

Practice Recommendations for Ophthalmic Outpatient Care in the COVID-19 Era

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Abstract: SARS-CoV2 (COVID-19) pandemic has caused unprecedented number of infections and deaths across the world.¹ This pandemic has forced entire nations into self-imposed quarantine to contain the transmission of this virus. For the same reason, the Government of India (GoI) too has mandated a nationwide lockdown, which is now being lifted in a phased manner. In the wake of this pandemic and various government-imposed restrictions, the practice of ophthalmology has been affected drastically. Thus, there is a need for a set of evidence-based guidelines for ophthalmic outpatient care in this COVID-19 era. In this paper, we attempt to summarize a preferred practice pattern (PPP) in these times, especially for Indian ophthalmologists, based on guidelines from various government authorities, healthcare institutions, and various international and regional ophthalmic associations. These guidelines will be required to be updated from time to time as per government protocols & recommendations as well.

PRACTICE GUIDELINES FOR OPHTHALMOLOGISTS DURING THE LOCKDOWN

Scheduled appointments

- a. Postponement/Schedule of all the routine outpatient consultations as per the Government of India recommendations zone wise²
- b. Postponement/Schedule of all elective surgeries and

procedures as per the Government of India recommendations zone wise

- c. Creating alternate channels for interaction with patients including phone calls, emails, and social media interaction

Ophthalmic Emergencies

The ophthalmologists should triage the patients^{3,4} (Figure 1) and decide which patient requires emergent care. This has to be

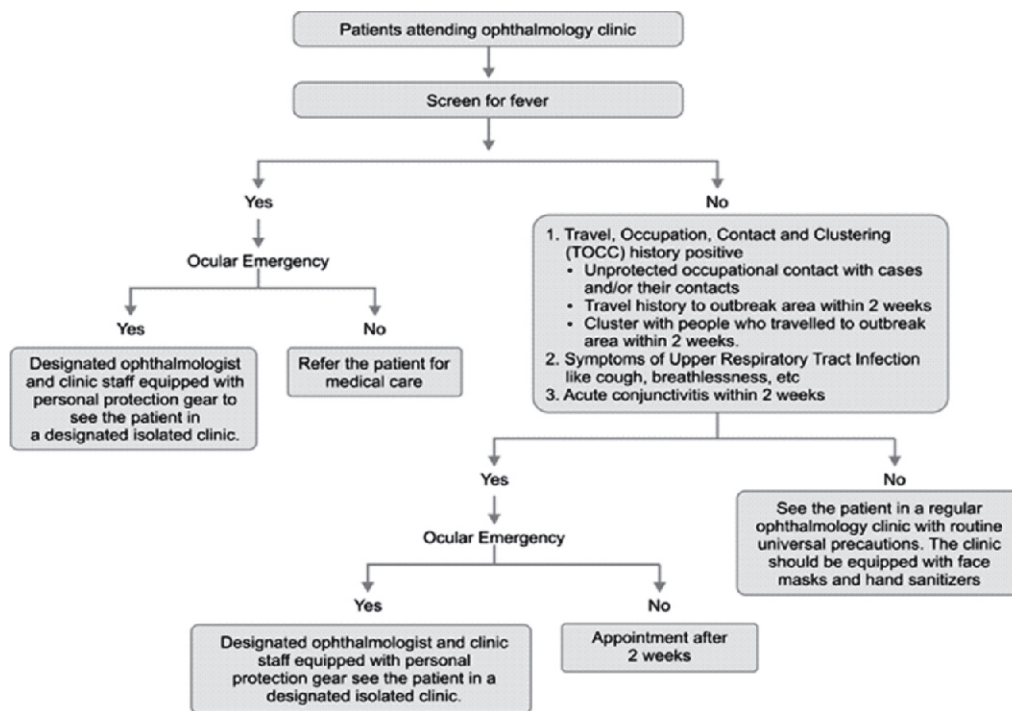


Figure 1: Flowchart showing the triage system to be used in ophthalmology^{3,4}

done on case to case basis. This diagnosis-based triage can only be done after the patient has been seen by a medical practitioner. However, if the patient has contacted the call centre of the hospital for an appointment or is met with by the non-medical staff of the hospital, then they may be given a checklist of presenting complaints that may indicate true emergencies.

These include the following:

- a. Injury to the eye (chemical, thermal, mechanical)
- b. Sudden loss of vision
- c. Acute pain
- d. Acute red eye
- e. Acute onset of eyelid lesions
- f. Acute onset of double vision or sudden onset of drooping of the eyelid
- g. Acute onset of colored halos, photo phobia, floaters or flashes of light
- h. Acute onset of discharge from the eye
- i. Acute or subacute (days to weeks) onset bulging of the eye.

Point of entry screening and check in

Triage should be done by an ophthalmologist or a trained ophthalmic technician or an optometrist. Telephonic triaging to be done as far as possible. The flowchart shown in Figure 1 can be utilized to screen the patients at entry point and for further segregation of the patients.^{3,4}

Waiting hall guidelines

- a. Maintain a one-meter distance at every point
- b. Keep the waiting time minimum in the hospital premises
- c. Only one attendant per patient
- d. Numbered stickers to be given to every patient
- e. Provision of hand sanitizer in the waiting hall
- f. Three-ply masks for all the patients and their attendants
- g. Keep as many doors open as possible
- h. Sanitize the waiting hall frequently

Cleaning of the emergency room and waiting halls

- a. After every 2 hours or 3 patients, the emergency room areas, which come in contact such as doorknobs, handles, slit lamps (head and chin rest), tables, benches must be cleaned with freshly prepared 1% Sodium Hypochlorite or 1% Bacillocid Extra solution
- b. Every day, the floor and common contact surfaces must be cleaned with 1% Bacillocid Extra solution before work begins and every 2 hours with Lizol
- c. The slit-lamp apparatus, especially the joystick, switches and other parts must be thoroughly cleaned with alcohol

wipes

- d. The rooms should be well-ventilated and well lit
- e. All HCWs must be instructed to clean and disinfect (using the standard procedure as recommended by the manufacturer) their equipment such as lenses, indirect and direct ophthalmoscopes, torches, and other such items.

Precautions at ophthalmic evaluation and OPD procedures⁵

- a. Protections for head, mouth, nose, and eye (with a surgical cap, three-ply surgical mask, goggles/faceshield) for the examiner and a three-ply surgical mask for the patient. Masks should be changed every 6 hours.
- b. Slit-lamp barriers or breath shields. These can be designed indigenously by cutting out a transparent plastic sheet of an appropriate thickness (Figure 2). The slit lamp touch-



Figure 2: Breath-shield for the slit lamp made using X-ray sheet

contact parts should be cleaned by alcohol wipes after examining every patient. Barriers can be washed with soap water, dried and reused

- c. Alcohol-based hand sanitizer before and after examining each patient
- d. Speak as little as possible. The patient should also be informed not to speak during the examination
- e. Disposable gowns, gloves and eye protection, cap and N95

mask are recommended if a procedure is planned that will result in aerosols. Details are provided in Table 1⁶

- f. Avoid dilatation and nasola crimal syringing if possible. If dilatation is mandatory for a follow-up patient, home dilatation is ideal if there is no known contraindication.
- g. Avoid all aerosol-based procedures including non contact Tonometer (NCT). Use of Tonopen with adisposable tip or Goldmannapplanationtonometry (with the cleaning of the applanation cone after every patient) is recommended if IOP measurement is necessary
- h. Refraction can be performed using autorefractor or a streak retinoscope where mandated. Trial frame and the metal rim of the lenses used should be cleaned with alcohol-based sanitizer after use.
- i. Avoid contact lens trial unless therapeutic
- j. Optical dispensing and Pharmacy services should be available, but with 1-meter distancing protocolk. Retinal

examination should be done in patients who need it, strictly with an indirect ophthalmoscope. Avoid direct ophthalmoscopy and contact lens-based fundus examination

- l. Infants undergoing ROP screening must be placed on a designated crib with a plastic or polythene sheet, by the mother who uncovers the face of the infant and steps away more than 2 meters. The barrier sheet is replaced or sanitized between successive infants
- m. In case of urgent ophthalmic problems in a patient who is at high risk for COVID-19, transmission precautions for treating ophthalmologists include full body protection (full PPE or an HIV kit)
- n. Since conjunctivitis is a part of the spectrum of COVID-19,⁷⁻¹⁰ all patients with conjunctivitis should be COVID-19 suspects and should be examined in isolation, with slit lampbreath shields, using N95 mask and disposable gloves [Table 1]
- o. Prophylaxis: ICMR has advised oral Hydroxychloroquine

Table 1: Recommendations on use of PPE by ophthalmologists⁶

COVID-19 status	Risk of life- or sight-threatening harm if not seen urgently (based on triage)	Brief close contact (e.g., slit-lamp examination)	Prolonged close contact (e.g., laser, intravitreal procedures)	Aerosol-generating procedures (e.g., general anesthetic, ophthalmic surgery involving high-speed devices)
Asymptomatic	Low	Discharge or postpone until after pandemic or offer remote consultation.		
Asymptomatic	High	Slit-lamp breath shield, Three-ply surgical face mask, Protective goggles, Surgical cap, Surgical scrub suit	Slit-lamp breath shield, Three-ply surgical face mask, Protective goggles, Surgical cap, Surgical scrub suit	Slit-lamp breath shield, N95 face mask, Protective goggles, Surgical cap, Disposable sterile gloves, Disposable surgical gown wom over surgical scrub suit
Suspected or confirmed COVID-19	Low	Discharge or postpone until after pandemic or offer remote consultation.		
Suspected or confirmed COVID-19	High	Isolate the patient Slit-lamp breath shield, N95 face mask, Protective goggles, Surgical cap, Surgical scrub suit, Disposable plastic apron, Disposable gloves	Isolate the patient Slit-lamp breath shield, N95 face mask, Protective goggles, Surgical cap, Surgical scrub suit, Disposable plastic apron, Disposable gloves	Isolate the patient Slit-lamp breath shield, FF3 respirator, Protective goggles, Face shield, Surgical cap, Surgical scrub suit, Disposable scrub suit, Disposable plastic apron, Disposable gloves, Disposable shoe cover

(HCQ) 400 mg BD on day 1, followed by 400 mgOD weekly for 7 weeks.¹¹ This must be taken only after direct consultation with an internal medicine expert

Precautions at diagnostic procedures

- a. Non-essential testing and imaging should be deferred
- b. Gonioscopy and visual field examination should be avoided unless mandatory
- c. Optical coherence tomography (OCT) and retinal imaging

procedures to be done based on ophthalmologist’s discretion

- d. All imaging equipment should be cleaned before and after each patient, using the technique recommended by each manufacturer

Personal Protective Equipment (PPE)

PPEs are protective gear designed to safeguard the health of workers by minimizing the exposure to a biological agent.¹² Components of PPE are goggles, face-shield, mask, gloves,

coverall/gowns (with or without aprons), head cover and shoe cover. Table 1 shows recommendations for use of PPE by ophthalmologists based on the COVID status, risk of vision loss, duration of expected contact with the patient and need for aerosol-generating procedures

Infection control and prevention measures¹³

- a. Hand hygiene: HCWs should perform hand hygiene using alcohol-based hand rub (minimum 20 seconds) or by washing with soap and water (minimum 20 seconds). If hands are visibly soiled, use soap and water for hand wash. Hand hygiene should be performed frequently, before and after examination of a patient
- b. Mask and PPE etiquette
 - i. Place the mask carefully to cover mouth and nose and tie securely to minimize any gaps between the face and the mask. Wear the PPE as instructed by experts.
 - ii. While in use, avoid touching the mask
 - iii. Remove the mask by using the appropriate technique (i.e., do not touch the front but remove the lace from behind)
 - iv. Remove PPE in the reverse order that it was worn and discard the material in appropriately colored disposal bags for infective plastic items (red)
 - v. Do not reuse or use three-ply surgical mask/N 95 masks for more than 8 hours.
 - vi. Mask and PPE etiquettes should be followed by hospital staff as well.
- c. Environmental hygiene: Freshly prepared 1% Sodium Hypochlorite or 1% Bacillocid Extra solution can be used as a disinfectant for cleaning and disinfection for ophthalmic instruments between patients. Leaving the solution for a contact time of at least 10 minutes is recommended. Alcohol (e.g., isopropyl 70% or ethyl alcohol 70%) can be used to wipe down surfaces where the use of bleach is not suitable, e.g., metals. The slit lamp contact surfaces
- d. OPD areas and the OT are fumigated with 2% Bacillocid Special at the end of every day
- e. Follow an open door, non-AC environment if feasible.

Guidelines for maintenance of equipment

- a. Equipment maintenance to be done once a week by trained OT Technicians
- b. All ACs, AHU, dehumidifiers to be switched on at least twice a week
- c. All OPD and OT machines, other than Excimer and Femtosecond laser machines, to be switched on for a minimum of 15 minutes twice a week.

- d. Excimer and Femtosecond laser machines need to be calibrated and tested at the end of the lockdown period and before any patient is posted for these procedures. It will be prudent to discuss maintenance guidelines with the specific manufacturer
- e. For OCT, topographers, etc. all printers need to be given one print command as test print at least once a week
- f. All lasers, including Nd:YAG and retina lasers, will need to fire for 50 blank spots at least once a week

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Resumption of Work after the Lockdown is Lifted

It is certain that, after the lockdown is lifted, the viral infection will still be prevalent in the population and health care workers, especially ophthalmologists and others who come in close contact with patients will continue to be at increased risk of contracting the infection unless some precautions are continued to be taken. A lot of the OPD and OR procedures can be adapted for routine use irrespective of a pandemic. Most of the measures mentioned above to be adopted during the lockdown should be continued even after the lockdown is gradually lifted at least till such time when the virus spread is relatively high.

Discussion

The COVID-19 infection is posing an unprecedented challenge to the health care system.¹ Ophthalmologists are at a slightly higher risk of transmission due to their close contact with patients,^{16,17} tears⁹ as well as procedures that generate aerosols. It is important to manage patients effectively, using preferred practices and recommendations as mentioned above. Precautions to be taken during OPD and surgical services, both during and after the lockdown have been lifted.

Conclusion

SARS-CoV-2 has created a healthcare emergency all over the world and the development of vaccine against it is still in the initial stages. Thus, the fight against the SARS-CoV-2 virus appears to be a long one. Using preferred practices as far as possible will protect us in these difficult times. Various measures mentioned in this paper such as triage, PPE, sterilization techniques, tele consultation and social distancing are crucial in blunting the effect of this pandemic.

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Interesting Facts

Bats actually have good eyesight -- they just don't need it much.

Bats aren't blind. They're not even a little nearsighted. What they do have is exceptionally acute hearing. They also possess sonar so sophisticated, it tops that used by the U.S. military [source: **Science Daily**]. This sonar, or echolocation ability, involves the bats producing ultrasonic pulses, or sounds, which then reflect off objects. The bats process the reflected sound to avoid obstacles, to effectively hunt and to properly orient themselves.

Since **bats are nocturnal animals**, and have such amazing echolocation skills, their sense of sight isn't that important. Perhaps this is why the myth about their blindness arose. It also may have something to do with the fact that bats, the world's only flying mammals, have long been viewed by humans as both fascinating and repulsive -- qualities that have led to many myths about the creatures.