


Slide 1

**The Mouth Matters:
How Oral Health Impacts Diabetes**

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Slide 2


Introduction/ Background



Slide 3

Objectives

- How is the mouth a portal for bacteria to enter the body via gum disease and dental caries?
- Diet is the key to a healthy mouth. Why?
- What are dental health care providers telling their diabetic patients about preventative maintenance?
- What can the diabetic educator tell their patients about oral health care in less than two minutes?



Slide 4

Dental Decay & Gum Disease:
A Portal for Bacterial Invasion

- Effect of carbohydrate breakdown on teeth
- Effect of acidic foods on teeth
- How does sugar and acid affect the gums



Slide 5

Sugar

- High Fructose Corn Syrup
- Sucrose
- Fructose
- Maltose
- Corn Syrup
- Molasses
- Honey
- Several more...




Slide 6

Hidden Sugar



Slide 7

Progress of Tooth Decay



Decay often begins in hard-to-clean areas.

Decay spreads beneath the enamel, to the dentin, destroying more tooth structure.


Left untreated, a small area of decay becomes larger.

Once decay enters the pulp, an abscess may occur. The tooth will need endodontic treatment or may need to be extracted.

Slide 8

Decay: Early Childhood Caries

Progress of Early Decay



Healthy primary (baby) teeth


Moderate decay

Serious decay

Severe (rampant) decay

Slide 9

Phosphoric Acid & Citric Acid



PH 1 PH 2 PH 3 PH 4 PH 5 PH 6 PH 7

Sprite
Diet Coke
Coca-Cola

Carbonated Water, High Fructose Corn Syrup, Caramel Color, Phosphoric Acid, Natural Flavors, Caffeine, Very Low Sodium

Acid-Blastberry™ (single artificial flavors)

Slide 10

Acid

- Battery acid is pH 1.0
- Water is neutral at pH 7.0
- Most soda, juice, energy & sports drinks range from pH 2.4 to 4.0

A horizontal pH scale from 1 to 7. The scale is color-coded: 1-2 (red), 3-4 (orange), 5 (yellow), 6 (light green), 7 (green). A yellow warning sign with a battery and acid symbol is positioned above the pH 1-2 range. A tooth icon is positioned above the pH 5-6 range. A glass bottle of red liquid is shown above the pH 2-4 range, and a plastic bottle of water is shown above the pH 7 range.

Slide 11

Decay: Snacking & Sipping

- The frequency of which teeth are exposed to cariogenic (acidic) environments affects the likelihood of caries development. After meals or snacks, the bacteria in the mouth metabolize sugar, resulting in an acidic by-product which decreases pH.
- The pH returns to normal due to the buffering capacity of saliva and the dissolved mineral content of tooth surfaces.
- During snacking and sipping, there is less salivary flow and therefore the acidic environment can last 20 minutes and up to two hours.
- Since teeth are vulnerable during these acidic periods, the development of dental caries relies heavily on the frequency of acid exposure.

Three small images showing teeth. The top image is labeled 'Healthy Teeth' and shows bright white teeth. The middle image is labeled 'Acid Exposure' and shows teeth with yellowish-orange staining. The bottom image is labeled 'Teeth Frequently Exposed to Acid' and shows teeth with significant decay and staining.

Slide 12


Gum Disease

- About 80% of US adults have some form of gum disease
- The disease is preventable
- Bacterial infection in the gums can spread to other parts of your body
- Bleeding gums ARE NOT NORMAL!

A photograph of a large, multi-towered stone castle situated on a small island in a body of water. The sky is blue and the water is calm.

Slide 13

Progress of Periodontal Disease




Normal, Healthy Gingiva (Gums)
Healthy gums, periodontal ligament, and bone anchor teeth firmly in place.

Gingivitis
Plaque and its byproducts irritate the gums, make them tender, inflamed, and likely to bleed. Un-removed, plaque hardens into calculus (tarter).

Slide 14

Progress of Periodontal Disease

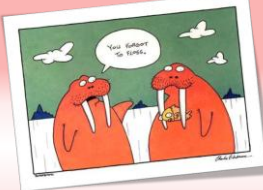


Periodontitis
As plaque and calculus builds up along the gum line, plaque's bacteria breakdown the supporting soft & bone tissues and tooth.

Advanced Periodontitis
The gums can recede as more bone and the periodontal ligament are destroyed. Teeth—even without decay—may become loose and need to be extracted.

Slide 15

Flossophy




• Make **T**uesdays & **T**hursdays **T**eeth days

• Mouth wash does not replace flossing

Slide 16

Gum Disease

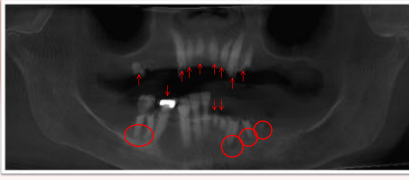


The volume of your fist is comparable to the amount of inflamed and/or infected tissue present in people with moderate to advanced periodontal disease.

If your hand was swollen and puffy, bleeding and exuding pus, would you ignore it? What effect do you think an infection of this size would have on your ability to control your blood sugar?


Slide 17

The Mouth is a Portal for Bacterial Invasion



Slide 18

Diet: The Key to a Healthy Mouth




- Nutrition and hidden acids
- Snacking
- Sip all day, get decay

Slide 19

A Meal vs. Snacking

- What happens orally during mastication?
- What happens orally during snacking?



Slide 20

Sip/Snack All Day, Get Decay

- Plaque (bacteria) builds around the base of the teeth
- The bacteria uses sugar to produce acid that attacks enamel
- The acid attack lasts 20 minutes and up to 2 hours
- Snacking/ sipping on sugary beverages starts the acid attack over and over again
- Repeated attacks cause tooth decay and/or periodontal disease

Slide 21

Chewing Gum—ADA Approved

- Dentyne Ice Sugarless Gum
- Stride Sugarless Gum
- Trident Sugarless Gum
- Wrigley's Extra Sugar-Free Gum
- Wrigley's Orbit Sugar-Free Gum



Slide 22


Dentistry & Diabetes

- What are dental health care providers telling their diabetic patients about preventative maintenance?
 - Diabetes impacts gum disease
 - Gum disease and blood sugar
 - Gum disease can be a risk factor for diabetes

Slide 23

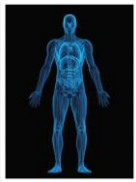
Diabetes

- Not only are people with diabetes more susceptible to periodontal disease, but the presence of periodontal disease may also make glycemic control more difficult.
- Proper care of the mouth that includes treatment of periodontal disease may help people with diabetes achieve better glycemic control.



Slide 24

Diabetes: The Mouth Matters



While it has been established that people with diabetes are more prone to developing periodontal disease, new research is suggesting that periodontal disease may, in turn, be a risk factor for diabetes.

Slide 25

The Elevator Speech

Do's and Don'ts of Snacking

Regular Dental Check-ups

Gum Disease—The Daily Battle

Slide 26

It's all about healthy choices...

It's all about healthy choices...

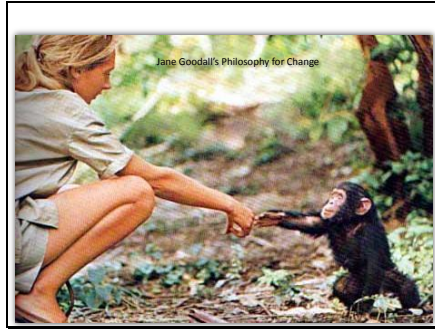
Slide 27

Oral/Overall Health

MICHAEL POLLAN
AUTHOR OF THE BESTSELLING BOOKS
FOOD RULES
AN EATER'S MANUAL

- “Don’t fuel your body at the same place you fuel your car.”
- “If your food is handed to you through a window, it’s not food.”

Slide 28



Slide 29

