Commentary: Preferred practice pattern for primary eye care in the context of COVID-19 in L V Prasad Eye Institute network in India

The COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), originated in Wuhan, China, and spread across the globe. As of 5th June 2020, it has infected nearly 6.5 million individuals and killed more than 400,000 individuals.[1] The route of transmission includes mainly droplets, fomites, and also aerosol particles.[2] There is evidence that SARS-CoV-2 can also cause intestinal infection and present in faeces, however there are no reports on the faecal-oral transmission.[2] The most common symptoms reported are fever and cough.[3,4] Ocular involvement in the form of conjunctivitis can sometimes be the first symptom.[5,6] Advisory measures include social distancing, working from home and safe hygiene practice. Legal measures include travel restrictions, reduction or postponement of elective procedures, lockdown, and curfews.[6]

Health care professionals are at an increased risk of infection, including ophthalmologists, optometrists, and other allied health personnel, as most of the ophthalmic procedures bring them in close contact with the patients.[5,7] There are also reports of SARS-CoV-2 identified in tears and conjunctival swabs, thus putting clinical eye care professionals at risk of acquiring the infection.[6,8-11] Different guidelines have been developed for ophthalmologists by the American Academy of Ophthalmology (AAO),[12] International Council of Ophthalmology (ICO)[13] as well as national societies such as All India Ophthalmological Society (AIOS).[14,15] Similarly, the American Optometry Association has developed guidelines for optometry.[16] However, there are limited guidelines available for primary eye care (PEC) facilities in India. In India, the government sector offers PEC through its Vision Centres (VC) located within the primary health centres (PHC). The non-governmental organizations (NGO) offer care through a stand-alone Vision Centre (VC) model.[17,18] In this article, we describe the guidelines followed in our PEC network, i.e., VC network of L V Prasad Eye Institute (LVPEI), India.[19]

LVPEI response to COVID-19 at primary level can be divided into the following steps:
1. Safeguarding infrastructure and equipment
2. Primary eye care personnel protection
3. Patient triaging and Clinical protocols (including optical dispensing)
4. Administrative control and monitoring

The protocols can also be viewed at: https://youtu.be/zVc5iHrFojk

1. Protection of infrastructure and equipment: A PEC facility is typically set up in a space of approximately a 500 square feet area. The existing structure has been modified and re-arranged to suit the current COVID-19 situation. This includes seating arrangement to ensure that social distance (3 feet distance) is maintained. Cleaning and disinfection protocols have been developed [Table 1]. Sanitizers are also placed at the entrance of the examination room as well as the optical dispensing counter and used after each examination. As described in other guidelines, breath barriers have been installed on slit lamp biomicroscopes.[12-15] Additional breath barriers have been created for retinoscopes, autorefractors, and for fundus imaging equipment. The cleaning and disinfection protocols of the PEC facility are shown in Table 1.

2. Primary eye care personnel protection: Personal protective equipment has been provided as described in other guidelines [Table 2].[13-16,20] The procedure for donning PPE (putting on) and doffing PPE (taking off) is detailed in Fig. 1. Along with PPE, the importance of social distancing and hand hygiene practice has been reinforced. They are also advised to avoid social gatherings and visitors, as well as family holidays. All pregnant women and high risk persons are given leave.[21] For education, the use of online platform is encouraged and being used.

3. Patient triaging and clinical protocols (including optical dispensing): The PEC facilities are stand-alone units managed by a single person (in most cases). The core functions include refraction and dispensing of spectacles, diagnosis of common eye conditions, and appropriate referrals for further intervention. Hence, the clinical protocols are developed with a focus on these functions as well as other guidelines.[13-16] Fig. 2 shows the clinical workflow at a PEC facility in our network. All patients are instructed to wear a mask or cover their nose and...
Table 1: Cleaning and disinfecting protocol for the primary eye care facility

<table>
<thead>
<tr>
<th>Type of surface*</th>
<th>Disinfectant to be use</th>
<th>Frequency of cleaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallic surfaces</td>
<td>1% sodium hypochlorite solution</td>
<td>Twice a day (Morning when the centre is opened and after lunch time).</td>
</tr>
<tr>
<td>Electronic/Information technology equipment</td>
<td>70% Isopropyl Alcohol wipes</td>
<td>Three times a day</td>
</tr>
<tr>
<td>Floor</td>
<td>1% sodium hypochlorite solution</td>
<td>Three times a day</td>
</tr>
<tr>
<td>Wooden surfaces</td>
<td>0.5% Hydrogen Peroxide solution in a spray bottle or 1% sodium hypochlorite solution</td>
<td>Twice a day (Morning when the centre is opened and after lunch time)</td>
</tr>
<tr>
<td>Medical equipment</td>
<td>70% Isopropyl Alcohol wipes</td>
<td>Every time before starting an eye examination</td>
</tr>
<tr>
<td>Optical Dispensing area</td>
<td>0.5% Hydrogen Peroxide in a spray bottle or 70% Isopropyl Alcohol wipes</td>
<td>After every patient</td>
</tr>
<tr>
<td>Vehicle (if available)</td>
<td>1% sodium hypochlorite solution</td>
<td>Twice a day* (Once in the morning and once in the evening)</td>
</tr>
</tbody>
</table>

*High touch surfaces to be cleaned more frequently

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Recording personal history and demographic information: The standard protocol with social distancing is followed to obtain personal and demographic information. Aadhar card (personal identification card issued by government) and mobile numbers (of patient and next of kin) are mandatory as these details would be required at a later date, if any positive cases are reported among the patients examined in the centre. Attendants are discouraged unless the patient is a child or physically disabled.

Visual acuity assessment: Visual acuity for the distance is assessed using standard illuminated Snellen’s visual acuity chart. However L-Occluder is not used. Instead, the patient is instructed to close the non-testing eye with his/her hand (not fingers). The near vision chart is held by the examiner at a distance of 35-40 cm, and at least one-meter distance from the patient is maintained while assessing visual acuity.

Objective and Subjective Refraction: Objective and subjective refraction is performed on all patients. The trial frame is cleaned with an alcohol wipe before placing it on the patient for refraction. Touching the forehead of the patient to measure working distance is avoided. All the lenses used for neutralization are placed on the desk. After completing a subjective examination, each lens and occluder is cleaned with alcohol wipes before replacing in the trial box. The trial frame is also cleaned each time. Retinoscopy barrier is used while doing retinoscopy, similar to the slit lamp barrier as shown in Fig. 3. Wherever possible, spherical equivalent lenses are prescribed and dispensed, so that movement of lenses and frames can be minimized.

Slit-lamp examination and applanation tonometry: Slit-lamp examination is performed on all patients and the same

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Figure 1: Donning and doffing of personal protective equipment by primary eye care personnel
Screening for COVID-19 before entering the facility using COVID-19 questionnaire
(Depending on the availability of seating with social distancing arrangement, a certain number of patients can be allowed to enter the facility. Appointment system to allow spread of time slots to avoid crowding can be planned where feasible)
(Ensure that patient always wears a mask)

No issues
Suspect (At least one ‘yes’ on COVID-19 Questionnaire)
Referral to Primary Health Centre

The examiner offers sterillium (hand rub) to the patients and explains the hand rub procedure.
Then directs them to the pre-arranged seating location
Liquid soap and water can be provided near a wash basin, if feasible

Seating of the patients in ‘ear-marked’ positions
(Maintaining at least three feet distance between the patients)

Clinical examination is conducted as per the modified examination protocol for one patient at a time in the examination room; Ensure that patient is always wearing the mask properly

Advice

Glasses
Referral to higher centres
Tele – Consultation, where applicable
No Treatment required

Preferably provide the referral letter as a soft copy through by WhatsApp either to the patient or next of kin; Avoid paper forms as far as possible

Exit

Dispense glasses as per the modified protocols
(Patient is asked to thoroughly clean their hands with ‘hand-rub’ before touching / trying on the frames;
Examiners maintains safe distance while showing the frames; All the frames touched by the patient are cleaned with 0.5% Hydrogen peroxide solution, allowed to dry and then only replaced in the display; Encourage digital payment methods and where it is not possible, cash should be handled with gloved hands only)

Exit

Figure 2: Clinical workflow in a primary eye care clinic
Table 2: Personal protective equipment for primary eye care personnel

<table>
<thead>
<tr>
<th>Personal Protective Equipment</th>
<th>Frequency of changing</th>
<th>Disinfection methods</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face Protection (mask)</td>
<td>To be changed after 4-5 days of usage (cumulative) unless soiled daily</td>
<td>UV Chamber or Light (254 nm) for 30 minutes Can be disinfected and used for 8-10 cycles Disposable</td>
<td>Used masks are stored in individual on ziplock covers</td>
</tr>
<tr>
<td>Ideal: Masks N95 or FFP2 (Filtering Face Piece)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum: Triple Layer Surgical mask</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hair cover</td>
<td>Daily</td>
<td>Disposable</td>
<td>Discard after a single use in a separate dustbin</td>
</tr>
<tr>
<td>Ideal: Disposable Surgical cap or impermeable fabric</td>
<td>Daily</td>
<td>Wash it after single-use</td>
<td></td>
</tr>
<tr>
<td>Minimum: Cloth cap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective goggles</td>
<td>Reusable</td>
<td>Cleaned with the 1% hydrogen peroxide solution</td>
<td>To be cleaned daily</td>
</tr>
<tr>
<td>Ideal: Post cataract surgery protection goggles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum: Open Source Visor</td>
<td>Monthly</td>
<td>Cleaned with the hydrogen peroxide solution or 70% isopropyl alcohol wipes</td>
<td>To be cleaned daily</td>
</tr>
<tr>
<td>Face Shield</td>
<td>Reusable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal: Visors covering up to the ears</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum: Open Source Visor</td>
<td>Monthly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth gowns</td>
<td>Daily/Reusable</td>
<td>Disposable/Wash it after a single-use</td>
<td>Discard after a single use in a separate dustbin</td>
</tr>
<tr>
<td>Ideal: Disposable or cloth gowns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum: Full sleeve dresses/Apron</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foot protection</td>
<td>Daily</td>
<td>Disposable</td>
<td>Discard after a single use in a separate dustbin</td>
</tr>
<tr>
<td>Ideal: Disposable/impermeable fabric shoe cover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum: Shoes/footwear that covers the entire ankle</td>
<td></td>
<td></td>
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</tbody>
</table>

Figure 3: A barrier for performing retinoscopy

protocols described in other guidelines are followed.\[13-16\] This includes avoiding all non-essential examination as well as ‘no talking’ policy during the examination. Patients with conjunctivitis are not examined on slit-lamp, and referred directly to higher centres. Aerosol generating procedures like non-contact tonometry are avoided.\[22\] Wherever possible intraocular pressure (IOP) measurement is avoided. This includes patients who are less than 30 years of age, those with redness in the last 2 weeks, those likely to be referred to higher centres, and those with Best Corrected Visual Acuity (BCVA) 6/6 and N6 for near. Procedures like direct ophthalmoscopy is also avoided.

Lensometry: If the patient is using spectacles, preferably hand neutralization technique is used to assess lens power and the spectacles are cleaned with hydrogen peroxide before returning to the patient.

Fundus camera: A breath barrier is installed with the help of the manufacturer and imaging is restricted to those who require the service. These include patients with a history of diabetes; intraocular pressure more than 20 mm of mercury; and those with shallow anterior chamber. It is also indicated if the vision is not improving with refraction beyond 6/12; and if there is a relative afferent pupillary defect (RAPD). Spectacle dispensing: Patients are advised to clean hands with sterillium at the entrance of the optical outlet. During frame selection, social distancing is maintained. All frames tried by the patient is kept in a separate tray (Ex: Red colour tray). After trial, the frames are cleaned using 0.5% hydrogen peroxide spray, especially the nose pad and nose bridge before replacing them.

4. Administrative control and monitoring: The PEC centres are a part of a larger eye care network, and are monitored by a higher level center through frequent phone calls and physical checks where possible. A monitoring checklist is developed and implemented. The checklist includes indicators to assess the adherence to protocols such as one attendant policy, awareness of health messages, compliance with PPE and cleaning protocols. One-to-one meetings are also held with the PEC personnel. The aim is to reduce anxieties, obtain feedback, provide guidance for implementation, monitoring, and compliance. The PEC personnel is also instructed to submit Incident Reports on any serious event.

To summarize, these guidelines are based on the best possible evidence and also align with other recent guidelines in India.\[14,15\] While these guidelines are developed based on our experience at our higher centres, these can be easily adopted by the PEC facilities in the developing countries of our region. The guidelines are subject to change based on the generation of new evidence as well as changes in national policies.
In conclusion, a good triaging system at multiple levels and following the best-preferred practices would significantly mitigate the risk of COVID-19 at the PEC facility.

Disclaimer

The guidelines are based on the best available evidence as of today as well as experience in our network of more than 100 centres. Despite adherence, they may not mitigate the risk to 100%, however, they would aid in reducing the risk at multiple points. These guidelines will be updated as and when new evidence is generated. Anyone interested in following the updates and the protocols, we would recommend that they get in touch with our Hospital Infection Control Committee.

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References


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