



Dental Workforce Safety During the COVID-19 Pandemic

Potential exposure to SARS-CoV-2 in the dental setting is dependent on three factors, just as it is in any other setting: infectiousness of the individual, the distance between individuals, and the length of time of exposure. This can be complicated in the dental setting by the potential to aerosolize virus during procedures on infected patients. Since it is impossible to treat patients or work with other staff and completely avoid any of these factors, it is necessary to limit and control these factors as much as possible while utilizing personal protective equipment (PPE) to effectively prevent contact without regard to proximity. These measures deny the virus access to tissues to infect and subsequently become established in the body. When used by the infected individual they also greatly reduce the volume and range virus might be spread by talking and breathing. While none of these measures provides absolute protection by themselves, the combined controls result in an acceptable level of safety to prevent transmission.

SARS-CoV-2 may enter the dental workplace through either an infected patient or staff member. The principles of prevention will be the same for each, however there are key differences which should be recognized and accounted for. There are three types of contact:

- Patient-to-patient
- Staff-to-patient
- Staff-to-staff

Patient-to-patient contact can be eliminated by social distancing and pre-screening. Current recommendations seek to limit the contact between patients in reception areas and other parts of the office by asking them to wait outside until they can be brought directly to a treatment room. Pre-screening encourages those with symptoms not to come to the office at all. At the office, screening is performed outside prior to entering the office. Conscientious disinfection eliminates contact with contaminated surfaces. Temporary barriers can be added between treatment areas to reduce the spread of aerosols to other parts of the office.

Most staff-to-patient encounters are carefully controlled. It is impossible to provide dental care without prolonged contact in close proximity to unprotected patients. Guidelines provide rigorous PPE use recommendations and techniques to mitigate contact with infectious fluids and aerosols during clinical encounters. There is ample evidence that these techniques safeguard patients from transmission from a potentially infectious provider. Non-clinical staff contacts with patients are also manageable. Generally these encounters have short duration contacts and can often be accomplished with social distancing, barriers and masking. Offices may add plexiglass shields to further reduce contact. Cloth masks are most effective at limiting the spread of body fluids but are not considered PPE. Offices should consider rated masks as PPE for non-clinical staff when they are available.

Staff-to-staff encounters require special precautions. They may occur repeatedly during the workday, both while providing direct patient care and during maintenance, patient navigation or breaks. Staff using high levels of PPE during clinical procedures should have no unprotected contact regardless of the type of procedure being performed. Outside the clinical setting, contacts are generally very limited in time and social distance can usually be maintained. Breaks can be staggered or taken outside, while masked or socially distanced. Again, it should be noted that cloth masks are not considered PPE.

Infectiousness

One of the most frustrating aspects of COVID-19 is the inability to identify infectious individuals that present with no symptoms or prior to their developing symptoms. This means that it is likely that some potentially infectious people, both staff and patients, will be present on occasion in the dental setting, even after thorough screening. It is estimated that as many as 40% of those that have been infected could present without symptoms.¹ Many asymptomatic individuals will be eliminated by strict adherence to routine screening. Nevertheless that suggests that vigilance must be maintained, it also means that, as a rule, offices do not treat those that are known or suspected COVID-positive patients because all non-emergency treatment can usually be delayed until the patient is no longer infectious. This is an important distinction because the most rigorous PPE requirements are reserved specifically for those that are known positive or suspected-positive. No patients treated in most offices fall into this very high-risk category². Further, when dental personnel are wearing appropriate PPE for the procedures being performed on patients of unknown COVID-19 status and not suspected to be COVID-19 positive contact is eliminated making most encounters relatively low risk.

Distance

Dental offices take steps to maintain distance between patients, non-clinical staff and others in the office. When this isn't possible, they may install barriers and require the use of cloth or surgical masks whenever personnel are in the office. Staff should not congregate in common areas such as sterilization, supply or break rooms. In treatment settings it will not be possible to maintain distance and therefore surgical masks and eye protection are required for all encounters greater than a few minutes.

Time

Prolonged contact between patients and staff can be avoided by pre-screening prior to entering facilities and limiting waiting in reception areas. Staff should be encouraged not to linger in rooms with other staff. Longer contact is required during treatment necessitating a higher level of PPE. Time of contact is probably the most difficult factor to control in the clinical setting because procedures simply require a certain amount of contact time.

Personal Protective Equipment

Dental offices have been using effective PPE routinely since AIDS and Hepatitis were recognized as a serious threat in the 1980's. While these measures were directed primarily at bloodborne pathogens they are familiar and provide effective prevention of most droplet transmission. Since super-spreader events involving SARS-CoV-2 suggest that airborne transmission via aerosols is also an occasional vector, the use of respirators during some dental procedures is also recommended. PPE differs for the care of well patients during the COVID-19 pandemic versus PPE needed when providing emergency care to a

patient with suspected or confirmed COVID-19 (See OSHA's PPE standards at [29 CFR 1910 Subpart I](#))³. For this reason, it is recommended that patients with suspected or confirmed COVID-19 have treatment deferred until they are no longer infectious, when possible, or be referred to facilities that can accommodate their care taking additional precautions.

According to the OSHA Guidance, aerosol-generating procedures performed on patients who are well are considered high risk procedures and the Guidance recommends, but does not require, that dentistry workers wear N95 masks when performing those procedures.⁴ Evidence suggests that medical masks and N95 respirators offer similar protection against viral respiratory infection including coronavirus in healthcare workers during non-aerosol-generating care.^{5,6} Unfortunately, the limited availability of supplies of N95 respirators during the pandemic means that offices are forced to use nominally fitted N95 and KN95 respirators and to reuse them after disinfection. While this may be less than ideal it does not conflict with the standard. The fact that after six months of routine care during the pandemic there are no documented cases of transmission between dental personnel and patients in the United States indicates that prevailing practices have been quite effective anyway. The fact that dentists' rates of infection are below that of the population suggest that the measures being taken by dental offices have been effective at containing spread in what may be considered high risk dental settings⁵.

Aerosols

Aerosols are airborne suspensions of liquid that persist for a period of time inversely proportional to the volume of liquid suspended. The aerosols produced in dentistry through the use of rotary and ultrasonic devices that may produce fine mists of airborne liquid. It has been shown that these microdroplets may remain suspended in the air for an extended period of time,⁶ however most dental aerosols consist of larger droplets that are more rapidly dissipated by gravity or removed through the use of high speed evacuation.

The amount of virus in the mechanically-produced aerosols resulting from dental treatment has not been determined. Since most testing requires direct sampling of pharyngeal tissues to acquire adequate concentrations of virus, there is reason to believe that the amount of virus in oral saliva may present less of a threat when aerosolized, particularly when diluted by irrigating water. Combined with barrier techniques and high-speed evacuation, the threat of dental aerosols may be considerably less than might initially be suspected.⁶ While there is not conclusive evidence either way, the lack of transmissions in dental settings suggest that dental aerosols may not pose the risk once hypothesized.

1. Best current estimate, <https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html>
2. OSHA: COVID-19-Control & Prevention/Dentistry Workers and Employers, <https://www.osha.gov/SLTC/covid-19/dentistry.html>
3. OSHA: COVID-19-Control & Prevention/Dentistry Workers and Employers, <https://www.osha.gov/SLTC/covid-19/dentistry.html>
4. OSHA Guidance for Dentistry Workers and Employers, ADA interim guidance, May 13, 2020
5. Medical masks vs N95 respirators for preventing COVID-19 in healthcare workers: A systematic review and meta-analysis of randomized trials, *Influenza Other Respir Viruses*. 2020 Jul;14(4):365-373
6. Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis *CMAJ*. 2016 May 17; 188(8): 567–574.
7. Estimating COVID-19 prevalence and infection control practices among US dentists, *JADA* 2020:n(n):n-n <https://doi.org/10.1016/j.adaj.2020.09.005>
8. Dental procedure aerosols and COVID-19 *The Lancet*, Aug. 2020 [https://doi.org/10.1016/S1473-3099\(20\)30636-8](https://doi.org/10.1016/S1473-3099(20)30636-8)

For all staff contact and patient contacts not involving aerosol-generating procedure

Time	Distance	PPE	PPE-infected person	Recommendation for Dental Provider
> 0 min.	> 6 ft.	None	None	No work restrictions, Monitor for symptoms
> 3 min.*	< 6 ft.	None or cloth mask only	None	Exclude from work for 14 days, Monitor for symptoms, Testing if appropriate
> 3 min.*	< 6 ft.	None or cloth mask only	Cloth mask	Exclude from work for 14 days, Monitor for symptoms, Testing if appropriate
> 15 min. cumulative	< 6 ft.	Any level of mask, no eyewear±	None	Exclude from work for 14 days, Monitor for symptoms, Testing if appropriate
>15 min. cumulative	< 6 ft.	Any level of mask, no eyewear±	Cloth mask	No work restrictions, Monitor for symptoms
>15 min. cumulative	< 6 ft.	Surgical mask & eyewear±	None	No work restrictions, Monitor for symptoms
< 3 min.*	< 6 ft.	None or cloth mask	None	No work restrictions, Monitor for symptoms
< 3 min.*	< 6 ft.	None or cloth mask	Cloth mask	No work restrictions, Monitor for symptoms
< 15 min.	< 6 ft.	Surgical mask, no eyewear	None or cloth mask	No work restrictions, Monitor for symptoms

*These references are from POLICIES FOR THE PREVENTION AND CONTROL OF COVID-19 IN NEW MEXICO (09/21/20). All others are from CDC.

±In some settings a plexiglass shield may substitute for personal eyewear

For patient contacts involving aerosol-generating procedure

Time	Distance	PPE-operators	PPE-infected patient	Recommendation for Dental Provider
> 0 min.	< 6 ft.	None or cloth mask	None	Exclude from work for 14 days, Monitor for symptoms, Testing
> 0 min.	< 6 ft.	Surgical mask, no eyewear	None	Exclude from work for 14 days, Monitor for symptoms, Testing if appropriate
>0 min.	< 6 ft.	Respirator, gown, eye protection	None	No work restrictions, Monitor for symptoms

The New Mexico Environment Department (NMED) filed an [emergency amendment](#) on August 5, 2020 that requires employers to report positive COVID-19 cases in the workplace to the NMED Occupational Health and Safety Bureau within four hours of being notified of the case. Frequently, NMED does not learn of positive cases until after the employer is notified by the 11

positive employee, causing a delay in rapid response deployment. The requirement for employers to report positive COVID-19 cases among employees within four hours of being notified will allow NMED to respond more quickly and prevent spread among employees.

- Email: NMENV-OSHA@state.nm.us
- Phone: 505-476-8700
- Fax: 505-476-8734

Disclaimer. These materials are intended to provide helpful information to dentists and dental team members. They are in no way a substitute for actual professional advice based upon your unique facts and circumstances. ***This content is not intended or offered, nor should it be taken, as legal or other professional advice.*** You should always consult with your own professional advisors (e.g. attorney, accountant, insurance carrier). The information is provided as interim guidance based on the best assessment of information available at the time of publication. Offices should be aware of changes to recommendations and adjust practices accordingly as circumstances occur during the pandemic.