

# Aspect

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A QUARTERLY NEWS BULLETIN

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Welcome to Aspect, PrimeCare Benefits Group's quarterly news bulletin, through which we offer contemporary news information on oral health, the dental industry, the latest research and advice for providers.

# CONTENTS



Mouth-Eye Connection ————— **04**



Most Dentists Still Wearing Masks ————— **06**



Oral Bacteria & Viral Growth ————— **07**



Older Women & Heart Health ————— **08**



Caries in US Adults ————— **10**



Bucky's Bites ————— **11**



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# EYE SPY: EXPLORING THE MOUTH-EYE CONNECTION

Lancette VanGuilder, BS, RDH, PHEDH | RDH Magazine

**Emerging research suggests that infection and inflammation may travel between the mouth and the eyes. Dental hygienists can valuable insight regarding oral health and eye health, including potential vision problems and blindness.**

It's no surprise to dental professionals that a healthy mouth is critical to overall health and wellness. But could a healthy mouth also lead to healthier eyes? Emerging research suggests that infection and inflammation may travel between the mouth and the eyes. Dental hygienists are poised to offer valuable education and prevention regarding oral health and eye health, including potential vision problems and blindness.

With the infectious pathway, bacteria travel from the oral cavity and metastasize to the eye. The eye, just like the mouth, skin, and gut, has a unique and individualized microbiome. Factors that may influence the makeup of the eye microbiome include ethnicity, geographic region, age, contact use, and oral and intestinal health.<sup>1</sup>

Harmful pathogens can enter the bloodstream and lymphatic system and travel throughout the body to the eye. Dysbiosis can occur when bacteria, viruses, fungi, and parasites disrupt the normal eye microbiome. Eye diseases are more likely to emerge when the microbiome is out of balance. Some examples of eye diseases associated with nonocular microbes include dry eye syndrome, keratitis, blepharitis, and conjunctivitis. High bacterial loads in the oral and intestinal parts of the body, including *Bacteroides* and *Prevotella*, have been implicated in an altered eye microbiome.<sup>2</sup>

In 2017, a study published in the *Journal of Glaucoma* concluded that poor oral health, an altered oral microbiome, and the number of missing teeth all may be considered risk factors for glaucoma pathology.<sup>3</sup> With all types of glaucoma, the optic nerve in the back of the eye that connects the eye to the brain is damaged (figure 1). With the inflammatory pathway, the highly vascular supporting periodontal structures around the teeth become injured by harmful periodontal bacteria. The host inflammatory response is triggered. Chemicals in the form of histamine, bradykinin, and prostaglandins are released by the damaged cells. This results in tissue swelling caused by the chemicals leaking into the surrounding blood vessels. The inflammatory cascade is marked by inflammation throughout the body, which increases pressure around the eye. Increased pressure in the eye irritates or damages the optic nerve. In the June 2021 issue of *Investigative Ophthalmology & Visual Science*, research corroborated previous scientific studies regarding the association between poor oral health and primary open-angle glaucoma (POAG).<sup>4</sup>

Glaucoma is classified as a progressive optic nerve disease. POAG is the most common form of glaucoma and makes up approximately 90% of all cases. Glaucoma is one of the leading causes of blindness for people over

the age of 60. Glaucoma may have no symptoms in its earliest stages, and 50% of people with the condition may not even know they have it.<sup>5</sup> POAG may have no symptoms other than a slow loss of peripheral or central vision.

Other contributing factors for glaucoma may be family history, age, race, eye injury, and medical conditions.<sup>6</sup> High-risk periodontal pathogens are not the only cause for concern. Untreated tooth decay, failing dental restorations that harbor bacteria, and abscesses may contribute to orbital cellulitis, an infection of the tissues around the eye (figure 2). This can be a dangerous condition when infections travel from the oral cavity into the sinus and migrate to the brain via the optic nerve. Orbital cellulitis provides a pathway for infection to lead to brain abscesses, vision loss, and/or death.<sup>7</sup>

The theory that oral bacteria enter the bloodstream and travel to other parts of the body, with the potential to create systemic inflammation, has been discussed since the late 1800s.<sup>8</sup> Now, we know that harmful oral pathogens have been linked to a wide range of conditions-including diabetes, obesity, certain cancers, cardiovascular disease, and much more.

To read the entire online article, [click here](#).



# HPI: MAJORITY OF DENTISTS MAINTAIN MASK REQUIREMENTS FOR PATIENTS, STAFF

Kimber Solana | ADA News

## Poll finds dental practice schedules were, on average, 88% full in March

Two-thirds of dentists in the country required patients to wear a mask in the waiting area in March, according to the latest wave of the ADA Health Policy Institute's Economic Outlook and Emerging Issues in Dentistry poll.

In addition, most dentists required both clinical and non-clinical staff, 70% and 62% respectively, to mask continually throughout the workday.

The poll also found that masking requirements for patients in waiting areas and for clinical and nonclinical staff in the practice were more common in urban than in rural settings.

Other results from the poll, which involved more than 1,900 respondents, included:

- Dental practices have gotten busier since January. Schedules were 88% full on average in March, up from 83% in February and 77% in January. Patient cancelations remained the most common reason for not having a full schedule.
- Dental team recruitment needs eased up slightly in March. One-third of dentists had recently or were currently recruiting dental hygienists and 38% had recently or were currently recruiting dental assistants. The level of difficulty with recruitment these positions has remained relatively stable.
- Fewer than 3 in 10 dentists are confident in the U.S. economic recovery, though the majority remain at least somewhat confident in their practice's and the dental sector's recovery.

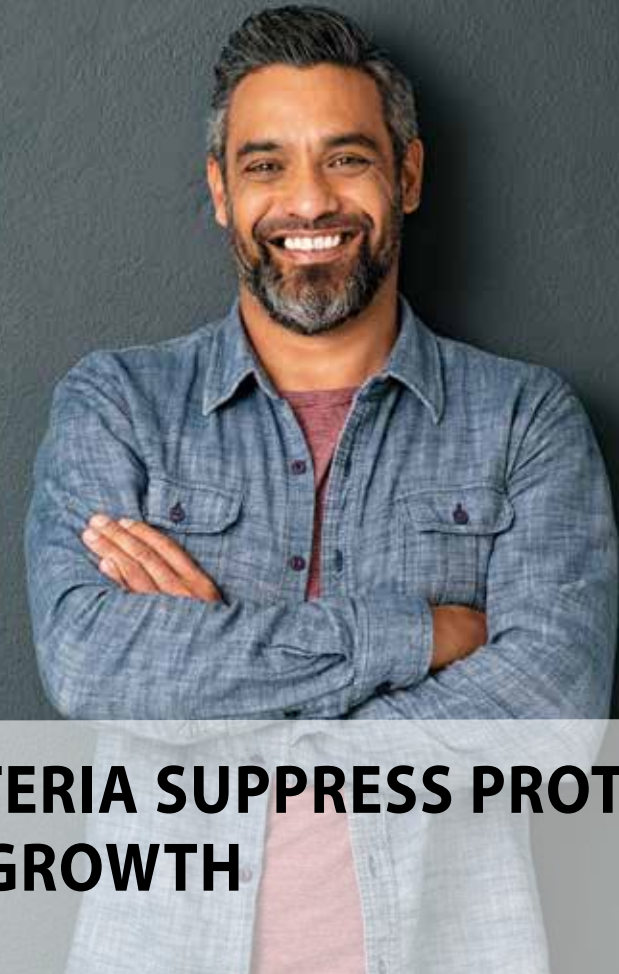
The mask requirement findings come after the ADA released new resources to help dental practices make informed decisions and facilitate conversations about the Centers for Disease Control and Prevention's latest public indoor masking recommendations.

According to the resource, the CDC on Feb. 25 revised its mask recommendations, indicating that indoor masks are no longer necessary for most individuals in areas with low COVID-19 community levels. It recommended that communities should take into account three different metrics - new COVID-19 hospitalizations, hospital capacity and new COVID-19 cases - to determine its risk level and masking guidance.

The HPI's Economic Outlook and Emerging Issues in Dentistry monthly poll began in January to measure the economic impact of the COVID-19 pandemic and to gather dentists' opinions on other current and emerging issues impacting their practices. The revamped panel is a continuation and expansion of the previous poll that HPI conducted between the onset of the pandemic and December 2021.



To read the online article, [click here](#).



# HOW ORAL BACTERIA SUPPRESS PROTECTION AGAINST VIRAL GROWTH

Betty Coffman | ScienceDaily

## Bacteria that cause periodontal disease reduce oral defense and increase viral growth

Researchers from the University of Louisville School of Dentistry and their colleagues have discovered details of how proteins produced by oral epithelial cells protect humans against viruses entering the body through the mouth. They also found that oral bacteria can suppress the activity of these cells, increasing vulnerability to infection.

A family of proteins known as interferon lambdas produced by epithelial cells in the mouth serve to protect humans from viral infection, but the oral bacteria *Porphyromonas gingivalis* reduces the production and effectiveness of those important frontline defenders.

"Our studies identified certain pathogenic bacterial species, *P. gingivalis*, which cause periodontal disease, can completely suppress interferon production and severely enhance susceptibility to viral infection," said Juhi Bagaitkar, assistant professor in the UofL Department of Oral Immunology and Infectious Disease. "These resident oral plaque bacteria play a key role in regulating anti-viral responses."

Bagaitkar and Richard Lamont, professor and chair of the UofL Department of Oral Immunology and Infectious Disease, led the work, with first author Carlos J. Rodriguez-Hernandez and other colleagues at UofL and at Washington University in St. Louis. The findings were published in December in PNAS...

To read the entire online article, [click here](#).



## A HEALTHY MOUTH CAN MEAN A HEALTHY HEART FOR OLDER WOMEN

Amy Norton | HealthDay

A new study offers more evidence that oral health is connected to heart health: Older women who harbor certain bacteria in their mouths might be at increased risk of developing high blood pressure.

The study, which followed 1,200 women for a decade, found that 15 types of mouth bacteria were linked to the odds of developing high blood pressure. Most were tied to an increased risk, but a few types were potentially protective.

The findings do not prove that microbes in the mouth directly influence blood pressure, said Michael LaMonte, a senior author on the study and a research professor at the University at Buffalo-State University of New York.

So it's not yet clear, he said, whether brushing and flossing can help control your blood pressure, too.

But the notion isn't far-fetched, either. Studies in recent years have found that people with severe gum disease, which is a bacterial infection, tend to have heightened risks of heart disease and high blood pressure.

One theory is that once gum disease sets in, "bad" oral bacteria may get into the systemic circulation and contribute to inflammation in the blood vessels.

Some research also suggests that people with high blood pressure tend to have a different oral microbiome than people with normal blood pressure. The "microbiome" refers to the trillions of bacteria and other microbes that dwell in the human body. Most of those bugs reside in the gut-but the mouth has its own large microbial community.

LaMonte's team wanted to find out whether specific oral bacteria were linked to the risk of developing high blood pressure in the future.

So they used data from 1,215 women who were part of a larger U.S. study called the Women's Health Initiative. The women, aged 53 to 81 at the outset, underwent a dental exam that included taking a plaque sample. Those samples were analyzed to determine the composition of the oral microbiome.

Over the next decade, 735 women were newly diagnosed with high blood pressure. LaMonte's team found that 15 oral bacteria were connected to the condition. In most cases, a greater abundance of the bug meant a higher risk of high blood pressure, but five bacteria were tied to a decreased risk.

The findings, published March 2 in the Journal of the American Heart Association, do not answer the question of why.

But LaMonte pointed to one potential mechanism: nitric oxide (NO) production.

"Some of the bugs that live in our mouths provide a source of NO," LaMonte said. Nitric oxide matters because it helps relax blood vessels and regulate blood pressure.

One of the bacterial types identified in this study is involved in the NO process - but only one, LaMonte said.

That leaves open the question of what all the other bacteria might be doing to sway blood pressure.

And it's possible they are not directly doing anything. They may simply be a "marker" of something else, said Dr. Willie Lawrence, chair of the American Heart Association's National Hypertension Control Initiative Advisory Committee.

Lawrence, who was not involved in the study, noted the researchers tried to account for other factors that affect blood pressure. They included body weight, education level, and diet, exercise and smoking habits, along with certain health conditions like diabetes and high cholesterol.

But, Lawrence said, there could still be other reasons for the connection between oral bacteria and blood pressure.

"This is an interesting finding," he said, "and it tells us there may be more to blood pressure control than we understand. We need to keep an open mind."

LaMonte agreed there is a lot left to learn. For one, he said, studies should look at the link between oral bacteria and the risk of future high blood pressure in other populations, including men.

As for proving that oral bacteria, themselves, exert an effect, that would take an intervention study. One possibility, LaMonte said, would be a trial where people with elevated blood pressure are given probiotics designed to "shift the oral microbiome composition from bad to good," then see if that improves their blood pressure numbers.

Then there is the question of whether good oral hygiene - daily brushing and flossing, and regular dental checkups - can help maintain a healthy blood pressure.

"I think it could," LaMonte said. "But right now, we don't have the evidence to prove that."

To read the online article, [click here](#).



## STUDY SHOWS 21.3% RATE OF UNTREATED CARIES IN US ADULTS

Mary Beth Versaci | ADA News

### People of lower socioeconomic status at disproportionately high risk

More than 1 in 5 U.S. adults have untreated caries, and those with a family income at or below the poverty threshold are at a disproportionately high risk of being part of that group, according to a study published in the April issue of *The Journal of the American Dental Association*.

The cover story, "Update on the Prevalence of Untreated Caries in the US Adult Population, 2017-2020," used data from the 2017-2020 National Health and Nutrition Examination Survey to derive estimates for untreated caries prevalence in the U.S. adult population. Author Nasir Zeeshan Bashir, B.D.S., a research fellow in the University of Bristol School of Oral and Dental Sciences in England, conducted subgroup analyses to assess how the disease was distributed among population subgroups and how the epidemiology differed between coronal and root caries.

The study found the prevalence of untreated caries to be 21.3%, based on a weighted sample representative of 193.5 million U.S. adults. Caries was most prevalent in those with a family income to poverty ratio of less than 0.5 or 0.5-1.0, as well as men, those aged 30-39 and 40-49, those of other or non-Hispanic Black race or ethnicity, those with an educational attainment less than high school graduation, those who did not have health insurance, and those who were underweight or obese. The prevalence of coronal and root caries was 17.9% and 10.1%, respectively.

"There is a substantial unmet health care need in the U.S. adult population for the prevention and management of untreated caries, and public health efforts should aim particularly to address disease within those subgroups who are at a disproportionately high risk," Dr. Bashir said in the study.

To view the online article, [click here](#).

## Beach Hacks

Trish Flake | Princess Pinky Girl

- ~ Use a makeup brush to apply sunscreen to smaller kids' faces.
- ~ Use frozen water bottles as ice packs to keep your cooler cold.
- ~ Bring a kiddie pool or make your own with a cheap shower curtain for sand-free fun.
- ~ Bring a permanent marker and write the times you applied sunscreen on the bottle so you don't forget when to reapply.

To view the entire list, [click here](#).





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@ [www.primecarebenefits.com](http://www.primecarebenefits.com)

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