THE CANADIAN SOCIETY OF OCULOPLASTIC SURGERY
LA SOCIÉTÉ CANADIENNE DE CHIRURGIE OCULOPASTIQUE

Canadian Ophthalmological Society
Société canadienne d'ophtalmologie
EYE PHYSICIANS AND SURGEONS OF CANADA | MÉDECINS ET CHIRURGIENS OPHTALMOLOGISTES DU CANADA

Canadian Society of Oculoplastic Surgery Position Statement: Guidelines on personal protective equipment (PPE) during COVID-19 pandemic for oculoplastic and orbital surgery

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The Coronavirus Disease 2019 (COVID-19) was first described and reported to the World Health Organization (WHO) on December 31, 2019, as an unknown cause of pneumonia detected in Wuhan, China.[1] The causative agent is a virus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). By January 30, 2020, an international public health emergency was declared by the WHO. The major public health measures aimed at slowing community spread of COVID-19 have been frequent handwashing and social distancing to limit person-to-person transmission. Although universal droplet precautions are now recommended in healthcare settings, it is recognized that some clinical care areas may require more stringent infection control measures.

The Canadian Society of Oculoplastic Surgery (CSOPS) herein presents its recommended guidelines for personal protective equipment (PPE) during oculoplastic and orbital surgeries. These guidelines are based on current available evidence and consideration of the Canadian context. As our understanding of COVID-19 evolves in this pandemic, these recommendations may change accordingly.

Virology

SARS-CoV-2 is an enveloped, single-stranded positive sense RNA virus (0.12um in size) that uses a metallopeptidase named angiotensin-converting enzyme II (ACE2) to invade human cells.[2] ACE2 is abundantly expressed on lung alveolar epithelial cells and enterocytes of the small intestine.[3] A recent study has also shown ACE2 to be expressed in nasal tissue. However, viral loads remain significantly lower in nasal/throat swabs than in sputum.[4,5]

SARS-CoV-2 is transmitted by droplet mechanisms. Droplet mechanisms involve the formation of large respiratory droplets (>5um) that are expelled from an infected individual during a cough, sneeze, or while speaking. These droplets settle at most 1 meter from the host. Transmission then occurs via:

1. Hand contact with droplet contaminated surfaces, with survival of viral particles on surfaces for up to 4 days.[6] Appropriate hand hygiene (avoid transfer of virus from hand to airways) is therefore essential to minimize transmission via contaminated surfaces.

2. Projection of droplets directly onto the face/airways of another individual. Minimizing the projection of droplets on the nose/mouth/eyes is therefore also essential.

There is debate regarding whether SARS-CoV-2 can also be transmitted via airborne mechanisms. Airborne transmission involves the formation of microdroplets (<5um in size) within an infected airway that are then dispersed into the air, known as aerosolization. When dealing with airborne pathogens, microdroplets are produced by coughing, sneezing, talking or breathing, [7,8] and they may float in the air for a few hours.[6,9] An appropriate filtering mask (e.g. N95 or equivalent) would be required to minimize airborne transmission. However, an analysis of 75,465 COVID-19 cases by the WHO-China Joint Mission on COVID-19 found no evidence for airborne transmission.[10]

Clinical Features

The most common clinical features of COVID-19 are fever, fatigue, cough, and myalgia, but some patients have reported diarrhea, hemoptysis, headache, sore throat, or loss of smell and/or taste.[11–13] Ocular manifestations such as epiphora, conjunctival congestion, and chemosis have also been described in a case series of 38 patients, and they were more common when systemic disease was severe.[14,15] Although SARS-CoV-2 has been detected in the tears of a limited number of patients with conjunctivitis, the overall likelihood of isolating the virus from tears of asymptomatic patients is low.[16,17] In contrast, the nasal and oral mucosa can harbor detectable SARS-CoV-2 virus in asymptomatic and presymptomatic patients.[18–20] The presence of SARS-CoV-2 within

the lacrimal system is unknown. However, the lacrimal system is contiguous with the nasal mucosa, making the presence of SARS-CoV-2 in the lacrimal system biologically plausible.

The mean time from exposure to onset of symptoms (incubation period) is estimated to be 5.1 days. 97.5% of symptomatic patients will develop symptoms within a mean of 11.5 days.[21] Thus, if exposed, the conservative recommendation is for self-isolation for 14 days. The controversy around asymptomatic spread arises from the fact that virus shedding can start 2-3 days before symptom onset.[22] Moreover, individuals aged 20-29 may exhibit extremely mild to no symptoms despite positive PCR testing. Recent studies have estimated the proportion of patients with presymptomatic transmission to range from 44% to 62%.[22,23]

Oculoplastic and Orbit Surgical Considerations

A major concern with performing surgeries during the COVID-19 pandemic is the potential for transmission to healthcare workers.[24] Close proximity to the patient's face during surgery, and the plausible risk of aerosolization during oculoplastic surgeries may increase the risk of infection for oculoplastic surgeons.

Aerosol-Generating Procedures (AGPs) have the potential to turn SARS-CoV-2 into an opportunistic airborne pathogen (microdroplets). Universally recognized AGPs include tracheal intubation and extubation, bag mask ventilation and airway suctioning.[25]

Experimental models have suggested that cautery and high-speed drilling may also produce aerosolization of blood and bone particles.[26,27] There is a paucity of studies evaluating potential AGPs in oculoplastic and orbital surgery.

CSOPS Recommendations

Based on the above current understanding of COVID-19, CSOPS recommends the following algorithm (Appendix A) for risk stratification and determination of PPE use in patients with unknown or negative COVID-19 status. In COVID-19 positive patients, any procedure or surgery is considered likely high risk for transmission, and should therefore be replaced by medical intervention, unless surgery is deemed absolutely necessary. Our working group considers some procedures unlikely to result in viral transmission, even if they are potential AGPs. The implementation of this guideline should take into consideration local prevalence and incidence of COVID-19, as well as health authority/hospital protocols.

Other Considerations:

- Current RT-PCR nasopharyngeal swab testing has limited sensitivity in asymptomatic carriers of COVID-19. Even if a patient tests negative, social isolation between testing and a clinical encounter cannot be guaranteed. Therefore, one should use caution even when dealing with test-negative patients in regions with high COVID-19 prevalence.

- Lengthy surgeries, in patients with unknown or negative COVID-19 status, involving significant manipulation of the lacrimal system, nasal mucosa, or sinuses present a high risk of transmission to healthcare workers and should be deferred or replaced by non-surgical options if deemed valid.
- We strongly recommend that physicians cover the patient's nose and mouth during examinations or procedures that are performed face-to-face or in close proximity. This can be achieved via draping or asking the patients to wear a (surgical) mask. It is also recommended to use a large slit lamp shield and minimize dialogue during examinations.
- Physicians should also follow standard universal precautions as per their hospital protocols (gloves and gowns).
- Clinicians should also become familiar with hospital protocols on intubation and the use of negative pressure operating rooms for aerosol-generating procedures.
- Please follow your local guidelines to determine which clinical activities can be safely performed at this time.

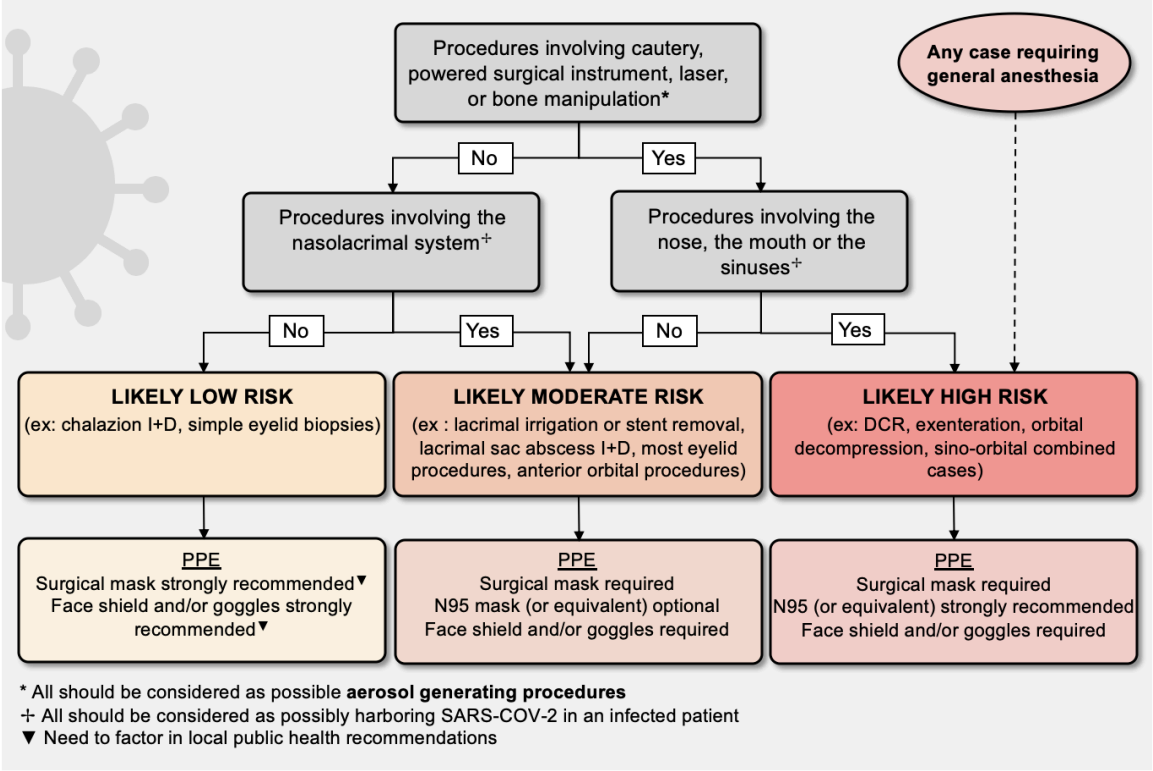
Use of Personal Protective Equipment:

Most centers recommend fit testing for N95 masks every 2 years. The proper fit and use of PPE are essential for effective protection. The highest risk of self-contamination is at doffing (please review your local donning and doffing videos prior to use).[28] It is recommended that you have a partner spot you if you are not a frequent user of N95

masks. Eye and face protection with goggles and/or a face shield has generally been recommended at most centers with surgical procedures.

Both our understanding of SARS-CoV-2 and the prevalence and severity of this pandemic continues to evolve on a daily basis. The current guideline is based on a comprehensive review of this topic as of April 22, 2020.

Appendix A



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