# **Review Article**

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20204771

# Modified office practice in COVID-19 pandemic - an otorhinolaryngologist perspective

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**Received:** 05 August 2020 **Revised:** 27 September 2020 **Accepted:** 05 October 2020

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# **ABSTRACT**

COVID-19 spreads through contact, minute droplets and aerosol from infected person which may be symptomatic or asymptomatic. Nose and throat had very high load of severe acute respiratory syndrome (SARS-CoV-2) virus. Otorhinolaryngologists by virtue of their work which requires close examination of these part are at very high risk of infection. Many studies are available for precautions to be taken in patient management related to COVID-19 in wards and surgical intervention in operation theaters but very little information is available regarding precautions in working in outpatient clinic setting. Our article highlights some changes we made in ear, nose and throat (ENT) outpatient clinics after going through various guidelines to make it safe in current scenario. These changes may inspire others to move toward safer work practices in their outpatient area to provide ENT consultations. The main changes were categorized into infrastructural changes, identification of frugal but effective personal protective equipment (PPE) for ENT, training for use of different level of PPE as per risk, new modus operandi, and new infection prevention measures. These changes had taken into account safety guidelines by Ministry of health and family welfare (MOHFW) government of India and various international associations specific to specialty. The modification and its advantages were presented.

Keywords: COVID-19, ENT outpatient clinics, PPE, Infection, Healthcare workers, ENT examination

# **INTRODUCTION**

With the COVID-19 pandemic sweeping across India, some heartbreaking news kept on coming from health care sector. Thousands of health care workers (HCW) were getting infected and many of the doctors and nurses had sacrificed their lives in giving treatment during this challenging time of pandemic. Virus was detected from saliva, mucus, nasopharyngeal oropharyngeal tracheobronchial secretions, and feces. This could be transmitted very rapidly via droplets, direct contact, fomites, and aerosols and thus made this virus highly contagious.

Various precautions for preventing transmission were contact precaution, droplet precautions and aerosol precautions.<sup>3</sup>

Based on experience from China, Italy and Iran otolaryngologist were among the highest risk of being infected with SARS-CoV-2 this is probably due to high load of virus in mouth, nose and nasopharynx having in these area. Instrumentation of these area during examination might aerosolize the virus and close contact with patients during examination makes ear, nose and throat (ENT) one of the high risk branch.<sup>4,5</sup> Transmission was mainly produced by symptomatic patients, but it had been reported that even asymptomatic individuals and those in the incubation period (which could last longer than 14 days), could also be a source of occult transmission as virus had been detected in nose and saliva in such patients.6-8 Hence HCW should treat every patient as source of infection until proven otherwise. Because of that, majority of doctors had stopped their outpatient services and routine surgeries. Only oncological surgeries and

lifesaving procedures were being done with proper precautions.

ENT outpatient clinic area is the key area of practice and was a highly infectious zone owing to many aerosol generation procedures. It became a big challenge for us to provide treatment to our patients and simultaneously protect our self from exposure. In order to continued safer office practice we reviewed various guidelines released by Ministry of health and family welfare (MOHFW) from government of India, European association of otorhinolaryngologist and American academy of otolaryngology - head and neck surgery (AAO-HNS).<sup>9-11</sup>

We searched for the evidence based practices from journals using various data source like PubMed, MEDLINE and Google scholar. We came up with some evidence based modification in our functioning for clinics.

In this article we suggested modifications which we did in our setup to minimize the risk of infection to patients as well as continued providing healthcare. These guideline might help other ENT surgeons in their practices and this becomes more relevant when doctors are opening up their practice with step wise ease in lockdown restrictions.

The aim of the study was to provide broad overview of modified setup and functioning of ENT outpatient clinic to make it safe with reduced risk of transmission of infection during COVID-19 pandemic.

# **METHODOLOGY**

# Old scenario

In normal scenario when life was not such a roller coaster due to this 'COVID crisis' we used to run outpatient departments (OPD) in separate individual chambers. Our waiting room was always full of patients. OPD timings were stretched and lengthy with no limitations for the number of ENT appointments and procedures to be performed. ENT procedures were done in minor operation theatre (OT) in OPD. The use of surgical mask and gloves as protective gears were the routine precaution for us and surface cleaning was done once a day.

# New innovative strategies

We reviewed all the steps of our working and tried to analyze the risk involved in each steps. We focused on how we could reduce these risk as per new COVID-19 protocols simultaneously providing clinical consultation to the patient with good patient satisfaction. We worked on various ideas taking feedback from patients and finalized the protocols for ENT department which included infrastructural changes, identification of frugal but effective personal protective equipment (PPE) for ENT, training for use of different level of PPE as per risk, new modus operandi, and new infection prevention measures.

#### Infrastructural changes

We shifted our whole OPD in a large fully ventilated waiting lobby space. Waiting area had been shifted outside OPD in open space where patient could maintain social distancing norms. Patients for selected ENT minor procedures were allowed to enter inside OPD. There was a clear demarcation of infected and non-infected area. A transparent glass was used for examination of mouth and nose to mitigate the risk of direct droplet infection. The patient stands on opposite side of window and doctor on the other with nobody touching the glass. For rest of examination patient had to wear mask mandatorily. Signages in Hindi and English were put in place to alert patients for their responsibilities like wearing mask all time except when asked to do so, cough etiquettes and respiratory hygiene.

# Identification of frugal but effective PPE

As per various recommendations routine ENT consultation should be done with level 1 PPE and aerosol generating minor procedures with level 2 PPE. Such disposable PPE not only increased the discomfort to the doctor, also became a costly affair and were not freely available. So we designed our own level 1 and level 2 PPE which would suit best for our activities and conforms to the norms. Our level 1 PPE included head cap, N95 mask, goggles, gloves and cloth gown while level 2 further included face visor, reusable plastic gown as impervious body layer. Hood was used for any intervention in oral or nasal cavity like nasal packing for epistaxis, foreign body of nose and throat. Various combination of PPE sets to be used were defined for various activity as per the risk involved. Level 3 PPE included full hazmat suit and used only in main operating theater.

# Training for PPE and newer way of management

Various combination of PPE for different procedures were clearly defined. Protocols were made and regular training sessions were done for donning and doffing in proper order. We tried that all the patients were examined by a team having one doctor and one helper whose job is to help and check that doctor was adhering to safety protocols or not. Mock drills for various ENT procedures were done so that every person in OPD was clear about their role and proper level of PPE to be utilized in various activities. This activity helped us tremendously in adhering to the protocols.

### New modus operandi

#### **Teleconsultation**

Patients were attended physically as well as virtually by telemedicine and phone numbers of doctors had been shared. This helped us to maintain continuity of care and patient satisfaction while reducing the contamination risk by reducing the time and avoiding the direct contact between healthcare professionals and patients. Tele consultation also reduced frequent patient visit to hospital and was of great advantage in providing healthcare to patients residing in containment zones or patient living in remote area unable to reach hospital due to lockdown norms. Since we did not had facility to charge for online consultation it resulted into some revenue loss for the hospital but greatly increased the goodwill of the hospital in this crisis time.

## Physical examination

Days were divided between doctors to do OPD. All other doctors were available on phone for teleconsultation. Number of appointments were limited and timings of OPD were shortened to reduce the timing a doctor to wear PPE. All OPD patients were mandatorily screened at a central point in hospital for flu like symptoms and routed through fever clinic. Temperature, pulse and blood pressure were recorded.

Once patient came to OPD he was asked to wear mask compulsorily and stands at a distance of 2 meters from the doctor for all history taking. Seats were only provided to those patients who were unable to stand or of old age to prevent contact transmission by transfer of fomites.



Figure 1: ENT OPD setup with primary doctor, supervising helper and patient – OPD shifted to well ventilated and spacious waiting hall. Distance between doctor and patient is 2 meter. Patient is wearing mask during history taking. No sitting arrangement for patient.

Examination was done accordingly, general physical examination was done from distance only. All though out examination patient has to wear mask, neck examination was done routinely. Ear examination was done mainly with headlight. Use of otoscope was avoided unless it was necessary. Suction and microscopy had been stopped. Throat and nose examination were done using a transparent glass window. Patient was being explained the maneuvers to allow doctor to do complete nasal and oropharyngeal examination. With this we were able to examine nasal cavity, most of pharynx and oral cavity without direct exposure and without use of instruments. Nasal endoscopy was preferred over anterior rhinoscopy. Laryngoscopy and endoscopic nasal examination whenever required were done in main OT.

Minor OT procedures which could be completed in OPD were clubbed together and scheduled at specific time slot which helped us in reducing the usage of PPE, unnecessary waiting period for the patients and discomfort for doctor in wearing higher level of PPE for long time. Use of suction was avoided. Aerosol generating short duration minor OT procedures wherever necessary were scheduled and performed in major OT with laminar flow and highefficiency particulate air (HEPA) filter with level 2 PPE. Major life saving procedure were done with level 3 PPE with complete hazmat suit.

All the prescription to pharmacy and referrals to lab and other doctors were done by electronic paper less method.

# Infection prevention measures

Since working space was well demarcated in outer waiting lobby, more focus was given to clean and sanitize that area. Mopping of floor 3 times a day with 1% hypochlorite solution. Surface cleaning of frequently touched surface was scheduled 3 times a day with 1% hypochlorite solution. Window glass through which the patients were examined was cleaned after every high risk patient by spraying 1% hypochlorite solution and wiping by rubber wiper. All the reusable items like face visor, goggles, and reusable plastic gowns were properly immersed in 1% hypochlorite solution for 60 minutes before washing with detergent and dried. All the cloths items like caps and cloth gown were washed and autoclaved. The working station and table were mopped by 1% hypochlorite solution after every shift. During OPD, hand sanitization was practiced after seeing every patient. Biomedical waste generated were disposed in double bags as per protocol.



Figure 2: Temporary space created where patient stands in front of glass window for examination.



Figure 3: Examination of mouth and nose through glass window, patient does not touch the glass.

#### **DISCUSSION**

In this article we presented and discussed various aspect of modifications in our functioning to reduce the risk of infection in our OPD. Since this disease would remain with us for some time, the change was needed to adapt to the new normal in our functioning to prevent infection. We set protocol in our OPD after going through standard guidelines from various authorities and discussed and validated it by hospital infection control committee.<sup>9-11</sup> Feedback from patients were taken to make our process robust. The innovative methods for examination were well appreciated by patients. The main advantage for developing this innovative system was to lower the risk of transmission of infection to health care worker and cross infection in patients. This boosted the confidence among doctors to provide health care without fear and much discomfort of wearing PPE for long time.

Various sets of PPE were defined as per recommendation which suits the risk of activities. Using mix of disposable and reusable protective gears had brought cost effectiveness and rationale use of precious disposable PPE which were difficult to procure at that time. 6 Many of the PPE like plastic gowns and face shields were designed and produced locally by ours staff only as they were not readily available initially. This also avoided discomfort of wearing full impervious PPE for long time. Repeated training session were required to don and doff PPE in correct sequence which was very important to prevent transmission of infection. Presence of supervisor/helper, helped doctor to concentrate more on clinical procedure simultaneously maintain full adherence to protocol. World health organization (WHO) also recommended various administrative measures including proper training and monitoring of compliance with standard precaution and providing mechanism for improvement needed.<sup>12</sup>

Telemedicine had been recommended both in United Kingdom and United States guidelines, helped a lot and should be used as much as possible. Through this avenue patients with symptoms of cough and cold can be managed and monitored at home. This reduce frequent patient visits and reduce chances of infection both for patient and health care staff. <sup>13,14</sup> Easy accessibility of doctors on video calls provide good connectivity, continued patient care in patients from restricted area, high patient confidence and good patient satisfaction.

Physical examination of patients helped in proper treatment and triaging of patients which increased the patient compliance. Examination from glass prevent direct aerosol and droplet exposure to doctor. With the cooperation of patient one could see reasonably well without using any instruments. Barrier method had been used for reducing the risk of intubation in COVID patients. This system had increased patient satisfaction and safety for doctors as examination of nose, oral cavity and oropharynx was the most dangerous area to be examined. Even several guidelines suggested to examine these area only if it was very necessary.

Infrastructural changes had been helpful in running the outpatient services in well ventilated room. Waiting area shifted outside and patients were asked to maintain social distancing. Both of these things were advocated in almost all guidelines for reducing the cross infection both to patient and health care staff. Restricted entry of patients into our OPD made clear segregation of infected area from non-infected area. This made individual chambers as low risk area where doctor could rest without mask. The new working station area became the infected zone and more stringent and supervised infection prevention and control (IPC) measures were taken for its cleaning and sanitization. Since 24th March - 1st August we provided treatment to 2079 out patients which included 56 minor procedures like foreign bodies of ear nose, and fish bone. We admitted 49 patients and 6 major surgical procedure was done including tracheostomy and rigid esophagoscopy for foreign body. All elective surgeries had been stopped.

Indian patients' demands face to face consultation for their satisfaction. Physical examination and touch by physician is important for their treatment and reassurance. In this article the suggested broad guidelines for changes which were practical and which can be tailored to the needs for those who want to restart their OPD practice. Safety protocols are fast changing and with new available information we need to keep ourselves updated for any change in guidelines in near future.

## **CONCLUSION**

In this article we have presented various modifications in the working which we adopted in our practice to establish safe ENT practice in an office setting. These modifications were amalgamation of innovative measures and standard practice for COVID-19 to reduce the exposure and infection to healthcare workers especially from otorhinolaryngology. These modifications proved beneficial in our setup. The article gives broad guidelines which can be fine-tuned according to the need and infrastructure of different setups. Since the disease is expected to remain with us in the close foreseeable future this article may inspire other ENT specialists to make their practice safe, thus preventing infection in the ENT fraternity.

Funding: No funding sources Conflict of interest: None declared Ethical approval: Not required

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Cite this article as: Tripathi J, Kumari S, Rastogi S. Modified office practice in COVID-19 pandemic - an otorhinolaryngologist perspective. Int J Community Med Public Health 2020;7:4659-63.