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## **Can diet, environment and mother's health affect a baby in-utero and have any permanent affect on the teeth in the future?**

Aren't the Ultra-sound pictures of a baby in-utero amazing? As doctors are able to more clearly gaze at the growing baby, the miracle of baby's development is astonishing.

The primary dentition (baby teeth) begins to form tooth buds at 4 months in-utero. Sometimes, newborns greet their parents with one or more teeth already erupted! The eruption pattern is a timed sequence of emergence of pairs of teeth, first lower, then upper which is generally the same for all infants, regardless of race, creed or color; it is written into the genetic code of "Homo Sapiens." Amazing! The usual age for the bottom first baby tooth to erupt is about 7 months old. All the baby teeth are erupted by age 2-1/2 or 3 years old.

Around birth, the first permanent molar starts to form. The two front permanent incisors begin to form at 8 months old.

The universe for the baby in-utero is his or her mother. Everything the mother does affects the developing baby, including the developing teeth. Mother Nature has designed pregnancy so that the baby's development will take precedence over the mother's needs. The baby will take what is needed for development, even if this means harm for the mother.

The teeth need minerals to lay down the crystalline structure which forms enamel; these minerals include calcium, phosphorus, magnesium, sodium, iron and fluoride. Amino acids are needed to form the dentine and the nerve canals inside the teeth. If mom's diet is severely restricted, the baby teeth will be adversely affected. If something interrupts this crystallization, the teeth can have a bright, white spot or tan and beige discoloration in the visible enamel. The teeth will be more susceptible to decay and breaking. Without adequate vitamins and amino acids, the

roots cannot form ideally, and the teeth may become easily loosened. This is why pre-natal vitamins are so important as well as a diet rich in milk, fresh fruits, vegetables and protein.

Some mothers worry because morning sickness can be so severe that they may even lose weight early on; if the mom started as a healthy woman, the fetus will take from the mother what is needed for its development. So, I try to reassure moms-to-be not to worry: the morning sickness will pass and baby will be okay. If there is a major illness such as cancer and chemotherapy, the baby will be affected, including its teeth.

It is thought that little fluoride passes the placenta, so it is not recommended that pregnant moms be placed on a fluoride supplement, except if she needs a fluoride rinse for her own teeth.

Excessive alcohol can cause Fetal Alcohol Syndrome and can harm the tooth buds, causing misshapen, weakened and even missing teeth; the enamel can be hypoplastic and discolored. Second-hand smoke has been shown to damage the baby's teeth, almost doubling the cavity rate compared to babies whose parents did not smoke. Nicotine and its byproduct, cotinine, weaken the baby's developing enamel in-utero and after birth. Cavities are caused by bacteria, and the baby's immune system is weakened by second-hand smoke, making him or her less resistant to cavities.

Excessive drug intake can also permanently scar the baby teeth; this includes over-the-counter drugs, prescribed drugs and illegal drugs. Always ask the pharmacist before you take any drugs. Although most prescriptions will be okay, the tetracycline antibiotics can stain the developing teeth. Any illegal drug is highly unsafe for the baby, including its teeth.

Enjoy every day of your pregnancy, and remember:

Perhaps baby'll be a  
President,

Or sage with wisdom  
Heaven sent;

To be sure baby's smile is  
bright and clear,

Care for baby's teeth  
as they appear.

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## **Does a baby bottle or a sippy cup affect a baby's teeth?**

How excited we are when baby graduates from bottle or breast to sippy cup and then to a real cup ... and soon that baby is driving YOUR car down the driveway.

Anything which enters a baby's mouth has the potential to do good or to do harm. That which does the most good is the mother's breast. Humans are born with an instinct and desire to suckle; this action not only brings nourishment to the child, but it also develops the muscles needed for speech development; suckling stimulates the bones in the lower face to grow to their genetic potential; suckling has a psychological calming effect. I do not think we should discourage a baby's suckling time, up to age three.

We will discuss 4 items a baby suckles: 1) a bottle, 2) a pacifier, 3) the thumb, and 4) a sippy cup. The physical shape and make-up of the item suckled does impact its effect on the baby's developing mouth and teeth. A bottle and a pacifier are soft, and so do not have a lasting negative impact on the baby's mouth and teeth. I would recommend a pacifier which is approved by the American Dental Association or the American Association of Orthodontists. It may even benefit baby to have extra time suckling.

The thumb and the sippy cup are hard and cannot change shape when suckled; the mouth has to change its shape to conform to the sippy cup or the thumb. Both can cause an open bite, where the top front teeth do not come together with the bottom front teeth, if the baby suckles many hours per day. I do not recommend unlimited use of the sippy cup or the thumb.

The thumb cannot be removed, so it is especially difficult for the child to stop this habit. Many thumb suckers use that thumb for 23 hours

per day, even until the teen years. This can cause a pronounced open bite as well as a receding lower jaw. If an infant can be gently persuaded to take the pacifier, I would recommend this. If a 2, 3 or 4 year old is currently sucking the thumb, I would discuss this with your dentist on how to stop the habit. If gentle persuasion does not work, I recommend that the subject be dropped for awhile; do not badger the child.

What is of utmost importance is what is put into the bottle or sippy cup. Mother's milk is best, of course. I recommend only milk or water be used in the bottle or sippy cup. Juices are not needed by the baby; it is more important for baby to eat the real fruit, pureed if necessary. Juices can be introduced when baby can handle a real cup, at about age 3. Never, never, never put any soda pop into the bottle or sippy cup!!! Never, never, never put kool-aid or punch into a bottle or sippy cup. The sugar in these beverages are 4 - 12 teaspoons per 8 ounces, and babies simply do not need this much sucrose. The sugar sucrose is the culprit in dental decay.

Milk also has fermentable sugars called lactose and galactose. This can coat the baby's teeth, if the bottle is put into the bed with the baby. Never put a milk bottle into bed with the baby, because this many hours of fermenting lactose and galactose can cause rampant decay, even in infants. I recommend holding baby on your lap, singing to him or her, until the bottle is finished. A few more minutes of rocking and gentle massage helps baby transition to sleep. Take the bottle away when baby is placed into the bed. If there is a need for a bottle or sippy cup in bed, just put plain water into it. Baby can suckle without any fermenting sugars lingering in the mouth.

We celebrate our baby's growing independence as he or she graduates from breast or bottle to sippy cup and when he or she throws

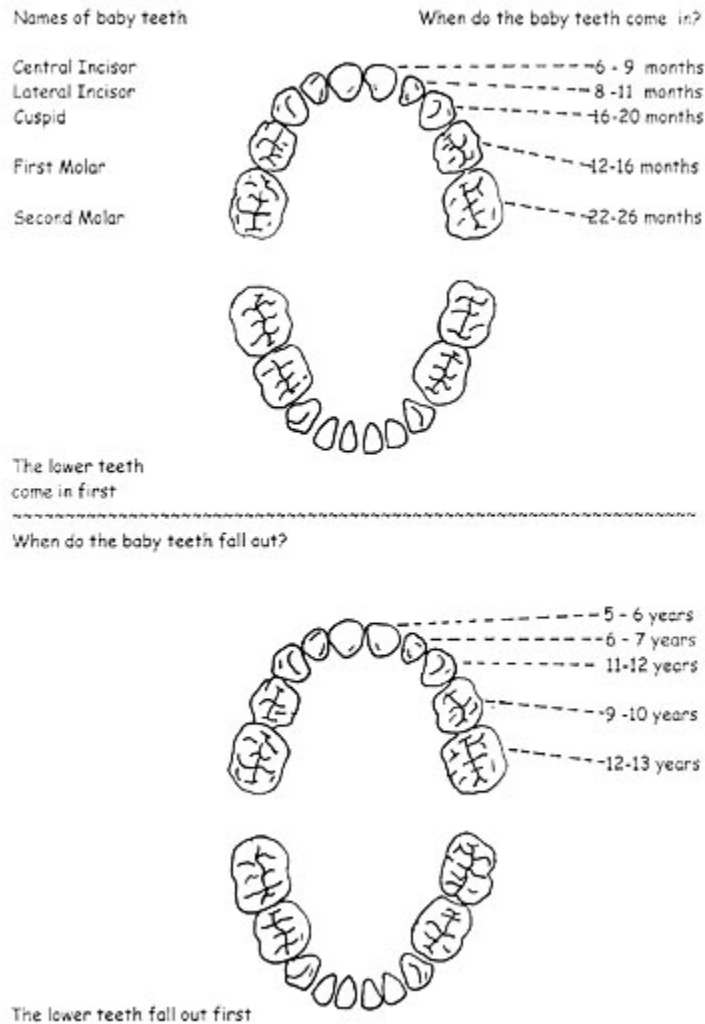
away that pacifier and "blankie." Remember these moments when he or she is truly, independently entering adulthood...and leaving you behind.

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My son is 18 months old. The pediatrician says he doesn't need to make his first trip to the dentist until he is about 3 years old. Is this too long to wait? What should I expect on this first visit?

C O N G R A T U L A T I O N S !! When you hold your baby in your arms for the first time, and those big eyes lock into yours, you fall hopelessly in love with life.

Did you know that baby's first tooth bud starts to form 4 months in utero? What mom eats and drinks mightily impacts the formation of baby's teeth and jaws. The charts below show when the "baby" teeth erupt.



WAHH!! WAHH!! WAHH!! Babies sure can be cranky when they are teething. Chew toys help, as do cooled teething rings. You can stitch the end of a baby wash cloth into a roll, launder and freeze it, and baby can drag this around the house, chewing on it. Don't worry, your son will find many things to drag around the house, chewing on them all. Over-the-counter acetaminophen and gels can sooth the gums through the worst of it.

Why are "baby" teeth important? Your child will eat so many more foods as the teeth erupt; the presence of healthy teeth contribute greatly to developing speech patterns; a baby's smile is so precious with that first tooth, and he or she will develop the huge variety of human expressions with a healthy mouth and teeth. Each tooth is indeed precious, and needs to be cherished.

As soon as you are entrusted with your precious miracle, there are effects riding on your every decision, including effects on the baby's teeth. Breastfeeding is best for the development of the chewing muscles and stimulating proper jaw growth.

He should have fluoride daily. Most metropolitan areas have fluoride added to the drinking water; call you county health department to find out; the pediatrician or dentist can prescribe a daily fluoride supplement, if your drinking water isn't fluoridated. Please do not put the baby to bed with a bottle containing anything other than water. This prevents many cavities.

Avoid sugary drinks and foods. Table sugar (sucrose on food labels) is the favorite food for the evil *Streptococcus mutans*, the bacteria responsible for decay. Sticky foods adhere to the crevices of the teeth, increasing decay. Wholesome foods, including fruits and vegetables and meats and crackers and dairy products contribute to healthy teeth.

As soon as the first tooth appears, begin the healthy habit of daily brushing. Of course, your son will mimic everything you do, so be sure to let him see you brushing and flossing. Mom or dad should brush baby's teeth. If toothpaste is distasteful for your son, use water. There are several toothpastes formulated for babies, and they have a bland taste and are not as gritty. Use no more than the size of a pea. I would sing a song as I brushed my darlings' teeth in little circles with a small, soft toothbrush:

"This is the way we brush our teeth, brush our teeth, this is the way we brush our teeth so early in the morning." And...

"This is the way we brush our teeth, brush our teeth, brush our teeth, just before bed time." Or...

"The bristles on the brush go 'round and 'round, 'round and 'round, 'round and 'round, the bristles of the brush go 'round and 'round all through your mouth."

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**Is it important for a parent to be with the child at a dental appointment?  
How is it handled when a child comes alone or with an Aunt/Uncle to the appointment?**

A great joy is to see the wide grin on a child's face, sparkling, white teeth flashing at us.

You are doing the right thing, taking your child to the dentist. I applaud you. The best time for a child to see the dentist is before there are any problems, about age 3. You don't have to tell the child anything about the appointment, except to say they will "tickle" your teeth. Dentists and hygienists are trained to talk to the children at their level and to present the dental appointment in a non-threatening manner. We use terms such as Mr. Thirsty (suction), magic toothbrush (polisher), squirt gun (water syringe), tooth-drier (air syringe), paint your teeth (sealants), Miss Sunshine (mouth light), Mr. Whistle (drill), pictures of your smile (x-rays), heavy blanket (lead apron), etc. In my office, I do not mind if the parent comes into the operatory, but some dentists and hygienists do not allow the parent back. I ask the parent not to talk to the child while I am treating the child, because the child can only listen to one person at a time, and that person needs to be the operators. I will say that children are much more co-operative when there is no one else in the room.

There are special dentists who treat only children called PEDODONTISTS. Often, their entire office is decorated for kids, right down to miniature dental chairs.

After a child is established in my office, other adults can bring in the child, and some teenagers come by themselves. Each dentist sets the policy for the individual office, but legally, we are advised to have the custodial parent bring the child to all appointments, since only the custodial parent can speak for the child. In the real world, and in my family, there are just times when a relative brings the kids to appointments.

I do recommend that you write a note, authorizing that relative to make dental decisions for your child.

We have a bulletin board to put up the children's names who come to our office, and we draw for 3 gift certificates per month for kids. We also have a treasure chest from which they can choose at prize for co-operating. I am often amazed at how good the kids can be in the dental chair, if procedures are simply explained to them before we start.

It is good for your kids to see that you are going to the dentist yourselves, and that you are brushing and flossing regularly. I truly believe the best gift you can give a child is a cavity-free mouth at age 18. So, make and keep those regular dental appointments - and have fun!

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**My son slipped in the bathtub and chipped a front tooth. He didn't cry, and there wasn't any blood. He doesn't seem to be in any pain or discomfort, so I decided not to worry about it. Do you think I should take him to the dentist? What, if anything, could the dentist do about it?**

Even babies with the most vigilant parents will experience injuries as they begin crawling, walking, climbing, jumping, swinging, rolling...are we talking about a human or a monkey, here? Injuries to the little monkey's teeth and mouth are common. I recommend a fluffy bath towel be laid over the tub's edge during bath time, along with a soft bathmat on the floor. Your son's tooth injury is not severe, because he did not fall far. If he had fallen from a car top, or down the stairs, there is likelihood that the injury would require a dentist. If the enamel fractures, don't worry about it; the enamel is .5-1.5 mm thick, so if the chip is smaller than that, it is probably in the enamel. Under the enamel there is dentine, which is often a pale yellow color in kids. This can cause hot/cold sensitivity, which your boy would let you know about. Also, dentine can decay rather quickly, so you'll want to keep the tooth especially clean. The harder the blow, the more likely that the root and/or nerve is damaged. If the nerve dies, the tooth will turn darker; there may be an abscess at the end of the root. An x-ray can show root fractures as well as abscesses. Often an abscess forms several days/weeks after the injury. You can check for this by gently holding up your son's lip. If there is a pimple where the gums stop and the lip starts, you must take your son to the dentist. An abscess left at the end of a root can cause harm to the adult tooth bud which is at the end of the root.

A general dentist can see your son, but there is a specialist especially trained to deal with babies; this is a PEDODONTIST. Some parents feel better going to a pedodontist, and your family dentist can give you names of specialists.

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## **How do you get a child to stop grinding his teeth? Cause? Solutions? If grinding doesn't stop, is there any harm?**

Raising children is a challenging task; growing up is a very challenging task, indeed.

Bruxism is not an uncommon problem for children as well as adults. This represents two harmful habits: clenching and grinding. Most children with this problem seem to grind while sleeping; it is out of their control. Even during the day, children are completely unaware that they are doing it. Observe your child during the day; if you see him/her bruxing, smile widely and simply say, "Open you teeth a little, honey." Then distract him/her with an activity; I recommend a physical activity such as 10 jumping jacks. I recommend a wide smile first, because the child will automatically smile back, and I have never known anyone who can bruxe and smile at the same time.

We parents are right to be concerned with bruxing, because this can cause the enamel to wear away ten times faster than chewing. Sometimes, stainless steel crowns have to be placed on the back molars to avoid the nerve inside the tooth from being exposed. Most often, though, the wear is not severe enough to require restorations.

The exact cause of bruxism is not known, but there are 3 theories:

1. The "local" theory suggests that there is something wrong with the child's teeth, such as cavities, abscesses, gingivitis or malaligned teeth. These malaligned teeth can cause a "bad bite," and the child constantly shifts to find the "ideal" bite.

So, first have the dentist check for any dental problems; have the needed restorations completed. The dentist can adjust the bite so that the teeth fit together better, and the child may then stop bruxing.

2. The “systemic” theory implicates the following: intestinal parasites, nutritional deficiencies, allergies, endocrine (hormone) disorders and sequelae to drugs, including too much caffeine.

So, I recommend considering the child’s diet. Make sure it is balanced with wholesome foods. I would eliminate all sources of caffeine such as soda pops and chocolates. I have had some luck when parents eliminate or substantially cut down on sugar (sucrose) in the child’s diet. A medical doctor can check the child for parasites, hormones and/or allergies.

3. The “psychological” theory recognizes that stress is the cause of bruxism. From my personal experience, I believe that the vast majority of bruxers do so to relieve stress. Children are under a lot of stress a lot of the time. We’d like to believe that childhood is carefree, but children have very real concerns about the difficult job of growing up. Sometimes, we parents can alleviate the stresses, such as providing a harmonious, soothing home with all the basic physical needs of the child being provided without question. We parents cannot eliminate all stresses such as having to get to kindergarten on the bus on time, or a sibling’s illness. What we can do is to help the child deal with the stresses of everyday life.

Always talk to your child, and really listen to him/her as an individual. Respond with questions such as “Why do you think your teacher sent you into the hall? What can you do next time to avoid this?” Sometimes you can start a dialogue by telling a story from your own childhood. Driving in the car can provide time for this, if the radio is off.

Some stress-busters that worked for me were: humor, laughing and smiling a lot; hugging and hand-holding; singing loudly together; and physical exertion. I had a kicking bag in the basement and a punching bag in the garage for the kids to use. Nerf bats and balls are good, too. If space and time allow, do the Hokey-Pokey and/or exercises such as

jumping jacks and squats for 5 minutes. Of course, outside activities such as kick-ball, playgrounds, hiking, biking, swimming, etc., are good.

I personally do not think TV, movies, video games and/or computers relieve stress. I limited my children's use of them ( My 3 children complained very loudly and often about their mean Mom, which upon occasion was stressful for me!)

Try getting ready for bed at the same time every night; always have a routine. I played soothing, classical music while the kids had a snack which included some milk product. If your child tolerates milk, it is a soporific (sleep-inducing); then they had a warm bath; then I or Dad read a story of their choosing while we held them. We always sang a sleepy-bye song to them, while rubbing their backs while they hugged a stuffed animal.

Some of my patients have used this routine, and after 3 - 4 weeks, the bruxing lessened. If the child has severe emotional problems, there will be many other symptoms besides bruxism, and the dentist or medical doctor may refer you to a child psychiatrist.

If all else fails, dentists do make bite guard out of plastic to be worn at night. These do protect the teeth, but have to be changed as the child's mouth changes. There are some children with handicaps and disorders (especially musculoskeletal) whose bruxism cannot be otherwise managed.

For many children, bruxism stops inexplicably when the first permanent teeth erupt at around age 6-7.

You sound like a very caring Mom, and your child is lucky to have you as a parent. Of course, we parents must never forget the miracle our child represents and the privilege it is to participate in our children's lives.

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## How important is it to wear a mouth guard during sports?

Sports are a great way to stay fit and have fun. But, there is certainly a risk of injury whenever there are bodies slamming into each other, walls, balls and floors. Injuries to the face are common in any sport. Many injuries to the mouth can be avoided or lessened with the faithful use of an athletic mouth guard. Many states mandate the mouth guard be used in certain athletics such as football. The following sports should require the use of a guard: acrobatics; basketball; bicycling; boxing; extreme sports; field hockey; football; gymnastics; handball; ice hockey; inline skating; lacrosse; martial arts; racquetball; rugby; shot-put and discus and javelin; skateboarding; skydiving; soccer; softball; squash; surfing; volleyball; water polo; weightlifting; and wrestling.

Thousands of dollars in dental treatment can be avoided with the faithful use of a mouth guard. Also, trauma to the lips and cheeks is lessened with the mouth guard in place. Broken jaws have been avoided.

A mouth guard needs to be durable and tough. It should be comfortable and properly fitted. There are 3 types of mouth guards:

1. A ready-made or stock mouth guard.
2. The "boil and bite" type which is formed in your mouth to your teeth.
3. A custom-made mouth guard provided by the dentist.

Usually, the guard covers only the upper teeth, but there are reasons for the dentist to recommend a lower mouth guard and even situations when both jaws are protected. I do recommend the custom-made mouth guard, but it is more expensive. An adequate compromise is the "boil and bite" guard, if you very carefully follow the directions.

If you take good care of the guard, it will last a long time. Be sure to brush it every night with regular toothpaste and toothbrush. You can soak it in an antiseptic mouthwash overnight, to kill the bacteria which can live in the plastic. Be sure to store it in a hard, plastic case. Avoid any hot temperature, even inside a closed car in the summer. The heat can distort the plastic.

If there are cracks, tears or holes in the guard, get a new one. The plastics come in many colors, even multi-colored and with sparkles. Many of my patients like neon stripes, and it is quite a surprise when they smile.

For more information go to "[www.sportsdentistry-iasd.org](http://www.sportsdentistry-iasd.org)".

Have fun with your buddies, train and practice hard, and protect those precious pearly whites.

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**Is there really a gum that will help my teeth? I do chew sugar-free gum, like you advised.**

Great! You've switched to sugar-free gum, and that makes me happy. Gum chewing actually increases the saliva output, which is beneficial to the mouth.

There are two gums which are good for the teeth.

The first is sweetened with XYLITOL™, a sugar substitute which has been found to prevent the formation of cavities. In a study done in Finland, the children borne to mothers who chewed Xylitol™ gum had a lower level of the bacteria known to promote cavities than the children whose mothers did not chew Xylitol™ gum! The National Institutes of Health's data supports the anti-cavity benefits of Xylitol™. The original flavor of TRIDENT™ GUM contains xylitol™. There are other brands available, also; ask the pharmacist for those.

Number two is Trident White™, a new gum on the market which contains calcium and phosphate in a proprietary molecule called RECALDENT™. This is derived from a protein found in cow's milk. By the way, teeth are made up of calcium phosphate crystals. Remineralization is the process of replacing minerals lost from the teeth by acids left on the surface. This acid is made when sucrose is digested by the bacteria Streptococcus Mutans. If the acid sits there long enough, a cavity will form.

Chewing sugarless gum with RECALDENT™ can reverse the demineralization in the early stages. Calcium and phosphate bathe the enamel and the enamel absorbs these minerals, strenghtening the teeth, even stopping cavities. Trident White is sweetened by the sugar substitutes Sorbitol™ and Manitol™

All gums do list every ingredient on every package, including the sweetener used. Sucrose and high corn syrup are two sweeteners to avoid.

So, I urge all readers to purchase gum with Xylitol in it, and to consider also chewing RECALDENT™ as well. Both of these gums are formulated by the TRIDENT Company, and you can reach them at 800-524-2854.

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**My friend at work is having all her silver fillings removed and replaced with white. She's trying to talk me into doing this. I have 7 silver fillings. What do you think??**

In the past, gold, silver or porcelain were the filling materials which were strong enough to resist the chewing forces. White, plastic fillings are bonded into the tooth, and they are now strong enough to withstand chewing forces.

If you look in most dentists' and their families' mouths, you will see gold and porcelain fillings in the back teeth. The gums love gold and, of course, porcelain is beautiful. Patients who decide not to have gold or porcelain often do so because of the cost.

Silver fillings contain a small amount of mercury. This is combined with the metals such as silver, palladium, copper, and tin. When the mercury binds to the metals, it becomes inert, not reactive like the liquid mercury inside the old thermometers. The final filling is called amalgam. This has been used for decades, and every scientific study has shown amalgam fillings are not injurious to 99.99999% of the population. There is a very few verified cases where the patient is truly sensitive to the inert mercury or to one of the metals used.

The population most exposed to amalgam is not the public, but dental personnel. Even after years of working with amalgam, dentists and their staff do not show any harmful effects.

According to Dr. Albert Kingman at the National Institutes of health, "Our findings do not support the hypothesis that exposure to amalgam produces adverse, clinically evident effects." This was based on a study of the military.

"The bottom line," says Dr. James W. Albers of the University of Michigan, "is that there was no association between abnormal neurological signs and amalgam exposure."

The NIH concluded, "Concerns regarding the safety of silver-mercury amalgam fillings continue to be raised in the absence of any direct evidence of harm." Dr. Daniel M. Meyer of the American Dental Association Division of Science, notes, "Amalgam is a safe dental restorative material. The ... report by the Life Science Research Office, which extensively reviewed the literature,... concluded that amalgam is safe." (Go to [www.lsro.org](http://www.lsro.org) and click on "Review of Dental Amalgams" for more information.)

In my office, I use gold, porcelain, amalgam and bonded white fillings. Your friend should realize that the plastic fillings may have to be replaced sooner than the amalgam fillings due to breakage.

Many patients want white fillings for cosmetic reasons, and I think this is a valid concern. I do not recommend that patients have all their silver fillings replaced if the fillings are still functioning and are intact and the teeth have no symptoms. In the future, there may be other materials developed which are more durable and kinder to the tissues, but we dentists will still recommend gold and porcelain to patients as the "ideal" restorations.

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## **I might buy an automatic toothbrush. What do you think?**

PREVENTION! PREVENTION! PREVENTION!

99.9% of dental disease is preventable by excellent toothbrushing and flossing, good nutrition with the elimination of sugar, fluoride and regular visits to the dentist. PREVENTION: it's so easy to preach it, and yet, it's so hard to do.

Anything which helps people remove the plaque from their teeth is a great idea and a sound investment. All studies show that automatic toothbrushes remove much more plaque and food than hand-brushing for the average American. These are especially beneficial for anyone with any handicap, because less manual dexterity is required. These power tooth brushes are also advised for patients with braces, bridges, implants or any other extensive dental restorations in their mouths.

I do recommend that you brush for 3 minutes twice a day, or more, with the bristles aimed for the gumline. I recommend that you floss once a day, or a least twice a week. For a mouthwash, I recommend Peroxyl or Listerine. If you do not have fluoride in your water, use a daily fluoride rinse such as ACT. Phone your county health office to see if there is fluoride in your water, or ask your dentist.

Plaque is the byproduct of the bacteria *Streptococcus Mutans* and sugar. Other foods can also produce plaque, although not as readily. The bacteria releases acid and produces long, sticky chains of sugar molecules; these stick to the teeth and trap the bacteria and acid against the tooth and gumline. Decay can start on the enamel and gingivitis can start along the gumline. Within 24 hours of sitting on the tooth, the plaque begins to be mineralized from saliva and fluids which pass by as they are drunk. This is called calculus by the dentist and is called tartar by the patient. The calculus can continue to increase until the gums are pushed away from the teeth and periodontal (gum) disease progresses.

There are many brands of power toothbrushes in the marketplace. Some are: Sonicare™, CyberSonic™, Oral B™, Braun™, and Crest Spinbrush™. The prices are spread over a wide range, yet any will do a good job. The less expensive seem to break down sooner.

Yes, I think an automatic toothbrush would be a wonderful tool for you to use to prevent dental disease. YOU still have to commit to taking it off the shelf and using it faithfully, no matter how busy and hectic your life gets. Only YOU can prevent dental disease.

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## **Are the whitening products good for your teeth? Does that help keep your teeth healthy?**

*“What sunshine is to flowers, smiles are to humanity” -Joseph Addison.*

A cheerful, radiant personality is reflected in a brilliant smile, so it follows that many people want to improve their appearance by whitening their smiles.

There are two classes of stains: 1) Stains which are internal. Examples of these are the darkening of a tooth which needs a root canal from trauma and staining from drugs such as tetracycline at a young age. 2) Stains which are external, sitting on the surface of the tooth. Most people have darkening teeth as they age due to external stains from cigarettes, coffee, tea, colas and other foods and drink.

Both stains can be whitened, but the dentist has to supervise the removal of internal staining.

*“As the sun warms the sand, so a smile warms the heart” - Emerson Davis.*

The ingredient which whitens the teeth is Carbamide Peroxide. It is an oxidizing agent which removes organic matter between the enamel rods. Thusly, it can only work on natural enamel, not on crowns, veneers or fillings. If there is plaque left on the teeth, the product does not work well. So, the teeth should be professionally cleaned, with the dentist making sure that there is no cavities, loose fillings or any gum disease. The patient has to brush and floss thoroughly and completely in order for the product to work its best.

There are several methods by which the carbamide peroxide is applied. The least expensive is at-home products which work quite well. However, the patient must follow all directions very carefully and exactly. I have seen patients want to hurry the result, so they used the product 8 hours instead of 2, ending up with abraded gums or other bad consequences.

The fastest and least complicated method for the patient is in the dentist office, with a special, high-powered light. The dentist or hygienist does this, and the time required is about an hour, with the patient simply lying back in the dental chair. This is also the most expensive, but some people prefer no hassles.

The whitening can last 4-5 years, depending on the patient's staining habits. But, the "touch-up" required to return the teeth to their whiteness takes very little time.

***"Friendship begins with one smile" – Dr. Jessica Rickert***

There can be some side effects. These are of a short duration and are reversible. Common side effects are teeth which are hot/cold sensitive and gum irritations. A fluoride rinse can lessen or eliminate the temperature sensitivity; a warm salt-water rinse will help the gums; occasionally, an analgesic is needed.

Carbamide peroxide is a form of hydrogen peroxide and is quite safe. Several dental products have had these peroxides as part of a formula and have been used for many years. The gel is buffered to a pH of 6.8, with 7.0 being neutral. (Caution: it is advised that pregnant or nursing women do not use this product. There is simply no research which has been done to determine its safety in these circumstances, and to be cautious, women are advised to wait. There have been no reported side effects to any mother or baby when this product has been inadvertently used.)

So, Linda, if you're looking to boost your self-confidence with a whiter, brighter smile, go for it.

***"The best smiles are the ones we share" - F. Scott Alan***

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**You are always telling us to go to the dentist for regular check-ups. I live on the reservation, and it is so hard to get an appointment for my kids and me at the dental clinic. I'm frustrated!**

I can understand your frustration. Here you are, trying to do the right thing, and stumbling blocks are being thrown in your path.

There is much you can do at home. Try to eliminate the sweets and soda pops you give the kids. At least, limit them to the evening meal. Try to get the kids to eat the healthy foods such as meat, bread, potatoes, vegetables, fruits, etc. Supervise your kids' brushing and flossing. Always remove the plaque before bedtime. You can use an over-the-counter fluoride mouth rinse such as ACT™ according to the directions. Do not smoke around your children, because second-hand smoke may likely increase the cavity rate in children.

There is going to be a national shortage of dentists, beginning in 2005. Many dental schools have closed in the past 10 years. The Universities give as their reason that it is too expensive to educate a dental student.

There are rigorous requirements to get into dental school, and many students today do not want to meet those requirements. If you know a student who is strong in math and science, encourage that student to pursue a career in dentistry.

According to the American Dental Association, the Indian Health Service dental program is short at least 90 dentists. This is especially hitting Alaska hard. In the future, it is likely that dentists may not take emergency patients, on or off the reservation. So, it is important that you keep trying to become established at a dental office or clinic as a regular patient before an emergency occurs.

Some Tribes are working very hard to get the dental care for their members that is needed. Have you talked to your tribal council

members? Writing a letter may help. I know that tribes are very concerned with the dental health of their members, as is the Indian Public Health Service.

These are your children, so you have to hang in there and keep trying to get them the dental care they need. Don't give up, even if you are frustrated. There is no one else who is going to care as much for your kids as you do. They are lucky to have you in their corner. Keep trying.

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**What is a preventative antibiotic, and why does the patient have to take “pre-meds” before the dental appointment? Are they prescribed to all patients?**

This is such an important question for you to understand. A pre-medication is an antibiotic taken before a dental appointment to prevent infections. The usual dose is 2000 mg of Amoxicillin one hour prior to the appointment for adults. There are other antibiotics used, if you are allergic to Amoxicillin.

There are many harmless bacteria in your mouth, harmless as long as they do not penetrate the surface of the tissue. If you have decay, an abscess, or periodontal (gum) problems, there are millions of harmful bacteria in your mouth. All dental procedures, except maybe x-rays, cause bacteria from the mouth to go under the tissues and into the blood stream. These bacteria stick to artificial joints and to heart valves in certain conditions. The bacteria are hidden, of course, and get lots of food and water from the blood stream. So, they multiply and multiply, and by the time the patient has symptoms, there is much damage done. Always ask your medical doctor if a pre-med is recommended for you. Your medical doctor knows your individual needs.

Bacteria do not stick to healthy heart tissue and does not stick to healthy joints.

Some patients, such as those on chemotherapy, immunosuppressant drugs and diabetics, cannot resist infections. For them, pre-medication with antibiotics is often recommended. The antibiotic is in the entire system in one hour, and kills any bacteria which may enter the bloodstream.

The best way to guard against problems in the body is to maintain an extremely clean mouth through daily brushing, flossing and

professional dental cleanings. Cut way back on eating sugary foods and drinks. Harmful bacteria love that white sugar (sucrose)!

An older gentleman came to my office with an emergency toothache. We x-rayed and determined that I could extract the tooth. After carefully checking his health history, I anesthetized, did the extraction and sent him home. His wife called back 1/2 hour later, telling us that he had TWO artificial knees. Apparently, he had forgotten and had checked "NO" when asked if he had any artificial joints. So, I called his medical doctor right away, and the gentleman was placed on a longer course of amoxicillin. He did heal nicely, and everything turned out well. I asked his wife to always accompany her husband to any future dental or medical appointments.

Always remind and doctor or dentist that you have a heart problem or artificial joints. Sometimes, the dentist and medical doctor have to confer to decide the best treatment for you. Good luck with your dental care.

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**I had a root canal done, but I can still feel the tooth. It's not painful, but isn't this tooth dead?**

Because of the root canal procedure, called ENDODONTICS, most teeth can now be saved. There is nothing like the patient's very own tooth for function and esthetics.

The tooth is surrounded by the PERIODONTAL LIGAMENT which are fibers tinier than a single hair, hundreds of them suspending the tooth in the bone. The fibers compress each time you chew, then they relax. Alongside the ligaments are hundreds of nerve fibers. These keep you from chewing too hard and thus keep you from breaking a tooth. The nerve fibers let you know where the teeth are positioned during the chewing cycle. This is called PROPRIOCEPTION. This is what you are feeling in that tooth. The tooth cannot distinguish hot or cold, sweet or bitter.

A root canal removes all the living tissue inside the tooth. This is accessed through an opening in the enamel and dentine. The nerve canal space is filled with blood vessels, capillaries, connective tissue and nerve fibers. Damage can occur from a large cavity, trauma, many past restorations to the same tooth and idiopathically, meaning without any explanation or reason. The nerve will finally die. The soft tissue inside the tooth tries to swell, but the tooth and bone are hard, so the swelling exits out the end of the root. The body reacts with an inflammatory response. This is an abscess. Often, the patient is in severe pain with throbbing. Sometimes, though, the abscess is discovered with routine x-rays, and the patient remembers only mild discomfort in the past.

The whole purpose of the root canal procedure is to remove the damaged soft tissue. The inflammation will then stop, and the patient will feel relief. The nerve space cannot be left empty, and the dentist fills it with gutta percha and sealer paste. The patient can see none of this, as it is visible only on x-ray.

The dentist cannot see how the root canal is going except with x-ray or a fibro-optic microscope. Mostly, the dentist does the root canal by feel. The canal is three dimensional and convoluted. It is not expected that the dentist can always get 100% of the nerve, but the dentist tries to shape the canal a certain diameter and length, and this is usually enough to "cure" the tooth. IF the abscess at the end of the root doesn't heal, there is another procedure called an APICOECTOMY. The dentist may refer you to an ENDODONTIST, a dentist who only does root canals, for this surgery. Basically, the abscess is surgically removed from the root end, as is inflamed bone and soft tissue. The end of the root is sealed, and a few sutures are placed. The gums will heal quickly, but the bone can take up to 6 months to heal; this depends on the individual patient's healing response. The tooth might be sensitive to hard biting during this time.

After a root canal, the patient is strongly urged to have a full crown placed, because the tooth becomes brittle and can break. Many patients are using teeth which were root canalled and crowned over 30 years ago.

Sometimes patients are afraid, but most root canals are very routine, and I have patients who fall asleep during the procedure. In fact, at one party I was describing the weird noises people make when they snore, and a passerby asked, "Just how many times have you been married?"

I quickly replied, "Once, and happily so ... I was talking about patients who fall asleep in my dental chair!"

It is a lot of time in the dental chair, and it is expensive to have a root canal done, but it is a miracle of modern dentistry that we can save hundreds of teeth for many, many years.

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**When we were children, our mother would make us use ALUM if we had canker sores. Is this still a good product to use or does another product work better?**

Gosh, you must be really old! The first mention of alum was recorded in 1325; it was written about in literature by Chaucer in 1386. Alum is a white, transparent salt; its chemical name is aluminum potassium sulfate ( $\text{AlK}(\text{SO}_4)_2$ ). Its uses include dyeing, tanning skins, sizing paper and fire-proofing. It has been used in this country since 1850 for home canning and pickling. Alum also adds crispness to home-baked goods.

When mixed with a fine clay, a paste called alum cake was formed. This was applied to wounds and sores; its astringent properties withdrew the water from the tissues, reducing the swelling; being a salt, it also was antibacterial. These are anti-inflammatory properties which hurried the healing process.

Alum may be available today in some pharmacies and some groceries.

There are two common afflictions in the mouth: Canker sores and Cold sores.

CANKER SORES are found on the moveable parts of the mouth - the tongue, inside the cheeks and lips, often in the folds of the tissues. Very seldom are they on the roof of the mouth or on the gums. Trauma to the mouth is often the initiating factor.

The cause of canker sores is unknown. Half of the people get them in high stress situations. Hey - let's just eliminate the stress from our lives, relax, quit working and take it easy ... although no money is also very stressful, eh? Other causes are a malfunction in the immune system; sometimes women get them at certain times of the menstrual cycle; or allergies and reactions to foods such as citrus foods and chocolate. Very rarely in this country a deficiency of vitamin B-12, folic acid or iron may be

the cause. Genetic studies indicate that susceptibility to recurrent outbreaks of canker sores may be inherited, which partially explains the tendency of the disorder to be shared by family members.

Canker sores are NOT contagious and last from 10-14 days. There is NO cure. But, localized pain may be so severe that talking and eating and drinking are difficult. It is very important that the patient eat and drink, so that that body can obtain the nutritional building blocks needed to heal itself. Frozen and cold soft foods and liquids can help. And, for those people who cannot stop talking ...

There are many over-the-counter products which can help during the most painful times. Some gels and pastes are Anbesol™, Benzodent™, Cankaid™, Cankare™, Champho-Phenique™, Kank-a™, Glyoxide™, Orabase™, OraJel™, SensoGard™ and Tanac™. Some mouthrinses available are Amosan™, Hygienic™, Listerine™, Perimix™, PerioRinse™, Peroxyl™, Oxyfresh™, ST-47™, Ulcerease™ and Viadent™. Apply with a new Q-tip™ each time. Two toothpastes supposedly reduce the frequency of outbreaks, and these are Viadent™ and original Rembrandt™. If symptoms are extremely severe the dentist can prescribe a tetracycline mouth rinse. For only rare patients are steroid drugs prescribed in consultation with the medical doctor.

The other common type of sores in the mouth are COLD SORES, also known as FEVER BLISTERS. They are caused by various types of the herpes simplex virus; the virus can live, hidden, in the body's nerves for a very long time. Being very CONTAGIOUS, touching, kissing or sharing eating utensils can spread them. There are cases of Herpetic Whitlow, which is cold sores around the nail bed, on the fingers. DO NOT touch any cold sore. I suppose you could get Herpetic Whitlow around the nail beds on the feet, if you put your foot in your mouth. Cold sores last 10 - 14 days and are

most likely found on the gums, roof of the mouth as well as the outside of the lips or nostrils.

There are three stages this disease goes through: 1) just before the outbreak, there may be a tingling, itching or burning sensation at the site where the sore will develop; 2) a group of small, fluid-filled blisters appear, break and coalesce together to form a large sore (most contagious now); 3) a scab or a yellow crust forms before healing. They do not seem to scar afterward. Factors that contribute to the outbreak of cold sores are: sunlight, tanning beds, fever and illness, stress, fatigue, windburn and chilling. Some women report getting them at certain times of their menstrual cycle.

Of course, eliminating the above factors will lessen the likelihood of cold sores occurring. Wear sunscreen and a hat, at the very minimum. Keep the lips and nostrils lubricated, so there are no cracks on the surface. Lysine, an amino acid available at health food stores, has been advocated as lessening the frequency and severity and duration of outbreaks. This has not been proven in rigorous studies. The virus likes the amino acid arginine; so you might eliminate the following foods from your diet: chocolate, cola, peas, peanuts, cashews and beer.

Pain during an outbreak may be such that people cannot eat or drink or talk. It is urgent that soft foods and liquids be consumed so that the body can have the nutritional building blocks it needs to recover. Frozen or cold food and liquids are easier on the patient.

There are many over-the-counter gels and pastes which will help, because they are anti-viral: Abreva™, Viractin™ and Zilactin™. A prescribed mouthwash called chlorohexidine has helped some. The dentist can prescribe several anti-viral creams: Zovirax™, Denavi™r and Penciclovir™. Apply with a new Q-tip each time. There are capsules taken for an extended period of time which may eliminate the cold sores

for some people: Zovirax™ and Valtrex™ capsules. A dentist can apply Viroxyn™ directly onto the sores, and this hastens healing for some.

Be sure to read and follow the directions precisely. I personally recommend that you throw away your toothbrush after an outbreak, and buy a new one. I'm sure you can handle that.

There is a lot of research going on, to try to eliminate this problem. Promising is INTERFERON which is currently being tested on patient to ascertain its effectiveness in treating the first outbreak, and possibly preventing any other outbreaks in that individual's life. A vaccine is being developed.

Let's all take a lesson here, and keep your foot out of your mouth.

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## **How can I avoid puffy and bleeding gums premenstrually?**

The female body undergoes many hormone changes to ready it for this process.

A few days before menstruation, you may notice several changes in your mouth, including swollen, bleeding gums, reddened soft tissues and canker sores. These oral manifestations are due to the changing hormone levels of estrogen and progesterone. Both of these hormones affect blood supply to and water retention in all bodily tissues. There also is some influence on the body's immune system. Many women notice no changes at all.

In the mouth, there can be an exaggerated response to any plaque or tartar present. So, the first thing to do is to brush and floss your teeth thoroughly and often. DISCLOSING TABLETS are available from your dentist or your pharmacist, and these are vegetable dyes which clearly show where plaque is missed by your brushing and flossing. Second, reduce the amount of sugary, processed food in your diet, because the numbers of bacteria which form plaque increase dramatically when sugars are consumed. Try to increase the raw fruits and vegetables you eat. Try a multivitamin daily. Third, get plenty of rest and sleep, to boost your immune system.

Fourth, there are products you can use the week before menstruation to lessen the tissue responses. VIADENT™ toothpaste and mouth rinse may help, and you can use the rinse 4 or 5 times per day. For three or four days, take 500 mg of calcium and 100mg of vitamin C; both help maintain healthy gums and bone.

Fifth, stop smoking and limit the amount of alcohol you consume for a week before your period.

If you are still having problems, consider having you teeth cleaned 3 or 4 times per year. Be sure to mention you concerns to your own dentist; there are prescription tablets and mouth rinses which may help.

We have been wondrously created, and the rhythms of the female body are still a mystery to us, just as the why and wherefore of the rhythms of much of nature remain unknown to us.

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**I had to have my knee replaced last year. Now, my dentist has me take antibiotics before my appointments. Why?**

The miracle of joint replacement has allowed so many people to regain freedom of movement without pain. The artificial joints are made of a synthetic material which is not as smooth as cartilage, tendon and bone, especially when blood flows by.

If there are bacteria (germs) in the blood, they stick to the artificial joints and multiply. When bacteria enter the blood stream, it is called bacteremia. One way bacteria can get into the blood stream is through dental and surgical procedures, through dental infections and in other ways.

The best way to guard against this is to maintain an extremely clean mouth through daily brushing, flossing and professional dental cleanings. Before the dental cleanings or any dental procedure, your dentist might prescribe antibiotics for you. There are several types that are prescribed; the most common is 2000 mg of Amoxicillin one hour prior to the dental appointment. This will allow a high enough blood level of the antibiotic to be reached so that there will be no bacteria to stick to the heart valves or to artificial joints.

Always remind your doctors or dentists that there has been a heart problem or a joint replacement.

I'm glad the knee replacement has worked out well for you, and good luck on your dental care.

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## **As a diabetic, what can I do to improve my dental health?**

I commend you for taking action to try to prevent diabetes from damaging your oral health. The most common problems associated with diabetes are: tooth decay, gum disease, salivary gland dysfunction, fungal infections in the mouth, lichen planus, delayed healing and more infections, and taste impairment.

Everyone has bacteria in the mouth; these are in a delicate balance and most are harmless. When diabetes is not controlled, high glucose levels in saliva cause "bad" bacteria to thrive. Specific bacteria are the cause of decay and gum disease. Diabetic patients who do not control this disease react more severely to the plaque and tartar around the teeth. This over-charged inflammatory response causes severe and rapid gum disease which destroys the soft tissue and the bone around the teeth.

Oral candidiasis, a fungal infection, appears to occur more often in diabetics, including denture wearers. Diabetics do take more antibiotics because of frequent infections, and long use of antibiotics can lead to fungus infections in the mouth and elsewhere. This is also called THRUSH, and white and red patches appear in the mouth that may become sore. If present on the tongue, the patient often has a burning sensation which interferes with taste. Denture wearers should soak the denture in Listerine at least twice a week, for 3 hours.

I do recommend to my diabetes patients that they have their teeth cleaned 4 times per year. Fluoride in the office and at home can greatly benefit diabetics. Occasionally, diabetics use a daily anti-bacteria mouth rinse as well as oral antibiotics.

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## How does diabetes affect dental work?

There are so many diabetic people who lead fascinating, busy lives. Yet, their lives are quite changed once the diagnosis of diabetes has been made.

People with diabetes have trouble regulating blood-sugar levels. The natural hormone INSULIN moves the blood-sugar glucose out of the bloodstream and into cells; the cells use the glucose for energy. Excess sugar in the blood causes the blood vessel walls to thicken and weaken. Normally, oxygen and nourishment quickly pass through the blood vessel walls into surrounding tissues, including the oral cavity. The thicker walls slow down this flow.

Type 1 diabetes affects young people and type 2 affects adults. Insulin is not produced correctly by the pancreas in these patients.

The blood-sugar levels needs to be regulated, and this can be done in several ways. Weight-control, diet and exercise help to regulate blood-sugar levels. First, active muscles absorb glucose more efficiently. Second, obesity causes the cells to not respond properly to insulin. And, third, a patient's diet directly affects the blood-sugar levels, according to the amount of sugar the patient eats or drinks. Fourth, the medical doctor may have the patient use insulin or other drugs daily as the patient monitors the blood-sugar level.

Diabetics develop infections more easily and quickly throughout the entire body; and they do not heal as well or as quickly as those without diabetes.

Diabetics have a greater incidence of more severe periodontal or GUM disease than the rest of the population. As many as 20% of the juvenile diabetes have some form of periodontitis. Without treatment, the body fighting this chronic infection can throw off the blood-sugar levels

even further, causing a cycle of worsening oral infection and wildly fluctuating blood-sugar levels.

A recent study also demonstrated that root canals do not heal as well in diabetics; nor do extraction sites; and there have been problems with implants in diabetics who have not controlled their blood-sugar levels.

As diabetics lose their teeth, they begin to eat softer, processed food which can cause difficulty in following an ideal diabetic diet. Again a cycle is set up, whereby eating less raw foods can cause the blood-sugar levels to fluctuate and the diabetes is not controlled, which leads to more tooth loss which leads to eating less raw foods ... etc.

Diabetics do not have to lose their teeth. I advise many patients to have their teeth cleaned every 3 months, so that gum disease can be prevented and any other problem can be found when it is very small and quickly treated. Also, the daily oral hygiene we discussed in a previous column is absolutely necessary for diabetics; they must brush three times a day and floss once. Sometimes, I have them use special toothpastes or rinses. I also recommend that dental appointments be made in the morning, about 1 hour after breakfast; and I ask that the diabetic bring a snack with them, because sometimes they need it after the appointment.

With the correct diet, ideal weight, lots of exercise, meticulous oral hygiene and a little extra dental care, you can look forward to a full life and a full set of teeth.

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**Being a diabetic, am I a candidate for implants instead of my partial plate? Explain procedure, cost, by whom and do dental plans cover it?**

Implants are fairly new to dentistry; they are a wonderful improvement over partial and full plates. Implants are so close to the feel of natural teeth, because they are anchored in the jawbone itself. A natural tooth is a marvelous, fascinating biological wonder; humans can exert 300 pounds per square inch in force at the cusp tips. Thorough chewing is where digestion begins. The implant can closely approximate this.

The implant is a cylinder made of titanium, coated with hydroxylapatite. The implant is placed surgically into a prepared opening in the jawbone; it is not screwed in. The osteoblasts are cells which begin the healing process in bones, and they grow into and around the implant. The coating attracts and promotes cellular healing. The implant is enclosed in the bone and gums during these 4 - 6 months. When an x-ray shows that the bone has filled in, the gums over the implant is removed, and a healing cap is placed for several weeks. Usually an oral surgeon does this.

Then, the dentist places a post into the implant and a full crown is cemented onto the post. A full gold crown is highly recommended, but, of course, the patient wants a tooth-colored restoration, a porcelain-fused-to-gold crown, which is fine.

The implant is unlike a tooth in that it is rigid. A tooth actually flexes quite a bit when chewing. A natural tooth is suspended from the bone to the root via the periodontal ligament. This comprised of thousands of stretchy, cushiony fibers less than the diameter of a hair, surrounded and filled with water. Being made out of rigid metal, there is no flex or give with an implant. Most patients do not feel this when they use the implants to chew, so there can be no clenching or grinding from the patient.

It is likely that an implant will last 10 - 20 years. There are several reasons an implant might fail, but often it is because the junction where the implant meets the gums breaks down. Perfect oral hygiene helps prevent this, because the number and type of bacteria are lessened in the mouth. There can be implant failure with no known cause.

The cost of implants is approximately \$2200.00 per tooth; I do not know of any insurance plan which covers implants. I had a young patient who was congenitally missing 10 adult teeth, which we had documented through x-rays when he was 6 years old. At age 16, his parents and he elected to have implants placed, rather than having him wear a removable partial denture. I thoroughly documented every detail of his condition, but the insurance company repeatedly refused to cover any of his implants.

There are contraindications to having implants placed, and these include: diabetes, bruxism/TMJ, smoking, osteoporosis, advanced periodontal disease, past trauma to the jaw bones, and various bone abnormalities. There is an evaluation before the implants are placed, and a controlled diabetic can be a successful implant patient.

Many of my patients are thrilled with their implants, so if it is determined that you are a candidate, I encourage you to consider them. Enjoy your food and keep smiling!

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## How does cancer treatment affect dental health?

Chemotherapy often uses bisphosphonate drugs intravenously. Examples are Aredia™ and Zometa™. The drugs affect the bone. While on chemotherapy, invasive dental procedures should be avoided. For example, if a tooth is extracted, these patients may develop Osteonecrosis of the Jaw. This means that the jaw around the socket starts to break down and die. The destruction of the bone by the body continues and can result in the patient losing all or part of the jaw. Rarely, the patient can die.

Typical signs and symptoms of Osteonecrosis of the Jaw include, but are not limited to: pain, swelling of the gums; loosening of the teeth; sores on the gums which will not heal; heaviness and numbness of the jaw; drainage and exposed bone.

To avoid problems, the patient is strongly urged to have all dental care done prior to cancer surgery and chemotherapy. The patient should, also, thoroughly brush and floss the teeth; other hygiene practices such as a water pik or anti-microbial mouth rinses can be considered.

Ideally, the patient will have had excellent dental care for years prior to the diagnosis of cancer, as well as excellent oral hygiene. Then, cancer treatments do not have to be put off because of poor dental health.

You can get more information by phoning the Novartis Company at 1-800-521-9445 and request "Taking Care of Yourself While Living with Cancer": pamphlet # ONC - 8155 - 01.

Dear readers, you are so precious, and I do not want anything bad to ever happen to you. So please, recognize how vital good dental health is, and take care of those pearly whites.

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**My daughter has just been diagnosed with cancer. They are doing surgery, and then chemotherapy. The nurse said Trina should go to the dentist right away, before surgery if possible. Why?**

Just as diseased teeth can affect a person's health, an illness in the body can affect the teeth. Specifically, the treatments for cancer can be detrimental to your daughter's dental health. I hope that Trina has had her teeth checked, cleaned and treated every 6 months in the past. Hopefully, there are no major problems. If her mouth is totally healthy, Trina will recover more quickly from the surgery and treatments. Trina will also be able to more quickly eat quality food, and this aids in healing.

There are several reasons why oral conditions are worsened during cancer treatment. The first is the surgery, where a tube is placed through the mouth. Actual physical damage can occur to weakened teeth. If a tooth breaks off, the anesthesiologist and surgeon have to stop and find the tooth before proceeding. If a tooth is aspirated into the lungs, more surgery is required. The second reason is after any surgery, many patients can't even tolerate brushing or flossing, so any gum problems or cavities will progress quickly.

Thirdly, radiation and chemo are hard on the mouth. A condition known as RADIATION CARIES is when cavities progress exceedingly rapidly and become so large as to destroy the entire tooth. Why does this happen? Many times, the saliva is slowed or stopped; the body's natural bacteria can be killed, so that dangerous microbes then overpopulate the mouth. The mouth tissues may be so sore that many patients eat only soft foods or drink fluids only. A fifth side effect of some chemo is vomiting, and the stomach acid is very harmful to teeth.

It is not uncommon for us to have to extract teeth after cancer treatments, although the surgeons recommend that we wait 6 months before doing any major dental treatment.

I always see patients like Trina immediately, and even re-arrange my schedule, to treat any and all cavities and gum disease. I apply professional fluoride and make custom, plastic trays for the patient to take home. One tray is made for the upper and another is made for the lower arch. These trays are similar to athletic mouth guards, with space for fluoride gel to cover the teeth. She would apply fluoride every night inside the custom tray, and place in her mouth for 1 or 2 minutes, until her surgery, trying to strengthen the teeth.

If the mouth is sore, or the patient is nauseous during chemo, I recommend an antimicrobial mouthwash such as PEROXYL (tm). I also advise using BIOTENE (tm) products during chemo, because the mouth becomes so very dry.

As soon as is possible, drink lots of water and eat raw fruits and vegetables. If toothpaste is problematic, then use warm water on the brush. Even a q-tip in warm water can be moved along the gum line to remove plaque. The custom, plastic fluoride trays can be used as soon as the patient can tolerate them.

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**I'm a pack-a-day smoker. My doctor has me using Zyban and Nicorette gum. What kind of mouth problems can I expect?**

Hooray! I am so glad that you are trying to stop smoking. Keep on quitting until forever, and you'll be successful.

As I have explained in previous columns, smoking and chewing tobacco are very harmful to the mouth and throat, including the gums and teeth. Second-hand smoke has also been found to damage the teeth and gums of those around the smoker.

There are many aids to help you to stop smoking. Zyban™ is an oral tablet which has been used to treat anxiety. Wellbutrin™ contains the same drug, Bupropion HCL™, slow release. The drug lessens the desire for nicotine and can suppress the urge to light up. There is no nicotine in Zyban™, and I could not find any effects on the mouth. Just don't open the pill bottle with your front teeth!

Nicorette™ gum is available without a prescription. It contains all the ingredients in regular gum and is artificially sweetened. The gum also contains 2 mg or 4 mg of Nicotine.

Nicotine is harmful to the teeth and gums and oral tissues. In the smoked nicotine, there is greater harm due to the heat which accompanies the nicotine. Most cigarettes in the USA are cured with sugar, and this is the sucrose the harmful bacteria use. Also, molecules in smoke are more rapidly absorbed than from chewing gum; this is why smokers' teeth stain so quickly. So, the nicotine in the gum is "less harmful."

Nicotine constricts the blood vessels, and this can reduce the soft tissue's resistance to inflammation. Nicotine in many patients does reduce the salivary flow, resulting in a dry-mouth. Soft tissue problems and decay are accelerated in a dry mouth. It is also a cancer-causing substance.

The good thing about Nicorette™ gum is that the patient is trying to stop smoking or chewing, both habits being more harmful than the gum. We do recommend that all smoking and chewing tobacco be stopped when you use the gum. The 2 mg gum is for those who smoke under 25 cigarettes per day. 4 mg is for those who smoke over 25 cigarettes per day. Use the gum over 12 weeks, according to this chart:

Weeks 1 to 6 →1 piece every 1 to 2 hours

Weeks 7 to 9 →1 piece every 2 to 4 hours

Weeks 10 to 12 →1 piece every 4 to 8 hours

It is not recommended that you use the gum longer than 12 weeks.

You need to chew the gum according to these instructions: Chew the gum for about 1/2 minute, then “park” the gum. Chew for 1/2 to 1 minute whenever the urge for a cigarette hits you. Do NOT chew continuously. “Park” the gums in different areas of the mouth for the time period recommended. The gum should be “parked” for most of the time. Use a maximum of 12 pieces per day.

Foods with acid in them will decrease the absorption of nicotine in the mouth, so avoid these foods and drinks.

Medical doctors are very careful in recommending this gum. It is not recommended for patients with HIGH BLOOD PRESSURE, DIABETES, IRREGULAR HEARTBEATS, STOMACH ULCER, or who use ASTHMA medications. It can also interfere with certain drugs.

Be so very careful with the gum. If children or pets chew the gum, it can be extremely harmful to them. Nicotine is a drug with pronounced, harmful side effects. If you have any unusual side effects, call the doctor immediately and stop using the gum.

The only way to be successful in your effort to STOP SMOKING is the keep on quitting. I am cheering for you!

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**My brother was arrested for meth production. The dentist at the jail said he has to have 15 teeth extracted, but he's only 23 years old. Do you know anything about this??**

Methamphetamine is a highly addictive drug made of possibly lethal chemicals. Addicted users very quickly develop a condition known as "meth mouth." Usually, the addicts are young people who very likely had good to excellent dental health before using "meth."

Meth mouth presents itself with many teeth rotted to the gum line, brown and black spots where the teeth were a few months ago. The gums are also often infected.

Methamphetamine dries the saliva up, letting the bacteria grow unstopped in the mouth, with a great increase in acid. Meth triggers a drive for more and more sugar, candy bars, pop, cookies, anything with sugar in it. White table sugar has sucrose in it, and this sucrose is the favorite food of the harmful bacteria which cause cavities.

As meth users become more addicted, they become excessively paranoid and nervous. This causes them to harshly grind and clench their jaws together, putting stress fractures in the teeth. Add the grinding to the sugar and decreased saliva, the weak gums and cavities, and the teeth break readily.

Addicts do not care about anything except the drug they crave. They do not bathe, sleep much or eat healthy food. They do not care how they look, so they never brush or floss the teeth. Meth is made out of poison, and its effect on the entire body is horrible. Users are typically gaunt, poorly nourished and dirty. They stay awake for days. Sadly, meth users often die.

The best thing that you can do is to support your brother in every way to stay clean and sober.

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**What are the new developments in the future of dentistry? I want to go to dental school in a few years; I am a junior in college.**

Congratulations on choosing the dental field for your career. We need young people like you, and I am proud that you have made it to your third year.

You are going to discover that the science of dentistry is constantly changing. That is why it is always so interesting.

There are many new developments on the horizon. For example, scientists at the National Institute of Dental and Craniofacial Research have used adult dental stem cells from extracted third molars to grow new teeth in mice. In England, new teeth were grown from nondental stem cells.

A tooth's development is fascinating and very complex. It depends on many genes firing in just the right sequence. So, gene therapies are being developed at companies like Dentigenix Inc., whereby the correct tooth bud can be placed into the correct site in the mouth and then be prompted to grow. It will be 5 to 10 years before this is available to human patients, probably at dental schools.

As you know, there are some patients who are more susceptible to gum disease than others. Gene therapy may identify which gene(s) cause this, and they might be altered. Also, Dr. Shi at the NIDCR has used stem cells from third molars to try to re-grow the periodontal ligament cells in petri dishes. Since this would come from a patient's own body, there is little likelihood of rejection. Also, brothers and sisters could "donate" third molars to each other, to try to repair broken down periodontal tissue. Dr. Shi said, "In theory, people could one day preserve, or bank, these stem cells when they have their wisdom teeth extracted, opening the door for biology-based regenerative treatment later in life of advanced periodontal disease."

When might this option be available for patients? The earliest would be 2015.

Genetic testing can also determine many other dental abnormalities such as Amelogenesis Imperfecta, Dentin Dysplasia Type I and II among others.

The European Journal of Neuroscience has shown the cells inside the nerve of the tooth can be used to treat Parkinson's disease. At the University of Michigan, nerve cells from the tooth have been implanted into the brains of pigs with Parkinson's, and these animals showed marked improvement in all functions as well as a slowing of the disease's progression. Dr. Nostrat at the U of M has also used these cells to treat spinal cord injuries, prompting regeneration.

In the dental office, there are always new developments, such as the laser therapy now used intra-orally. The DIAGNOdent™ uses a red light-emitting laser at 655 nm. The probe is held over the biting surface of the tooth. It can more accurately determine if there is a cavity in the tooth. (go to [www.steindent.com](http://www.steindent.com) for more information.) When cavities are treated when they are very small, it is easier for the dentist and patient. Less tooth structure is lost, so that the filling has a greater chance of success.

There are many other developments, and so much is available to help the patient which was not even dreamed of ten years ago.

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**I am interested in perhaps pursuing a career in dentistry. Can you explain how to start the process, how long college will be, and after you have been practicing for awhile, how do you stay abreast of new innovations and new changes in the field?**

Let me encourage you to consider entering the dental field. You will be doing a great service for your patients, you'll have enormous personal pride in your career and you will be very well compensated. I have been a general dentist for decades, and I have never been bored for even one minute.

You can receive detailed information by reading my book, [Exploring Careers in Dentistry](#). Finally, the American Dental Association has a website full of information about dental careers at [www.ada.org](http://www.ada.org).

There are 4 career paths in the dental field:

1. Dental assistants help the doctor and work under his/her direction. 2 years of college is suggested, with a comprehensive exam at the end. If passed, you can become a Registered Dental Assistant and you can do expanded duties in the office. Many dental assistants receive on-the-job training.
2. Registered Dental Hygienists clean patients' teeth, take x-rays and impressions, do temporaries and can place sealants and can whiten teeth. They go to college for 4 years and also have to pass a exam at the end. RDH's are licensed by the individual states, and they have to renew their licenses every year.
3. Dental Laboratory Technicians attend college for 2 or 3 years. They fabricate dental restorations such as crowns, bridges, implants, partial and full dentures and orthodontic appliances, following the dentist's written instructions. Most often, they will work in a dental laboratory which is separate from the dental office.

4. The general dentist goes to college (3 to 4 years) and then to dental school (4-1/2 years) for a total of 7-1/2 to 8-1/2 years. To specialize, such as an oral surgeon, requires an additional 3 years for a total of 10-1/2 to 11-1/2 years.

Young people should begin thinking about their futures in 6th or 7th grade. Definitely, students should take college-preparation classes. If the student follows the advised curriculum for pre-med or pre-dent or pre-engineering, he/she will have the necessary basis to succeed in college. Most pre-dent students end up majoring in a science such as biology or chemistry, because the college pre-requisites to qualify to apply to dental school are many science and math classes.

When you have completed high school and college, you are about to enter the wonderful world of dental school. From now on, until you retire, you will be challenged, rewarded and never bored. My youngest patient is 2 years old, and my eldest patient is 102 years old! Just try to imagine what our world will be like when the 2 year old is 102!

You are ready for the hard science classes in your first two years; these are usually the same as the medical students' classes and include: Gross Anatomy, Craniofacial Growth, Pathology, Histology, Microbiology, Internal Medicine, Pharmacology, Physiology, Nutrition, Neuroscience and Biochemistry. The dental classes include Community Dentistry, Dental Anatomy, Oral Diagnosis, Occlusion, Periodontics and Pre-Clinical Dentistry. You will have a TYPODONT to begin practicing on; this is a plastic mouth, usually with lips and tongues and everything. Most dental students affectionately name their TYPODONTS. I called mine Big Bertha; the good news is that any mistake made on Big Bertha was snapped out, and I began again. In Pre-Clinical, you will begin to see live patients, who are usually your fellow dental students. In this homogeneous population, I

was amazed at the diversity of the human race. In your career, you will note that each patient is unique and different and wondrous.

Beside the biological sciences, you will also learn Dental Materials, Metallurgy, Ceramics, Heat transfer, Ultrasonic Mechanics, Force Vectors, the Physics of Light, Plastics Applications, the Physics of Radiology and Digital Imaging, Dental Chemistry and some Statistics as applied to research projects.

Patients, other than fellow students, are seen in the second year. Each year, more difficult procedures are performed on patients as the student studies the dental sciences which include: Anesthesia, Periodontics (Gums), Oral Pathology and Diagnosis, Restorative Dentistry (fillings), Crown and Bridge, Removable Prosthesis (dentures), Endodontics (root canals), Orthodontics (braces), Occlusion (bite), Pedodontics (children's dentistry), Oral Surgery. This is where organizational talents and meticulous attention to detail and precision will become more and more important. There is a surprising amount of artistry and creativity involved.

You will work in a cubicle, which is about 6 feet by 6 feet with 5 feet walls on 3 sides. No one else uses your cubicle, which contains the dental chair, the light and the dental unit as well as cabinetry; each night you lock this up. The average cubicle costs about \$15,000.00, which the dental school pays for.

Most dental schools divide the class into small teams of 6 - 8 students with one professor and one assistant professor. The procedures on live patients are closely supervised, with check points at every step of the procedure. The professors also will stop by a student's cubicle every 15 minutes or so, to observe. Dental school is organized such that it is almost impossible to make a mistake. In dental school, it might take 2-1/2 hours to complete a class II composite in a molar. Now, I do one in 15 minutes, including anesthesia time. The first extraction I performed

required about an hour; I'd do this in 8 minutes today. I clearly remember this wonderful, black lady as she kept patting my arm, telling me I was doing just fine. She was comforting me instead of me comforting her!

I attended the University of Michigan before I took the North East Regional Board examination in order to be licensed in the State of Michigan; this board exam is 4 days long. The University and the board exams thoroughly prepared me to enter private practice. Some of my classmates entered the military, the public health service or joined clinics or hospitals to practice. A few consulted with insurance companies and some stayed to teach at the University. Large corporations also needed researchers.

Within a short time frame, I realized that there were new techniques and drugs being developed, and I had to sign up for continuing education classes. In the State of Michigan, we are required to take 30 hours of certified classes per year in order to renew our dental licenses.

Right now, there are many new developments every year to help dentists, and I am glad I can learn these so that my patients can be helped more quickly and more comfortably. It really is amazing the number of patients who stop me and thank me for changing their lives for the better. This is an honor and privilege I am grateful for each and every day. So, if you possess the aptitude, I strongly encourage you to consider entering the dental profession.

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