Oral Health & COVID-19: The Inextricable Link
Interprofessional Oral Health Care Model

Adapted from: World Health Organization (WHO, 2010)

ASK about oral health risk factors and symptoms of oral disease

LOOK for signs that indicate oral health risk or active oral disease

DECIDE on the most appropriate response

ACT offer preventive interventions and/or referral for treatment

DOCUMENT as structured data for decision support and population management

Available at: www.QualisHealth.org/white-paper

(Hummel, Phillips, & Holt, 2015)
The Interprofessional Team

- 84% of adults have an annual medical visit
- 64% of adults have an annual dental checkup
- 89 million patients seek urgent care per year
- PCP visits highest among people ≥ 65 years
- Children have ≅ 12 pediatric well-child visits to their PCP by age 3
- Nursing is the largest health profession with…
  - 4.2 million RNs
  - 290,000 NPs
  - 11,800 MWs
  - 1 million MDs and DOs and 115,000 PAs
  - 200,000 DDS/DMD
  - 150,000 dental hygienists
  - 150 dental therapists

(American Association of Nurse Practitioners, 2019; American College of Nurse-Midwives, 2017; Medical Economics, 2018; American Dental Association, 2020; American Dental Hygienists Association)
Oral Health & Overall Health: The Oral-Systemic Connection

- Cardiovascular disease
- Lung conditions
- Adverse pregnancy outcomes
- Oral cancers
- Diabetes
- Stroke
Impact of COVID-19 on Oral Health

- Impact of SDOH on risk for COVID-19
- Dental offices shuttered for 4 months in 2020
- Oral hygiene became more important than ever to protect overall health!
- Impact of loss of dental insurance
- Reopening of dental offices → backlog of access
- Emergence of teledentistry
- Dental care is low-risk, with new COVID-19 preventive protocols
Mechanisms of oral bacteria introduction

- Aspiration of oral pathogens into lungs
- Periodontal disease-associated enzymes modify oral mucosal surfaces to allow for adhesion and colonization of respiratory pathogens
- Respiratory epithelium altered by periodontal associated cytokines to promote infection by respiratory pathogens
COVID-19 Oral Microbiome

Bacterial Superinfections: > 50% COVID-19 patients who die

- Most fatalities in 1918 influenza outbreak due to subsequent bacterial infection
- > 50% of severe COVID-19 patients had secondary bacterial infections when they died
- > 71% admitted into hospital required antibiotics
- 74.5% of patients admitted to ICU required antibiotics

(Cox et al, 2020; Image: Quanterix, 2020)
COVID-19 Symptoms

- Fever or chills
- Cough
- Shortness of breath
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose

- Nausea or vomiting
- Diarrhea
- Skin rashes – patchy, itchy bumps, or blisters
- “COVID toes” – discolored or swollen toes, blisters, itching
- “COVID tongue” – inflammation of the small bumps on the tongue's surface, swollen and inflamed tongue, or indentations on the side

(CDC, 2020; Miller, 2021)
How is inflammation a risk factor for complications of COVID-19?

Periodontal disease causes systemic inflammation, producing high levels of interleukin 2,6,10.

The same inflammatory markers are heightened in COVID-19.

Patients with chronic conditions associated with inflammation, often with periodontal disease, are at risk for severe COVID-19.

- Cardiovascular disease
- Autoimmune diseases
- Diabetes mellitus
- Hypertension
- Obesity

(Ramadan et al., 2020)
COVID-19 and Oral Health of Patients

- Change toothbrush head every 3-4 months
- If patient has had COVID-19, change toothbrush immediately afterwards.
- Prescription of high fluoride toothpaste for high risk patients. If patient is shielded or vulnerable, deliver toothpaste.
- Interdental cleaning
- Brush twice a day minimum
- Denture hygiene: chemical and mechanical cleaning nightly
Prevent Mask Mouth!

Mask Mouth refers to the many oral health problems that occur from wearing a mask for extended periods of time. Since the beginning of the COVID-19 pandemic, dental professionals have noticed increased incidence of these problems in their patients:

- Dry mouth (Xerostomia)
- Bad breath (Halitosis)
- Tooth decay (Dental caries)
- Gum disease (Periodontitis)
- Mouth sores/ulcers

Prevention of mask mouth is imperative to preventing serious oral health problems.

- Wear a clean face mask – wash cloth masks every day, do not reuse disposable masks
- Take regular breaks from mask-wearing throughout the day
- Stay hydrated – do not forget to drink water throughout the day, and avoid dehydrating beverages like coffee and alcohol
- Focus on oral health – maintain a daily oral care regimen

(Express Dentist, 2021)
Caring for Your Teeth During COVID-19

Oral health is directly linked to your overall health. Bacteria thrive in the mouth as it is a perfect environment for them to grow and can cause tooth decay and periodontal disease. Bacteria can enter the bloodstream and contribute to health problems in other parts of the body.

Dental offices across the U.S. have reopened. It is safe to make an appointment for your regular dental cleaning and check-up. With or without a dental visit, it is important to maintain an at-home oral hygiene regimen to prevent oral health problems.

Tools of the Trade

Toothbrush
Use a toothbrush with soft bristles. Replace toothbrush or electric toothbrush head every 3 months. Do not share toothbrushes and other mouth care tools.

Toothpaste
Avoid toothpastes with harmful chemicals, namely sodium laurel sulfate (SLS) and artificial colors and sweeteners.

Floss
Use floss to remove bacteria below the gum line and sides of all teeth - do not neglect teeth and gums at the back of mouth. To promote gum health, you can also try a gum massaging tool to increase blood flow to gum tissue.

Tips for Teeth, Tongue and Gums

Consistency is key. Brush teeth first thing in the morning and before you go to bed at night.

Brush your tongue - it houses most of the harmful bacteria in your mouth.

Rinse with a warm saltwater mixture to reduce muth bacteria, soothe gums and reduce tooth sensitivity.

Avoid hard, sticky foods. It is important to be careful with your teeth when seeing the dentist is not an option.

When should I call my dentist?

Dental offices are open and eager to welcome you back for preventive, restorative and emergency oral health care.

Many dentists are still available online or have adopted telehealth practices to virtually communicate with patients. Your dentist can assess your problem and determine if you need to visit the office.

Available under Oral Health Literacy at: http://ohnep.org/interprofessional-resources

(OHNEP, 2021)
Special Care for Your Braces During COVID-19
Common Issues with Orthodontic Appliances

Orthodontic offices have reopened, but it may not be possible for you to make an appointment if you have an issue with your braces. Our care tips provide safe methods for caring for your braces until you are able to visit your orthodontist.

⚠️ My brackets are causing sores on my lips and cheeks.
Place a small amount of orthodontic wax over the offending bracket or broken wire. It is recommended that you avoid oily and spicy foods until the sores are healed.

⚠️ I keep getting food stuck in my brackets and it is causing irritation on my lips and cheeks.
With braces and other orthodontic appliances, it is especially important to maintain proper oral care. Use an interproximal brush or Waterpik® to dislodge food stuck in brackets. Do not use sharp objects to dislodge food.

⚠️ One of my wires is poking out of my bracket.
Place a small amount of orthodontic wax over the offending bracket or broken wire. Do not attempt to cut or adjust the wire.

⚠️ My retainer broke.
If your retainer or other removable orthodontic appliance breaks, do not continue using. Keep the piece in water until next orthodontic visit.

COVID-19: OrALL in the Family

Case Study

COVID-19 risk increases for individuals, families and communities disproportionately affected by chronic diseases and the social determinants of health. These same populations are at higher risk for oral disease. Common risk factors include obesity, poverty, stress, poor diet, alcohol and tobacco use, substance misuse, mental health issues and domestic violence. Many of these factors have been heightened during the pandemic. These and other social determinants of health contribute increased risk of COVID-19, exacerbation of chronic disease and poor oral health.

1. The Collins Family is a multi-generational African American family living in the Bronx.
2. The family agreed to all get tested for COVID-19, and if negative they would have dinner together.
3. They all gathered for Grandma Collins’ 90th birthday.

Collins Family Members

- Grandma Collins, age 90 - mother of Carla and Joe
- Carla, age 68 – daughter of Grandma Collins; widow; mother of Laurette and Rich
- Joe, age 69 – son of Grandma Collins; single
- Laurette, age 42 and Mike, age 64 – parents to Tanisha, age 13 and Troy, age 5
- Rich, age 36 and Selena, age 34 – parents to Este, age 2

Day 0 - You are on the team in ASSISTED LIVING.

Grandma Collins age 90 returns to assisted living and is required to quarantine in her room for 14 days. Meals will be delivered to her room and her caregivers will wear full PPE to administer her daily care.

The day after the family dinner, Laurette noticed she could not taste or smell anything and went for another COVID-19 test.

Day 1 - You are on the team in the COVID TESTING CENTER.

Laurette age 42 teaches 5th grade in a public school and has been working remotely for 9 months. You give Laurette a rapid and PCR test. Her COVID-19 rapid test was positive, and her PCR test results 3 days later was also positive. She informed the rest of the family to get tested.


What do you tell Laurette about the loss of taste and smell?

1. What percent of patients experience loss of taste/smell?
2. Is this an early or late sign?
3. Why would this be considered a COVID-19 alert?
4. Why is the tongue a considered a possible site of initial infection?
5. What type of cells exist on the tongue?

COVID-19: OrAll in the Family

Answer Sheet

1. About 50% of all COVID patients report loss of taste and smell.
2. It occurs in the early stages of the disease, before fever and other symptoms, and is persistent.
3. Since loss of taste and smell occur early in COVID, this sign should serve as an alert to get tested for COVID-19.
4. Although the underlying mechanism is unclear, the loss of taste and smell has led to the hypothesis that the oral cavity, particularly the tongue, might be the site of initial infection and is persistent.
5. The tongue is the taste organ where 96% of oral ACE2 positive cells reside. Hand to mouth contact could be the route of infection.

Day 2 - You are on the team in ASSISTED LIVING.

Grandma Collins age 90 is not showing any improvement in her symptoms.

Day 10 - You are on the team in the COVID TESTING CENTER.

Grandma Collins age 90 is now showing mild improvement in her symptoms.

Day 20 - You are on the team in ASSISTED LIVING.

Grandma Collins age 90 has almost completely recovered from COVID-19.

Available under Case Studies at: http://ohnep.org/interprofessional-resources
HEENT to HEENOT – Putting the Mouth Back in the Head

(Haber et al., 2015)
OHNEP LEADS THE WAY

OHNEP is at the vanguard of helping nurse practitioners, nurse-midwives, nurses, and other health professionals incorporate oral health into patient care.

Why? Oral health and overall health are interconnected. Research evidence links poor oral health like periodontal disease with diabetes, cancer, heart and lung diseases, and progression of dementia and Alzheimer's, among others. Yet, few health professionals integrate oral health in their clinical practice.

www.ohnep.org
Smiles for Life: A National Oral Health Curriculum

Click a Course Below to Get Started

The Relationship of Oral and Systemic Health

Child Oral Health

Adult Oral Health

www.smilesforlifeoralhealth.org
References


