

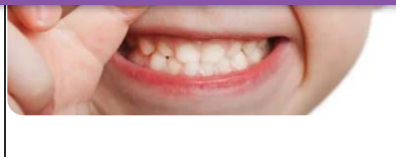
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Keep your nose clean

Nasal and upper respiratory benefits of xylitol use

May 1st, 2011





Nasal and upper respiratory benefits of xylitol use

by **Susan Clark, RDHEF**

Dr. Matti Uhari is one of the world's leading xylitol researchers. He works in the department of pediatrics at the University of Oulu in Finland. Knowing that xylitol inhibits the growth of *Streptococci mutans* in the mouth, he then hypothesized that xylitol could also affect the growth of other nasopharyngeal bacterial flora, an important factor when considering respiratory infections. He studied this in vitro by adding xylitol to a medium and observed that 1% and 5% xylitol markedly reduced the growth of alpha-hemolytic streptococci, including *Streptococcus pneumoniae*. If xylitol reduced the growth of *Streptococcus pneumoniae* in the nasopharynx, he concluded that xylitol could also reduce the carriage of this pathogen and thus have clinical significance in the prevention of pneumococcal diseases.

Finnish researchers also found that xylitol decreased ear infections. They looked at what happened when the bacteria in the nose were exposed to xylitol. Dr. Uhari's group reported their findings in the *British Medical Journal* in 1996 and in *Pediatrics* in 1988. They showed that ear infections in children could be reduced by up to 40% with eight to nine grams of oral xylitol every day.

Building on the studies of Dr. Uhari and other researchers, Dr. Lon Jones, a board certified osteopathic physician based in Plainview, Texas, developed a xylitol-based nasal spray. Since these studies suggested that it was possible to create better upper respiratory health using a natural product such as xylitol, he began administering it to his granddaughter who had chronic ear infections. He administered the xylitol-based nasal wash after every diaper change and observed her ear infections ceased. Dr. Jones then had 10 children in his practice use the nasal wash in the same manner. Over the next 11 months of regular use of this xylitol-based spray, these 10 children

in the back of the nose, when fluid builds up in the area behind the eardrum, and then becomes infected. The bacteria that live on the mucus travel down into the eustachian tube that leads into the middle ear and cause otitis media in children.

In older people, and while properly termed lower respiratory infections, bacteria and viruses that are able to get airborne in the nose are aspirated to cause bronchitis and pneumonia. When working effectively, any fluid that enters this area leaves quickly through the eustachian tube, which connects the middle ear to the back of the nose and throat. However, if the eustachian tube is blocked – which is common during colds, sinus infections, and even allergy seasons – it traps the fluid in the middle ear. Germs like to grow in dark, warm, and wet places, so a fluid-filled middle ear becomes the perfect breeding ground. As the infection worsens, so may the inflammation in and behind the eardrum, resulting in pain.

Babies are particularly susceptible to ear infections because their eustachian tubes are short (about 1/2 inch) and horizontal. As they grow to adulthood, their tubes triple in length and become vertical, so fluid can drain more easily. Ear infections are one of the most common childhood illnesses. Be sure to include questions on the health history with children in your practice about ear infections and asthma. These conditions are now considered risks factors for early childhood caries.

In 1999, Dr. Jones patented using xylitol in nasal application and formulated the product that became known as Xlear Nasal Spray. This nasal spray line contains xylitol, purified water, salt, and grapefruit seed extract as a preservative. It contains no drugs, has no side effects, is safe for all ages, and is completely non-habit forming. Its principal ingredient is xylitol. It functions to wash bacteria and pollutants, while soothing and moisturizing the nasal passageway.

The nasal spray works in three ways:

- First, it decreases the adherence of harmful bacteria to the cells in the nose.
- Secondly, the concentration of xylitol stimulates our own defensive washing of the nose.



If you could look with a microscope inside your nose, you would see all of the pollutants and infecting agents stuck in mucus that coats and protects your airway. The mucus would be moving slowly, toward the back of the nose. The mucus is secreted by special cells, scattered among those lining your airway and swept by microscopic hairs called cilia that extend into the airway from the other cells in the airway. Between these ciliated and mucus-secreting cells and the mucus layer is the airway surface fluid that provides some space for the cilia to help trap and propel bacteria and pollutants out of the nose.

The thin layer of airway surface fluid is also the home of several protein substances called defensins. These antimicrobial substances help trap and kill foreign bacteria that are constantly being deposited in the lungs. When it is working properly, it is a very effective cleaning mechanism.

Xylitol helps the defensins because it has low transepithelial permeability, and is poorly metabolized by several bacteria, so it can lower the airway surface liquid salt concentration. Bacteria lose their ability to adhere to sinus tissue, thus allowing the body to more easily clear them away.

Irritants, toxins, allergens, and dust accumulating in the nasal passages cause the cilia to become disorganized. This underscores the cilia's natural defense system to work properly. The mucus is dry and does not hold on effectively to the bacteria or other pollutants. When a person's natural defense is blocked, and when harmful bacteria make their home in the upper respiratory passages, they breed and multiply, leading to upper respiratory infection and disease, ear infections, sinusitis, and asthma.

Using a nasal spray with xylitol on a daily basis helps your body rinse away infection-causing bacteria and hydrates the nasal passage and sinuses. In addition, unlike prescription remedies, this daily use will never damage tissues, nor result in antibiotic resistance.

Irritants in the back of the nose trigger asthma and allergies as well. Again, the



According to the American Academy of Allergy, Asthma, and Immunology, histamine accomplishes four steps in the nasal passageway.

- Opens small blood vessels under the cells lining the nasal cavity. By doing this, it provides the water for the washing, it replenishes and increases the airway surface fluid with its defensins, and optimizes the water available for the mucus to be wet, sticky, and moveable. Thus, histamine helps the nose get cleaned out faster and easier.
- Increases the mucus to pick up more pollutants.
- Increases sneezing
- Constricts the bronchi, closing down the airway to protect the lungs.

A child's immune response to pollutants in the nose is a runny nose. Traditionally, antihistamines were developed to block histamines, induce rhino rhea, and shrink swollen membranes to allow easier draining of sinuses and the eustachian tube. What they do in effect is turn off nasopharyngeal washing by drying the membranes. Antihistamines block histamine – the "water" is never turned on. Decongestants close down the leaking blood vessels, turning off the water, and do not respond to the pollution in the nasopharynx.

An open nasal airway helps to avoid mouth breathing and is essential for proper orthopedic and orthodontic development. I have already discussed chronic middle ear infections, sinusitis, and upper respiratory infections. Mouth breathing can particularly affect the growing face.

Tongue thrust and digit sucking are harmful to the developing child as well. There is a direct relationship between the degree of mouth breathing and the severity of the malocclusion. This picture shows the results of open mouth breathing, tongue thrust, and digit sucking. Open mouth posturing can cause dental and cosmetic problems too.

Infants instinctively are 100% nasal breathers at birth. When babies are born, their sinus passageways are not connected to the throat like children and adults. This



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The largest increments of growth occur during the earliest years of life.

Consequently, if a child has chronic nasal obstruction, it is essential to correct the problem as soon as possible.

The decision is clear. Regular cleansing of the nasal passage is an important step to preventing illness. Using a nasal spray with xylitol is an effective tool for washing the nose and flushing away harmful bacteria and pollutants that might otherwise lead to sinusitis, ear infections, and upper respiratory disease.

So remember, keep your nose clean.

Susan Clark, RDHEF, is a key opinion leader, speaker, and author of "Exploring Dental Hygiene, Finding the Hidden Rewards." She is the West Coast Region Product Educator for Xlear Inc. She is also actively involved with her local component and California Dental Hygienists' Association and the California HY-PAC committee. You can visit her web site at www.sgclark.net or contact her at sgc31@verizon.net.

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The neglected duty

Over half the bacteria in the mouth is located on the tongue, and bad breath is one of the most common patient complaints. And yet how often are we as dental hygienists discussing this vital organ with our patients? Kristin Goodfellow, RDH, makes an argument for why we should think differently (and why brushing the tongue with a toothbrush doesn't work).

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Ask Our Authors: Tools that take your hygiene appointment above and beyond

Dental hygiene products are only one part of the equation, but they can help keep clinicians safe and patients healthy, happy, and loyal to the practice. Here are some recent recommendations from our advisory board.

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Dental hygienists are vital to promoting a total health concept and helping parents teach best oral health practices to their children.

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Tailoring appointments: Special needs patients

This dental hygienist has educated herself in order to handle the special needs people in her dental chair more effectively. Here she shares tips with her peers for making those sometimes-dreaded appointments much more manageable, and even enjoyable!

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Arginine: A magical weapon in the war against oral microbial diseases

For years, fluoride has been one of the most popular go-to tools in the war against oral disease. Anne Nugent Guignon, MPH, RDH, CSP, takes us on a journey behind the science of the amino acid arginine and explains how this important chemistry is now available in OTC products that reduce the risk for caries, erosion, and fungal infections; neutralize oral pH values; work as effective desensitizers; and support remineralization.

Anne Nugent Guignon, MPH, RDH, CSP

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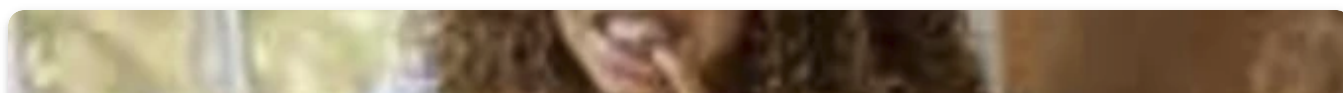


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New Article

Study examines preferences for self-care aids to control halitosis.

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New Article

Maintaining healthy teeth and gingiva during orthodontic treatment enhances self-esteem.

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New Article

Woodstock Natural Products Inc. introduces The Natural Dentist Antimicrobial Rinse. According to studies, The Natural Dentist proved to kill germs and reduce gingivitis and gingival bleeding. The rinse is made from well-known herbs like Aloe Vera and Echinacea, both recognized for their therapeutic properties. The Natural Dentist contains no alcohol, artificial sweeteners or harsh chemicals, so it is safe to use even by the most sensitive patients. Dentists are using The Natural Dentist in their

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New Article

The TheraBreath System is now available at professional discounts for dentists, according to Dr. Harold Katz of the California Breath Clinics. TheraBreath is based on pharmaceutical-grade CIO2 active ingredients that have already been used successfully by thousands of people in 59 countries.

Jan 1st, 2019





abnormalities.

Nov 1st, 2018

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Ask the Experts: Desensitizers

Dental sensitivity can make life difficult for patients—and it can make treating them difficult for you. In this installment of our new feature series, our editorial advisory board shares their thoughts and recommendations on how dental hygienists can treat sensitivity in two different patient scenarios, including thoughtful product recommendations.

Oct 1st, 2018



Premier Dental Products Company

Clinical Pearls – Coronal Polishing

Do you polish every tooth as a part of every prophylaxis procedure? Has polishing become an expected part of a patient's hygiene visit?

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Tailoring appointments: Pregnant patients

This RDH has many ways that she helps pregnant patients. Besides providing them with good oral care during their pregnancy, she starts them off on the road to motherhood with a few tips for the oral care of their babies. Find how what she recommends here.

Sep 1st, 2018



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Activated charcoal: An all-natural tooth whitener?

Have your patients asked you about activated charcoal tooth whitening products? If not, they will eventually. Bethany Ley, BSDH, Kayla Kendrick, BSDH, and Amy Coplen, RDH, EPDH, MS, explain what dental hygienists need to know about this new fad.

Sep 1st, 2018





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Marketing ingenuity or beneficial dentifrice?

Kris Potts, RDH, outlines the background behind activated charcoal toothpastes, and why some consumers are indicating a preference for them.

Jul 1st, 2018



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patients be successful in meeting their oral health goals.

Anne Nugent Guignon, MPH, RDH, CSP

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Concerns with oral piercings

With oral piercings becoming more popular, dental hygienists should know proper care and how to manage patients with oral piercings. It's important to help patients keep their piercings and mouths healthy.

Jun 1st, 2018



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Empowering patients to take control

Kari Kuempel, RDH, outlines a strategy for encouraging patients to control their risks for caries development, May 1st, 2018

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2018 Heart to Hands Award: Hygienists use video to explain how they deliver oral health messages

The three recipients of the 2018 Heart to Hands Award use videos to explain how their careers in dental hygiene inspire them.

Apr 2nd, 2018



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Blow a bubble for those who can't

Kim Miller, RDH, explains how your office can get involved in the Oral Cancer Cause Bubble Challenge. She also reviews a line of interdental brushes and a baby toothbrush that use Smart Grip technology, and she explains why you should consider recommending neem mouthwash to your patients.

Apr 1st, 2018

Patient Care

8 challenges rinses will resolve in your practice

Kristin Goodfellow, RDH, explains how professional mouth rinses can help dental hygienists solve some of the common challenges they face in everyday practice.

Apr 1st, 2018



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Something new

Anne Guignon, RDH, made the mistake of taking too long to test a product that a company was nice enough to share with her, and she won't make that mistake again. She loved the product, and she tells her fellow hygienists to appreciate the opportunities that companies share with them.

Apr 1st, 2018

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Fun in the school cafeteria

Noel Kelsch, RDHAP, discussed sanitation processes in school cafeterias that promote oral health practices.

Mar 1st, 2018

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Controlling aerosols



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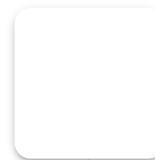
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Own your role in curbing addiction

Carly Scala, RDH, defines how dental professionals can lead the efforts to halt opioid addiction.

Feb 10th, 2018

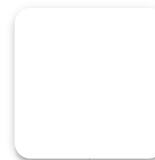


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Tailor dental hygiene appointments for heavy stain

As with any type of employment, dental hygiene temping has both benefits and risks. But if you have the right personality and know what you are doing, temping can offer you a variety of clinical experiences and a flexibility you might not experience in traditional full-time employment.

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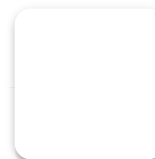


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How to tailor appointments for young orthodontic patients

This dental hygienist used to dread appointments with young orthodontic patients, but no longer feels that way after making some small but important changes to the way she approaches these patient interactions.

Dec 12th, 2017

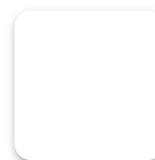


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NHANES: A tool for improving your community's oral health

Christine Nathe, RDH, summarizes the purpose of the National Health Nutrition Examination Survey, or NHANES, which is conducted by the Centers for Disease Control (CDC) to assess the overall and oral health of the US population.

Dec 1st, 2017

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