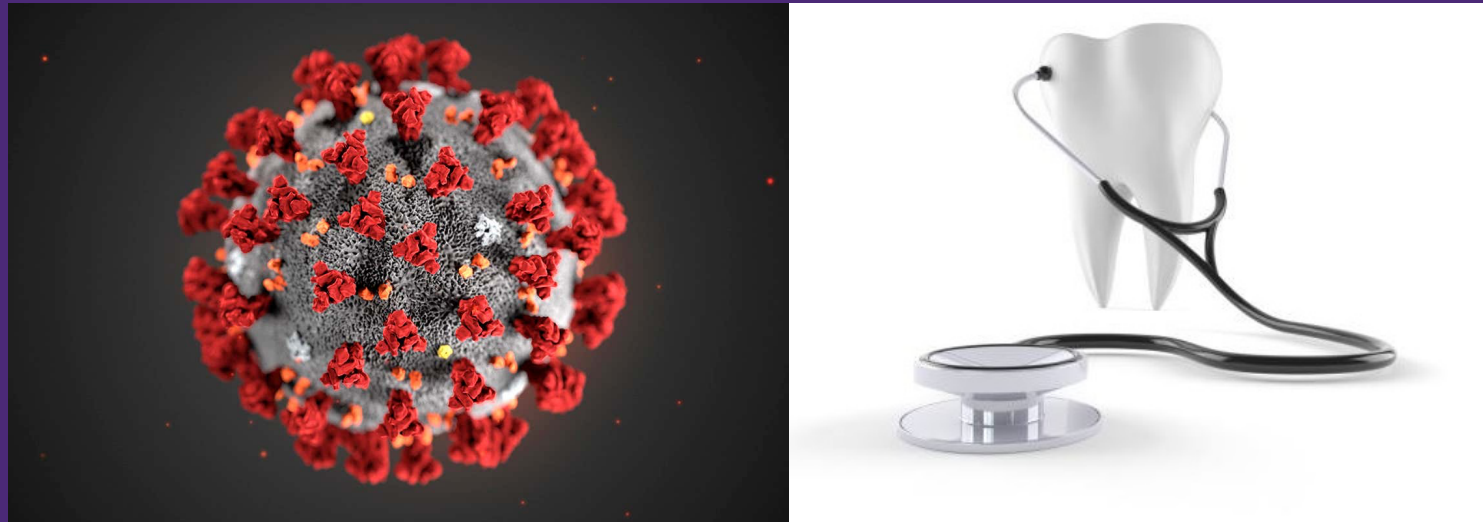


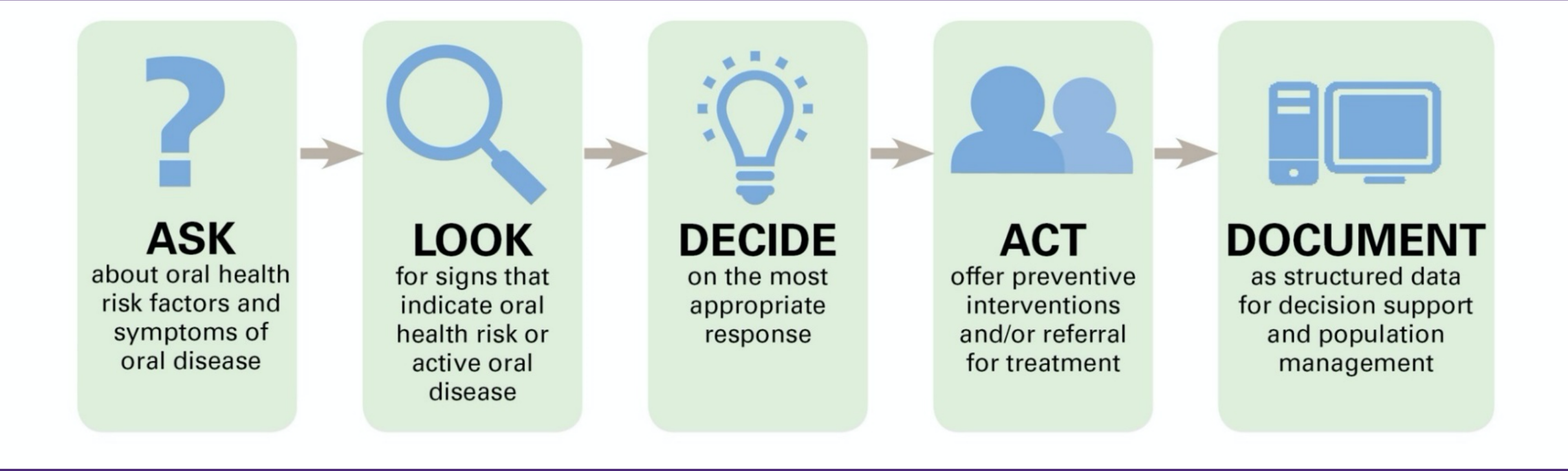
Oral Health & COVID-19: The Inextricable Link



Interprofessional Oral Health Care Model



Oral Health Delivery Framework (2015)



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

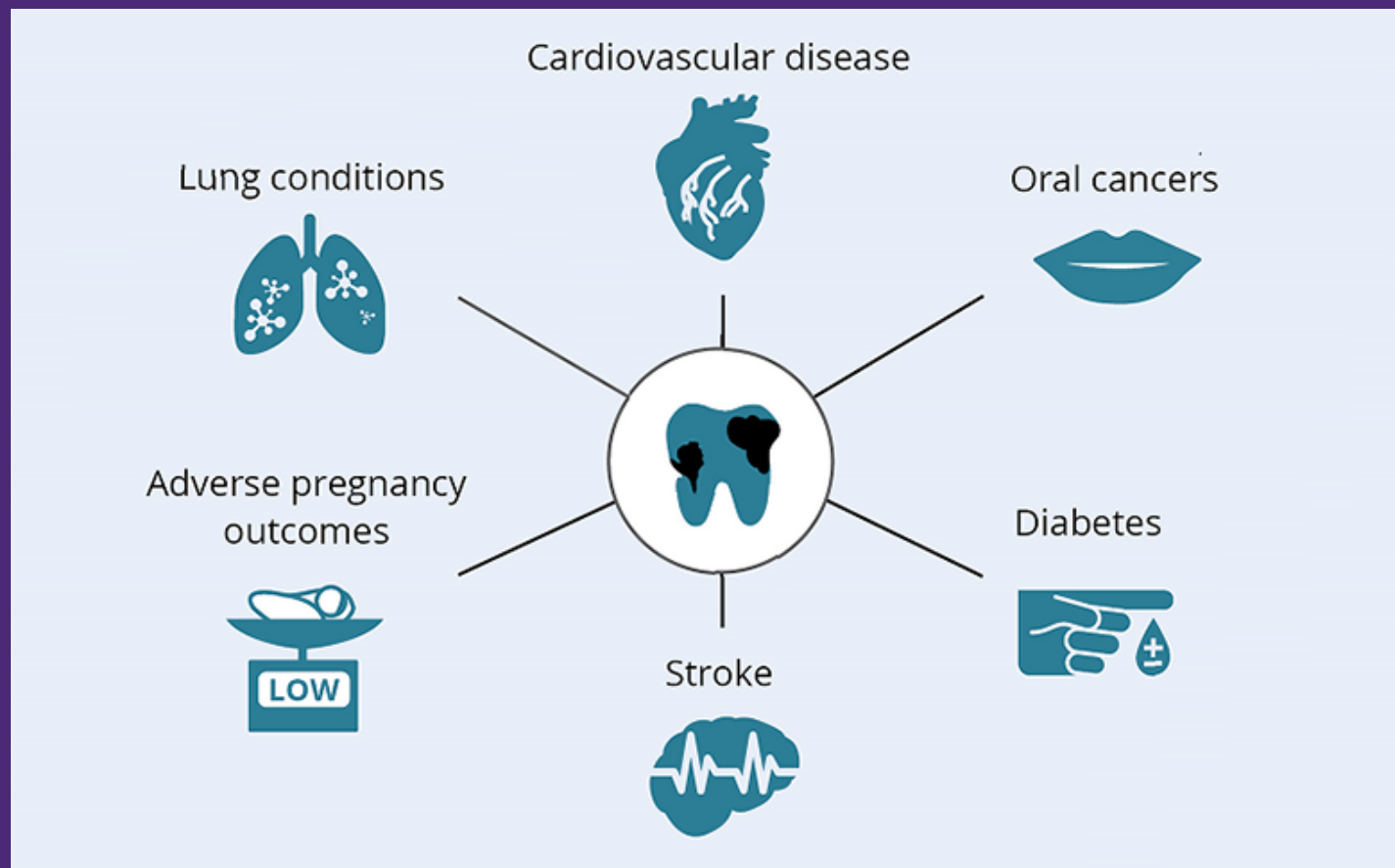
The Interprofessional Team



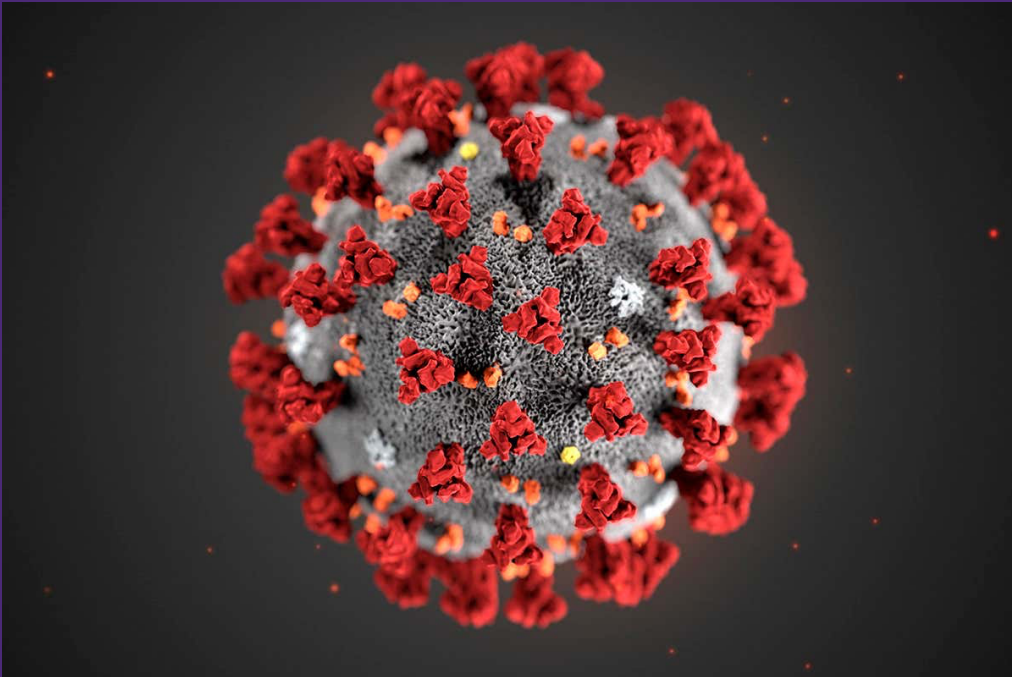
- **84% of adults** have an annual medical visit
- **64% of adults** have an annual dental checkup
- **89 million** patients seek urgent care per year
- PCP visits highest among people \geq **65 years**
- Children have \cong **12 pediatric well-child visits** to their PCP by age 3
- Nursing is the largest 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**



Oral Health & Overall Health: The Oral-Systemic Connection

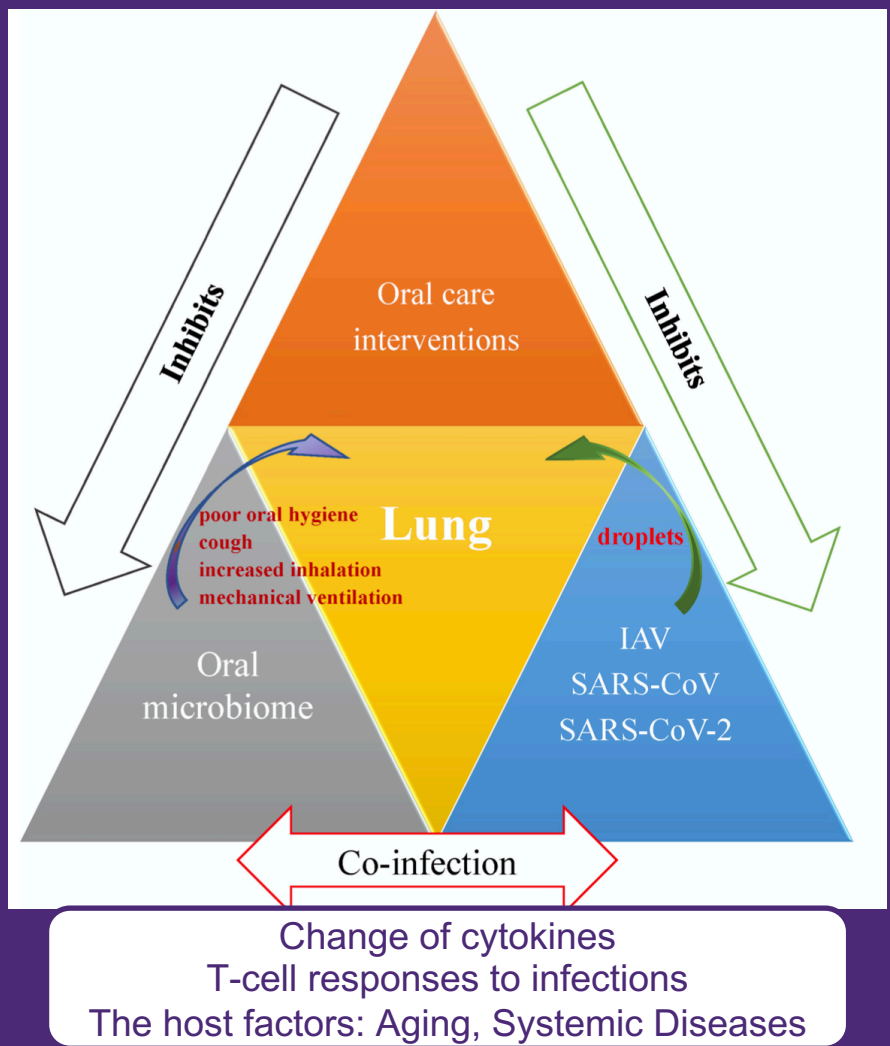


Impact of COVID-19 on Oral Health



- 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

COVID-19 Oral Microbiome

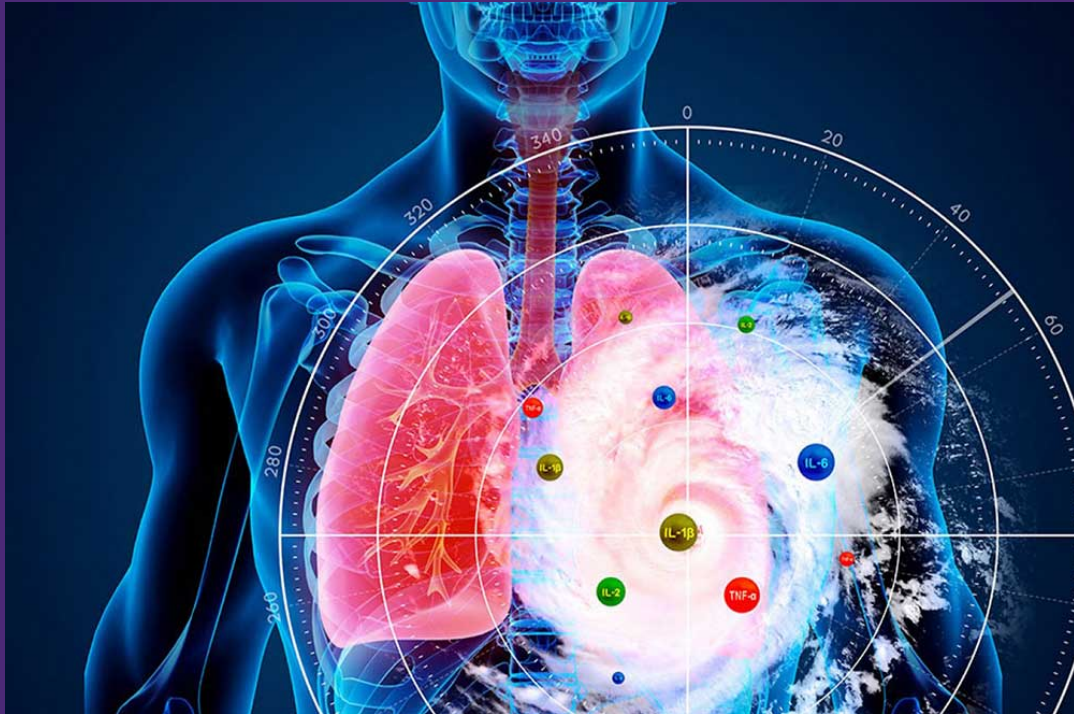


Mechanisms of oral bacteria introduction

- 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

(Fig. 1, Bao et al., 2020)

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

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

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



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

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 lauryl 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 mouth 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 over the phone 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.



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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.

Source: Sharan, J., Chanu, N.I., Jena, A.K., Arunachalam, S., & Choudhary, P.K. (2020). COVID-19 – Orthodontic Care During and After the Pandemic: A Narrative Review . Journal of Indian Orthodontic Society, 54(4), 352-365. doi: 10.1177/0301574220964634.

“COVID-19: OrALL in the Family”

Oral Health Case Study



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.

- ◇ **The Collins family is a multi-generational African-American family living in the Bronx.**
- ◇ The family agreed to all get tested for COVID-19, and if negative they would have dinner together. 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 44** – parents to **Tanisha, age 13** and **Troy, age 5**
- ✓ **Rich, age 36** and **Selena, age 32** – 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. She has mild dementia, has poor oral health, and requires assistance for all activities of daily living (ADL) including oral hygiene.

The day after the family dinner, **Laurette** noticed she could not taste or smell anything and went and 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.

Read: Ren, Y.F., Rasubala, L., Malmstrom, H., & E. Eliav. (2020). *Dental Care and Oral Health under the Clouds of COVID-19. JDR Clinical and Translational Research, 5(3), 202-210.* doi: 10.1177/2380084420924385.

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.

6. The rapid test is an antigen test and gives results in 15 minutes.
7. The results are less accurate. In symptomatic patients, the results are 80% accurate, but in asymptomatic patients, results are only about 40% accurate.
8. Because of the inaccuracy of the rapid test, it must be confirmed with the more accurate PCR test.

9. If you continue to have no symptoms, stay home and isolate for 10 days.
10. If you develop symptoms, you must isolate from others for at least 10 days since symptoms first appeared **and at least 24 hours** with no fever without fever-reducing medication **and until** other symptoms of COVID-19 are improving.
11. Monitor your symptoms. If you have an *emergency warning sign* (including trouble breathing) seek emergency medical care immediately. (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>)
12. Stay in a separate room from other household members, and use a separate bathroom if possible. Advise the family to use the guidelines for CDC household cleaning: (https://youtu.be/l3s75_X8Xjs)
13. Quarantine keeps someone who might have been exposed to the virus from infecting others. Isolation keeps someone who is infected with the virus away from others, even in their home.

HEENT to HEENOT – Putting the Mouth Back in the Head



(Haber et al., 2015)

| COMMENTARIES |

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Putting the Mouth Back in the Head: HEENT to HEENOT

Improving oral health is a leading population health goal; however, curricula preparing health professionals have a dearth of oral health content and clinical experiences.

We detail an educational and clinical innovation transitioning the traditional head, ears, nose, and throat (HEENT) examination to the addition of the teeth, gums, mucosa, tongue, and palate examination (HEENOT) for assessment, diagnosis, and treatment of oral-systemic health. Many New York University nursing, dental, and medical faculty and students have been exposed to interprofessional oral health HEENOT classrooms, simulation, and clinical experiences. This was associated with increased dental-primary care referrals.

This innovation has potential to build interprofessional oral health workforce capacity that addresses a significant public health issue, increases oral health care access, and improves oral-systemic health across the lifespan. (*Am J Public Health. 2015;105(4):611-611. doi:10.2196/AJPH.2014.300492*)

Judith Haber, PhD, APRN, BC, Erin Harvett, DNP, CFNP, BC, Kenneth Allen, DDS, MBA, Dorra Halkas, PhD, CFNP, BC, Caroline Dorsen, MSN, FNP, BC, Julia Lange-Kessler, DNP, CM, RN, MacLeine Lloyd, MS, FNP, BC, PMHNP, BC, Edwidge Thomas, DNP, ANP, BC, and Dorothy Wholman, DNP, ANP, BC, CFNP, BC

DURING THE DECADE FOLLOWING publication of the Surgeon General's Report, *Oral Health in America*, health professionals, physicians (MDs), nurse practitioners (NPs), nurse-midwives (NMs), and physician assistants (PAs) began to align with the dental profession to heed Satcher's call to "view the mouth as a window to the body."¹ The most significant interprofessional movement that followed this report occurred with family practice and pediatric physicians coming together to work on preventive oral health initiatives for children in which those professionals would provide screenings, fluoride varnish, and referrals for children to find dental homes.

Mobilization of the overall health community to work collaboratively has been slower. Development of "Bodies for Life: A National Oral Health Curriculum"² represented an important interprofessional "tipping point" for engaging health professionals focused on treating populations across the lifespan in considering oral health and its relationship to overall health as an integral component of their practice.

Yet, evidence from national databases monitoring oral health data continue to reveal a high

incidence and prevalence of dental caries, especially in lower socioeconomic and minority group populations.^{3,4} Data from the 2009–2012 National Health and Nutrition Examination Survey⁵ reveal that approximately one in four children (1.9%) aged 3 to 5 years living at the poverty level have untreated dental caries. The survey data further reveal that 19% of non-Hispanic Black children aged 3 to 5 years and 20% of Hispanic children aged 6 to 9 years had untreated dental caries compared with non-Hispanic White children aged 3 to 5 years (1.1%) and 6 to 9 years (1.4%).⁶ Although national statistics show an improvement in access to oral health care for children aged 5 years and older, the data reveal significant disparities in access to care for children aged 2 to 4 years.⁷

In the adult population, oral cancer morbidity and mortality rates have not declined over the past 10 years, at least in part related to absent or inadequate oral examinations,⁸ and human papillomavirus is associated with the recent rise in the incidence of oropharyngeal cancer.⁹ Among adults aged 65 years and older, only 30% have a dental benefit.¹⁰ Primary care providers have been

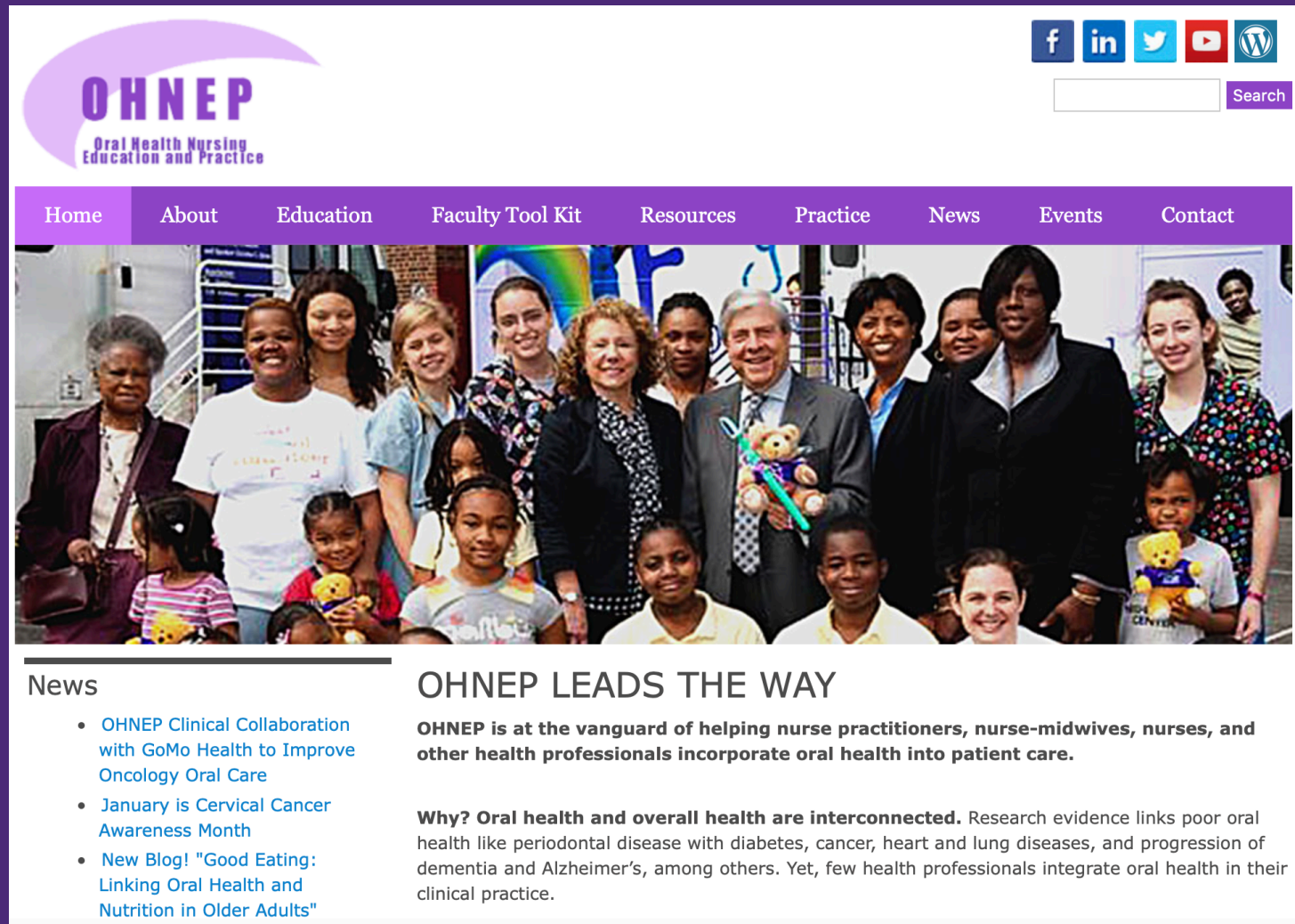
challenged by the Institute of Medicine to play a significant role in improving those oral health disparities by building interprofessional oral health workforce capacity.¹¹

One important component of the problem is that the majority of curricula for preparing health professionals have a dearth of oral health content and clinical experiences. Approximately 70% of medical schools include 4 hours or less on oral health in their curriculum; 10% have no oral health content at all.¹² Similarly, NPs and NMs have also not had a defined oral health curricular knowledge base nor a set of oral health clinical competencies.^{13,14} The PA programs have generally followed medical school curricula and have not required curricular oral health content or competencies.¹⁵

The recent publication of several important national reports, two oral health reports by the Institute of Medicine,^{16,17} the listing of oral health as one of the Healthy People 2020 Leading Health Indicators,¹⁸ the release of the Health Resources and Services Administration document "Integration of Oral Health and Primary Care Practice,"¹⁹ and the dissemination of "Oral Health Care During Pregnancy: A

March 2015, Vol 105, No. 3 | American Journal of Public Health | Haber et al. | Peer Reviewed | Commentaries | 437

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- [New Blog! "Good Eating: Linking Oral Health and Nutrition in Older Adults"](#)

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



Smiles for Life
A national oral health curriculum

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