

Dental 101 for the Primary Care Physician: A look at the Relationship between Oral and Systemic Health



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DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health
A Nationally Accredited Health Department

Our time together today

- Oral Health
- Considerations on National and State level
- Oral=Systemic connections
- Medical and Dental collaboration
- Identifying oral/dental conditions
- Guidance for patients



Oral Health is...



Defined not just absence of disease, but the presence of oral wellness

Oral wellness is when you have healthy gums, teeth, and tongue that allow you to speak, chew, enjoy food, and smile.

Oral health is also being free of mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's biting, chewing, smiling, speaking, and psychosocial well-being.

Oral Wellness can have impact on:

- Enjoyment (eating and drinking)
- Obtaining a job
- Confidence social interactions



Oral Pain is linked to:

- Poor school performance in children
- Work loss in adults to care for themselves and their children
- Difficulty chewing and inadequate nutrition
- Costly emergency department visits



Surgeon General's Report on Oral Health

- Dental care is the most common unmet health need.
- Oral disease can adversely affect systemic health.
- Most oral disease is preventable or at least manageable.
- Profound disparities in oral health and access to care exist for all ages.
- Interdisciplinary care is necessary to achieve optimal oral and general health.
- Section 1 of the **Oral Health in America Report published in 2021** highlights the power in integrating oral and systemic health. The section notes promising new directions for health care homes that are integrating medicine and dentistry, and evolution of health records and diagnostic codes that support a new level of integration.

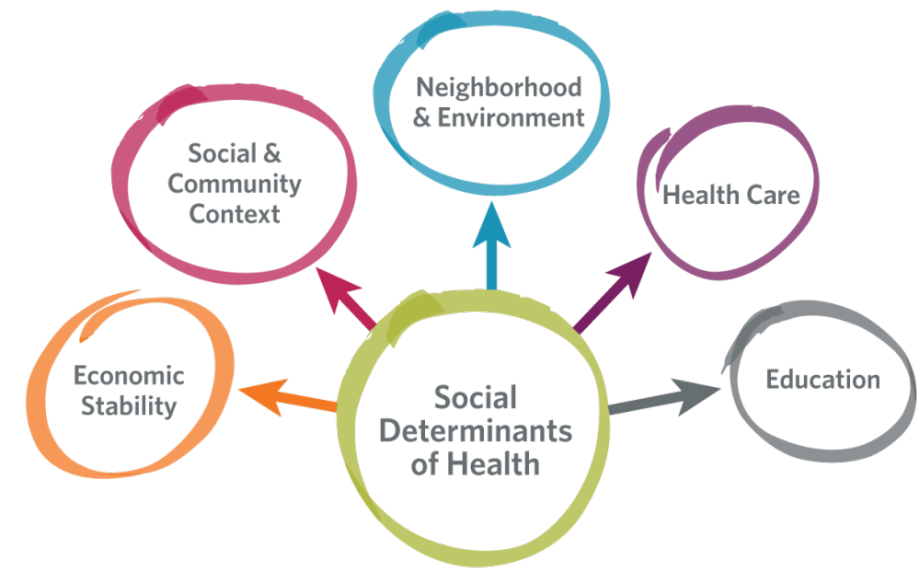
Statistics Speak to the Prevalence of Poor Oral Health



- Dental caries is the most common chronic disease of childhood
 - More than half of children have had dental decay by age 7.
- One in five adults has untreated dental disease
- Two in five adults have periodontal disease, which can lead to infection, pain, and tooth loss
- Every year there are more than 58,000 cases of oral cancer diagnosed, and more than 12,000 people die from oral cancers

Consequences of Poor Oral Health

- The economic and social consequences of oral pain, dental decay, and tooth loss are far-reaching and can result in social stigma.
- There is mounting evidence of aggravating effects on systemic conditions due to poor oral health.
- Oral health problems intersect with and are exacerbated by the social determinants of health.



What constitutes Overall Wellness?



Mental health and oral health are closely related.

- Stress
- Anxiety
- Depression
- Eating disorders
- OCD

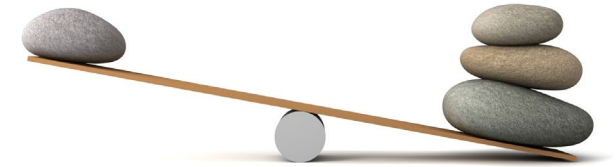


Studies show that people with mental health disorders are nearly 3x as likely to lose teeth.

The Disconnect: Access to Care is a Major Issue

- 33% of Americans had a medical visit but not a dental visit in 2019.
- 9% of Americans had a dental visit but not a medical visit.
- Medical providers lack comfort with oral exams and systems for dental referrals.
- Dentists may not have training to feel comfortable providing care to very young children, pregnant women, & patients with special care needs.
- These are opportunities for better collaborative learning and management

Inequities in Oral Health

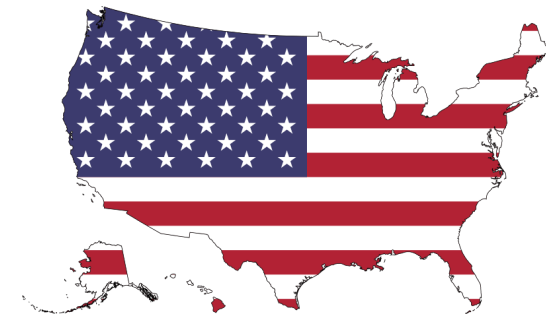


- The uninsured rate for dental insurance is four times higher than that for medical insurance.
- Uninsured and publicly insured adults make up to **70% of all the 2.4 million ED** visits each year for a dental problem
- Traditional **Medicare offers no dental coverage for the 37 million adults and people with disabilities** it covers.
- For low-income adults on Medicaid, it depends on where you live.
 - no dental benefits; limited coverage; require a copay.
 - even for children with Medicaid or CHIP access is limited.





2024 Health Disparities



- **Mexican American Children-**
 - 7 in 10 Mexican American children (70%) aged 6 to 9 years have had cavities in their primary (baby) or permanent teeth compared with 4 in 10 non-Hispanic White children (43%)
- **Non-Hispanic black children regarding sealants**
 - non-Hispanic Black children continued to have lower presence of dental sealants (32%) than non-Hispanic White (44%) and Mexican American children (44%)
- **Uninsured working-age adults**
 - Untreated cavities are about twice as common among working-age adults with no health insurance coverage (43%) compared with those who have private health insurance coverage (18%)
- **Non-Hispanic black working age adults**
 - Prevalence of untreated cavities was twice as high for non-Hispanic Black adults (40%) as it was for non-Hispanic White adults (21%) in 2011–2016.
- **Non-Hispanic Black and Mexican American adults aged 65 and older**
 - Untreated cavities were three times as common among non-Hispanic Black older adults (28%) and more than two times as common among Mexican American older adults (24%) compared to non-Hispanic White older adults

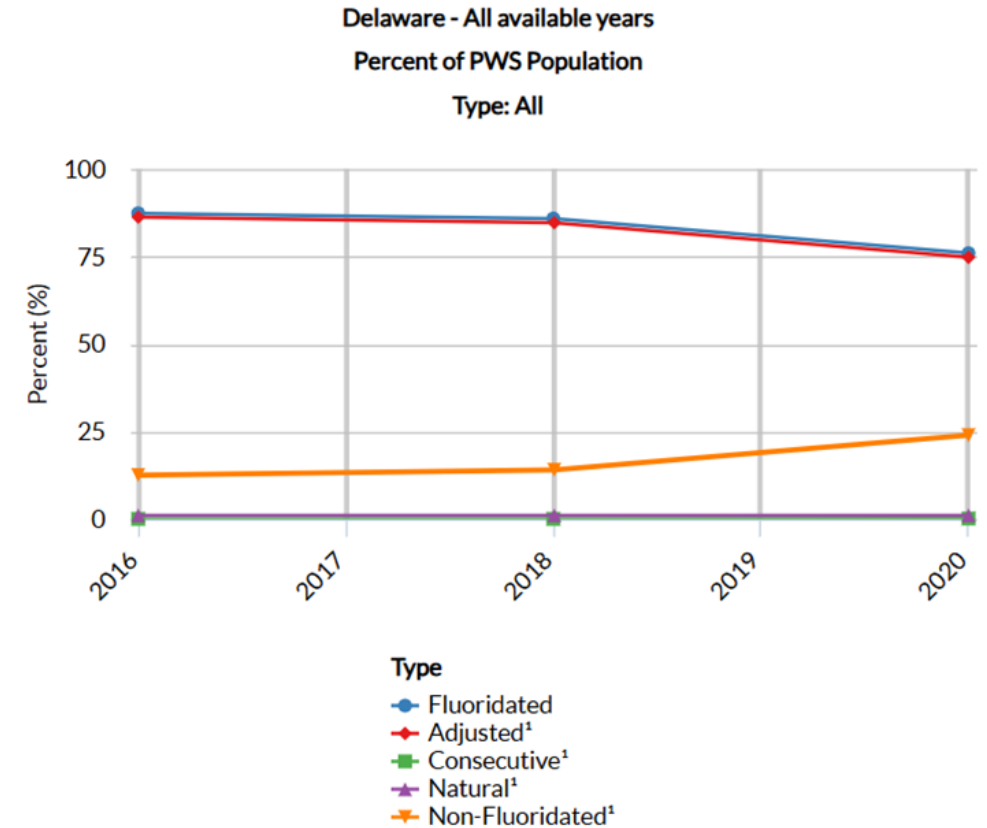
Landscape in Delaware

- 178,000+ live in a dental shortage area
 - Nearly one-fifth of Delawareans do not have access to adequate dental care
- Kent and Sussex Counties are Dental HPSA, as well as portions of New Castle County
- Poor **provider: population** ratio
- Increase dental access by changing licensing conditions (2022 Legislation SB277) and public health intervention (SB83 in 2023)



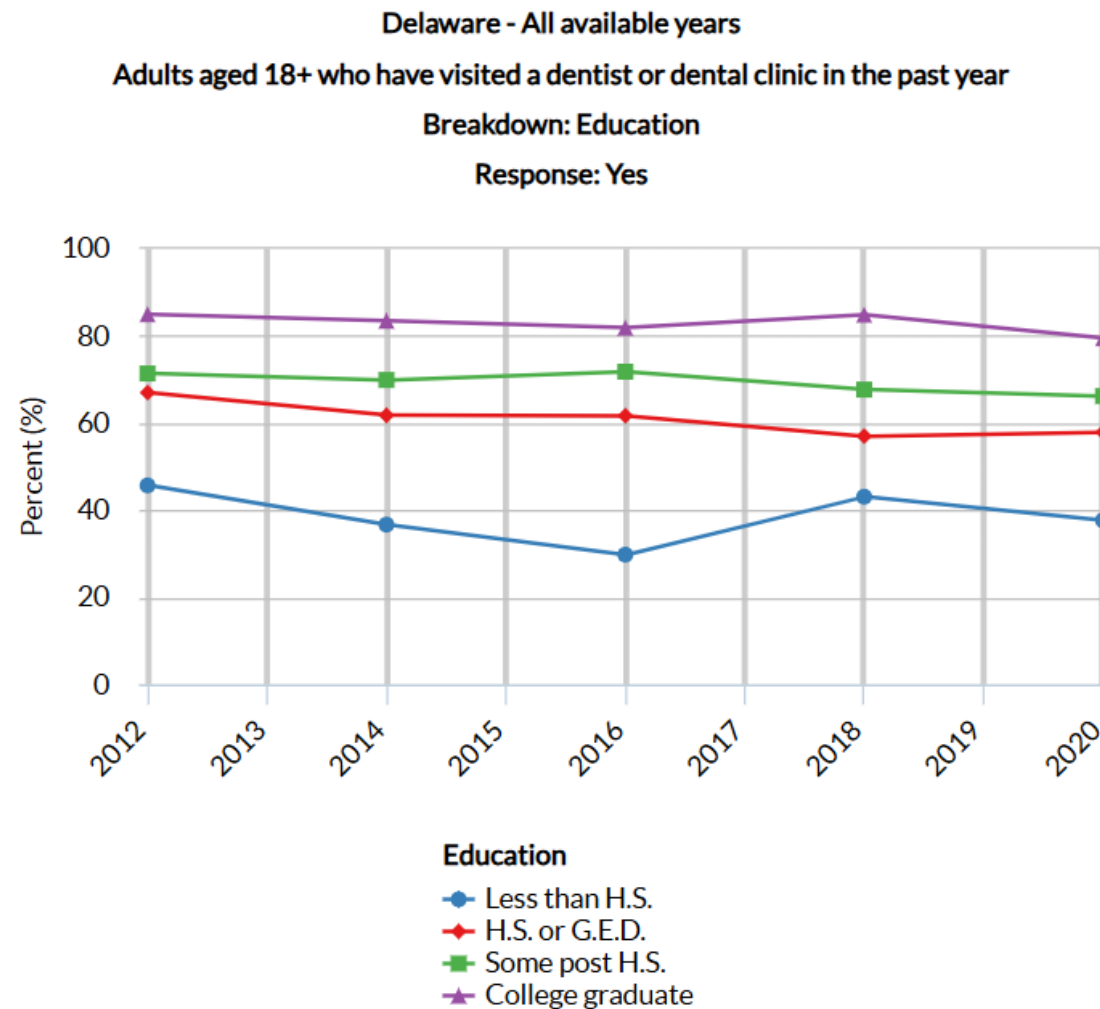
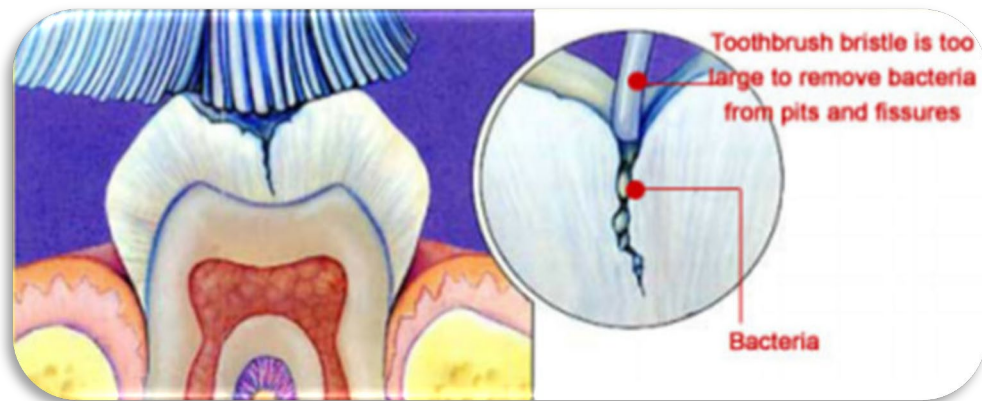
Considerations in Delaware

increase in the percent of the population that
is served by non-fluorinated water sources



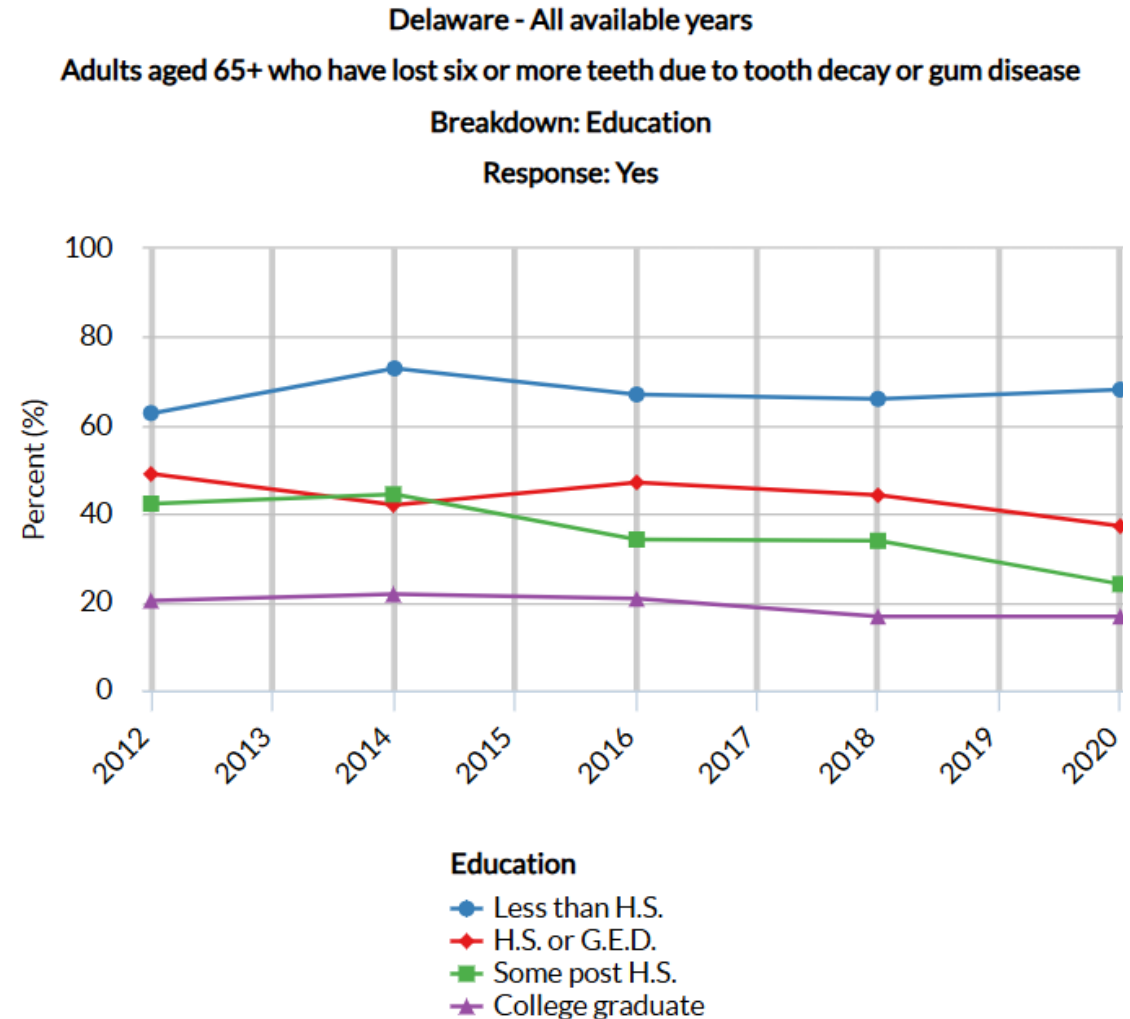
Data Source: CDC Water Fluoridation Reporting System

Considerations in Delaware



Considerations in Delaware

Adults with **less than a High School** education are more likely to have tooth loss (BRFSS) and less likely to have visited a dentist

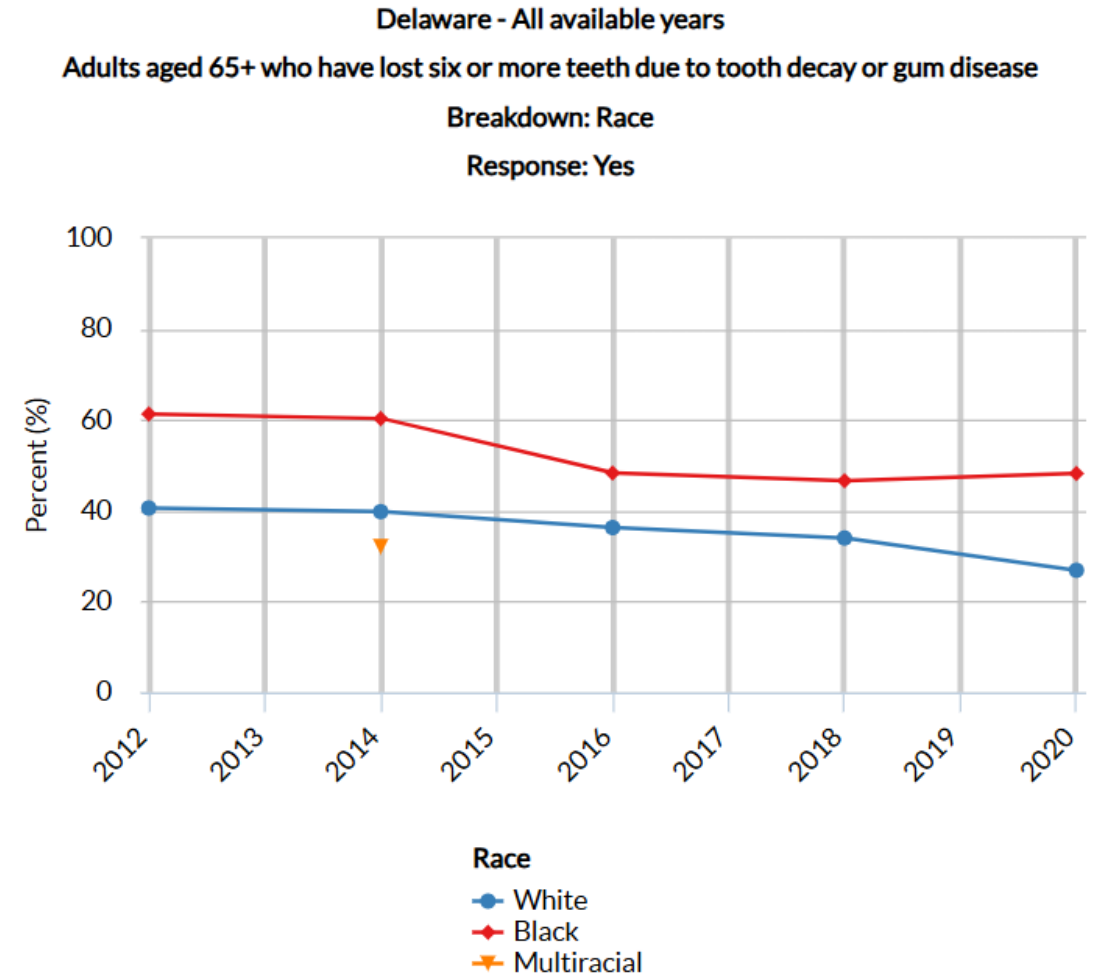


Considerations in Delaware



Disparity in loss of teeth/tooth extractions

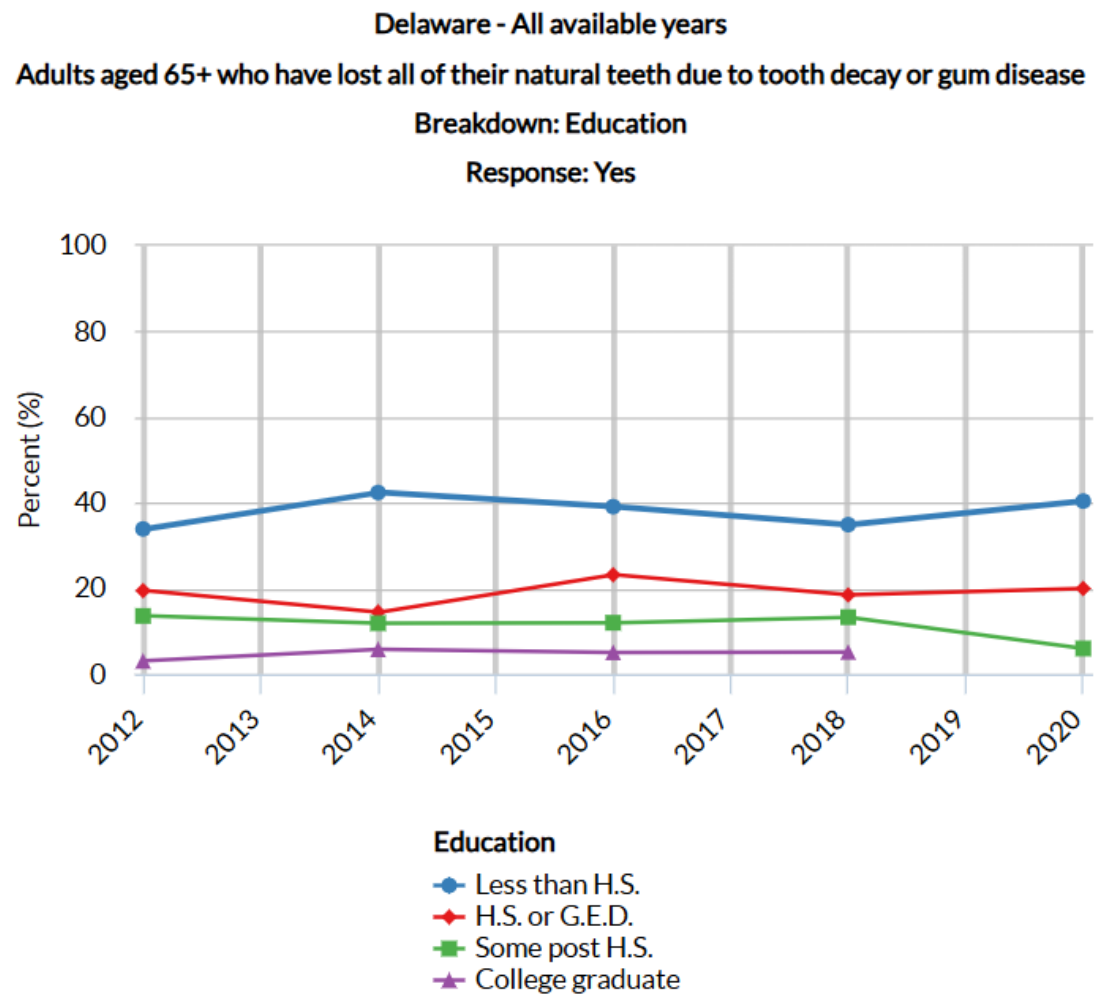
Losing teeth without replacement can lead to a cascade of tooth and bone loss



Considerations in Delaware

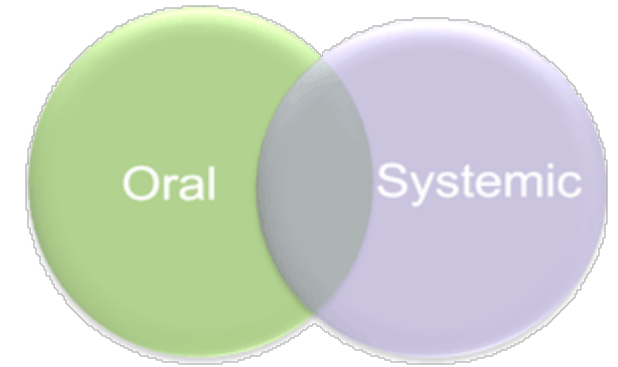
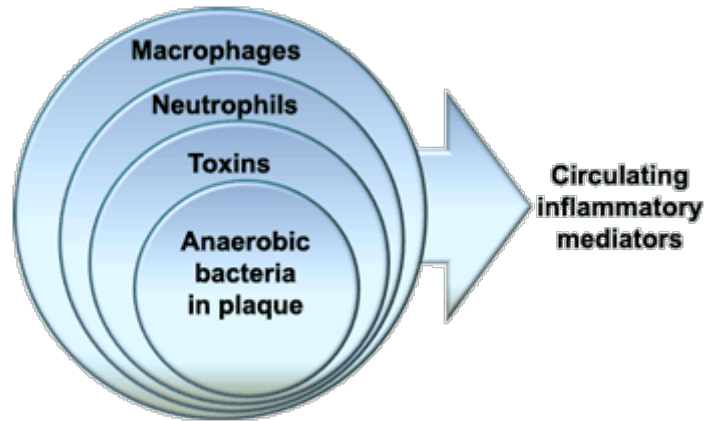


Dentures are NOT a replacement for teeth, they are an alternative to NOT HAVING TEETH



Interrelationships Between Oral & Systemic Health

- The Role of Inflammation



Inflammation plays an increasingly recognized role in oral-systemic interaction.

Inflammation & Systemic Disease

Inflammation constitutes a major mechanism for the observed link between oral disease, specifically periodontitis, and systemic diseases, although direct cause-and-effect is difficult to establish.



Dental Decay and Tooth Loss can lead to:

- Esthetic and self-image issues
- Feeling worthless, unhappy and shy
- Costly restorations
- Systemic complications



Normal Tooth



Dental Caries



Dental Cavities

Understanding Disease Transmission

- Dental caries (tooth decay) is a vertically-transmitted infectious disease that can almost always be prevented.
- Most of the general public and many physicians are unaware that the bacteria *Strep mutans* is responsible for dental caries and that the bacteria is contagious.
- The *Strep mutans* bacteria causes cavities by metabolizing sugars into acids that demineralize dental enamel.
- Poor dietary habits keeping sugar in the mouth between meals feed this bacteria and do not permit the normal re-mineralization that occurs between meals.



Key Message to PCPs: Caries is a Transmissible Bacterial Infection

- PCPs are trained to deal with bacterial infections

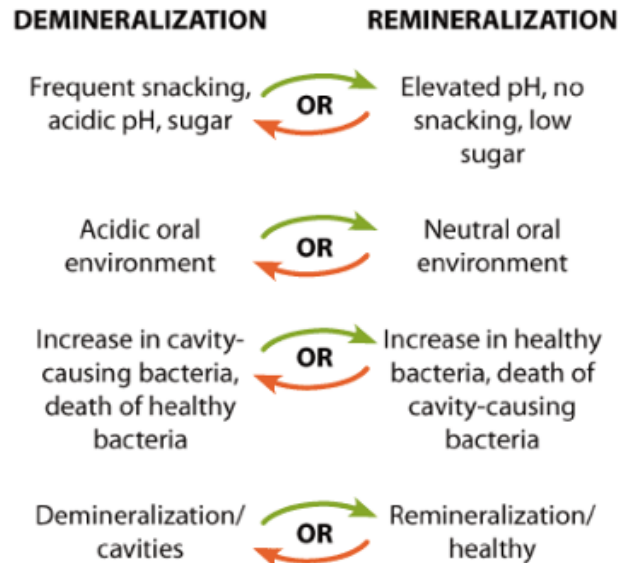


Figure 2. Simplified schematic of the ecological plaque hypothesis proven

(Philip Marsh, "Marsh Schematic of Ecological Plaque Hypothesis," *Oral Microbiology*: 116)

Bacterial Spread of Oral Lesions

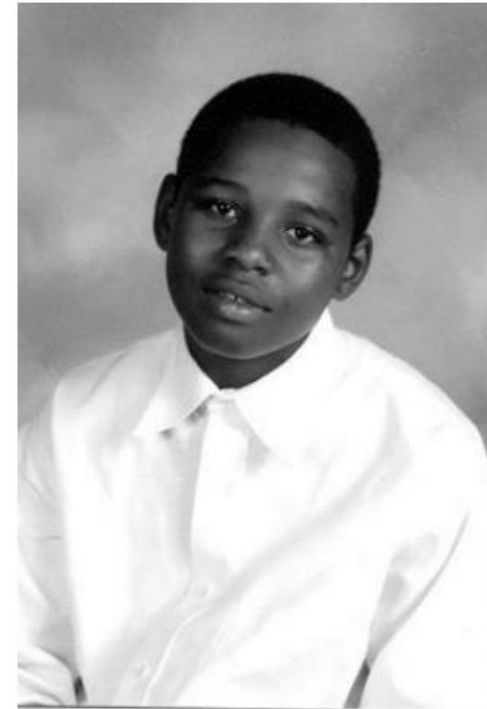
- When the tooth pulp becomes necrotic secondary to severe caries, infection can spread to become a potentially life-threatening cellulitis.
- Untreated oral bacterial infection can cause:
 - Intraoral abscesses
 - Sinusitis
 - Facial and periorbital cellulitis
 - Brain abscesses
 - Bacteremia and sepsis
 - Airway compromise secondary to infection tracking into fascial planes of the neck
 - Sinusitis, bacteremia, and brain abscess may occur due to direct bacterial extension into adjacent soft tissues



Have you heard of these tragic outcomes?

Deamonte Driver

- Grew up in Prince George's County, Maryland, the 3rd of 5 boys
- From low-income family
 - Children had medical and dental insurance through the Maryland HealthChoice (Medicaid) program contracted thru managed care organizations (MCO)
- Had long-standing tooth decay and abscess – but never complained
- Always received primary medical care through a pediatrician – a medical home
- But not a dental home – no primary care dentist
- Mother could not find a dentist willing to accept Medicaid despite the Medicaid MCO listing 27 dentists on their provider panel for that area
 - All panel dentists could not see his brother
 - Needed the Public Justice Center along with the help of others to finally find a dentist to treat his brother



Have you heard of these tragic outcomes?



2017 Vadim Anatoliyevich Kondratyuk, a 26-year-old truck driver, was on his way from Truckee, California, to New York on January 24 when he began complaining of a toothache that resulted in complications that claimed his life within just six days, according to his wife. Diabetes diagnosis while in hospital for infection.

Substance Use Disorders

- **People with tobacco use disorder are at higher risk of:**
 - Oral cancer
 - Periodontal disease
- **People with alcohol use disorder may develop:**
 - Oral cancer (synergistic with tobacco)
 - Poor hygiene and resultant caries or periodontal disease
- **People with substance use disorders are at higher risk of:**
 - Dental caries due to dry mouth from substances
 - Tooth loss and dental pain from inability to provide self-care or access dental treatment



Infectious Disease & Oral Health Manifestations

- HIV related oral diseases include:
- Candidiasis (thrush)
- Acute Necrotizing Ulcerative Gingivitis (ANUG)
- Oral hairy leukoplakia
- Kaposi sarcoma
- Periodontal disease
- Ulcerative conditions (herpes virus and aphthous ulcers)



- Human papilloma virus (HPV) is on the rise, as are cancers associated with HPV.
- 25% of oral cancers and 66% of oropharyngeal cancers are related to HPV 16.



Now that we have understanding of the problem...
how do we solve it???



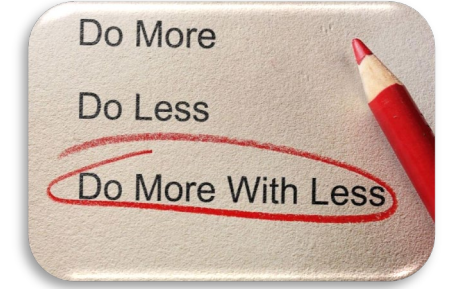
Goal: Improve oral health by increasing access to oral health care, including preventive services.

Objectives:

1. Increase awareness of the importance of oral health to overall health and well-being
2. Increase acceptance and adoption of effective preventive interventions
3. Reduce disparities in access to effective preventive and dental services



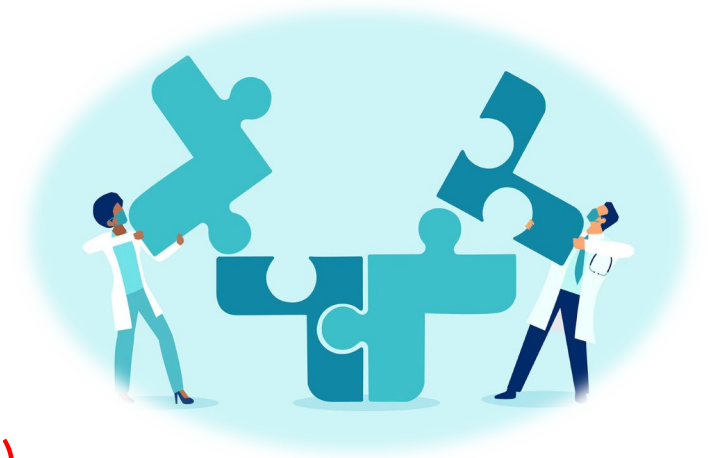
Healthcare Provider Challenges



- Providers have increasing demands on limited time.
- May forget to ask about oral health when other problems compete for attention.
- Oral health prompts are often not incorporated into the electronic medical record.
- May be unsure when or where to refer in the community - especially for people with Medicare, patients with special needs, young children, and pregnant women.
- Limited training: Oral health training in health professional schools is steadily increasing, but health providers may be unsure of correct questions to ask or how to perform a proper evaluation.

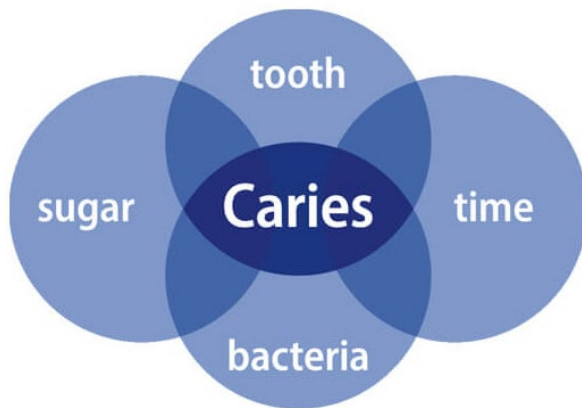
Collaboration with Dental Professionals

- Referrals for routine and emergency care
- Pain management
- Medically complicated patients
- Anticoagulation
 - (tooth extraction, periodontal sx and implant placement)
- Antibiotic prophylaxis for patients with appropriate medical conditions
 - Preventing antimicrobial resistance is a growing area of collaboration between medicine and dentistry. The Association for Dental Safety (ADS) continues to provide information on antibiotic stewardship practices, current guidelines, and resources to help physicians and dentists communicate.



Nutrition and Oral Health Interactions

- Frequent ingestion of sugary snacks and beverages contributes to obesity, diabetes, and dental caries
- Poor dentition, dental pain, and chewing problems due to missing teeth make eating fruits, vegetables, and sources of protein more challenging
- Children, patients with special healthcare needs, and older adults are more at risk of malnutrition and health consequences from poor nutritional intake and snacking habits

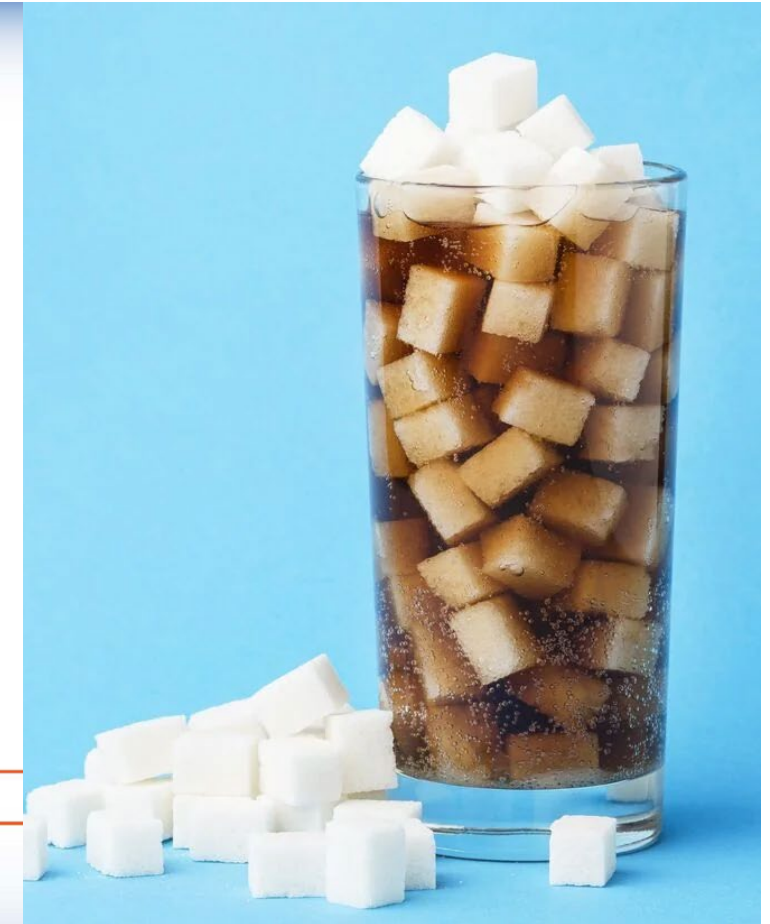
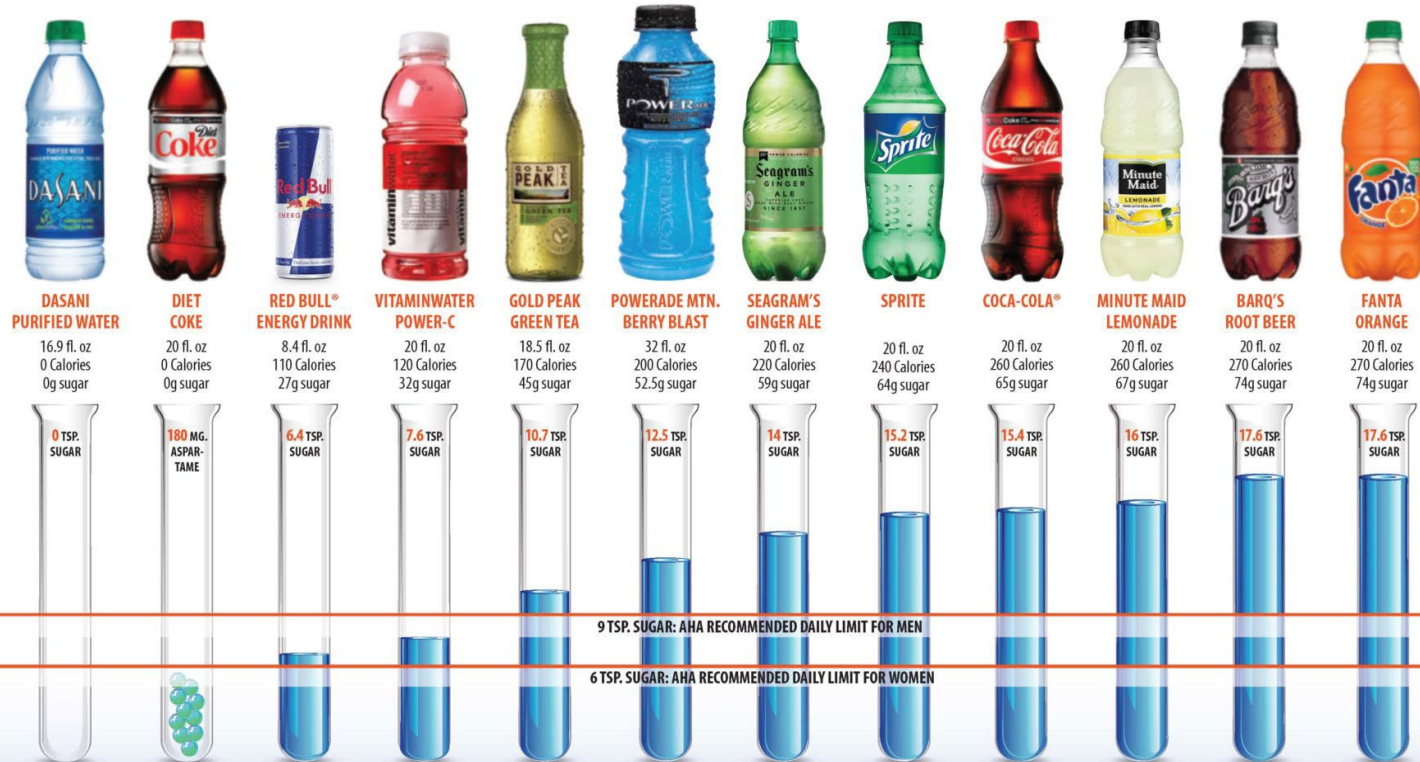


Visuals Make a HUGE Difference



THINK BEFORE YOU DRINK.

The American Heart Association (AHA) recommends consuming no more than 6 teaspoons (tsp.) of added sugars per day for women, and no more than 9 tsp. of added sugars per day for men. How does your drink measure up?



Oral Health Promotion



- The medical home is an ideal place for oral health screening and guidance to occur, as well as assistance with the social determinants of health.
- The Smiles for Life courses on oral examination, infant oral health, adult oral health, women's oral health, caries risk assessment, and geriatric oral health help with
- Providing anticipatory guidance regarding:
 - Caries
 - Oral health promotion
 - Timely referral
 - Fluoride





Screen , Advise and Advocate!



- Counsel patients on oral health promotion
- Screen for oral disease and facilitate appropriate referrals
- Focus on prenatal oral health and develop fluoride varnish programs for infants and children
- Collaborate with schools, Head Start, and health providers promoting oral health in the community
- Consider further training to learn skills such as anesthetic blocks, biopsies, and incision and drainage (if access is not available)
- Know your local resources, such as dental providers who accept Medicaid and Federally Qualified Healthcare Centers (FQHCs) that offer dental services.

The Primary Care Team's Role



- History, risk assessment, and screening
- Educate patients on the nature of dental disease and self-care strategies to prevent/reverse disease
- Recommend/prescribe therapies to maintain optimum oral pH levels, reduce unhealthy bacteria and remineralize teeth
- Make appropriate referrals for dental care
- Identify dental providers who will collaborate to integrate medical and dental care for patients

Risk Assessments by the Primary Care Team

- CAMBRA (Caries Management by Risk Assessment)
- Goal to identify factors that put patients at high risk for dental problems

BEST PRACTICES: CARIES-RISK ASSESSMENT AND MANAGEMENT

Caries-Risk Assessment and Management for Infants, Children, and Adolescents

Latest Revision

2022

How to Cite: American Academy of Pediatric Dentistry. Caries-risk assessment and management for infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:306-12.

Abstract

This best practice reviews caries-risk assessment and patient care pathways for pediatric patients. Presented caries-related topics include caries-risk assessment, active surveillance, caries prevention, sealants, fluoride, diet, radiology, and nonrestorative treatment. Caries-risk assessment forms are organized by age: 0-5 years and ≥6 years old, incorporating three factor categories (social/behavioral/medical, clinical, and protective factors) and disease indicators appropriate for the patient age. Each factor category lists specific conditions to be graded "Yes" if applicable, with the answers tallied to render a caries-risk assessment score of high, moderate, or low. The care management pathway presents clinical care options beyond surgical or restorative choices and promotes individualized treatment regimens dependent on patient age, compliance with preventive strategies, and other appropriate strategies. Caries management forms also are organized by age: 0-5 years and ≥6 years old, addressing risk categories of high, moderate, and low, based on treatment categories of diagnostics, preventive interventions (fluoride, diet counseling, sealants), and restorative care. Caries-risk assessment and clinical management pathways allow for customized periodicity, diagnostic, preventive, and restorative care for infants, children, adolescents, and individuals with special needs.

This document was developed through a collaborative effort of the American Academy of Pediatric Dentistry Councils on Clinical Affairs and Scientific Affairs to offer updated information and recommendations regarding assessment of caries-risk and risk-based management protocols.

KEYWORDS: CARIES-RISK ASSESSMENT; CARIES PREVENTION; CLINICAL MANAGEMENT PATHWAYS; DENTAL SEALANTS; FLUORIDE

Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that caries-risk assessment and management proto-

Background

Caries-risk assessment

Risk assessment procedures used in medical practice generally

Caries Risk Assessment

Table 1. Caries-risk Assessment Form for 0-5 Years Old

Use of this tool will help the health care provider assess the child's risk for developing caries lesions. In addition, reviewing specific factors will help the practitioner and parent understand the variable influences that contribute to or protect from dental caries.

Factors	High risk	Moderate risk	Low risk
Risk factors, social/behavioral/medical			
Mother/primary caregiver has active dental caries	Yes		
Parent/caregiver has life-time of poverty, low health literacy	Yes		
Child has frequent exposure (>3 times/day) between-meal sugar-containing snacks or beverages per day	Yes		
Child uses bottle or nonspill cup containing natural or added sugar frequently, between meals and/or at bedtime	Yes		
Child is a recent immigrant		Yes	
Child has special health care needs ^α		Yes	
Risk factors, clinical			
Child has visible plaque on teeth	Yes		
Child presents with dental enamel defects	Yes		
Protective factors			
Child receives optimally-fluoridated drinking water or fluoride supplements			Yes
Child has teeth brushed daily with fluoridated toothpaste			Yes
Child receives topical fluoride from health professional			Yes
Child has dental home/regular dental care			Yes
Disease indicators^β			
Child has noncavitated (incipient/white spot) caries lesions	Yes		
Child has visible caries lesions	Yes		
Child has recent restorations or missing teeth due to caries	Yes		

^α Practitioners may choose a different risk level based on specific medical diagnosis and unique circumstances, especially conditions that affect motor coordination or cooperation.

^β While these do not cause caries directly or indirectly, they indicate presence of factors that do.

Instructions: Circle "Yes" that corresponds with those conditions applying to a specific patient. Use the circled responses to visualize the balance among risk factors, protective factors, and disease indicators. Use this balance or imbalance, together with clinical judgment, to assign a caries risk level of low, moderate, or high based on the preponderance of factors for the individual. Clinical judgment may justify the weighting of one factor (e.g., heavy plaque on the teeth) more than others.

Overall assessment of the child's dental caries risk: High ☐ Moderate ☐ Low ☐

Table 2. Caries-risk Assessment Form for ≥6 Years Old²⁵

(For Dental Providers)

Use of this tool will help the health care provider assess the child's risk for developing caries lesions. In addition, reviewing specific factors will help the practitioner and patient/parent understand the variable influences that contribute to or protect from dental caries.

Factors	High risk	Moderate risk	Low risk
Risk factors, social/behavioral/medical			
Patient has life-time of poverty, low health literacy	Yes		
Patient has frequent exposure (>3 times/day) between-meal sugar-containing snacks or beverages per day	Yes		
Child is a recent immigrant		Yes	
Patient uses hyposalivatory medication(s)		Yes	
Patient has special health care needs ^α		Yes	
Risk factors, clinical			
Patient has low salivary flow	Yes		
Patient has visible plaque on teeth	Yes		
Patient presents with dental enamel defects	Yes		
Patient wears an intraoral appliance		Yes	
Patient has defective restorations		Yes	
Protective factors			
Patient receives optimally-fluoridated drinking water			Yes
Patient has teeth brushed daily with fluoridated toothpaste			Yes
Patient receives topical fluoride from health professional			Yes
Patient has dental home/regular dental care			Yes
Disease indicators^β			
Patient has interproximal caries lesion(s)	Yes		
Patient has new noncavitated (white spot) caries lesions	Yes		
Patient has new cavitated caries lesions or lesions into dentin radiographically	Yes		
Patient has restorations that were placed in the last 3 years (new patient) or in the last 12 months (patient of record)	Yes		

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^β While these do not cause caries directly or indirectly, they indicate presence of factors that do.

Instructions: Circle "Yes" that corresponds with those conditions that apply to a specific patient. Use the circled responses to visualize the balance among risk factors, protective factors, and disease indicators. Use this balance or imbalance, together with clinical judgment, to assign a caries risk level of low, moderate, or high based on the preponderance of factors for the individual. Clinical judgment may justify the weighting of one factor (e.g., heavy plaque on the teeth) more than others.

Overall assessment of the dental caries risk: High ☐ Moderate ☐ Low ☐

Monitoring & Management

- The medical home is an ideal setting to:
- Manage conditions that affect medical and dental health, as well as provide guidance and support to patients to improve both oral and overall health.
- Evaluate and initially manage oral emergencies.
- Apply fluoride varnish for prevention of caries and silver diamine fluoride for the treatment of caries, particularly in locations where dental services are not available.



Key Messages to Patients

Primary caregivers **should counsel patients and caregivers** on the need (and strategies) to:

1. Maintain optimum oral pH levels
2. Reduce levels of bad bacteria in the mouth
3. Practice effective home care





Caregiver/Patient Challenges

- Dental care is not always a high priority and may not be given the attention it deserves by patients, caregivers and health care providers.
- Caregivers may be overwhelmed with care needs and deemphasize oral care without realizing its importance to overall health.
- Financial limitations may force patients to choose between systemic and oral health care and basic necessities.
- Oral hygiene and dental care can be physically or behaviorally challenging for those with conditions such as Parkinson's, arthritis, autism, Down Syndrome, and many others.
- If you see family members who serve as caregivers, the American Dental Association has oral health resources for caregivers.

Role of Oral pH Levels

- Prolonged periods of low (acidic) pH in the mouth provide the biologic oral environment that promotes the growth of cavity-causing bacteria
- Low pH (below 5.5) is responsible for the demineralization and net mineral loss of the teeth

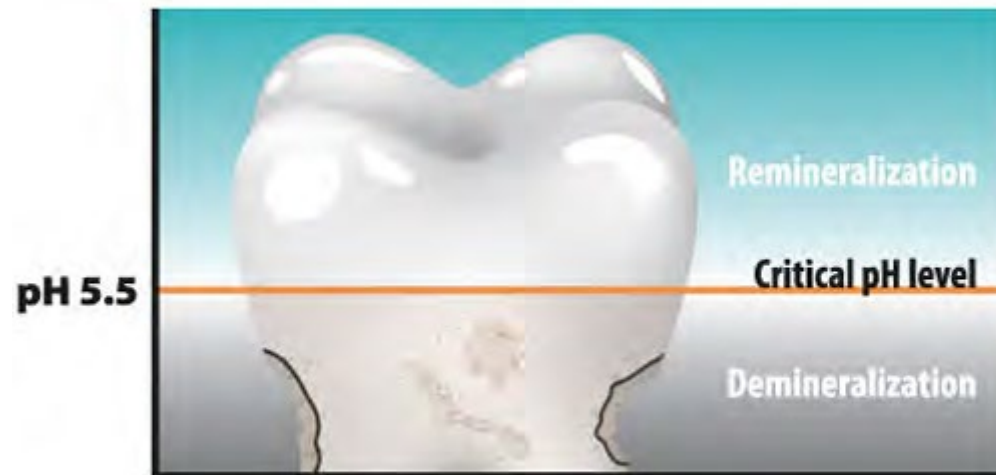
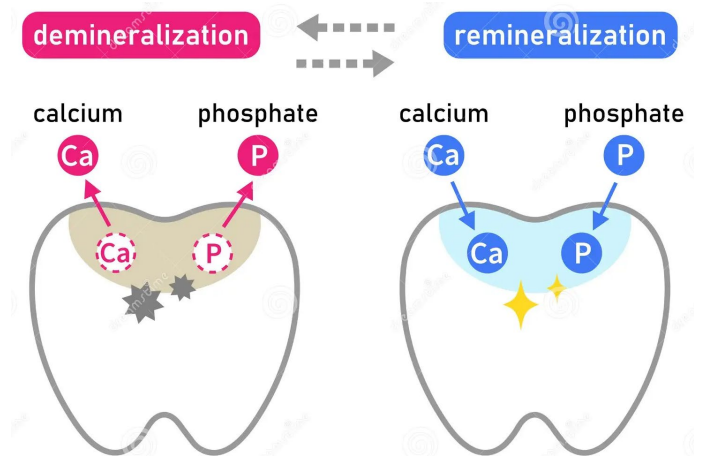


Figure 11. The results of being above and below the critical pH point of 5.5



The Role of Diet in Oral pH

- Eating/drinking lowers plaque pH to an acidic level
- Saliva is designed to restore pH to a healthy (alkaline) level
- In balanced oral environment, we eat or drink something, pH drops, some mineral is lost from the teeth, pH recovers and mineral returns to the teeth
- When the system is out of balance, prolonged periods of low pH result in demineralization of teeth and decay
- Frequent exposure to food/drink (except water) increases the number of acid attacks on the teeth
- Therapies are available to neutralize acidity and increase pH to more favorable levels (oral rinses, sprays, gels and gum)



How do we bridge the gap between underserved and access to care?

- Clinical Services
 - ✓ Increasing access to care
- Education
 - ✓ Increasing oral health literacy
- Community Outreach
 - ✓ Increasing awareness and resources



Guidance for all prenatal patients:

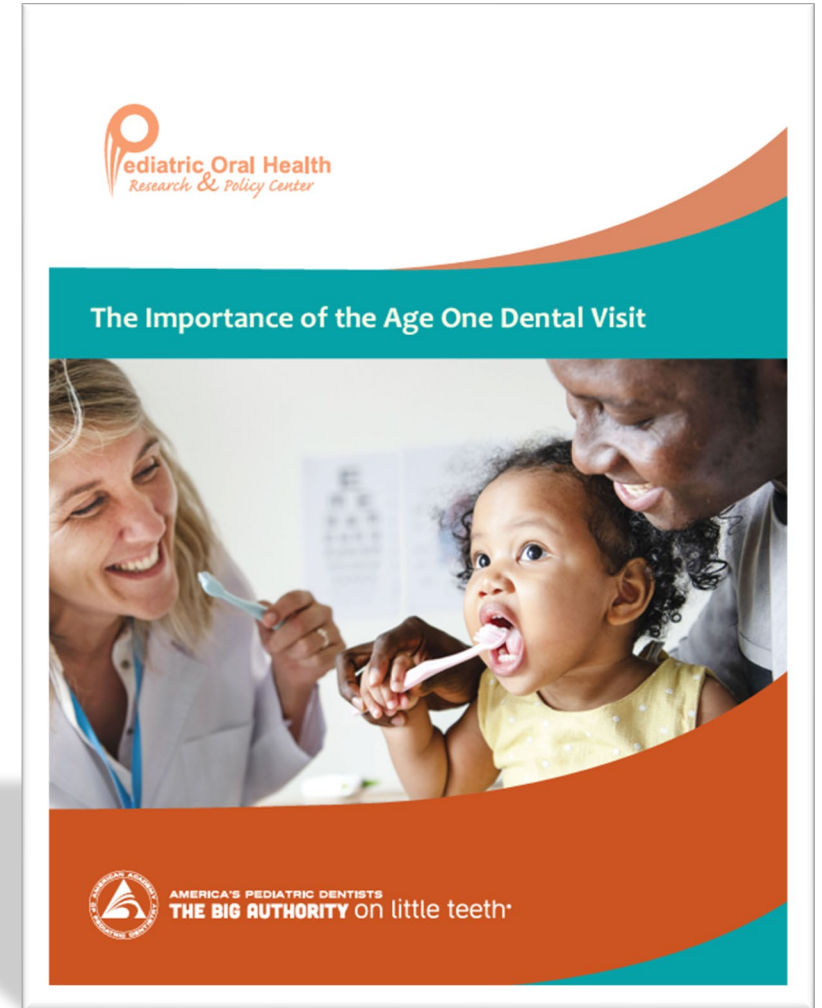
- Snacking, nausea and hormonal changes are a natural part of pregnancy but can make you particularly vulnerable to dental disease
- Left untreated, severe gum disease may increase health risks for mother and baby
- It is safe for pregnant women to have dental examinations, routine cleaning, and restorative treatment
- For morning sickness, rinse your mouth with a teaspoon of baking soda and water after vomiting to remove harmful acid and then brush your teeth



First Visit to a Dental Provider

- Important to help with messaging to parents
- Biggest challenges?
- Trying to accomplish:
 - Familiarity and Trust
 - Prioritize the importance of Oral Health
 - Identification of developmental issues
 - Early counseling
 - Establish a dental home!

1



For Children:

Guidance provided to parents and caregivers:

- Before baby has teeth, wipe gums with a clean washcloth morning and night.
- After the first tooth, brush with a soft toothbrush and fluoride toothpaste 2x/day
- Put only formula, milk or water in a baby bottle – no juice or sweet drinks.
- Putting only water in the sippy cup outside of mealtime.
- Not sharing spoons, forks or putting anything in your mouth before your baby's
- All children should see a dentist by their first birthday and get dental sealants by age 6 to protect the first permanent molars.



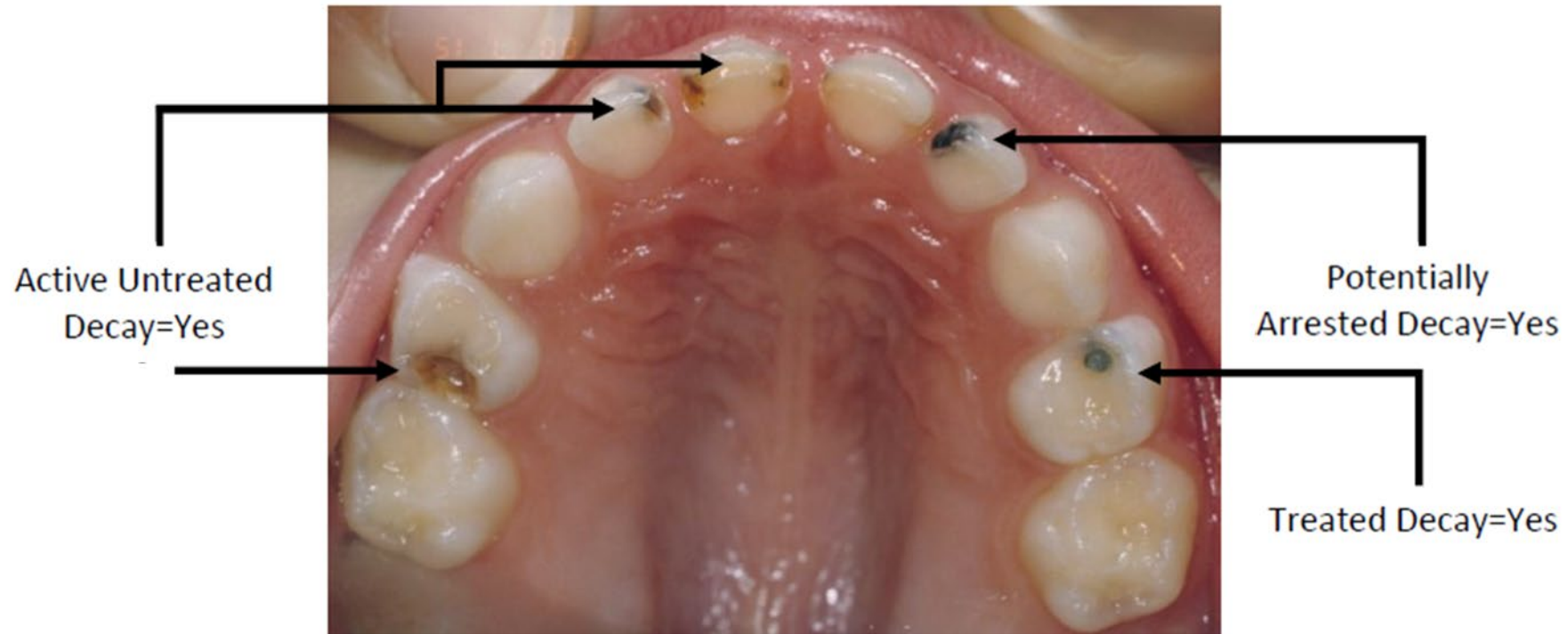
General Advice to the Patient:



Medical homes generally tend to be more common than dental homes, physicians are in an ideal position to educate patients about the importance of oral health and the basic preventive steps that can keep their smile healthy.

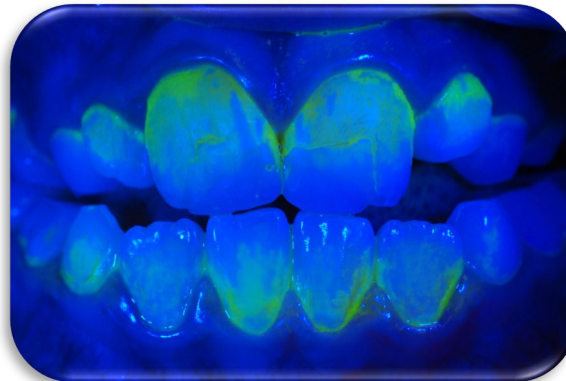
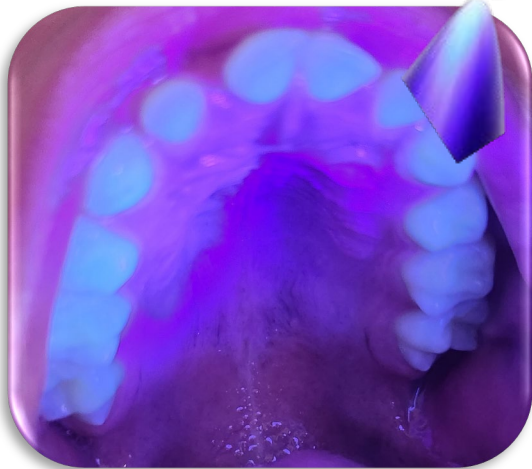
- ✓ Brush teeth twice every day for two minutes with fluoride toothpaste.
- ✓ Floss between all teeth, every day.
- ✓ Regular dental visits – ideally every six months.
- ✓ Drink plenty of fluoridated water and limit between-meal snacks.
- ✓ Avoid starchy, sweet, and sticky foods, as well as sugary drinks.

Let's Do a Screening Together!



What can we identify Is it an Urgent Situation? Is there unmet need? Prior History?

Extent and/or History of Treated Decay



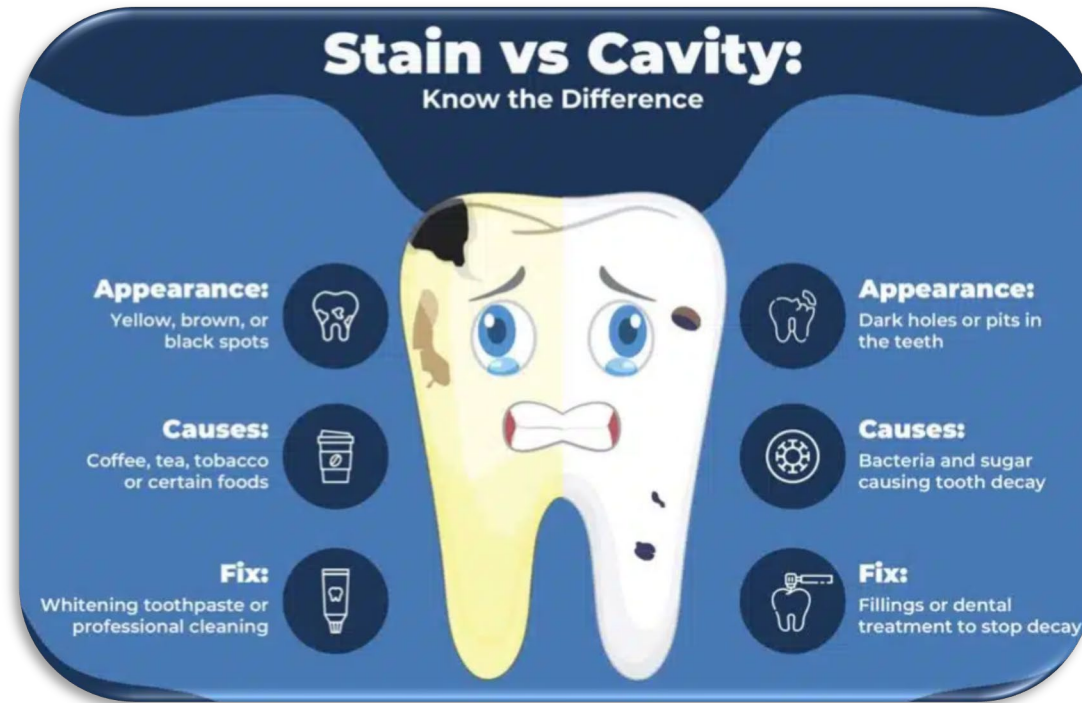
Exposure to black light makes the restorations visible!



Presence of Untreated Decay

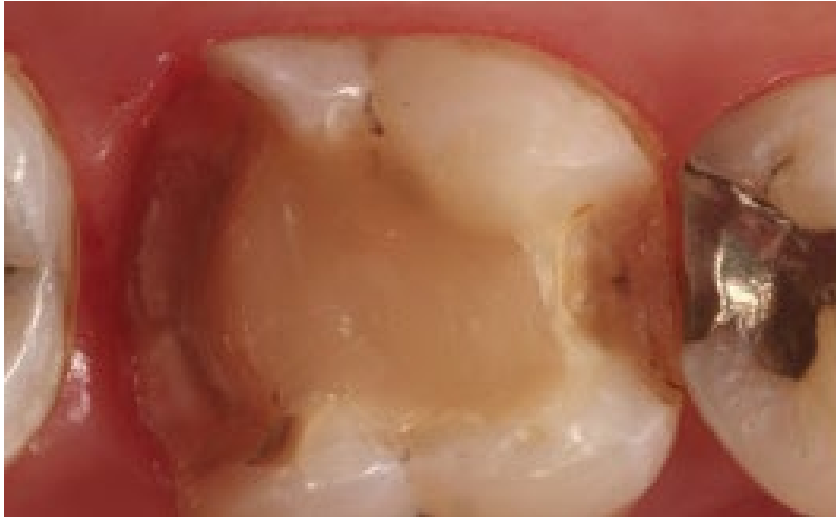


Precavitated
Pit & Fissure Caries



Cavitated
Pit & Fissure Caries

Evaluate the Extent of Treated Decay



Urgent Need vs Unmet Need



Urgent Care Needed



Early Care Needed

Child reporting pain, obvious swelling or sign of infection or multiple extensive lesions- involving permanent teeth

For Information or Questions

For oral health information and free educational resources are available from the Delaware Division of Public Health.

The **Bureau of Oral Health and Dental Services** hotline **302-318-8850**



<https://www.dhss.delaware.gov/dhss/dph/hsm/ohphome.html>

Google Delaware Oral Health Program or Delaware Bureau of Oral Health

