Xylitol used in a nasal spray

Upper respiratory infections (URIs) are a common complaint heard by primary care physicians. After colonization in the nasopharynx, bacteria extend down the Eustachian canal causing otitis media, into the sinuses and can be aspirated causing bronchitis. The greatest use of antibiotics is for URIs and the overuse in these cases becomes the primary source of antibiotic resistance.

URIs have increased six percent each year since 1970, due in part to increased use of daycare centers and over-the-counter use of antihistamines and decongestants. Children in daycare experience an average of six URIs per year. Physiologic washing of the nasopharynx is accomplished by histamine-induced rhinorrhea. A runny nose is nature’s way of washing out bacteria and toxins. Antihistamines and decongestants stop the normal washing process and have led to a three-fold increase in problems. In 1990, the cost of treating ear infections was $3.5 billion dollars; in 1994, the cost for asthma treatments was $5.8 billion.

Xylitol reduces the bacterial population significantly by interfering with energy and acid production, leaving the bacteria unable to adhere to each other or tissues. A side effect of xylitol chewing gum studies was a 40 percent reduction in ear infections. Lab studies using a five percent xylitol solution reduced adherence of Strep pneumonia to nasal cells by 68 percent and Haemophilus influenza by 50 percent. The osmolarity of xylitol reduces swelling and pulls water from the tissue to wash the area.

Clinical cases of a five-month-old, an eight-year-old and a 42-year-old showed clinically significant reductions in URIs when an 11 percent xylitol nasal wash was used three to four times per day. Asthma was also reduced significantly.

Clinical Implications: Adding xylitol nasal-washing instructions to oral hygiene instructions might provide patients with additional preventive benefits.


Flossing with intention and a plan

Since periodontal disease begins interproximally, cleaning in between is essential for effective prevention. Despite this fact, compliance with flossing or interdental cleaning is extremely low. In Germany, floss sales predict only 2.2 percent of the general population uses it. Studies show only nine percent of university students floss.

According to the research, having the intention to floss is not enough. A plan of action is also needed. Graduate psychology students carried out this study on the campus of Freie University in Berlin, Germany. A total of 194 highly educated individuals completed a questionnaire assessing flossing behavior at the time of study enrollment and other questionnaires were mailed to them at weeks two and eight.

Subjects received Oral B Satin Floss and printed flossing instructions. Those randomly assigned to the “planning” section spent three-minutes with a student writing down their plan: when, where and how they planned to floss. Control and planning groups were further subdivided based on answers to questions about flossing that identified those who were still contemplating the benefits of flossing and those who were intent on implementing flossing.

Compliance with flossing for two weeks was not ideal. Those with intent to floss who had a plan flossed four times per week compared to those in the control group who flossed three time per week.

Clinical Implications: Compliance with flossing is consistently low, but helping patients make a plan as to when, where and how they will floss might lead to slightly better compliance.

Topical doxycycline tested in furcations

Furcations don’t respond as well to treatment as single-rooted teeth and are therefore at greater risk for further attachment loss. Tooth loss is higher for teeth with furcation involvement. Periodontal therapy reduces C-reactive protein (CRP) and fibrinogen.

Researchers at University Hospital in Heidelberg, Germany, compared SRP alone and SRP with doxycycline gel in furcations of periodontal maintenance patients. Plaque, probing, attachment and bleeding scores were recorded at baseline. All sites with probing depths equal to or greater than 4mm were instrumented with a KaVo Sonicflex sonic scaler. Following instrumentation, subjects were randomly assigned to either receive the 14 percent doxycycline gel or not.

Five subjects had to leave the study for rescue treatment because of attachment loss greater than 2mm since their last visit. One person in the SRP group exited at six-months and four people in the SRP plus doxycycline group exited, three at three-months and one at six-months. Problems were not always due to furcation involvement, as some single root teeth presented with advancing disease and some with endodontic problems.

At three months, slightly more improvement was evident in the doxycycline group compared to the control group. This difference wasn’t carried over to the six and 12 month evaluations. Any site still measuring 4mm or more with bleeding was re-instrumented. This applied to 75 percent of furcation sites.

Clinical Implications: Furcation sites will likely require re-instrumentation at each maintenance visit, despite the application of doxycycline gel.


Periodontal therapy reduces C-reactive protein

Cardiovascular disease is a leading cause of death today. Patients who don’t respond to drugs for lowering blood pressure are considered to have refractory hypertension. Periodontal disease is associated with elevated plasma levels of IL-6, C-reactive protein (CRP) and fibrinogen.

Researchers at the National Institute of Cardiology in Rio de Janeiro, Brazil, provided non-surgical therapy to 11 patients with refractory hypertension who also had severe periodontitis. The control group of 11 patients with refractory hypertension and severe periodontitis had their non-surgical therapy delayed for three months. Clinical, demographic and blood tests were done for all the patients at baseline and three months. Non-surgical therapy included oral hygiene instructions, power scaling with a KaVo sonic scaler, and hand instrumentation with Hu-Friedy Gracey curettes. No time limit was placed on the therapy and patients were seen for four to six visits over two weeks.

At baseline, both groups presented with similar clinical, demographic and laboratory parameters. At three months, the control group showed increased levels of CRP and IL-6, and unchanged levels of fibrinogen. Those receiving non-surgical therapy showed significant reductions in levels of CRP, IL-6 and fibrinogen. All clinical parameters showed improvement, except plaque levels. Perhaps this was due to only one session of oral hygiene instruction.

Further research is needed to determine if these short-term results are maintained long-term and to determine if periodontal therapy provides a beneficial effect on hypertension.

Clinical Implications: Non-surgical periodontal therapy provides benefits beyond the gingiva, by reducing inflammatory markers.

Oral probiotic lozenge reduces perio pathogens

Caries and periodontal disease are the most common infectious diseases in humans. An emerging area of oral research focuses on probiotics, which are live microorganisms that confer beneficial effects on the balance of bacteria in the mouth. The most common bacteria used in probiotics for gastrointestinal disorders are *Lactobacillus* and *bifidobacteria*. For control of periodontal pathogens, *L. Salivarius* strain WB21 was selected because it is resistant to gastric acid, produces adhesion inhibitors and antimicrobial components, which should inhibit periodontal bacteria.

Researchers at Tohoku University Graduate School of Dentistry in Sendai, Miyagi Prefecture, Japan, compared WE21 probiotic lozenge sweetened with xylitol to a placebo xylitol lozenge. Subjects in this eight-week study all worked at the Wakamoto Pharmaceutical Co. in Tokyo, Japan, the company making the probiotic. Subjects were instructed to place one lozenge, three times each day, on their tongues and let it dissolve without chewing.

Supra and subgingival plaque samples were taken from the mesial surfaces of six teeth in each of the 66 individuals. Bacterial counts reduced for both the control and test halves of the group. Greater reductions were seen in the WE21 group for five bacteria measured in subgingival samples at four weeks. At eight weeks, both groups showed similar reductions. Perhaps the xylitol played a role as well as the Hawthorne Effect of better compliance with oral hygiene because of participation in a research study.

Concern was raised by the authors about the potential for WE21 to contribute to caries formation, by increasing the *Lactobacillus* count in the mouth.

Clinical Implications: Probiotics might be helpful in reducing and controlling periodontal pathogens.


Oral lesions may be metastatic cancer

Oral metastatic tumors make up one percent of malignant oral neoplasms and might mimic pyogenic granuloma, peripheral giant cell granuloma or fibroma. The primary tumors are most often located in the breast, lung, kidney, bone and colon.

Researchers in Spain and The Netherlands evaluated several years of data from patient charts to determine the survival rate for those diagnosed with oral metastatic tumors. A series of 39 patients ranging in age from eight to 90 years, the average being 62 years, were included in this retrospective study. The primary tumors for these individuals included kidney, breast, lung, prostate, liver, colon, thyroid, esophagus and cerebellum. Primary tumors in children tend to be associated with the nervous system.

Gingival tumors were more frequent in the maxilla (86 percent vs 14 percent) while osseous tumors were more prevalent in the mandible (78 percent vs 22 percent). The average time between diagnosis of the primary tumor and evidence of the oral lesion was 14 months. There was a wide range for the number of months surviving after diagnosis of the oral metastasis, one month to 120 months, with the average survival rate being six months.

One theory to explain metastasis to gingival tissues is the capillary rich network found in chronically inflamed gingival tissue. However, the mechanism of metastasis is poorly understood.

Clinical Implications: Gingival lesions seeming to be benign, inflammatory lesions might in rare cases actually be oral metastatic lesions from a primary tumor elsewhere in the body. Any suspect lesion require biopsy and a histopathologic evaluation.