Evolving Guidelines for Retinal Procedures During the COVID-19 Pandemic: Outpatient Clinic

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Ricardo Tobias M. Papa, MD, MBA[1], Ian J. Daguman, MD[2], Jona May S. Ongkeko, MD[3], Recivall P. Salongcay, MD[1], Jennifer Joy Y. Santos-Rayos, MD[4], Christopher Sebastian J. Uy, MD[5]

[1]The Medical City, Pasig City
[2]Our Lady of Fatima EENT Center, Tacloban
[3]Victor R. Potenciano Medical Center, Mandaluyong City
[4]Mariano Marcos Memorial Hospital and Medical Center, Ilocos Norte
[5]Iloilo Doctors Hospital, Iloilo City

Correspondence: Ricardo Tobias M. Papa, MD
Suite 501 Medical Arts Tower Inc
The Medical City
Ortigas Avenue Pasig City
e-mail: Rbpops@yahoo.com

I. Introduction

The Coronavirus 2019 (COVID-19) is a disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), an enveloped single-stranded RNA virus that can prove potentially fatal in the elderly and those with co-morbidities like diabetes mellitus and respiratory disease.[1,2]

This advisory will target specific procedures that are performed in completing a retina evaluation.

Human-to-human transmission of COVID-19 is largely believed to occur through droplets and contacts and fomites, similar to previous coronavirus outbreaks like severe acute respiratory syndrome coronavirus (SARS-CoV).[3] SARS-CoV can be transmitted through direct or indirect contact with mucous membranes in the eye, mouth or nose.[4] Whether SARS-CoV-2 is also transmitted through the mucous membrane of the eye remains questionable, but the virus has been detected in conjunctival sac secretion and tears of a number of patients with SARS-CoV-2 pneumonia.[5,6] Because of the close proximity between ophthalmologists and patients during ophthalmologic evaluations and the fact that asymptomatic patients can be potential sources of infection, ophthalmologists are highly susceptible to infection.[7,8]

During evaluations, specialists need to presume that all patients may be potential COVID-19 carriers. Thus, all patients are advised to wear face masks; ophthalmologists are advised to wear either a surgical mask or N95 mask and eye protection like goggles or face shields.[9] Masks are worn to cover both nose and mouth. Protective gown and gloves may be worn as well. During these evaluations, the ophthalmologist should refrain from conversing with the patient while the examination is ongoing. Conversation can resume after the examination and the patient is at a safe distance, more than a meter away. It is advised that the flow of air inside the clinic or examining room should be from the examiner towards the patient. Ophthalmologists are encouraged to practice good hand hygiene (wash hands with soap and water for 20 seconds or disinfect with at least 60% ethyl or 70% isopropyl alcohol) before and after seeing each patient. Routine cleaning of commonly touched surfaces and equipment is advised after every patient. For further advisory on the disinfection of the clinic environment please refer to the Infection Prevention and Control Guidelines for Outpatient Clinic Resumption created by the Philippine Society for Microbiology and Infectious Diseases, Philippine Hospital Infection Control Society and Philippine College of Physicians.[9]

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II. Direct Ophthalmoscopy

Because the close proximity between ophthalmologist and patient when a direct ophthalmoscopy is performed increases the risk of transmission of COVID-19, it is advisable for the ophthalmologist to use other diagnostic tools to examine the fundus like the indirect ophthalmoscope or slit lamp biomicroscope (with corresponding condensing lens).

III. Binocular Indirect Ophthalmoscopy (BIO)

For better protection from aerosols from the patient during examination, a breath shield can be placed on the BIO. Breath shields made from polyethylene terephthalate and designed to fit Keeler and Heine BIOs can be purchased from the Keeler website.[10] Alternatively, breath shields can be created at home.

IV. Slit-Lamp Biomicroscopy and Laser Photocoagulation

There is also close proximity between doctor and patient during slit lamp evaluations. Dr Li Wenliang, an ophthalmologist in Wuhan, China, was credited for issuing one of the first warnings about the coronavirus outbreak, but evetually expired after allegedly contracting the virus from an asymptomatic glaucoma patient.[8] To decrease transmission risk from droplets from potential COVID-19 positive patients, protective shields or breath shields (made of plastic or acrylic) should be installed on all slit lamps (those for diagnostic examination and for lasers).[11] In their study, Liu and his associates determined that commercially available slit-lamp breath shields "may allow up to 54% of overspray contamination."[11] Likewise, anteriorly fixed breath shields located at the plane of the objective lens arm appeared more effective than posteriorly placed breath shields of similar size.[11] Air-puff tonometers should be avoided to prevent the aerosolization of tears.

Since povidone-iodine is known to inactivate SARS-CoV and may potentially work similarly against SARS-CoV-2, 5% topical povidone-iodine can be used prior to laser photocoagulation after instillation of topical anesthetic.[12]

Lenses used for slit-lamp biomicroscopy and laser photocoagulation, both contact and non-contact, should be cleaned properly after every use with each patient. The reference for the proper method of cleaning lenses is included in this document.[13]

V. Multi-patient Use of Multidose Eyedrops

Most outpatient and surgical ophthalmological centers make use of multidose eyedrop medications for multi-patient use because such practice is mainly economically viable, prevents wastage, and on the practical side, is convenient. Such practice, however, can result in contamination of these communal containers, leading to an increased risk of infection in patients.[14] While preservatives inhibit growth of microbes in the solution itself, the bottle cap inner surfaces and the container grooves and tips are not immune from bacterial growth. In fact, a study conducted in 2017 examining bacterial contamination of multi-dose eye drops listed 4% povidone iodine as the medication with the highest overall rate of contamination (40%), followed by tropicamide (29.4%), and tetracaine (20%).[15]

The Institute for Safe Medication Practices (ISMP) argued that serious eye examinations may occur due to cross contamination from sharing eye drop containers between patients. They recommend that ophthalmic-specialty hospitals and centers adopt mandatory training, competency and monitoring programs on safe eye drop administration or, if unable to do so, dispense separate eye drop containers for each patient and each eye.[15]

Published reports have suggested that the virus responsible for COVID-19 can potentially cause conjunctivitis; aerosol contact with the conjunctiva can lead to infections.[16] In this light, multi-patient use of eyedrops in the operating room or clinic can lead to an inadvertent spread of the virus. It is because of this that the VRSP advices that the comprehensive guidelines for the use of multidose ophthalmic medications created by the American Society of Ophthalmic Registered Nurses (ASORN) be followed.[17]

Procedure for Multidose Ophthalmic Drops and Ointments[18]

(1) Verify any medication allergies.

(2) Obtain medication, check expiration date.

(3) Wash hands prior to administration of medications. If instilling more than one drop, utilize

appropriate technique to prevent contamination (i.e., do not touch medication bottle after patient contact unless hand hygiene has been performed).

(4) Explain the procedure to the patient.

(5) Place the patient in a reclining or supine position.

(6) Before administering the ophthalmic drops, remove the top of the bottle and place in a secure area, making sure not to contaminate the inside part of the bottle.

(7) Instruct the patient to look up, keeping the eyes open.

(8) Use an applicator or have the patient gently retract the lower lid with a clean finger. Instill a drop into the cul-de-sac. *If an infection is present or suspected, all medication used on that patient becomes single use and should not be used on any other patients.*

(9) Gently squeeze the dropper or bottle to instill the correct amount of medication into the cul-de-sac.

(10) Avoid application of a drop directly on the cornea.

(11) Never touch the tip of the bottle to the patient's lid, lashes, or surface of the eye.

(12) Have the patient gently close the eye to distribute the medication evenly. Ask the patient not to squeeze the eyes shut.

(13) Replace the top of the bottle using aseptic technique.

(14) If a second medication is ordered, follow physician's orders or facility policy on time elapsed between administration of subsequent drops.

(15) Label the medication bottle or tube with the date and time opened, the initials of the person opening the vial and the expiration date of the vial, not to exceed 28 days.

(16) Wash hands.

(17) Document medication in the patient record.

REFERENCES

1. American Academy of Ophthalmology. Covid-19 background primer for ophthalmologists. May 16, 2020. https://www.aao.org/headline/covid-19-background-primer-ophthalmologists (accessed May 20, 2020).
2. Cascella M, Rajnik M, Cuomo A, *et al*. Features, Evalution and Treatment Coronavirus (COVID-19). StatPearls. March 1, 2021. https://www.ncbi.nlm.nih.gov/books/NBK554776/ (accessed March 28, 2021).
3. World Health Organization. Coronavirus disease 2019 Situation Report - 25. February 14, 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200214-sitrep-25-covid-19.pdf?sfvrsn=61dda7d_2. (accessed Feb 15, 2020).
4. Peiris JS, Yuen KK, Osterhaus AD, Stohr K. The Severe Acute Respiratory Syndrome. *N Engl J Med* 2003;349(25): 2431-2441.
5. Liang L, Wu P. There may be virus in conjunctival secretion of patients with COVID-19. *Acta Ophthalmologica*. 2020;98(3): 223-223.
6. American Academy of Ophthalmology. COVID-19 patients with conjunctivitis may shed viral particles in tears and conjunctival secretions. April 17, 2020. https://www.aao.org/editors-choice/covid-19-patients-with-conjunctivitis-may-shed-vir (accessed May 16, 2020).
7. Nature. Coronavirus: hospitals must learn from past pandemics. February 11, 2020. https://www.nature.com/articles/d41586-020-00354-4 (accessed May 10, 2020).
8. Lai T, Tang EW, Chau SK, *et al*. Stepping up infection control measures in ophthalmology during the novel coronavirus outbreak: an experience from Hong Kong. *Graefe's Arch Clin Exp Ophthalmol*. 2020;258(5):1049-1055.
9. Philippine Society for Microbiology and Infectious Disease. Infection Prevention and Control Guidelines for Outpatient Clinic Resumption in the Context of COVID-19. May 2020. https://www.psmid.org/infection-prevention-and-control-guidelines-for-outpatient-clinic-resumption-in-the-context-of-covid-19/ (accessed May 20, 2020).
10. Keeler. Keeler BIO face shield. https://www.keelerusa.com/keeler-covid-binocular-indirect-breath-shield.html (accessed May 21, 2020).
11. Liu J, Wang AY, Ing EB. Efficacy of slit lamp breath shields. *Am J Ophthalmol*. 2020;218(10):120-127.
12. Volk. Volk optical - cleaning and care guide. https://cdn.shopify.com/s/files/1/0289/2749/2130/files/CCG-001-Cleaning-and-Care-Guide.pdf?v=1589467201 (accessed May 20, 2020).
13. Grissinger M. Shared Eye Drop Bottles: The Danger in Making Every Drop Count. *P &T* 2003;28(12):762.
14. Tsegaw A, Tsegaw A, Abula T, Assefa Y. Bacterial Contamination of Multi-dose Eye drops at Ophthalmology Department, University of Gondar, Northwest Ethiopia. *Middle East Afr J Ophthalmol*. 2017;24(2):81-86.
15. Institute for Safe Medication Practices. ISMP Quarterly Action Agenda - Jan-March 2012. April 5, 2012. https://www.ismp.org/Newsletters/acutecare/articles/A2Q12Action.asp (accessed May 16, 2020).
16. American Academy of Ophthalmology. Important Corona Virus Updates for Ophthalmologists. March 23, 2020. https://www.aao.org/headline/alert-important-coronavirus-context (accessed May 16, 2020).
17. American Society of Ophthalmic Registered Nurses. Recommended Practice for Registered Nurses: Use of Multi-Dose Medications. August 2013. https://asorn.org/client_data/files/2014/303_asornmultidosemedicationsed.pdf (accessed May 16, 2020).