

Infection Control Advice for Dental Professions Decision-Makers in the COVID-19 Pandemic

(April 3rd, 2020)

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Work enabled through financial support of le Réseau de recherche en santé buccodentaire et osseuse (<http://www.rsbo.ca>)

Context

Dental professional organizational, institutional, clinic and other leaders, including frontline dental professionals treating patients, in multiple Canadian and other jurisdictions are making decisions each day on how to best manage patients and guide the professions in the context of the COVID-19 pandemic. These people and organizations are making decisions in a very fast-moving crisis with a changing environment and multiple, evolving sources of information. These decisions are made based on instructions and guidelines from governments and other legal entities, on scientific data and evidence, on expert opinion and on prioritized needs. They also include health care, economic, ethical and other important elements, while also recognizing the information and advice upon which decisions are made is often imperfect, incomplete and/or otherwise limited. In short, dental professional decision-makers at all levels are making decisions and providing advice and guidance in a highly complex, rapidly evolving environment, based often on imperfect and incomplete information.

A second contextual observation is that across all jurisdictions in Canada, dentists, dental hygienists, dental assistants, denturologists, dental technicians and other dental professionals have been advised or mandated to cease all routine and elective care and only provide emergency care. Furthermore, this emergency care should be provided by telephone where possible and through in-person care only when essential. Aerosol generating procedures are to be avoided unless absolutely essential. Depending on the Canadian jurisdiction, such in-person care is to be provided in private offices or in regional centres, many of which are hospital dental departments.

Aim of this document

Recognizing the aforementioned context and that guidelines and protocols in multiple jurisdictions across Canada and internationally exist already, the aim of this document is to provide guidance to dental professional decision-makers, whether at an organizational, clinic or individual patient-care level, concerning best infection-control practices in the context of the COVID-19 pandemic in Canada. Specifically, this document aims to:

1. Provide evidence to support infection-control practices where it exists and highlight where it does not
2. Suggest infection-control approaches for consideration by decision-makers

Background information and elements of infection-control protocols and guidelines for consideration by decision-makers

The SARS-CoV-2 virus transmissions routes are multiple

- Transmission routes include^{1,2}:
 - Respiratory droplets
 - Direct (i.e. person-to-person) and indirect (i.e. person-to-surface-to-person) contact transmission
 - Faecal-oral route

¹ <https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>.

² Zhang W and al. Molecular and serological investigation of 2019-nCoV infected patients: implication of multiple shedding routes. Journal of Emerging Microbes & Infections. [Accessed at: <https://www.tandfonline.com/doi/full/10.1080/22221751.2020.1729071>]

- It is not clear if mothers can transmit the virus to their foetus or newborn baby³

The SARS-CoV-2 virus can remain viable and transmit disease for variable lengths of time but it is currently not known how long the virus remains viable⁴

- The evidence on this matter is very limited but one study has estimated virus viability on different surfaces as follows⁵:
 - In airborne droplets 3-6 hours
 - On soft surfaces such as cardboard up to 48 hours
 - On hard surfaces such as stainless steel (consider dental instruments) up to 80 hours (3-4 days)
 - On hard surfaces such as plastic up to 96 hours (4-5 days)

What disinfectant should be used in a dental professional clinic and laboratory?

- The government of Canada provides a regularly updated list of disinfectants to use to clean surfaces⁶
- Soapy water is an effective means to clean hard surfaces and kill the virus⁴

What is the incubation period for COVID-19 and who is infectious?

- The incubation period is 1-14 days with the average being approximately 5 days⁷
- It is believed that people are most infectious during the disease, although they may also be infectious before symptoms appear and for a short period after symptoms have disappeared⁸

In the context of the COVID-19 pandemic what dental care should dental professionals be providing and what dental care should they not be providing (responses below provided based on experiences from China and Italy^{9,10,11}, as well as those of Canadian and US organizations)?

- Most jurisdictions or organizations have mandated (e.g. Quebec¹², Ontario¹³) or recommended (e.g. BC¹⁴, CDC in the USA¹⁵) that dental professionals must or should not provide any in-person care beyond caring for dental emergencies
- Similarly, most jurisdictions are advising not to perform any aerosol-generating procedures unless absolutely essential^{16,17}
- Most jurisdictions have defined dental emergencies as a list similar to this¹⁸
 - Dental trauma
 - Infection
 - Significant or prolonged bleeding
 - Acute uncontrolled pain
 - Dental treatment medically required as a pre-intervention to surgery needed promptly
- Tele-dentistry (with a telephone or videoconferencing mechanism) can be used to:
 - Triage the need for in-person emergency dental care

³ <https://www.who.int/news-room/q-a-detail/q-a-on-covid-19-pregnancy-childbirth-and-breastfeeding>

⁴ <https://www.who.int/news-room/q-a-detail/q-a-on-infection-prevention-and-control-for-health-care-workers-caring-for-patients-with-suspected-or-confirmed-2019-ncov>

⁵ <https://www.nejm.org/doi/10.1056/NEJMc2004973>

⁶ <https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/list.html#tbl1>

⁷ <https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>

⁸ <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>

⁹ Meng, L.; Hua, F.; Bian, Z. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine. J. Dent. Res. 2020. 1-7

¹⁰ Peng, X.; Xu, X.; Li, Y.; Cheng, L.; Zhou, X.; Ren, B. Transmission routes of 2019-nCoV and controls in dental practice. Int. J. Oral Sci. 2020, 12, 9.

¹¹ G Spagnuolo, D. De Vito, S. Rengo & M. Tatullo. COVID-19 Outbreak: An Overview on Dentistry. Int. J. Environ. Res. Pub. Hlth. 2020

¹² <http://www.odq.qc.ca/CoronavirusCOVID19/tabid/638/language/fr-CA/Default.aspx>

¹³ <https://www.rcdso.org/en-ca/rcdso-members/2019-novel-coronavirus>

¹⁴ <https://www.cdsbc.org/about-cdsbc/news/covid-19/covid-19-for-registrants>

¹⁵ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>

¹⁶ <https://www.rcdso.org/en-ca/rcdso-members/dispatch-magazine/articles/5288>

¹⁷ http://www.odq.qc.ca/Portals/5/fichiers_publication/DossierSante/Coronavirus/1-20-MS-00496-92-PJ%20Procédures%20COVID-19%20ENG-r.pdf

¹⁸ http://www.odq.qc.ca/Portals/5/fichiers_publication/DossierSante/Arbre%20d%20Modifications_260320_VfinaleENG.pdf

- Decide on the provision of pharmaceutical or other non-in-person interventions
- BUT check with the local jurisdiction on what is permitted or not.

When providing in-person care, what personal protective equipment (PPE) should be worn?

- The use of personal protective equipment, including masks, gloves, gowns, and goggles or face shields, is recommended to protect skin and mucosa from (potentially) infected blood or secretion^{8,9,10,19}.
- As respiratory droplets are the main route of SARS-CoV-2 transmission, particulate respirator masks (e.g., N-95 or higher such as N-99 masks [the number refers to the % of small inhalable particles the mask filters]) have been recommended for dental care by some organizations²⁰ although others are explicitly recognizing the limited availability of PPE globally and so recommending different use according to the availability of certain items²¹.
- MORE SPECIFICALLY
 - In a rapid review published in 2014, CADTH stated “N95 respirators are more effective than masks at preventing viral infection and bacterial colonization”, and recommended “using an N95 respirator when performing aerosol-generating procedures on patients with infectious diseases that are spread through the respiratory tract, when treating patients with tuberculosis, when treating patients with SARS in high-risk situations, and in high-risk pandemic influenza situations”²²
 - There are currently no evidence-based guidelines available for the use of N-95 or surgical masks in the performance of dental care
 - CDC discriminates between extended N-95 use (i.e. “wearing the same N95 respirator for repeated close contact encounters with several patients, without removing the respirator between patient encounters” and re-use (i.e. “using the same N95 respirator for multiple encounters with patients but removing it [‘doffing’] after each encounter”) and provides recommendations regarding each²³

What infection control procedures are recommended when providing dental care in the context of the COVID-19 pandemic (responses below provided based on experiences from China and Italy^{8,9,10}, as well as those of Canadian and US organizations²⁴)?

- To enable maintenance of good infection-control and other relevant protocols, plus efficient use of PPE, it is worth considering having designated regional centres
- Consider ceasing all use of aerosol-generating procedures
- All patients potentially needing emergency dental treatment should have pre-appointment checks by phone/videoconference with a view to avoiding all appointments apart from those deemed immediately essential. Questions to ask:
 - Is the treatment required immediately or can it be deferred?
 - Has the patient returned from international or regional travel in the past 14 days?
 - Has the patient been in contact with anyone at high risk of COVID-19?
 - Does the patient have any symptoms suggesting COVID-19?
 - Has the patient been tested for COVID-19 and if so, what is the result?
- In as much as is possible, patients should be encouraged to come alone to the clinic
- When the patient arrives for the emergency appointment, check her/his temperature
- To maintain “social distancing” consider timing of appointments (i.e. space appointments to try to reduce to a minimum the numbers in the waiting room) and spacing in waiting areas for patients
- Furthermore, space appointments to ensure time to disinfect frequently touched surfaces between appointments with recommended disinfectants⁶

¹⁹ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/caring-for-patients.html>

²⁰ <https://www.rcdso.org/en-ca/rcdso-members/dispatch-magazine/articles/5288>

²¹ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>

²² https://www.cadth.ca/sites/default/files/pdf/htis/dec-2014/RC0576_RR_RiB_Respirator_Effectiveness_e.pdf

²³ <https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>

²⁴ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinic-preparedness.html>

- Use of four-handed dentistry with appropriate level of suction helps reduce any bioaerosol during, for instance, tooth extraction procedures
- Rinse all patients' mouths with an effective antiseptic mouth rinse (H_2O_2 ²⁵ or povidone iodine²⁶) prior to examining the patient and providing care. This will not eradicate viruses or bacteria but will reduce their load
- In as much as is possible use extra-oral imaging for diagnostic purposes
- In as much as is possible use a rubber dam
- In as much as is possible manually remove decay and pulp tissue and manage chemically and/or pharmaceutically
- Use self-absorbing sutures to reduce the need for follow-up procedures except by phone/videoconference

²⁵ <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html#Hydrogen>

²⁶ Eggers, M. Infectious Disease Management and Control with Povidone Iodine. *Infect Dis Ther* **8**, 581–593 (2019).