

**Saraswati Dental College, Faizabad Road, Lucknow**

**Science Update Notice Board**

**March 2015**

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## Too old for cavities? Think again, dentists say (Part-1)

USA TODAY 11:36 a.m. EST February 8, 2015

Alice Boghosian, a dentist in Niles, Ill., USA, says she was working on an 87-year-old patient recently when she discovered a cavity and exclaimed, "You have got to be kidding me." Boghosian, a consumer adviser for the American Dental Association, was not surprised by the patient's age. She was surprised because the patient was her own mother. "Luckily, I was able to save the tooth," she says — something she cannot always do for her older patients.

**Adults of all ages need to know, dentists say, that cavities are not just for kids.  
The risk can even rise as we age.**

"It's as much a problem in seniors as it is in kids," says Judith Jones, a Professor of General Dentistry, Health Policy and Health Services Research at Boston University. It's also a more persistent threat now that most aging adults keep at least some of their teeth.

Just 50 years ago, more than half of people over age 65 in the United States had lost all their teeth and needed dentures, Jones says. More recent data find 15% of people ages 65 to 74 and 22% of those over 75 are toothless, according to the federal Centers for Disease Control and Prevention.

But those with teeth don't always have healthy teeth: More than 20% of people over age 65 had untreated cavities in 2008, CDC says. Poor people, men and non-whites were especially at risk.

Cavities can lead to pain, infection and tooth loss. They also can come as quite a shock for aging adults, says Christine Downey, a Clinical Assistant Professor of Dental Ecology at University of North Carolina at Chapel Hill.

Downey, who also is on the adjunct faculty of Duke University, says: "Many a person has come into my office saying, 'I always had really nice teeth and now I'm getting cavities. What's going on?' "

There are a number of factors that might be at play. Cavity prevention, at any age, means brushing with fluoride toothpaste at least two times a day, for two minutes at a time, plus flossing and regular dental visits, dentists say. Some people need to take extra steps, such as using stronger prescription fluoride toothpastes and oral moisturizing products, Downey says. And everyone can benefit from watching what they eat and drink.

Next week: Boghosian's tips for a tooth-friendly diet.

## **Too old for cavities? Think again, dentists say (Part-2)**

USA TODAY 11:36 a.m. EST February 8, 2015

### Boghosian's tips for a tooth-friendly diet

According to Alice Boghosian, a dentist in Niles, Ill., USA, the following are some of factors that might cause cavities:

- **Dry mouth.** It's a side effect of more than 500 medications, including many commonly used by older adults. Our saliva has a cleansing, anti-cavity effect.
- **Recessed gums.** When you are "literally long in the tooth," decay is more likely to reach tooth roots, Jones says.
- **Delayed care.** Many people lose dental insurance when they stop working and then stop going to the dentist.
- **Cognitive and health challenges.** People with dementia may forget to brush or "don't care about it," and caregivers may not take up the slack. Lost dexterity and other physical problems also can get in the way of dental hygiene.
- **Diet** - especially sugar. Foods that are sticky and sweet can promote tooth decay at any whether you are 7 or 70. When you eat or drink sugar, bacteria in the mouth produce acid. That acid breaks down the protective enamel on teeth, allowing decay. Eating acidic foods, such as citrus fruits, also can damage enamel. Everyone can benefit from watching what they eat and drink. Here are Boghosian's tips for a tooth-friendly diet:

- ✓ Recognize sugar in all its forms. Scan labels for honey, corn syrup, dextrose, fructose and other sweets. "It's all sugar."
  - ✓ Watch out for sticky foods. Dry fruit, caramels and other sticky sweets can promote decay. Even bread or crackers that stick to teeth can convert to sugar and cause trouble.
  - ✓ Don't nurse sweet drinks or candies. Sipping a sweet tea or sucking hard candy for hours keeps your teeth bathed in sugar.
  - ✓ Limit acidic foods. Citrus fruits and juices count. So do sodas, even if they are sugar-free.
  - ✓ Drink water, and make it fluoridated tap water when you can. Swish water around your mouth after eating sweet, sticky or acidic foods.
  - ✓ Keep up your calcium intake, with milk, yogurt, cheese and leafy greens. That can help rebuild enamel.
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## **NYU study successfully screens for diabetes at dental visits using oral blood**

Last updated: Monday 2 March 2015 at 1am PST

### **Researchers find a 99 percent correlation between tests for hemoglobin A1c at dental visits using finger stick and oral blood**

It is estimated that 8.1 million of the 29.1 million Americans living with **diabetes** are undiagnosed and many who have diabetes have poor glycemic control. Given that each year many Americans visit a dental provider but not a primary care provider, dental visits may be an opportune site for diabetes screening and monitoring glucose control for many at-risk patients.

Now, a new study published in the *American Journal of Public Health*, confirms that using gingival crevicular blood (GCB) for hemoglobin A1c (HbA1c) testing produced values that were nearly identical to those obtained using finger stick blood (FSB), with a correlation of .991 between the two blood samples of 408 dental patients. Testing HbA1c is promoted by the American Diabetes Association (ADA) for diabetes diagnostic purposes and glycemic control monitoring.

"In light of findings from the study, the dental visit could be a useful opportunity to conduct diabetes screening among at-risk, undiagnosed patients - an important first step in identifying those who need further testing to determine their diabetes status," said the study's principal investigator, Dr. Shiela Strauss, Associate Professor of Nursing and Co-Director of the Statistics and Data Management Core for NYU's Colleges of Nursing and Dentistry.

The study, "The Potential for Glycemic Control Monitoring and Screening for Diabetes at Dental Visits Using Oral Blood," builds upon an earlier pilot study in which the feasibility and acceptability to patients and dental providers of using oral blood to screen for diabetes during a routine dental exam was demonstrated.

While all persons at-risk for diabetes who were never told they had the condition can potentially benefit from additional opportunities for diabetes screening, Dr. Strauss and her team found that participants who were at least forty-five years old might especially reap great benefit from diabetes screening at dental visits. The researchers also noted that HbA1c testing at dental visits could serve as an additional opportunity to determine the extent of glycemic control among those already diagnosed.

"Our study has considerable public health significance because we identify the value and importance of capitalizing on an opportunity at the dental visit (a) to screen at-risk, but as yet undiagnosed patients for diabetes (especially those 45 years or older) and (b) to monitor glycemic control in those already diagnosed so as to enable them to maintain their health to the greatest extent possible," said Dr. Strauss.

<http://www.medicalnewstoday.com/releases/289585.php>

## **Bone-loss score may tip off doctors to gum disease in postmenopausal women**

19 February 2015

Postmenopausal women susceptible to **bone fractures** may also be at a higher risk for **gum disease**, according to researchers at Case Western Reserve University School of Dental Medicine and Case/Cleveland Clinic Postmenopausal Health Collaboration (CCCPOHC). Researchers found a link between postmenopausal women with high scores on a **Fracture Assessment Risk Tool (known as FRAX)**, and symptoms of severe gum disease, said Leena Palomo, DDS, MSD, Associate Professor of Periodontics and Director of DMD Periodontics Program at the University's Dental School. "More investigations are needed", she says "but the FRAX Tool score can potentially be used as a way to find women at risk for gum disease." Their findings have been published in the *Menopause* article, "Can the FRAX tool be a Useful Aid for Clinicians to Refer Patients for Periodontal Care?"

Women can suffer a rapid spike in bone loss in the first decade after the onset of menopause as estrogen levels drop. Lower estrogen levels also impact the mouth and cause inflammatory changes in the body that can lead to gingivitis, a precursor to gum disease, Palomo said. If untreated, the result is tooth loss. Knowing how bone loss occurs throughout the body in menopause, researchers also were interested in oral-physical connections. Researchers set out to find a way for doctors to identify women at risk for both gum disease and osteoporosis. They tested the hypothesis that women at-risk for bone fractures might also be at-risk for gum disease.

FRAX scores take into account weight, height, previous fractures, rheumatoid arthritis, smoking habits, diabetes and other factors. "Many of these factors are also markers for gum disease," Palomo said. Using CCCPOHC's database of 853 women, they found a sample of 191 women between ages 51 and 80 who had gone through menopause within the last 10 years, didn't smoke and were not on hormonal replacement therapy, bone loss medicines for at least five years or diabetes medication. All women had FRAX scores and a periodontal check-up that measured probing depth for the gums, tooth loss and attachment loss from ligaments holding teeth to bone. Women were divided into groups with high- and low-risk FRAX scores. Researchers found that women with high FRAX scores also showed strongest signs of gum disease, a result that suggests bone-loss scores could provide a reliable indicator of gum disease. But there's a drawback: "Medical insurance does not cover dental procedures," Palomo said, calling for a change in health insurance policies to cover gum disease because it's linked to a woman's overall health.

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SDC staff and students interested in submitting relevant articles for display on this Notice Board are requested to email the same at [mmsingh@saraswaticolleges.com](mailto:mmsingh@saraswaticolleges.com). The articles are displayed after approval of the President, SDC.

<http://www.medicalnewstoday.com/releases/289469.php>

## Making teeth tough: Beavers show way to improve our enamel

17 February 2015

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### Discovery could lead to better understanding of tooth decay process, early detection.

Beavers don't brush their teeth, and they don't drink fluoridated water, but a new Northwestern University study reports **beavers do have protection against tooth decay built into the chemical structure of their teeth: IRON.**



Researchers found that the pigmented enamel of beavers, which contains iron, is both harder and more resistant to acid than regular enamel, including that treated with fluoride. This discovery is among others that could lead to a better understanding of human tooth decay, earlier detection of the disease and improving on current fluoride treatments.

Layers of well-ordered hydroxylapatite "nanowires" are the core structure of enamel, but Dr. Derk Joester and his team discovered that it is the material surrounding the nanowires, where small amounts of amorphous minerals rich in iron and magnesium are located, that controls enamel's acid resistance and mechanical properties.

Enamel is a very complex structure, making study of it challenging. Joester's team is the first to show unambiguously that this "amorphous," or unstructured, phase exists in enamel, and they are the first to show its exact composition and structure. "We have made a really **big step forward in understanding the composition and structure of enamel -- the tooth's protective outer layer -- at the smallest length scales**," said Joester, lead author of the study and an Associate Professor of Materials Science and Engineering in the McCormick School of Engineering and Applied Science. "The unstructured material, which makes up only a small fraction of enamel, likely plays a role in tooth decay," Joester said. "We found it is the minority ions -- the ones that provide diversity -- that really make the difference in protection.

**In regular enamel, it's magnesium, and in the pigmented enamel of beaver and other rodents, it's iron."** The unprecedented imaging study of tooth enamel at the nanoscale was published by the journal *Science*.

Dental caries -- better known as tooth decay -- is the breakdown of teeth due to bacteria. ("Caries" is Latin for "rottenness.") It is one of the most common chronic diseases and a major public health problem, despite strides made with fluoride treatments.

According to the American Dental Association, \$111 billion a year is spent on dental services in the U.S., a significant part of that on cavities and other tooth decay issues. **A staggering 60-90 percent of children and nearly 100 percent of adults worldwide have or have had cavities, according to World Health Organization.**

In a series of experiments of rabbit, mouse, rat and beaver enamel, Joester and his colleagues imaged the never-seen-before amorphous structure that surrounds the nanowires. They used powerful atom-probe tomography and other techniques to map enamel's structure atom by atom. **(Rodent enamel is similar to human enamel).** The researchers subjected the teeth to acid and took images before and after acid exposure. They found that the periphery of the nanowires dissolved (the amorphous material), not the nanowires themselves.

The researchers next identified amorphous biominerals in the structure, such as iron and magnesium, and learned how they contribute to both the mechanical hardness and resistance of enamel to acid dissolution. Of particular interest to Joester and his colleagues was the pigmented enamel of the beaver's incisors. Their studies showed it to be an improvement over fluoride-treated enamel in resisting acid. (The **presence of iron gives the teeth a reddish-brown color**). **"A beaver's teeth are chemically different from our teeth, not structurally different,"** Joester said. "Biology has shown us a way to improve on our enamel. The strategy of what we call 'grain boundary engineering' -- focusing on the area surrounding the nanowires -- lights the way in which we could improve our current treatment with fluoride."

The title of the *Science* paper is **"Amorphous Intergranular Phases Control the Properties of Rodent Tooth Enamel."** A related paper will be published this week by the journal *Frontiers in Physiology*.

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### **QUOTE OF THE DAY**

“Success usually comes to those who are too busy to be looking for it” - *Henry David Thoreau*