

## Oral, Esophagus, Dysphagia, and Adaptive Feeding Techniques

### 1. What are the difference between cariogenic foods, cariostatic foods, anticariogenic foods?

- **Cariogenic** - foods are those that contain fermentable carbohydrates which, when in contact with microorganisms in the mouth, can cause a drop in salivary pH to 5.5 or less and stimulate the caries process. Fermentable carbohydrates are found in four of the six food guide pyramid food groups: grains, fruits, dairy products, and the added sugar and fats/sweets. Examples: crackers, chips, pretzels, hot and cold cereals, and breads. All fruits and fruit juices. Fruit drinks, sodas, ice teas and other sugar-sweetened beverages, desserts, cookies, candies, and cake. Dairy products sweetened with fructose, sucrose, or other sugars. Sucrose. All dietary forms of sugar, including honey, molasses, brown sugar, and corn syrup solids.
- **Cariostatic** foods - or foods that do not contribute to decay are not metabolized by microorganisms in plaque and so do not cause a drop in salivary pH to 5.5 or less within 30 minutes. Examples: protein foods such as eggs, fish, meat, and poultry, many vegetables, fats, and sugarless gums.
- **Anticariogenic foods** – are those that prevent plaque from recognizing an acidogenic food when it is eaten first (acidogenic = cariogenic). Sources include xylitol gums and cheeses, such as aged cheddar, Monterey jack, and Swiss cheese.

### 2. What roles does saliva play in cavity prevention and oral health?

Salivary flow clears food from around the teeth. By means of the bicarbonate-carbonic acid and phosphate buffer system, it also provides buffering action to neutralize bacterial acid metabolism. Chewing promotes saliva production, and may account for the reduced cariogenicity of fermentable carbohydrates consumed with a meal. Saliva is supersaturated with calcium and phosphorus. Once buffering action has restored plaque pH above the critical point, remineralization can occur. If fluoride is present in the saliva, the minerals are deposited in the form of fluorapatite, which is resistant to erosion. Salivary production decreases during sleep, as a result of diseases affecting salivary gland function, as a side effect of fasting, as a result of radiation therapy to the head and neck, or with the use of certain medications. Medications that may cause xerostomia include antianxiety agents, anticonvulsants, antidepressants, antihistamines, antihypertensives, diuretics, narcotics, sedatives, serotonin uptake inhibitors, and tranquilizers.

### 3. How is the etiology of caries affected by things such as microorganisms and dental plaque; substrate; substrate in mouth; susceptible tooth; fluoride and other minerals; and saliva?

Dental caries is an oral infectious disease in which organic acid metabolites produced by the metabolism of oral microorganisms lead to gradual demineralization of tooth enamel, followed by rapid proteolytic destruction of the tooth structure. The etiology of dental caries is multifactorial. Four factors must be present simultaneously. 1) a susceptible host or tooth surface, 2) microorganisms in the dental plaque or oral environment, 3) fermentable carbohydrates in the diet which serve as the substrate for bacterial metabolism, and 4) time (duration) in the mouth for bacteria to metabolize the

fermentable carbohydrates, produce acids, and cause a drop in salivary pH to less than 5.5. Once the pH falls below 5.5, oral bacteria can initiate the caries process.

1. **Microorganisms and dental plaque** – bacteria are an essential part of the decay process. Several microorganisms are capable of fermenting dietary carbohydrate. They metabolize carbohydrates and produce acid at levels sufficient to cause decay. Plaque is a sticky, colorless mass of microorganisms, salivary proteins, and polysaccharides that adheres to teeth and gums.
2. **Substrate** - fermentable carbohydrates are the ideal substrate for bacterial metabolism. The acids produced by their metabolism cause a drop in salivary pH to less than 5.5, creating the environment for decay.
3. **Substrate in mouth** – frequency of consumption of fermentable carbohydrates, food form (liquid, solid, slowly dissolving), sequence of eating foods and beverages, combination of foods, nutrient composition of foods and beverages, duration of exposure of teeth to food and beverages.
4. **Susceptible tooth** – vulnerable to attack. The composition of enamel and dentin, location of teeth, quality and production of saliva, and the presence and extent of pits and fissures in the tooth crown are factors that govern susceptibility. Composition of the saliva is also important. Alkaline saliva may have a protective effect, whereas an acidic saliva increases susceptibility to decay. Family factors/genetic influences of food selection, eating patterns, and oral hygiene.
5. **Fluoride** and other minerals – helps promote repair and remineralization of tooth surfaces with early carious lesions, helps reverse the decay process while promoting the development of a tooth surface that has increased resistance to decay, and may help deter the harmful effects of bacteria in the oral cavity by interfering with acid production by the bacterial cell.
6. **Saliva** – see question 2 above and number 4 above (susceptible tooth).

5. How to prevent caries for someone with xerostomia?

Efforts to stimulate saliva production using pilocarpine and citrus-flavored, sugar-free candies may ease eating difficulty. Individuals without any saliva at all have the most difficulty eating; artificial salivary agents may not offer relief. Lack of saliva impedes all aspects of eating, including chewing, swallowing, and the sensation of taste; causes pain; and increases the risk of dental caries and infections. Dietary guidelines focus on the use of moist foods without added spices, and use of lemon glycerine or liquids with all meals and snacks. Avoid chewy, crumbly, dry and sticky foods. Good oral hygiene habits are important to reduce the risk of tooth decay.

6. How is a soft diet different from a general diet? When is it used?

Soft:

- **For patients who have difficulty chewing tough or hard foods.**
- Tough meats, raw fruits/vegetables that are hard to chew (raw apples, oranges, celery, carrots, broccoli, etc.) are eliminated.
- Meats are not chopped. Foods should be easy to digest.

- Meats can be "chopped" if specified into cubes for patients who have difficulty cutting their meat up or have trouble chewing big pieces of meat.
- The need for chopped meat can be determined by a nurse or dietitian.

7. What is the diet therapy for GERD?

- Low acid foods
- Some spices, as tolerated
- **Diet as tolerated**
- Avoid foods that lessen LES pressure (fat, alcohol, carminatives, chocolate)
- More low fat diet
- Avoid foods that stimulate HCl production (alcohol, caffeine, coffee)
- Wait 2-3 hrs after eating before lying down.
- Stop smoking (relaxes LES and decreases saliva flow)
- Lose wt. if appropriate.

8. What are the underlying causes of GERD?

Anatomical reasons for GERD:

- Lessened or impaired lower esophageal sphincter
- Decreased acid clearance
- Delayed gastric emptying
- Duodenoagastric reflux of bile salts (very corrosive)

9. What are the 2 areas of skills needed by a person to be able to get food from the plate to the mouth?

Sensorimotor and cognitive.

10. What are signs that an occupational therapist (OT) needs to be called in for a consult?

Trays are coming back untouched.  
Not getting food to mouth.

11. What are the signs that a speech pathologist needs to be called in for a consult?

Trays are coming back untouched.  
Not swallowing.

12. What is the appropriate consistency of diet or diets to feed if a person has a problem with swallowing in the pharyngeal stage?

- Use cohesive foods that do not fall apart and thickened liquids.
- Use moist, well-lubricated foods that maintain a cohesive bolus.
- Use soft foods and thick to spoon-thick liquids.

- Avoid sticky and bulky foods that tend to fall apart.
- Use thickened liquids and pureed foods.

13. What is the appropriate consistency of diet or diets to feed if a person has problems with the oral stage?

- Maintain semisolid or chopped/minced consistencies.
- Use moist, well-lubricated foods.
- Maintain semisolid consistencies that form a cohesive bolus.
- Avoid foods with more than one texture (i.e., dual density foods).
- Use foods at colder temperatures; increase texture and seasoning of foods for increased sensation/awareness.
- Use soft, bland foods.
- Avoid acidic foods, temperature extremes, and rough, raw, salty, and spicy foods.
- Add gravies, margarine, and sauces.
- Use artificial saliva, sugarless lemon drops, papain, or citrus juices to thin secretions.
- Avoid dry, crumbly foods.
- Ensure adequate fluid intake.
- **Use cohesive foods.**
- **Density depends on the level of oral sensation and swallowing dysfunction. Temperature extremes and highly seasoned foods may help to excite nerves.**
- **Use thickened liquids.**
- **Avoid sticky or bulky foods.**
- **Assess ability to control liquids.**

14. Why is it important to intervene in cases of dysphagia?

- To provide adequate energy, nutrients, and fluids in a consistency safely tolerated by the individual and adjusted according to the changing needs of the individual.
- To prevent malnutrition, dehydration, choking, aspiration pneumonia, and associated sequelae such as decreased immune function and pressure ulcers.