FROM THE DESK OF DR. REBECCA KING

North Carolina has a rich dental public health history. The NC Oral Health Section (OHS) is over 90 years old and is the oldest dental public health program in the country. Because our program gradually evolves based on science, and using best practices, we continue to be a national leader in providing preventive dental services to North Carolina citizens. This is one of the reasons North Carolina was a leader in fluoridating community water systems. February is always an exciting and busy time for OHS staff since it is National Children’s Dental Health Month. Part of our long history includes great partnerships with local dentists and teachers. Each year, we partner with the North Carolina Dental Society to coordinate Give Kids a Smile! and refer children for dental care. Teachers across North Carolina assist us by including preventive dental health messages in their classroom, especially during February. Our staff are busy providing preventive services and dental health education to children in schools and community settings. I truly appreciate the long history and great working relationship between OHS staff, dentists and teachers. By working together, North Carolina children can be cavity-free forever.

FOR YOUR DENTAL HEALTH

Water Fluoridation: A North Carolina Update

North Carolina has supported community water fluoridation as an effective method to prevent dental decay for 60 years. Charlotte was the first city in the state to fluoridate its water supply in 1949, and at that time was the largest water system in the world to adjust its fluoride level to the recommended optimal amount.

North Carolina has always been a progressive leader in this area. As our state’s population has grown, so have the number of residents who benefit from this essential preventive measure. In the 1950’s, only 15 percent of the state’s population was drinking optimally fluoridated water. The latest figures show that, of those who receive their water from a community water system, approximately 88 percent or about 5.6 million residents receive the benefits of fluoridated water. As the size of the North Carolina population receiving optimally fluoridated water has grown, our statewide dental epidemiologic surveys have documented dramatic improvements in the dental health of our citizens.

In 2004, former United States Surgeon General Richard H. Carmona reaffirmed that community water fluoridation continues to be the most cost-effective, practical and safe means for preventing and controlling the occurrence of tooth decay in a community. Additionally, the Centers for Disease Control and Prevention (CDC) recognized fluoridation of drinking water as one of the 10 great public health achievements of the twentieth century. The Office of the Surgeon General, CDC, and at the state level by Dr. Jeffrey Engel, State Health Director, strongly endorse community water fluoridation and the value it has in preventing tooth decay and improving a person’s quality of life.

In North Carolina, the decision to fluoridate a community has historically been determined by administrative action, i.e., through vote by a city/town council, regional health board or water authority board.

The overwhelming majority of health related organizations support water fluoridation. However, as scientific opinion is rarely unanimous, there are those who oppose water fluoridation. They tend to be vocal and have frequently and effectively made use of the Internet as a vehicle for expressing their contradictory views. Well-intentioned people looking for information often search the web. They read the many alarming inflammatory statements and opinions provided on certain sites, and assume that, because it is on the Internet, it must all be true. As with all information on the Internet, it is important to get information from credible sources.

You can learn a wealth of credible information on community water fluoridation from 1) the CDC, which routinely
monitors the literature and provides frequent updates available on their website (http://www.cdc.gov/fluoridation/index.htm), 2) the American Dental Association (ADA), that promotes its position supporting community water fluoridation in an easily searchable question and answer format in its publication Fluoridation Facts (http://www.ada.org/public/topics/fluoride/index.asp#fluoridationfacts), and 3) the American Public Health Association (APHA) October 2008 updated policy on community water fluoridation, available at: http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1373.

Healthy Living Standard Course of Study Competency Goals: Grade 5, 2.06; Grade 6, 2.09. Science Standard Course of Study Competency Goal: Grade 2, 3.06.

IN THE SCHOOLS

Celebrating Dental Health

February 2010 is National Children's Dental Health Month (NCDHM). This is always a busy time for the Oral Health Section (OHS) public health dental hygienists who are providing instruction on good oral health practices to children in classrooms and community settings. To request a presentation, contact your public health dental hygienist. (see page 3 for contact information) The month of February is booked quickly due to high demand, but OHS public health dental hygienists are available to provide presentations year round. For additional resources you can use in the classroom for NCDHM, check out the American Dental Association Web site (link in the RESOURCES section).

One of the major events that occur during NCDHM is "Give Kids a Smile!" (GKAS). Some of your students may be involved with this project. The North Carolina Dental Society (NCDS), OHS and many other partners, including volunteer dentists and other dental professionals, provide care to children from across the State — whether it is dental treatment, prevention, and/or educational programs. In most counties, local teams plan oral health programs specifically designed to fit the needs of the community. The teams identify sites and schedule volunteers to provide care for children who have been pre-screened in public schools and county health departments. Screening children is one of the primary duties performed by OHS public health dental hygienists for GKAS. While specific GKAS activities vary from county to county, the importance of oral health care prevention and treatment is the focus of the initiative.

With the leadership of the North Carolina Dental Society and the efforts of thousands of volunteers, North Carolina has been part of "Give Kids A Smile!" since it began in 2003, and won a national award for the best statewide GKAS program. To date, more than 13,020 dental volunteers have provided over $8.7 million in oral care to more than 107,707 children across the state. In North Carolina, organized dentistry has been working to solve the access to care problem for many years, and "Give Kids A Smile!" is an opportunity to bring this issue to the forefront.

FUN FACTS

The Legend of the Tooth Worm

People have had toothaches, tooth decay and periodontal disease for thousands of years. Science has determined that oral pain, infection and tooth decay are usually related to unclean teeth, and to bad eating habits that contribute to the breakdown of the natural protections that tooth enamel and healthy gums give us.

Before the modern age of science, toothaches and tooth decay were believed to be caused by a very sinister and secretive tooth worm that lived in the tooth and consumed it, creating cavities and rotting the tooth. When the worm was resting, the victim would be unaware of its presence. But when the worm was wriggling around and feeding, the pain of toothache would torment the victim.

The legend of the tooth worm began in Eastern countries thousands of years ago, and continued well into the 18th century, and the myth still persists in traditions of isolated tribal societies. Treatments for tooth worm infestations often involved teasing the worm out with honey, herbs or heat and grabbing it with tweezers. Some healers actually believed that the tooth nerve was the worm itself. Extraction of the tooth was the last resort, and maybe the least painful.

From multiple sources, including: http://www.1800dentist.com/dental-encyclopedia/tooth-worm

IN THE CLASSROOM

The “Dental EGGS periment”

On page 4 is a classroom experiment that demonstrates the effects that sodas can have on teeth. The “Dental EGGS periment” shows how the acid in soda will affect the shell of an egg (like enamel) while there is no change on the shell of the egg that is placed in water. Students enjoy seeing the changes in the eggs from day to day. Grade level: 3-5
Tick Tock Tick Tock

Almost all teeth are susceptible to dental disease. Research has shown that tooth decay and gum disease are caused by bacteria normally found in the mouth. The bacteria can then form plaque, a colorless, sticky film that forms in our mouths daily. Plaque grows best in the areas between the teeth, the pits and grooves of the tooth surface, at the gum line and the area beneath the gum line, where the gum attaches to the tooth. Sugar from sugary snacks and drinks interacts with plaque that results in acid formation. This interaction sets the stage for the disease process to begin including both tooth decay and gum infections. Acid formation is determined not only by the frequency, but also the consistency of the sugars we eat. Liquid sugars can result in acid attacks for up to 20 minutes after you eat, and solid, sticky sugars can result in acid attacks for up to 40 minutes afterwards. Substituting healthy snacks for in-between meals can greatly reduce the amount of time we are exposed to these damaging acids that destroy tooth enamel and contribute to gum infections. On page 5 of Dental Bytes, there is an activity, “It’s Math Time”. Use this with your students to help them learn how destructive sugary snacks and drinks can be to their oral health and, surprisingly, the length of time their teeth can be exposed to acid attacks. Please stress effective plaque removal by brushing and flossing and the importance of good nutrition. Effective brushing and flossing after eating decreases the amount of time teeth are under acid attacks. This will result in both healthier teeth and bodies. See pages 6-7 for additional classroom resources, “What is Dental Plaque?” And “Plaque Causes Tooth and Gum Disease”

Healthy Living Standard Course of Study Competency Goals: Kindergarten 4.03; Grade 1, 4.04; Grade 2, 4.02; Grade 5, 4.02; Grade 6, 4.06; High School 4.08

Books:

• Throw Your Tooth on the Roof by Shelby B. Beeler
This is a collection of stories about traditions of losing primary teeth in many cultures. Customs vary from placing the tooth under the pillow for the Tooth Fairy to Botswana kids throwing their tooth on the roof. Ages: 5 to 8

• How Many Teeth? by Paul Showers
Discuss how human teeth develop from babies to adults, including tooth types and functions, number of teeth, how permanent teeth replace baby teeth, and a quick lesson in proper dental care. Ages: 3 to 6

Web Sites:

• American Dental Association (ADA)
http://www.ada.org/prof/events/featured/ncdhm.asp
This section of the ADA web site provides information on Children’s Dental Health Month information, free classroom activity sheets and posters, in English and Spanish.

• National Institute of Dental and Craniofacial Research (NIDCR)
“The Story of Fluoridation”. This story takes you through the journey to discover fluoride and its effect on teeth. It describes a mysterious disorder that resulted in teeth with brown stains for people who lived in Colorado Springs, Colorado in 1909. Two dentists worked to discover why this was occurring. One of the mysteries they discovered was that even though the teeth were brown, they were free of dental decay.

Next Issue

Oral Health and Learning
Fluoride Mouthrinse Program Update
Oral Hygiene

Your State Dental Public Health Hygienist

Kim Jernigan, RDH, MEd
Alamance County Health Dept.
319 N. Graham-Hopedale Rd., Suite B
Burlington, NC 27217-2971
Phone: (336) 538-9918
Kim.Jernigan@dhhs.nc.gov
The purpose of this experiment is to demonstrate the effect that the acid content in sodas have on the enamel of the teeth. Grades 3-5

Many students are notorious for the amount of sodas they consume daily and their favorites are either citrus based (green/yellow/clear) or Colas (brown/ reddish brown).

Hard boil at least three eggs. Obtain three tall classes. Carefully place one egg in each glass so that the shell does not crack. Fill one glass with the cola drink, one with the citrus drink and the 3rd with water. Make sure the liquid covers the egg. Egg shells are used here to simulate tooth enamel.

Place one egg in each class during the first period class and allow time for each class to observe the color of each egg. As the day progresses note that the first two eggs are taking on a deeper shade of the color of the liquid they are soaking in.

Allow the eggs to stay in the liquid several days. The shells on the eggs that are placed in the sodas should begin to break down after a few days due to the acid content of the cola. The egg in the plain water should show no change in the shell pointing out that water is good for our teeth.

This lesson demonstrates that teeth retain the color of the materials they are exposed to most often and that acids from foods we consume can damage the enamel of the teeth. Once tooth enamel is gone, the enamel does not regenerate itself.

Healthy Living Standard Course of Study Competency Goals:
Grade K, 4.03; Grade 1, 4.04; Grade 5, 4.02; HS, 4.08

State of North Carolina, Beverly Eaves Perdue, Governor
Department of Health and Human Services, Lanier M. Cansler, Secretary
Division of Public Health, Oral Health Section  2/10
February is National Children’s Dental Health Month

It’s Math Time

Can you help Flossy find the answer to this math mystery?
Follow the clues below to get the answer!

20 minutes – this is how long acids can attack your teeth each time you have sugary foods or drinks. If you have two sugary treats every day, how long have your teeth been attacked by acids at the end of a year?

20 \times 2 \text{ sugary drinks or snacks per day} = \underline{} 
\times 7 \text{ days per week} = \underline{} 
\times 4 \text{ weeks per month} = \underline{} 
\times 12 \text{ months per year} = \underline{} 
\div 60 \text{ minutes in an hour} = \underline{} \text{ hours per year!}

Limit sugary foods and drinks!
When your tooth enamel is eaten away by acids, it doesn’t grow back!

Answer: 224 hours
What is Dental Plaque?

Plaque is a sticky, clear film which forms every day on teeth.

Plaque is made up mainly of microscopic germs which are in the mouth at all times.

Plaque sticks to the teeth.

Plaque is found mostly between the teeth and near or under the gum line.

How does Plaque grow?

Plaque germs feed on many of the foods we eat. Carbohydrates and sugars are their favorites. When these germs stay on the teeth, they grow in number and form into clumps. Plaque produces acid as it feeds. This acid is the major cause of tooth decay and gum disease.

How can Plaque be controlled?

Some Plaque is removed by saliva or by movement of the tongue and cheeks over the teeth.

Brushing and flossing every day can help to control Plaque. Regular professional cleaning at your dentist office is the best way to keep plaque under control.
Plaque Causes Tooth Decay And Gum Disease

How does plaque cause tooth decay?

When Plaque germs feed on sugar or carbohydrates, acid forms within seconds. This acid is held on the surface of the teeth by Plaque. The acid dissolves the enamel and over a period of time, causes tooth decay. Early stages of tooth decay may cause no pain.

When the decay reaches the nerves, or the pulp, the pain can be severe.

PLAQUE GERMS FEEDING ON SUGAR AND CARBOHYDRATES PRODUCE ACID
ACID + TOOTH = DECAY

How does plaque cause gum disease?

Plaque may irritate gums and cause them to become red and swollen and to bleed easily. No pain occurs at this stage.

If this continues, the gums may become infected. This infection can destroy the periodontal membrane and the bone which hold the tooth in place. The tooth can become loose and may fall out.

PLAQUE IRRITATES THE GUMS, AND MAY CAUSE INFECTION AND TOOTH LOSS
PLAQUE + GUMS = GUM DISEASE

Control Plaque With Daily Brushing And Flossing, And Regular Visits To Your Dentist

State of North Carolina, Beverly Eaves Perdue, Governor
Department of Health and Human Services, Lanier M. Casler, Secretary
Division of Public Health - Oral Health Section 2/09