

Suggested Clinical Protocols to Prevent COVID-19

Aravind Eye Hospital, Pondicherry

To safeguard visiting patients and the staff of the hospital we have taken the following actions to prevent the spread of COVID-19. A senior leadership task team was formed to develop the following protocols to prevent the spread of COVID-19 and plan for handling ophthalmic emergencies and high risk patients.

Patient Examination Protocol

1. OPD Restricted for Emergency and High Risk Clinical Scenarios Only

In order to prevent COVID-19 dissemination, the hospital has suspended all routine eye clinic visits and has cancelled all elective ophthalmic surgeries. Only ocular **emergency** services are offered.

2. Temperature Check

Body temperature is checked using a Thermal Scanner for both patients and staff entering the hospital. If one is febrile (> 38 degrees Celsius), he or she will be referred to the nearest COVID-19 nodal Centre (Pondicherry GH).



Figure 2: Temperature being checked for staff and patients using a forehead thermal scanner

3. Hand Sanitization

In order to ensure clean hygiene of patients and staff, a temporary hand wash area was built in front of the hospital entrance. All patients and staff are required to wash their hands before entering the hospital.



Figure 1: Hand wash area in OPD block entrance

4. Reception and Preliminary Screening

A reception counter is set up in the main entrance where every patient undergoes a preliminary health screening and is dispensed hand sanitizer. A patient registration form is given along with a COVID-19 enquiry form which requires the following: upper respiratory symptoms, exposure risks, and contact information. Patients must enter alone and without accompaniment except for those that require supervision (e.g. vulnerable adults and/or children). Bands are provided to patients for quick identification.

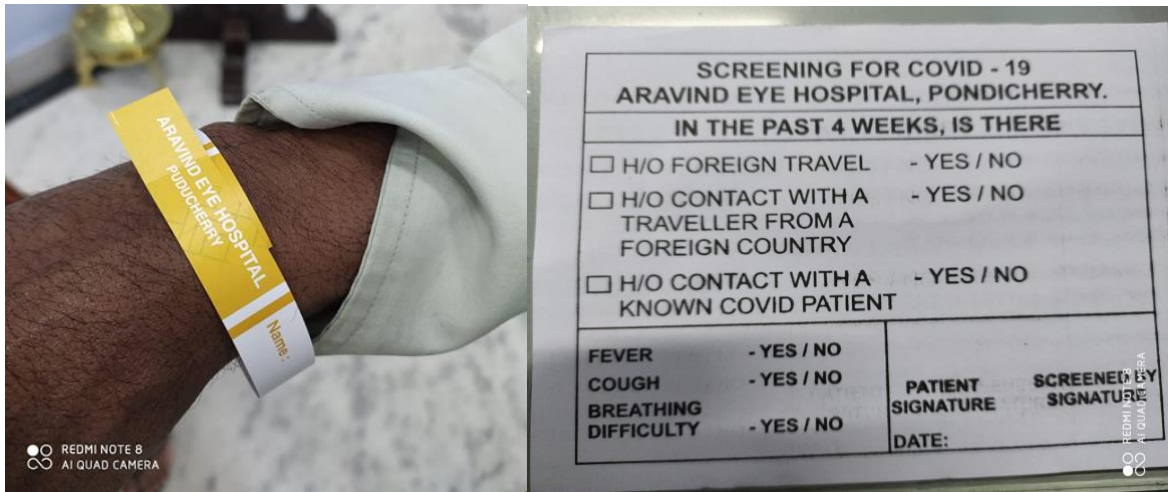


Figure 3: Patient wrist band for easy identification and a COVID-19 screening form

5. Registration and Screening Triage

The temporary registration desk is arranged at the entrance lobby after preliminary screening. Once registered, patients undergo a preliminary eye screening in which A new fully equipped triage area is setup in the entrance of the hospital to do the preliminary eye screening and then patients are escorted accordingly. The Triage area was created with all safety precautions for both staff and patients. The staff posted in the triage examination area are provided with all required personal protective equipment (PPE).



History taking and triaging

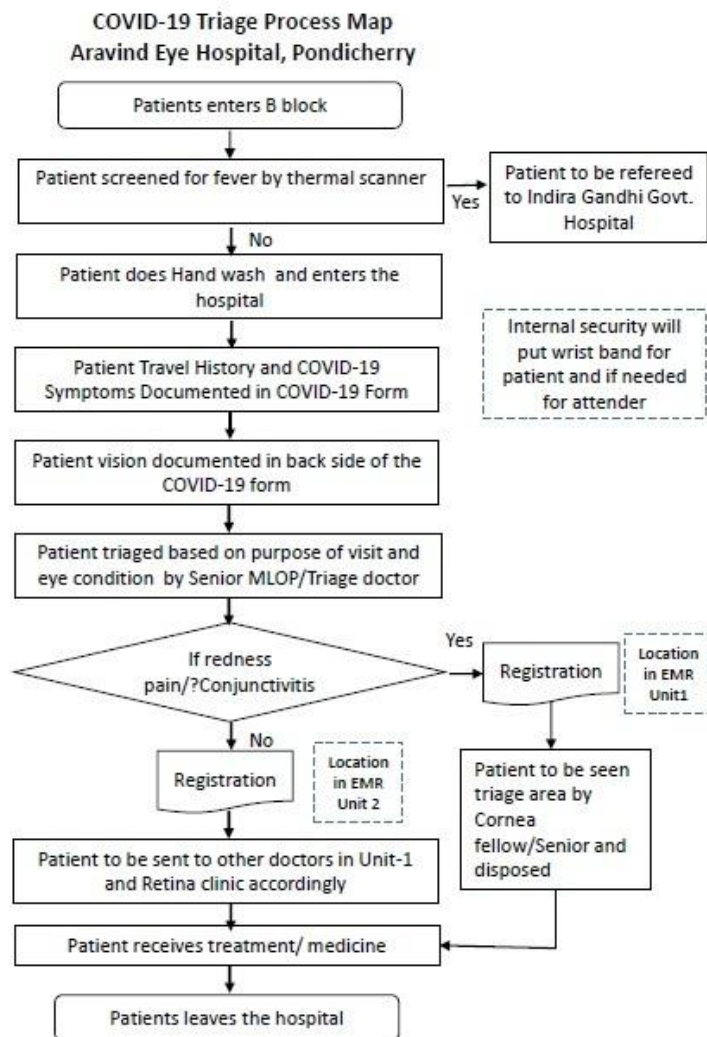


Ophthalmic examination in triage area

Figure 4: Temporary triage area near the entrance. Appropriate social distancing measures in place at each station.

6. Patient Flow Process Map

A Triage Process Map was developed for an efficient and expedited patient pathway. This process map is strictly followed in order to ensure appropriate care is delivered to all patients while still maintaining a safe environment.



7. Surgery and Admission

Only emergency clinical scenarios in which a delay in care would lead to immediate loss of vision are taken for surgical procedures. A strict admission protocol was set based on input from the COVID-19 Task force. Admitted patients are housed in single rooms as all common wards were closed. Patients are given strict admission guidelines to stay in the room. All surgical decisions and appropriate clinical staff are confirmed by the relevant Head of Department (HOD).

8. Patient Reviews:

Short term reviews and close follow-ups are discouraged and patients are given additional drops to manage their conditions with appropriate precautions. Only emergency reviews are given.

Personnel Planning and Staff Safety

1. Personnel Planning

The clinical workforce was divided into different teams and posted accordingly in order to limit the staff to exposure. Personnel planning and allocation are altered based on the patient load and efficient patient flow. Doctors and staff in the triage area are restricted to a maximum of 4 hours per day.

2. Staff Safety

Staff safety is taken as the highest priority and all possible avenues for disease transmission were identified and addressed through incremental innovations. PPE were given accordingly.

A. Patient Instructions: The patient's history and chief complaint are asked before sitting at the slit lamp. Patients are discouraged from speaking at the slit lamp.

B. Ophthalmic Equipment: All ophthalmic equipment that are unnecessary in appropriately identifying ophthalmic emergencies are not used due to an increased risk of contamination. Applanation tonometry (e.g. Perkins Tonometry) and non-contact Air Puff tonometry are prohibited. iCare tonometry is used and the tonometer pin is changed for every patient.

C. **Face Shield:** Our staff has expeditiously developed an effective face shield. These shields have subsequently been distributed to all staff in the high risk triage area. (<https://www.youtube.com/watch?v=6PHyM4sbZmQ>)

D. **Slit Lamp Protective Shield:** Due to the close proximity between patients and providers at the slit lamp, a durable barrier shield was installed on each slit lamp. These are cleaned at regular intervals and were developed in house by our biomedical engineering team.



Figure 7: Slit lamp protective shield

E. **PPE:** A full PPE set has been provided in the Triage area for all providers. Both the Doctor and MLOP in the triage area are fully covered with a disposable Cap, Mask, Face shield and OT gowns that are sterilized every day. No other staff shall enter the triage area.

- F. **3D-printed Mask** : To overcome the shortage of essential mask supplies, Aravind is testing a 3D-printed mask. Efficacy and safety are currently being tested.



Figure 8: 3D-printed face mask developed at Aravind

- G. **Staff Awareness:** A staff awareness training program was conducted for all staff to ensure personal hygiene and to minimize as much contact as possible. MLOP were advised to use cotton swabs when touching a patient. If any patient is contacted, then staff must change gloves immediately.

- H. **Paramedical Team Engagement:** The paramedical team were shifted from the hostel living quarters to the hospital inpatient building in order to adhere to social distancing guidelines. They have been engaged in different ways during this crisis to maintain motivation and promote well-being.

Cleaning and Disinfection

1. Equipment and Instruments

All ophthalmic equipments used including the slit lamps in the triage area are cleaned after every patient examination. A separate steriliser is kept in the triage area to sterile all ophthalmic instruments.

2. Object Surfaces and Floor Cleaning:

All object surfaces including tables, chairs, and floors are cleaned routinely.

(see *Appendix 2 Guideline for Eye Hospital Environmental Cleaning and Disinfection against COVID-19*)

3. **UV Sterilization:** Preliminary research suggests ultraviolet (UV) light may kill the COVID-19 virus. Therefore, UV lights from the hospital were immediately installed in the triage area. Every day the high risk triage area is sterilized after the OPD is completely cleaned and closed when no patients or staff are present. The UV lights are switched on from 6 pm – 9 pm daily.



Figure 9: Ultraviolet light in the triage area

4. Social Distancing

Chairs in all waiting areas were placed to adhere to social distancing guidelines. The excess chairs in each unit were removed and the middle chair in the triplet chairs were blocked with red tape. All plastic single chairs are placed on pre-marked floor spacing.

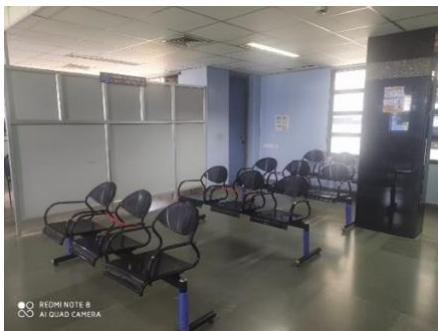


Figure 10: Chairs strategically placed for social distancing. Middle chairs are blocked with red tape.

5. Other Preventive Precautions

- a. All windows are opened and no air-conditioning system is used in order to prevent theoretical dissemination through the vent system.
- b. All doors are kept open to reduce patient and staff touch.
- c. All window curtains are removed.
- d. All unassigned areas are completely shut from patient and staff access.
- e. Inpatients are allocated to only 1 floor with individual rooms.

Patient Care Initiatives

1. e – Consultation

We still recognize that patients require ophthalmic care even if their symptoms do not constitute an ocular emergency. A robust e-consultation service via Google Meet is utilized for patients to have a video consultation from their homes during these shelter-in-place conditions. A detailed set of guidelines for Telemedicine was created and are specific for the various subspecialties as determined by the HODs. The patient's medical record and history are accessible and triaged appropriately. Ref Appendix

Link for Aravind Pondicherry

LINK1: meet.google.com/ahw-tuju-tcp

LINK 2: meet.google.com/iuv-zssv-nzu



Figure 11: E-consultation platform staffed by a healthcare provider

2. Calling Post-Op and High-Risk Patients

The list of surgical follow-ups and all other high-risk follow-up patients were recorded for every subspecialty and these patients were personally contacted to assess clinical status. Sight-threatening ocular emergency patients were called for their follow-up accordingly and taken for surgeries. Patients were advised to use the e-consultation platform for consultation.

3. Awareness about COVID-19

Awareness displays and public service announcements were displayed of COVID-19 to help patients understand the importance of social distancing hygiene precautions.

Education and Training

1. Lockdown Lecture Series

To engage the residents and fellows of Aravind as well as other ophthalmology residents, we started the lockdown lecture series to maintain a learning atmosphere. A robust lecture schedule with expert guest lecturers from around the globe are providing an interactive e-learning experience using the Zoom platform.

Stay Home! Stay Safe!
Lockdown Lecture Series

Aravind Eye Hospital, Pondicherry
6th to 11th April, 2020
Daily 4 – 5 PM

**NEVER
STOP
LEARNING**

- April 6th - Dr. Balamurugan, Puducherry
" Behcet's Disease "
- April 7th - Dr. Anand Parthasarathy, Chennai
" Recent Trends in Keratoconus Management "
- April 8th - Dr. Koshy Zachariah, Scotland
" Diabetic Retinopathy - Established and Emerging Targets "
- April 9th - Dr. Pradeep Ramulu, USA
" OCT - Structure and Progression Analysis in Glaucoma "
- April 10th - Dr. Sriram Gopal, Trichi
" Ocular Ultrasound - Principle and Applications "
- April 11th - Dr. Bertie Surgith Fernando, United Kingdom
" Thyroid Eye Disease "

[Click the Zoom Link Below to Join the Lecture](#)

ARAVIND EYE CARE SYSTEM

Figure 12: Lockdown Lecture Series Schedule

Appendix - 1. Guidelines for Eye Hospital Environmental Cleaning and Disinfection against COVID-19

Areas	Name of the things & place	Object Surface & (Wiping with Aurorub)		Object surface & Floor Mopping/wiping 5% Lysol		Air	Remarks
		Frequency		Frequency		Way of Disinfection	
		2 times/Day	3 times/ day	2 times /Day	3 times/ day	Open window & doors for ventilation	
Entry Point	Forehead thermometr		•				
	Hand rail				•		
	Mopping the steps				•		
	Attender waiting chairs				•		
Triage Area by doctors	Waiting chairs				•		
	Floor mopping				•		
	registration form desk				•		
	Wheel Chair				•		
Registration counter	Registration desk top				•	•	
	Handrail - Queing				•		
	Computers,printers, Key board				•		
Emergency Slit lamp area	Slit Lamp		•				
	Slit Lamp Top & base		•				
	Computers,printers, Key board				•		
	Drops table and tray				•		
	Wooden Stool				•		
Patient access area (OPD)	Slit Lamp		•				
	Slit Lamp Top & base		•				
	Computers,printers, Key board				•		
	Drops table and tray				•		
	Waiting chairs				•		
	Wooden Stool				•		
	Refarction table				•		
	Trial Set		•		•		
	Staff and Patient Chair				•		
Doctors chair Hand rest				•			
Housekeeping	Cooridor cleaning				•		
	Mopping the floor				•		
	Staircase handrails			•			
	Lift			•			
	Toilet Cleaning				•		
	Water coolers			•			

Appendix - 2 Prevention Guidelines for Medical & Paramedical Personnel at Different location

Sequence	Availability of Hand Sanitizer	Wearing of Face Mask	Availability of Gloves	Protective Goggles
Triaging Area	●	●	●	●
Reception (MRD)	●	●		
Outpatients examination area	●	●	●	●
Ward	●	●	●	●
Laboratory	●	●	●	
Pharmacy	●	●		
Optical Shop	●	●		
Refraction	●	●	●	
Adminstration	●			
Housekeeping	●	○	Thick rubber gloves	
<ul style="list-style-type: none"> ● - Shall be done , ○ Selective to be depending on exposure risk 				