

## COVID-19 INFECTION PREVENTION AND CONTROL (PATIENTS AND HEALTHCARE PROFESSIONALS): HYPERBARIC OXYGEN THERAPY

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### Question

What is the best available evidence regarding the reduction of the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during hyperbaric oxygen therapy?

### Clinical Bottom Line

Hyperbaric oxygen therapy comprises short-term, high-dose oxygen inhalation and diffusion therapy that delivers oxygen through airways and blood, achieved by having the patient breathe concentrated oxygen at a pressure higher than one absolute atmosphere.<sup>1</sup> As the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) can be transmitted through droplets and aerosols, and can remain infectious on surfaces for days, the risk of transmission during HBOT for patients with coronavirus disease 2019 (COVID)-19 cannot be ignored.<sup>2,3,4</sup> Although enveloped viruses such as coronaviruses are not highly resistant to disinfectants, inadequate use of may not limit the spread of infection.<sup>2</sup> Although HBOT is a new field for the treatment of COVID-19, there is emerging evidence to show that transmission of infection is low in this setting.

- Literature reviews and expert opinion report the following infection control practices in HBOT chambers:<sup>1,2,3,4</sup> (Level 5)
  - Disinfection measures should be strengthened, with cleaning performed during and after each procedure following the recommended disinfectants and concentration.<sup>1,2</sup>
  - Standard and transmission-based precautions should be followed, and general cleaning must follow guidance for standard, contact, and airborne precautions, including the use of eye protection and personal protective equipment.<sup>2</sup>
  - Where HBOT chambers are to be shared, treatments should be scheduled for inpatients first (in the morning), and for outpatients following (in the afternoon).<sup>2</sup>
  - Disinfectants recommended for use include: ethanol (hands and on metal or glass); hydrogen peroxide (hands or wounds, metal or glass); glutaraldehyde (only environmental on metal, glass or acrylic resin); formaldehyde (only environmental on metal, glass or acrylic resin); UV-C (metal and acrylic resin); and benzalkonium chloride (safe to use on human and environmental surfaces).<sup>2</sup>
  - Disinfectants that are not suitable against SARS-CoV-2, due to weak effect or no evidence for their efficacy, are: quaternary ammonium salts (benzalkonium chloride, benzethonium chloride); and alkyl diaminoethyl glycine hydrochloride.<sup>2</sup>
  - An HBOT chamber and oxygen inhalation system are perfect gas management systems for disease control for healthcare professionals and patients, due to their properties of closed, one-way gas flow, all-fresh-air, and relatively independent gas lines.<sup>3</sup>
  - Visitors and healthcare professionals who come in contact with patients should be limited.<sup>4</sup>

- The same team of healthcare professionals should interact exclusively with the same group of patients.<sup>4</sup>

## Characteristics of the Evidence

This summary is based on a structured search of the literature and selected evidence-based health care databases. The evidence included in this summary is from:

- Literature review.<sup>1,2,3</sup>
- Expert opinion.<sup>4</sup>

## Best Practice Recommendations

- Standard, and transmission-based, infection control measures should be followed. (Grade B)
- Disinfection measures should be strengthened, with cleaning performed during and after each procedure. (Grade B)
- Disinfection protocols should follow recommendations for use, type and concentration of disinfectants (e.g., ethanol for hands and on metal or glass, hydrogen peroxide for hands or wounds, metal or glass, glutaraldehyde or formaldehyde only on metal, glass or acrylic resin, UV-C on metal and acrylic resin, and benzalkonium chloride use on human and environmental surfaces). (Grade B)
- Where HBOT chambers are shared, inpatient and outpatients should be kept separately (e.g., treatments should be scheduled for inpatients in the morning and for outpatients in the afternoon). (Grade B)
- Visitors and healthcare professionals who come in contact with patients should be limited. The same team of healthcare professionals should interact exclusively with the same group of patients. (Grade B)

## References

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3. Criado PR, Miot HA, Pincelli TPH, Fabro AT. From dermatological conditions to COVID-19: Reasoning for anticoagulation, suppression of inflammation, and hyperbaric oxygen therapy. *Dermatol Ther.* 2020: e14565.
4. Lo JJ, Wang SC, Lee HY, Lee SS, Lee HC, Hung CT, et al. Proactive COVID-19 infection prevention measures in a hyperbaric oxygen therapy center. *Medicina (Kaunas).* 2020; 56(6).

## Archived Publications

1. JBI-ES-435-1 (Published at 12 July 2021)
2. JBI-ES-435-2 (Published at 12 October 2021)

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For details on the method for development see Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach. *Worldviews Evid Based Nurs.* 2015;12(3):131-8.

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