

## Review Article

### Covid-19 protocols in the department of prosthodontics

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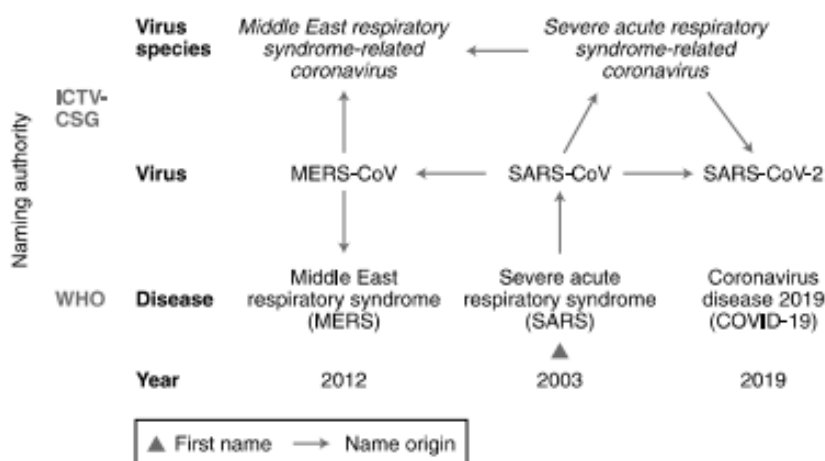
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#### INTRODUCTION

Since December 2019, an increasing number of cases of infected pneumonia have been identified in Wuhan, a large city of 11 million people in central China. The majority of the earliest cases included reported exposure to the Huanan Seafood Wholesale Market, but there was an exponential increase in the number of nonlinked cases beginning in late December.<sup>1</sup> The causative organism was found to be a virus, which was initially named 2019-novel coronavirus (2019-nCoV) on 12 January 2020 by World Health Organization (WHO). On 11 February 2020, WHO officially named the disease Coronavirus Disease 2019 (COVID 19) and Coronavirus Study Group

(CSG) of International Committee on Taxonomy of Viruses (ICTV) proposed to name the new coronavirus as SARS-CoV-2.<sup>2,3</sup> On March 11, 2020, the World Health Organization (WHO) officially declared the novel Coronavirus Disease 2019 (COVID 19) outbreak a global pandemic.<sup>4</sup> The novel coronavirus belongs to a family of single-stranded RNA viruses known as Coronaviridae.<sup>5</sup> These include severe acute respiratory syndrome coronavirus (SARS-CoV), first identified in 2002, and the Middle East respiratory syndrome coronavirus (MERS-CoV), first identified in 2012.<sup>6</sup> As of September 2021, this novel coronavirus have been globally infecting 230,326,827 people across the globe.

**Fig.1 Classification of SARS-CoV-2**



#### CHARACTERISTICS OF THE VIRUS<sup>2,5,7,8</sup>

The current classification of coronavirus recognizes 39 species in 27 subgenera, 5 genera, 2 subfamilies that belong to family Coronaviridae, suborder Cornidovirineae, order Nidovirales and realm Riboviria.

1) Coronaviruses are minute in size (65–125 nm in diameter) and contain a single-stranded RNA as a nucleic material, size ranging from 26 to 32 kbs in length.

2)The subgroups of coronaviruses family are alpha ( $\alpha$ ), beta ( $\beta$ ), gamma ( $\gamma$ ) and delta ( $\delta$ ) coronavirus.

3)The SARS-CoV-2 is a  $\beta$ -coronavirus, which is enveloped, non-segmented, positive-sense RNA virus.  $\alpha$ - and  $\beta$ -coronaviruses are able to infect mammals, while  $\gamma$ - and  $\delta$ -coronaviruses tend to infect birds.

4)It was found that the genome sequence of SARS-CoV-2 is 96.2% identical to a bat CoV RaTG13, whereas it shares 79.5% identity to SARS-CoV. It is clear now that SARS-CoV-2 could use angiotensin-

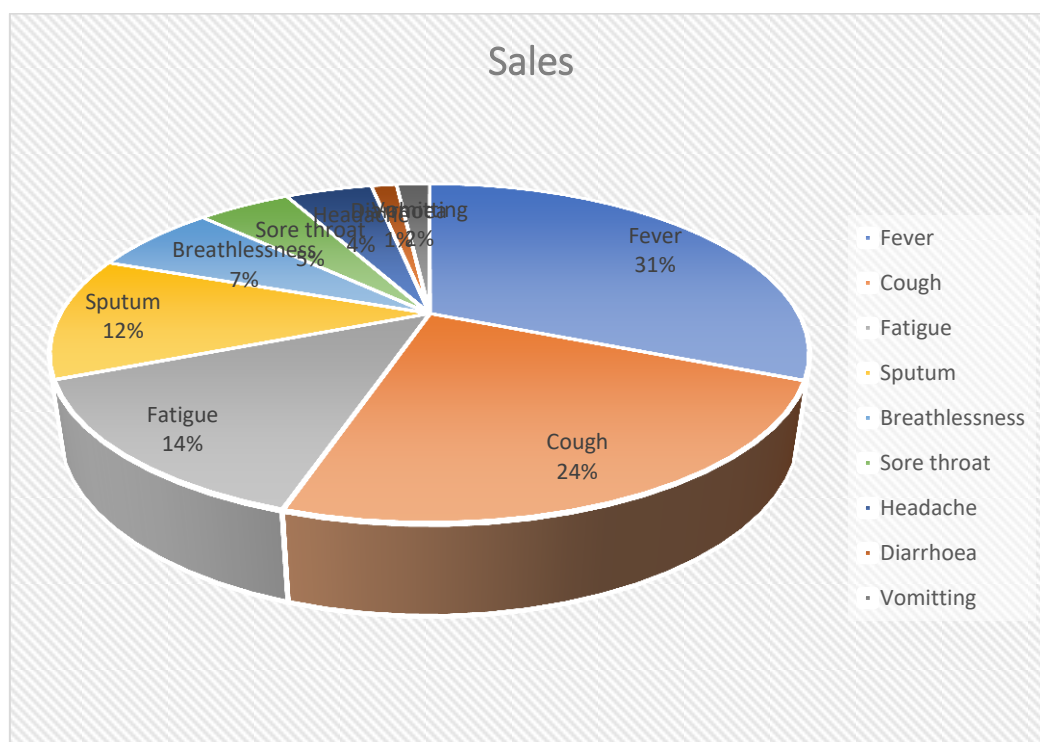
converting enzyme 2 (ACE2), the same receptor as SARS-CoV to infect humans.

5)The coronaviral genome encodes four major structural proteins: the spike (S) protein, nucleocapsid (N) protein, membrane (M) protein, and the envelope (E) protein, all of which are required to produce a structurally complete viral particle.

6)During the replication cycle, E is abundantly expressed inside the infected cell, but only a small portion is incorporated into the virion envelope.

### CLINICAL FEATURES OF COVID-19<sup>2,5,9</sup>

The common clinical manifestations included fever (88.7%), cough (67.8%), fatigue (38.1%), sputum production (33.4%), shortness of breath (18.6%), sore throat (13.9%), and headache (13.6%). In addition, a part of patients manifested gastrointestinal symptoms, with diarrhoea (3.8%) and vomiting (5.0%).



As mentioned by government Ministry of Health & Family Welfare Directorate General of Health Services WHEN TO SUSPECT the case under Guidelines on Clinical Management of COVID-19 are under given:

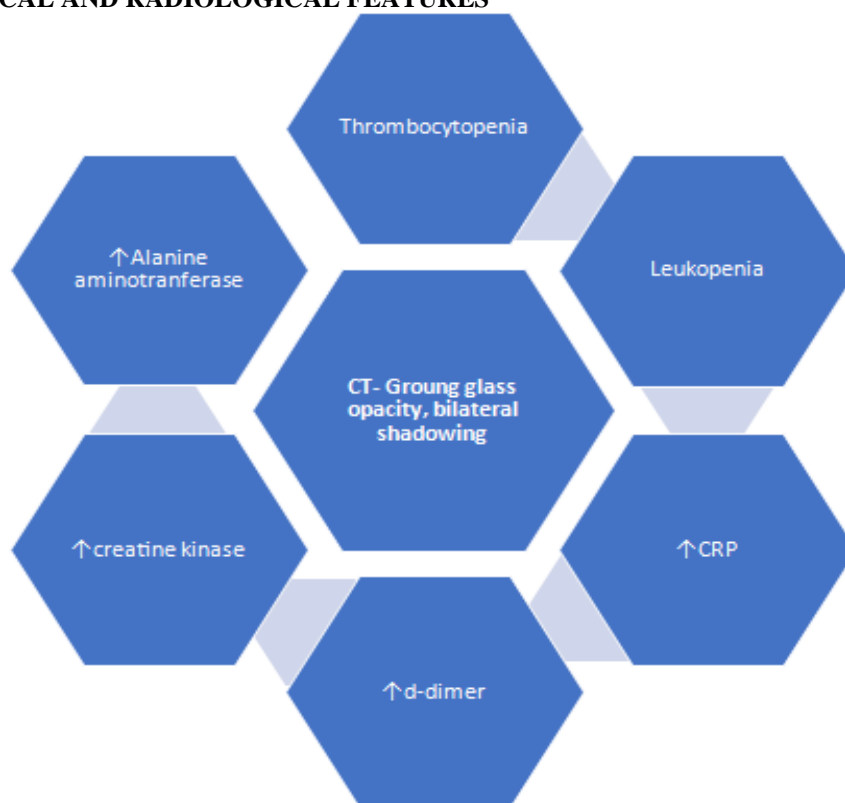
1. All symptomatic individuals who have undertaken international travel in the last 14 days or
2. All symptomatic contacts of laboratory confirmed cases or
3. All symptomatic healthcare personnel (HCP) or

4. All hospitalized patients with severe acute respiratory illness (SARI) (fever AND cough and/or shortness of breath) or

5. Asymptomatic direct and high-risk contacts of a confirmed case (should be tested once between day 5 and day 14 after contact

6. Symptomatic refers to fever/cough/shortness of breath. Direct and high-risk contacts include those who live in the same household with a confirmed case and HCP who examined a confirmed case.

## **PATHOLOGICAL AND RADIOLOGICAL FEATURES<sup>2,9</sup>**



In laboratory examination results, most patients had lymphocytopenia in 83.2%, thrombocytopenia in 36.2%, leukopenia in 17.9%. The patients had elevated levels of C-reactive protein, alanine aminotransferase, aspartate aminotransferase, creatine kinase, and D-dimer. Patients with severe disease had more prominent laboratory abnormalities than those with non-severe disease. Most common patterns on chest CT were ground glass opacity in 56.4% of the patients and bilateral patchy shadowing in 51.8% of the patients. No radiographic changes were seen in 17.9% of the patients with non-severe disease and 2.9% of patients with severe disease.

### **COVID-19 TESTING (RT-PCR versus Rapid Antigen tests)<sup>5,10</sup>**

WHO has published guidance on 24 April 2020 adjusting public health and social measures for the next phase of the COVID-19 response. Some governments have suggested that the detection of antibodies to the SARS-CoV-2, the virus that causes COVID-19, could serve as the basis for an “immunity passport” or “risk-free certificate” that would enable individuals to travel or to return to work assuming that they are protected against re-infection. There is currently no evidence that people who have recovered from COVID-19 and have antibodies are protected from a second infection.

### **CLINICAL SPECIMENS<sup>10</sup>**

Respiratory samples, mainly nasopharyngeal and throat swabs, are collected and mixed in 2 mL of viral

transport media (VTM), consisting of Hanks’ balanced salt, 0.4% foetal bovine serum, HEPES, antibiotic and antifungal agents. Samples stored and transported at 2–8 °C to the Microbiology laboratory for processing.

### **SARS-COV-2 RNA DETECTION USING REAL-TIME RT-PCR<sup>10</sup>**

Allplex™ 2019-nCoV Assay (Seegene, Korea), which targets envelope gene (E) of Sarbecovirus, and RNA-dependent RNA polymerase (RdRp) and nucleocapsid (N) genes of SARS-CoV-2, was used for SARS-CoV-2 RNA detection according to the manufacturer’s instructions.

### **RAPID SARS-COV-2 ANTIGEN DETECTION ASSAY<sup>10,11</sup>**

Standard Q COVID-19 Ag test (SD Biosensor®, Chuncheonbuk-do, Republic of Korea) is a rapid chromatographic immunoassay for the detection of SARS-CoV-2 nucleocapsid (N) antigen in respiratory specimens. This rapid antigen test device has two pre-coated lines on the result window: control (C) and test (T) lines. The control (C) region is coated with mouse monoclonal anti-chicken Ig-γ antibody; the test (T) region is coated with mouse monoclonal anti-SARS-CoV-2 antibody against SARS-CoV-2 N antigen.

Detectors for SARS-CoV-2 N antigen presented in the specimen are mouse monoclonal anti-SARS-CoV-2 antibody conjugated with colour particles. The antigen–antibody colour particle complex migrates via

capillary force and is captured by the mouse monoclonal anti-SARS-CoV-2 antibody coated on the test (T) region. The coloured test (T) line's intensity depends on the amount of SARS-CoV-2 N antigen presented in the sample. For positive COVID-19 antigen result, two coloured lines of control (C) and test (T) lines are seen.

In a research by Chutikarn Chaimayo et al<sup>10</sup>, the rapid assay for SARS-CoV-2 antigen detection (Standard™

Q COVID-19 Ag kit) showed comparable sensitivity (98.33%; 95% CI, 91.06–99.96%) and specificity (98.73%; 95% CI, 97.06–99.59%) with real-time RT-PCR assay. Among asymptomatic and symptomatic patients, the specificity of the antigen test was 99.5% and 98.7%, respectively, and the sensitivity was 60.5% and 72.1%, respectively.<sup>11</sup>

**Table 1. Sensitivity and specificity of the Standard Q COVID-19 Ag kit**

	RT-PCR assay (Allplex™ 2019-nCoV Assay)		
	Positive	#1 Negative	Total
<i>Rapid SARS-CoV-2 antigen assay (Standard Q COVID-19 Ag kit)</i>			
Positive	59	5	64
Negative	1	389	390
Total	60	394	454
Sensitivity	98.33% (59/60; 95%CI, 91.06–99.96%)		
Specificity	98.73% (389/394; 95%CI, 97.06–99.59%)		

#1 Negative RT-PCR is defined as having Ct-values of E, RdRp, and N larger than 40

### TRANSMISSION ROUTES<sup>5,7,8</sup>

Human-to-human transmission of SARS-CoV-2 occurs mainly between family members, including relatives and friends who intimately contacted with patients or incubation carriers. The common transmission routes of novel coronavirus include direct transmission (cough, sneeze and droplet inhalation transmission) and contact transmission (contact with oral, nasal and eye mucous membranes). Studies have proved that the virus is airborne through aerosols formed during medical procedures.

#### 1. Transmission through saliva

Since SARS-CoV-2 can be passed directly from person to person by respiratory droplets, emerging evidence suggested that it may also be transmitted through contact and fomites. In addition, the asymptomatic incubation period for individuals infected with the virus has been reported to be approximately 1-14 days could spread the virus. To et al. reported that live viruses were present in the saliva of infected individuals by viral culture method. The SARS-CoV-2 enters the cell in the same path as the previous SARS virus, that is, through the ACE2 cell receptor.

#### 2. Transmission through blood and body fluids

Dental patients and professionals can be exposed to pathogenic micro-organisms, including viruses and bacteria that infect the oral cavity and respiratory tract. Dental care settings invariably carry the risk of infection due to its specificity of its procedures, which involves face-to-face communication with patients, and frequent exposure to saliva, blood, and other body fluids, and the handling of sharp instruments. The pathogenic organisms can be transmitted in dental

settings through inhalation of airborne microorganisms that can remain suspended in the air for long periods, direct contact with blood, oral fluids, or other patient materials, contact of conjunctival, nasal, or oral mucosa with droplets and aerosols containing microorganisms generated from an infected individual and propelled a short distance by coughing and talking without a mask, and indirect contact with contaminated instruments and/or environmental surfaces.

#### 3. Transmission of airborne spread

Dental literatures show that many dental procedures produce aerosols and droplets that are contaminated with virus.<sup>8</sup> Droplet and aerosol transmission are the most important concerns in dental clinics and hospitals, because it is hard to avoid the generation of large amounts of aerosol and droplet mixed with patient's saliva and even blood during the dental practice. In addition to infected patient's cough and breathing, dental devices such as high-speed gas to drive the turbine to rotate at high speed and work with running water. When dental devices work in the patient's oral cavity, a large amount of aerosol and droplets mixed with patient's saliva or even blood will be generated. Particles are small enough to stay airborne for an extended period before they settle on environmental surfaces or enter the respiratory tract.

#### 4. Transmission by contact spread

A dental professional's frequent direct or indirect contact with human fluids, patient materials, and contaminated dental instruments or environmental surfaces makes a possible route to the spread of viruses. In addition, dental professionals and other patients have likely contact of conjunctival, nasal, or

oral mucosa with droplets and aerosols containing microorganisms generated from an infected individual and propelled a short distance by coughing and talking without a mask.

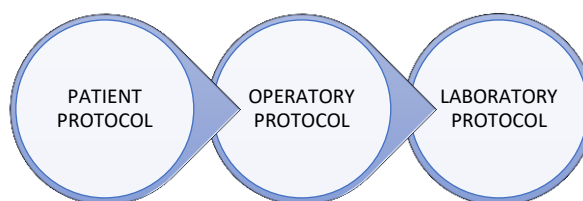
**5. Transmission through spread of contaminated surfaces**

Human coronaviruses such as SARS-CoV, Middle East Respiratory Syndrome coronavirus (MERS), or

endemic human coronavirus (HCoV) can persist on surfaces like metal, glass, or plastic for a couple of days. Therefore, contaminated surfaces that are frequently contacted in healthcare settings are a potential source of coronavirus transmission. Thus, keeping a clean and dry environment in the dental office would help decrease the persistence of SARS-CoV-2.

Symptomatic transmission	Pre-symptomatic transmission	Asymptomatic transmission
Symptomatic transmission refers to transmission from a person while they are experiencing symptoms. Data from published epidemiology and virologic studies provide evidence that COVID -19 is primarily transmitted from symptomatic people to others who are in close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated objects and surfaces.	The incubation period for COVID-19, which is the time between exposure to the virus (becoming infected) and symptom onset, is on average 5-6 days, however can be up to 14 days. During this period, also known as the “pre- symptomatic” period, some infected persons can be contagious. Therefore, transmission from a pre - symptomatic case can occur before symptom onset.	An asymptomatic laboratory-confirmed case is a person infected with COVID-19 who does not develop symptoms. Asymptomatic transmission refers to transmission of the virus from a person, who does not develop symptoms.

**MODE OF PREVENTION<sup>5,12</sup>**



**I. PATIENT CARE PROTOCOL**

1. Strict written informed consent, screening and undertaking should be procured from all patients regarding COVID and other diseases in general. (Many standard consent forms are available online). Meticulous screening of even asymptomatic patients is important.
2. Keep in mind that the patient may not be giving a true picture of his/her history or he/she may be unaware of his/her condition. All patients must be considered a potential asymptomatic COVID 19 carrier.
3. Consider recently recovered patients also as a potential virus carrier for at least 30 days after the recovery confirmation by a laboratory test.
4. Maintenance of proper record, address, contact details are of paramount importance.
5. The clinic assistants should also be given proper protective equipment and should be trained in eliciting patient history as well as basic check-up preferably using a non-contact thermal scanner.
6. When the patient arrives at the Dental set up, he/she should be directed to the hand wash station

7. At the reception patient’s temperature must be recorded by using non-contact thermometer. The minimum distance of “6 feet” is to be maintained between the reception and the patient. The reception staff must consist of a Dentist along with the receptionist. The Prosthodontist must ensure that he/she performs a telephonic conversation with respect to all the patients prior to the patient reporting to the dental clinic which includes a brief medical history. He/she must ensure that as far as possible, all dental visits of the patient are strictly by appointment only. If dental prosthetic treatment can be delayed, provide patients with detailed home care instructions and any appropriate pharmacologic intervention. Ibuprofen should be avoided

whenever pharmacologic management of pain is required. If the patient is afebrile (temperature < 100.4°F) and otherwise without symptoms consistent with COVID-19, then emergency dental care may be provided using appropriate engineering controls, work practices, and infection control practices. The Prosthodontist should defer all elective treatment procedures like Crown, Bridge, Veneers, Inlays, Onlays, removable and complete dentures, Implant prosthodontics etc. and handle only emergency and basic procedures.

8. After making the patient scrub their hands using hand sanitizer or soap, ask them to keep their hands in their pockets or without touching anywhere till they proceed to sit on the dental chair.
9. The patient must be made to do a pre-procedural mouth rinse using Betadine or 1% Hydrogen peroxide/ 2% w/v Povidone-Iodine mouth wash for at least 15 seconds, just before treatment is initiated and also after the procedure is over.
10. Patients should also be covered with a full-length drape with their hands tucked in and a head cap and goggles and the immediate extra oral area may be wiped with Betadine solution or a disposable disinfectant face wipe before commencing the procedure.
11. Rubber dams must be made mandatory, along with adequate training of its usage will form the best barrier to prevent aerosol formation.
12. After the patient gets off the dental chair, the assistant must ensure that all surfaces with which the patient or aerosolized particles may have come in contact are sprayed with surface disinfectant and wiped clean. The PPE is to be disposed of as per laid down protocols on completion of the treatment of each and every patient.
13. Encourage minimal follow-up visits.
14. Encourage and educate the patients to pay the fees by Digital routes.
15. Do not hesitate to report the patient's condition to health authorities, should you find anything untoward during his/her visit.
16. High vacuum extra oral suction used in conjunction with high-speed saliva ejectors, should be mandatory to minimize aerosol dissemination.
17. Intraoral imaging should be restricted and extra oral radiographs should be utilized to reduce the excessive salivation and gag reflex associated with intraoral radiographs.
18. Patients using Removable Prosthesis should be given additional hygiene recommendations and recommendations for disinfection of the prosthesis, especially if a patient using prosthesis develops COVID infection the use of the prosthesis must be discontinued as the prosthesis can be source of spread.

## II. CLINICAL AND OPERATORY PROTOCOL

1. All the clinical and auxiliary staff should be provided proper PPE and should be trained in sterilization and infection-control protocols.
2. With respect to the dental personnel a specified work flow is required to be maintained while in the sterile zone. For efficient work flow, a separate screening, donning and doffing room should be designated. Donning & doffing should be regularly practiced as improper donning/doffing will lead to cross-contamination.
3. It is preferable to work with minimal staff or use a rotation of your existing staff.
4. A hand sanitizer or facility to scrub hands with soap and water along with instructions should be made available outside the clinic just before the patient is to enter the reception or waiting area, it is also advisable to have the patient cover his face with a mask before he/ she talks to the receptionist. The patient may also be instructed to strictly keep the foot wear outside and may be requested to wear a disposable foot cover and gown as soon as he/ she enter the clinic. (As already mentioned in the patient care)
5. COVID related disinfection and personal care protocol might be displayed using posters or audio video means in your clinic for the patients benefit.
6. Strictly practice according to appointments and see that there no patients crowding in your waiting area, and that they are seated following the social distancing pattern. The seating arrangement may be re-arranged so as to have a distance of at least six feet between each chairs. The backrest of every alternate chair may be posted a sticker saying OCCUPIED.
7. Fumigation with a quaternary ammonium compound must be performed every day, to ensure that all low contact areas are also disinfected in the waiting area as well as the operatory.
8. Minimize use of Air Conditioners and restrict its use while aerosol generating procedures are underway. Regular cleaning of its filters should be done. During fumigation/fogging let the AC on so as to let the fumigant reach its filters. It is preferable to revamp the HVAC system in the clinic and to adhere to the newer developed guidelines on the same to help address COVID concerns especially so to suck out contaminate air and push in fresh air so that the airborne particles may be shunted out in a clinical environment (fig below) The clinic should also be equipped with a superior quality high vacuum suction and to prevent splatter preferably and Extraoral suction system (Fig)
9. Hand pieces, burs, diagnostic instruments, etc., have to be stringently autoclaved, in sealed pouches. Overlooked practices such as scrubbing the hand piece with a disinfectant and working on

multiple patients at a time must be avoided under all circumstances. Used burs should be soaked in a proper disinfectant solution after scrubbing prior to autoclaving. Whenever possible dispose the burs after single use. Scrubbing the diagnostic instruments and hand instruments in a concentrated soap solution for 20 seconds prior to autoclaving may be a good practice as soap is one of the best antiviral means. The use of saliva ejectors with low or high volume can reduce the production of droplets and aerosol.

10. IMPRESSIONS should be thoroughly disinfected before pouring or sending to the laboratory as a standard protocol (Septodent spray, Cidex-Glutaraldehyde). Alginate -0.5% Sodium Hypochlorite or iodophors Zinc-oxide eugenol impression paste-2% Glutaraldehyde or Chlorine compounds Rubber-base impression materials - 2% Glutaraldehyde or Cidex.
11. It is preferable to move to digital dentistry with the use of Intra oral scanners for digital impressions, Digital extra oral radiography etc. so that there is minimal transfer and use of materials in and out of the mouth.
12. The patients may be educated at the reception regarding the PPE kits that are being used for the patient's safety as well as that of the operator and of the minimal additional charges that may result from its use.

### III. LABORATORY CARE PROTOCOL

1. The laboratory technician should at best discontinue all services that require direct patient contact until this pandemic has passed.
2. When working in the lab it should be strictly with minimal staff required for the work.
3. Laboratory personnel should be adorned with full PPE attire as is worn by the clinical staff.
4. There is evidence to suggest that there is a risk of transmission of COVID-19 from dental impressions, casts or dental prosthesis or appliances. Also, the virus can stay active on various surfaces in the lab including plastic and cardboard for several hours to steel for a few days. So, it is of paramount importance that these should be thoroughly disinfected prior to handling both at the clinic or operator, on acceptance of the work at the lab and prior to delivery.
5. Labs need to use disinfectants containing virucidal agents that are effective against enveloped viruses, which also apply to coronaviruses including COVID-19. The active ingredients for these agents can include Hydrogen peroxide; Sodium hypochlorite; Isopropyl alcohol among others. The use of soap should be thought of as an adjunct along with the other agents.
6. In case of spray, sprinkle the product directly on the surface you are disinfecting. In case of wipe soaked with disinfectant, it is important to wipe thoroughly the surface to be disinfected. In both cases it is essential ensuring that the whole surface to be disinfected has been covered. It is better to let the disinfectant evaporate as opposed to removing it with a wet cloth unless otherwise indicated. Ensure disinfection of models, casts, trays, articulators with at least 70 % isopropyl alcohol-based solutions.
7. For disinfection of tables/ platforms, floors and sinks preferably use a sodium hypochlorite-based solution.
8. All lab personnel without exception should observe the proper infection control protocols, including wearing Personal Protective Equipment that includes mask, gloves, protective eyewear, and protective garment.
9. The protective garment, mask and eyewear that is worn in the lab needs to be left in the lab itself and not taken out of the lab. This has to be cleaned/washed, disinfected each day and stored in lab itself and those that are to be discarded be done through proper channel.
10. Hand sanitizers are to be placed at vantage points within the lab and to be used routinely when not wearing gloves. Handle all lab equipment as well as clinic transfers including casts or impressions strictly using gloves.
11. Hands need to be washed thoroughly with soap and water after every case and avoid touching the face while in lab. Washing hands is critical to practicing standard precautions.
12. All technicians or lab personnel need to practice social distancing in their place of work or seating as much as possible and maintain a distance of at least 6 feet from each other.
13. If the delivery/ pick up person who picks up the impression from the dentist is part of lab, then he needs to follow strict hygiene protocols. He should always be wearing mask and gloves when traveling. The delivery person should not enter the lab if possible and should hand over the impression or model to the receiver at the entrance. All packets containing the models etc. need to be disposed off with utmost care and then the material subjected to disinfection procedures.
14. Strictly instruct all staff to stay home if they develop any of the following symptoms- cough, fever, cold symptoms including nasal congestion and runny nose, breathing distress and all the staff should be checked periodically for symptoms of COVID-19.
15. While using the trimmers and buff other than using the PPE see that the flints or fragments are sucked out using a high vacuum suction.
16. Encourage the clinics to move to digital platform and use of intra oral scanners instead of regular impressions whenever possible.
17. All dental prosthesis coming in and going out of the lab should be thoroughly disinfected

18. Ensure regular fumigation of the dental laboratory.

### **ADDITIONAL PROSTHODONTIC CONSIDERATIONS**

(Following the protocols as mentioned by IDA and CDC)

1. Post a sign at the entrance to the dental practice which instructs patients having symptoms of a respiratory infection (e.g., cough, sore throat, fever, sneezing, or shortness of breath) to please reschedule their dental appointment and call their physician. The same thing applies if they have had any of these symptoms in the last 48 hours.
2. Take a detailed travel and health history when confirming and scheduling patients. Do not provide non-emergent or cosmetic treatment to the above patients and report them to the health department immediately. Screen patients for travel and signs and symptoms of infection when they update their medical history.
3. Take temperature readings as part of the routine assessment of patients before performing dental procedures.
4. Take the contact details and address of all patients treated and detailed case history.
5. Install physical barriers (e.g., glass or plastic windows) near the working area.
6. Make sure the personal protective equipment being used is appropriate for the procedures being performed and follow the guidelines mentioned above.
7. Use high-speed evacuation for dental procedures producing an aerosol. Autoclave hand-pieces after each patient. Have patients rinse with a 1% hydrogen peroxide solution before each appointment. Clean and disinfect public areas frequently, including door handles, chairs and bathrooms. Patients who cough, sneeze or undergo dental treatment including the use of high-speed handpiece or ultrasonic instruments make their saliva, secretions and blood aerosolize to the environment.
8. Make the impression and disinfect it with benzalkonium chloride-based disinfectant. Since conventional sterilization methods, such as dry heat sterilization, cannot be used for eliminating potential pathogen microorganisms that are present on the dental impression surface, liquid chemical immersion disinfection is currently the most widely accepted method. Current commercially available immersion disinfection solutions contain sodium hypochlorite (0.525%), quaternary ammonium compounds, glutaraldehyde, phenols and iodophors in various concentrations and immersion times. Apart from immersion disinfection, alternative methods have been suggested, such as spray disinfection, steam autoclave, ozone, microwave, ultraviolet light, etc. The 10-minute disinfection time for the

0.525% sodium hypo-chlorite immersion disinfection was selected according to ADA specifications. 31 The 2-minute disinfection time for the 0.3% benzalkonium chloride immersion disinfection was selected according to the recommendations by the manufacturer. The 30-minute disinfection time for both immersion disinfectants was selected for the case of extended immersion time due to factors such as impressions being forgotten immersed, which happens in daily practice. The 5-minute ozone disinfection time was selected based on previous work<sup>32</sup> which showed efficient disinfection results. The 15-minute ozone disinfection time was incorporated in case further microbiology experiments (regarding different bacteria or viruses) show that more time is needed for disinfection.

9. In one article stated by Dr. Rajeev Chitguppi that we cannot prevent aerosol generation in dental clinics, but can we minimise the viral load in the aerosols?" We should consider using Povidone-Iodine as an irrigant in high-speed handpieces too, as it has already been a recommended irrigant in the ultrasonic scaler. The recommendation is to use 10% povidone-iodine diluted 1:9 with water. So, if you have a half litre bottle attached to your chair: Put 50 ml of 10 % Povidone Iodine solution in the bottle and then add water to fill the bottle. So, this dilution will be 50: 450 = 1:9.
10. All the above said precautions should be taken when making impression, jaw relation, insertion and even doing cementation.

### **SUMMARY**

To summarize the following points are to be noted to prevent COVID-19 infection from further transmission:

1. Patient welfare and emergency needs should be considered amid the pandemic. Enhanced PPE kit should be used during the outbreak.
2. Multifactorial considerations for work resumption after the outbreak included facility preparation and management, training for employees, and clinical operation management.
3. In-person psychological consultation and online mental wellness program could be offered to employees to improve their mental wellness.
4. Distance or online education should be under rapid development to minimise the interruption of education for students and to engage the dental community amid the pandemic.

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