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The Massachusetts Dental Society (MDS) is pleased to make this publication available to our member dentists as a way of communicating important oral health information to their patients.

Information in Word of Mouth articles comes from dental health care professionals of the MDS and other leading professional dental organizations, including the American Dental Association. If you have any guestions about specific content that may affect your oral health, please contact your dentist. For timely news regarding oral health, visit the "For the Public" section of the MDS website at www.massdental.org.

Your comments and suggestions regarding Word of Mouth are always welcome. All correspondence and requests for additional copies may be forwarded to Melissa Carman, Director of Publications, Massachusetts Dental Society, Two Willow Street, Suite 200, Southborough, MA 01745-1027, or email mcarman@massdental.org.

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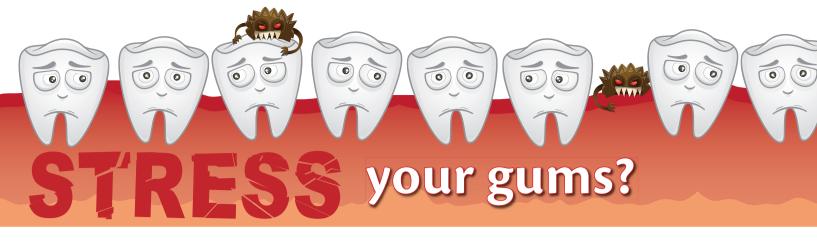


# Can stressing out

Stress is something we all face at one time or another, but does cramming for a test or feeling the pressure of bills really wear on our oral health as well as our nerves? Stress has already been linked to many serious health conditions, including heart disease and stroke, and now it seems that stress has been caught—this time red-gummed—in yet another unsavory act of hostility upon our bodies: gum disease. One recent Tufts University study claims that emotional stress contributes to gum disease because of its inflammation-causing effects.

Many of us know what it's like to be jammed for time, when brushing seems like minutes down the drain as we are running out the door, and we all know what a battle it can be to brush before bed when our tired limbs vote against it. Stress has a way of hindering us so that proper oral hygiene falls from top of mind to "if there is time." The result of this is bacterial build-up that leads to gum disease if it goes uncurbed long enough, which is why it's important to maintain good oral health habits.

Gum disease, often referred to as periodontitis, is an infection of the tissues that surround and support the teeth. The culprits for infection are bad (anaerobic) bacteria that build up in the form of plaque and tartar, releasing harmful toxins into the gums. These toxins forge pockets for bacteria to live in and multiply. Rampant bacterial pocketing starts the early stages of gum disease, commonly referred to as gingivitis. Once gingivitis develops, the body activates its defense mechanism by unleashing immune cells to fight off these bacterial intruders. The problem is that our body wants to expel all threats so badly that it goes into overkill mode and produces immune cells so numerous that they end up irritating tissue and causing gum inflammation. So, while the immune cells do kill the bacteria, they also end up inflaming the soft tissue and bone supporting our teeth, and that's bad. Not to mention,



when gums become inflamed, there is more pocket space around the teeth for plaque and tartar to move into, and the deeper these anaerobic minions get, the further gum disease progresses. It's a vicious cycle, and that's why it's important to keep this inflammation in check to keep gum disease at bay.

But just how does stress play a role in gum disease? According to the Tufts study published in the Journal of Biological Regulators & Homeostatic Agents, there are two ways that stress speeds up gum disease. The first has to do simply with human behavior: As a reaction to constant stress, we are prone to break from our clean routines and start eating sugary foods, smoking, and drinking more alcohol. Being of bad oral company, these habits all contribute to the bacterial build-up that leads to gum disease. The other way is biological in nature: When we feel stressed—say, when we are stuck in traffic and late for a meeting—our bodies release a hormone, cortisol, which instigates the production of more immune cells. These immune cells increase inflammation of the gums, which, as described earlier, speeds up the development of gum disease. This inflammatory response from the immune cells plays a significant role in gum disease, according to the researchers.

While the study's authors say that more research on the cause and effect of stress and gum disease is still needed, they believe that in the future, treatment of gum disease will

Don't let stress get your teeth and gums down: Make time for good oral care habits, and your teeth and gums will stay healthy and happy.

look not only at controlling the bacteria attacking the gums, but also at tempering the accompanying inflammation.

Whatever the case, do not let the oral effects of stress be one more thing that stresses you out. Studies show that adopting healthy habits, such as exercising regularly and eating a balanced diet, helps ward off stress-related health issues. Now, it seems, this includes oral health habits, so bear in mind that the classic two-minute brush, daily floss, and biannual checkup with your dentist are dental essentials for keeping your oral health in check.

If only it wouldn't be too forward to provide our employers with reports of studies on the ill effects of stress, we might all benefit more than we ever thought possible by getting additional time off or massage chairs at our desks. Looking on the bright side, by knowing that stress affects our oral health, we now have the upper hand—with a toothbrush and floss—to take more seriously the dangers of bacterial infiltration in our mouths, and to take it easier on our bodies.



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# X-RAY MARKS THE SPOT

ental X-rays, or radiographs, are an important method for diagnosis of dental disease and, along with a thorough clinical examination, can help dentists provide the best treatment possible to patients suffering from oral health issues. Many oral diseases cannot be detected on the basis of a visual or physical examination alone, and that's where dental X-rays come in. Dental X-rays are valuable in detecting problems in a patient's oral health not visible to the eye, including: caries (tooth decay) that develops between the teeth and gums or under fillings; periodontal (gum) disease; diseases in the bone or jaw; infections that develop under the gums or in the nerves of teeth; and some types of tumors. Dental radiographs can also alert the dentist to changes in the patient's soft and hard tissues. Patient safety, however, is the highest priority.

Dental X-ray equipment and techniques are designed to limit the body's exposure to radiation. Every precaution is taken by dental professionals to ensure that a patient's radiation exposure is As Low As Reasonably Achievable (the ALARA principle).

Many patients and parents question the need for dental X-rays primarily from concerns regarding radiation exposure. That's why it's important to know that the radiation a patient is exposed to from a dental X-ray is quite small compared to the benefits that X-rays provide in aiding accurate diagnosis or guiding a treatment plan. For example, patients who have bitewing

X-rays (two to four images) taken are exposed to about 0.005 millisieverts (mSv) of radiation. (The millisievert is a measure of the absorption of radiation by the human body.) Compare this to the roughly 3.2 mSv of radiation exposure that the average American receives from sources that occur naturally in the environment, such as cosmic rays, radon, cigarettes, and granite, according to the American Nuclear Society. Concerns still loom, though, because radiation at any level frightens many people.

However, the facts may help you eliminate concerns, as dental X-ray equipment and techniques are designed to limit the body's exposure to radiation. Every precaution is taken by dental professionals to ensure that a patient's radiation exposure is As Low As Reasonably Achievable (the ALARA principle). The lead apron placed on a patient

before an X-ray minimizes exposure to the abdomen and groin. Also, the use of a lead thyroid collar, which is recommended for women of childbearing age, pregnant women, and children, protects the thyroid from radiation. Female patients should also be aware that there is no need to delay dental X-rays if they are trying to become pregnant or are breastfeeding.

A patient needs to be proactive about his or her oral care, and this includes having concerns about the benefits and safety of dental X-rays. When seeing a new dentist for the first time, it's recommended that patients bring copies of previous radiographs, as this may help avoid unnecessary duplication of X-rays and limit exposure to radiation. Patients may obtain copies of X-rays from dentists who are no longer their dentist of record.

Many patients think there are state laws governing the frequency of X-rays. This is not the case. There are, however, standards of care that dentists utilize that are based on clinical evaluation, risk factors, and established guidelines to determine X-ray frequency. The American Dental Association (ADA) has a long-standing position that dentists should order dental X-rays for patients only when necessary for diagnosis and treatment, and has provided recommendations to help dentists ensure that radiation exposure is as low as reasonably achievable. The ADA also recommends that dentists use E- or F-speed film—the two fastest film speeds available—or digital X-rays, which have lower exposure than film X-rays, to minimize radiation exposure.

#### **Frequency Recommendations**

The U.S. Food and Drug Administration and the ADA established guidelines in 2012 that provide recommendations for dental X-ray frequency based on patient age and risk factors (see chart on page 5). These recommendations are subject to the dentist's clinical judgment and may not apply to every patient. For example, if the patient reports symptoms that appeared after the previous X-rays were taken, the dentist may need to take new radiographs to determine the cause of the symptoms and to advise on the course of treatment to alleviate the pain.

If you have any concerns about your child's or your own oral health, including diagnostic and treatment procedures recommended, don't hesitate to speak with your dentist.

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**Dental X-Ray Schedule** for Children, Adolescents, and Adults

	New patient	Repeat patient, high-risk, decay is present	Repeat patient, no decay, not at high risk for decay	Patient diagnosed with or has a history of gum disease	Other comments
Children (before eruption of first tooth)	X-rays should be taken if the teeth are touching and all surfaces cannot be visualized or probed	X-rays taken every 6 months until no decay is present	X-rays taken every 12 to 24 months if the teeth are touching and all surfaces cannot be visualized or probed	X-rays taken of areas where disease is seen in the mouth	X-rays to check for growth and development are usually not indicated at this age
Adolescents (before eruption of wisdom teeth)	A full series of X-rays is indicated when there is evidence of dental disease or history of extensive decay	X-rays taken every 6 to 12 months until no decay is present	X-rays taken every 18 to 36 months	X-rays taken of areas where disease is seen in the mouth	X-rays should be taken to check for development of wisdom teeth
Adults with teeth	A full series of X-rays is indicated when there is evidence of dental disease or history of extensive decay	X-rays taken every 12 to 18 months	X-rays taken every 24 to 36 months	X-rays taken of areas where disease is seen in the mouth	X-rays to check for growth and development are usually not indicated
Adults without teeth	X-rays are usually not indicated unless specific dental disease is clinically present				
Source: U.S. Food & Drug Administration and American Dental Association					

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Healthy teeth and gums are important for you and your children. Dental disease can affect your overall health, and it's important that you and your children regularly see a dentist to stay healthy. This is true whether you have a dental insurance plan or not. Even if you choose not to purchase dental benefits, you can still visit a dentist of your choice and ask if the office provides flexible payment options. Additionally, you have the option of purchasing dental insurance through the new health insurance marketplace, which was introduced last year as part of the rollout of the Affordable Care Act (ACA). These plans can help offset the cost of going to the dentist.

The ACA requires all health insurance marketplaces to offer dental plans for children, and most states will also offer dental coverage for adults. In Massachusetts, the Health Connector is the designated health insurance marketplace, and the Health Connector does offer adult plans.

Visit www.mahealthconnector.info/portal/ site/connector to learn more, review plans, and sign up for coverage. Open enrollment for 2015 runs from November 15, 2014, through February 15, 2015.

To help make the plan review process easier for you, the American Dental Association has compiled a list of helpful questions to ask yourself as you review the Health Connector's dental plans for your children or yourself:

- Will you and your children be able to see the dentist you want to see?
- How far do you have to travel to find a dentist who accepts the dental plan?
- What is the monthly cost for dental coverage?
- 4. Are your children eligible for help with the cost of going to the dentist under the ACA?
- Is there an annual limit to what the plan will pay for your adult coverage?\*
- How much of the cost does the plan cover for routine visits that may include dental cleanings, sealants, X-rays, and fluoride treatments?
- 7. How much of the cost does the plan cover for fillings, root canals, oral surgery (e.g., extractions), and treatment of gum disease?
- How much of the cost does the plan cover for major dental care (e.g., crowns, dentures, fixed bridges, implants, or treatment for disease of the jaw joint)?
- Is there a waiting period before the plan covers certain care?
- 10. Does the plan cover the cost of braces?
- 11. How does the plan treat referrals to dentists who are specialists, such as an endodontist for a root canal or a periodontist for gum disease treatment?

**Health Connector** 

#### If you have questions or need additional assistance:

U.S. Department of Health and Human Services Hotline (877) MA-ENROLL (623-6765)

(800) 318-2596

www.mahealthconnector.info/portal/site/connector

<sup>\*</sup> Children's dental coverage must be offered without an annual or lifetime maximum. Adult coverage could have an annual limit.

While you know that the holiday season can be tough on your wallet and your waistline, did you also know it can pose some danger to your gumline?

Holiday events and traditions, such as family and work parties, are often a big part of the end of the year. However, according to the Massachusetts Dental Society, some aspects of this upcoming holiday season may not bring comfort and joy to your mouth and can actually cause injury to your teeth.

Enamel, which is the outer-most layer of the tooth, is the hardest substance found in the body and it protects the inner part of your tooth from injury. When enamel is weakened, your tooth can become more susceptible to problems, including cracking and breaking. Therefore, you may not want to take a "crack" at putting certain items in your mouth. Accidentally biting down on small, hard objects—such as ice cubes, hard candy, or food decorations—can cause a cracked tooth. All of the biting force in the whole mouth is concentrated on the small area of tooth that comes into contact with the hard object.

Cracked teeth can also occur from teeth grinding, also known as bruxism, which can often be the result of holiday stress. The force of the grinding usually occurs while sleeping, which does not make for a silent night. Physical symptoms can manifest themselves through sore facial muscles or jaw joints. The grinding can eventually lead to a cracked tooth if the force is great enough or happens over a long period of time.

While many of us enjoy consuming seasonal holiday foods and drinks, use caution when eating or drinking anything overly acidic, sugary, or sticky. Acidic foods and drinks, such as citrus fruits and juices, wine, soft drinks, and sweetened mixed drinks, can actually cause enamel erosion over time. It's better to sip beverages through a straw to minimize exposure of the acids to the tooth enamel. Also, try to avoid sticky toffees and candy, as they can loosen or even remove fillings and crowns.

While giving and receiving holiday gifts can be enjoyable, they can also pose problems for your oral health. Many people use their teeth to cut through strings and tape, open packages, and remove tags from new clothing. These practices can cause your teeth to chip, crack, or even break. So always use a pair of scissors to open your child's new toy or remove that tag from a new sweater—never use your teeth.

By following these simple guidelines, you can spend this holiday season giving the gift of a healthy smile to yourself.

# EAT, DRINK, AND BE VERY GOOD TO YOUR TEETH







Accidentally biting down on small, hard objects—such as ice cubes, hard candy, or food decorations—can cause a cracked tooth.

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The health benefits of running—including increased cardiovascular health, weight control, and improved sleep—have been touted for years. In fact, a recent study in the Journal of the American College of Cardiology found that people who run as little as five minutes a day may live an average of three years longer than those who never run at all. While runners may have stronger hearts and leaner legs than sedentary people, can logging too many miles cause endurance athletes to come in last for oral health?

According to a study published in the Scandinavian Journal of Medicine & Science in Sports, triathletes who trained almost 10 hours per week were found to have significantly higher instances of tooth erosion than non-athletes. (Triathlons are endurance events consisting of long-distance swimming, cycling, and running intervals.) The researchers also found that, as with most things, moderation is key: The triathletes who logged more training time had more tooth decay than those who trained less.

The study of 35 triathletes and 35 control subjects consisted of oral examinations, oral health assessments (with special attention paid to caries and erosion), saliva testing during inactivity, and questionnaires about their eating, drinking, and oral hygiene behaviors. Participants were also questioned on their training habits, including their intake of beverages and sports nutrition while training. The high sugar content and acidity levels of sports drinks have long been linked to increased tooth decay in children and teens, and this may apply to the athletes in this study as well, since nearly half (46 percent) claimed to consume sports drinks during their workouts. The researchers believe that this beverage choice is one of the reasons for the high incidences of tooth decay and erosion.

"The triathletes' high carbohydrate consumption, including sports drinks, gels, and bars, during training can lower the mouth's pH below the critical mark of 5.5," says lead researcher Dr. Cornelia Frese in an article on *Runner's World Newswire*. "That can lead to dental erosion and caries." The pH scale measures how acidic or basic a substance is; the scale ranges from 0 to 14, with a pH of 7 being considered neutral, a pH less than 7 acidic, and a pH greater than 7 basic. (To give you a frame of reference, water, which is as neutral as it gets, has a pH level of 7.) The normal pH range for saliva is 5.6 to 7.9, according to the *International Journal of Drug Testing*.

#### For Good Oral Health, Don't "Carbo-Load"

Because they expend so many calories during the course of a long race or workout, endurance athletes, such as long-distance runners and triathletes, often need to replenish their energy reserves. Sports drinks use carbohydrates and electrolytes to help energize and hydrate athletes, but the same carbohydrates that help reinvigorate leg muscles can wreak havoc on teeth. When you drink a sports beverage, the bacteria that are already naturally present in the mouth convert carbohydrates (i.e., sugar and starch) into acids, which attack the enamel on your teeth and cause tooth decay. Many sports drinks also contain citric acid, which is known to break down calcium, making enamel even more susceptible to erosion. What's more, constantly taking sips over an extended amount of time, such as during a halfmarathon or marathon, means that the decay-causing acids stay in your mouth that much longer, coating your teeth and

increasing your risk for tooth decay.

#### Something in the Air

It isn't just sports drinks that played a part in the higher incidences of erosion and cavities for these triathletes. It turns out that the air they breathed contributed to higher decay rates—or more specifically, *how* they breathed. "The athletes breathe through the mouth during hard exercise," Dr. Frese tells *Runner's World Newswire*. "The mouth gets dry and produces less saliva, which normally protects the teeth."

Saliva, along with fluoride, is the mouth's primary defense against tooth decay. According to the American Dental Association, saliva provides high levels of calcium and phosphate ions at the tooth surface, enhancing protection of the enamel. Not having enough saliva to lubricate the mouth, wash away food particles, and neutralize the acids produced by plaque can lead to extensive decay.

In the study, both the triathletes and the control group were found to have similar saliva levels when at rest, but once the triathletes started working out, they produced less saliva. It wasn't just the quantity that made a difference in the health of their mouths, it was the quality. The saliva they produced while exercising was acidic, and the longer the workout, the higher the degree of acidity.

What does all this mean for the hard-core endurance athletes or weekend warriors among us? First of all, don't stop working out; the overall health benefits of cardiovascular exercise far outweigh the drawbacks. But just as you tend to your muscles with stretching, ice, and ibuprofen after a long run, you should give your teeth some post-workout TLC. First, be mindful of the amount of sports drinks you consume during your workouts and races. Try to cut down on the cavity-causing acids and carbohydrates in your mouth by alternating between sipping sports drinks and water while you're working out or racing. Water fights tooth decay by rinsing the acids from teeth, keeping the mouth lubricated, and aiding in the production of healthy saliva. Next, be sure to brush your teeth after every workout, especially when you've consumed sports drinks, to sweep away any acids that may be clinging to your teeth.

Exercise caution with Sports drinks: The same carbohydrates that help reinvigorate leg muscles can wreak havoc on your teeth.

In the long run, by adding these two simple steps into your fitness routine, you can help keep tooth decay at bay and make sure your mouth is as fit as your feet.

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Oral Conditions
Can Be a Pain in the

With more than 300 causes for headaches, no one is immune to that sharp sting behind the eye or dull ache around the temples, or in more serious cases, that debilitating throb of migraines. In fact, headaches are one of the most common ailments, according to the American Academy of Craniofacial Pain (AACP). Most of the time, headaches are a frustrating but temporary part of the human experience that can be relieved with over-the-counter pain medication. But sometimes it can be difficult to pinpoint exactly why that persistent ache is causing you so much pain. To get to the root of the cause, you may want to consider visiting your dentist, because headaches linked to oral health are more common than you might think.

Most of us are familiar with tension headaches, which are characterized by a dull aching pain accompanied by a tightness or pressure throughout the forehead or on either side of the head. They can sometimes be accompanied by tenderness of the scalp, neck, and shoulders. Tension headaches can rear themselves after a potentially stressful day at work, but can also be linked to the dental conditions of "tired bite" (jaw muscle strain) and teeth grinding.

Your jaw muscles are busy, contracting 2,000-plus times a day with every swallow. According to the AACP, swallowing requires that the upper and lower teeth come together firmly to brace the jaw against the skull. If you have a missing tooth or uneven bite, your jaw muscles work harder to bring your teeth together. This action can cause muscles to overwork, resulting in a tension headache. Surprisingly, poor posture can also angle the spine in a way that stresses the jaw joint and misaligns the upper and lower sets of teeth, leading to tired bite. Your dentist can correct an uneven bite and prevent future damage to teeth by using braces, other dental appliances, or surgery.

#### Don't Let Headaches Bring You to a Grinding Halt

If you find yourself waking up in the morning with a tension headache, you could be suffering from a condition called bruxism, the clinical term for grinding your teeth. Oftentimes, the grinding takes place when you sleep, so you may not even be aware that you're doing it. For some people, the grinding can be loud enough to wake up others or themselves. For others, it can be completely silent, leaving people baffled by inexplicable headaches and jaw pain or a dentist's diagnosis of worn-down teeth.

Bruxism is caused by an uneven bite or can be the result of stress. And if stress is the cause of the grinding, it is advisable to reduce your tension through exercise, meditation, or other techniques recommended by your doctor.

Headaches are also strongly linked to temporomandibular joint disorder (TMD). According to the National Institute of Dental and Craniofacial Research (NIDCR), an estimated 10 million Americans suffer from TMD symptoms, including: soreness or stiffness in chewing muscles and/or the jaw joint; radiating pain in the face, jaw, or neck; limited movement or locking of the jaw; and painful clicking or popping of the jaw joint. These symptoms may be the result of trauma to the jaw or temporomandibular joint, a misaligned bite, or possibly stress or bruxism, according to the American Dental Association. Some people suffering from TMDs have relatively mild forms, where their symptoms improve significantly or disappear spontaneously within weeks or months. But for others, the condition causes long-term debilitating pain, according to the NIDCR. The disorder can be treated in several ways, and your dentist will recommend the best treatment for you and may refer you to a physician or specialist.

If headaches are becoming more than an occasional annoyance for you and are occurring more regularly, persistently, and painfully, you should consult your dentist to determine if there's an oral basis for the pain and, if so, to obtain treatment. If you experience numbness, paralysis, disorientation, double vision, or inability to talk along with a headache, you should seek immediate medical attention.

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# TOOTH PICKS

#### Hip Hop for Hops

A recent study published in the Journal of Agricultural and Food Chemistry found that the hops plant, known for imparting a distinctive bitter taste and aroma to beer, contains substantial amounts of healthful antioxidants that could help fight cavities and gum disease. Scientists focused specifically on studying the leaves, called bracts, and discovered that extracts from the plant prevented the bacteria responsible for cavities and gum disease from sticking to the surface of teeth and releasing certain bacterial toxins. The study also found three completely new compounds, one already-known compound identified for the first time in plants, and 20 already-known compounds identified for the first time in hops, which will continue to be studied. About 30,000 tons of hops are harvested each year in the United States and only the flower and vine are used in beer production, while the bracts are discarded, making the future usefulness of bracts a distinct possibility in dentistry. Cheers to that.

#### Tiny Teeth, Big Brains

It's a phenomenon more than 2.5 million vears in the making: Homo sapiens (humans) are the only primates who have shown an increase in their brain size and a decrease in the size of their teeth. Why? According to researchers at the University of Granada, who compared the tooth and skull sizes of a broad range of primates—including the fossils of early humans—from various stages of evolution, the paradox has to do with changes in diet. Normally, if an animal's brain grows, its body's metabolic needs will as well, affecting the teeth. However, since humans have incorporated higher-quality foods into their diets—such as animal proteins, which are essential for greater brain function and growth—the body's overall metabolic needs have remained stable, inhibiting the evolutionary growth of teeth.

### Washington's Teeth: Wood Not, Want Not

George Washington, the first president of the United States and one of the founding fathers of the nation, is known for many things, but a beautiful smile is not one of them. On his inauguration day more than 225



years ago, Washington had only one original tooth in his mouth. The rest of his smile was comprised of a bulky set of dentures fashioned from other human teeth-not wood, as folklore has suggested. According to Michael Beschloss, a presidential historian and author, the dentures were painful and disfiguring—and a blow to Washington's self-esteem. "To him, the dentures were a mortifying sign of weakness," he tells the New York Times. "For years, Washington's dentures were kept out of public view to avoid marring his image." Washington's colleagues also noted how infrequently the president smiled or laughed, and that he sometimes hissed when he spoke. Now that's something your history teacher probably never taught you.

#### Toothbrush in Space

Most of us wouldn't pay more than \$5 for an ordinary toothbrush. But you might if it went into orbit! A clear Oral B-40 brush used by astronaut Jack Swigert aboard the 1970 Apollo 13 space mission was recently sold at auction to an anonymous buyer for \$11,974. The toothbrush never made it to the moon, but it did survive a harrowing seven-day journey into space that threatened the lives of three astronauts and was dramatized in the film *Apollo 13*.

# Sore Throat? Do You Still Need to Chuck Your Brush?

Hold on to your toothbrush after a bout with strep throat, because contrary to popular belief, it's not likely to make you sick again. A small study conducted by researchers at the University of Texas



Medical Branch at Galveston found no trace of *A Streptococcus*, the bacteria associated with strep throat, on toothbrushes used by study participants with the ailment, suggesting that the toothbrushes will not be a factor in the spread of the bacteria. In fact, *streptococcus* was found on only one toothbrush in the study, and that was the toothbrush of a healthy participant in the control group. To ensure optimum oral health, a good rule of thumb is to make sure to change your toothbrush every 3 to 4 months, or sooner, if the bristles become frayed with use.

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It's an important number to the MDS this year.

But to our more than 4,000 members, the patients cared for every day will never be just numbers to us.



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