

Nutrition During the Life Cycle: Implications for the Dental Professional

Massachusetts Dental Hygiene Association

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Learning Outcomes

- ◆ Connect nutrition with oral health considerations during period of growth, maintenance & repair
- ◆ Describe common eating patterns of infants → adults
- ◆ Use reliable resources to recommend food intake during periods of growth, maintenance & repair
- ◆ Recommend at least one food modification to a patient next week

Life Groups

- ◆ Pregnancy and lactation
- ◆ Infants
- ◆ Toddlers
- ◆ Pre schoolers
- ◆ Adolescents
- ◆ Teens
- ◆ Older adults

Pregnancy

Greatest Risk--Refer

- ◆ Skipping/excessive food groups and/or kcals
 - Vegans
 - Lactose intolerance
 - Eating disorders
- ◆ Weight
- ◆ Pregnant teens
- ◆ Health risks
 - Hypertension
 - Gestational Diabetes

Women Infants and Children (WIC)

Serves 53% of all US infants

- ◆ Low income pregnant, postpartum, nursing
- ◆ Low income infants and children under 5
- ◆ Must be medically or nutritionally at risk
- ◆ Receive:
 - Supplemental nutritious food
 - Screenings & referrals to healthcare professionals
 - Nutrition education and counseling

Pregnancy Food Concerns

- ◆ Environmental contaminants
 - Mercury in fish
 - Wash fresh fruits and vegetables
- ◆ Foodborne illness
 - Soft and blue-veined cheeses
 - Cook leftovers and processed meats
- ◆ Caffeine (200 mg/day or less)

Pregnancy

- ◆ Nausea
- ◆ Snacking patterns
- ◆ Cravings
 - Pica
- ◆ Aversions to odors and/or flavors

Changes due to hormonal imbalances

Pregnancy gingivitis



Fluoride Supplementation

Not recommended for pregnant women

- No systemic benefit to fetus

Non-nutritive sweeteners

Considered safe within acceptable daily intakes

[J Acad Nutr Diet.](#) 2012 May;112(5):739-58.

Pregnancy and Nursing

◆ ↑ Fluids

- 10 cups/day for pregnancy
- 13 cups/day for nursing

◆ ↑ Calories

- 2200-2900 kcals/day for pregnancy
- 2400-3100 kcals/day for nursing

Pregnant and Lactating

<http://www.choosemyplate.gov/pregnancy-breastfeeding.html>

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MOMS/ MOMS-TO-BE

Fetal Nutrition

Growth and development of oral hard & soft tissues

- Tooth development and size
- Tooth formation
- Orofacial development
- Susceptibility to caries
- Risk of abnormalities

Fetal Nutrition

- ◆ Vitamin C—synthesis of collagen
- ◆ Calcium, Magnesium, Phosphorus, vitamin D—mineralization
- ◆ Vitamin A—synthesis of keratin in enamel
- ◆ Folic acid-prevention of cleft lip/palate

Prefacial Embryology

- 3 weeks** Facial development
Forehead
- 4 weeks** Nasal pits → nasal processes
- 4 1/2 weeks** Stomodeum formed
- 6 weeks** Nasal processes fuse together

Palatal and Nasal Development

5-6 weeks in utero Primary palate & nasal cavity begin forming

12 weeks in utero Palate and nasal cavity

Cleft Uvula



Cleft Palate with Cleft Lip



Tongue Development

Week 4-8

Clinical Consideration of Tongue Development

Ankyloglossia

Fetal Nutrition

- ◆ Tooth development begins—6th week of gestation
- ◆ Calcification begins—3rd month in utero
- ◆ Mandible is calcified—4th month in utero

DENTITION	TOOTH	FIRST EVIDENCE OF CALCIFICATION (WEEKS IN UTERO)
Primary (upper)	Central Incisor	14
	Lateral Incisor	16
	Canine	17
	First Molar	12.5 - 15.5
	Second Molar	12.5 - 19
Primary (lower)	Central Incisor	18
	Lateral Incisor	18
	Canine	20
	First Molar	12 - 15.5
	Second Molar	12.5 - 18

Encourage Adequate Intake



Factors people cite to explain food choices

- ◆ Personal preference
- ◆ Habit
- ◆ Ethnic heritage or tradition
- ◆ Social pressure
- ◆ Availability
- ◆ Convenience
- ◆ Physiological influences
- ◆ Disease states or treatments

Food Choices

- ◆ Economy
- ◆ Positive associations
- ◆ Emotional needs
- ◆ Values or benefits
- ◆ Nutritional value
- ◆ Taste
- ◆ Weight control
- ◆ Media

Carbohydrates and Oral Health

Patient Education

◆ Caries

- Preeruptive
- Posteruptive
 - ◆ All CHO are an energy source for bacterial growth
 - ◆ CHO can adhere to tooth and attract plaque
 - ◆ CHO ↑ volume and rate of plaque formation

Fermentable Carbohydrates

-produce an acidic pH in plaque

- ◆ pH of 5.5 or lower → demineralization
- ◆ Reached within 2-4 minutes
- ◆ Gradually returns to safe pH within 40 minutes
- ◆ Fat and protein are not cariogenic

Is this meal cariogenic?

Bread

Sliced ham

Mayo

Roll-ups

Fish Crackers

Pretzel

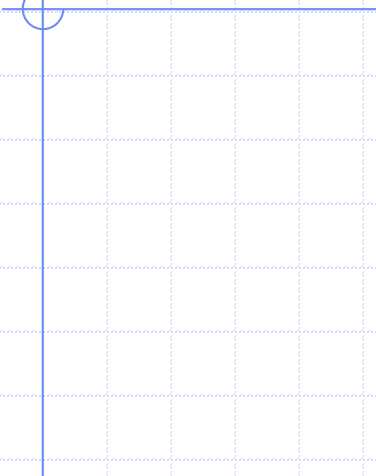
Apple

Dill pickle

Is this snack cariogenic?

- ◆ Crackers
- ◆ Cream cheese
- ◆ Regular soda

Primary Caregiver



Educational Tools

Nutrition Counseling

- ◆ Visuals of Sugar Amounts in Food/Beverages

<http://www.sugarstacks.com/>

- ◆ Food Models

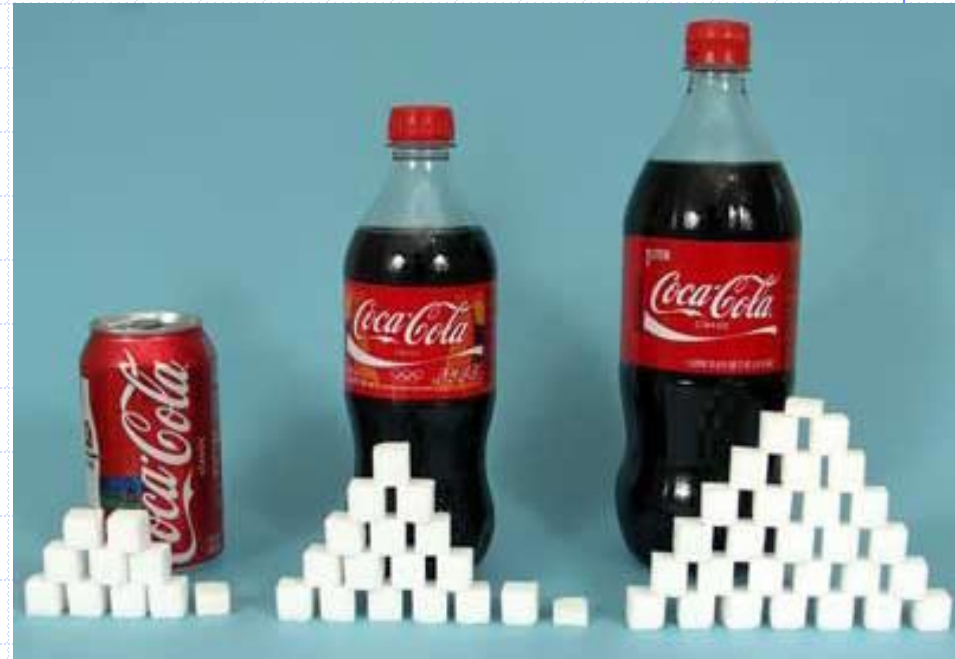
- ◆ Posters

- ◆ Patient information sheets/pamphlets

- www.ada.org

- ◆ <http://www.ada.org/public/topics/alpha.asp>

Sugar in Foods/Beverages



Birth to 6 months

- ◆ No fluoride supplements
- ◆ Clean erupting teeth
- ◆ At risk for Early Childhood Caries

Birth to 12 months

- ◆ Growth and development
- ◆ Nutrition needs met with breastmilk and/or formula
- ◆ ~6 months-start adding solid food
- ◆ Add single ingredient foods, one at a time
- ◆ ~9 months-introduce finger foods
- ◆ NO honey

6-12 Months

- ◆ Clean erupting teeth
- ◆ Encourage weaning from bottle
- ◆ If applicable, fluoride supplementation can begin at 6 months-3 years
 - *If less than 0.3 ppm of fluoride in water supply

*American Academy of Pediatric Dentistry, 2013

12-24 Months

- ◆ After age 1--introduce cow's milk
- ◆ Whole milk until age 2
- ◆ ~18 months—wean off bottle

12-24 months

- ◆ All primary teeth have erupted
- ◆ By age 1, infant should be weaned to a cup
- ◆ At risk for ECC
- ◆ First dental appointment
- ◆ Educate on oral development, OH technique, eating habits, fluoride

2-3 years

- ◆ Introduce a variety of new foods
- ◆ Meal/snack patterns
- ◆ Identify use of medications

2-3 years

- ◆ Age 2—can manage cups

- ◆ Age 3-4—can use fork and spoon

*Fluoride supplementation (3-6 years) for those with <0.6 ppm fluoride in water supply

*American Academy of Pediatric Dentistry, 2013

American Academy of Pediatric Dentists

- ◆ Fluoridated toothpaste for all children starting at tooth eruption, regardless of caries risk
- ◆ Under 2: smear (size of grain of rice)-0.1 mg F
- ◆ Ages 2-6: pea-sized-0.25 mg F

According to AAPD

- ◆ Parents dispense toothpaste, supervise/assist with brushing
- ◆ Fluoride varnish every 3–6 months starting at tooth eruption
- ◆ Over-the counter fluoride rinse is not recommended for children younger than 6 yrs

Encourage adequate intake



Early Childhood Caries (ECC)

- ◆ Early rampant caries
- ◆ PREVENTABLE
- ◆ Long term oral complications
- ◆ Behavior management
- ◆ Painful
- ◆ \$\$\$

ECC

- ◆ Maxillary incisors from the lingual
- ◆ Extends to interproximal and facial
- ◆ Demineralization develops rapidly from chalky white to yellow to brown/black



ECC

Who has counseled a parent/caregiver?
Who will be counseled?

What are topics an RDH can discuss with a pregnant woman or mother of young children?

- Dietary guidelines and age-specific information
- Nutrients for growth and development of oral cavity
- ECC
- Fun snacks/fluids—nutrient dense
- Carbohydrate intake
- Oral Hygiene Instruction
- WIC
- 8-15 exposures to a new food

Nutrient Dense

Calorie Dense



Preschool to School Age

Healthful eating to prevent:

◆ Undernutrition-growth retardation

■ Food Programs

- ◆ WIC
- ◆ School Breakfast Program—offer 4 food items
- ◆ School Lunch Program—offers 5 food items

◆ Overnutrition-obesity

◆ Caries

Preschool to School Age

- ◆ Able to adjust meal size based on energy density of food provided
 - Growth spurts
- ◆ 6 small meals
- ◆ 15-20 exposures to a food for an increased preference
- ◆ Food jags
- ◆ Age 4-5—ability to use knife

Preschool to School Age

<http://www.choosemyplate.gov/kids/index.html>

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What are topics a RDH can speak with a mother regarding nutrition?

- Dietary guidelines and age-specific MyPlate
- Nutrients for growth and development of the oral cavity
- ECC
- CHO intake
- OHI
- WIC
- 15-20 exposures to a new food
- Fluoride recommendations
- Information on feeding practices for all kids
- Fun snacks/fluids--nutrient-dense

Snack ideas?



Adolescent Nutrition

No "good" or "bad" foods

No "diet" or "nondiet" foods

NO DIETING

- Balance-limit ↑ sugar, Na, fat snacks
- Variety-Have appropriate foods available
- Moderation
- Change behaviors
- Fluoride supplementation for ages 6-16, if $<0.6\text{ppm}$



Adolescent Nutrition

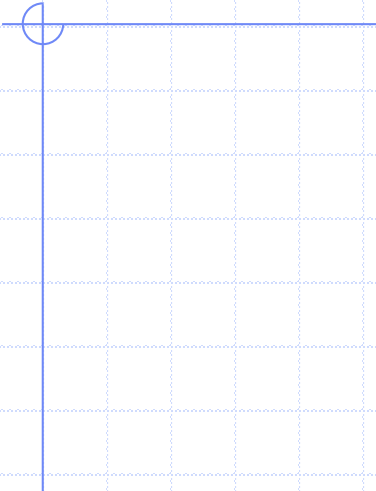
Moderation



Rewind the Future Childhood Obesity

<https://www.youtube.com/watch?v=xUmp67YDIHY>

Obesity



Body Image

<https://www.youtube.com/watch?v=iYhCn0jf46U>

Nutritional Considerations for the Older Adult



Older Adults Categories

Young-old

65-74 years

Old

75-84

Oldest-old

85+

Distribution of Major Body Components

Age 25

15%

17%

6%

42%

20%

fat

tissue

bone

intracellular

extracellular

water

water

Age 75

30%

12%

5%

33%

20%

Nutritional Considerations

- ◆ ↓ kcals
- ◆ ↓ physical activity
- ◆ ↓ metabolic rate
- ◆ ↑ in some nutrients
- ◆ High prevalence of malnutrition
- ◆ Unusual wt loss ($>10\%$ in 6 months)

Factors Influencing Nutritional Status of Older Adults

- ◆ Living alone
- ◆ Disease states
- ◆ Medication
- ◆ Smell
- ◆ Taste
- ◆ Sensation of feel of food in mouth

Factors Influencing Nutrition

- ◆ Adequate hydration
- ◆ Mobility & physical problems
- ◆ Alteration in digestion/absorption
- ◆ ↑ physical stresses

Factors Influencing Nutrition

- ◆ Lack of nutrition knowledge
- ◆ Poverty
- ◆ Oral health problems
- ◆ Dysphagia

Oral Health Problems

- ◆ Dentition status
- ◆ Osteoporosis
- ◆ Periodontal disease
- ◆ Absence of papillae on tongue
- ◆ Xerostomia
- ◆ Atrophy of oral muscles
- ◆ Root caries

Periodontal Disease Counseling Considerations

- ◆ Mechanical Soft → Regular
- ◆ Bland Foods/beverages
- ◆ Adequate kcals and nutrients
- ◆ Cooler or soothing foods

Periodontal Disease Counseling Considerations

- ◆ Frequent eating/smaller meals and snacks
- ◆ Nutrient-dense, fortified, enriched foods
- ◆ Monitor CHO intake
- ◆ Supplements as last resort

Xerostomia

Counseling Considerations

- Frequent sips of water
- Soft, moist foods
- Gravies and sauces
- Fluids with meals and between meals
- Non-nutritive sweeteners or sugar alcohols
- Tart, sour and citrus foods may stimulate saliva flow

Xerostomia

Counseling Considerations

- Monitor Carbohydrate intake
- Avoid
 - Dry, crumbly, sticky and spicy foods
 - Alcohol
 - Tobacco products
 - Caffeine
- Unflavored or mildly flavored OH products
- Humidifier
- Lip balm

Dentition Status

Counseling Considerations

As the number of missing teeth ↑ and/or tooth mobility ↑, the ability to chew ↓

- Ensure a variety of **nutrient-dense** foods
- Fortified or Enriched foods/beverages
- Chew food well and longer
- Avoid chewy, hard, fibrous foods

Dentition Status

Counseling Considerations

- Cut foods into small pieces
- Peel and chop or cook fruits and vegetables
- May need a liquid nutrition supplement

Dentition Status

Counseling Considerations

- ◆ AVOID BITING WITH ANTERIOR TEETH
- ◆ EVENLY DISTRIBUTE FOOD ON BOTH SIDES
- ◆ AVOID STICKY FOODS, BERRIES WITH SEEDS, NUTS
- ◆ DECLINE IN TASTE, TEXTURE, TEMPERATURE

Root Caries/Dentin Hypersensitivity Counseling Considerations

- ◆ Brushing before acidic foods/beverages
- ◆ Wait 40 minutes to brush after acidic products
- ◆ Straw for acidic drinks
- ◆ Monitor carbohydrate intake
- ◆ Avoid foods that cause discomfort

Acidic foods

- Carbonated beverages (regular and diet)
- Sport drinks
- Energy drinks
- Pickled products
- Wine
- Citrus products
- Ciders
- Tea and coffee

Promoting Appetite

- ◆ Attractive table
- ◆ Music
- ◆ Add color
- ◆ Variety
- ◆ Texture
- ◆ Eat with others
- ◆ Beverages with meal
- ◆ 5-6 small meals
- ◆ ↑ seasonings
- ◆ ↑ enriched or fortified foods
- ◆ ↑ milk

MyPlate for Older Adults

Fruits & Vegetables

Whole fruits and vegetables are rich in important nutrients and fiber. Choose fruits and vegetables with deeply colored flesh. Choose canned varieties that are packed in their own juices or low-sodium.

Healthy Oils

Liquid vegetable oils and soft margarines provide important fatty acids and some fat-soluble vitamins.

Herbs & Spices

Use a variety of herbs and spices to enhance flavor of foods and reduce the need to add salt.



Fluids

Drink plenty of fluids. Fluids can come from water, tea, coffee, soups, and fruits and vegetables.

Grains

Whole grain and fortified foods are good sources of fiber and B vitamins.

Dairy

Fat-free and low-fat milk, cheeses and yogurts provide protein, calcium and other important nutrients.

Protein

Protein rich foods provide many important nutrients. Choose a variety including nuts, beans, fish, lean meat and poultry.



Remember to Stay Active!

Website for MyPlate for Older Adults

<https://hnrca.tufts.edu/myplate/what-is-myplate-for-older-adults/>

Nutrition Goals

Dental Hygienist Responsibilities:

- ◆ Identify patients with signs of malnutrition
- ◆ Provide suggestions to improve intake of food
- ◆ Document findings
- ◆ Collaborate with other health care professionals

Nutrition Goals

Health Professional responsibilities:

- ◆ ↑ nutrient density of food
- ◆ Medical nutrition therapy
- ◆ Adapt physical properties of food to meet the mastication/swallowing abilities of the individual
- ◆ Provide suggestions to improve intake of food
- ◆ Adequate hydration

What are some topics a RDH can speak with an older adult regarding nutrition?

- ◆ Dietary guidelines and MyPlate for Older Adults
- ◆ Nutrients for maintenance and repair and optimize immune function
- ◆ Nutrient-dense food & fluid ideas
- ◆ Carbohydrate intake (caries & perio issues)
- ◆ Xerostomia
- ◆ Oral Hygiene Instruction