

## 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 5<sup>th</sup> June 2020, it has infected nearly 6.5 million individuals and killed more than 400,000 individuals.<sup>[1]</sup> The route of transmission includes mainly droplets, fomites, and also aerosol particles.<sup>[2]</sup> 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.<sup>[2]</sup> The most common symptoms reported are fever and cough.<sup>[3,4]</sup> Ocular involvement in the form of conjunctivitis can sometimes be the first symptom.<sup>[3,5]</sup> 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.<sup>[6]</sup>

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.<sup>[3,5,7]</sup> 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.<sup>[5,8-11]</sup> Different guidelines have been developed for ophthalmologists by the American Academy of Ophthalmology (AAO),<sup>[12]</sup> International Council of Ophthalmology (ICO)<sup>[13]</sup> as well as national societies such as All India Ophthalmological Society (AIOS).<sup>[14,15]</sup> Similarly, the American Optometry Association has developed guidelines for optometry.<sup>[16]</sup> 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.<sup>[17,18]</sup> In this article, we describe the guidelines followed in our PEC network, i.e., VC network of L V Prasad Eye Institute (LVPEI), India.<sup>[19]</sup>

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/zVcSiHfFojk>

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.<sup>[12-15]</sup> 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].<sup>[13-16,20]</sup> 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.<sup>[21]</sup> 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.<sup>[13-16]</sup> 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**

Type of surface*	Disinfectant to be use	Frequency of cleaning
Metallic surfaces Door handles, Desk handles Locks, keys Partition surfaces, if any	1% sodium hypochlorite solution	Twice a day (Morning when the centre is opened and after lunch time).
Electronic/Information technology equipment Monitor, Keyboard, Mouse Mobile, Tablet	70% Isopropyl Alcohol wipes	Three times a day
Floor All open areas in the examination room, waiting and seating areas	1% sodium hypochlorite solution	Three times a day
Wooden surfaces Desks/Benches/Chairs	0.5% Hydrogen Peroxide solution in a spray bottle or 1% sodium hypochlorite solution	Twice a day (Morning when the centre is opened and after lunch time)
Medical equipment Slit-lamp including barrier Trial frame and lenses Retinoscope along with the Barrier sheet Autorefractor and its barrier sheet	70% Isopropyl Alcohol wipes Lenses to be cleaned with 0.5% Hydrogen Peroxide in a spray bottle	Every time before starting an eye examination
Optical Dispensing area Spectacles frames Display mirror Display unit desk	0.5% Hydrogen Peroxide in a spray bottle or 70% Isopropyl Alcohol wipes	After every patient
Vehicle (if available)	1% sodium hypochlorite solution	Twice a day* (Once in the morning and once in the evening)

\*High touch surfaces to be cleaned more frequently

#### Donning and Removing the Personal Protective Equipment – Sequence



Adapted from Centers for Disease Control and Prevention (CDC) Handout:  
<https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf>

**Figure 1: Donning and doffing of personal protective equipment by primary eye care personnel**

mouth with cloth/scarf. The patient is greeted (non-contact method). For patient triaging, a COVID-19 questionnaire is administered and temperature is recorded. Anyone with high temperature is referred to the nearest government facility. Before examination, the patient is asked to sign a COVID-19 consent form.

**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

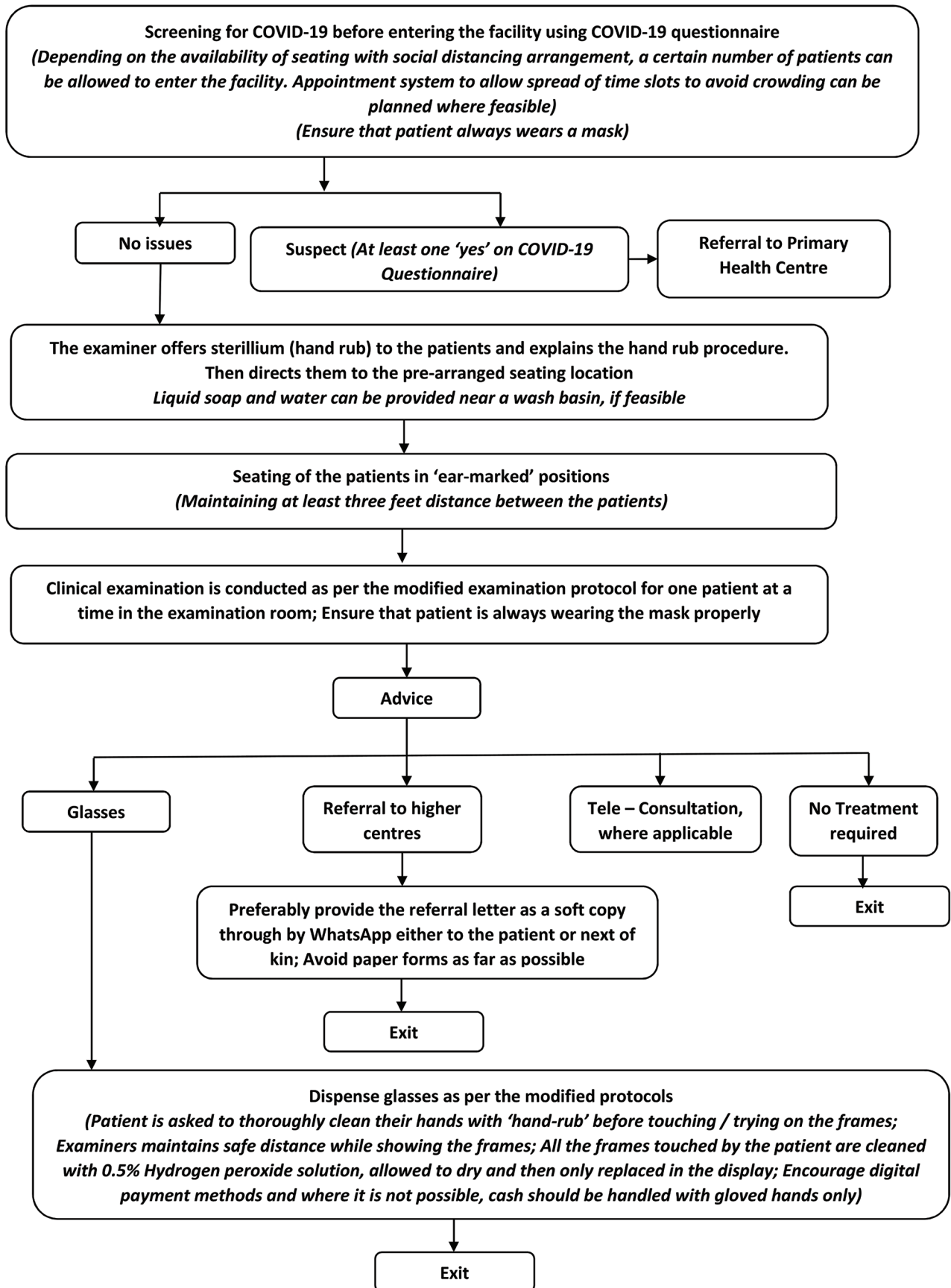
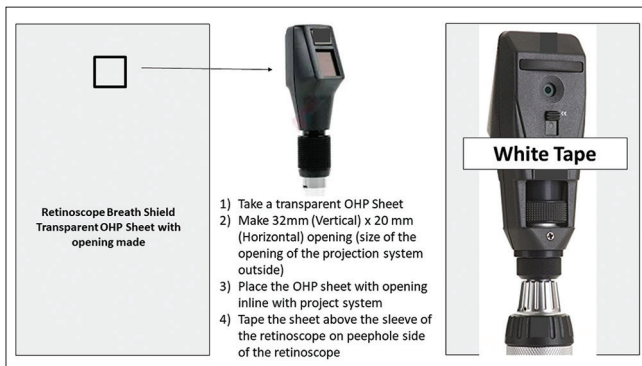


Figure 2: Clinical workflow in a primary eye care clinic

**Table 2: Personal protective equipment for primary eye care personnel**

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

**Figure 3: A barrier for performing retinoscopy**

protocols described in other guidelines are followed.<sup>[13-16]</sup> 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.<sup>[22]</sup> 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.

- 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.<sup>[14,15]</sup> 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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