Adolescent/Young Adult’s Oral Health and the Eruption of Permanent Teeth (after 6 years of age)

The causes of caries remain the consistent throughout life. Caries are known to be caused by acids produced by Streptococcus mutans, Lactobacillus, and many other bacteria in the mouth. These bacteria colonize dental plaque. These bacteria are also present in healthy adult saliva and are part of the normal oral bioflora environment in most adults.

Caries in Permanent Dentition

Risk of Caries may be assessed in children >6 years of age and adults

Risk factors include:

1. Absence of oral hygiene and/or not using a fluoride-containing toothpaste
2. Frequent snacking on sugar sweetened or carbohydrate snacks
3. High level (more than 1 per day) of consumption of carbonated beverages
4. Special healthcare needs that may make oral hygiene difficult
5. Eating disorders: Anorexia/bulimia and gastroesophageal reflux disease (GERD)
6. Visibly heavy plaque on tooth surfaces
7. Orthodontic appliances
8. Drug abuse—especially methadone
9. Reduced salivary flow (caused radiation or commonly prescribed prescription drugs that cause dry mouth/xerostomia,)
10. Neither obesity nor diabetes (types 1) have NOT been shown to be risk factors for caries

Oral Hygiene Recommendations for the Prevention of Caries

At the eruption of the first permanent tooth

1. A child should have mastered tooth brushing technique and use a fluoride containing toothpaste by the age of 7.
2. Tooth brushing should be done twice daily for 2 minute durations.
3. Fluoride recommendations include drinking fluoridated water, using fluoride-containing toothpaste. A child or young adult may elect to also use fluoride-containing mouth rinses.
4. Daily flossing should be encouraged
5. Chewing sugarless gum stimulates salivary flow and enhances remineralization.
Issues of Mouth and Oral cavity that may impact a young adult’s development

1. As the awareness and importance of personal appeal becomes a deep concern to the developing young adult, cosmetic concerns, an attractive smile and breath odors gain importance
2. Oral pain may impact attendance or performance in school
3. Caries is a preventable disease in adults as it is in young children
4. Malocclusion (imperfect positioning of the teeth when the jaws are closed) of permanent teeth may affect both proper mastication of food and self-esteem
5. Tooth whitening should be considered a cosmetic procedure that may produce tooth sensitivity

Pain in the Oral Cavity

Tooth Pain

1. Caries is a disease of the hard tissues of the tooth and caused by infection
2. Before caries spread to the nerve of the tooth, dental caries is painless
3. Once caries has spread to the nerve inside the tooth, a patient will begin to experience pain
4. When infection reaches the inside of a root, it is called a tooth abscess. This condition is severely painful and required immediate attention from an oral health professional

Gum and Soft Tissue Oral Lesions

1. If gums are loose, sore, red, and bleed when the teeth are brushed, then these gums are infected
2. Gum disease is progressive, beginning with redness and tenderness at the gum/tooth line (gingivitis) and progressing to infection of the surrounding oral tissues and bone
3. Aphthous ulcers appear inside the mouth are common and painful, also referred to as canker sores
   a. Cause is unknown
   b. Sores do not appear outside the mouth (see Herpes Simplex Labialis)
   c. Aphthous ulcers resolve without treatment within 2 weeks of onset
4. Herpes simplex labialis, also known as cold sores, fever blisters or oral herpes, is an infection of the mouth, lips and tongue area caused by the herpes simplex virus
   a. Caused by herpes simplex 1 (HSV-1) is highly contagious and prevalent
   b. Lesion should resolve without treatment within two weeks of onset of symptoms
5. Oral Cancer
   a. Mouth pain is often associated with cancer of the mouth and oral cavity
   b. Early signs of oral cavity and oropharyngeal cancer may be mistaken for other problems, such as a toothache or cold sores. It is extremely important that, if oral lesions persist beyond 2 weeks, referral to a physician is necessary

Risks of Oral/Oropharyngeal Cancer

While Oral/ Oropharyngeal Cancer often presents during late adulthood, the major risk factors for this devastating cancer begin in youth. Counseling patients regarding appropriate cessation and prevention strategies is advised.

1. Gender-Male (50% of those diagnoses with oral/oropharyngeal cancer are male)
2. Tobacco use including spitting tobacco and smoking
3. Tobacco use in combination with alcohol use
4. Use of Betel quid (common in some Asian communities)
5. Actinic Radiation (from sunlight) associated with cancer of the lip
6. Engaging in oral sex and oral exposure to Human Papaloma Virus (HPV-16)
   a. Symptoms of HPV often associated Oral/ Oropharyngeal Cancer include: a lump in the neck, a sore throat or ear pain that persists more than two weeks
   b. Vaccination for HPV-16 may be suggested to patients at risk

**Diseases of the Gums: Gingivitis and Periodontitis**

*While diseases of the gums are not as common for younger adults than older patients, risk factors for the younger patient should alert to the professional to the possibility of gum disease*

**Risk Factors for Gum Disease**

1. Pregnancy
2. Diseases of the immune system such as AIDS and its treatments
3. Treatments for cancer
4. Smoking (all substances that may be smoked)
5. Diabetes (type 1 & type 2)
6. Medications that cause xerostomia (dry mouth)
7. Genetic predisposition

**Gingivitis**

1. Caused by the reaction of gum tissue to the bacteria present in dental plaque. When plaque is not removed by tooth brushing or flossing properly, gingivitis may result.
2. Symptoms include redness at the tooth/gum line, gums that bleed easily (often when tooth brushing), and gum tenderness
3. Should be treated as soon as detected as this is a precursor for periodontal disease that is both more difficult to treat
4. Referral to an oral health professional is advised if symptoms of gingivitis are present

**Periodontitis**

1. Like gingivitis, caused by the reaction of gum tissue to the bacteria present in dental plaque, however in periodontal disease, infection has progressed toward the area of tooth roots and boney structures
2. Periodontal disease is present when gums pull away from the teeth and form spaces (called “pockets”) that become infected
3. In periodontal disease, the body’s immune system fights the bacteria as plaque spreads and grows below the gum line
4. Bacterial toxins (the body’s response to infection) break down the bone and connective tissue that hold teeth in place
5. Symptoms include redness of the gums, gums that bleed easily (often when tooth brushing), gum tenderness.
6. If not treated, bones of the jaw, gums, and tissue that support the teeth may be destroyed. The teeth may eventually become loose and have to be removed.
7. Referral to an oral health professional is advised if symptoms of periodontal disease are present.

**Pregnancy**

1. Extra care of all oral structures (gums, teeth, lips, and soft tissues) should be counseled during pregnancy. Assessment by a dentist is recommended for all pregnant women.
2. Hormone changes (estrogen & progesterone) of pregnancy may increase the risk of gingivitis and periodontal disease in the mother
   a. Although the precise cause is not known, maternal gingivitis and periodontal disease have been associated with infant low birth weight and pre-term birth.
   b. Inflamed, non-cancerous growths may develop between the teeth or when swollen gums become irritated. These localized growths/swellings are believed to be related to excess plaque. Normally, these "tumors" may left alone and will shrink on their own after the baby's birth; however, if a tumor is uncomfortable, interferes with chewing, brushing, or other oral hygiene procedures, a dentist may decide to remove it.
3. Any infection, including tooth decay, gingivitis, and periodontal disease has the possibility of affecting the health of the fetus.
4. Pregnant patients should be advised to postpone any cosmetic or esthetic procedure until after the birth.

**Demineralization/Remineralization Cycle and Permanent Dentition**

1. This process in which calcium and phosphate ions are dissolved from the tooth enamel by acids produced by bacteria in the mouth (demineralization) and replaced with these same ions present in saliva (remineralization) remains consistent throughout life. However, as a person develops, the saliva and salivary environment may now be impacted by personal life style choice, prescription drugs, and dietary preferences.
2. This is a natural process that is ongoing in the mouths throughout life.
3. Mineral ions essential in saliva for the process to be most effective are: calcium, phosphorous and fluoride.

**Xerostomia** (dry mouth) before age 40, is primarily caused by medications

1. More than 400 common can cause xerostomia. Xerostomia alters the salivary environment and increases risk of gingival and periodontal disease as well as enamel erosion and caries.
2. Common drug classifications that cause xerostomia (dry mouth)
   - Analgesics
   - Antipsychotics
   - Anorexiant
   - Anti-Parkinson agents
   - Anti-anxiety agents
   - Anticholinergics
   - Antidepressants
   - Anti-diarrheals
   - Anti-emetics
   - Anorexiant
   - Antihypertensives
   - Bronchodilators
   - Decongestants
   - Diuretics
3. Patient perception of dry mouth is unreliable since a 50% loss is necessary before a patient will be conscious of the condition.

4. In the young adult age group, the most common xerostomia causing drugs are antidepressants.

5. Common antidepressants for this age group are:
   - sertraline (Zoloft)
   - citalopram (Celexa)
   - paroxetine (Paxil, Pexeva)
   - trazodone (Oleptro)
   - escitalopram (Lexapro)
   - fluoxetine (Prozac)
   - fluvoxamine (Luvox)

6. A patient prescribed antidepressant medications may be counseled in the preventive strategies for xerostomia.

7. Strategies to prevent the oral consequences of xerostomia:
   a. Attention and care taken with oral hygiene and tooth brushing/flossing.
   b. Self-monitoring for sore patches in the mouth that may be oral candidiasis (thrush).
   c. Avoiding sugar-sweetened beverages and foods.
   d. Drinking fluids when eating.
   e. In dry environments, using a humidifier.
   f. Staying well-hydrated but avoiding caffeinated beverages (caffeine is a mild diuretic).
   g. Stimulate salivary flow by chewing sugar-free gum or sucking on long-lasting sugar-free mints.

Trauma to the Mouth and Oral Structures

When an Emergency that Involves the Mouth occurs:

Caregivers should protect themselves:

1. Work from the side: this avoids having to put your hands directly into the mouth.
2. Remember, no bandages across the mouth.
3. Protect hands with gloves.
4. Practice the ABC’s of Trauma.
5. Do not attempt to clean an oral wound.

Control Mouth Bleeding:

1. Direct pressure: Press firmly for 15 minutes. Do not check—just keep applying pressure.
2. Inter-lip bleeding (between the lip and the gums), put gauze into the mouth—but leave a “tail” of gauze hanging out of the mouth.
3. Do not stretch the lips.
4. Bite A Wet Teabag—for bleeding in a small area of the mouth.

Get and Keep Patient Upright, Comfortable and Drooling:

1. Do not have the patient spit.
2. Drool out debris that may be in the mouth.
3. No mouthwash or antiseptic.
Get All Debris Out of the Mouth
1. “If it dangles—tissue, tooth fragments, appliances, etc—get it out“
2. Try to keep all things found in the mouth and give these to the oral health profession who assesses the patient

Emergency Involving Appliances That Do Not Come Out
1. Braces, wires, jagged edges of “grills” – if available, candle wax or a pencil eraser can cover the pointy protrusions to avoid more damage
2. Always keep "the pieces"

Avulsed Teeth
1. When teeth are out of the mouth, if possible, put back into place in the tooth socket
2. Transport in whole milk or inside the patient’s mouth if he/she is fully conscious

After Care Patient Advice: For the next 12 hours...
1. No drinking through a straw
2. No carbonated beverages
3. No hot beverages

Lifestyle and Cosmetic Procedures that Negatively Impact the Oral Cavity
The American Association of Pediatrics stand is to advise patients regarding the complications of these cosmetic procedures

Oral Piercing and Jewelry

Procedure-Related Risks
1. Swelling
2. Infection
   a. Oral piercing carries a risk for infection due to trauma of the skin or oral tissues and the vast amount of bacteria in the mouth
   b. Blood-borne disease transmission - Possible transmission of Hepatitis B, C, D, or G --if the procedure is performed in non-sterile manner
c. Oral piercing is a route of entry of bacteria into the bloodstream. Endocarditis may result in endocarditis for patients with cardiac abnormalities
d. Prolonged bleeding and possible nerve damage

Intra-Oral Jewelry-Related Risks (lip, tongue, cheek)

1. Injury to the gums
2. Chipped (fractured) teeth
3. Interference with normal oral function—speaking, chewing
4. Allergic reaction/hypersensitivity to metal (e.g., nickel)
5. Aspiration or ingestion possible if jewelry becomes loose
6. Interference with oral health evaluation

Additional Behaviors that Negatively Impact the Oral Cavity

Drug Abuse: Illicit drug use can have negative effects on oral health by affecting salivary flow (promoting dry mouth), changing the acidity of the mouth and by promoting poor dietary habits and laxity in oral hygiene

Methamphetamines
Street names: Crystal meth, meth, speed, ice, crank.
Potent central nervous system stimulant that stimulates release and blocks re-uptake of monoamines in the brain.
Can be smoked, snorted, injected or taken orally.
Methamphetamine abuse is associated with rampant caries, termed “meth mouth”, which may result from a combination of drug-induced xerostomia, increased consumption of high calorie, sugared, carbonated beverages, tooth grinding/clenching and poor oral hygiene.

Methadone
1. Accelerated tooth decay in teens and young adults.
2. Distinctive pattern of decay on smooth surface of teeth next to the cheek (buccal) and between teeth located in the back of the mouth

![Image of teeth affected by meth mouth]
Smoking
1. Tobacco smoking is associated with increased risk of oral cancer
2. Marijuana smoking not has yet been determined as contributing factor in oral cancer risk
3. To date, no evidence has been compiled to directly link e-cigarettes with oral disease.

Bruxism (Tooth grinding)
1. A type of erosion that cannot be repaired by enhancement of the natural remin/demin process
2. Patients with bruxism should be referred to a dental or sleep medicine specialist

Dietary Choices and their Impact
Throughout life, consuming sugar in any form may negatively contributes to oral health as it is the energy source for Strep mutans which produce acid that results in decay.

The Role of Sugar
1. Food and beverage manufacturers list sugar that contributes to caries under many names
   Sugar has little effect on caries, if:
   a. Ingested with meals
   b. It is consumed less than 4 times per day
2. Sugar is related to caries with regard to frequency and/or duration of exposure, not solely on the quantity ingested
3. A diet for a healthy mouth echoes the recommendations for a healthy body
   a. Drink water to stay hydrated and maintain proper saliva flow. Inadequate hydration, medications, and stress can decrease saliva flow, increasing caries risk
   b. Select high fiber, whole grain breads or cereals instead of foods made with white flour
   c. Eat foods rich in calcium and vitamin D at least 3 times a day

Importance of Calcium
Necessary for proper saliva content (buffering, remineralization substrate) and alveolar bone maintenance. Vitamin D helps with absorption of calcium and is also necessary for maintenance of alveolar bone.

Sources of dietary calcium are: Milk and yogurt (vitamin D fortified), cheese
1. Fish (tuna, salmon, sardines)
2. Eggs
3. Cereals and grains fortified with Vitamin D
4. Foods and beverages fortified with calcium (orange juice, cereal, non-dairy milk)
5. Soy (soybeans, soy milk or tofu)
6. Green leafy vegetables (e.g. spinach, greens, kale, etc.)
Enamel Erosion

While not an issue of the deciduous teeth of childhood, erosion of the enamel surface is a concern throughout adulthood.

1. Erosion is the chemical dissolution of tooth structure by acids without the involvement of microorganisms
2. Intrinsic erosion is caused by gastrointestinal problems like acid reflux (GERD), anorexia or bulimia
3. Extrinsic erosion is caused by environmental factors, lifestyle and diet
4. Extrinsic erosion is associated strongly with the consumption of sugar-sweetened carbonated beverages, diet carbonated beverages, 100% fruit juices, citrus flavoring, citrus flavored beverages and energy drinks
5. Erosion may be difficult to identify, appearing first as a silky, shiny tooth surface. Tooth sensitivity may also be a patient complaint
6. Advanced erosion may appear similar to be severe caries. The impact on the integrity of the teeth is similar

Recommendations for the Prevention of Enamel Erosion

1. Exposing tooth structures to fluoride. (Drinking fluoridated water, using fluoride-containing toothpaste, fluoride-containing mouth rinses)
2. Chewing sugarless gum – stimulated saliva combats erosion
3. Non-nutritive chewing stimulates salivary flow; increases alertness
4. Sugar-free chewing gums do not stimulate the growth of caries-causing bacteria
5. Some sweeteners, like the sugar alcohol xylitol, have been shown lower caries rates

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