Where Should Prevention Begin?

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

Several years ago I was invited to Szeged, Hungary to meet with dental school faculty, government officials and officers in the Hungarian Dental Association. They were considering adding a dental hygiene training program to its curriculum. I was indeed honored to be invited to share my experience and vision for the future.

As a dental hygienist with clinical experience as well as teaching experience, it seemed a simple answer – yes, go ahead and open a dental hygiene school. Before the official meeting I spent time gathering information about the country and the dental needs of its people.

With a population of nearly 10 million where it appeared more than half of the adult population smoked, it was a stretch for me to imagine how graduating 25 dental hygienists per year would ever impact the high level of periodontal disease in a country the size of Hungary. Add to this the fact that each dental office had only one operatory, offering no place for the new graduates to work. It was suggested they could work a few hours in the morning before the dentist began seeing patients.

It quickly became clear that the population of adults in Hungary with periodontal disease would simply have to die with their disease because educating enough dental hygienists to provide care for the entire country would take too long. Instead, I suggested they abandon the idea of a dental hygiene program and instead focus on creating a program of several hundred preventive specialists who would work with caries-free babies and help them grow up healthy. Instead of entering the equation after dental disease was already present, it would be better to start with healthy mouths and keep them that way.

This month’s focus on hygiene and prevention is provided by Rhoda Kublickis, based on her family’s experience with dental disease.
**Hygienetown**

**Perio Reports**

Perio Reports provides easy-to-read research summaries on topics of specific interest to clinicians. Perio Reports research summaries will be included in each issue to keep you on the cutting edge of dental hygiene science.

**Factors Influencing Tongue Coating**

Tongue coating forms on the middle and posterior portion of the tongue in people with periodontal disease as well as healthy individuals. Oral causes account for 76 percent of oral malodor. Tongue coating alone accounts for 43 percent of oral malodor, along with gingivitis and periodontitis accounting for 18 percent. Since tongue coating is a significant cause of oral malodor, more needs to be learned about what causes it.

Researchers at the Catholic University Leuven in Leuven, Belgium evaluated 96 patients seeking care at its halitosis clinic. Subjects were instructed by letter to refrain from eating onions, garlic or spicy food for two days before their appointment and to refrain from drinking coffee or alcohol or smoking cigarettes for 12 hours before the appointment. They were also asked to refrain from using chewing gum, mints, drops, scents or mouthrinses on the morning of their appointment.

They were asked to complete a written questionnaire relating to general health, oral hygiene habits, ENT problems and diet. The clinical examination included an organoleptic (smelling of the breath) test and an evaluation of tongue coating both visually and by weighing the scrapings from the back of the tongue. Sulphur compounds were measured using OralChroma, gas chromatography. Quality and quantity of saliva were also measured.

Clear correlations were established between organoleptic scores, tongue coating scores, the weight of tongue coating scrapings and the objective measure of volatile sulphur compounds using the OralChroma machine. Those who smoked, did not clean between their teeth and preferred soft foods had more tongue coating and higher oral malodor scores.

**Clinical Implications:** Tongue coating is indicative of oral malodor and influenced by poor oral hygiene.


**Sleep Apnea and Periodontal Disease**

Chronic periodontitis (CP) is linked to many systemic diseases, without any cause and effect studies yet published. Both CP and obstructive sleep apnea (OSA) are associated with a systemic inflammatory response. A study of 68 subjects by Australian researchers published in 2009 suggested a link between OSA and CP.

Researchers at Taipei Medical University in Taipei, Taiwan evaluated a much larger group to determine if there was a link between OSA and CP. The Longitudinal Health Insurance Database of Taiwan includes records of one million individuals. From this database, researchers selected more than 7,000 patients who were diagnosed with OSA through a sleep study. A group of 22,000 age-, gender- and country location-matched controls with no diagnosis of OSA were also identified.

In Taiwan insurance records also provide information about the diagnosis and treatment of periodontal disease. From this information it was possible to determine who also had CP. The average age of the subjects evaluated was 48 years and 62 percent were males. After adjusting for several influencing factors, including smoking, alcohol use, hypertension, cholesterol levels, diabetes and obstructive pulmonary disease, a significant difference was detected between the groups. In the group with OSA, 34 percent were diagnosed with CP compared to 23 percent in the control group. These findings do not suggest a cause and effect relationship between CP and OSA, but rather a link between the two conditions. Something not mentioned in the article is the link between mouth breathing and both CP and OSA.

**Clinical Implications:** The odds ratio of 1.75 makes those with a diagnosis of chronic periodontitis 1.75 times more likely to experience obstructive sleep apnea.


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Bacteremia from Flossing and SRP Similar

Infective endocarditis (IE) is a rare but serious infection of the heart. Viridians streptococci bacteria (VAB) are the primary oral bacterial associated with IE. Prophylactic antibiotics are recommended for those at risk when undergoing invasive dental procedures like scaling and root planing (SRP). New research suggests that toothbrushing might be just as risky as SRP when considering a bacteremia.

Researchers at the University of Sydney, Australia compared bacteremia levels following SRP and flossing in a group of 30 people with chronic periodontitis. Full-mouth flossing was completed at the first visit and one quadrant of SRP at the second visit. Blood samples were taken at baseline and at 30 seconds and 10 minutes after flossing. Blood samples were taken five minutes after starting SRP and again at 30 seconds and 10 minutes after completing SRP. A gingival index and plaque index were taken on all subjects immediately after baseline blood draws.

Flossing was done with waxed floss, moving the floss up and down three times on each proximal tooth surface. SRP was done under local anesthesia using both an EMS power scaler and Gracey curettes.

The incidence of total bacteremia was 30 percent in the flossing group and 33.3 percent in the SRP group. VSB bacteremia was 27 percent in the flossing group and 20 percent in the SRP group. These differences are not statistically different. However, the fact that both flossing and SRP result in similar incidence of bacteremia scores is problematic since the recommendations for prophylactic antibiotics only apply to invasive dental procedures.

Clinical Implications: It might be time to rethink prophylactic antibiotic recommendations.


CHX Gel vs. Rinse for Peri-implant Mucositis

Peri-implant mucositis is a reversible infection in the marginal tissue surrounding implants. It is characterized by bleeding, swelling and inflammation with no bone loss. If left untreated, it can progress to peri-implantitis and irreversible bone loss. Chlorhexidine (CHX) in gel or rinse is often used to control these infections.

Researchers at the University of Milan in Milan, Italy compared the use of a 1% CHX gel and a 0.2% CHX mouthrinse to treat peri-implant mucositis in a group of 23 patients. All implant sites showed evidence of bleeding on probing, plaque accumulation and bone loss.

Average age of the patients was 62 years, with a range from 43 to 87. Subjects all received instrumentation and were randomly assigned to either the gel (13 subjects) or the mouthrinse (10 subjects) and instructed to use their assigned product twice daily for 10 days. Clinical indices were evaluated at 10 days, one month and three months.

At 10 days, each group showed significant reductions in plaque and bleeding. Seventy percent of sites in the gel group and 90 percent of sites in the mouthrinse group were healed. Healing remained stable through the three months of the study. The differences between groups were not statistically significant.

This study used a 0.2% rinse, stronger than the typical U.S. rinse of 0.12%. The gel provided a localized application of the CHX while the mouthrinse was more generalized throughout the mouth.

Clinical Implications: CHX gel and mouthrinse both work well for peri-implant mucositis.

Antimicrobial Power Scaler Coolant as Effective as Water

Power scalers are as effective as hand instruments for the removal of subgingival deposits. It has been suggested that using an antimicrobial coolant solution would enhance healing. This combination of power scaling with an antimicrobial combines two treatments within one and as such might save time. Both povidone iodine and chlorhexidine have been tested in power scalers and to a lesser extent, essential oil solutions.

Researchers at the University of Ghent and the Free University of Brussels, both in Belgium, compared clinical outcomes after power scaling with either Listerine or water as the coolant. Patients with at least one pocket in each quadrant measuring 6mm with bleeding upon probing were included in the study. A total of 29 patients completed the three-month study: 17 in the Listerine group and 18 in the water group. Subjects all received two 90-minute instrumentation visits, using only an EMS Piezon Master 600 power scaler. Subjects were also instructed in toothbrushing and interdental cleaning using interdental brushes or toothpicks. All were provided with a manual toothbrush, toothpaste and interproximal cleaning aids.

The test group was treated with full strength Listerine as the coolant in the power scaler. The control group was treated with water as the coolant.

At three months, both groups showed significant healing with 50 percent reduction in bleeding, probing depth reductions of 1mm and attachment gains of 0.5mm. Deep pockets reduced 2.5mm in both groups.

Clinical Implications: Listerine used as a coolant solution with a power scaler provides no added benefit over water when used to treat chronic periodontitis.


Essential Oil Rinse Used for Perio Maintenance

To be successful, periodontal treatment should be followed by frequent periodontal maintenance visits with the dental hygienist and effective daily oral hygiene. Many antimicrobials are suggested to enhance the benefits of mechanical plaque removal.

Researchers at the University of Ghent in Belgium compared Listerine mouthrinse with a placebo rinse in a group of periodontal maintenance patients over a three-month period. Subjects were instructed to rinse twice daily. There were 23 in the test group and 21 in the placebo group who completed the full study. Baseline clinical indices included plaque, bleeding, gingivitis, probing depths and clinical attachment levels. Subgingival bacterial samples were taken from the deepest pocket in each quadrant and analyzed. Measurements were taken at baseline and repeated at three months.

Differences between groups were not statistically significant. The test group began with healthy gingiva at 80 percent of sites and at three months this was 96 percent. In the placebo group, it began at 91 percent and increased to 97 percent. Bacterial load was similar at baseline and three months for both groups. Despite no clinical evidence of benefit, patients in both groups reported feeling refreshed after rinsing. Nearly 60 percent of subjects reported they would continue using a mouthrinse and would recommend a mouthrinse to family and friends. The strong taste gave subjects the perception of clinical benefits, even though the clinical evidence does not support this.

Clinical Implications: People with good oral hygiene will experience no added benefit from daily rinsing with Listerine.

When to Ask for a Raise and Benefits?

A Townie wonders if it’s the right time to ask for a raise and others chime in with advice on how to prepare for the talk with her boss.

Fresh out of school two years ago, I accepted the first job offer I got for a part-time position. The salary was a little lower than what I originally wanted, plus I did not negotiate any benefits. When I started working for that office there was no perio program at all. I love working in this office and working with my boss, but I feel in order for me to be truly happy here, I need a $1/hour raise and some benefits: paid vacation, paid holidays (when they fall on a day I’m working).

When would be ideal for me to ask for that raise and benefits? Now or after our office completes training with a dental consultant? I feel that if he won’t give me what I’m asking for, I will look for another job, although it’s scary to leave the practice I love and have invested so much in to improve without knowing if the grass is really greener on the other side. Any input would be appreciated. New hygienist, still learning to fight for my rights!

I think you should just go for it. Have a sit down with your boss to discuss your concerns. He might surprise you and give you what you are asking for. It seems like you are happy there and he is happy with you.

As a dentist of 20 years, and a former hygienist, I feel uniquely qualified to give you some direction on this question. You said you have made many positive changes to the hygiene department, but you don't list what those changes are. It is very important to have that list in-hand when you talk to your boss. Most of us dentists don't like to give raises just on time spent in the office, (especially part-time) but we love to find an employee who brings value to the patient experience, brings value to the team and therefore to the practice.

If you have implemented a perio program, take credit for it. If you have been able to bring your patients in for three- or four-month recalls on that perio program, take credit for it. If you are being requested as the "hygienist that they want to see" bring this to his attention. Perhaps you have been complimented on his website or Facebook page. In two years, can you show him some patients who have actually improved their perio pocket depths because of your care? Present this all from an information point of view and not a demand. When presented with this type of information, any employer can see that your raise is very reasonable.

Benefits for a part-time hygienist are more difficult. Not impossible, just a little more difficult. You have to remember that as a hygienist, you probably make the most in the office other than the dentist. And, I believe hygienists deserve a high salary; after all, they likely have the most education in the office other than the dentist. Figure out what benefits are most important to you and go in with an attitude that is ready to negotiate, not demand. Two days a week for two years in an office that is open only four days a week is not that much time compared to the full-time staff. If you work two days a week, perhaps ask for one paid vacation day after the first two years. When it comes to holidays, maybe ask for Thanksgiving if you work on Thursdays. In my office, I give my hygienists their birthdays off, paid, after three years. After three years, they have shown their value to my practice or they would not still be there.

If you want to be treated the same, you have to prove to the rest of the staff that you are part of the team and not a prophy queen that comes in five minutes before the schedule...
starts, and leaves five minutes after the last patient without really being a team member. Do things without being asked; help the assistant leave at the same time you do. Offer every day to do what is necessary to make the practice prosper, even if it isn’t in your job description. Once they realize that having you there will not only bring value to the practice, but make their positions run smoother, you will be a member of the team. If they have staff meetings, show up, even if it isn’t your day to be there.

I hope this was helpful. It sounds like you love your job and no dentist can afford to ignore that kind of loyalty. You really shouldn’t have to fight for your rights, but rather earn your desired benefits.

It appears that you have already received some sound advice from our RDH/DDS friend. I have been practicing for almost 18 years now and have had quite a bit of experience asking for pay that reflects my contribution to the office. I currently work in a corporate setting with a health-care organization that manages medical, optical, dental, PT/OT, etc., so the process is completely different from private practice.

I believe that you are at an advantage because you have the opportunity to bring in your facts (increase in treatment acceptance, increase in monthly production, developing a program, etc.). I don’t know what state you reside in but a standard rate is 35 percent of your production. It would be wise to know what you have produced over the last quarter and year, and what your current pay percentage is related to this production. Dentists are not merely clinicians; they have to be practical-minded and run a business as well. You are part-time and seeking benefits. This is negotiable but keep in mind many offices do not offer part-time staff benefits. You might decide to get creative and negotiate a higher salary if the numbers support this (from your production) and only request holidays, which you were scheduled to work or a few paid sick days. There are many ways to work this. I would suggest you ask yourself what matters most to you prior to having this meeting with your employer. In other words, what is your bottom line? Shoot for the stars (with supporting facts and figures) but understand that this might be a surprise to your employer. Do not expect an immediate answer. In fact, I would ask your employer to take a few days and look over the information that you have provided before making a decision unless he/she is on board right away.

Knowing your value and what the practice requires from your department is vitally important and presenting this information to your employer will show that you are in touch and have done your homework.

When asking for a raise of any boss, be sure you have your facts. Don’t feel you deserve the raise; know why you deserve the raise. Print out your metrics of revenue to the practice, number of re-care appointments kept, how many new patients you have brought to the practice, how many marketing events you have participated in, what your case acceptance percentage is, etc. Just because you feel you want a raise and it would make you happy doesn’t mean a boss should provide you with one.

Also, do your research on what other part-time RDHs in your area get for salary and benefits. Making sure you are in your target area and asking for realistic compensation is important in supporting your efforts. Good luck!
This message was lost with my grandmother who grew up in the Philippines. It was too late for prevention when my mother had a toothache and the dentist gave two choices: fill the tooth for $4 or extract the tooth for $4. My grandmother’s logic was to extract the tooth, as then it would no longer be in the mouth to cause pain. Filling the tooth left it in the mouth and perhaps it would decay again and cause more pain and more expense. By the age of 17, my mother had no maxillary teeth and wore a denture. Her mother thought she had made the right decision for her daughter. It was my mother who broke the cycle of extractions and ignorance about dental health in our family. As a child, I remember her brushing her upper denture and telling us stories of how poor her family was, so poor that my grandmother could not properly pay for dentistry until my mother was in such pain that she had no choice but to extract the tooth.

I was nine when my family moved to the U.S. from the Philippines. Every six months my siblings and I would go to our dentist and hygienist for our bi-annual check-ups. My sister and I always had several carious lesions. I did not realize at the time that it was not just home care, but other multi-factorial issues that contributed to our dental demise.

In the pursuit of saving my teeth and avoiding the dreaded denture my mother had, I completed my college education in the field of dental hygiene, becoming licensed in 1983. I worked toward my master’s degree in a program that challenged me and helped me find my passion for public awareness of dental hygiene as the oral health profession. Just thinking about dental decay, brought up many questions to ponder: Why should enamel, the hardest substance in the body simply breakdown? Why should a person need to have the hardest surface in the whole body drilled open to place a filling? Why should a patient have a nerve removed from a live tooth? Why should teeth be extracted? Why should a patient die because of a dental abscess? These questions puzzled me since dental disease is preventable. A more haunting question is why don’t people know that dental disease is preventable? Why do they believe caries and periodontal disease are inevitable? Why is the preventive message of the dental profession falling on deaf ears?

During this soul-searching time, I was working for a dentist in Fort Lauderdale. This luxurious and upscale dental practice faced the Intracoastal Waterway. It was not uncommon to have families put off regular dental hygiene visits with the excuse they were too expensive. One family in particular had six children and by the time all of them had radiographs, prophylaxis and fluoride, it cost the parents the equivalent of an expensive Prada purse! Strangely enough, some people would rather buy the Prada purse than purchase preventive dental care. It was puzzling to me that my own mother had a matching purse for every pair of shoes she owned, but in her family growing up, there wasn’t enough money for preventive care. Why is more value placed on discretionary purchases than on oral health care?

Remarkably, even those with free dental care choose to have the best shoes and electronic games for their children rather than pay for preventive services to ensure good oral health. This interest in prevention provided the foundation for my master’s degree research project. At the request of my adviser, Dr. Inge Ford, I gathered emergency room data on dental visits in Martin County, Florida. According to the 2010 Martin County Community Health Assessment, the most difficult health service to obtain was dental care. A majority of the respondents, 69 percent, received routine physicals whereas only half received routine dental exams. Quiñonez (2011) noted that lower and middle income groups were the populations who reported to the emergency room for dental emergencies. The lower and middle income groups earned too much for public support and worked in jobs that did not offer dental insurance as part of the benefits package. This combination of circumstances led them to the emergency room for care rather than paying for regular dental visits. No value was placed on preventive services.

Even though patients might choose to spend money on a Prada purse rather than investing on maintenance of their children’s oral health, it makes you wonder if they really understand that making a choice in favor of preventive services provided by a dental hygienist has the potential to last a lifetime. Parents need to be aware of the consequences of keeping the deciduous teeth in the mouth, therefore allowing for guidance of permanent teeth into the correct position. If permanent teeth are clean and healthy, it usually results in healthy bone around teeth, allowing teeth to be kept for a lifetime. Effective prevention services last longer and are more valuable than any Prada purse!
According to the Martin County Health Assessment, in 2010 there were 243 dentists serving 139,794 people and 9.3 percent were enrolled in Medicaid. However, of those 243 dentists, only two took Medicare for children up to 21 years of age and only two clinics perform free services for adults with Medicare. With such limited number of dentists providing services for those 22 to 61 years old, many end up in emergency rooms for routine treatment of dental disease as well as treatment of painful dental abscesses. Providing dental care for those with acute disease addresses the immediate need for treatment, but it doesn’t address the need for more valuable prevention information. With oral health education, these people could avoid the damage done by caries and periodontal disease and the need for expensive dental treatment.

There are many preventive oral health programs now available to educate parents or caregivers of young children, so why don't people value oral health? Why don’t they know dental disease is preventable? The information is out there and has been for many years, but the message isn’t getting through with our current educational programs. People would still prefer to buy a purse than spend money on prevention because they do not see the value of good oral health.

If people realize that dental disease is preventable and that parents are the source of Strept mutans in their children’s mouths, values might change. Right now, people don’t believe they have any part in the oral health of their children. They believe dental disease is inevitable. They have experienced tooth decay and they fully expect their children to have tooth decay. The concept of preventing tooth decay is as foreign to parents today as it was to my grandmother years ago. Despite the dental profession’s efforts to educate people about the dangers of sugar, the importance of good nutrition and the value of regular dental visits and daily oral hygiene, many still believe dental disease is inevitable and only seek dental care in emergency rooms when the disease has progressed to severe pain.

From my own family experience, the message of the contagiousness of dental caries was missed. Babies “catch” tooth decay from their parents and caregivers, from whoever shares saliva with them. Strept mutans are transmitted via saliva through kissing, sharing eating utensils and sharing food. Numerous studies have reported similar Strept mutans genotypes among mother, father and children and suggest vertical transmission from parent to child and horizontal transmission between siblings sharing utensils, straws, glasses and kissing. In Domejéan’s study of unrelated kindergarten children, the risk of caries transmission was found to be relatively low in one out of six children due to less contact time amongst each other (2010). My mother’s Strept mutans colonizations and subsequent dental disease was very likely due to my grandmother’s generous sharing of her saliva. She just didn’t know she was also sharing Strept mutans that would be responsible for future tooth decay.

According to research done by Caufield et al. in 1993, if a child can avoid exposure to Strept mutans during their first two years, they have a better chance of establishing a healthy oral flora rather than one conducive to caries. The best way to do this is by changing the mother’s oral flora so mom shares a healthy oral flora with her baby. Early childhood caries is known to strike before the age of two, so waiting until the child is two or three for their first dental visit may be too late. They might already need extensive restorative work. The first dental visit for the child should be during pregnancy to make sure the mother has good oral health and low Strept mutans levels.

Several research studies have demonstrated the value of mothers chewing xylitol-sweetened gum three to five times daily to reduce their Strept mutans levels and consequently, reduce the chance for colonization in the baby’s mouth by fivefold (Soderling 2006, Nakai 2010). Intervening early is the best hope of stopping the caries process that if left unchecked will result in tooth decay, expensive restorative work and many extractions. In the case of my mother, it led to full arch extractions and a denture at the age of 17. Backing up to the point before the Strept mutans colonize the mouth and the first carious lesions occur is true primary prevention. Waiting to address the problem when dental decay has ravaged the mouth and expensive and extensive work is needed is too late. Early intervention is the key. Had my grandmother thought about the end result for my mother when her deciduous teeth first erupted, perhaps my mother could have had healthy teeth today rather than the denture she has now. The price of early prevention over a lifetime is worth much more than a purse.

Author’s Bio

Rhoda Kubicikis was born in the Philippines. She received AS in Dental Hygiene from Fairleigh Dickinson University and her BASDH from St. Petersburg College. She is received High Honors for her MHSc at Nova Southeastern University. She is active in her component, Vice-President for the Florida Dental Hygiene Association, and Atlantic Coast delegate for ADHA. This year she was recipient of the leadership workshop with ADHA’s Unleashing Your Potential in Chicago. One day a week she practices dental hygiene in a general practice in Fort Lauderdale. She is the Southeast Coast Regional Xylitol Educator for Wasatch Sales Force, the leading manufacturer of xylitol dental defense products. She also is trained in mass disaster and assists forensic odontologists in identifying deceased in three counties. Since 1987 she has been married to Alex and together they have raised three sons, Steven, Jordan and Ty.

3. Ford, personal communication, September, 2010
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