Having Moments with Seniors

Program contents and goals

- Discuss 5 common and mostly avoidable illnesses of functionally independent adults
- Describe lifespan vs. healthspan
- Explore the latest oral-systemic link evidence and oral disease
- List to age-related disorders and physiological changes associated with periodontal disease
- Determine ways to help family and friends become good oral caregivers to dependent elders

Are we prepared for the Silver Tsunami? http://youtu.be/LicPYDLd51M

Need a much greater focus on prevention

- Life span is how long we live
- Health span is how long we live with the best possible health

Primary prevention

- Entirely avoid the development of disease
- Eliminating the principal risk factors

Secondary prevention

- Detection early disease
- Stage at which intervention may lead either to an outright cure or to a significant reduction in damage

Tertiary prevention

- Reduce the risk of disease recurrence following the treatment
- Minimize the risk of disease-related complications

Action Step 1: Changing times call for changing language

Baltimore Longitudinal Study on Aging: http://www.grc.nia.nih.gov/branches/blsa/blsa.htm

- Normal aging can be distinguished from disease
- Change is normal, disease is not inevitable
- No chronological timetable of human aging

5 most common systemic diseases seen in functionally independent older adults

- Hypertension

- Diabetes
- Ischemic heart disease
- Dementia
- Arthritis

Action Step 2 Evaluate for Inflammation

Relationship of periodontal disease in Older Adults with Diabetes

- Periodontal disease
  - associated with poor glycemic control in pre-diabetic
- Uncontrolled type 2 diabetes
  - risk factor for severe periodontitis
- Treatment of periodontal disease
  - improves glycemic control in diabetic patients

The three-way street

- According to Robert Genco, "Obesity can intensify infections, such as periodontal disease; cytokines produced by fat cells are known to trigger insulin resistance, which can lead to type 2 diabetes.
- Diabetes, in turn, is known to increase the risk for periodontal disease. New research suggests that periodontal disease can affect a diabetic patient's ability to control blood sugar levels."

Metabolic Syndrome

- 2x the risk of developing CVD
- 5x increase in risk for type 2 diabetes

Fat is an inflammatory tissue

- Is Obesity an Oral Bacteria Disease? **http://www.ncbi.nlm.nih.gov/pubmed/19587155**
- Affects up to 30% of the US population
- Releases TNFα, C-reactive protein, and other cytokines
- April 2008 Journal of Clinical Periodontology Vol 35 Issue 4 P. 277-290 **http://onlinelibrary.wiley.com/doi/10.1111/j.1600-051X.2007.01173.x/full**

Hypertension

- Risk of dying of ischemic heart disease and stroke > progressively and linearly when BP > 115/75
- Normal BP age 55-65 have 80-90% risk of developing HBP by age of 80-85

Vascular Dementia

- Result of many small strokes that go unrecognized
- Episodic decline mental function, memory, judgment, functional ability
- Diabetes often a factor but HBP alone can cause it

Ischemic Heart Disease

- Responsible for 70% of deaths after age 75 years

Epidemiology, Consequences and Management of Periodontal Disease in Older Adults- Cardiovascular disease

- Panoramic radiograph study of 60- to 75-year-old found correlation between alveolar bone loss and an increased risk of experiencing CVD
- PD-induced gingival recession and subsequent root caries increased risk of cardiac dysrhythmia
- 1.5-fold increased odds of experiencing atherosclerosis and coronary heart disease in older adults who had experienced both periodontitis and tooth loss

Action Step 3 Find ways to keep your brain fit

Dementia

- Affects about 1% of people aged 60-64 years
- 30-50% of people older than 85 years
- Leading reason for placing elderly people in institutions
- Brain Fitness at **www.pbs.org**

Epidemiology, Consequences and Management of Periodontal Disease in Older Adults- Alzheimer's disease

- Diminished salivary flow and poorer oral health, recommended aggressive prevention of oral diseases as long as possible to maintain quality of life

9 habits of highly effective Brains

- Appreciate your brain's beauty
- Physical exercise enhances neurogenesis
- Take care of your nutrition
- Practice positive, future-oriented thoughts

- Thrive on learning and mental challenges
- Aim high. Always keep learning
- Don't outsource your brain
- Develop and maintain stimulating friendships
- Laugh often

Action Step 4 Recognize and report all kinds of abuse

Elder Abuse: The Opportunities and Obligations of the Dental Profession

- More than one million elders are victims of abuse every year

Physical

- Broken eyeglasses or frames
- Signs of being restrained, such as rope marks on wrists
- Caregiver's refusal to allow you to see the elder alone
- Unexplained signs of injury such as bruises, welts, or scars, especially if they appear symmetrically on two side of the body
- Broken bones, sprains, or dislocations
- Report of drug overdose or apparent failure to take medication regularly

Emotional Abuse

- Threatening, belittling, or controlling caregiver behavior that you witness
- Behavior from the elder that mimics dementia, such as rocking, sucking, or mumbling to oneself

What you can do

- Watch for warning signs that might indicate elder abuse
- If you suspect abuse, ***report it***

Action Step 5 Treat oral disease as wound care

Our focus must change to biofilm disruption and creating an oral environment favorable for total body health

Volatile sulfur compounds

- Stimulate bacterial growth.
- These toxic gasses have a systemic effect as well as a social effect.

Cranberry juice - stops the attachment of biofilm

Licorice Extract Suckers –removes cariogenic bacteria in the biofilm

Unhealthy vs. healthy biofilm

- Healthy biofilm <1% cariogenic bacteria neutral pH = 7
- Unhealthy biofilm high levels of cariogenic bacteria pH is often < 5

Seniors Are More Than Denture Care—A CAMBRA Approach

2 CE Units

Author: Patti Digangi, RDH, BS

LEARNING OBJECTIVES:

- Describe some basic concepts of aging and oral health
- Explore the impact of the latest oral-systemic link evidence and the relationship of oral disease to common age-related systemic diseases
- Identify and prescribe methods to manage dry mouth for older adults
- Define CAMBRA and ART
- Create evidence-based care plans for older adults

January 1, 2011, ten thousand of the oldest members of the Baby Boom Generation turned age 65. This was just the start. This same pattern will continue every day 365 days/year, for the next 20 years. Oral health conditions likely to be associated with the boomer or *new* elderly are apt to be complicated by a lifetime of wear and tear. Yet their problems are often less complicated than the oldest elderly who are age 80+. It is no longer appropriate to equate geriatric dental care with denture care. The elderly are not one uniform group. The baby boomers are redefining what it means to be older placing greater demands on the dental practice.

The boomer generation has kept more of their teeth than any preceding generation. Many, due to dental benefits, have experienced a high level of dental care and will demand, or at least desire, the same in their older years. They do not have the expectation of tooth loss. At the same time, often different care is needed for the 80+ group. Both groups hope for longevity combined with good health. However, among those aged 65 years and over there are sharp differences by income, with those in poverty twice as likely as those with higher incomes to have lost all their teeth. The dental profession can help older adults keep their teeth particularly as they relate to systemic conditions with newer concepts of care including Caries Management by Risk Assessment (CAMBRA).

Healthy Aging

Important concepts on aging can only be understood by looking at healthy, independently living people over a number of years. Most dental research comes from a disease-based model. This is also the case for most medical research yet not all of it. In 1958, William Peter, M.D., a retired physician and former missionary decided to donate his body to science while he was still alive. He wanted to study normal aging. This became the basis for the National Institute on Aging (NIA) Baltimore Longitudinal Study on Aging.[1] This ongoing study celebrated its 50th anniversary in 2008. Two conclusions were made. 1) Normal aging can be distinguished from disease. Though change is normal, disease is not inevitable. 2) There is no chronological timetable of human aging. We all age differently. These fundamental concepts mean there is a need to change our thinking about aging, disease and prevention. There is a trend in medicine and dentistry to develop more biological and tissue-preserving techniques and treatments. CAMBRA is one of those concepts moving into dentistry. These changes are especially timely with an aging population.

A State of Decay

Oral Health America (OHA) is a 501c3 non-profit organization with a mission to improve public health by eliminating oral disease, especially for the country's most vulnerable citizens. In 2000, OHA issued its first national report card on oral health and made several subsequent updates over the past decade. It's bad news all around for older Americans. OHA gave the nation a "D" for older Americans' access to key dental services. "Dental care for our nation's seniors remains in a state of decay," said Robert Klaus, then president of OHA. "Too many older Americans suffer in silence as their oral health and periodontal needs are neglected. They deserve better and we need to do more."[2]

The New Science of Caries – CAMBRA

Pre-1995 caries theories posited caries as attributable to the intersection of cariogenic bacteria in the mouth, particularly 1-2 specific pathogens; fermentable carbohydrates in the diet; and susceptible teeth. This is not correct. New science shows caries is a complex, multi-pathogenic biofilm disease.

First let's look at the bacterial portion. In the past, the evaluation of bacteria would use some method of culturing for a few single pathogens thought to be the cause of cavities. Strep Mutans and Lactobacillus can be thought of as markers for the dental caries infections yet current science has shown there may be as many as 32 different species of bacteria involved. Additionally, many of the bacteria which we previously thought were harmful are actually not playing as big of a role as certain other strains. All of these species live in a complex biofilm community, and any or all of them may be at play in any patient's caries infection.

The next portion is fermentable carbohydrates. A 2003 study showed the selection pressure for the biofilm that produces dental caries is not sugar availability but rather prolonged periods of low pH.[3] Additional 2009 studies demonstrated the microbial shift was directly proportional to the pH shift.[4,5] Simply put, dental caries is a biofilm mediated, pH specific disease.

The final portion is susceptible teeth. Science daily finds connections between caries and other oral infections with systemic health. Caries is not limited to teeth rather it involves the entire mouth potentially affecting the entire body.

Ongoing research continues to expand our knowledge of the caries process. This different view is the basis of CAMBRA which utilizes all available diagnostic data to assess the patient's risks for this disease, including: oral exam, radiographs, a risk assessment form, biometrics, and patient history. It is not a history looking for cavities rather looking for *risk* of caries and treating before cavitation occurs. CAMBRA represents an evidence-based approach to preventing, reversing and treating dental caries[6] before they affect systemic health.

Oral-Systemic Health

Former Surgeon General C. Everett Koop, M.D., has often been quoted saying, "You are not healthy without good oral health."[7] Oral health professionals must expand

our knowledge of the oral-systemic links and develop office protocols based on this knowledge. Discussions of the oral-systemic connections are not new. Nearly 100 years ago, the focal infection theory made similar connections. Practitioners at that time interpreted this systemic connection theory to mean the human mouth was the focus of infection and extraction of teeth was the answer to a wide variety of diseases. Focal infection theory fell out of favor in the mid-1940's and there was little interest in oral-systemic connections. This changed in 1989 when Mattila et al. published in the British Medical Journal, the *Association between Dental Health and Acute Myocardial Infarction.*[8]

Dentistry has been oral-systemic era for 20 years yet few practitioners have changed their protocols based on this knowledge. Oral infections have systemic implications and systemic conditions have a reciprocal impact on oral health. Cross-discipline and inter-professional interaction can create successful partnerships for better patient care. Alan R. Gould, D.D.S. said it this way, "We will soon witness the evolution of a practice of dentistry…. One can envision a system of health care in which physicians and oral health professionals will work together in an increasingly integrated and coordinated manner, providing diagnostic and therapeutic services to address a significant range of oral and systemic diseases."[9] An aging population often with more and more complex health issues is pushing this change. Risk assessment, the first key step in CAMBRA, starts with health histories.

Health Histories

Though normal aging does necessarily equate to disease, many older adults have one or more chronic diseases with associated medication management. These issues can impact the delivery of oral health care. Dental professionals need to understand the complexities of older adults and their possible special needs. In 2007, the American Dental Association created a program called Oral Longevity.[10] That program identified the ten (10) most common systemic diseases seen in functionally independent older adults including: arthritis, chronic obstruction pulmonary disease (COPD), diabetes, ischemic heart disease, hypertension, dementia, depression, osteoporosis and stroke. This is the top ten list but by no means exhaustive.

Before there is disease, there is health with risk for disease. This is well understood with heart disease. Many people take blood pressure and cholesterol medication to reduce the risk of a heart attack. In dentistry, risk assessment starts with an oral review of the health history with the patient or caregiver. What must be considered, no matter the age group, is many patients may not be able to read or understand the health history form. A news story was published about a retired school teacher admitting he was illiterate until the age of 48.[11] A *National Assessment of Adult Literacy* showed that 20% of the U.S. population is functionally illiterate with another 35% reading and comprehending only at a 6th-10th grade level.[12] It is quite possible that the person filling out the health history didn't understand many of the questions. In the case of dependent older adults, this lack of literacy must also be considered when interacting with caregivers. Legally, it is the duty of the oral health professional to gather complete patient health data; a filled out form alone may not be enough. A clear, complete understanding of the older person health status and medication profile provides important risk data for CAMBRA assessment.

Polypharmacy

Pharmaceutical advances have improved the quality and length of life for many patients. Dental professionals must recognize effects of polypharmacy. A thorough discussion of prescription and non-prescription medications prescribed as well as how medications are taken is paramount. Due to financial issues, older patients may be skipping doses, cutting pills or not refilling prescriptions.

Studies show about 30% of older patients have dry mouth. Don't let that statistic lull you into thinking dry mouth is something that is part of the aging process. Many xerostomic symptoms can be attributed to polypharmacy. We are likely to see an increase in dry mouth with our aging population. Dry mouth symptoms may not appear until salivary flow rate is reduced by as much as 50% of normal.[13] An interesting issue is though elderly patients are more likely to have dry mouth, they may be less likely to complain about symptoms. The challenge is when dry mouth is chronic and long term, people may not be aware they have it. Older patients with dry mouth can be as much as 3 times more likely to have caries as well as an increased risk for oral cancer and periodontal disease. Chronic dry mouth is strongly and independently associated with a reduction in a patient's quality of life resulting in loss of self esteem and other social problems.

Medication use is not the only cause of dry mouth. Other reasons include:

- **Cancer Therapy:** Chemotherapeutic drugs can change the flow and composition of saliva. Radiation treatment that is focused on or near the salivary gland can temporarily or permanently damage that gland.
- **Sjögren syndrome:** A chronic autoimmune disease in which people's white blood cells attack their moisture-producing glands. Today, as many as 4 million Americans are living with this disease. It often occurs in the presence of another autoimmune connective tissue disease like rheumatoid arthritis, lupus, or scleroderma. The hallmark symptoms are dry eyes and dry mouth.[14]
- **Nerve Damage:** Trauma to the head and neck area, from surgery or wounds, can damage the nerves that supply sensation to the mouth. While the salivary glands may be left intact, they cannot function normally without the nerves that signal them to produce saliva.
- **Other conditions:** Bone marrow transplants, endocrine disorders, stress, anxiety, depression, nutritional deficiencies, tobacco, drug abuse, alcohol use, and caustic mouth products.

Simple dry mouth really isn't simple as the following case demonstrates.

Case Study

Nancy, a 63 year old baby boomer, has a very bad case of dry mouth. She's had it for many years and drinks a lot of water, but it doesn't help. She visits her dental hygienist for routine six-month care, which consists of a cleaning, exam, and sometimes x-rays. When Nancy is asked, "Has your health changed since you were last here?" the hygienist turns her back

and washes her hands not seeming really interested in listening and more in hurry to get going with care. At the end of the appointment Nancy is told whether or not she has cavities and to floss regularly. Nancy thinks this is what routine hygiene appointments encompass; she doesn't know any different. She doesn't think her hygienist or dentist wants to know about anything else because they never ask.

Nancy has a complex health profile that includes multiple allergies, the most severe of which is an anaphylactic reaction to gluten. She carries an EpiPen, and has had reactions so severe she's been hospitalized for as long as two to three weeks to get her immune system stabilized. She uses a C-PAP each night for sleep apnea. Nancy suffers from migraines, gastroesophageal reflux disease (GERD), and has a family history of thyroid dysfunction, colon cancer, osteoporosis, glaucoma, and more. She takes 6-7 medications daily, using a nebulizer to deliver some of those medications. She has also been prescribed many other medications to be used as needed for migraine headaches.

Nancy was frustrated during her last dental visit because a bridge had fallen off as it had several times in the past. She also has decay by her front bonding. She asked her hygienist if dry mouth had anything to do with these changes. She got no real answer. She then asked if there was something she could do for her dry mouth. She was told to drink water, chew gum and rinse with mouthwash and of course the golden fleece of dental hygiene-she must floss. This information is not much help with a situation as complex as Nancy's. Water is not the same as saliva and though important to overall systemic hydration, water will not be enough to manage severe dry mouth. The type of gum does make a difference depending on ingredients like sucrose. Additional sugar with no saliva to buffer can make a bad situation worse. Mouthwash can and should be part of any caries management plan yet should be matched to the person. Using an alcohol based rinse might potentially worsen Nancy's situation. Floss does not make a dry mouth more comfortable and may irritate dry, sore tissue.

Nancy's dental practitioners didn't notice anything relating to her dry mouth, yet neither did Nancy until it became extreme. When she sought advice from professionals, they either didn't know, had forgotten, or worse, they thought they knew how to treat dry mouth but actually did potential harm with their advice. It is easy for us to recognize Nancy's problems through her story. Yet how often is oral dryness ignored or poor advice is given particularly to older patients?

Evaluating Saliva

Saliva is a remarkable fluid and a mirror of the body. Its complexity offers multiple opportunities for monitoring general wellness, assessing oral health, tracking systemic disease, and designing interventions to promote health. With a continually building body of research on the connection between systemic and oral health, knowledge about saliva and its value will expand exponentially with an aging population. Saliva has a critical role in the prevention and reversal of the caries process. With our growing knowledge of saliva as a diagnostic tool and the connections between oral and systemic health, monitoring saliva should become, like blood pressure screening, an important vital sign completed at every appointment.

Saliva testing starts with asking patients simple questions such as:

- Do you have any difficulty swallowing?
- Does your mouth feel dry when eating a meal?
- Do you sip liquids to aid in swallowing dry food?
- Does the amount of saliva in your mouth seem to be too little, too much or do you not notice?

A clinical assessment can start with a simple mirror stick test performed during the oral cancer evaluation. All it takes is to place the mirror against the buccal mucosa and tongue. If it adheres to the tissue, then salivary secretion may be reduced.

Presence of saliva does not indicate that the saliva is healthy. Testing for pH can be done using simple litmus paper. Collect a small sample of saliva by having the patient expectorate into a small cup and place the pH paper into the sample. Both the patient and practitioner can see if the older patient has acidic saliva. An acidic condition allows acid-producing, acid-loving bacteria to be produced. Providing ways to elevate the pH to counteract these inevitable periods of acidity will assist the older patient to prevent breakdown.

In office saliva testing systems are available to evaluate hydration, consistency, resting saliva pH, stimulated saliva flow, stimulated saliva pH, and buffering capacity. Understanding a patient's saliva characteristics can give the practitioner valuable information to determine treatment choices and strategies including designing an individualized remineralization plan - another part of CAMBRA.

A more specific test uses bioluminescence technology. All living cells use Adenosine Tri-phosphate (ATP) as their energy to perform whatever function that cell is designated for.[15] ATP is the energy molecule for all living cells, whether they are human cells, bacterial cells, fungal cells, etc. This technology screens for levels of all bacteria based on presence of ATP.[16] Acid-producing bacteria contain up to 100 times more ATP than non-acid-producing bacteria. A higher reading for the older adult indicates higher caries susceptibility.

These tests are not designed to add to costs for older patients; rather prevention and healing can reduce overall costs — another foundational CAMBRA concept.

Evidence Based Care Plans

Armed with this risk knowledge, professionals can design a program with the patient that is more than what Nancy was given. Deciding the appropriate products to use during in-office prophylactic and maintenance procedures may include the use of smart polishing pastes with amorphous calcium phosphate (ACP), Novamin, Pro-Argin or other remineralizing and desensitizing ingredients. The plan might include in-office fluoride varnish treatments or use of sealants. Often professionals only think of fluoride and sealants for children. Older patients can gain value with these treatments. The advantages are both physical and economic. Preventive care costs much less than restorative care and older adults will value less-invasive care.

A home self-care plan must be tailored to the comfort level of the older person. Rinses are not a one-size-fits all and are part of any regimen. Products with additional calcium, phosphate and fluoride can assist inadequate saliva to have the components needed to boost remineralization. Power toothbrushes can assist older patients that may have lost dexterity. Offering these va-

rieties of options will also help to manage dryness. Products containing enzymes that mimic saliva can be comforting.

Xylitol is a bulk sweetener that has similar sweetness and functional properties of ordinary table sugar but helps prevent decay. Xylitol is a 5-carbon structure that is non-fermentable by oral bacteria. Xylitol weakens acidic bacteria and helps reduce oral acidity. Use of xylitol gum, mints, and sprays can help bring the pH level under control as needed over and over each day as well as provide comfort for dry mouth. Only small amounts are needed for dental benefits. Xylitol is 40% lower in calories than sugar with a low glycemic index. Xylitol is safe, enjoyable, and can be a self-directed low cost preventive measure that older adults can readily find in most health food stores.

Testing, along with patient discussions, can guide the best evidence based choices. It is important not to overwhelm the person with too many options. Changing habits is difficult. Offering simple solutions like chewing xylitol gum or mints can create better prospects for success with older patients.

When Older Patients Can't Afford Care – ART

Unfortunately less than 2 of 10 older Americans have dental insurance making oral healthcare a luxury.[2] More complex health conditions and failure to maintain proper dental care can have adverse consequences to overall health. Older patients as well as other healthcare providers often lack knowledge of the oral-systemic links creating a "teeth are not that important" message. Dental health professionals believe in helping to create optimal oral health. When older adults can't afford this care, professionals' belief in optimal care can nearly blind them to other interim options. The consequences of poor oral health can lead to dehydration, malnutrition, pneumonia, aspiration and food taste alteration just to name a few of the myriad of problems. A CAMBRA approach to managing older patients with gross caries disease that cannot afford care is a procedure called Atraumatic Restorative Treatment (ART.) ART was first used in the 1990's in third world countries and was officially endorsed by the World Health Organization in 1994.[18] The two main principles of ART are 1) the removal of gross carious tooth tissues using hand instruments only and 2) restoring the cavity with a restorative material that sticks to the tooth. Currently, ART is performed using glass-ionomer as the restorative material. Glass ionomer acts as a physical barrier against biofilm/pH destruction and can be recharged with fluoride releasing into the adjacent enamel. This procedure is temporary in nature and not particularly attractive, yet the benefit of protecting both oral and systemic health outweighs the esthetics. This option is reversible and can be performed by dental hygienists and assistants in most states and is a viable option for older patients that cannot afford care.

Fundamental Thinking Changes Needed

Dental health professionals need to make fundamental changes in our thinking about aging, disease and prevention. An increasing number of individuals are reaching extreme old age, maintaining good health and functional status. Baby boomers plan to live forever. This cannot happen, in the words of Dr. Koop, without good oral health. A CAMBRA approach will not only save teeth, it can also save lives.

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Mastering Change:
Challenging Beyond Your Routine

Patti DiGangi, RDH, BS

People play Sudoku and work crossword puzzles to keep their brains sharp. Stretching our minds is a key to brain fitness. Yet for many of us, routine is the order of the day. Each day is somewhat like the plot of the movie *Groundhog Day:* we wake up day after day hearing Sonny and Cher singing *I Got You Babe*. Patient after patient, our chart notes and care are much the same — prophy/exam, prophy/exam, prophy/exam/4BWX, little bleeding, needs to floss more. This routine no longer serves our patients and can actually degrade our brain.

Back in our dental hygiene school days, we learned an amazing amount of information. In our skill development, we went through specific stages. Our skills eventually work on automatic pilot, so we no longer have to consciously think about the individual steps. We have mastered the skills. Or have we? Have you ever thought, "Now did I say this to this person or did I say it to the last person?" How well does that serve our patients? The sidebar scenario shows the type of dilemma we can face. The second question is, what does that mastery do to our brain?

The human brain is incredibly adaptive. Our mental capacity is astonishingly large, and our ability to process widely varied information and complex new experiences with relative ease can be surprising. The brain's ability to act and react in ever-changing ways is known, in the scientific community, as *neuroplasticity*. Because of the brain's neuroplasticity, old dogs, so to speak, regularly learn new tricks. Yet the brain's innate ability to change itself can be both positive and negative. The very plasticity that allows us to learn can also lead us to be stuck in a rut. The problem is that wisdom and mastery can make us lazy. We

About the Author

Patti DiGangi, RDH, BS, is a speaker, author, practicing dental hygiene clinician, and director of CareerFusion (www.careerfusion.net) a retreat providing personalized training in all facets of career evolution. She can be contacted through her Web site at www.pdigangi.com.

Ten Habits of Highly Effective Brains

1. Appreciate your brain's beauty as a living and constantly developing dense forest with billions of neurons and synapses.
2. Take care of your nutrition.
3. Exercising your body helps sharpen your brain: physical exercise enhances neurogenesis.
4. Practice positive, future-oriented thoughts until they become your default mindset and you look forward to every new day in a constructive way.
5. Thrive on learning and mental challenges.
6. Aim high. Once you graduate from college, keep learning. The brain keeps developing, no matter your age, and it reflects what you do with it.
7. Explore, travel, and adapt to new locations. This forces you to pay more attention to your environment. Make new decisions; use your brain.
8. Don't outsource your brain. Make your own decisions and mistakes. Then learn from them.
9. Develop and maintain stimulating friendships.
10. Laugh often, especially to cognitively complex humor full of twists and surprises.

Adapted from: Fernandez A. "The Ten Habits of Highly Effective Brains" Aug. 22, 2007, available at http://www.sharpbrains.com/blog/2007/08/22/10-habits-of-highly-effective-brains/

stop challenging ourselves as the brain ages partly because the challenge itself gets harder. This is the paradox of plasticity. It's like a mountain covered with snow — when you are at the top, there are a lot of different paths to take down. But once you take a path, the second time it becomes easier to take the same path, and the path eventually becomes a rut. The plasticity that allows us to learn new things is the same one that can keep us in a rut.

Article after article, CE course after CE course, we learn more about options like saliva testing, early oral cancer detection, risk assessment, remineralization techniques, the oral-systemic connection, and much more. We are reminded of the importance of routinely taking vital signs, complete accurate documentation, recording periodontal charting at every visit — those things we did during dental hygiene school yet are not part of our current routines. We come back from a course or are motivated by an article and with renewed energy we decide to make a change. Yet often we fall back into the same rut. We have probably seen it happen with our dentist employers, as well. They come back from a course excited and diagnose whatever they learned on everyone for about two weeks, and then they go back to the way they always did things.

Getting out of a rut requires consistent and progressive challenges. Changing our pattern of thinking changes the brain's structure. We have the ability to remodel our brains. To change the wiring in a skill, you must engage in an activity that is unfamiliar to you, yet related to that skill, because

A scenario ...

You attend a course on polishing. During your hygiene school education you were taught selective polishing with fine paste only. Your office and patients' expectations are to polish everyone. Your office manager orders only coarse and extra-coarse products. Though uncomfortable at first, you've grown accustomed to these products.

During the CE course, the speaker says continuous polishing can, over time, cause morphological changes in the teeth by abrading tooth structure away, and fluoride in the outer layers of enamel is removed through polishing. The speaker asks the audience to consider the aging of our patients. The baby boomers have kept their teeth their entire lifetimes, and many have had quarterly prophylactic procedures to remove microns of enamel with 20 times as much loss on the roots when polished with pumice-based products. This cumulative damage must be considered.

You learn of a number of therapeutic products that work differently than the traditional polish, including Enamel Care with ACP (Premier Dental, Plymouth Meeting, PA, www.premier.com), Clinpro with Perlite (3M ESPE, St. Paul, MN, www.solutions.3m.com), Cosmetic Polishing Restorative-CPR (IC Care, Silverdale, WA, www.iccare.net), and NuSolutions with NovaMin (Dentsply, York, PA, www.dentsply.com, and NovaMin Technology Inc. Alachua, FL, www.novamin.com) to name a few.

You're now even more confused and unsure of what to use. It seems easier to go with the flow at the office and just use the same stuff on everyone. Even if you want to make changes, how can you ever talk the office manager into it?

simply repeating the same activity only maintains already established connections. Many of us no longer use the word *cleaning* in relation to the care performed by a dental hygienist. Each time the term is used, it can make our care seem less professional. What word can we substitute that people will understand? Hygiene care is a broad term that better fits current views. That word transition, even for this author, was challenging and difficult to start. The change was not only about the word; it was about changing the thoughts behind the word. It was about using the plasticity of the brain and reprogramming it with new learning. It can seem easier to stay in the same rut, and we often readily fall right back into it. Yet the mental strain and stretch can assist in forming new and different synapses and connections to your neural assemblies. You can actually improve your brain function by doing the work it takes to make the change. The change can happen, and eventually you can even feel comfortable. Once mastered, the neurons initially recruited for the learning process are free to go to other assignments, to learn and stretch and grow more, which is a key to brain fitness.

Changing your brain to keep it healthy is also enhanced with regular physical exercise, good nutrition, laughter, friendships, travel, and more. (See Box 1) To keep on task with change, it can help to get an accountability partner such as a coach, mentor, or friend to kick your butt, encourage you, provide feedback, and hold you accountable.

If you want your brain to stay sharp, you have to keep challenging yourself. Avoid the temptation to fall back into the rut and take the easy way out by avoiding things you aren't already good at. It's important to embrace lifestyles and workstyles that will use your brain plasticity. Growth and change can help our patients, and more importantly, it can help keep your own brain fit.

References

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