

# Novel COVID-19 Pandemic Threat: Systematic Approaches To Preventing and Controlling Transmission in Eye Care System in Developing Countries

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## Abstract

**Background:** 2019-novel coronavirus is a pandemic and major threat being how to avoid catching an infection.

**Purpose:** To develop a working protocol to prevent and control community transmission of novel and life-threatening corona viral strain (COVID 19) in a tertiary eye care system of a tier-three city in developing countries such as India and underdeveloped countries.

**Methods:** Prevention and control measures concerning staff training, working environment, staff health, patients, and outreach activities implemented and being practiced in our tertiary care ophthalmology hospital are focussed.

**Results:** Proper and adequate training imparted by a qualified immunologist in addition to continual updates on disease outbreaking news and guidelines to the employees. Ways to limit transmission within and between patients and staff are discussed in conjunction with the disinfection of equipment and high- and low-risk areas in a more frequent manner. Outreach camps are stopped in the obedience of the authorized governing bodies.

**Conclusion:** This systemic approach developed based on our experience, and observational data will be useful in preventing transmission of this pandemic threat.

**Key words:** COVID-19, Ophthalmology, Pandemic

## INTRODUCTION

Ever since its origin from Wuhan, China to Italy, and Spain and adjacent countries is being a major pandemic challenge for the human race.<sup>[1]</sup> On January 31, 2020, the World Health Organization (WHO) declared corona viral infection as a global medical emergency with due concern on developing countries such as India and underdeveloped countries which lack tools to contain the disease spread.<sup>[2]</sup>

The first confirmed case of novel coronavirus (nCoV) has been reported from Kerala where a student studying in Wuhan University, China, has been tested positive with the deadly virus.<sup>[3]</sup>

The Ministry of Health and Family Welfare is closely monitoring the emerging situation on 2019-nCoV in India on a daily basis. Between January 30, 2020, and February 3, 2020, MoHFW confirmed three cases of 2019-nCoV in Kerala. These patients are in stable condition and are being closely monitored in hospital isolation. Government of India (GoI) has issued travel advisories requesting the public to refrain from travel to China and that anyone with a travel history since January 15, 2020, from China will be quarantined on return.<sup>[4]</sup>

In this present situation, another challenge lies in the production and supply of protective masks and hand

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sanitizer which are highly in demand and resources appear limited.

This article focuses on control and prevention measures in tertiary eye care hospitals against nCoV with limited availability of resources to create a risk-free environment reduce the burden of transmission of a viral pathogen in this threatening coronavirus pandemic.

## METHODS

This blueprint is developed using prevention and control measures implemented and being practiced at our tertiary eye care hospital concerning staff training, working environment, hospital workers, patients, and outreach activities. This is based on our clinical experience, observational data, and qualitative studies.

### Training and Education

A special training session was organized for all our employees with an immunologist to provide adequate training on control and preventive measures. The immunologist emphasized on nature of the virus, virulence factor, transmission, public health concern, need for proper handwashing techniques, cleaning and disinfection of instruments, and touch areas. Newsletter, out breaking news from the WHO, ICMR, The Centers for Disease Control and Prevention, guidelines from GoI and Tamil Nadu State Government are circulated to employees for up-gradation of information toward corona infection.

### Operating Environment

Our paramedical staff cleaned and disinfected slit-lamps and contact instruments with ethanol of over 80% concentration after every patient examination. Floors and walls are disinfected in more frequently than the routine practice. All the consultation cabins, nursing procedure rooms and patient waiting areas are fumigated with Aldasan 2000. 10 mL of the solution is mixed with 1 L of water and fumigated using fogger over a period of 20 min per room. We cleaned doors and handles and other high-risk touch areas with isopropyl alcohol (density 0.784) with a dilution of 1 mL in 1 L. Lift walls, stair railings are disinfected with isopropyl alcohol once in every 2 h.

Aerodesin 2000 is a mixture of 33 g of 1-Propanol; 18 g ethanol; and 0.5% acetone, which is used to clean equipment. Biomedical waste products should be disposed in a proper way respecting International Guideline.

### Staff Health

Every employee is supplied with a high-quality protective mask to cover nose and mouth (3M/N95, ISO standard) with specific employee numbers and endorsement in

the strap. We instructed them to wear at all times within hospital premises.

A special arrangement has been done to gas sterilize the masks every day. We use ethylene oxide 40 mg under 50°C for 4 h.

Hand sanitizer will be available on all floors at specified accessible spots and employees are encouraged to use them at least once every 15 min.

Employees are advised to inform their respective heads/managers immediately in case affected with symptoms of respiratory infection. Two employees, a driver and a pharmacist had minor upper respiratory changes were forced to undergo home isolation for 2 weeks.

The biometric attendance system was temporarily suspended instead, we are following conventional manual attendance register for administrative activities. All employees are advised to prevent contact with the nose and mouth after handing a patient.

All employees are encouraged to take adequate fluids, Vitamin C containing food and supplements and keep the immune system healthy.

### Patient Care

All patients both new and review, along with attenders at the entrance of the hospital, were captured for the history of fever, non-contact temperature measurement, respiratory symptoms, and travel history in the past 2 weeks both domestic and international. Six Indian patients had international travel history and 26 had domestic travel history inter-state along with 13 overseas patients from the Maldives, of which surgical procedures have been done.



Figure 1: Sanitizer for all patients and attender coming to the hospital



Figure 2: Mask for patients and preventive suit for staffs



Figure 3: Preventive suit for ophthalmologists



Figure 4: Slit lamp protection sheet

We supplied masks, protective aids to them and monitored them through an isolated special tracking system with due

precautions taken by the staff and medical team. Gloves and protective goggles were made mandatory in suspected cases [Figures 1-4].

### Outreach

Community-based eye camps remain a backbone to feed cases into tertiary eye care hospitals in India. In this pandemic global situation, there is a strong question raised about whether to continue the eye screening and treatment camps. We conducted a focussed group discussion with clinicians, scientists and camp organizers, we got the majority of votes in favor of continuing camps rather than to stop them but in a controlled manner and due caution in prevention till we received a guideline from government regulatory authority. We incorporated COVID 19 awareness and precautionary measures into all the pamphlets and banners in a view to educate the public. In addition to this, we used a survey questionnaire for all the camp participants and bystanders regarding fever, respiratory symptoms, travel history both domestic and international.

### CONCLUSION

In this nCoV pandemic scenario halting community transmission is the key factor to save people of the nation as no effective drugs or vaccines are yet available. This systemic approach developed based on our experience, and observational data will be useful in avoiding spread and overcoming this pandemic threat in tertiary eye care systems of developing countries such as India and underdeveloped countries.

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