

A New Normal Dental Practice with Pandemic (Coronavirus Diseases 2019)

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ABSTRACT

Coronavirus disease (COVID)-19 is a pandemic disease, declared by the WHO in March 2020. This disease was seriously affecting the lungs and immune system of the body. Hence, many studies were done to make a clear treatment modality for the same, but no proper treatment is described till date. We all have to learn living with this until a proper treatment modality comes out. Here, we are describing the new normal dental practice and precautionary measurements to deal with pandemic, severe acute respiratory syndrome coronavirus 2 (COVID-19).

Key words: COVID, Dental practice, Guidelines

INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a strain of CORONAVIRUS disease 2019 (COVID-19) was first experienced by Wuhan Province of mainland China by late 2019. There are two similar strains of coronavirus pathogens, SARS-CoV and Middle East respiratory syndrome coronavirus. Out of which SARS-CoV-2 is responsible for causing aggressive and occasionally fatal (<10%) respiratory tract disorder as it grows extensively in human airway epithelial cells than in standard tissue culture cells. Patients with SARS CoV-2 were hospitalized with provisional diagnosis of pneumonia of unknown etiology. Patients with symptoms of COVID-19 were epidemiologically linked to a seafood and wet animal wholesale market in Wuhan, China. Novel (New) coronavirus was named as COVID-19 by the WHO on February 11, 2020.^[1]

Patients infected with COVID-19 showed leukocytosis, abnormal respiratory findings, and increased levels of plasma pro-inflammatory cytokines. One patient showed 5 days of fever along with a cough, Rhonchi sounds of both lungs, and body temperature of 39.0°C. The sputum of the patient showed positive real-time polymerase chain reaction (RT-PCR) results that confirmed COVID-19 infection. The laboratory studies showed leukopenia with leukocyte counts of 2.91×10^9 cells/L of which 70.0% were neutrophils. In addition, a value of 16.16 mg/L of blood C-reactive protein was noted which is above the normal range (0–10 mg/L). High erythrocyte sedimentation rate and D-dimer were also observed.^[2]

The major effect of COVID-19 infection was extreme pneumonia, as well as the occurrence of ground-glass opacities and acute cardiac injury in the respiratory system. Patients with COVID-19 infection had significantly elevated blood levels of cytokines and chemokines

such as interleukin 1 (IL1-), IL1RA, IL7, IL8, IL9, IL10, simple FGF2, GCSE, GMCSE, interferon, IP10, MCP1, MIP1, MIP1, PDGFB, and others. High levels of pro-inflammatory cytokines such as IL2, IL7, IL10, GCSE, IP10, MCP1, MIP1, and TNF were found in some of the extreme cases admitted to the intensive care unit, which are thought to enhance disease severity.^[3]

Fever, dry cough, and exhaustion are the most common COVID-19 symptoms. Loss of taste or scent, aches and pains, fever, sore throat, nasal congestion, red eyes, diarrhea, or a skin rash are some of the less common symptoms that may affect some patients.^[4]

RT-PCR, Truenat test, CDC influenza SARS-CoV-2 multiplex assay, and computed tomography (CT) chest are the diagnostic tools for COVID-19. RT-PCR is a nuclear- derived method for detecting the presence of specific genetic material and gives high specificity for COVID 19. Truenat test is a chip-based battery operated RT-PCR kit and detect E gene in SARS-CoV-2. CDC influenza SARS-CoV-2 multiplex assay is the newest test used for both influenza (A and B) and SARS-CoV-2 at a same time. CT chest in patients with COVID-19 can show abnormalities like peripheral ground-glass appearance in lower lobe of lungs but cannot give accuracy for positive or negative.^[5]

Maintain at least a 1 m distance between yourself and others to reduce your risk of infection when they cough, sneeze, or speak. Make wearing a mask a normal part of being around other people. Wear a fabric mask, surgical masks if you are over

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60, having underlying medical conditions, feeling unwell, and/or looking after an ill family member. Medical masks are important personal protective equipment (PPE) for health workers who are working with patients who have COVID-19 infection, whether

it is suspected, possible, or confirmed. Respirator masks (such as the FFP2, FFP3, N95, and N99) should be worn in environments where procedures that generate aerosols are conducted, and they must be fitted to ensure that the correct size is worn.^[4]

COVID-19
CORONAVIRUS DISEASE
TASKFORCE

Health Advisory
A Reminder about Basic Precautions

In alignment with our Direction Statement, Qatargas is committed to protect and care for employees and their families and prioritizes their health and wellbeing above all else.

All the information about COVID-19 that is circulating in the media can sometimes feel overwhelming and confusing.

It's a good idea to occasionally remind yourself of the basic precautions we all need to abide by to help prevent the spread of the Coronavirus.

 <p>STAY AT HOME Only go outside for food, health reasons or work if you cannot work from home.</p>	 <p>SOCIAL DISTANCING To be extra safe, the Social Distancing minimum has been increased from 1.5 metres to 2.0 metres</p>
 <p>WASH YOUR HANDS Wash your hands frequently with soap and water for at least 20 seconds.</p>	 <p>RESPIRATORY HYGIENE Cough or sneeze into a tissue or a bent elbow. Dispose of the used tissue immediately.</p>
 <p>AVOID SOCIALIZING This includes family outside your immediate household, friends and work colleagues.</p>	 <p>AVOID TOUCHING YOUR FACE Contaminated hands can transfer the virus to your eyes, nose or mouth.</p>
 <p>STAY INFORMED Keep up to date with latest public health advice via trusted sources.</p>	 <p>SEEK MEDICAL CARE If you develop common COVID-19 symptoms such as a fever, persistent cough and fatigue</p>

REMEMBER!
You can spread the virus even if you don't have symptoms.
Don't take risks with your own health and the health of others.

Remdesivir is an intravenous nucleotide prodrug of an adenosine analog and approved in India. It speeds recovery by shutting down viral replication in the body. It has broad-spectrum activity against members of several virus families, including filoviruses and coronaviruses. *In vitro* studies, remdesivir shows its effective role against SARS-CoV-2.^[6,7] Glucocorticoids are corticosteroids. It calms acute inflammatory response to slow disease progression by preventing the body from pumping out inflammatory chemicals.^[8] Hydroxychloroquine is an antimalarial drug. It found to inhibit the activity of SARS-CoV in laboratory studies by decreasing the acidity in endosomes, which are compartments inside cells that some viruses coopt to enter cells and cause infection.^[9,10] Favipiravir, this broad-spectrum antiviral drug works by selectively inhibiting RNA polymerase, which is needed for the replication of SARS-CoV-2 inside the human body to cause severe disease.^[11,12] Tocilizumab is monoclonal antibody. It calms the aberrant hyperimmune response called cytokine storm

by acting against inflammatory chemicals to fight infection.^[13] Convalescent plasma is plasma therapy, approved for restricted use. It should be used for patients with moderate disease whose oxygen requirement is progressively increasing despite the use of steroids.^[14]

Modifications required for a dental clinic setup (Guidelines for Dental Professionals in COVID-19 pandemic situation. Issued on May 19, 2020).^[15,16]

The dental operatories should gear themselves for Readiness-Preparatory Phase (I), Implementation Phase (II) and Follow-up (III).

- Phase I: Preparatory phase for a dental clinic
- Doctor and health-care prophylaxis against COVID-19
- Testing for the COVID-19 before resuming work in the clinics: health care workers who are asymptomatic and do not fall under the category of being exposed to coronavirus infection are not required to undergo a test before resuming to work in the clinics.

HYDROXYCHLOROQUINE PROPHYLAXIS

- As per the advisory given by the MOHFW, all asymptomatic health care workers (HCW) involved in the care of suspected or confirmed cases of COVID-19 are advised to take HCQ prophylaxis after medical consultation.

DENTAL CLINIC

- Ventilation and air quality management in stand-alone dental clinics
 - I. Maintain air circulation with natural air through a frequent opening of windows and using an independent exhaust blower to extract the room air into the atmosphere
 - II. Avoid the use of a ceiling fan while performing procedure
 - III. Place a table fan behind the operator and let the airflow toward the patient. A strong exhaust fan to be so located to create a unidirectional flow of air away from the patient
 - IV. The window air condition system/split AC should be frequently serviced and filters cleaned
 - V. Use of indoor portable air cleaning system equipped with HEPA filter and UV light may be used.

CLINIC ENTRANCE, RECEPTION, AND WAITING

Display visual alerts at the entrance of the facility and in strategic areas (e.g., waiting areas or elevators) about respiratory hygiene, cough etiquette, social distancing, and disposal of contaminated items in trash cans.

- Install glass or plastic barrier at the reception desk, preferably with a two-way speaker system
- Ensure availability of sufficient three-layer masks and sanitizers and paper tissue at the registration desk, as well as nearby hand hygiene stations
- Distant waiting chairs, preferably a meter apart
- All areas to be free of all fomite such as magazines, toys, TV remotes, or similar articles
- Cashless/contactless payment methods are preferred
- A bin with lid should be available at triage where patients can discard used paper tissues.

CHANGING ROOM

- Changing room to be available for staff and all workers to wear surgical top and pyjama and clinic shoes
- Dedicated area for donning and doffing of PPE
- Dedicated area for sterilization
- A dedicated and trained person should be available to undertake transport, cleaning, drying, packing, sterilization, storage, and testing the quality of sterilization as per the standard guidelines and manufacturer's instructions
- Sufficient and dedicated space for storage of additional items of PPE and sterilization and disinfection instruments and chemicals must be ensured.

EQUIPMENT AND INSTRUMENTATION

- I. Fumigation systems
- II. High-volume extraoral suction
- III. The indoor air cleaning system
- IV. The dental chair water lines should be equipped with anti-retraction valves
- V. Used hand pieces with anti-retraction valves only
- VI. Chemicals required for disinfection
- VII. Appropriate PPE and ensure it is accessible to HCW
- VIII. Maintain a supply of all consumables related to PPE, sterilization, and disinfection.

TRAINING OF HCWS

- I. Train administrative personnel working in the reception of patients on hand hygiene, social distancing, use of facemask, for them, and incoming patients
- II. Educate all HCW on proper selection and use of PPE. They may require psychological support and morale boosting to maintain their level of confidence and strict adherence of guidelines
- III. Staff should rotate more frequently, preferably, should avoid long working hours, should ensure proper nutrition and sleep
- IV. All staffs and dentists must use surgical attire in the dental office, and all personal clothing should be avoided.

DISINFECTION OF DENTAL CLINIC

- COVID-19 virus can potentially survive in the environment for several hours/days. Premises and areas potentially contaminated with the virus to be cleaned before their reuse. Remove the majority of bioburden, and disinfect equipment and environmental surfaces
- Environment and surface disinfection
- Floors: 2 step cleaning procedure (detergent and freshly prepared 1% sodium hypochlorite with a contact time of 10 min. Mop the floor starting at the far corner of the room and work toward the door. Frequency: After any patient/major splash or 2 hourly
- Rest of the surfaces: Freshly prepared 1% sodium hypochlorite (contact time: 10 min). Damp dusting should be done in straight lines that overlap one another. Frequency: Before starting daily work, after every procedure, and after finishing daily work
- Chemiclave: It involves the use of an unsaturated chemical vapor system of alcohol and formaldehyde. The temperature and pressure utilized are 127–132°C at 20–40 psi for 30 min. This process is quick, the load comes out dry, the sterilization is verifiable, and corrosion sensitive instruments do not rust
- Delicate electronic equipment should be wiped with alcohol-based rub/spirit (60–90% alcohol) swab before each patient contact.

PHASE II IMPLEMENTATION PHASE

- Tele-consult tele-screening
 - I. Telephone screening is encouraged as the first point of contact between the patient and the dentist or reception office is encouraged
 - II. Current medical history and history particularly pertaining to symptoms of severe acute respiratory illness (fever and cough and/or shortness of breath) or all symptomatic ILI (fever, cough, sore throat, and runny nose) must be analyzed
 - III. Any positive responses to either of the questions should raise concern, and care should be postponed for 3 weeks except in dental emergencies
 - IV. Encourage all to download the Aarogya Setu App.

Dental history and remote TRIAGE

- I. Obtain m-Oral Health (mobile phone-based oral health) screening about dental history and try to manage problems with advice and analgesics and local measures
- II. Clinics can evolve a web-based form which can also include a consent form
- III. Comprehend dental treatment according to the urgency of the required treatment and the risk and benefit associated with each treatment
- IV. Only pre-appointed patients should be entertained in the clinic whose history, problems, and procedures are already identified to some extent through previous telephone and remote electronic or web-based systems.

Protocols of patient handling in the clinic area

- For appointments that do not result in aerosols, and need examination only wear a triple layer surgical mask and protective eyewear/face shield and gloves
- Wear N95 face masks, protective eyewear/face shields, and gloves along with coverall for high-risk and very high-risk procedures. To increase the shelf life of N95 masks, you may cover them with a surgical mask and discard only the surgical mask after use
- When examining patients with moderate risks the treating doctor will require all PPE as high risk except that the coveralls can be substituted with surgical gowns
- Practice non-aerosol-generating procedures
- Use of rubber dam is encouraged
- The 4-handed technique is beneficial for controlling the infection.

PATIENT DISCHARGE PROTOCOL

- I. The patient drape will be removed by the assistant, and the patient is asked to perform hand wash and guided out of the clinic toward reception and handed back his foot wears and belongings
- II. The procedures and prescription are recorded only after doffing the PPE

- III. Patient to perform hand hygiene and to be provided with review/follow-up instructions.

Patient turn around and disinfection protocol

- I. After the patient leaves the treatment room, the assistant will collect all hand instruments immediately, rinse them in running water to remove organic matter and as per standard sterilization protocol
- II. All 3 in 1 syringe, water outlets, hand piece water pipelines, etc., should be flushed with the disinfectant solution for 30–40 s
- III. Remove water containers and wash them thoroughly and disinfect with 1% sodium hypochlorite using clean cotton/gauge piece and then fill with fresh 0.01% sodium hypochlorite solution and attach back to the dental chair
- IV. Then, disinfect the dental chair along with all the auxiliary parts within 3 feet of distance using 1% sodium hypochlorite and clean and sterilized cotton/gauge piece using inner to outer surface approach and leave for drying. New cotton/gauge piece should be used for every surface. The areas include:
 - a. Patient sitting area and armrests
 - b. Dental chair extensions including water outlets, suction pipe, hand piece connector, 3 in 1 syringe, etc.
 - c. Dental light and handle
 - d. Hand washing area – slab and tap nozzle
 - e. Clinic walls around the dental chair and switchboards
 - f. Hand washing area – slab and tap nozzle.
- V. Hand pieces should be cleaned using a hand piece cleaning solution to remove debris, followed by packing in the autoclave pouches for autoclaving. Record to be maintained for the same.
- VII. Remove visible pollutants completely before disinfection. Mop the floor with 1% sodium hypochlorite solution through separate mops for the clinical area following unidirectional mopping technique from inner to outer area. Wash and disinfect the mop with clean water and 1% sodium hypochlorite and leave it for sun drying.

BIOMEDICAL WASTE MANAGEMENT

- Biomedical waste management area is to be equipped with required bins as per Government of India guidelines.

PROTOCOL FOR HEALTH CARE WORKERS ON REACHING HOME

- On the way back home, follow all precautions and on return, follow the removal of shoes, change of clothes, having a wash and disinfect your mobile wristwatch, etc.

PHASE III PATIENT FOLLOW-UP AND REVIEW

- The patient should be contacted telephonically 24 h and in a week time to know if he has developed any symptoms that should warn the dental staff to undertake appropriate actions. He should be advised to inform back to the dental clinic should there be any adverse symptoms

- Health care workers who are required to attend dental ailments in remote locations in the government sector should provide advice and analgesics and refer the patient to dental surgeon for further management.
- These are dynamic guidelines and will be updated from time to time, as required.

CONCLUSION

COVID is pandemic disease and in uncontrollable condition now-a-days, so we all have to learn, how to prevent society from COVID. As dental practitioners, we all are at high risk of COVID infection and cannot deny to provide services to society so, precautions have to be taken to prevent ourselves and society from its dangerous spread.

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