

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

Title: Michael E. DeBakey VA Medical Center (MEDVAMC) Eye Care Line Response to COVID-19 Pandemic

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Project Description	<p>The COVID-19 pandemic has required the Eye Care Line at MEDVAMC to adjust practices to reduce potential exposure of patients and staff and reduce spread of the SARS-CoV-2 virus. While remaining available to provide urgent and emergent ophthalmic care, we have converted many in-person visits to telehealth appointments, limited clinic and OR procedures to urgent/emergent procedures only, divided optometrists and ophthalmology residents into two teams that alternate teleworking and working on-site, increased use of PPE, increased the already stringent protocol for cleaning examination rooms between patients, and implemented screening to determine which patients require a face-to-face examination.</p>
Background Information	<p>The SARS-CoV-2 virus that causes COVID-19 is an enveloped, single-strand RNA virus that is highly transmissible with a significant mortality rate. The MEDVAMC patient population is particularly vulnerable to poor outcomes with COVID-19, as many veterans have multiple risk factors including advanced age, immune suppression due to cancer chemotherapy or therapy for autoimmune disease, and medical comorbidities such as obesity and underlying cardiac, renal and pulmonary disease. Transmission of the virus is believed to be primarily by respiratory droplets in close personal contact. However, recent evidence indicates that transmission can also occur via asymptomatic carriers, surfaces, and aerosols.</p> <p>By the first week of March 2020, it became clear that Houston, Texas would be affected by the rapidly-spreading pandemic. Houston area schools were closed by March 13 with city officials recommending that individuals stay home as much as possible and practice social distancing. By March 16, 2020, the MEDVAMC Eye Care Line was approved to reduce clinic volume to accommodate only urgent patients and to cancel all elective OR and clinic procedures. At that time, the CDC also issued a nationwide recommendation to limit all group gatherings to 10 people or fewer. More recently, Harris County officials have implemented more stringent measures to try to blunt the curve and to minimize the burden on the health care system, including the stay-home-work-safe order that has now been extended through April 30. Governor Greg Abbott also issued an executive order requiring a 14-day self-quarantine for anyone traveling to Texas from Washington, California, New York, New Jersey,</p>

	<p>Connecticut, Louisiana, Miami, Atlanta, Detroit, or Chicago. The American Academy of Ophthalmology, the Texas Medical Board and the American College of Surgeons have released guidelines for permitted outpatient and surgical care as well as cleaning and disinfection of exam lanes and equipment during this pandemic.</p> <p>The MEDVAMC Eye Care Line is the largest ophthalmology service in the VA system, providing routine and complex medical and surgical care to a high volume of veteran patients. The MEDVAMC Eye Care Line has maintained compliance with all federal, local, and institutional recommendations in managing patient care during this rapidly changing time. As ophthalmologists, we are at increased risk for exposure due to the necessity of being in close proximity to patients during examinations and surgery (1). While symptomatic patients are more likely to present to an emergency room than an eye clinic, conjunctivitis is a finding in COVID-19 and virus has been isolated from conjunctival secretions and tears (2). In addition, there is risk of spread by asymptomatic patients who are infected. Measures must be taken to reduce risk of exposure to both patients and eye clinic staff during this outbreak (3).</p> <ul style="list-style-type: none"> • Wan KH, Huang SS, Young A, Chiu Lam DS. Precautionary measures needed for ophthalmologists during pandemic of the coronavirus disease COVID-19). <i>Acta Ophthalmol.</i> 2020Mar 29. doi: 10.1111/aos.14438. • Jianhua Xia MM, et al. Evaluation of coronavirus in tears and conjunctival secretions of patients with SARS-CoV-2 infection. <i>Journal of Medical Virology.</i> 26 February 2020. • Lai THT, et al. Stepping up infection control measures in ophthalmology during the novel coronavirus outbreak: an experience from Hong Kong. <i>Graefe's Archive for Clinical and Experimental Ophthalmology.</i> 3 March 2020.
Project Setting	Veteran's Affairs Medical Center
Study Population	<p>This study will be done at the Michael E. DeBakey Veterans Affairs Medical Center Eye Care Line in Houston, Texas. Our departmental personnel include attending ophthalmologists, Baylor College of Medicine ophthalmology fellows and residents, optometrists, technicians and administrators. In response to the COVID-19 pandemic, we sought to implement the following changes. Convert non-emergent clinic patient visits to telehealth visits.</p> <ul style="list-style-type: none"> • Cancel all non-emergent OR and minor procedure surgical cases. • Change our staffing model (residents, optometrists, administrators) to minimize potential exposures. • Increase personal protective equipment (PPE) for any personnel with direct patient contact. • Screen all patients and employees for COVID risk before entering the clinic

or,

- Increase exam and testing room sanitation.

<p>Quality Measures</p>	<p>The date that most of these changes were implemented was 3/16/20, so we will compare the 6 weeks prior to each intervention to the 6 weeks following the intervention. The outcomes for each of the numbered objectives in the previous section “Study Population” are as follows:1.We will quantify number of clinic visits before (2/3/20-3/13/20) vs after (3/16/20-4/24/20) the conversion of non-emergent clinic visits to telehealth visits. We will also calculate the number of telehealth visits performed by ophthalmologists and optometrists for the intervention time period (3/16/20-4/24/20).2.We will quantify the number of OR cases and minor procedures done before vs after the cancellation of all non-emergent cases.3.We will calculate the total FTE of residents/optometrists/administrators physically present in clinic before vs. after the conversion to telehealth visits.4.We will describe the PPE used by personnel in direct patient care before vs. after implementation of strict PPE guidelines, and how this varies by degree of patient contact (front desk personnel vs. ophthalmologist/tech performing clinic visit vs. ophthalmologist performing intravitreal injections).5.We will describe the process to screen patients and employees before they enter the MEDVAMC hospital building, implemented 3/9/20.6.We will describe the process to sanitize exam rooms and testing rooms after each patient.</p>
<p>Project Interventions and Improvement Period</p>	<p>Strategies to implement the numbered objectives in the previous section "Study Population" are as follows. The administrators have printed lists of all clinic visits for the upcoming week. The optometrists, residents, and attendings review these lists and perform telehealth visits for all patients that were scheduled for non-emergent visits. If both the provider and patient are in agreement, the visit is cancelled and a new one scheduled for a time deemed appropriate. Ocular medications are refilled, and the patients are counseled on ocular risk factors that should prompt them to call the eye clinic for an earlier appointment.</p> <ul style="list-style-type: none"> • Patients were called and cancelled if their OR surgery, clinic procedure or laser was deemed non-emergent, as outlined by the American Academy of Ophthalmology and the Texas Medical Board. Any emergent ophthalmic cases must be discussed and approved by the Eye Care Line Section Chief, Operative Care Line Executive and the hospital Chief of Staff. • The ophthalmology residents rotating at the MEDVAMC were divided into an A team and a B team. These teams alternated a week at a time,

with one team providing on-site coverage and the other team teleworking from home. They must report back to their supervisor daily with the work done on that day. The same protocol was followed by staff optometrists and optometry residents. They have been instructed to practice social distancing at all times when not at the hospital. All teleworkers must be approved for telework by their supervisor, and clinical staff were prioritized for approval. Subsequently, administrative staff were approved and began to telework for portions of their tours of duty.

- Before the pandemic, the only personnel required to wear PPE in the clinic were ophthalmologists performing intravitreal injections (surgical masks, gloves) and minor Oculoplastics procedures (surgical masks, gloves and gown). As of 3/16/20, every employee has been given a surgical mask and gloves to wear when in direct patient contact. In addition, plexiglass slit lamp breath shields were custom made by the MEDVAMC bioengineering department and installed on every clinic slit lamp to prevent droplet transmission during the slit lamp exam.
- Before the pandemic, patients and employees could enter the hospital freely through multiple entrances. As of 3/9/20, a screening process was instituted at all entrances. This includes answering a series of questions (travel history, ill contacts, COVID symptoms), utilizing a non-contact thermometer to measure temperature, and using hand sanitizer prior to entering the facility. In addition, employees are all required to enter through a single entrance that is separated from the other patient-designated entrances.
- Before the pandemic, the clinical exam rooms were cleaned at the end of each day using CleanCide wipes. After the pandemic started, the clinic rooms are cleaned after each patient. Additionally, when rooms are available, the ophthalmologists are switching between two exam rooms to minimize contact with aerosols. Humphrey visual field testing has been suspended. Use of other testing equipment has been minimized as much as possible. Due to infection concerns, non-disposable tonometer tips had been replaced prior to the pandemic with disposable tips in the MEDVAMC eye clinic.

Project Team	<p>This is a collaborative project involving the members of the MEDVAMC Eye Care Line. The policies and procedures implemented specifically in the eye clinic during this pandemic have been devised by the executives with significant input by individual physicians the subspecialty divisions. The Eye Care Line is also responsible for following hospital guidelines as directed by the Chief of Staff, Chief of Surgery, and the Medical Center Director. In many instances, we were the initiators of many of the hospital procedures.</p>
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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>Policy changes related to the COVID pandemic were implemented on 3/16/20. We compared data from 6 weeks before and after the intervention. Outcomes for each numbered objective in the section "Study Population" of our Project Description are as follows:</p> <ul style="list-style-type: none"> • Clinic visits: All non-emergent clinic visits were converted to telehealth visits. These visits were telephone calls, not video calls. The baseline "pre-COVID" data is as follows: Pre-COVID: 2/3/2020-3/13/2020 Face-to-Face Visits Ophthalmology: 3327 Face-to-Face Visits Optometry: 2028 Telephone Encounters: 398 • Surgical Care: All non-emergent cases were cancelled. The baseline "pre-COVID" case count consisted of 230 surgical cases and 42 minor procedures. • Employee Schedules: Pre-COVID, the MEDVAMC Eye Care Line maintained 7.0 Baylor College of Medicine ophthalmology resident full-time employee equivalent (FTEE) on site for general and subspecialty clinics. We also normally had 7.0 optometry FTEE and 8.0 administrative FTEE. However, at the time of the intervention, 1 optometrist was already on scheduled maternity leave, leaving 6.0 optometry FTEE. Part of the Baylor College of Medicine and MEDVAMC response to the COVID pandemic was to limit the number of residents physically present in the hospitals at any given time. The ophthalmology residents and optometrists were divided into A and B teams, each team alternating on a weekly basis with no physical overlap. The on-site team provides on-site coverage at MEDVAMC, and the "home" team does remote telework. • PPE: Pre-COVID, personal protective equipment (PPE) in the eye clinic was used according to OSHA and JHACO standards for universal precautions (i.e. intravitreal injections and minor Oculoplastics procedures). See follow-up data for changes that were implemented.

	<ul style="list-style-type: none"> • Screening: Pre-COVID, patients and employees could enter the hospital freely through multiple entrances. As of 3/9/20, access was limited to 1 entrance for patients and a separate single entrance for all hospital employees. A screening process was instituted at these entrances - see follow-up data for specific changes. • Sanitation: Pre-COVID, the clinical equipment that touched a patient (i.e. slit lamp chin rest, tonometer tips, etc.) was cleaned using Isopropyl alcohol wipes or per JCAHO standards in between each patient. Exam rooms were cleaned at the end of each day using CleanCide wipes unless specific conditions mandated cleaning after the patient (i.e. adenoviral conjunctivitis). See follow-up data for specific changes.
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<p>FOLLOW-UP DATA</p>	<ul style="list-style-type: none"> • Clinic Visits: The number of in-person clinic visits was reduced, and the number of telephone encounters was increased by the following amount: Pre-COVID: 2/3/2020-3/13/2020 Post-COVID: 3/16/2020-4/24/2020 Percent Increase/Decrease Face-to-Face Visits Ophthalmology: 3327 700 -79% Face-to-Face Visits Optometry: 2028 144 -93% Telephone Encounters: 398 3633 +913% • Surgical Care: The case count was 11 surgical cases, and 10 minor procedures. This is a 95% reduction in surgical cases and 76% reduction in minor procedures from baseline. • Employee schedules: The schedule for optometrists, residents, and administrators was changed to decrease the risk for employee exposure to COVID. After implementing the rotating teams, 3.0 optometry FTEE (50%) were on-site providing direct patient care, and 3.0 optometry FTEE (50%) were teleworking. Similarly, 3.5 resident FTEE (50%) were on site and 3.5 resident FTEE (50%) were teleworking on any given week. Of the 8 administrator FTEE, 7 FTEE (87.5%) remained on-site. Only one
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administrator FTEE (12.5%) teleworked.

- PPE: As of 3/16/20, every tech, physician and nurse was fit tested and given an N95 respirator and a surgical mask as well as gloves to wear when in direct patient contact. While N95 were not required for use with patients that passed screening for COVID, the N95 masks were utilized by many employees routinely. N95s with a surgical mask were required for all patients with a red eye or suspected COVID. Additionally, for those physicians and techs involved with intravitreal injections or other clinic procedures, N95s with surgical masks were required, as well as gloves and face shields and/or goggles. In addition, plexiglass slit lamp breath shields were custom made by the MEDVAMC bioengineering department and installed on every clinic slit lamp to prevent droplet transmission during the slit lamp exam. Masks were provided to patients if they did not have their own.
- Screening: As of 3/9/20, a screening process was instituted at all entrances which included answering a series of questions (travel history, ill contacts, COVID symptoms), utilizing a non-contact thermometer to measure temperature, and using hand sanitizer prior to entering the facility. Employees are required to enter through a single entrance, separate from the patient-designated entrances. Only patients with appointments or those presenting to the ER were permitted to enter the hospital after screening. Visitors were not permitted in the building unless accompanying veteran patients requiring assistance due to mobility, mental health or visual disability.
- Sanitation: In response to the pandemic, the clinic rooms (chairs, desks, slit lamps, indirects) are cleaned with CleanCide wipes after each patient. Additionally, when enough rooms are available, the clinicians switch between two exam rooms to allow aerosols to settle/dissipate between patient encounters. Humphrey visual field testing has been suspended. Use of other testing equipment has been minimized as much as possible. Due to infection concerns prior to the pandemic, non-disposable tonometer tips had already been replaced with disposable tips in the MEDVAMC eye clinic. Seating in waiting areas was decreased to enforce social distancing.

PROJECT IMPACT	<p>The intervention is designed to balance the need for personal and patient safety while also trying to maintain productivity and access to appropriate, timely ophthalmic care. The impact of the intervention can be measured by the following:</p> <ul style="list-style-type: none">• The number of reported COVID-19 cases• Productivity of eyecare clinic personnel <p>COVID-19 Cases</p> <p>There were no confirmed COVID-19 cases in the eye clinic personnel. One technician and one nurse were ill with flu-like symptoms which resolved within a few days. Both were tested and quarantined at home until their test results were reported as negative. One staff physician who did not develop symptoms was tested after exposure to someone with suspected COVID and was required to quarantine until results were reported as negative. One resident physician, also asymptomatic, was required to quarantine after exposure to someone with possible exposure.</p> <p>There were no confirmed COVID-19 cases in patients seen in the eye clinic.</p> <p>Productivity</p> <p>The total number of clinic encounters prior to the intervention was 5,753, including 5,355 in clinic visits and 398 telephone encounters. During the intervention period, the total number of encounters was 4,477, including 844 clinic visits and 3,633 telephone encounters. While there was a decrease of 1,276 encounters overall during the intervention period, the number of telephone encounters increased significantly. The number of in person clinical visits decreased to 23.8% compared to baseline. The ability to make use of telehealth resulted in an overall productivity of 78% of baseline compared to the pre-intervention period.</p> <p>All patient charts were reviewed by clinicians. Routine ophthalmology and optometry patients were contacted to determine whether they needed to keep their scheduled appointments or if they could be safely rescheduled to minimize the number of non-essential individuals visiting the hospital. Patients with urgent issues or time-sensitive conditions were seen in the clinic. All patients were given appointments for an appropriate follow-up interval to avoid losing track of them.</p>
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	<p>The number of surgical cases decreased from 272 to 21 cases, a drop of 92% from baseline. All elective surgery was prohibited during this time due to state and hospital policy. All urgent and emergent surgeries required review and approval by the Chief of Ophthalmology, as well as the hospital Chief of Staff. The ophthalmology cases performed during this period were urgent retina cases (retinal detachments) and glaucoma cases (uncontrolled IOP, tube exposure).</p> <p>Currently, there is a significant backlog of elective cataracts and oculoplastic surgeries. It is not yet clear when we will resume elective surgeries, and our surgical volumes will be limited by the need for preoperative COVID-19 testing on all operative patients, which is also limited by number of those tests currently available.</p> <p>At the present time, when we begin performing cataract surgery, we plan to begin immediately sequential bilateral cataract surgery (ISBCS) in appropriate patients. For ISBCS, cataract surgery by phacoemulsification is first performed in one eye, then, with the patient still in the OR, the personnel, instruments, drapes, and back tables are turned over as though for a new case before proceeding with the second eye of the same patient. For carefully selected patients, this process can improve efficiency, patient satisfaction, as well as decrease the number of preoperative, operating room and postoperative visits. Additionally, ISBCS would conserve COVID testing and PPE. Safety and efficacy of ISBCS is well-established. Use of separate sets of surgical instruments and intracameral moxifloxacin minimizes the incidence of simultaneous endophthalmitis in both eyes.</p>
<p>PROJECT REFLECTION</p>	<p>During the intervention period, there were reports of SARS-CoV-2 being transmitted via conjunctiva as well as more reports of aerosol transmission. Both risks indicate that use of goggles and respirators is likely more important in protecting providers than previously thought.</p> <p>The interventions taken at the MEDVAMC Eye Care Line are in line with the interventions taken by many ophthalmologists practicing in an academic or hospital setting. Houston has been fortunate in that the number of COVID-19 cases has been low relative to other US cities of comparable size. It is imperative that measures taken be appropriate and specific to their situation.</p>