

# **Healthy Mouth, Healthy Body-- Healthy Practice**

**Thursday, 6/24/2010  
9:30am-12:30pm**

**Sponsored by:**



# Healthy Mouth, Healthy Body, Healthy Practice

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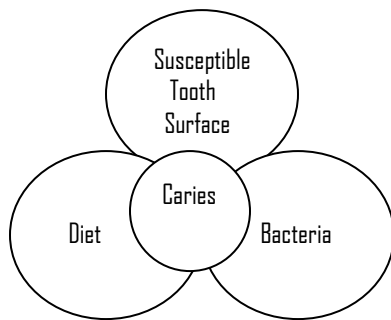
## I. Scientific evidence in the literature regarding oral health and nutrition link.

A. As the interrelationship between the mouth and the rest of the body becomes clearer, dental professionals, doctors, the allied professions and patients will need to rethink the term “oral health”

### B. Poor Oral Health Associated with Coronary Artery Disease (*Circulation: Journal of the American Heart Association, Feb. 2004*)

1. Pericoronitis
2. Root remnants
3. Gingivitis
4. Dental caries
5. Missing teeth

## II. Diet and Dental Caries



### A. Back to the Basics:

1. Physical Form
2. Frequency
3. Time

### B. Sucrose isn't the only 'bad guy'.

1. All of the monosaccharides and disaccharides can be cariogenic under certain circumstances.
  - a. Fructose, glucose and maltose ALMOST as caries promoting as sucrose

- b. Lactose has low cariogenicity EXCEPT when used in a baby bottle at bedtime
- c. Honey is composed of fructose, glucose and sucrose and is as cariogenic as sucrose
- d. Refined cooked sugars such as doughnuts, cookies, potato chips and some ready to eat breakfast cereals produce a prolonged acidogenic response when retained in interproximal spaces
- e. Fat free foods—loaded with sugar

**Sugar by any other name...is STILL sugar...**

➤ Brown sugar	High-fructose corn syrup
➤ Lactose	Corn sweetener
➤ Maltose	Corn syrup
➤ Malt syrup	Dextrose
➤ Sucrose	Fructose
➤ Syrup	Fruit juice concentrate
➤ Table sugar	Glucose
➤ “Cane Juice”	

**2. Sources of sugar in the diet.**

- a. 33% come from soft drinks
- b. 1 tsp sugar= 4 grams carbohydrate
- c. Currently the average person consumes approximately 53 gallons of carbonated soft drinks a year ---that doesn't include the noncarbonated beverages!
- d. AHA guidelines recommend 6 tsp of sugar for women and 9 tsp for men-- whereas typical American diet consumes 22 tsp/d.
- e. EXCESSIVE INTAKE OF SODA: Replaces nutrient dense foods with liquid sugar
- f. Oral Health: Dental caries and tooth erosion
- g. Overall Health: Contributes to conditions such as diabetes, osteoporosis, and increased rate of bone fractures in women and OBESITY.

## Difference Between "Natural" and "Added Sugars"

The sugars listed on the Nutrition Facts panel on foods include BOTH naturally occurring sugars (like those in fruit and milk) as well as those added to a food or drink. **Naturally occurring sugars are NOT considered "added sugars."**

<b>Nutrition Facts</b>	Amount/serving	%DV*	Amount/serving	%DV*
	<b>Total Fat</b> 2g	<b>3%</b>	<b>Total Carb.</b> 0g	<b>0%</b>
Serving Size 1/3 cup (56g) Servings about 3	Sat. Fat 1g	<b>5%</b>	Fiber 0g	<b>0%</b>
<b>Calories</b> 90 Fat Cal. 20	Trans Fat 0.5g		Sugars 0g	
	<b>Cholest.</b> 10mg	<b>3%</b>	<b>Protein</b> 17g	
	<b>Sodium</b> 200mg	<b>8%</b>		
<small>*Percent Daily Values (DV) are based on a 2,000 calorie diet</small>	Vitamin A 0% • Vitamin C 0% • Calcium 0% • Iron 6%			

Below is a comparison the U.S. Food and Drug Administration provided on two yogurts. The plain yogurt on the left has no added sugar; the other one does. Depending on your overall food choices and calorie needs, either one might be a satisfactory choice. Just be aware that when a dairy or fruit product cites "sugars" on the Nutrition Facts panel, it doesn't mean there are added sugars, unless a form of sugar listed in the ingredients.

<b>Total Carbohydrate</b> 15g	5 %
Dietary Fiber 0g	0 %
Sugars 10g	
<b>Protein</b> 13g	

**Plain Yogurt:** contains no added sugars

**Ingredients:** cultured pasteurized grade A nonfat milk, whey protein concentrate, pectin, carrageenan

<b>Total Carbohydrate</b> 46g	15 %
Dietary Fiber Less than 1g	3 %
Sugars 44g	
<b>Protein</b> 9g	

**Fruit Yogurt:** contains added sugars

**Ingredients:** cultured grade A reduced fat milk, apples, **high fructose corn syrup**, cinnamon, nutmeg, natural flavors, and pectin

For more information about understanding and using the Nutrition Facts Label:  
[www.cfsan.fda.gov/~dms/foodlab.html](http://www.cfsan.fda.gov/~dms/foodlab.html)

### What's in your CUP?

12 oz can of non-diet beverage (10 tsp. of sugar) ~140 calories; one a day=15 lbs

20 oz can of non-diet beverage (17 tsp. of sugar) ~250 calories; one a day= 24 lbs

64 oz "Big Gulp" of non-diet beverage ( 52 tsp of sugar) ~800 calories; one a day= 83 lbs

### 3. Dental healthy suggestions:

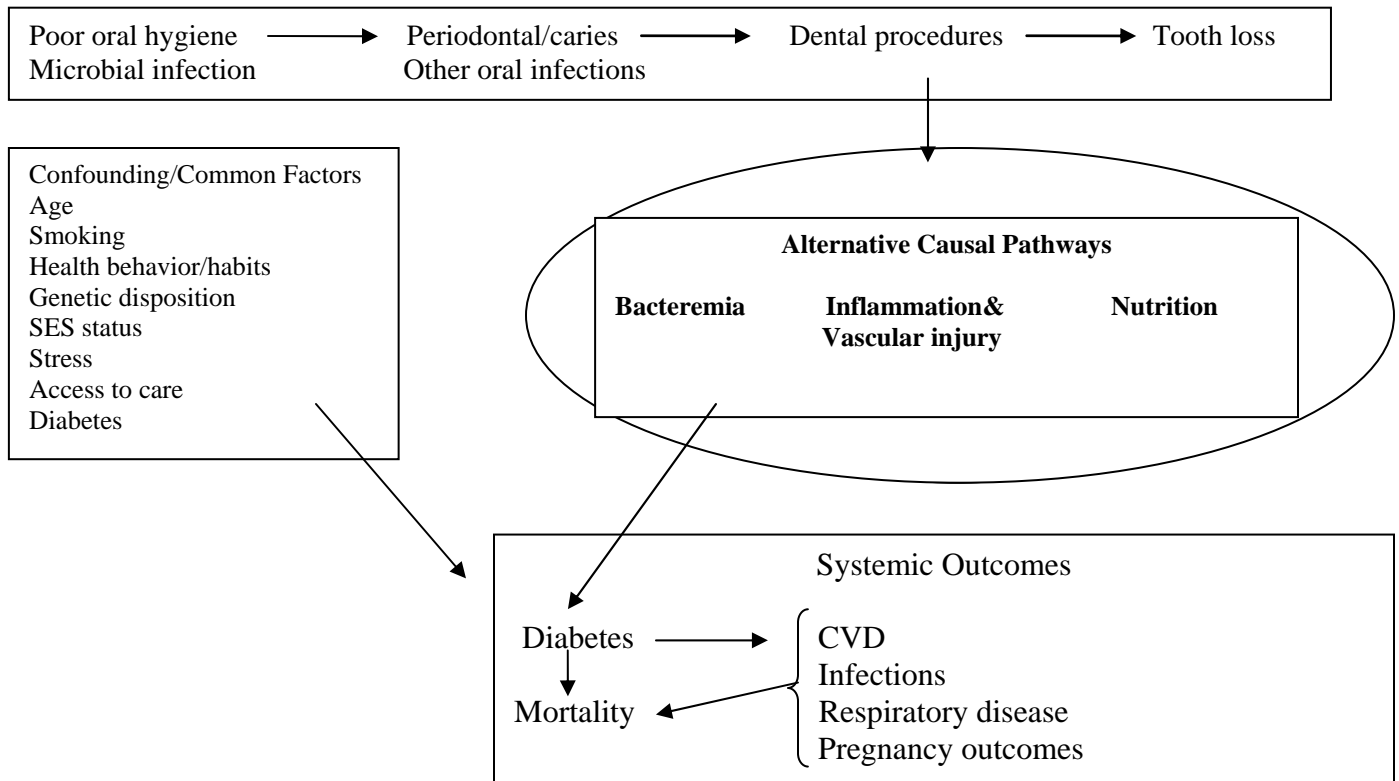
- Try to drink soda only with meals
- Select cans over re-sealable bottles because they limit consumption to one sitting.
- Chew sugarless gum
- Use a straw positioned toward the back of the mouth to reduce pop's direct contact to the teeth.
- Eat a dental healthy diet that emphasizes moderation and a variety of foods.
- Limit regular pop to one can per day.
- Keep your regular dental check-up appointments.

Great link to use as a resource in your practice:

[http://www.mndental.org/flash\\_sip/home.html](http://www.mndental.org/flash_sip/home.html)

### III. Diet, Nutrition and Oral Systemic Disease

#### Model for Evaluating Oral Systemic Associations



## **Systemic effects of nutrition on oral health**

1. Role of diet and nutritional factors in the development of periodontal disease is unclear. **HOWEVER** it IS known that defense mechanisms of the gingival tissues and saliva can be affected by nutritional intake and status.
2. Oral health affects our diet and our diet affects our oral health.
  - a. Weakened immune system can slow wound healing
  - b. Tooth Loss
  - c. Weight and Teeth
  - d. Smoking
  - e. Heart disease
  - f. Diabetes Mellitus
  - g. Respiratory infection, COPD
  - h. Osteoporosis
  - i. Preterm birth
  - j. Stroke
3. Inflammation and Oral health
  - a. C-reactive protein biomarker for heart disease
  - b. HSCRП—tests for “highly sensitive C-reactive protein”
  - c. Indicates levels of inflammation in the body
  - d. Normal= 1.2
  - e. Gingivitis, periodontal disease or some other type of inflammation results in increased numbers; often as high as 10-12.
4. Medications can be also problem—so be sure to update those medical histories, ask about herbals and supplements as well!

### Heart Disease

- Leading cause of death in men AND women
- Dentate status and heart disease is closely related
- Causal link between periodontal disease and heart disease



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### Heart Disease

- Changes in diet because of tooth loss can increase the risk of developing chronic ailments, including cardiovascular diseases (JADA Sept 2003)
- The relationship between tooth loss and changes in diet over an eight-year period among 31,813 male health professionals.



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### Heart Disease

- Participants consumed specific foods and nutrients associated with cardiovascular and other systemic diseases
- Results of this study support the detrimental impact of tooth loss on dietary intake



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### Heart Disease

- Changes in diet because of tooth loss could contribute to an increased risk of chronic disease.
- According to the study, the dietary change of men who lost five or more teeth was unhealthier than that of men who lost no teeth



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### Heart Disease: Flossing Matters!

- People who have both gum disease and a high body mass index, were more likely to have increased C-reactive protein—a marker in blood for heart disease. (Archives of Internal Medicine Dec 2003)



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### Diabetes Mellitus

- Sixth leading cause of death in the U.S.
- ADA estimates 1 out of every 6 overweight children has pre-diabetes

Oral Signs and Symptoms:

- Burning mouth and taste disturbances
- Gingivitis and Periodontitis
- Dental caries
- Salivary dysfunction
- Lichen planus, fungal and bacterial infections
- Oral Candidiasis

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### Diabetes Mellitus

- Oral infections and periodontal disease risk is much greater if poorly controlled.
- Consultation with physician may be necessary prior to invasive periodontal therapy.
- Good glycemic control is needed to maximize patient response to oral surgery, denture placement, and operative care.

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### Patient Management

- Changes in mouth since last visit
- When last meal was consumed, and what type of carbohydrate eaten
- Frequency of hypoglycemic attacks
- Medications used, dosages, frequency

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### Patient Management

- How often glucose is tested—self results and HgA1C
- Current symptoms
- Oral hygiene/frequent recalls
- Topical fluoride as indicated

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### Patient Management

- Encourage planned meals, physical activity and taking prescribed meds if needed
- Discourage hard candies or other foods consumed to combat hypoglycemia
- Limit alcohol if diabetes is not controlled
- Refer diabetic patients to MD for further care if needed and possible consult with a RD

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## Respiratory Disease

- Chronic obstructive pulmonary disease, bronchitis, emphysema and pneumonia
- Bacteria in the throat and mouth can cause infections or worsen existing lung conditions
- Ventilator assisted pneumonia (VAP) is leading cause of death from hospital acquired infections.
- Geriatric population



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## Osteoporosis

- Osteoporosis is suspected of being a risk factor for oral bone loss (Wactawski-Wende et al., 1996).
- Kribbs et al. (1989) showed that the height of the edentulous ridge is correlated with body calcium and the mandibular bone mineral density.

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## Osteoporosis

- ~25 million Americans account for 1.5 million fractures each year
- 1 in 2 women; 1 in 8 men
- Older white woman, low calcium intake, low activity, and a family history
- Dental x-rays as early diagnostic tool

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### Osteoporosis

- Risk of tooth loss and edentulism is increased
- Smoking increases bone loss; decreases calcium absorption
- Encourage use of sugar free chewable calcium supplements
- Food sources are first choice

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### Osteoporosis: What's the Dental Professional's Role?

- Ask about age and weight
- Question history of fractures
- "Is the person menopausal?"
- Pay attention to posture
- Has bone density been checked

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### Osteoporosis: What's the Dental Professional's Role?

- Encourage 3 to 4 food servings rich in vitamin D and calcium
- Calcium citrate OR calcium carbonate
- Tobacco cessation
- Encourage weight bearing exercises
- Recommend MD consult

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### Secondary Forms of Calcium

- 1 cup calcium fortified soy milk
- 3 cup cooked, dried beans
- 1 cup broccoli
- 1 2/3 cup sunflower seeds
- 1 cup almonds
- 3 pieces enriched cornbread
- 1 cup collard greens

\*Each substitution provides the same amount of calcium as 1 cup of milk

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### Populations that require special attention:

- Elderly
- Periodontal/Oral surgery patients
- Denture patients
- Pregnant women
- Parents of young children

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### Populations that require special attention:

- Athletes/Vegetarians
- Patients with chronic diseases (HIV, diabetes, cancer, GI problems)
- Patients with known eating disorders
- Patients suffering with GERD
- Lactose Intolerance

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### Elders taking shortcuts....

- More older Americans are taking unproven dietary supplements
- Supplements vs. cancer protective foods
- Supplements, fad diets, rising levels of obesity
- Fruits and veggies just aren't sexy!

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### Oral Health and Elderly Nutrition

- Xerostomia
- Ill-fitting dentures
- Chew 75-85% less efficiently
- Decreased consumption of meats, fruits,veggies
- Decreased, iron, vitamin E, B12, C, folate and B- carotene(vitamin A)

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### Common Classes of Medications Associated with Xerostomia

<b>Analgesics</b>	<b>Anticholinergics</b>
<b>Antidepressants</b>	<b>Antihistamines</b>
<b>Antihypertensives</b>	<b>Anti-inflammatory agents</b>
<b>Anti-Neoplastics</b>	<b>Anti-psychotics</b>
<b>Anti-Parkinson</b>	<b>Bronchodilators</b>
<b>Cancer treatments</b>	<b>Decongestants</b>
<b>Diuretics</b>	<b>Gastrointestinal agents</b>

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### General Recommendations for Caries Prevention in Xerostomia

- Encourage lots of water
- Limit beverages to meal time
- Saliva substitutes or salivary stimulants
- Sugarless candies or gums
- Incorporation of topical fluorides Lip balm to keep lips moist
- Use of a humidifier at home
- Nutrient-dense, soft, moist food (i.e.. Macaroni and cheese, cottage cheese)

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### Dentures, Partial Dentures, Missing Teeth....

- ½ of all American  $\geq$  55 wear a partial or complete denture
- Loss of teeth is NOT normal to aging
- Major cause is tooth extractions due to dental caries and/or periodontal disease.
- Fewer teeth=poor diet

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### Dentures, Partial Dentures, Missing Teeth....

- Dentate adults eat more fruits and veggies
- Implant supported mandibular dentures improve biting force
- Edentulous patients often consume more refined CHO's
- Lower fiber intake may contribute to impaired GI function

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### Dentate Status and Systemic Health

- Assess food quality
- Food choices may put edentulous patient at greater risk of heart disease and cancer
- Weight loss—limited variety or low calorie intake
- Low magnesium, zinc, calcium, fluoride, and folic acid levels are seen in edentulous persons

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### Dietary Recommendations for Denture Patients

• When learning to eat:

- Start with soft non-sticky food
- Cut food into small piece
- Cook fruits and veggies
- Chew slowly using both sides of mouth
- Chew in straight up and down motion
- Eat with molars; progress to biting and incising



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### Periodontal Surgery-Preoperative

- Patients should be screened for nutritional risk
- Chronic alcoholics, medically compromised and diabetic patients cannot tolerate periods without food
- Elective surgery should be postponed 1 to 2 weeks

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**Periodontal Surgery-Preoperative**

- Referral to registered dietitian
- Tailored meal plan
- Provide with list of nutrient dense foods and beverages
- Dental professionals can recommend liquid nutritional supplement or multivitamin

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**Periodontal Surgery-Postoperative**

- Blood loss, increased catabolism, tissue regeneration—increased nutrient needs!
- Intake influenced by nausea, dysphagia and oral discomfort.
- Extent of surgery and symptoms will determine diet
- Full liquid diet may be required first 1-3 days post op
- Most healthy people have adequate post-op nutrient stores for 3-5 days

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**Liquid/Soft Diet**

Sources of calories and protein for wound healing:

- Puddings, milk shakes, custards, ice cream, Ensure, Boost
- Mashed potatoes, cottage cheese, cream soups
- Soft canned fruit, scrambled eggs

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**Periodontal Surgery-Postoperative**

- Progression to mechanical soft diet
- Soft, ripened, chopped, ground, mashed, pureed foods; 3-7 days
- Small frequent meals (6—half meals)
- Avoid raw fruits, veggies, foods with seeds and nuts
- Bland diet may be needed to avoid tissue irritation

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**Periodontal Surgery-Postoperative**

- Diabetic patients will need to spread CHO intake evenly throughout the day
- Sugar free and “no sugar added” alternatives should be discussed
- Due to reduced dietary intake CHO contained in liquid supplements may be needed

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**Oral Surgery-Preoperative**

- Patient must be well nourished prior to surgery
- Alcohol or substance abuser, severely underweight, or those taking steroids, immunosuppressants or antitumor agents.
- Refer to registered dietitian if needed

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### Oral Surgery-Postoperative

- Nutritional needs increase
- Enhanced immune response, wound healing and lowered risk of infection
- Important to educate patients to consume adequate calories in early stages of recovery

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### Oral Surgery-Postoperative

- Minimally stressed patients should consume 25 to 30kcal/kg and 1 gram of protein/kg of body weight
- High calorie liquid diet—high CHO for optimal tissue healing
- Powdered skim milk can be used to fortify foods
- Cool or cold foods may be more soothing during first 12 hours following tooth extractions or surgery

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### Oral Surgery-Postoperative

- By 2<sup>nd</sup> or 3<sup>rd</sup> day progress to soft diet--- should return to normal diet within a week
- Multiple extractions may need soft diet for longer time
- Eight glasses of fluid should be consumed daily
- Volume of food consumed is limited so high nutrient dense foods should be consumed.

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### Highly Nutrient Dense Foods

- Whole milk, omelets
- Soft casseroles topped with cheese
- Fortified cooked cereals
- Mashed vegetables
- Moist, diced meat

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## IV. Fad Diets, Supplements and Herbal Use among Dental Patients

### A. Herbals and supplements

1. Ginkgo biloba
2. St. Johns Wort
3. Echinacea
4. Ginseng
5. Saw palmetto
6. Kava
7. Vitamin C

### B. Recommendations Before Having Dental Surgery, if you use any of these herbal medications stop taking them:

- **Ephedra** at least 24 hours before surgery
- **Garlic** 7 days before surgery
- **Ginkgo** 36 hours before
- **Ginseng** 7 days before surgery
- **Kava** 24 hours before
- **St. John's Wort** 5 days before surgery

### C. Who takes supplements?

## V. Treat or Refer---- What's the role of the dental professional?

## VI. Partnering with allied health professionals

A. American Dietetic Association's Position Paper on Oral Health and Nutrition : <http://eatright.org/ada/files/Oralhnp.pdf>

B. Dietetic Internship programs; local dietetic associations

## VII. Practice makes perfect—integrating heart healthy messages into our 9 to 5 workday..and beyond!

<i>Circle the number in the "Yes" column for all positive answers</i>	<b>YES</b>
1. Do you have any illness or condition (i.e. food allergy) that has made you change the kind and/or amount of food you eat? (Referral to MD or RD)	<b>2</b>
2. Are you on a special diet?	<b>2</b>
3. Do you avoid eating one or more food groups (meat, dairy, fruit, veggies, bread/ cereal)?	<b>2</b>
4. Do you have 2 or more drinks of beer, liquor or wine daily?	<b>2</b>
5. Do you use tobacco products daily?	<b>1</b>
6. Do you have tooth pain or mouth sores that make it hard to eat or make you avoid certain foods?	<b>2</b>
7. Do you drink sugar sweetened beverages (coffee, tea, soda, flavored juice) OR diet sodas 2 or more times a day between meals?	<b>2</b>
8. Do you snack in between meals (on foods other than fresh fruits and vegetables)?	<b>2</b>
9. Did you have 3 or more new cavities at your last dental checkup OR at your present checkup?	<b>2</b>
10. Do you have a dry mouth which causes you to drink something other than water OR use gum, hard candy, cough drops, or mints to moisten your mouth 2 or more times per day?	<b>2</b>
11. Do you take 3 or more different prescription, over the counter meds OR vitamins, minerals, herbals, dietary supplements daily?	<b>1</b>
12. Without wanting to, have you lost or gained 10 pounds in the last 6 months? (Referral to MD or RD)	<b>2</b>
<b>TOTAL</b>	

<b>Total Points</b>	<b>Nutritional Risk Level</b>	<b>Intervention</b>
0-2	Low	Recheck nutritional score in 6 months
3-5	Moderate	Continue with nutrition assessment (24 hr recall/5day food record)
6 or more	High	Continue with nutrition assessment; consider need for referral to physician and/or a registered dietitian.

*Circle appropriate answer*

- |   |       |    |
|---|-------|----|
| 1. Does patient have moderate to severe periodontitis?  | YES*  | NO |
| 2. Would this patient benefit from a 24 hour recall and/or 5 day food record to determine an inadequate and/or cariogenic diet? | YES*  | NO |
| 3. Does the patient have complicated medical and nutrition needs?   | YES** | NO |

\* IF the answer is YES to question #1 or #2, general nutrition education for a healthy, low cariogenic diet is recommended.

\*\* IF the answer is YES to question #3, patient should be referred to a physician or registered dietitian for further assessment.

The RDH and/or DDS have informed me of my risk factors for oral diseases and the preventive services that are available to reduce the risk.




Patient signature: \_\_\_\_\_ Date: \_\_\_\_\_

Adapted from The Nutrition Screening Initiative, a project of the AAFP, ADA & NCOA, Washington, D.C. 1992.



# Food Journal

week of \_\_\_\_\_

	 Breakfast	 Lunch	 Dinner	 Snacks	 Fruits & Veggies <small>Aim to eat 8-7 daily</small>	 Water <small>Aim to drink 64 oz.</small>																
Sunday					<p>Check off each one as you eat</p> <table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>									<p>Check off each glass as you drink</p> <table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>								
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## Diet and Your Teeth

Frequent eating or drinking of sugar containing food is a major risk factor for developing dental caries (tooth decay).

Do you have a dry mouth?	Yes	No
Do you chew gum? If yes what type?	Yes	No
Do you suck on hard candy, cough drops, etc.?	Yes	No

**A**  
Circle foods eaten regularly?  
(> 1 time/week)

**B**  
How many of the circled foods do you eat each day?

**C**  
Multiply the column "B" by column "C".  
Record the total at the bottom.



### LIQUID

Soft drinks, fruit drinks, cocoa, sugar or honey in beverages, non-dairy creamers, ice cream, sherbert, jello, flavored yogurt, pudding, custards, popsicles

### SOLID/STICKY

Cake, cupcakes, donuts, sweet rolls, pastry, canned fruit in syrup, bananas, cookies, chocolate candy, caramel, toffee, jelly beans, other chewy candy, gum, dried fruit, jelly, jam, marshmallows.

### DISSOLVING

Hard candies, breath mints, antacid tablets, cough drops

### TOTAL

x1=

x2=

x3=

**Points to keep in mind to lower your risk for caries:**

Cut down on the frequency of between meal sweets

Don't sip constantly on sweetened beverages.

Avoid using slowly dissolving items like hard candy, cough drops, or breath mints.

Eat more non-decay promoting foods such as low-fat cheese, raw vegetables, crunchy fruits, popcorn, nuts, artificially sweetened beverages and natural spring waters.

Promote good oral health and overall health; eat adequate amounts from each of the groups of the Food Guide Pyramid.

## Oral Manifestations of Nutritional Deficiencies

Oral Symptom	Possible Nutrient Deficiency
Glossitis	Niacin, folate, riboflavin, B6, B12
Glossodynia	Niacin, B12, B6
Angular cheilosis	Riboflavin, B6, B12, folate, niacin, iron
Inflamed, bleeding gingiva	Vitamin C, K, B12, niacin, folate
Stomatitis, mucositis	Niacin, folate, thiamin, B12
Xerostomia	Zinc, vitamin A, B12
Sore or burning tongue	Riboflavin, thiamin, niacin, B6, B12, iron
Altered taste	Thiamin, riboflavin, vitamin A, B12, zinc
Increased risk of candidiasis	Folate, vitamin A, K, iron, zinc
Decreased mineralization of teeth; alveolar integrity	Calcium, phosphorus, magnesium, vitamin D
Delayed wound healing	Vitamin A, C, riboflavin, zinc
Altered enamel development	Vitamin A, calcium, phosphorus
Adapted from Palmer, C.A.: Diet and Nutrition in Oral Health, 2003, pp. 96, 100-101, 117-118, 129-132.	

## What do you eat in a typical day?

List all the foods including snacks and beverages that you eat in a typical day. Give your best estimate of amounts and times consumed.

Time of Day      Foods eaten      Amount

## How does your diet rate?



Grains: 1 2 3 4 5 6 7 8 9 10 11

Vegetables: 1 2 3 4 5

Fruits: 1 2 3 4 5

Dairy: 1 2 3

Meat & Beans: 1 2 3 4 5 6

Refer to Food Guide Pyramid [www.mypyramid.gov](http://www.mypyramid.gov) to determine individual requirements. Consumption below the lowest recommended servings in any of the food groups may indicate essential nutrients are missing in the diet. Plot risk below:



## **Resources for Practice:**

Palmer, C. Diet and Nutrition in Oral Health, 2<sup>nd</sup> Ed. New Jersey: Prentice Hall. 2006

Stegeman C and Davis J. The Dental Hygienists Guide to Nutrition Care, 3<sup>rd</sup> Ed. St. Louis: Saunders Elsevier. 2010

Harper Mallonee LF. Nutrition Counseling. In: Darby, M. *Dental Hygiene: Theory and Practice*. 3<sup>rd</sup> Ed. St Louis: Saunders Elsevier; pp. 609-639, 2010.

Harper-Mallonee LF. The Scope of Nutritional Counseling in the Dental Practice Setting. *Contemporary Oral Hygiene*. 2006; 6(8): 20-27.

American Dietetic Association: Position of the American Dietetic Association (ADA): Oral health and nutrition. *Journal of the American Dietetic Association*. 2007; 107:1418-1428.