Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Dental procedure aerosols and COVID-19

The US Centers for Disease Control and Prevention (CDC) has listed dental care-related aerosols or droplets as high risk on the basis of presumed equivalence of these aerosols to those that might occur during medical procedures.[1] In the dental setting, risk of transmission might be related primarily to treatment of asymptomatic and minimally symptomatic patients.[2]

Aerosols and droplets are generated during dental procedures as a result of water irrigation for cooling of the dental or surgical site. Although there is no evidence that aerosols generated from dental care lead to transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), guidelines have been recommended given the urgency of the epidemic. Typically, the greater the imminent threat to public health, the lower the standards of evidence in early guidance.[2] Several questions need to be addressed in order to develop and refine future guidance for infection control in the dental setting.

First, are dental aerosols equivalent to those induced during anaesthesia or tracheal and nasopharyngeal procedures?[3] Dental-generated aerosol is due to water or air spray, which would substantially dilute any potential viral presence, by contrast with anaesthesia and upper-airway procedures, in which water irrigation is not used and manipulation of the airway occurs. In addition, dental management includes routine use of high-volume evacuation, which reduces aerosol at source, and potential viral load could be further reduced if a dental rubber dam is in place isolating the dentition.

Second, do aerosols—specifically, dental aerosols—contain potentially infectious virus? Testing to date has focused on PCR, and even when positive, viral culture is required to confirm the potential for infection, as shown in investigations of other body sites.[4–6]

Third, what evidence is there of spread of respiratory infectious diseases in dental treatment with current standard precautions in place? Before the COVID-19 pandemic, dental providers used masks, gloves, and protective eyewear in routine care, particularly in procedures with dental aerosol production. CDC guidance has suggested that SARS-CoV-2 spreads from person to person, and spread via contact with surfaces is not the main way the virus transmits.[7] Furthermore, estimates of risk from aerosols and surface contamination must be based on recovery of viable virions, not only on PCR testing.

Finally, are oral health-care providers at increased risk of SARS-CoV-2 infection? Data for dental providers will be collected over time, allowing infection incidence among dental providers to be compared with infection incidence in the community. To date there are no reported clusters of respiratory-transmitted diseases, including severe acute respiratory syndrome coronavirus and SARS-CoV-2, in dental providers or patients in a dental setting.

We declare no competing interests.

Joel B Epstein, Kenneth Chow, Richard Mathias
jepstein@coh.org

Cedars-Sinai Health System, Los Angeles, CA, USA (JBE); City of Hope National Medical Center, Duarte, CA, USA (JBE); and University of British Columbia, Vancouver, BC, Canada (KC, RM)

1 US CDC. Guidance for dental settings. Interim infection prevention and control guidance for dental settings during the COVID-19 response. https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html (accessed July 30, 2020).
2 Sakurai A, Sasaki T, Kato S, et al. Natural history of asymptomatic SARS-CoV-2 infection. *N Engl J Med* 2020; published online June 12. https://doi.org/10.1056/nejmc2013020.
3 Melnick ER, Ioannidis JA. Should governments continue lockdown to slow the spread of COVID-19? *BMJ* 2020; published online June 3. https://doi.org/10.1136/bmj.m1924.
4 Wilson NM, Norton A, Young FP, Collins DW. Airborne transmission of severe acute respiratory syndrome coronavirus-2 to healthcare workers: a narrative review. *Anaesthesia* 2020; **75:** 1086–95.
5 Pan Y, Zhang D, Yang P, Poon LLM, Wang Q. Viral load of SARS-CoV-2 in clinical samples. *Lancet Infect Dis* 2020; **20:** 411–12.
6 van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *N Engl J Med* 2020; **382:** 1564–67.
7 US CDC. How COVID-19 spreads. June 16, 2020. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html (accessed June 23, 2020).

Published **Online** August 10, 2020 https://doi.org/10.1016/S1473-3099(20)30636-8