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**Food, Nutrition & Dental Health Summary**

**Canadian Health Measures Survey (2007 to 2009)**

- 57% of 6–11 year olds have or have had a cavity
- 59% of 12–19 year olds have or have had a cavity
- Average number of teeth affected by decay in children is 2.5
- 6% of adult Canadians no longer have any natural teeth
- 96% of adults have had a history of cavities
- 21% of adults with natural teeth have (or have had) a moderate or severe periodontal problem
- About 45% of Canadians have access to fluoridated water

**Position Paper: The Impact of Fluoride on Health**

Journal of the Academy of Nutrition & Dietetics, Sept/2012

- Considered the most effective dental public health measure in existence and one of the ten most important public health measures for the 21st century
- The following organizations strongly endorse the use of fluoride for the prevention & control of caries: Canadian Dental Association, Canadian Paediatric Society, Health Canada, Canadian Academy of Paediatric Dentistry, World Health Organization, United States Surgeon General, United States Centers for Disease Control & Prevention, American Dental Association, American Academy of Pediatric Dentistry, American Academy of Pediatrics
- Total fluoride intake is difficult to determine (about 80% of dietary fluoride comes from tap and water-based beverages like coffee and tea)
How fluoride promotes dental health:

- increases tooth mineralization
- promotes dental enamel remineralization
- helps reduce and reverse dental enamel demineralization
- helps reduce dentin hypersensitivity
- inhibits the metabolism of the acid-producing bacteria responsible for dental caries

Fluoride is beneficial to all age groups throughout the life cycle

**Systemic fluoride** benefits developing teeth from before birth until all teeth have erupted (typically through age 12 years).

**Topical mechanisms** (fluoride oral rinses, fluoride-containing toothpastes, topically applied gels and foams) are now considered the primary means by which fluoride imparts protection to teeth

**Fluoride Guidelines For Patients:**

- use fluoridated water
- brush with fluoride-containing toothpaste twice daily
- supplements only for children at high risk of caries and who don’t have fluoride in drinking water
- first dental visit within 6 months of eruption of first tooth and no later than 12 months of age
- individuals of any age at low caries risk will probably not receive additional benefit from professional topical fluoride applications (fluoridated water & toothpaste is enough)
- infant formulas should be reconstituted with fluoridated water
- children should not swallow oral care products meant for topical use
**Risk factors For Poor Dental Health:**

- medication
- radiation or disease-induced dry mouth
- poor oral hygiene or inability to perform proper care
- high levels of cariogenic bacteria
- poor family dental health
- genetic, developmental, or acquired dental defects
- chemotherapy or radiation therapy
- eating disorders
- drug or alcohol abuse
- cariogenic diet
- irregular dental care
- orthodontic treatment
- presence of exposed root surfaces

**Fluoride use should be based on level of caries risk:**

- number and timing of caries  (low risk: no caries past 3 years)
- presence or absence of risk factors

**Fluoride varnish:**  most people twice/year, high risk two to four times/year

**Sealants:**  All high risk children should receive, consider on both primary and permanent molars
Fluorosis

- Based on Canadian Health Measures Survey (2007 to 2009), fluorosis is of low concern in Canada
- 12% have one or more teeth with very mild fluorosis
- 4% with mild fluorosis

What Causes Dental Caries:

- Fermentable carbohydrates work with bacteria to form acids that begin the decay process and eventually destroy teeth.
- Any food containing fermentable carbohydrates can cause tooth decay (both sugars and starches)
- Sucrose has been identified as the most cariogenic carbohydrate
- Foods that adhere to the teeth increase the risk of tooth decay compared to foods that clear from the mouth quickly (potato chips, pretzels and crackers stick to teeth for longer periods than foods such as caramels and jelly beans)

NUTRITION ADVICE FOR GOOD DENTAL HEALTH

- Eat a healthy, balanced and nutritious diet
- Drink plenty of water throughout the day
- Drink milk, coffee and tea (without added sugar)
- Limit snacks between meals
- Choose healthy snacks that are low in sugar
- Chew sugarless gum (xylitol)
- Don’t put infants are put to sleep with a bottle of formula or juice
**Dental Erosion Due To Acidic Drinks Increasing**

Damage to tooth enamel is permanent, and without that protective outer layer, teeth are more prone to cavities and are much more likely to decay.

**Minimize Dental Erosion**

(acidic foods and drinks)

- Limit soft drinks (diet too), energy drinks, sports drinks, wine, juice (drink quickly and with a straw)
- Limit tart candies, citrus fruits, pickled foods and chewable vitamin C
- Eat acidic foods as part of a meal and not before bedtime
- Eat hard cheese or swish with water after consuming
- Brush teeth with fluoride toothpaste 30 minutes before consuming
- Wait 30 minutes to one hour before brushing after consuming

**Researchers Compared Acidity of 13 Sports Drinks and 9 energy drinks**

(General Dentistry, May/June 2012)

- After only five days damage was already evident
- Energy drinks caused twice as much damage to teeth as sports drinks

**CASE STUDY** (Open Dent J., Oct/2010)

9-year-old boy with severe tooth wear

- Drank a single glass of soft drink/day over a period of 1 to 2 hours while gaming
- Result: deep bite, enamel cupping, sensitivity of primary teeth and loss of fillings occurred
**Research Review For Calcium & Vitamin D**

(J Can Dent Assoc, April 2012)

- A lifelong adequate dietary intake of calcium and vitamin D help support good bone and dental health
- Calcium influences peak bone mass and may assist in tooth retention in later life
- Calcium and vitamin D supplementation may aid in tooth retention in early menopausal women

**Functional Foods & Dental Health**

“Until now convincing evidence exists only for green tea as a functional food for oral health”

(Current Opinion In Biotechnology, April 2012)

- erosive effect similar to water (no effect)
- inhibits growth of harmful bacteria (Streptococcus mutans)
- decreases acidity of the saliva and plaque
- abolishes halitosis through modification of sulphur components
- defends healthy cells from malignant transformation

Other foods that may promote dental health (ongoing research will tell us more): apples, berries, caraway, chicory, cinnamon, cloves, cranberry, cocoa, coffee, fibre, garlic, grapes & grape seeds, licorice (dried root), mushrooms (shitate), myrtle, nutmeg, propolis, red wine
**Dental Health of Seniors**

- Many more adults keep their teeth, but have root surface exposure due to gum recession
- Dentures that don’t fit make chewing difficult and impact nutritional intake
- Many drugs (antidepressants, diuretics, antihistamines, sedatives) reduce saliva production
- Oral hygiene difficult for oldest and most frail

**Your Teeth Are The Windows to Your Health**

Poor dental health is linked to a number of chronic diseases (heart disease, diabetes, dementia, arthritis)

**Dental Health & Diabetes**

- Diabetes increases risk of periodontal disease
- Number of missing teeth and percentage of deep periodontal pockets can help identify patients with unrecognized pre-diabetes or diabetes
- Treatment of serious periodontal disease may lower blood sugar levels (type 2 diabetes)
- Pregnant women with periodontal disease may face an increased risk of developing gestational diabetes

**Scientific Statement From the American Heart Association** (500 studies reviewed)

(Circulation, April 2012)

Expert committee (cardiologists, dentists and infectious diseases specialists) found no **conclusive** scientific evidence that periodontal disease causes or increases rates of heart disease.
**Dental Health & Obesity**

Obesity linked to increased risk of periodontal disease

**PROBIOTICS:**

- natural beneficial bacteria used to provide defense against harmful bacteria
- three main goals of probiotics in dental health: anti-inflammatory, reduce plaque formation, reduce number of harmful bacteria

Mouthwashes containing strong chemical reagents, such as Listerine, are not advisable for long-term continuous use. They dry up the mucous membranes, potentially damage soft tissues, and may cause severe imbalance in the oral microbial flora.

**Probiotic Delivery Systems**

- chewing gum may increase the retention time of probiotics in oral cavity (retention time may need to be increased further for optimal effect)
- need carrier system that enables release of probiotics in areas difficult to reach (hydrogels)
- inclusion of prebiotics may be optimal

**Further research is needed for probiotics:**

- dose optimization (avoid bacterial overload)
- mechanism(s) of action
- strain selection
- well-designed animal and clinical trials