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COVID-19 & DENTISTRY

CDC Update Regarding 'Aerosol' vs. 'Airborne' vs. 'Droplet' Transmission & Protection

David Reznik, DDS
Director of the Oral Health Center of Grady Health System's Infectious Disease Program

Gary Severance, DDS
Executive Leader of Professional Relations, Henry Schein Dental

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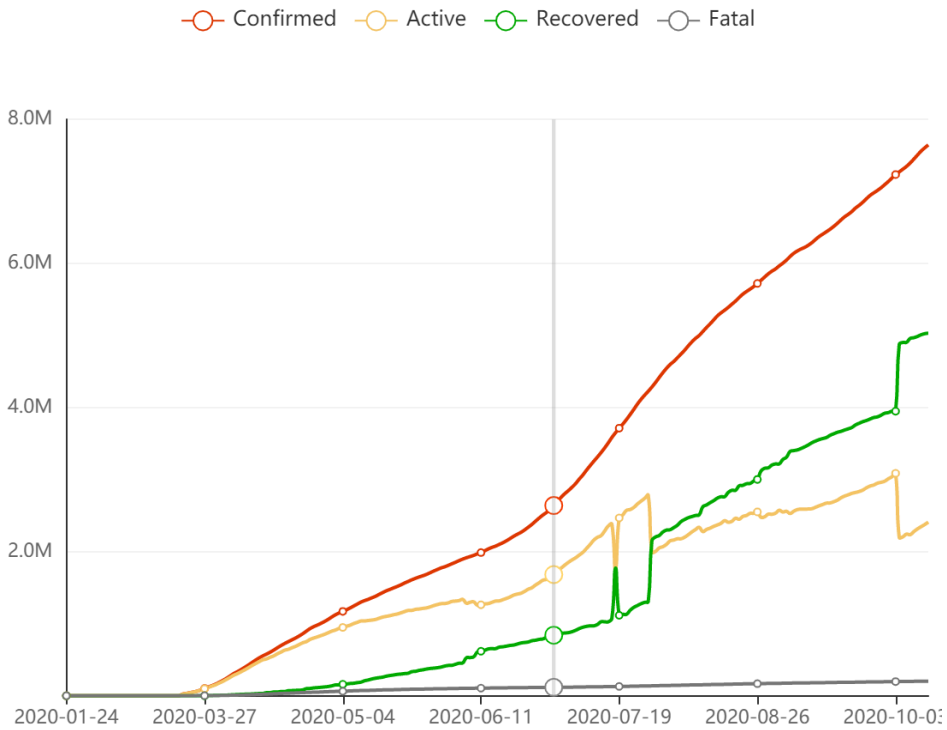
COVID-19 U.S. Tracker

- Confirmed: > 7,903,918
- Active Cases: > 2,637,689
- Recovered: > 5,047,743
- Fatalities: > 218,486 (~2.8%)

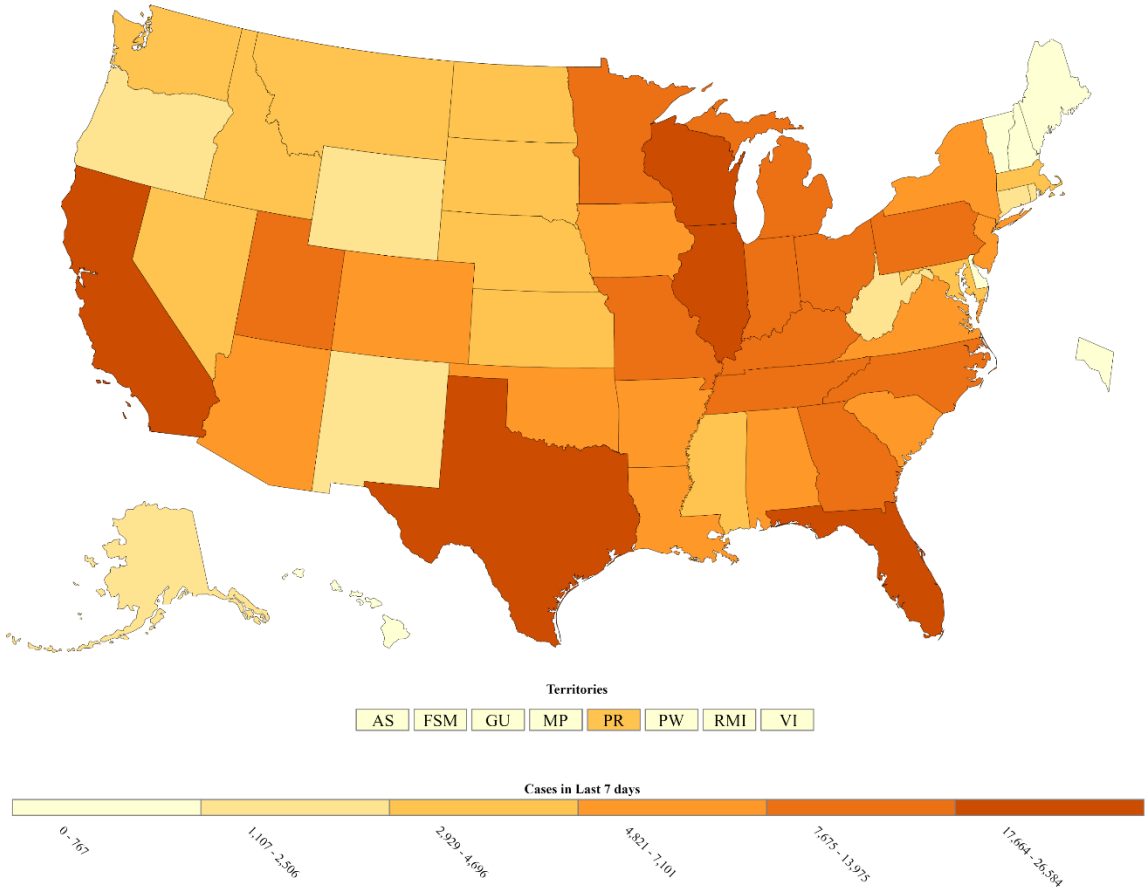
Source: CDC
Data as of 10/13/2020

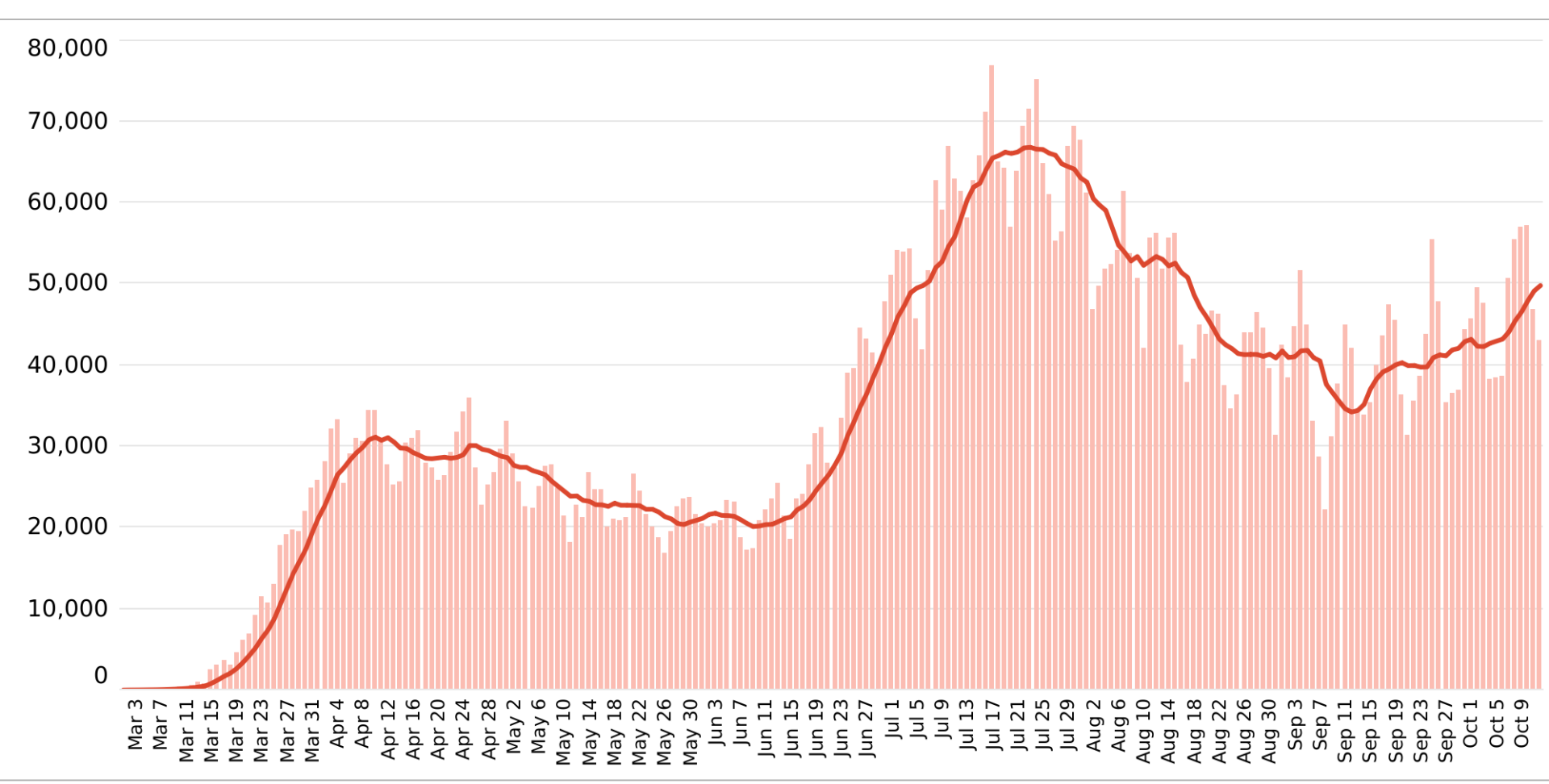


CDC COVID-19 Tracker

- Cumulative Cases per State

Source: CDC

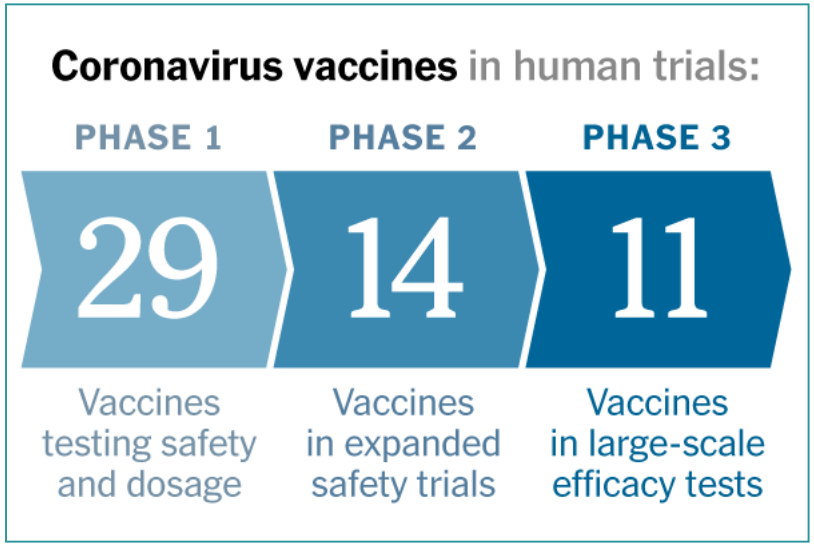




The COVID Tracking Project

COVID-19 Vaccine Update

- Johnson & Johnson's COVID-19 vaccine trial has been paused due to an unexplained illness in a volunteer
- Johnson & Johnson's JNJ-78436735 vaccine is one of four large-scale, final-stage COVID-19 vaccine trials underway in the U.S.
- Another trial, run by AstraZeneca, was halted Sept. 8 after a second participant was diagnosed with a neurological condition
- Now two of the four vaccine trials in the United States are now on hold



‘Aerosol’ vs. ‘Airborne’ vs. ‘Droplets’ in Relation to COVID-19

- Aerosol is a catch-all term for any solid or liquid particle so tiny and lightweight it can become suspended in air and float.
    - ❖ Some viruses can become aerosols, making airborne transmission possible

- The World Health Organization (W.H.O.) defines aerosol transmission, also known as airborne transmission, as "very small droplets...that are able to stay suspended in the air for longer periods of time."

‘Aerosol’ vs. ‘Airborne’ vs. ‘Droplets’ in Relation to COVID-19

- Airborne is when a droplet containing a virus is small enough to float in the air, and airborne transmission occurs when that infectious particle is inhaled by someone else, according to the W.H.O.

The W.H.O. said there's mounting evidence airborne transmission of COVID-19 may be possible indoors, especially poorly ventilated spaces, because of "reported outbreaks of COVID-19 in some closed settings, such as restaurants, nightclubs, places of worship or places of work, where people may be shouting, talking or singing."

‘Aerosol’ vs. ‘Airborne’ vs. ‘Droplets’ in Relation to COVID-19

- Droplets are large mucus or saliva particles heavier than air that fall toward the ground as soon as they're expelled, and droplet transmission typically occurs when a droplet containing a virus comes in contact with another person's eyes, nose or mouth.

According to the W.H.O., **current evidence suggests that close-contact, person-to-person transmission is the primary way COVID-19 spreads.** People in close contact with an infected person can become infected "when those infectious droplets get into their mouth, nose, or eyes."

ADA Weighs In

The “update to the CDC’s Web page” explains how the virus spread “represents an official acknowledgment of growing evidence that under certain conditions, people farther than six feet apart can become infected by tiny droplets and particles that float in the air for minutes and hours, and that they play a role in the pandemic.”

Still, “the CDC says the main way the virus spreads is through close contact with virus-containing droplets – large and small – that are emitted when someone coughs, sneezes, sings, talks or breathes.”

- ADA News

CDC Updates Coronavirus Guidance

On Airborne Transmission

- **COVID-19 spreads very easily from person-to-person**

- How easily a virus spreads from person-to-person can vary; the virus that causes COVID-19 appears to spread **more efficiently than influenza** but **not as efficiently as measles**, which is among the most contagious viruses known to affect people

  - Transmission of COVID-19 review: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html

COVID-19 Most Commonly Spreads During Close Contact

- People who are physically near (within 6 feet) a person with COVID-19 or have direct contact with that person are at greatest risk of infection

When people with COVID-19 cough, sneeze, sing, talk, or breathe they produce respiratory droplets. Small droplets can also form particles when they dry very quickly in the airstream.

- Infections occur mainly through exposure to respiratory droplets when a person is in close contact with someone who has COVID-19

COVID-19 Most Commonly Spreads During Close Contact

- As the respiratory droplets travel further from the person with COVID-19, the concentration of these droplets decreases
- Larger droplets fall out of the air due to gravity; smaller droplets and particles spread apart in the air
- With passing time, the amount of infectious virus in respiratory droplets also decreases

COVID-19 Can Sometimes be Spread by Airborne Transmission

- Some infections can be spread by exposure to virus in small droplets and particles that **can linger in the air for minutes to hours**

- **These viruses may be able to infect people who are further than 6 feet away** from the person who is infected or after that person has left the space

- This kind of spread is referred to as airborne transmission and is an important way that infections like tuberculosis, measles, and chicken pox are spread
  - ❖ Scientific Brief: SARS-CoV-2 and Potential Airborne Transmission

Airborne Transmission is not Equally Efficient for all Respiratory Microbes

For some viruses and bacteria, airborne transmission is a highly efficient mode for spreading infection. Examples include Mycobacterium tuberculosis (the bacterium that causes tuberculosis), rubeola (the virus that causes measles), and varicella-zoster (the virus that causes chicken pox).

Although these infections can be transmitted at close range, they are also efficiently and frequently transmitted over longer distances (more than six feet) or over longer times (to people passing through an air space in which the infectious person was present minutes to hours earlier).

It is especially important to control pathogens that readily infect by means of airborne transmission in health care and other occupational settings where special engineering controls are required to prevent spread.

Most Infections are Spread Through Close Contact, Not Airborne

The Epidemiology of SARS-CoV-2

Diseases that are spread efficiently through airborne transmission tend to have high attack rates because they can quickly reach and infect many people in a short period of time.

A significant proportion of SARS-CoV-2 infections (estimated 40-45%) occur without symptoms and that infection can be spread by people showing no symptoms.

Thus, where SARS-CoV-2 spreads primarily through airborne transmission like measles, experts would expect to have observed considerably more rapid global spread of infection in early 2020 and higher percentages of prior infection measured by serosurveys.

Most Infections are Spread Through Close Contact, Not Airborne

The Epidemiology of SARS-CoV-2

Available data indicate that SARS-CoV-2 has spread more like most other common respiratory viruses, primarily through respiratory droplet transmission within a short range (less than six feet).

There is no evidence of efficient spread (routine, rapid spread) to people far away or who enter a space hours after an infectious person was there.

Airborne Transmission of SARS-CoV-2 Can Occur

Under Special Circumstances

- There are several well-documented examples in which SARS-CoV-2 appears to have been transmitted over long distances or times

- These transmission events appear uncommon and have typically involved the presence of an infectious person producing respiratory droplets for an extended time (>30 minutes to multiple hours) in an enclosed space

- Enough virus was present in the space to cause infections in people who were more than 6 feet away or who passed through that space soon after the infectious person had left

Airborne Transmission of SARS-CoV-2 Can Occur

Under Special Circumstances

Circumstances under which airborne transmission of SARS-CoV-2 appears to have occurred include:

- **Enclosed spaces** within which an infectious person either exposed susceptible people at the same time or to which susceptible people were exposed shortly after the infectious person had left the space

- **Prolonged exposure to respiratory particles**, often generated with expiratory exertion (shouting, singing, exercising) that increased the concentration of suspended respiratory droplets in the air space

- **Inadequate ventilation or air handling** that allowed a build-up of suspended small respiratory droplets and particles

Questions That Remain Unanswered

- How effective are mitigation efforts to prevent SARS-CoV-2 spread, especially ventilation and masking?
- What proportion of SARS-CoV-2 infections are acquired through airborne transmission?
- What are the conditions that facilitate airborne transmission?
- What is the infectious dose for SARS-CoV-2 (how many virions are required for infection to occur)?
- Do inoculum size and route of inoculation affect risk of infection and disease severity?

Infection Control: Management of Aerosols in the Dental Setting

Pathogens that are spread easily through airborne transmission require the use of special engineering controls to prevent infections.

Control practices, including recommendations for patient placement and Personal Protective Equipment (PPE) for health care personnel in healthcare settings, can be found in Section 2 of Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the COVID-19 Pandemic.

COVID-19 Spreads Less Commonly Through Contact

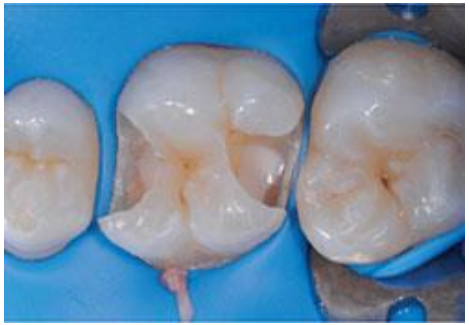
With Contaminated Surfaces

Respiratory droplets can also land on surfaces and objects. It is possible that a person could get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or eyes.

- **Spread from touching surfaces is not thought to be a common way that COVID-19 spreads**

- Follow Manufacturer's Instructions for Use on disinfecting wipes to clean surfaces

There Is Not “One Solution That Fits All”



Source Control

+

Ventilation

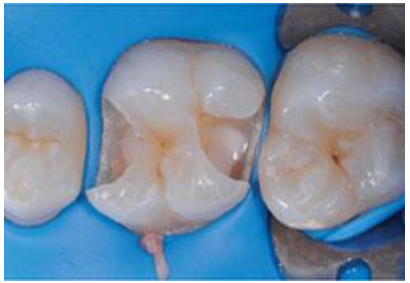
+

Air Cleaning

- Infection control bundling
- Layering of protective procedures

Aerosols and Aerosol Management

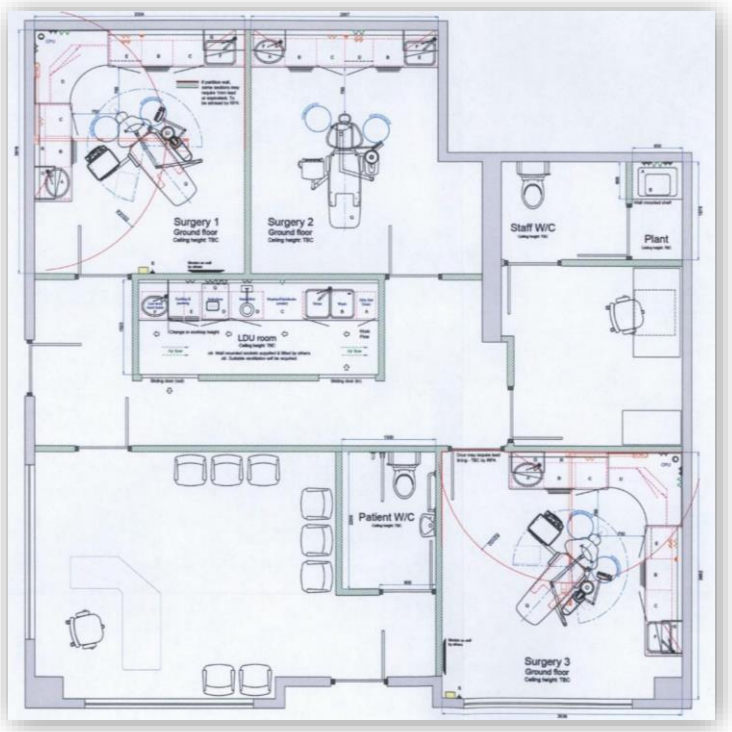
1. Source Control



Samaranayake, L. P., Reid, J. & Evans, D. The efficacy of rubber dam isolation in reducing atmospheric bacterial contamination. *ASDC J. Dent. Child* **56**, 442–444 (1989).

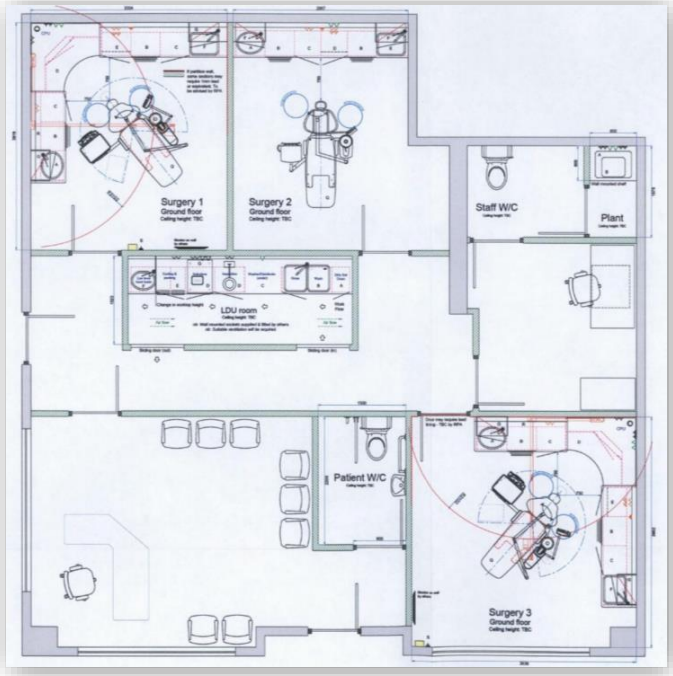
Aerosols and Aerosol Management

2. Ventilation – local and centralized



Aerosols and Aerosol Management

3. Air Cleaning – local and centralized



What Happened to Chinese Dental Teams at the COVID-19 Epicenter?

Dental teams at an oral medicine hospital in China did not develop COVID-19 while providing emergency dental treatment during the pandemic, likely due to increased infection control measures, according to a study published on September 27 in the Journal of Dental Research.

"Comprehensive measures such as the use of advanced [personal protective equipment (PPE)] and environmental disinfection can prevent cross-infection in dental practice," wrote the authors, led by Liuyan Meng, PhD, of the School and Hospital of Stomatology at Wuhan University.

Dental Team COVID-19 Risk Management

- Handpieces or ultrasonic dental instruments create a presumed risk of infection in dental practice
- Dental hygienists have been labeled as most at risk for these reasons
- Dental teams have stockpiled PPE, spaced out appointments to allow for more cleaning, and adhered to social distancing guidelines to combat COVID-19
- Despite these measures, some oral health professionals and patients have been hesitant to return to practices

Dental Teams Not at Risk of Getting COVID-19 at Work

Study Finds

Public health dentists and dental assistants in Italy who treated patients while the COVID-19 pandemic ran rampant did not appear to develop the disease, according to an article published on September 3 in Oral Diseases.

In that study, the occupational risk of dentists and dental assistants getting COVID-19 was estimated to be zero when they followed basic infection control protocols.

Dental Teams Not at Risk of Getting COVID-19 at Work

Study Finds

320 staff members at the Hospital of Stomatology provided dental emergency treatment, including for apical periodontitis, impacted wisdom teeth, and tooth fractures, to 2,025 patients during the outbreak.

Between January 23 and April 7, the dental workers wore advanced PPE, including N95 and KN95 masks when available, and maintained equipment and environmental disinfection measures. None developed COVID-19, according to the authors.

Poll: U.S. Patients Prioritize Oral Health During COVID-19

Nearly three-fourths (75%) of patients in the U.S. believe that routine dental appointments remain important during the pandemic and that the benefits of going to the dentist outweigh the potential risks of delaying preventive care, according to new data released on October 8 by Delta Dental Institute.

Most patients responded that they not only believe the benefits outweigh the risks but also worry about the negative long-term health consequences as a result of delaying appointments, according to survey results.

Dental Health Care Workers <u>are</u> Essential!

CDC, NIH Vaccine Distribution Framework

The National Institutes of Health and the CDC outlined a COVID-19 vaccine allocation framework that identified dentists and dental hygienists as essential healthcare workers who should be given early access, according to ADA News.

"We are thrilled that the National Academies has affirmed what we've long known," Chad Gehani, DDS, and Kathleen O'Loughlin, DMD, the respective president and executive director of the American Dental Association, told ADA News. "Dentistry is an essential health care service and dentists and their teams are essential health care workers."

COVID-19 Testing in Dental Practices

ADA Releases Toolkit with Guidance!

The ADA, in consultation with its Advisory Task Force on Dental Practice Recovery, has released the COVID-19 & Lab Testing Requirements Toolkit "to help guide dentists interested in offering their patients rapid response, point-of-care COVID-19 testing within their practices."

The toolkit includes information on applying for the federal certification required to offer COVID-19 testing.

"While rapid point-of-care testing is not widely used currently, as the technology and access to these important tests improve, this comprehensive document will enable members who want to do testing in their office to be sure they are compliant with all regulatory guidelines," said Dr. Tom Paumier, task force member.

COVID-19 Testing in the Dental Setting

More to come in the following weeks…stay tuned!

Thank You!

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