

COVID-19 INFECTION CONTROL AND PREVENTION IN OPHTHALMOLOGY OFFICES
PRE- APPROVED TEMPLATE

Title: THE OPHTHALMOLOGIST IN THE ERA OF COVID-19, A SURVIVAL GUIDE

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Project Description	<p>The COVID-19 pandemic has shaken the world and with that our own medical practices, clinical activities, and the dire risk of illness. Just a few months ago, our practices were busy with patients with little concern of a deadly communicable disease process. We have been forced to determine the best measures of practice to ensure not only the safety of our patients but also of our own. I would like to present the changes we made to our clinic at both the academic, private practice and Veterans facilities to safe-guard the health of everyone and yet not sacrifice the necessary treatment of emergent/urgent patients. With these changes comes practices that we can continue into the future. I will try to also look measures undertaken in areas outside the United States to further protect our patients and doctors in the future.</p>
Background Information	<p>I would also like to examine techniques our physicians and their healthcare team utilize to protect themselves after leaving the office.</p>
Project Setting	<p>Solo Project – Type of Practice Not Identified</p>
Study Population	<ul style="list-style-type: none">• Physicians/Employee training• Sanitation habits enforced• Office structure adopted to protect healthcare workers Schedule changes• Schedule Changes• Waste management of protective gear• Telehealth options implemented• Apps used to assist with telehealth visits

Quality Measures	Difficult to assess quality measures with the assumption that changes in our practices were only necessary to keep our patient and healthcare team safe. Will compare pre- and post-COVID measures. Will also make some suggestions for the future.
Project Interventions and Improvement Period	<ol style="list-style-type: none">1. Will be very descriptive of all the exact measures we have taken in our clinics.2. Will identify changes that were made that will improve safety. Outcome measures are difficult to assess once again.3. Will also identify changes in our schedules.4. Essentially will answer everything noted in the examples above.
Project Team	Solo project although may suggest a resident to be involved (add anything from a resident prospective) as part of our curriculum's project improvement activity.

COVID-19 Infection and Prevention in Ophthalmology Offices
Section 2. Project Evaluation

<p>PROJECT SUMMARY</p>	<p>Review the effect and adjustment of implementing the policy changes after a minimum of 30-days and in the following sections, please prepare a brief summary of the project highlighting the data collected, effectiveness of the measurement approach, interventions and the overall impact of the project.</p>
<p>BASELINE DATA</p>	<p>ABSTRACT</p> <p>Purpose/Project Description: Coronavirus disease (COVID-19) has been a rapidly evolving global health crisis. The purpose of this article is to outline my experience in our practices' mitigation efforts in creating a safe environment for our doctors, residents, technicians, office staff and patients based on the rapidly changing data about this virus. In order to continue to serve our communities safely without placing our healthcare team at risk, we have developed a strategic plan to address this new reality.</p> <p>Methods: Infection control measures implemented in 2 separate multi-specialty Ophthalmology office locations, one in a University setting and the other a local Veteran Affairs (VA) hospital, are discussed here in detail. The measures were implemented over a period of over 30 days effectively starting March 16, 2020, as growing information from the Center for Disease Control (CDC), our local/state governing medical bodies, and infectious disease experts provided recommendations based on their risk assessments.</p> <p>Results: Mitigation/risk reduction while providing continued safe and necessary patient care involves implementing control measures at the administrative, clinical, and personal levels. We are fortunate enough to avoid any gross interruption in our services to patients that require them urgently or emergently and keep our staff safe.</p> <p>Conclusion: The goal of this project improvement is to help shed some light on the need for urgent practice management changes unlike anything seen before. The science behind the disease itself will help us dictate the way our practices will be running for weeks, if not months to come, and hopefully help healthcare facilities deal with and prepare for any future deadly outbreaks.</p> <p>INTRODUCTION/BACKGROUND INFORMATION</p> <p>With every passing day, as more patients become infected and require immediate care, more information about this novel and highly contagious virus is obtained. This pandemic, which appears to have originated in the Wuhan province of China, came at the expense of multiple innocent lives that</p>

tried to warn the world of its deadly nature. Among its first victims and now well-known whistleblower was an Ophthalmologist, Dr. Li Wenliang who worked as a physician at Wuhan Central Hospital. Li warned his colleagues in December 2019 about a possible outbreak of an illness that resembled severe acute respiratory syndrome (SARS). He purportedly contracted the virus from a potentially asymptomatic glaucoma patient. Sadly, this brave physician passed away on February 7, 2020 after potentially being silenced. We owe a lot of gratitude to this young 33-year-old physician, not only because of his selfless attempt to warn the world but because his case, and that of other health-care colleagues, suggested how dangerous this novel virus could potentially be.

What do we know?

The virus, officially named as "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) generally has an incubation period of 2 to 14 days according to the CDC. The median incubation period for COVID-19 is approximately 5 days, similar to SARS, and 97% of those who develop symptoms do so within 11.5 days of exposure. This virus is highly contagious and is spread primarily via person-to-person transmission when an infected patient coughs or sneezes. What has emerged just as frightening is a recent study that demonstrated that the virus can survive on surfaces for hours to days depending on the surface type. Since most physician offices are equipped with plastic or stainless-steel furnishings and equipment to allow for quick disinfection after each patient, the virus could potentially survive up to 2 to 3 days on these surfaces.

Aerosolization has emerged as another potential risk factor of virus spread. Although the data is still controversial, aerosol transmission may be a much bigger risk factor in areas with known COVID-19 patients such as ICU and General wards. A Chinese study demonstrated that SARS-CoV-2 was widely distributed in the air and on object surfaces in both the ICU and GW suggesting a risk to health care workers, especially in ICUs. Lastly, the SARS-CoV-2 aerosol distribution characteristics may include a transmission distance of 4 meters. The study concluded that both air and object surfaces in COVID-19 wards were widely contaminated.

Thus, knowing the extent of environmental contamination of SARS-CoV-2 is critical for improving safety practices for not only medical staff but patients as well.

**FOLLOW-UP
DATA**

Study Population

- Employees/Office Staff (Safety/Protocols)
- Residents (Safety and continued education via novel means)
- Physicians (Safety/Protocols)
- Patients (logistics/safety/Protocols)

On analysis it is my feeling that this project achieved our intended aims. In the weeks of the intervention period we were able to maintain an average provider presence of 32% of our baseline. With careful and specific triage and schedule trimming performed by our providers while in clinic, we were able to decrease our clinic patient volumes to 30.3% of week 0 baseline levels, and 15.2% of our more typical patient volumes. Staffing levels were decreased to 60% of baseline values. Our percentage of staff calling out sick was 31.3% of the baseline value though low in both phases of the project overall. Certainly, our goal was to have no staff contract COVID-19 and to date we have achieved this.

Strategies to Prevent Transmission

This task has been an on-going process for both my University setting and Veterans Affairs practice settings as information was trickling in almost hourly about the virus' transmissibility. Because both practice settings are located in Washington, DC, implementation of novel practice patterns occurred at roughly the same time, March 16, 2020 and have been evolving weekly. The changes/recommendations implemented have been at the (1) Administrative, (2) Clinical, and (3) Personal levels. These changes were not all implemented immediately upon deciding to initiate practice changes, but instead, are a work in progress during these unprecedented times. Well before any surges in infection, we had established a well-run, streamlined system that offered any needed services safely to our patients while protecting our physicians, technicians, and administrative staff. Failure in any one area would potentially affect the safety of all. Our goal is to keep staff, residents, attending physicians safe/healthy in order to provide patients who urgently or emergently need our services with the appropriate and uninterrupted care. Lastly, we want to prevent initially non-urgent cases from turning into urgent ones. These are some of the changes we implemented:

Administrative Changes/Controls

- Early on, a series of in-person meetings with all physicians (while respecting social distancing) were initiated to update everyone about the current COVID-19 situation. These meetings included what we knew

about the virus and what our institution should do to take the necessary precautions. Topics for discussion included transmissibility, need for social distancing, protective equipment in clinics, changes to schedules and a means of keeping us up to date amongst via teleconferencing, testing, hospital/ER concerns/consultations, etc.

- Institute teleconferencing between physicians in the practice at the same time and days of the week to discuss any recent developments with regards to the virus, testing, scheduling, and instituting telemedicine.
- Streamline physician schedules to include only one physician available per clinic day seeing only urgent/walk-in patients. Physicians rotate so that each subspecialty is represented at least one day per week. In this manner urgent patients with specific issues that cannot be handled by the physician of the day would be referred quickly within the week. At the VA we removed any physician older than 65 years of age from this rotation given the possible increased risk to them.
- Each physician screens their schedule 1-2 weeks in advance and assigns a category to each patient in terms of (1) urgent and needs to be seen soon, (2) non-urgent but needs to be rescheduled to within 2-3 months, and (3) routine visit. Patients are directly contacted by their physician if there is any concern regarding their ocular health status.
- Patient that must be seen in the clinic are scheduled at least 30 minutes apart to avoid any patient-to-patient contact in the waiting room.
- Reducing the number of residents in the clinic at any one time. We do not have more than 2 residents available per day in our clinic.
- All non-urgent in-clinic and ASC/OR surgeries were halted in order to preserve personal protective equipment (PPE) and reduce the risk of transmission.
- Any absolutely necessary in-clinic oculoplastic surgical procedures had to be done with the aid of a vacuum, part of our Ellman set-up, when cautery is required as it is hypothesized that plume smoke may carry virus into the air of possibly infected individuals.
- A triage station was set up at the entrance of both the VA hospital and our medical facility (not connected to hospital) which included questioning patients about recent travel to international or domestic 'hot zones' and symptoms of fever and dry cough.
- These patients (and physicians coming to work) have their temperatures checked at the same time.

- The eye clinic developed an additional questionnaire to ask patients (patient triage) over the phone or at the front desk about fever, dry cough, diarrhea as well as loss of smell, taste (possible earlier symptoms) and/or red eye if they needed to be seen.
- As per protocol, any patient that replies positively to our clinic questionnaire is allocated to the SAME (if possible) designated room in the clinic. Only one physician is assigned to see these patients. Dedicated equipment and instruments used in these rooms are NOT to be shared in other rooms and appropriately disinfected. The patient is then referred for testing per institutional protocols.
- Protocol set-up for staff that may have had contact with a confirmed/in some cases suspected COVID-19 patient. Immediate quarantine is made mandatory for 2 weeks and testing is made available, as necessary.
- Infection control training and staff monitoring. All clinical staff are required to self- monitor and report immediately any new
- symptoms. Affected staff should be sent to designated triage areas immediately for temperature check and possible testing.
- Assign new expectations and support system for our residents including remote education opportunities.
- Educate physicians on telemedicine requirements and coding.

Clinical (and Environmental) Controls

Clinic Area:

- Cordon/close minimally used clinic areas to limit patients to only one examination area.
- Signage made available near the clinic area reminding patients about social distancing and possible COVID-19 symptoms.
- Remove magazines, coffee and water stations as needed.
- In order to eliminate the need to sanitize all available chairs in the waiting area and to maintain social distancing of 6 feet, signage, or placement of tape across chairs NOT to be used by patients is designated.
- Hand-sanitizer for patients needing care were placed near the front desk area in the line of sight of the front desk staff to remind patients to use at all times. All sanitizers at the VA hospital were placed in a secure area at the end of the day as, unfortunately, on a couple of occasions they were missing the following day. Physicians are told to remove cleaners/disinfectants from exam rooms at the end of the clinic day.
- Any necessary follow-up paperwork is given to the front desk by the physician alone to help eliminate viral spread on patient's face-sheets possibly because of patient contact.

- Avoid patient visits to clinic area for refills. Refills are addressed via patient portal system or at the time of rescheduling and/or physician direct contact.
- Have patients come alone to clinic area with family/friends outside the clinic area or building if possible.
- In-patient and ER patients are NEVER to be brought to the Ophthalmology clinic but rather seen on-site.

PPEs:

- We implemented the requirement that all front desk staff wear masks and quickly ask patients again about their symptoms and any recent travel as noted above.
- Physicians seeing patient MUST wear, at the very least a surgical mask, and gloves.
- Suspected COVID-19 (+) patients that are seen in the clinic should be given a mask if not already wearing one and seen by a physician with an assigned N-95 face mask, gloves, and isolation gowns.
- Contact with patients is minimized and any necessary dilated fundus examinations are done with the indirect ophthalmoscope and not at the slit lamp if possible.
- Given the increased infection risk to Ophthalmologists because of close patient contact, visors or protective eyewear is recommended and available to physicians and staff alike.
- Advise physicians on the appropriate N-95 disinfection mechanisms for reuse.

Equipment:

- Slit lamp protective shield installed on every slit lamp, even if present but noted to be very small. Our clinics at the VA and University setting used materials such as plexiglass cut out by Sanitation services to durable plastic used as stationary. Companies such as Zeiss offer protective pro-bono shields, but supply is limited to 2 per office address. Slit lamp protective shields need to be wiped down between every patient.
- Minimize equipment, drops, ancillary equipment on clinic desks and wipe down between patients with disinfectant.
- Avoid using phoropter for vision checks. Prescription glasses checks ARE NOT an option during this time. Patients are told that any prescriptions needed for broken glasses will be based on their last refraction.
- Avoid eye pressure checks if not necessary. Otherwise use disposable tonometer tips.
- Minimize use of slit lamp if possible and always wipe down between patients.
- Objects such as doorknobs, phones, and computer keyboards are disinfected frequently.

Technology:

	<ul style="list-style-type: none"> • Institute telemedicine as the main-stay of any future physician-patient encounters for follow-ups and address any new non-urgent issues. During our video conferencing we agree on which apps to use for vision, color, and Amsler grid checks during telemedicine visits. • Technicians are to review with patients the instructions for optimal facial/eye pictures to be sent to consulting physicians during telemedicine visit(s). This is especially important for Oculoplastics visits. • Use video conferencing as a means to continue resident education for grand rounds and lectures. • Opportunity for innovative telemedicine ideas/technology. <p>Personal Controls/Measures</p> <ul style="list-style-type: none"> • 20 seconds of hand washing with disinfectant or soap regularly throughout the workday. Advise counting slowly or singing a familiar tune. • A good hand lotion/moisturizer for dry/cracked hands. • Wear scrubs rather than the usual clothing. Place the scrubs in a bag at the end of the day to be washed at home. Leave office with street clothes and avoid return to clinical area after changing out of scrubs. • Learning appropriate Donning/Doffing technique for PPEs. CME credit is now available for many COVID Educational updates. • When at home, remove clothing at front door, if possible, to help further protect family and place scrubs in washer alone. • Wash hands and face again at home before greeting family.
<p>PROJECT IMPACT</p>	<p>QUALITY MEASURES</p> <p>All of the above measures have been newly implemented. We examined our clinics for</p> <ul style="list-style-type: none"> • Protection of our attending physicians, residents, and staff from infection by implementing controls noted above. • Protection of our staff's family members by implementing controls noted above. • Continued but safe care of our patients with increased telemedicine visits. Continued means of safely postponing office visits and elective surgery to avoid any convergence to a more urgent situation. • Ensuring our patients are able to address any concerns with their physicians and avoid being without any medication refills. • Ensuring continued support to our residents by encouraging safe practices and continued educational initiatives. <p>PROJECT IMPACT</p> <ul style="list-style-type: none"> • To date, no physician/resident physician has been sick or diagnosed with COVID-19. • One (1) staff member, between both institutions, was tested COVID-19 (+) because of an outside (non-clinical) contact. She was immediately quarantined solely because of contact with a tested/known COVID-19 (+) acquaintance even prior to her own personal test or symptoms. The 2

	<p>physicians who worked with our staff member were also immediately quarantined as a precaution. They have been asymptomatic and back at work. ALL were wearing masks and gloves at all times. No overall disruption to clinic services noted because of decreased staffing at the time.</p> <ul style="list-style-type: none"> • No patients have been seen in our clinic that could be delayed. • No patients have been noted to be COVID-19 (+) after being seen in our clinic. • No clinic overcrowding. • No interruption to our scheduled clinic hours with adequate staff to help urgent/emergent and/or walk-in patients with concerns. • No shortage of supplies such as PPEs, disinfectants, etc. noted since protocol implementations. • Telemedicine has been implemented to provide much appreciated/needed easing of patient concerns. • Strategies implemented today will likely continue for months to come. • Forces our practices to plan for re-opening in a safe and likely forever changed manner.
<p>PROJECT REFLECTION</p>	<p>Do you feel that the project was worthwhile, effective?</p> <p>Yes</p> <p>* How might you have performed the project differently?</p> <ol style="list-style-type: none"> 1. Involved residents and other physicians for their perspective as well in order to complete project improvement requirements for them. 2. Comparative study with other pandemic outbreaks. 3. Suggest areas needing of improvement for future pandemics, etc. 4. Project improvement that deals with critical resident education. 5. Discuss/address Office economic effects.