The office is open five days a week. The open office concept helps people feel welcomed and comforted as they walk in, and the cool colors and curved arches give a sense of calmness. We want patients to have their minds at ease, to feel like they're home.

Treatment varies from day to day – restorative, cosmetic or recalls for all ages. We have families come in together for treatment at the same time, and then the next hour their friends come in to be treated. We definitely have a community feel to our practice. Treating all our patients like they are part of our family is what makes our practice different.

Female dentists are still the minority. What's it like to be a woman in dentistry?

Lembo and Montgomery: We are very grateful, as women dentists, to offer top-quality care, enjoy our family life and be a part of an outstanding profession. We love what we do, and together we are enjoying what we have built.

What is your biggest source of new patients?

Lembo and Montgomery: Word-of-mouth referrals and our Web site. We market through advertising, sponsor sports teams and community service.

What is the competition like in your area?

Lembo: The other general dentists have been very welcoming and encouraging. The area we are located in, Lake Norman, which is 30 miles north of Charlotte, North Carolina, is where small businesses help support other small businesses. Businesses grow beside one another and each wants the others to succeed.

Montgomery: It is very comforting, this area brings a sense of closeness, togetherness and a feeling of being at home no matter where you grew up originally.

How has the economy affected your practice?

Lembo and Montgomery: The economy has affected our practice when insurance coverage for the patient has changed either because of job loss or a new employer changes the dental

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insurance plan. We strive to provide customer service and treat patients well, not allowing the economy to be a negative factor to our success.

We think the biggest problem in dentistry right now is insurance coverage. Patients' insurance coverage hasn't changed in the last few decades regarding the maximum amount they are allowed to use per year. Insurance companies are dictating what to cover and how much. Some patients must put treatment on hold because of finances.

What is your favorite part about dentistry?

Lembo and Montgomery: We love all the services for patients to achieve beautiful and healthy smiles. This can be a combination of services such as restorative, cosmetic, implants, removable, bonding or simply whitening to give confidence.

Dana Stephens, dental assistant

Tell me about you and your families:

Lembo: My husband, Joe, of 11 years and I have two children – Joey who is four years old, and Isabel who is two. I enjoy outdoor activities, traveling and family.

Montgomery: Darran, whom I've been married to for five years works at the Marine Corps Engineering School at Camp Lejeune as a training analyst. We enjoy the outdoors, particularly the warm weather of the Carolinas.

Both doctors cite family as a priority, and conclude their families extend far past their children and spouses. Walk into Lembo-Montgomery Cosmetic and Family Dentistry and you'll be among family. ■

Drs. Lembo and Montgomery's Top Five

Dentrix	Velscope Vx	3M ESPE Filtek Supreme Ultra	Dexis Digital X-rays	KaVo Master Series GENTLEsilence Handpieces
When did you start using it?				
2011	2011	2011	2011	2011
Why can you not work without it?				
Allows our office to go paperless. More efficient with practice production and time management.	The non-invasive device is easy to use to detect oral cancer diseases in early stages. Patients do not have to rinse first.	Easy to use and polishable. Love the results.	Size is comfortable to patients, visual tool to discuss with patients and good contrast.	Precise cutting performance, light to hold and amazingly quiet.
When do you use it?				
Daily	On all new patients, recall patients and at-risk patients.	Daily	Daily	Daily
How do you market it to patients?				
Each treatment room has a computer so patients can see its usage.	By educating patients and with signage in our office.	By educating patients and with signage in our office.	By educating patients and with signage in our office.	During treatment, patients comment on how quiet they are.
What would you change about it?				
To be able to send messages through the software and have more color codes available to use for procedures.	To be able to take an image to show patients what we are looking for.	The cartridge carrier would be in a smaller size.	Sensors would be cordless.	Wouldn't change anything.

3M ESPE Lava Ultimate Restorative: A New Class of CAD/CAM Material

3M ESPE Lava Ultimate Restorative is a new CAD/CAM material with long-lasting aesthetics and performance. This new material builds upon two of 3M's core technology platforms – ceramics and nanotechnology – with a formulation that is a blend of 80 percent nanoceramic particles embedded in a highly cured resin matrix. The result is a unique, patented material that provides a fast, no-firing process and maintains a long-lasting polish. With this new easy-to-mill material, dentists can maximize the productivity of their CEREC and E4D in-office restorative systems and through Straumann Cares. Additionally, dentists can request the material, from their Authorized Lava Manufacturing and Design Centers or through Jensen's Digital Network, meaning even dentists who do not mill chairside can take advantage of its unique properties.

This new material comes backed by a 10-year warranty. Lava Ultimate restorative is resilient, not brittle, and is incredibly durable and shock absorbent. Because the material is less brittle, it provides better edge quality. Scanning electron microscope images have shown that inlays milled with this material exhibit less chipping at the margins than those made with glass ceramics, including lithium disilicate. The shock absorbency of the material also results in less wear to opposing enamel than glass ceramics.

Lava Ultimate restorative is indicated for a full range of permanent adhesive, single-unit restorations including crowns, onlays, inlays and veneers. Additionally, the material is ideally suited for implant supported restorations because of its high flexural strength and low wear. Lava Ultimate restorative reduces stress to the implant, and dentists can easily adjust the material for occlusion with additive and subtractive techniques.

Dentists opt for in-office CAD/CAM systems because of the increased productivity they enable, and Lava Ultimate restorative helps them maximize their time in two important ways. First, it provides a faster milling time. Second, it eliminates the need for an additional firing step – just a few minutes of polishing are all that is necessary to achieve an enamel-like luster. Lava Ultimate restorative is available in eight shades, four of which include both high and low translucencies, giving dentists the variety they need to create natural-looking restorations.

Additionally, this material enables even greater productivity when used in combination with 3M ESPE Scotchbond Universal Adhesive and 3M ESPE RelyX Ultimate Adhesive Resin Cement. With Scotchbond Universal adhesive, dentists gain the convenience of having a single-bottle adhesive that can be used on all surfaces in total-etch, self-etch or selective-etch mode. This gives dentists a flexible tool that lets them stock just one adhesive. Scotchbond Universal adhesive also works as a metal and ceramic primer as well as a silane agent for glass ceramics. Additionally, when Scotchbond Universal adhesive is used with RelyX Ultimate cement, the cement's integrated dark cure activator eliminates the need for a separate activator. This combination allows dentists to quickly and securely seat their CAD/CAM restorations.

With its enamel-like aesthetics, ease of use and 10-year guarantee, Lava Ultimate restorative lets dentists maximize the potential of their CAD/CAM systems. When using Lava Ultimate restorative with Scotchbond Universal adhesive and RelyX Ultimate cement, dentists can experience added efficiency and convenience throughout the restoration process. ■

HOW TO SPEAK SO PATIENTS WILL LISTEN

by Tom Hopkins

We've all heard the old cliché, "It's not what you say that matters – it's how you say it that counts." When trying to motivate patients to take better care of their teeth, mouths and gums, "what you say" is the foundation from which you figure out how to say it. So, we can't ignore that aspect of communication.

As a highly skilled dental professional, you think and act according to the particulars of your training. Understanding and using the terminology specific to dentistry is like knowing a foreign language. In fact, it *is* foreign to the vast majority of your patients. Very few of your patients will know what deciduous teeth are or the numerical notations used in your practice every day.

Even though dental shorthand is helpful when making notes and communicating with your hygienist or other staff members, it confuses patients. And, when patients are confused, they either tune you out or start building walls of resistance between you and them as if you just landed on the

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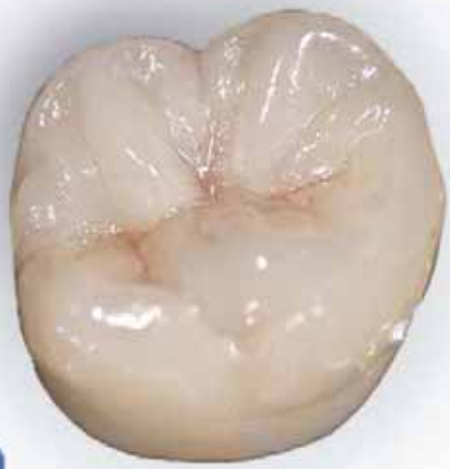

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 continued from page 72

planet and have antennae sprouting from the top of your head. Neither of those situations is good for your practice. Your goal is to communicate with your patients in such a way as to draw them to you – to build their trust in you and want to do as you advise.

After all, you invested many years of your time and a lot of money to develop your expertise. If you don't know how to "sell" it to others, you won't be anywhere near as successful as you could be. And by "success" I'm referring both to personal success in helping a large number of patients benefit from your services *and* the financial success you can achieve with strong revenue-generating practices.

Knowing that the use of that term "sell" in the previous paragraph might have sent a shudder down your spine, from this point forward, I will refer to what you do as "getting patients involved in your services." Do you feel the difference those words make? I took your mental picture of either fear or some other negative emotion related to the word "selling" and created a positive mental image of you helping your patients enjoy the results of your work. That's really what you want to have happen, right?

All words create mental pictures in our minds. When I have you read the word "tree" here you might have a mental picture of a giant oak tree come to mind. The people sitting next to you might picture a pine or an orange tree. It doesn't matter. The point is that no one pictures the letters T.R.E.E. in their mind when I refer to a tree. Our minds work in pictures and those pictures create emotions. The emotions generate thoughts which cause people to take certain actions. My goal in this article is to get you to pay attention to the pictures you create in the minds of your patients directing the actions they cause. Those actions might include having specific dental treatments or they might involve doing a better job of brushing and flossing at home.

We'll review some standard dental terms that probably turn your patients off and go over some more acceptable (and less threatening) options for replacement terms. In my basic sales training programs, I refer to the negative terms as being fear-producing or in some cases "the nasty words." The outcome of using them is to create fear and possibly rejection of whatever is being "sold." They contribute mighty bricks to the wall of sales resistance that keeps people from making wise and prudent decisions regarding their dental health.

I would suggest having everyone on your staff refer to the list of terms here and to begin using the positive, acceptance-building terms as soon as possible. You might even challenge your staff members to come up with additional terms that might give your clients new ways of saying those things. Make a game of it. Reward your staff members for using the new terms with the additional revenue you'll have from patients who feel good about what you say and take action to follow your advice.

Appointment – The mental image of this word for most people is that of a calendar. The feeling it often generates is that of "inconvenience." They have to carve time out of their daily schedules in order to see you. Even though most of your patients will believe seeing you is a necessary thing, for many the initial reaction to setting an appointment will be that it's an interruption of their normal schedule – their habitual routine – that feels very comfortable to them. Even though they might be in your office less than an hour, they have to include time for driving to your location and back to whatever this appointment took them from.

For some people they will be taking time off work to come to see you. For others, they will take time off work, pick up little Billy from school so he can see you, take him back (maybe with a detour through McDonalds because having dental work makes kids hungry) and then going back to work themselves. That could involve half a day of inconvenience.

Of course you will have patients who are enthusiastic about their dental health and look forward to their routine examinations. However, as you know, they are the minority.

The word "appointment" makes most of your patients wonder when and how this can be most convenient for them. If you don't have evening or weekend hours, there may not be a super convenient time for them. Do you feel the stress that one word that is so common to your practice can create?

So, I'm going to ask you to try using a different word. Substitute the word "visit" for "appointment." What comes to mind when you think of visiting someone? It's usually something positive, isn't it? It generates a softer emotional response in your mind and body … and it will for your patients as well. "Mrs. Smith, it's time for Billy to visit with Dr. Tim again. He has time available next Thursday at 7 a.m. or Friday at 3:30 p.m. Which would be most convenient for you?"

Problem – No one wants to have one, do they? Never say, "Sally, there's a problem with that incisor and we need to fix

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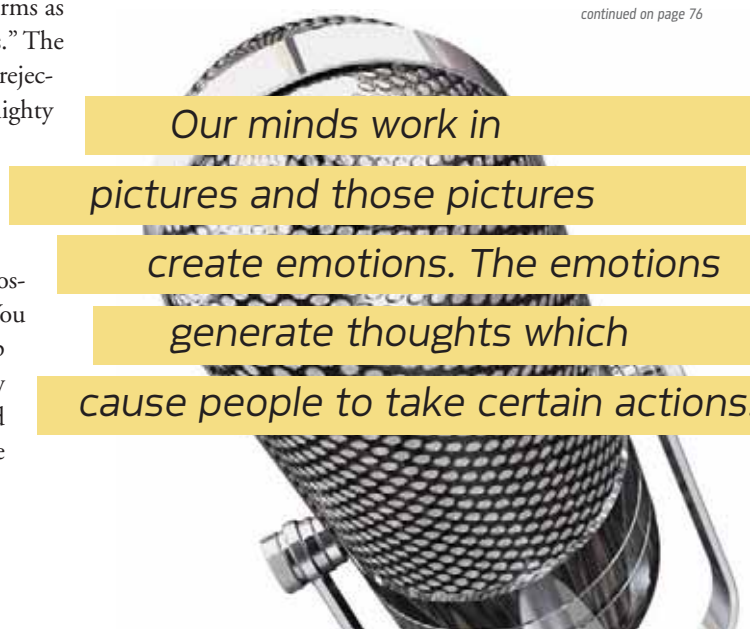

Our minds work in pictures and those pictures create emotions. The emotions generate thoughts which cause people to take certain actions.

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it right away." That makes you sound like a car mechanic. Try the word "challenge" instead. "Sally, the last thing I would want to have happen is for you to have an emergency situation arise with this incisor (pointing to X-ray) at a time that is inconvenient for you. Since it's impossible to predict when that challenge might arise, why don't we arrange a convenient visit within the next 10 days to take care of it?" Feel the difference? So will Sally.

Cost – The word "cost," for most people, generates the image of money leaving their wallets or credit card bills increasing. Yuck! Never use that word or allow your staff to use it either. Replace it with the word "amount" or "total amount." They know you're talking about the amount of money but it creates a kinder, gentler image and a usually more proactive response. People know your services aren't free. But they just don't create the kind of memories a trip to the amusement park would (with that same money).

Down Payment or Monthly Payment – If any of your patients are in a situation where they need to make multiple "payments" for your services and you make that option available to them, please refer to them as "initial amounts" and "monthly amounts."

Extraction – This is a fun mental image, isn't it? Hopefully, you already refrain from using this word within earshot of patients. When you are speaking with them or within their hearing range, use "remove" or as one oral surgeon I know of says, "sneak them out." His focus is on taking care of the little buggers causing the challenge for the patient – the results the patient will have of no future pain from those teeth – rather than on the discomfort of the actual removal and healing process.

Sign – As in paperwork. Take into consideration the mental images of "signing on the dotted line" and "signing your life away" or mom and dad's admonition to "never sign anything without reading the fine print." Rather than allow those negative mental images to permeate the minds of your patients, use the terms "approve," "authorize," "endorse" or "okay." "If you'll just okay the paperwork, Marvin, we'll get you taken care of as quickly and easily as possible."

If you just want to have a little fun with people, ask them for their autographs. If it fits your personality, smile and say, "I'd like to help you enjoy a moment of fame, Mrs. Johnson, by asking for your autograph right here." Point to the paperwork. Keep smiling. She will smile, too. And, she'll give you her signature. It happens all the time.

Cheaper, Cheapest – As you know, with fillings and crowns there are options for those treatments. If your patient is concerned about the "amount" required for these various services, never refer to the lowest cost version as being "cheaper" or "the cheapest." The mental image for that term can be something that is of poor quality. Instead use the terms "more economical" or "most economical."

Many words in the English language have more than a single meaning. Once you start thinking about them, you'll probably be amazed. The goal is to get you thinking about those mental images you are putting into the minds of your patients. In reality it's more than "every picture tells a story." Every word you use creates a story. If you want your patients to follow your advice, be treated sooner rather than later, and keep coming back to you, pay attention to how you speak with them.

Sometimes it's easier to observe the impact of words used by others than to pay strict attention to what comes out of our own mouths. Practice that with the very next conversation you hear. Once you begin paying attention to the resulting actions from words that are used, you will come up with many others that can be replaced with better mental pictures, which will result in more of the actions you want.

More than just tone, volume and speed of speech make an impression. Substituting a few words with the "happier picture" words suggested here will make a difference in the results you are getting. ■

Author's Bio

Tom Hopkins is a world-renowned expert and authority on selling and salesmanship. His simple yet powerful strategies have been proven effective in many industries, including the dental industry, and during all types of economic cycles. The foundation of his training includes both the "people skills" of proper communication and the nuances that impact every situation where trying to persuade others. Tom's style of delivery is practical and entertaining – making the strategies easy to remember and implement. Learn more about how Tom Hopkins can help you increase revenues in your practice at www.tomhopkins.com/blog.

Tom's Three-day Boot Camp Sales Mastery will be held August 23, 24 & 25 in Scottsdale, Arizona. Information can be found at: www.tomhopkins.com/boot_camp.shtml. Details about Tom's speaking schedule can be found at www.tomhopkins.com/live_events.shtml.

dentaltown research

Dentaltown.com Prosthodontics Forum Statistics (as of July 9, 2012)

Total number of topics: 3,352
Total posts: 39,146

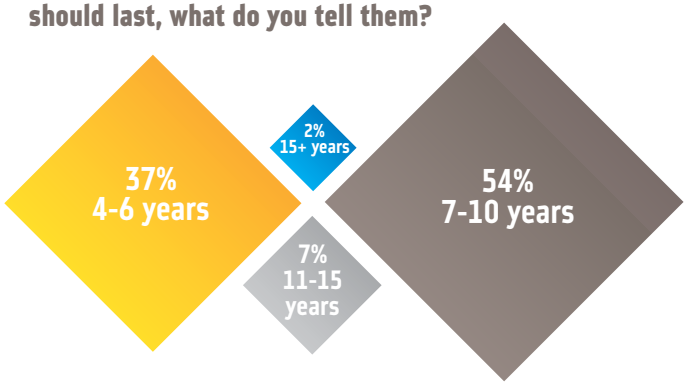
Dentaltown is digging a little deeper. Based on the monthly poll on Dentaltown.com, we're determining explanations for each poll result. Don't forget to participate in the poll on Dentaltown.com each month. The more opinions you can provide us, the more information and statistics we can supply you. The following poll was conducted from May 30, 2012 to June 30, 2012 on Dentaltown.com.

Do you use flexible partials in your practice?

YES 68%

NO 32%

When patients ask how long their full denture should last, what do you tell them?



How often do you use clasps on partial dentures?

Have you completed an "All-on-4" case in the last six months (surgical and/or restorative)?

- 21% Yes
- 79% No

Do you routinely place a post dam on maxillary full dentures?

- 14% No
- 86% Yes

Simple DENTURE STABILIZATION With MDI Mini Dental Impants

by Benjamin D. Oppenheimer, DDS

More and more dentists are discovering that mini dental implants can be an effective and affordable way to help their edentulous patients. After eight years of experience placing mini dental implants (MDIs), I have repeatedly seen firsthand how this minimally invasive procedure can help quickly improve the quality of life for many patients, who otherwise might go untreated. MDIs are a cost-effective and minimally invasive solution for patients, and can also be placed in some cases where patients do not have enough bone for a traditional-diameter implant. Additional considerations for candidacy include the patient's health and financial status. As compared to bone grafting and traditional implants, MDIs offer a shorter treatment period, lower cost and more immediate results.

Case Presentation

The patient in this case was an ideal candidate for denture stabilization with MDIs, as he had been wearing a mandibular denture for approximately 20 years, resulting in a severely resorbed ridge. Additionally, although the denture currently in use was relatively new and not in need of replacement, the patient was not satisfied with the fit and function of the prostheses.

At the planning appointment, an intra-oral exam and cone beam CT scan were performed in order to confirm the patient's candidacy and determine the necessary length and diameter of the implants to be used. If access to a CBCT is limited, an Orthopantomagram is typically sufficient to confidently plan most MDI mandibular denture cases. The standard treatment of four 3M ESPE MDI Mini Dental Implants in the mandible was accepted by the patient.

continued on page 80

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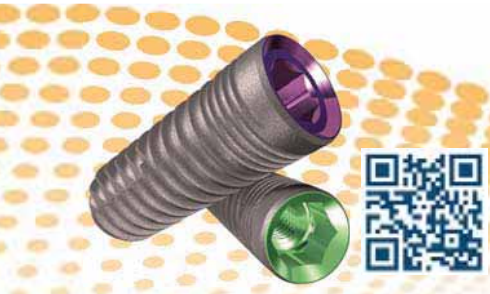

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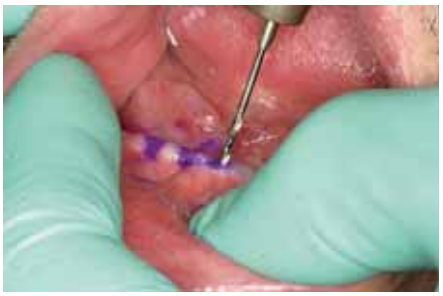

Fig. 1: A pilot hole being drilled.

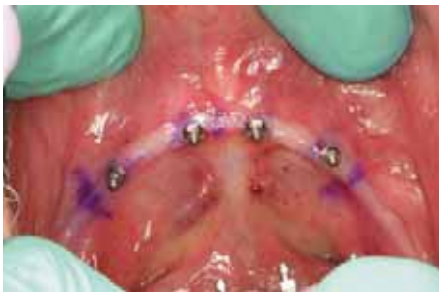

Fig. 2: The four implants immediately following placement.

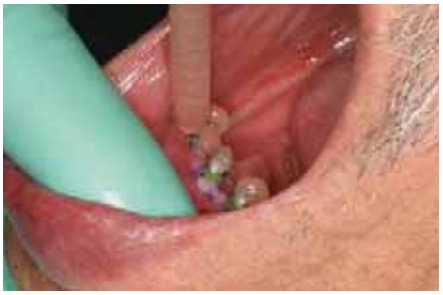

Fig. 3: Pick-up material being applied to the metal housings.

At the placement appointment, the locations for the four implants were marked on the ridge with a surgical marking pen. To mark the midline, the patient was instructed to stick his tongue up and out, and the lingual frenum was used as a reference point. The buccal border was palpated in the areas of the mental foramina, and lines were marked in these positions as well. Four dots were then marked in total, two on each side of the midline to indicate the implant sites and two dots 6mm anterior to the foramina. The area was then anesthetized with a single carpule of articaine and epinephrine.

The implants were placed one at a time, beginning in the anterior. A high-speed handpiece with a chamfer diamond was used to dimple the ridge with a gentle tapping motion, and the 1.1mm MDI pilot drill was then used to create a pilot hole approximately half to two-thirds the length of the implant to be used (Fig. 1). The implant was removed from the vial and placed in the pilot hole with the implant vial cap. A finger driver was then used to continue advancing the implant several turns. A winged thumb wrench and ratchet wrench were utilized for the final positioning to achieve 35Ncm of torque. After the first implant was placed, it was used as a paralleling point to establish the adjacent anterior implant angulation. This procedure was then repeated until all four implants were fully seated in their final position (Fig. 2).

As previously mentioned, in this case the patient's existing denture would be retrofitted with housings for use over the implants. Bite registration material was applied to the intaglio surface of the denture, and it was then placed in the mouth as the patient gently bit down with the upper denture in place. The lower denture was relieved in the areas of the implant heads. Blockout shims were cut and placed on the implants and metal housings were placed on each implant over the shims. Secure hard pick-up material was applied to the underside of the denture and onto the metal housings in the patient's mouth (Fig. 3). The denture was seated in the mouth and the patient was instructed to apply normal bite pressure for seven minutes. Following this, the denture was removed with the housings cured into place. The blockout shims were disposed of and the anterior border of the denture was trimmed to ensure patient comfort. Finally, an acrylic sealing agent was applied to the denture. The denture was seated back in the mouth and the patient was instructed to keep it in place for 48 hours.

Conclusion

This case is an ideal example of how MDIs can be placed quickly and immediately loaded, providing a nearly instantaneous increase in a patient's quality of life. With a thorough planning appointment, and by following the proper protocol, dentists can provide patients with an immediate denture stabilization solution that eliminates the strict bone requirements and lengthy recovery time sometimes associated with surgical dental implant procedures. ■

Author's Bio

Benjamin D. Oppenheimer, DDS is a graduate of the State University of New York at Buffalo School of Dental Medicine where he was acknowledged for Academic Excellence and won the International Congress of Oral Implantologists Award. He is currently a fellow of the ICOI and general member of the AAID. Dr. Ben is a lead industry speaker for progressive companies such as 3M ESPE, Dynamic Dental Instruction and Global Dental Sciences. He has previously lectured for IMTEC Corporation and Evolution Dental – an industry leading small diameter implant restorative lab. His knowledge of implant hardware, equipment, bone grafting materials and techniques, CBCT, digital implant planning and minimally invasive implant dentistry have opened new opportunities for hundreds of dentists across the nation and continue to interest corporations worldwide. Dr. Oppenheimer has authored many scientific articles that have contributed to the knowledge base and confidence of dentists worldwide. He has also helped thousands of dental implant patients in his private practice near Buffalo, New York, where he focuses on implant dentistry.

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The GUERILLA

by Rhonda Savage, DDS

When I bought my first practice, I walked in, with a tray of steaming hot lattes. The team members were crying. One front desk person thought, when she saw the tray of lattes: "Hey, this might not be bad!" However, this wasn't the group consensus! One dental assistant left the practice that first week. She felt betrayed. A transition can be a very hard time for some staff. It's not easy, even if it's a planned transition. Transitions are hard for the team members and difficult for the new doctor. Plus, if you're the selling doctor, you might have seller's remorse.

It's unrealistic to think that a major change like this will be something everyone can live with; but it is realistic to consider a strategy, create an action plan and be prepared when the transition happens. Staff retention can be good or bad; much depends upon your approach, your willingness to prepare and your follow through as the new doctor. Let's talk about the "Rules of Conduct" in this landmine of potential problems. This article will address the following topics:

- How to earn the trust and respect of patients and staff when you're the new person on the team.
- How to establish yourself as a leader in the practice, instilling a climate of ownership so every person feels like they're accountable and responsible for the success.
- How to create a practice where change and innovation are not met with fear, but instead, are understood as ways to set yourselves apart from the competition.
- As the selling doctor: What are your responsibilities?

The first question we should address is: Should you keep the team? Some say, "Fire them all, right away." I would disagree. The team can and should help with the transition. Should you keep someone who's disrespectful? No, but this is a qualified no. Read on for the answer.

As a young, eager new practice owner (the former doctor worked on a limited basis for six months), I made all the mistakes. I jumped in, excited, and began talking about adding hours and expanding days. Staff began to shift nervously, like a herd of antelope, ears up, eyes darting. I wanted to implement new technology. Nostrils flaring, the team members thought, "Am I going to have to change?" I was impatient; I wanted it all and I wanted it now. I didn't communicate well. And, I didn't understand the business of the practice. There was no plan. I was running this practice like it was all about me. I quickly learned that it couldn't be like that.

Whether you're coming in as an experienced doctor or a younger dentist, this applies to you. As a doctor, you cannot get where you're going or accomplish everything by yourself. What you do need to do is to come into the new situation well prepared as a leader.

Here's how:

1. Come in with a well-written office policy manual. One resource is Bent Ericksen and Associates.*

A Practice Sale

How to avoid crying, angry, surprised staff

Google it, take classes from them and learn about employment law. Quite frankly, you'll sleep better at night. Spendy? Yes. But you'll save in grief and mistakes; well worth the value and it's based upon your state laws.

2. Decrease the fear of the team with confidence, friendliness, great listening skills and saying, "I need your help!" Bottom line in guerrilla practice transitions: It's all about leadership. If you don't feel confident, fake it. Don't let your ego, however, get in the way of listening to the team. They know stuff.
3. Work with a great coach. You can save yourself costly mistakes. I hired one of Linda Miles consultants and put great systems into place, after I'd made my share of mistakes.

There is an awareness that comes with mistakes. One I learned was that leadership is earned. Trust is given slowly. Leadership, communication skills and knowledge of business systems are not taught in dental school, nor are these skills part of most office manager's training.

To earn trust, there are a number of areas that you should consider:

- Follow through consistently. Always do what you say you'll do.
- Be the first one to work, or nearly so and come in "on top of the world." Think your happiest thought before you walk in the door. Watch Sean Achor on YouTube: The Happiness Advantage.
- Have a team meeting and let them know your vision and goals for the practice. Start with a values exercise.
- Develop a system of daily coaching. Let the team know you're open to coaching also. Your team members need to know daily what they need to change. With that said, do praise and appreciate what they do well. Look for the good. Also, be careful that you aren't micromanaging; management is a balancing act. Micromanagement will drive the morale of the practice down. Don't coach when you're angry, but do let people know, if possible, that day what they need to change. Use a dialogue format rather than a berating format. Ask for their thoughts on the situation.
- Make certain you're listening to them. Involve them in dialogue so they don't feel threatened. Listening means you don't answer your cell phone, do not look at your computer and leave the paperwork on your desk alone. Paraphrase and ask clarifying questions: "So if I'm hearing you correctly…" or, "Just to make certain I understand what you're saying…"
- Clearly define your expectations. Train your team members to ask you clarifying questions.
- Learn the business systems of the practice so you can hold them accountable.
- Talk about accountability systems. Your team members need to know how to read their reports. You need to have them regularly sit down with you to give them feedback, plus praise and appreciation for what they've done well. The front desk should not be a mystery to you.

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These steps are foundational steps to earning respect. Let's step back now to the initial questions:

How do you earn the trust and respect of patients and staff when you're the new person on the team?

Let them know who you are, what your values are and how you envision the future of the practice. Ask for their thoughts. Lay down your expectations as a team and hold all team members to the same standards.

Put yourself at a higher level of accountability. Don't send the wrong message, like: "I come late but hey, I'm the boss!" Ugh. You say, "Don't be on your cell phone" but "I'm not giving up mine!" Double Ugh.

How can you establish yourself as a leader in the practice, instilling a climate of ownership so every person feels like they're accountable and responsible for the success?

1. Ask for their help.
2. Lay out a plan.
3. Start slowly with changes. Implement changes over time. Involve them in the change process (but always keep changing).
4. Develop goals as a team.
5. Be clear about expectations.
6. No excuses from you. The staff doesn't care!
7. Treat patients with respect.
8. Start slowly with patients, if possible, regarding treatment needs; you must earn trust and trust comes with time.
9. It can't be about the money, or the staff and patient will feel it.
10. It's not just about you.
11. Don't burden them with your debt issues. They need a sense of practice goals; long- and short-term.
12. Establish leadership meetings with your office manager, selling doctor and/or any associates.
13. Don't be a friend or a dictator. Staff need and want fair, firm, consistent leadership from you.

How can you create a practice where change and innovation are not met with fear, but instead, are understood as ways to set yourselves apart from the competition?

Everything above! You cannot expect to be perfect, nor have expectations of team members to be perfect. Instead, create an atmosphere where it's OK to make a mistake. The goal is to not repeat the mistake. If you make a mistake, throw your arms in the air and say, enthusiastically and loudly: "How fascinating!" Do this, grin and move on. Give your staff permission to do the same thing.

As the selling doctor, what are your responsibilities?

1. Never say anything negative about the buying doctor.
2. Move your stuff out of your office and have it cleaned up and ready on day one.

3. Support the doctor by letting the team know that to disrespect the new doctor is to disrespect you.
4. Have the new doctor's credentials ready and endorse them to the team.
5. Talk up the new doctor to patients.
6. Do not gossip about the practice or the new doctor in the community.
7. Support the new doctor with training on the business systems and diagnosis. Be a supporter, but not a coach, unless you're asked.
8. Defer leadership decisions to the new doctor, but if you're staying on, make certain you two are on the same page. Don't let staff do the "mom versus dad" thing.
9. Introduce the new doctor to the community.

You might well be doing all this stuff, but I know I wasn't! Right out of the Navy Dental Corps, as a former dental assistant and front desk, I've made every mistake there is to make. Hang in there! You can do this! ■

**Dr. Savage has no financial interest in the companies mentioned.*

Author's Bio

Dr. Rhonda Savage, a former dental assistant and front office staff, graduated with a B.S. in Biology, Cum Laude, Seattle University in 1985. She then graduated from the University of Washington, School of Dentistry in 1989, with numerous honors. She served on active duty as a dental officer in the U.S. Navy during Desert Shield/Desert Storm; awarded the Navy Achievement Medal, the National Defense Medal and an Expert Pistol Medal. Dr. Savage was in private practice for 16 years. She has authored many peer-reviewed articles and has lectured internationally. She is a past president of the Washington State Dental Association and is an affiliate faculty member of the University of Washington, School of Dentistry. Dr. Savage is the CEO for Miles Global, an internationally known consulting business. A member of the National Speakers Association and the Institute of Management Consultants, Dr. Savage is a noted speaker on practice management, women's health issues and zoo dentistry. To speak with Dr. Savage about your practice concerns or to schedule her to speak at your dental society or study club, please e-mail rhonda@milesglobal.net, or call 877-343-0909.

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Guided Implantology Made Easy

by August de Oliveira, DDS

Abstract

A CE-based article written to introduce the steps involved in performing a guided implant surgery case. The entire process from diagnosis to surgery will be covered. Clinical examples will be provided as well as a step-by-step narrative describing an edentulous case. The article will also offer one users opinion on guided implant surgery in the general dental practice.

Guided implant surgery involves taking a CBCT scan with a patient sometimes wearing a radiographic guide. Information from the CBCT scan is used with an implant software program to plan out a surgical case. Information from the software is used by a laboratory to manufacture a surgical guide. Through the use of a specific guided surgical kit, an operator uses the surgical guide to perform an osteotomy and insert dental implants.

The goal of this CE article is to educate new users as to the steps and armamentarium involved in the entire process of guided surgery. Through years of experience, I have placed many implants safely and precisely with this method.

Educational Objectives

1. To inform new users on the steps involved in guided implant surgery
2. To describe the means in which data is transferred from the scan to the patient
3. To educate new users on the minimum distances used in implant surgery
4. To describe the surgical steps used in guided implant surgery
5. To inform new users the advantages and disadvantages of guided implant surgery

*This written self-instructional program is designated for **1.5 hours of CE credit** by Farran Media. Participants will receive verification shortly after Farran Media receives the completed post-test.* *See instructions on page 95.*

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Safety, predictability and efficiency – these three words, in my opinion, are the basis of what makes dentistry enjoyable. It seems that the longer I practice the less tolerance I have for the stress that usually comes with our job as general dentists. In any procedure I do I try to find ways to apply those three glorious words. When performing a root canal, I always use new rotary files and only once. Why? I know that it's safer because there is less chance of file separation. I know that I can predictably instrument the canals in a stepwise fashion. Finally, I know that using sharp rotary files reduces the time I spend working in a canal. I learned how to place implants in my GPR residency, long before CBCTs and guided surgery. After picking implants back up three years ago, I looked at ways in which I could make implant placement safer, more predictable and more efficient. Naturally I gravitated toward guided surgery. I probably perform at least 95 percent of my implant cases via guided surgery. With the advent of CAD/CAM chairside millable guides, this percentage will approach 100 percent (Fig. 1).

If you look through a number of threads on Dentaltown's implantology section, you will find many different opinions on the matter. "Guided surgery for single units is cost prohibitive," "Guided surgery does not work," "I can place implants just fine without them," "You can't get enough irrigation and you will burn the bone." We all know dentists are certainly varied in their opinions. And although some of those statements have some truth to them, I have found a way to smoothly and profitably implement guided implant surgery in my practice. On any given day, most guided implant cases in my office can be many times easier than placing a post in a tooth root, or performing rotary endodontics.

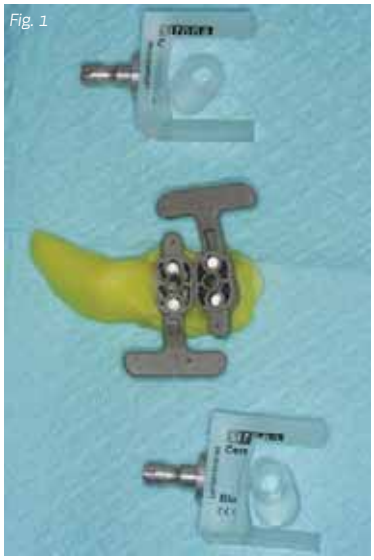
Advantages

There are many advantages to guided implant surgery. Guided surgery can be accurate up to close to .45mm.[1] Many times the gingiva only needs a 3.5 to 6mm punch rather than a large flap, preserving the blood supply to the bone (Fig. 2). Flapless surgery may lead to significantly less post-op bone loss than conventional flap surgery.[2] In regard to nerves, teeth and other structures, guided surgery can help the user to avoid these. Post-op pain from most cases is minimal and soft tissue healing can be rapid if punches or minimal flaps are used. Paralleling options in most implant software programs can allow for the use of stock abutments and greatly reduce the difficulty in restoring complex cases (Fig. 3). Finally, guided surgery might allow new users to place implants with the accuracy comparable to those surgeons with greater experience.

Disadvantages

There are disadvantages of guided surgery as well. There is an increased cost in manufacturing the radiographic and surgical guides. Along with that comes the possibility of one or multiple extra appointments. CBCT machines are expensive to own and deliver a higher dose of radiation than most 2D digital options. More irrigation than conventional implant surgery is needed to reach the osteotomy through the closed system of the surgical guide. In cases of limited opening, guided surgery may not be an option as the drills are at least 10mm longer than conventional implant drills (Fig. 4). Finally there is a decrease in visualization through the surgical guide to the edentulous site.

Fig. 1: Components of a chairside milled surgical guide.
Fig. 2: Punched tissue.
Fig. 3: Stock abutments/impression copings
Fig. 4: The guided pilot drill with the head of the handpiece is over 42mm long. The subsequent guided drills are much shorter.



Guided implant surgery involves using a CBCT scan and implant software via a surgical guide to place implants in the mouth. Besides a warm body missing a tooth you need five things to perform guided surgery:

1. A CBCT scan
2. A radiographic guide or some means of relating the patient to the scan
3. A surgical guide
4. A guided implant kit
5. A compatible implant

In order to perform guided surgery you need to unite three "worlds." The first is the patient. The second is a stone or virtual CAD/CAM model. The third is the 3D virtual world of the CBCT scan. In the CBCT scan with implant software, an implant is placed in a 3D coordinate system, known as the

1. *Clin Implant Dent Relat Res. 2011 Dec 15. doi: 10.1111/j.1708-8208.2011.00406.x. [Epub ahead of print] Three-Dimensional Accuracy of Guided Implant Placement: Indirect Assessment of Clinical Outcomes. Platzer S, Bertha G, Heschl A, Wegscheider WA, Lorenzoni M.*
2. *Year : 2008 | Volume : 19 | Issue : 4 | Page : 320-325 In vivo evaluation of crestal bone heights following implant placement with 'flapless' and 'with-flap' techniques in sites of immediately loaded implants Shibu Job, Vinaya Bhat, E Munirathnam Naidu Department of Prosthodontics, Meenakshi Ammal Dental College, Chennai, India*

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Cartesian Coordinate system, giving it a value in the x, y and z axis. Somehow this information needs to be translated and transferred back to the patient so an implant can be placed in a hole (osteotomy) that is drilled to the exact depth, width and angulation (Fig. 5). How is this done? In many systems a radiographic guide is worn by the patient during the scan. Markers known as fiducials contain radio opaque material and can be read in the scan by the software. Fiducials can be made of zirconia, alumina glass or even gutta percha (Fig. 6). These fiducials allow the software to relate the planned implant into a controlled coordinate system that can be transferred back to the patient via a CAD/CAM milling machine and the resultant guide (Fig. 7). The numbers that correspond to the implant position are known as a matrix. In the case of an edentulous guide, how the radiographic guide is made greatly affects the restorative outcome of the case.

An edentulous Radiographic Guide is a copy of the tooth arrangement of the final prosthesis (Fig. 8). If the patient is happy with the fit and the aesthetics of their existing denture, an acrylic duplicate denture can be made. If the patient does not like their denture, a new tooth set up must be finalized and a duplicate made of that. The duplicate can be simple acrylic impregnated with barium sulfate (Fig. 9). Care must be taken to use a more radio dense barium sulfate in the teeth, and less radio opaque in the denture base.

This will help identify in the software where the flange is located in the denture (Fig. 10).

In many implant software programs, a separate radiographic guide is not needed. The computer can recognize teeth shape on a stone or CAD/CAM virtual model via a process known as model stitching. A stone model of the patient can be scanned via an optical scanner and imported into the implant software using a specific file format. The computer may then prompt the user to mark similar landmarks between the model and the CBCT scan (Fig. 11). One can even scan a denture and stitch it to a CBCT scan on a patient wearing a radiographic guide containing barium sulfate containing acrylic teeth (Fig.12). Model stitching may not work on patients that contain a lot of

Fig. 5

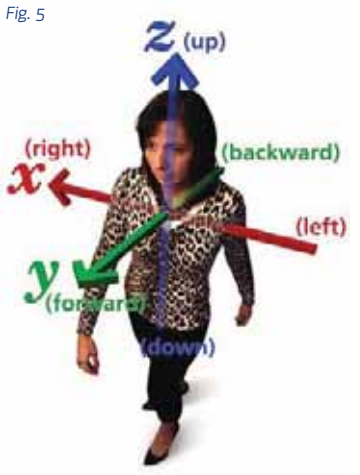


Fig. 6

Fig. 7

Fig. 8

Fig. 9

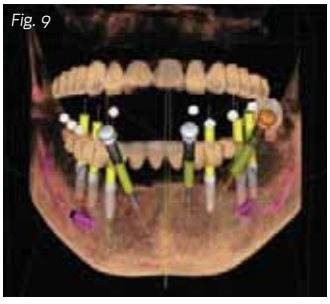


Fig. 10

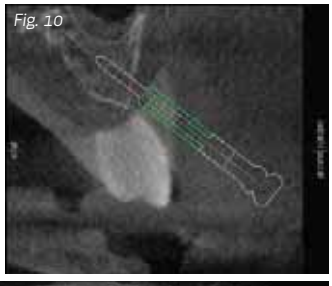


Fig. 11

Fig. 12

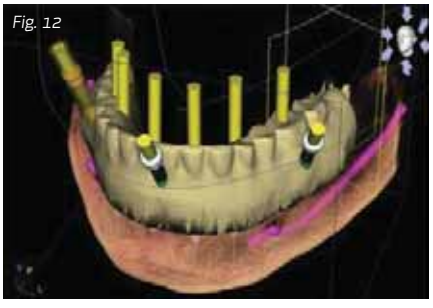


Fig. 5: The Cartesian Coordinate system contains an x, y and z value.
Fig. 6: Fiducial markers show up as white spheres in a 3D scan.
Fig. 7: The matrix coordinate is sent to a CAD/CAM-controlled device that manufactures the surgical guide.
Fig. 8: A copy of the patient's denture made in acrylic and impregnated with barium sulfate can serve as a radiographic guide.
Fig. 9: The barium sulfate teeth show up in the 3D scan and can greatly aid in the angulation and arrangement of implants.
Fig. 10: Having two densities of barium sulfate aids in the placement of stabilization pins.
Fig. 11: Sometimes no radiographic guide is needed and the patients model can be matched directly to the scan.
Fig.12: You can see that the patients denture is incorporated in the scan and its clear where the denture base and the teeth are. This is particularly helpful on the linguals of the anterior where screw access holes may be placed. One can also easily see the tripod configuration of the stabilization pins.

metal- or zirconia-based restorations due to metal-based artifacts in the scan.

After the scan is taken, the user can then begin to plan their implant case. CBCT viewer programs, as well as implant software are usually divided into four windows. Three of the windows that display 2D slices of the CT scan are known as orthographic views. These are the panoramic, the axial, and the cross sectional. The fourth window is the 3D view aka the 3D rendering (Fig.13). Implant software is very similar to 3D animation or CAD programs and share a similar layout. Programs such as 3D Studio Max or Maya are used to make video games, or animation such as those used in Pixar movies (Fig.14).

Within all implant programs the user must define a "track" known as the panoramic curve (Fig. 15). The panoramic curve is simply an arch in which slices are made either perpendicular to (cross sectional, Fig. 16) or parallel to (panoramic, Fig.16). Care must be made to define this "track" or the resultant 2D images may be distorted. Furthermore, unless the program has the ability to correct for this, patient positioning and head tilt may also result in distortion of the 2D views (Fig. 17).

Luckily, the 3D view is independent of patient positioning or the panoramic curve and usually carries little distortion.

For better or worse, the implant software transfers your plan of where you want the implant exactly, to the resultant surgical guide. Without landmarks, its easy to place an implant off course. Within most programs, virtual extensions known as drill paths extend out the long axis of the virtual implant helping you know where your drill will go, but more importantly, to allow you to achieve parallelism (Fig. 18). Virtual guide sleeves (to be explained later) simulate the channel in the guide where your drill will pass (Fig. 19).

Finally, virtual teeth or Barium Sulfate teeth are the ultimate in restorative-driven planning and allow you to place the implant where the restoration will ultimately reside (Fig. 20).

When you place implants, you need to learn the lingo. And guided surgery has its own language as well. The surgical guide is an acrylic stent containing holes (guide sleeves) that help direct drills (guided drills/guided twist drills) via inserts (drill

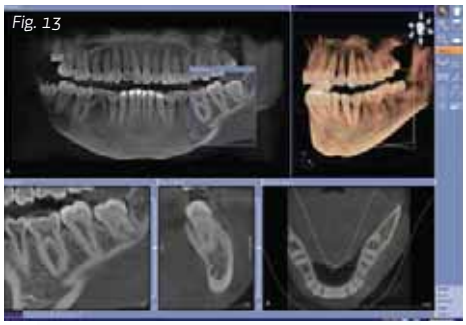
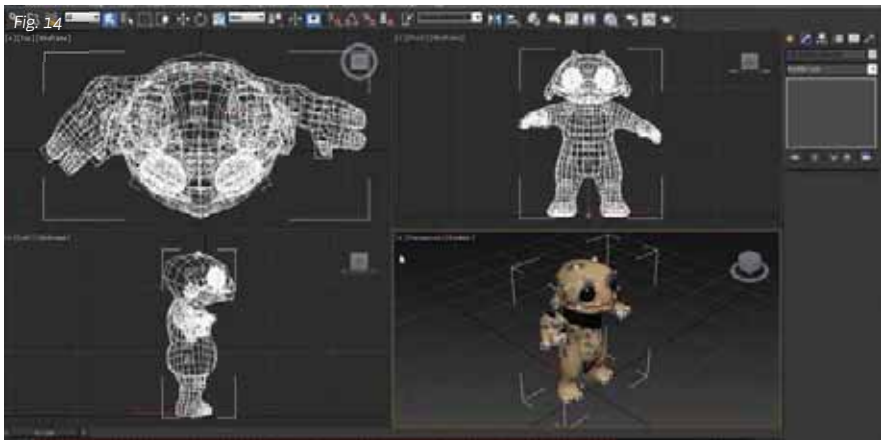


Fig. 13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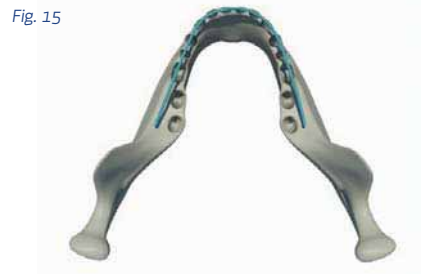
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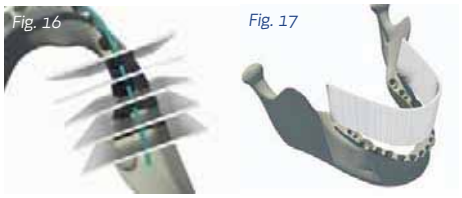


Fig. 16

Fig. 17

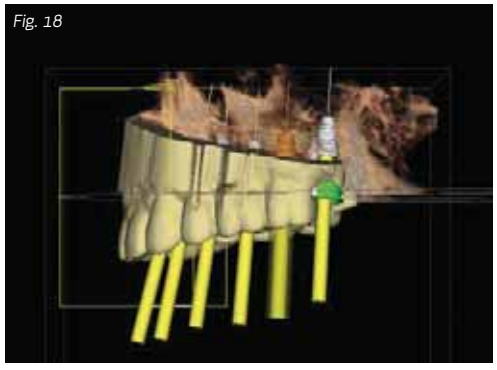


Fig. 18


Fig. 19

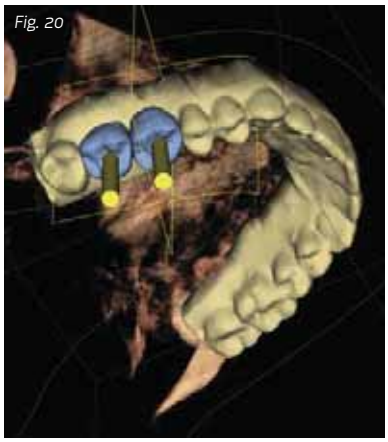


Fig. 20

Fig. 13: Screen arrangement of a guided surgery/CBCT viewer.
Fig. 14: Similar set up in a 3D animation/CAD program known as 3D Studio Max.
Fig. 15: The panoramic curve is a user defined "track."
Fig. 16: Cross sectional slices are taken at right angles to the panoramic curve.
Fig. 17: Slices in the 3D panoramic are made parallel to the panoramic curve.
Fig. 18: Drill paths
Fig. 19: Guide sleeve
Fig. 20: Virtual teeth

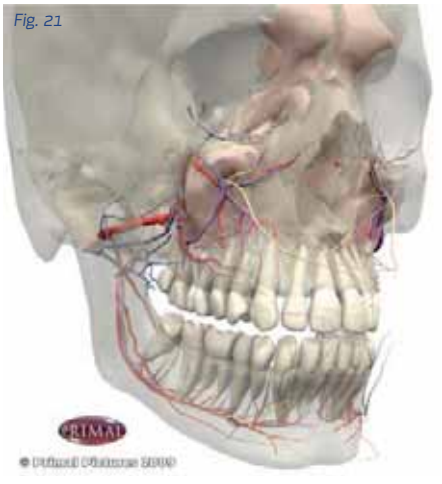
continued on page 92

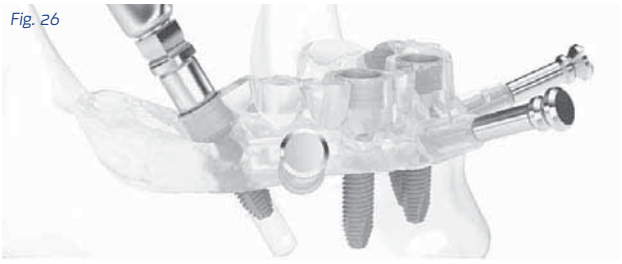
guides or keys). Stabilization pins can affix the surgical guide in place when there are few or no teeth to support it. The guide platform is a flat area around the guide sleeve that either serves as a stop or a visual guide to when your drill is at length. In a fully guided system, a guided implant mount allows the user to place an implant through the surgical guide, controlling the trajectory of the implant and ultimately the depth with a stop (Fig. 26). The guided implant mount usually has a mark denoting when the correct internal feature of the implant is pointing in the correct orientation, known as indexing (Fig. 27).

One thing I love about guided implant surgery is the ability to see and quantify measurements made between the implants and the surrounding structures. The CBCT scan gives you the ability to clearly see the patient's anatomy and avoid it if necessary (Fig. 21). We know that implants must be at least 1.5mm away from adjacent teeth (Fig. 22). Implants must be at least 3mm away from each other (Fig. 23). An implant should be no more than 2mm away from any nerves (Figure 24). Finally the implant must have at least 2mm of bone on the buccal and lingual side of the implant (Fig. 25).[3] Seeing this on the scan greatly improves my confidence in the procedure.

The indentation on the center of each indicates the proper direction known as indexing. There are two methods for controlling depth in guided implant surgery. In some systems there are no physical stops on the drills. Laser markings or bands on the implant drills signify a length. When this laser mark reaches the

3. *Abstract Journal of Periodontology September 2004, Vol. 75, No. 9, Pages 1242-1246 , DOI 10.1902/jop.2004.75.9.1242 (doi:10.1902/jop.2004.75.9.1242) Effect of the Vertical and Horizontal Distances Between Adjacent Implants and Between a Tooth and an Implant on the Incidence of Interproximal Papilla Jose Fabio Gastaldo Department of Periodontics and Implantology, School of Dentistry, University of Santo Amaro, Santo Amaro, Brazil. Dr. Patricia Ramos Cury Department of Oral Pathology, School of Dentistry, University of São Paulo, São Paulo, Brazil. Wilson Roberto Sendyk Department of Periodontics and Implantology, School of Dentistry, University of Santo Amaro, Santo Amaro, Brazil.*





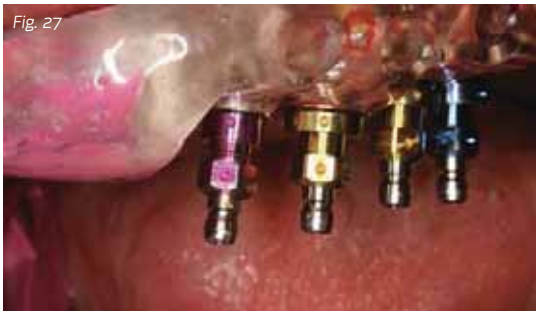


Fig. 21: A CBCT scan allows you to look inside the patients skull. One can see sinuses, channels surrounding nerves, teeth, and sometimes, vascular structures.
Fig. 22: Minimum tooth to implant distance is 1.5mm.
Fig. 23: Minimum inter-implant distance is 3mm.
Fig. 24: Minimum amount of bone on the buccal and lingual of an implant is 2mm.
Fig. 25: The minimum distance of an implant to a nerve is 2mm.
Fig. 26a-c: a. The guide platform b. Stabilization pin c. Guided implant mount
Fig. 27: Guided implant mounts. Each color represents a different diameter implant.
Fig. 28: Guides produced by stereolithography.
Fig. 29: Surgical guide being milled by a chairside CAD/CAM unit.

guide platform, it is up to the user to stop drilling any further apically (Fig. 30). Drills with stops are certainly more convenient. The operator either drills until the stop hits the drill guide or key, or the guide platform itself (Fig. 31). In a non-fully guided system, the surgical guide is removed and the implants placed through the punch in the tissue into the osteotomy. In a fully guided system, the implant is placed through the guide and the guided implant mount contains a stop at the correct depth (Fig. 32).

This surgical guide can be manufactured a number of ways. In some cases the surgical guide is copied, along with the information from the implant software program via a process known as steriolithography (Fig. 28). In other systems, the matrix (the number sequence of the planned implant) is given to a CAD/CAM controlled drill which then alters the radiographic guide itself. Another method is to mill the surgical guide via a CAD/CAM milling machine out of a large solid cylinder of acrylic. Most recently, via CAD/CAM chairside units, dentists now have the ability to mill surgical guides in their own offices (Fig. 29).

The act of surgically placing implants via guided surgery is actually quite simple. The patient is anesthetized and the surgical guide is tried in an evaluated for fit (Fig. 33). If this patient is edentulous, stabilization pins may be placed (Fig. 34). Tissue punches are then performed if the case is to be done flapless (Fig. 35). After removing the flapped tissue, a counterbore may be used if the implant is to be placed slightly subcrestal. A counterbore usually begins a slight countersink in the bone where a pilot drill may be used.

The pilot drill is usually between 2.0 and 2.3mm in width and does most of the work in the osteotomy (Fig. 36). After the pilot, it is a good idea to place an angulation pin and check the trajectory of the osteotomy. A subsequent series of guided implant drills follows depending on the width of the implant

Fig. 30

Fig. 31

Fig. 32

Fig. 33

Fig. 34

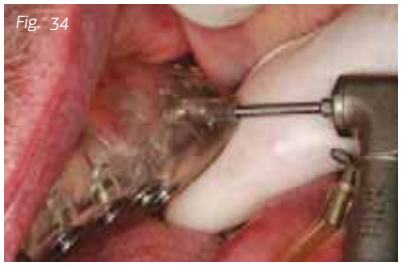


Fig. 35

Fig. 36

Fig. 30: Laser markings on the drill visually indicated when you are length.
Fig. 31: Many guided kits have drills with hard stops that engage the guide platform when at length.
Fig. 32: In a fully guided system, the guided implant mount controls the direction and depth of the implant through the guide.
Fig. 33: The Guide is tried in. It should be stable and relate to the arch in the same orientation as the radiographic guide.
Fig. 34: Stabilization pin drill being inserted into the guide. The pins have stops to prevent over insertion.
Fig. 35: Secure guide ready for tissue punches.
Fig. 36: The pilot drill is inserted through the drill guide (2.0).

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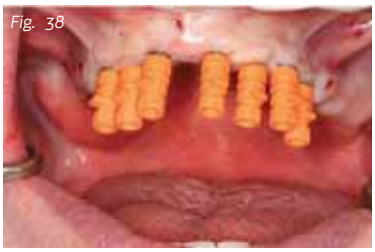
(Fig. 37). Finally, the implant is then placed in the osteotomy (Fig. 38). If the implant does not go to length, dense bone drills, or screw taps may be employed to further widen the osteotomy. It's up to the surgeon or the prescribing dentist whether the implants are then loaded (Fig. 39).

Guided surgery in my practice has proven time and time again to be a safe, predictable and efficient procedure. By carefully planning where the implant should go, taking into account the bone and the adjacent teeth, inexpensive stock abutments can be used to make final restorations with contours and anatomy that mimic natural teeth (Fig. 40).

Using a fully guided implant system, the osteotomy can be drilled with safety and the implant placed with the proper angulation and depth. With the proper training and attention to the necessary steps, placing simple implants in good bone on healthy patients is well within the skill set of most general dentists. ■



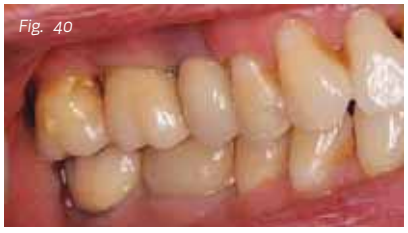


Fig. 37: Guided drills may be inserted through drill guides or directly into the guide sleeve.
Fig. 38: Implants inserted. Impression copings inserted to show parallelism.
Fig. 39: Implants may be loaded or the denture may be relived.
Fig. 40: Numbers 3 and 4 placed with guided surgery. Note the position and emergence profile. When the implant is placed in the ideal position and angulation, restoration is easy.

Author's Bio

Dr. August de Oliveira is the author of "Implants Made Easy," a book geared toward starting your first implant. He has just released, "Guided Implantology Made Easy," a book on the basics of guided implant surgery. Dr. de Oliveira has lectured nationally on cone beam technology, dental implants and CAD/CAM technology. He has been a software beta tester for Sirona, Blue Sky Bio, Anatomage and Implant Direct. He is currently a moderator and regular contributor to Dentaltown.com's Implantology and Mini Implants Section. Dr. de Oliveira practices general dentistry in Encino California. To find out more about implants and Guided Surgery, go to www.implantsmadeeasy.com.

Post-test

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1. The advantages of guided implant surgery are:
   a. Less expense, slower procedure, more post-op pain.
   b. Less post-op pain, possibly less bone loss, smaller incisions.
   c. More pain, larger incisions, less accuracy.
   d. All of the above.

2. The disadvantages of guided implant surgery are:
   a. Long drills, difficult irrigation, increased cost.
   b. There are no disadvantages.
   c. Drills, decreased cost, no irrigation.
   d. All of the above.

3. CBCT stands for:
   a. Cat barium computed tomography.
   b. Collimated back cranial tesselation.
   c. Cone beam computed tomography.
   d. None of the above.

4. The Cartesian Coordinate system is:
   a. An ancient system of reading maps.
   b. A new style of Brazilian mathematics.
   c. The X, Y and Z coordinate system used in 3D imaging and animation.
   d. A popular pastry in Europe.

5. The screen of most 3D viewer and implant software is set up as:
   a. Multiple 2D orthographic views and a 3D view.
   b. One large 3D view.
   c. No 3D view, just a series of 2D slices on large sheets of film.
   d. None of the above.

6. Many implant software programs are similar to:
   a. Dental practice management systems.
   b. Intra-oral camera programs
   c. 3D animation or CAD programs used in the video game and movie industries.
   d. Coleco vision.

7. The proper tooth-to-implant minimal distance is:
   a. 6mm.
   b. 1.5mm.
   c. 4mm.
   d. The width of a finger.

8. The guided implant mount does what?
   a. Keeps the implant in its container.
   b. Keeps the implant sterile.
   c. Guides the implant through the surgical guide to the proper depth and angulation.
   d. Keeps the implant from getting lint on it.

9. What is indexing?
   a. An older way of organizing library books.
   b. The section in the back of a book with a lot of numbers on it.
   c. Orienting the implant so that the proper direction of the internal connection faces to the buccal or whichever direction required.
   d. None of the above.

10. Stabilization pins are used for:
    a. Securing and stabilizing a surgical guide.
    b. Affixing a flap on to the underside of the guide.
    c. Keeping the irrigation tubing secure on the handpiece.
    d. Keep the implants secure for temporization.

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A Child's First Dental Visit Should Occur Before Birth

by Trisha E. O'Hehir, RDH, MS

By the time I was five years old, all my deciduous molars were decayed and painful. A trip to the dentist provided no pain relief. The dentist told my mother that the cavities were in baby teeth that didn't need to be repaired. He thought he was giving us good news, but the pain remained. When asked to pull the teeth to relieve the pain, he simply shrugged off the idea saying that these teeth didn't need to be pulled as they would eventually fall out by themselves. To control the pain he said, "That's simple, just have her chew Aspirgum!" And so the toothaches continued. I cried from the pain, but was given Aspirgum. Of course Aspirgum contained sugar, providing nutrition to the bacteria causing the problems!

Xylitol wasn't available when I was born, but children today still suffer the pain of unprevented tooth decay. Now, after 40 years of xylitol research, the evidence is clear that caries can be prevented and early lesions reversed through the daily use of xylitol. In fact, xylitol use should begin before the teeth erupt, to establish a healthy oral flora. Backing up one more step, mothers need a healthy oral flora before their babies are born as they are their baby's primary source of oral bacteria through kissing, sharing food and even "cleaning" a pacifier that falls on the floor.

Based on these findings, a baby's first dental visit should occur before they're born. Moms using xylitol are less likely to pass on *Strep mutans* to their babies. To effectively prevent tooth decay, it must begin before birth with the mother and continue with the child through tooth eruption, both primary and permanent.

If only my mother had xylitol when I was an infant, I wouldn't have the mouthful of dental restorations I have today. We can't change the past, but we can definitely change the future. ■

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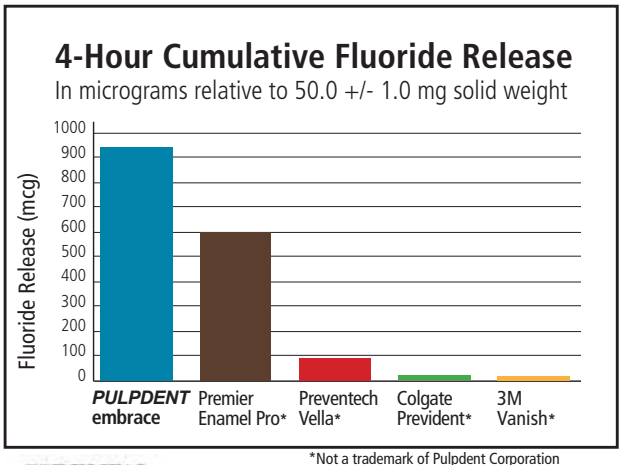

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Yapp R, Powers JM. Fluoride Ion Release from Several Fluoride Varnishes. Dent Advis Res Rpt 45:1, March 2012.

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Maternal Transmission of *Strep mutans* to Infants Through Saliva

Children of mothers who chew xylitol-sweetened gum during the first two years of the child's life are five times less likely to acquire *Strep mutans.* Researchers in Japan wanted to know if this was true for Japanese mothers and babies.

Pregnant women visiting an OBGYN clinic in Okayama, Japan were tested for salivary *Strep mutans* to identify those with high counts. These mothers were randomly assigned to either the xylitol chewing gum group or the no gum group. The study began at the sixth month of pregnancy and continued for two years. Both groups were given basic oral hygiene instruction and the gum group was supplied with 100 percent xylitol-sweetened chewing gum and instructed to chew the gum at least four times daily. At each three-month visit the gum chewers were given enough chewing gum for the next three months. They also recorded exactly how much and how often they chewed the gum and any side effects.

Unstimulated saliva and plaque samples from the infants were taken from the tongue and the ridges/teeth when present at six, nine, 12, 18 and 24 months. Children of moms in the no gum group acquired *Strep mutans* nine months earlier than the other children, at 12 months versus 21 months. Of the 56 xylitol mothers, 37 percent of their children were *Strep mutan* negative at 24 months, compared to 13 percent of the no gum group.

Clinical Implications: Pregnant moms should begin chewing xylitol-sweetened gum beginning at six months of pregnancy to lower oral *Strep mutan* levels, thus preventing transmission to their babies through saliva. ■

Nakai, Y., Shinga-Ishihara, C., et al: Xylitol Gum and Maternal Transmission of Mutans Streptococci. J Dent Res, 89: (1) 56-60, 2010.

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What Xylitol Dose is Needed to Effectively Reduce Bacteria

For xylitol to be a cost-effective public health measure, we need to know the lowest dose and ingestion frequency needed to achieve clinical benefit. Researchers at the University of Washington compared three total daily xylitol doses of chewing gum given to 120 adults over six months. A fourth group was given gum sweetened with sorbitol and maltitol. Subjects were instructed to chew three pellets for five minutes or more, four times daily. To ensure compliance, the assigned gums were distributed weekly for the first five weeks and then biweekly for the remainder of the six months. The daily doses tested were: 3.44 grams, 6.88 grams and 10.32 grams. Plaque and saliva were collected at baseline, five weeks and six months. Plaque was scraped off all buccal surfaces of all the teeth.

Strep mutan levels in the plaque were reduced tenfold from baseline to five weeks and also at six months for those chewing 6.44 grams and 10.32 grams of xylitol. Based on cultures of the plaque, the xylitol affected the *Strep mutans* without altering the numbers of other bacteria in the plaque. Salivary levels of bacteria were also lower for these two groups, and unchanged in the group chewing 3.44 grams per day. Researchers are now comparing the effects of 10.32 grams per day spread over two, three and four daily doses.

Clinical Implications: Xylitol chewing gum needs to be chewed four times per day for a total dose of six to 10 grams per day. Achieving a xylitol daily dose of less than six grams will not provide the anticariogenic effects desired. ■

Milgrom, P., Ly, K., Roberts, M., Rothen, M., Mueller, G., Yamaguchi, D.: Mutans Streptococci. Dose Response to Xylitol Chewing Gum. J Dent Research 85 177-181, 2006.

Gummy Bears – an Alternative to Chewing Gum

Three to five daily exposures to xylitol-sweetened products will reduce *Strep mutan* levels, reduce acid production, elevate oral pH and prevent caries. Xylitol is most often delivered in chewing gum. However, the use of chewing gum by children during school hours is discouraged or forbidden. The disposal of chewing gum after it's been chewed presents a significant problem. An alternative xylitol delivery system for school children is candy, specifically gummy bears.

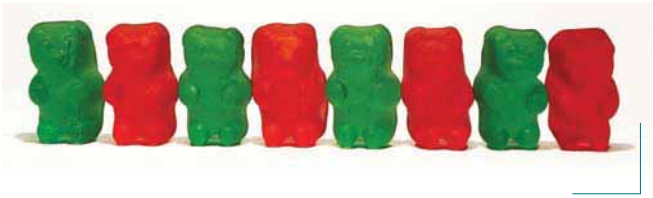
Researchers at the University of Washington used five-gram gummy bears produced by Santa Cruz Nutritionals (not available to the general market). All the candies were strawberry flavored and colored red or green. One formulation contained 1.3 grams of xylitol and another contained 3.7 grams of maltitol. Three-unit dose packages were created with different percentages of sweeteners: 1) four xylitol gummy bears, 2) three xylitol gummy bears and one maltitol gummy bear and 3) four maltitol gummy bears.

154 students in grades first to fifth from two rural schools participated. Students adapted to the xylitol products by gradually increasing from one dose to three over six days. The children ate their assigned four gummy bears three times each school day for six weeks.

At baseline, 42 children did not test positive for *Strep mutans.* After six weeks, 38 additional children changed from positive to negative for *Strep mutans.* All three formulations resulted in reduced bacterial levels, with no added benefit with 15.6 grams of xylitol compared to 11.7 grams per day.

Clinical Implications: Xylitol-sweetened gummy bear candies might be an effective alternative to xylitol-sweetened chewing gum for school children. ■

Ly, K., Riedy, C., Milgrom, P., Rothen, M., Roberts, M., Zhou, L.: Xylitol gummy bear snacks: a school based randomized clinical trial. BMC Oral Health 8:20, 2008.



Xylitol Long-term Study

Caries is a bacterial disease that can affect quality of life and consumes considerable health-care resources. Despite widespread use of fluoride in many forms, caries remains a staggering public health and economic burden.

Researchers have suggested that chewing gum stimulates saliva, which should help reduce the incidence of caries. This was the first study designed to compare, side-by-side, several chewing gum formulations.

Researchers from the University of Michigan compared nine treatment groups among fourth graders in Belize. The study included the 19 public schools in Belize City and lasted 40 months. The nine test groups were:

1. No gum control
2. Sugar stick gum five times daily
3. Sorbitol pellet gum five times daily
4. 45 percent xylitol/30 percent sorbitol pellet gum five times daily
5. 15 percent xylitol/45 percent sorbitol pellet gum five times daily
6. 60 percent xylitol stick gum three times daily
7. 60 percent xylitol stick gum five times daily
8. 65 percent xylitol pellet gum three times daily
9. 65 percent xylitol pellet gum five times daily

Gum chewing was supervised while at school. One of four dentists examined each child at baseline, 16, 28 and 40 months. The sugar gum resulted in a slight increase in caries compared to the control group. All the sorbitol and xylitol gums showed various levels of anticaries effects. The most effective gum for caries prevention was the xylitol-sweetened gum chewed five times daily.

Clinical Implications: Encourage patients to chew only xylitol-sweetened chewing gum five times per day to achieve the greatest anticaries benefit of xylitol. ■

Mäkinen, K., Bennett, C., Hujoel, P., Isokangas, P., Isotupa, K., Pape, H., Mäkinen, P.: Xylitol Chewing Gums and Caries Rates: A 40-Month Study. J Dent Research 74: 1904-1913, 1995.

continued on page 102

Xylitol's Impact on Biofilm Formation

The first step in biofilm formation is the development of a salivary protein and enzyme layer on the tooth surface. The enzymes are glucosyltransferase and fructosyltransferase. Bacteria are attracted, form micro-colonies and continue to proliferate. Biofilms associated with caries and periodontal disease are difficult to control. Chemicals that control planktonic cells are not as effective against an organized biofilm. Researchers have investigated anti-adhesion compounds to prevent the bacteria from colonizing tooth surfaces. Xylitol seems to be a promising molecule as a non-cariogenic sweetener that inhibits growth and acid production of *Mutans streptococci.*

Researchers at the Université Victor Ségalen in Bordeaux, France compared the effects of xylitol and saline on biofilm growth in the laboratory. Bacteria associated with both caries and periodontal disease were grown in the biofilm. Bacteria included: *M streptococci, S sobrinus, L rhamnosus, A viscosus, P gingivalis* and *F nucleatum.* Before anaerobic incubation, three treatments were provided and one control group. One group of biofilm samples was treated with one percent xylitol, another with three percent xylitol. The third group of biofilm samples was treated with saline. The fourth group of biofilm samples were untreated controls.

The saline-treated biofilms were similar to the control biofilms in thickness and bacterial growth. The xylitol-treated biofilms lacked cohesive formation and four of the bacterial species were not recovered at all and the other two were significantly reduced.

Clinical Implications: Xylitol reduces both the acid produced by caries causing bacteria and the ability of bacteria to form a biofilm. Xylitol has benefits for prevention of both caries and periodontal disease. ■

Badet, C., Furiga, A., Thébaud, N.: Effect of Xylitol on an In Vitro Model of Oral Biofilm. Oral Health and Preventive Dent 6: 337-341, 2008.

Xylitol Most Effective Before Tooth Eruption

Most xylitol studies have focused on the caries activity relating to permanent teeth. Between 1990 and 1992, 510 children with a mean age of six at the start of the study were evaluated for the effects of xylitol, sorbitol and a combination of the two delivered in chewing gum. Effects were measured on both primary and permanent teeth. The study took place in Dangriga, Belize. Five years after completion of the study, researchers returned to Belize to determine if any long-term effects were evident from the xylitol or sorbitol chewing gums.

After completion of the two-year study, no xylitol or sorbitol gums were commercially available to the children. Of the 510 original study children, 301 were available for re-examination. At-risk tooth surfaces were divided into four subgroups based on eruption: 1) before gum chewing, 2) first year of gum chewing, 3) second year of gum chewing and 4) after gum chewing.

The highest caries experience was found in the no gum group and the 100 percent sorbitol group, with no significant difference between these two groups. The least caries experience was in the 100 percent xylitol group. The combination group with xylitol and sorbitol was better than no gum, but not as effective as 100 percent xylitol. The proportion of decayed surfaces was 1.2 percent in the xylitol group compared to 3.3 percent in the no gum group. Xylitol reduced risk by 88 percent and xylitol/sorbitol by 64 percent.

Clinical Implications: For long-term effects, xylitol use should begin one year before permanent teeth erupt. ■

Hujoel, P., Mäkinen, K., Bennett, C., Isotupa, K., Isokangas, P., Allen, P.: The Optimum Time to Initiate Habitual Xylitol Gum-Chewing for Obtaining Long-Term Caries Prevention. J Dent Res 78 (3) 797-803, 1999.

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XYLITOL The Good Sugar

by Trisha E. O'Hehir, RDH, MS,
Editorial Director, Hygienetown

Abstract

Xylitol is a natural sugar that provides health benefits. Xylitol impacts plaque biofilm formation, acid production, salivary flow and oral pH providing benefits that prevent dental disease and enhance remineralization. Striving for five xylitol exposures daily can significantly improve oral health by reducing plaque biofilm accumulation and the transmission of *Strep mutans* from mother to child.

The anti-inflammatory aspects of xylitol prevent infection and enhance healing associated with open wounds, ear and sinus infections and aspiration pneumonia. The vast number of xylitol research studies published over the past 30 years in the dental field cover plaque biofilm accumulation, acid production, caries incidence, *Strep mutans* vertical transmission, oral pH and remineralization. Additional research demonstrates the effectiveness of xylitol in controlling biofilm infections in other parts of the body.

Educational Objectives

At the end of this program, participants will be able to:

1. Describe the beneficial characteristics of xylitol
2. Explain the impact of xylitol on plaque biofilm
3. List several ways xylitol can impact dental disease
4. Understand the anti-inflammatory effect of xylitol
5. Describe daily xylitol recommendation
6. Recognize products that are sweetened with 100 percent xylitol

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Introduction

Dental caries is a multi-factorial, pH-related, diet-associated infectious disease that begins with a non-cavitated demineralized enamel lesion.[1] Prevention of enamel demineralization is the foundation of caries prevention. Changes to diet and bacterial levels that impact salivary pH are preventive in nature. Saliva buffering and flow rates are key factors in maintaining neutral or alkaline pH levels. Reducing sugar consumption has been a primary focus in many caries prevention programs by suggesting non-cariogenic alternatives. The caries preventive benefits of many sugarless gums and candies have been attributed primarily to the increase in salivation due to chewing the gum or eating the candy and secondly depriving the oral bacteria of their normal growth substance: sucrose. These passive effects are no doubt important in limiting caries, but xylitol possesses active, specific effects that other non-cariogenic sweeteners do not.[2] Xylitol will limit caries even in the presence of strong cariogenic challenges with fermentable carbohydrates. The physicochemical properties of xylitol provide insight as to why it is more effective than other "sugarless" sweeteners in elevating oral pH, reducing plaque, contributing to remineralization and preventing caries.[3]

Xylitol is a natural sugar; it is not an artificial sweetener. It is considered a carbohydrate and more narrowly categorized as a polyol or sugar alcohol. It is found in tree bark, plants, fruits and vegetables. The human body makes five to 10 grams of xylitol each day in the metabolism of carbohydrates. The most common source today is from corn cobs and corn stalks. Xylitol's crystalline form looks and tastes like table sugar, but contains only 2.4 calories per gram, providing 40 percent fewer calories than other carbohydrates.

Xylitol was discovered in 1891 by chemists Emil Herman Fischer and Rudolf Stahel in Germany and simultaneously in France by chemist M.G. Bertran. It wasn't until the 1960s

1. *Hurlbutt, M., Novy, B., Young, D., 2010. Dental Caries: A pH-mediated disease. CA Dent Hyg J, 25 (1) 9-15.*
2. *Maguire, A., Rugg-Gunn, A., 2003. Xylitol and caries prevention—is it a magic bullet? Br Dent J, 194, 429–436.*
3. *Mäkinen, K., 2010. Sugar alcohols, caries incidence, and remineralization of caries lesions: A literature review, International Journal of Dentistry, 1-23.*

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that the benefits of xylitol for those with diabetes were recognized. The glycemic index of xylitol is very low at seven. Xylitol does not use insulin for metabolism, making it ideal for those with diabetes and anyone wanting to reduce sugar consumption.

Xylitol works by interfering with the bacteria's ability to produce acid and by blocking its stimulus to produce the polysaccharide slime that holds the biofilm together.[4] Cariogenic bacteria prefer living in a low pH environment and produce the acid that demineralizes enamel. Xylitol is a five-carbon sugar, while most others are six carbons. This makes it easier for a xylitol molecule to pass through the outer membrane of a bacteria, however passing through the next membrane is impossible for xylitol. The bacteria must then use its own membrane pump to move the xylitol molecule back through the membrane to the outside. The bacteria expends energy but does not derive any energy from xylitol the way it can from six-carbon sugars like sucrose and sorbitol.[5] In the presence of xylitol, the bacteria stop producing acid and the polysaccharide slime that holds the biofilm together and they simply slide off the teeth. In the presence of sugar, bacteria thrive, produce acid and stick to the teeth. Bacterial numbers are significantly reduced in the presence of xylitol.[6] Xylitol promotes an alkaline oral environment, which is conducive to oral health.

Xylitol maintains a higher pH level in both saliva and plaque fluid in contrast to the acid pH associated with sucrose ingestion.[7] Sucrose forms complexes with calcium that allows precipitation of calcium out of saliva while xylitol forms complexes with calcium that do not produce acid and maintain a supersaturated calcium level in saliva, important for remineralization of enamel. This is critical when teeth first erupt and are not completely mineralized. The ability of xylitol to maintain high salivary calcium levels as teeth erupt enhances final mineralization of these teeth. The ability of xylitol to bind with calcium is also evident in higher calcium levels measure in plaque when xylitol is present.[8]

There are some minor side effects when xylitol is eaten in large amounts too quickly. Xylitol is digested as a fiber and has the ability to pull fluid out of tissues, which can lead to gas, bloating and diarrhea. It only takes a week for the body to adjust to replacing all sugar with xylitol. In most cases, xylitol is added to the diet but will not replace all sugars so the gastric upset will only be a problem when eating too much too fast, for example, making cookies with xylitol and then eating several because they taste so good.

In the 1970s, the caries prevention benefits of xylitol were recognized, leading to the publication of numerous research studies over the past 40 years. The first dental research using xylitol measured plaque accumulation over a four-day period when xylitol was introduced as a coffee sweetener, in caramels and other food items eaten throughout the day. Plaque accumulation was reduced 50 percent in those eating xylitol-sweetened foods and beverages.[9] In 1972 this study was repeated with dental students who ate xylitol-sweetened foods and beverages several times each day and refrained from all oral hygiene during the five-day test. Again, plaque accumulation was reduced by 50 percent. This is greater plaque reduction than is evident in many toothbrushing studies. This significant finding, confirming results of the first study completed in 1970, provided a springboard for caries-related xylitol research around the world.[10]

After the second plaque accumulation study, the researchers in Finland undertook a serious and expensive study to measure the effects of replacing all sugar in the diet with xylitol. The two-year meal replacement study resulted in an 85 percent reduction in caries activity.[11] These findings were exciting, but replacing all sugar with xylitol was a daunting task. Instead of a daily dose of 67 grams of xylitol, researchers next tested a daily dose of 6.7 grams of xylitol-sweetened chewing gum taken after meals and snacks. The results were strikingly similar. This confirmed that not all sugar needed to be replaced with xylitol, but that chewing xylitol-sweetened gum after meals and snacks each day would provide the same caries preventive benefit.

Many more studies followed. Chewing gum comparisons showed that 100 percent xylitol-sweetened chewing gum reduced plaque accumulation significantly better than 100 percent sorbitol-sweetened gum and better than a gum sweetened with both xylitol and sorbitol.[12] Sorbitol can be metabolized by bacteria to produce acid, therefore adding sorbitol to chewing gum sweetened with xylitol will significantly reduce the benefits of xylitol. A three-year study in Hungary among nearly 700 students showed that having xylitol-sweetened candy several times each day reduced the incidence of caries better than fluoridated toothpaste or fluoride in milk.[13]

The classic long-term study was conducted by faculty from the University of Michigan in Belize. This 40-month study, conducted in the early 1990s, included nearly 1,300 students – all the fourth graders in Belize City. Several different chewing gums were tested, with the 100 percent xylitol-sweetened gum provid-

4. *Badet, C., Furiga, A. & Thébaud, N., 2008. Effect of xylitol on an in vitro model of oral biofilm. Oral Health & Preventive Dentistry, 6(4), 337-341.*
5. *Topitsoglou, V., Birkhed, D., Larsson L., et al, 1983. Effect of chewing gums containing xylitol, sorbitol or a mixture of xylitol and sorbitol on plaque formation, pH changes and acid production in human dental plaque. Caries Res, 17 (4) 369-378.*
6. *Frostell, G., 1984. Interaction between xylitol and sorbitol in plaque metabolism. Swed Dent J, 8 (3) 137-146.*
7. *Marsh P., 1994. Microbial ecology of dental plaque and its significance in health and disease. Adv Dent Res, 8, 263-271.*
8. *Tanzer, J. M. (1995) Xylitol chewing gum and dental caries. Int Dent J, 45, 65-76.*
9. *Scheinin, A. & Mäkinen, K., 1971. [The effect of various sugar diets on the formation and chemical composition of dental plaque]. Inter Dent J 21 (3), 302-321.*
10. *Scheinin, A. & Mäkinen, K.K., 1972. Effect of sugars and sugar mixtures on dental plaque. Acta Odontol Scan, 30(2), 235-257.*
11. *Scheinin, A., Mäkinen, K., Ylitalo, K. (1976) Turku sugar studies vs. final report on the effect of sucrose, fructose, and xylitol diets on the caries incidence in man. Acta Odontol Scan, 34, 179-216.*
12. *Mäkinen, K.K., 1976. Dental aspects of the consumption of xylitol and fructose diets. Inter Dent J, 26(1), 14-28.*
13. *Scheinin, A., Banoczy, J. Szoke, J. et al., 1985. [Collaborative WHO xylitol field studies in Hungary. I. Three-year caries activity in institutionalized children]. Acta Odontol Scan, 43 (6) 327–347.*

ing the greatest reduction in tooth decay at 73 percent. At the end of the study, no more xylitol chewing gum was provided for the students. Five years later, researchers from the University of Washington traveled to Belize to evaluate the then fourth graders who were still living in the area. The caries preventive benefit of the xylitol seems to have altered the oral flora providing long-term benefits. The children who had chewed the 100 percent xylitol-sweetened gum still maintained a 70 percent reduction in tooth decay compared to children in the other chewing gum groups.

Numerous published studies report caries reductions from 21 percent to 85 percent, presenting a significant gap between reports. Differences in study outcomes are attributed to many aspects of the study design. Subjects with low caries experience will not demonstrate a large difference. A small study with an insufficient number of subjects will fail to show a difference. Studies using too low of a concentration of xylitol, too short an exposure to xylitol or too few exposures each day will not show significant results. The recommended dose is six to seven grams of xylitol daily, separated into three to five exposures.[14] The gum is chewed for only five minutes, just enough to release the xylitol, no longer.

Babies are born essentially germ-free, quickly acquiring their oral flora from contact with food and loved ones. The mother is generally the primary caregiver and knowingly or unknowingly shares salvia with her infant through kissing, tasting food first to check temperature and sharing food and utensils. As the teeth erupt, *Strep mutans* transmitted from mother to baby will colonize on the non-sloughing tooth surfaces. If the mother has good oral health, low levels of *Strep mutans* and an alkaline oral environment that doesn't promote growth of acid-producing bacteria, the baby is less likely to acquire *Strep mutans.* If children can avoid oral *Strep mutan* colonization past two years of age, they may be able to maintain a healthy, non-acid producing oral microflora.[15] The children of mothers not chewing xylitol gum compared to the children of mothers chewing xylitol gum three to five times daily for two years were five times more likely to experience *Strep mutan* colonization. When the children were five years old, those whose mothers chewed xylitol gum for two years had 70 percent fewer carious lesions when evaluated at age five. Mothers in the two control groups received either fluoride varnish or chlorhexidine varnish twice yearly for the two-year study.

A side effect reported in a xylitol chewing gum study was a 42 percent reduction in ear infections (also known as otitis media).[16] This has led to research confirming the beneficial effects of xylitol nasal rinse in reducing ear infections, allergies, sinus infections and sore throats. Xylitol research has expanded further into the medical arena as a treatment for controlling bacterial biofilm forming on open wounds, specifically on the feet of those with diabetes. In six weeks, open wounds that have been active for many years are converted to healthy sites with the topical use of xylitol applied in dissolved form directly to the open wounds.[17] The potential for xylitol to reduce plaque levels 50 percent presents a means of controlling lingual plaque accumulation for people in long-term care facilities and intensive care hospital wards. Heavy lingual plaque is easily aspirated into the lungs, predisposing lung cells to infection.[18] Ongoing studies will determine if the use of xylitol to control oral bacterial biofilm formation will significantly reduce the incidence of aspiration pneumonia.

Many chewing gums contain some xylitol, but also contain sorbitol, sucralose, aspartame, Ace K or mannitol. Adding these artificial sweeteners to chewing gum containing xylitol will reduce the benefits of xylitol. To achieve results similar to those reported in the research, products should be sweetened with 100 percent xylitol. Xylitol delivery has most often been through chewing gum, but there are many other proven delivery systems available: candy, mints, toothpaste, mouthrinse, dry mouth spray and oral gel. Dr. Catherine Haynes was quoted in a 2001 edition of the *Journal of Dental Education* on the benefits of xylitol: "Since the evidence suggests a strong caries protective effect of xylitol, it would be unethical to deprive subjects of its potential benefits."

Note: Never assume that what is safe for you to eat is also safe for your pets. Xylitol should not be fed to pets, just as chocolate, raisins and grapes should not be fed to pets. Undernourished dogs are the most likely to experience severe reactions to xylitol. Keep xylitol out of the reach of dogs. ■

14. *Ly, K., Milgrom, P., Roberts, M., et al., 2006. Linear response of mutans streptococci to increasing frequency of xylitol chewing gum use: a randomized controlled trial. BMC Oral Health, 6(1), 6.*
15. *Caufield, P. W., Griffen, A.L. (2000) Dental caries: An infection and transmissible disease. Pediatr Cln North Am, 47, 1001-19.*
16. *Vernacchio, L., Mitchell, A., 2007. Xylitol to prevent acute otitis media. Ped Infec Dis J, 26(9), 863-864.*
17. *Ammons, M., Ward, L., James, G., 2011. Anti-biofilm efficacy of a lactoferrin/xylitol wound hydrogel used in combination iwht silver wound dressings. Int Wound J, 8 (3) 268-273.*
18. *Tada, A., Miura, H., 2012. Prevention of aspriation pneumonia (AP) with oral care. Arch Gerontol Geriatr, 55 (1) 16-21.*

Author's Bio

Trisha O'Hehir is currently the editorial director for Hygienetown.com and Perio Reports. She received her education at the University of Minnesota and her four-decade career has included roles as clinician in the USA and Zurich, Switzerland, faculty at the Universities of Minnesota, Washington, Arizona and Louisville, international speaker, writer, instrument designer, inventor and entrepreneur. Trisha currently resides in Arizona, where she is a past-president of the Arizona State Dental Hygienists' Association.

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Post-test

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1. Health benefits of xylitol use include:
   a. Reduced plaque and reduced caries.
   b. Increased salivary flow and increased oral pH.
   c. Reduced open wound biofilm.
   d. All of the above

2. Xylitol was discovered:
   a. in 1891 in both France and Germany.
   b. 10 years ago in milk products.
   c. in China by agricultural researchers.
   d. by NASA scientists.

3. Xylitol is:
   a. a crystaline carbohydrate.
   b. found in tree bark, plants, fruits and vegetables.
   c. made by the body in small amounts.
   d. All of the above

4. Xylitol interferes with bacterial function by:
   a. killing bacteria.
   b. breaking the cell wall of bacteria.
   c. interfering with sugar metabolism by the bacteria.
   d. making the tooth surface slippery.

5. Xylitol can benefit dental patients by:
   a. reducing plaque volume.
   b. reducing pH in the mouth.
   c. preventing acid production by the bacteria.
   d. All of the above

6. The ideal percentage of xylitol-to-sweetener chewing gum is:
   a. 100%
   b. 80%
   c. 75%
   d. 50%

7. Xylitol prevents otitis media by:
   a. opening the Eustachian tube.
   b. increasing biofilm formation.
   c. a direct effect on the ear drum.
   d. reducing biofilm formation blocking the Eustachian tube.

8. New uses for xylitol include:
   a. reducing global warming.
   b. healing and closing open wounds.
   c. sweetener for soda pop and other cold drinks.
   d. replacement for topical fluoride.

9. Xylitol reduces bacterial biofilm levels by:
   a. reducing bacterial acid production and making bacteria slippery.
   b. lowering the pH of the biofilm.
   c. increasing extracellular matrix in the biofilm.
   d. increasing the number of bacteria in the biofilm.

10. Xylitol is dangerous when consumed by:
    a. children.
    b. adults.
    c. dogs.
    d. All of the above

Continuing Education Answer Sheet

Instructions: To receive credit, complete the answer sheet and mail it, along with a check or credit card payment of $36 to: Dentaltown.com, Inc., 9633 S. 48th Street, Suite 200, Phoenix, AZ 85044. You may also fax this form to 480-598-3450. You will need a minimum score of 70 percent to receive your credits. **Please print clearly. This course is available to be taken for credit August 1, 2012 through its expiration on August 1, 2015. Your certificate will be e-mailed to you within 3-4 weeks.**

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9.	a	b	c	d
10.	a	b	c	d

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For questions, contact Director of Continuing Education Howard Goldstein at hogo@dentaltown.com

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High Risk Caries Protocol

A Townie needs advice on what to include when creating a new caries risk assessment protocol.

triciardh
Member Since: 03/31/10
Post: 1 & 2 of 16

I've been with the same practice for almost five years and am now assigned the task of creating a "risk assessment" protocol with recommendations including prophy sequence, fluoride supplements, electric toothbrushes, etc. Recently, several patients presented with generalized decay around the doctor's restorations. I know these patients do not comply with oral hygiene recommendations given at previous appointments. Most are 20-30 years old with a diet full of sugar. Some comply with three- to four-month recalls, but not all. They are on Clinpro 5000 twice daily, PerioMed three times weekly and Peridex. I do not believe they are using any of these products as instructed. At every appointment I stress and document it in the chart, the importance of good oral hygiene, review diet, etc.

I guess the protocol is to be used and signed by the patient so we have documentation that after new restorations are placed they know what is expected of them and we are not liable if recurrent decay presents. Does anyone have a protocol like this in their office, and if so, what does it say?

Also add xylitol in some form...

Thanks. ■ Tricia RDH

FEB 6 2012

Trisha O'Hehir
Member Since: 05/22/03
Post: 3 of 16

Three cheers for xylitol! The sweetest, easiest way to reduce *Strep mutans* and acid production in the mouth.

The protocol is one thing – helping the patient make those choices is totally different. Instead of telling patients what they must do, why not ask them what they are willing to do? Give them choices and let them tell you what is reasonable for them to really do each day. Let them create their own protocol from all the choices you present. Think of it like a salad bar; not everyone will eat all the options. Create steps: What will they do between their teeth? Which of the xylitol products will they use? What drink will they replace? What snacks are they willing to eat? It's a lot of fun and shifts responsibility to the patient's shoulders. ■

FEB 7 2012

timothyives
Member Since: 12/13/08
Post: 4 of 16

If any of you had any doubt about the effectiveness of xylitol in preventing caries then you should check out the long-term Soderling study from Finland, which ticks all the right boxes for excellent clinical unbiased research. New mums were given regular xylitol to prevent the transmission of caries-causing bacteria to their babies. This long-term study is now looking at these children at the age of six years and it seems the mums who were relying on xylitol to prevent transmission of caries-causing bacteria have children who have significantly healthier teeth compared to the chlorhexidine varnish and fluoride varnish groups.

My conclusion would be to recommend daily xylitol to all your new mum patients and everyone else in their close family unit as it seems that the babies whose mums chewed xylitol gum don't develop caries when their adult teeth are erupting. ■

FEB 7 2012

JGonzalesRDH
Member Since: 06/17/07
Post: 6 of 16

Is the question, "What is a good CAMBRA form?" or "What is a good form so the doc can't get sued when the patient gets recurrent decay?"

I've always liked the style of CariFree's CAMBRA form, but there are several others that you could customize to your own practice. Check Web sites like AAP and ADA. What I really love about these forms is that they address systemic issues that are non-bacterial in nature that might have a powerful complementary effect on caries including GERD, obstructive sleep disorders and mouth breathing.

If you believe that diet is the number-one culprit for recurrent decay, consider referring to a registered dietitian to educate patients on the profound effects of their current lifestyle. This can be done in the dental practice, but sometimes a "second voice" can influence a healthy change.

Bottom line, if your patients are not motivated to change their lifestyle, you and your doctor have to be more creative in your communication style to reach them on an emotional level. The form is your guideline to shape a well-rounded conversation to get your patient to health. Best of luck! ■

JUN 5 2012

mdhsmilespa
Member Since: 10/24/08
Post: 8 of 16

One huge thing we need to look at as well is the fact that not all restorations are great! Overhangs, open margins and poor contouring can invite more problems than they were designed to fix. The dentist must also search out products that ensure superior results and biofunctioning. I find air polishing and use of a glycine-based powder, for increased biofilm elimination (such as EMS Soft Powder), helps clients feel what it is like to have a clean mouth! I would treat all restorative margins to an air polish and follow it with a varnish application to help keep recurrent decay at bay. ■

JUN 9 2012

lindadouglas
Member Since: 06/09/06
Post: 9 of 16

The prevention regimen has to be very simple and doable without too much effort on the patient's part. We must be realistic, only the extremely motivated individual will stick to a complicated self-care regimen involving different rinses, etc., long enough to make a difference. This is why public health measures like water fluoridation have made such a great difference.

I also think more widespread use of xylitol is the way to go. If we had a concerted public education campaign on the benefits of xylitol, perhaps manufacturers of confectionery and soft drinks would start to use it. Imagine what a difference this would make, in addition to ways to make it easier to brush and perform interdental oral hygiene effectively on a day-to-day basis. Flossing entails learning a skill, and requires a degree of manual dexterity that some people just don't have. Everyone wants an easy alternative to floss. ■

JUN 9 2012

LMCBW
Member Since: 10/19/07
Post: 10 of 16

We stock Spry xylitol mints/gum and mouthrinse. We regularly test saliva and also have introduced the Dr. Slots bleach protocol for caries and periodontal disease. When we introduce the sodium hypochlorite dilute rinse to a patient, we mix some there in the office and have them try it (20 parts water to one part bleach). I often rinse with them as I have found time and again this does increase acceptance; many patients are understandably quite wary of this at first. ■

JUN 10 2012

Find it online at: www.hygienetown.com
search Caries Protocol ▶

HOW PUNNY

1. If you've been to the dentist several times, you know the drill.
2. Contemplating imminent root canal procedures is deeply unnerving.
3. Be kind to your dentist because he has fillings too.
4. My cavity wasn't fixed by my regular dentist, but by a guy who was filling in.
5. A dentist and manicurist fought tooth and nail.
6. The dentist put braces on his patient as a stopgap measure.
7. Dentists have their own "flossify" on how to keep teeth clean.
8. I got my job at the dentist's office by word of mouth.
9. They called him the king of the dentists because he specialized in crowns.
10. The dentist's alibi was full of holes, so the police performed a cavity search.
11. Dentists get on everybody's nerves.
12. A lawyer asked his dentist to give him a retainer.
13. Ten years without brushing causes horrible tooth decade.
14. Going to the dentist can be very full filling.
15. Dentists don't like a hard day at the orifice.
16. My dentist seems distracted; I think he was brushing me off.
17. There was a dentist who was convicted of incisor trading.
18. What is the dentist's favorite shopping center? The Gap.
19. Dentists have the same old grind day after day.
20. Is an uninfected tooth in a pre-carious state?
21. A dentist named Phil McCavity always quit work at tooth-hurtie.
22. A dentist with a toothache could have a bad impact on his patients.
23. I went to the dentist without lunch, and he gave me a plate.
24. It's a dentist's duty to tell patients the whole tooth. ■

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