International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 9; Issue 05(A); May 2020; Page No.22062-22068
DOI: http://dx.doi.org/10.24327/ijcar.2020.22068.4348

Research Article

# CORONAVIRUS DISEASE 2019 (COVID 19): CURRENT AND FUTURE PERSPECTIVE IN DENTAL PRACTICE

**Ajit Jankar[1], Suresh kamble[2] , Deepali Patane[3], Susheen Gajare[4] and Dishita Chokhani [3]**

[1]Head of Department, Department of Prosthodontics, Maharashtra Institute of Dental Science and Research (Dental College), Latur, Maharashtra
[2]Principal and Professor, Department of Prosthodontics, Maharashtra Institute of Dental Science and Research (Dental College), Latur, Maharashtra
[3]Post Graduate student, Department of Prosthodontics, Maharashtra Institute of Dental Science and Research (Dental College), Latur, Maharashtra
[4]Reader, Department of Prosthodontics, Maharashtra Institute of Dental Science and Research (Dental College), Latur, Maharashtra

**A R T I C L E I N F O**

***Article History:***
Received 4th February, 2020
Received in revised form 25th March, 2020
Accepted 23rd April, 2020
Published online 28th May, 2020

***Key words:***
2019-nCOV, aerosols, coronavirus, COVID-19, dental, infection control, severe acute respiratory syndrome

**A B S T R A C T**

The outbreak of Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2), has thus far killed over 2,94,046 people and infected over 4,248,000 cases in China and elsewhere in the world, resulting in catastrophe for humans. Although dental clinics have been closed during this epidemic, a large number of patients need emergency treatment. Biological features of 2019- nCOV should be updated in time and comprehensively summarized to help execute control measures and make therapeutic decision. It is need of hour to device practical strategies to block virus transmission and provide reference for preventing transmission of 2019-nCOV during dental diagnosis and treatment, including dentist and dental team preparation, waiting area protocol, patient evaluation, personal protective measure for dental health care worker, precautions before, during and after dental treatment. Precaution measures should be implemented for disinfection of clinical setting, management of medical waste and laboratory work protocols.



## INTRODUCTION

The current outbreak of the novel coronavirus Covid-19 (coronavirus disease 2019; previously 2019- nCOV), epi-centred in Hubei Province of the People's Republic of China, has spread to many other countries.[1] Based on growing case notification rates at Chinese and international locations WHO Emergency Committee on 30 January, 2020 declared it as global health emergency.[2]acute respiratory syndrome (SARS) in 2003; thus, it was named SARS-COV-2 by the World Health Organization (WHO) on February 11, 2020, and the associated disease was named COV Disease-19 (COVID-19)[3]. The epidemic started in Wuhan, China, and quickly spread throughout the entire country and all over the world. According to the WHO situation report (May 1, 2020) update on COVID-19, the virus has resulted in over 4,248,000 confirmed cases of COVID-19, with more than 2,94,046 patients who died.[4]

**Corresponding author:* **Ajit Jankar**
Head of Department, Department of Prosthodontics, Maharashtra Institute of Dental Science and Research (Dental College), Latur, Maharashtra

Novel coronavirus belongs to the family of coronaviridae which is known to transmitted from animals to humans followed by sustained human to human spread.[5,6] Dental professionals are at high risk for nosocomial infection. These risks can be attributed to nature of dental interventions, which consist of close proximity of personnel to the patient's oropharyngeal region, handling of sharp instrument and aerosol generation. If precautions are not taken, dental office can potentially act as source of cross contamination. Dental practices should be prepared to indentify individuals suspected, confirmed or have history of COVID -19 infection and direct them to appropriate treatment centre. In this article, we summarize current recommendations for diagnosing and managing patients with COVID-19.

### *Signs and symptoms*

Recent reports so far suggest a mean incubation period of five days, and a median incubation period of 3 days (range: 0 – 24 days).[7] In symptomatic patient's symptoms usually start after less than a week, consisting of fever, cough, nasal congestion, head ache, fatigue and other signs of upper respiratory tract infections. Observations also describe atypical such as muscle

pain, confusion, diarrhoea and vomiting and asymptomatic infections, especially among young children.[5,8] The infection can progress to severe disease with dyspnoea and severe chest symptoms corresponding to pneumonia in approximately 75% of patients, as seen by computer tomography on admission. Pneumonia mostly occurs in the second or third week of a symptomatic infection. [9,10] In general, older age and the existence of underlying comorbidities (e.g., diabetes, hypertension, and cardiovascular disease) were associated with poorer prognosis). (figure 1)

***Direct or Indirect Transmission***

Dental care settings invariably carry the risk of infection attributed nature its procedures, which involves face-to-face communication or direct transmission (cough, sneeze, and droplet inhalation transmission) and contact transmission (contact with oral, nasal, and eye mucous membranes).[13] 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 , its inhalation can lead to transmission. [1]

***Aerosol transmission and its implication in dentistry***

When water coolant with performing dental procedures, including tooth preparation, oral prophylaxis, and oral surgery combined with bodily fluids in the oral cavity, such as blood and saliva, bioaerosols are created.

Past reports have shown that the of SARS-COV and MERS-COV cases were associated with nosocomial transmission in hospitals, resulting, partly, from the use of aerosol-generating procedures performed on patients with respiratory disease.[12] Based on the current epidemiological data, 2019-ncov has higher transmissibility than SARS-COV and MERS-COV [12] . Therefore, modification of standard precaution and infection control regimen targeted toward 2019- nCOV is obligatory during this outbreak. (figure 2)

***Dentist and Dental Team Preparation [14]***

1. It should be ensured that the dental health care personnel (DHCP) have received vaccine for seasonal flu vaccine.
2. DHCP experiencing fever with either cough or sore throat, muscle aches or any influenza -like – illness should not report to work
3. DHCP who are older of age, have a pre-existing, medically compromised condition, pregnant, etc., are perceived to be at a higher risk of contracting COVID-19 from contact with known or suspected COVID-19 patients.
4. All DHCP should self-monitor and remain alert to any re respiratory symptoms and check their temperature twice a day, regardless of the presence of other symptoms consistent with a COVID-19 infection.
5. DHCP providers who have recently contracted and recovered from a COVID-19 infection should be the preferred personnel providing care to known or suspected COVID-19 patients.
6. Record of Available personal protective equipment (PPE) supplies [e.g., surgical masks, surgical gowns, surgical gloves, face shields] to be conducted.
7. Remove objects that may be touched by others and which are not easily disinfected such as magazines, reading materials, toys.
8. Print and place signage in the dental office for instructing patients on standard recommendations for respiratory hygiene/cough etiquette and social distancing.
9. Appointments should be scheduled apart enough to minimize possible contact with other patients in the waiting room.
10. Prevent patients from bringing companions to their appointment, except for instances where the patient requires assistance (e.g., pediatric patients, people with special needs, elderly patients, etc.). If allowed companions screened for signs and symptoms of COVID19 during patient check-in and should not be allowed entry into the facility if signs and symptoms are present. Companions are perceived to be at a high risk of contracting COVID-19 (e.g., having a pre-existing medically compromised condition) they should not be allowed into facility. No companion should be allowed in the dental operatory.

***Waiting/Reception Area Protocols***

Prominently display the notice below in the reception

1. Fill medical and dental questionnaires and self-declaration forms and sign them
2. Do not touch anything in the clinic unless unavoidable
3. Ask questions or talk with the mouth covered with a mask.
4. Avoid use of in-house toilets.

***Protocols***

a. Patients should be screened for body temperature and given hand sanitized upon entering dental office. Tissue should be provided for their use in coughing or sneezing. Disposal bag should be made available for disposal of used.
b. Schedule appointment to reduce wait time and maintain 6 feet spacing for patients. Ask patients to wait in car to have smaller number of patients in waiting area.
c. Patients should be requested to wear mask or nose protection in reception.
d. Schedule appointments leaving sufficient time for staff for disinfection of equipment and surfaces.
e. Use disinfection protocols for reception area like twice a day floor mopping with warm water, detergent and 1%Sodium Hypochlorite [Called as the Three-bucket Technique]. Broom sweeping should be avoided.
f. High touch surfaces like door knobs, reception chairs, furniture, etc should be disinfected after every patient disinfectant spray or detergent.
g. Patients should be requested to have a mask or a nose protection worn in the reception till they are called in the operatory.
h. The reception staff should be wearing head caps, eye protection glasses, masks and full sleeved aprons or scrubs and gloves. They should perform hand hygiene after every patient in the reception area.

Questionnaire should be used to screen patients with potential infection of 2019-nCOV before they could be led to the dental chair-side.[1]

***These questions should include the following***

1. Are you currently experiencing fever or have recent history of fever within the past 14 days?
2. Have you experienced a recent onset of respiratory problems, for example cough or difficulty in breathing within the past 14 days?
3. Have you, within the past 14 days, travelled to Wuhan city and its surrounding areas, or visited the neighbourhood with documented 2019-nCOV transmission?
4. Did you come into contact with a patient with confirmed 2019- nCOV infection within the past 14 days?
5. Have you come into contact with people who come from Wuhan city and its surrounding areas, or people from the neighbourhood with recent documented fever or respiratory problems within the past 14 days?
6. Are there at least two people with documented experience of fever or respiratory problems within the last 14 days having close contact with you?
7. Have you recently participated in any gathering, meetings, or had close contact with many unacquainted people?

If a patient reply "yes" to any of the screening questions, and his/her body temperature is below 37.3 °C, the dentist can make decision to suspend the treatment until 14 days after the exposure event. The patient should be instructed to self-quarantine at home and inform any fever experience or flu-like syndrome to the local health department.

If a patient reply "yes" to any of the questions, and his/her body temperature is more than 37.3 °C, the patient should be immediately quarantined, and the dental professionals should report to the local health department.

If a patient reply "no" to all the screening questions, and his/her body temperature is not above 37.3 °C, the dentist can carry forward treatment with extra protection measures, and avoids spatter or aerosol-generating procedures to the best.

***Patient screening***

(figure 3)

a. Dental professionals should be able to identify a suspected case of COVID-19. Medical history of each patient should be thoroughly noted.
b. If the patient is suspected to be from a high-risk category from the history, treat the patient's emergency problems with medication before he gets himself medically examined and proves to be COVID-19 negative.
c. Pharmacological management Choice of drugs should be

***Analgesics- Any one of the following***

1. Diclofenac Sodium [50mg] with or without paracetamol[500mg] TID
2. Ketorolac Tromethamine 10mg QID
3. Acetaminophen [Paracetamol] 1000mg TID

***Antibiotics***

Antibiotics are to be used in case of infections only.

Elective dental procedures should be postponed. Only emergency dental treatment should be performed. Dental treatments to be considered as emergency are uncontrolled bleeding, cellulitis and/or soft tissue swelling, swellings compromising patient's airway, trauma and cancers.

For suspected/confirmed cases of COVID-19 that are medically stable, laboratory tests and multidisciplinary team consultations should be performed. The patient should be rescheduled after the outbreak if possible, to ensure safety of patients and health care workers.

Implementation of highest level of personal protection should be done for suspected/confirmed cases of COVID-19 requiring urgent dental treatment. Natural ventilation should be fascinated by of a negative pressure room with a minimum of 12 air changes per hour or at least 160 L/s per patient. Mechanical ventilation should commence before treating the next patient.[16]

Patient with history of COVID-19 who have completed home isolation clearance can receive emergency dental care. This is decided using two strategies: a non-test-based strategy, and a test-based-strategy:[17]

***Non-test-based-strategy***

At least 3 days (72 hours) have passed since recovery (resolution of fever without the use of medications and improvement in respiratory symptoms such as cough or shortness of breath) and at least 7 days have passed since symptoms first occurred.

***Test-based-strategy***

1. Persons who have COVID-19 who have symptoms: Resolution of fever without the use of medications and improvement in respiratory symptoms (e.g., cough, shortness of breath) and results of an FDA Emergency Use Authorized molecular assay for COVID-19 from at least two consecutive nasopharyngeal swab specimens collected ≥24 hours apart are negative [5] (total of two negative specimens).
2. Persons with laboratory-confirmed COVID-19 who have not had any symptoms: At least 7 days have passed since the date of the first positive COVID-19 diagnostic test and have had no subsequent illness.

***Personal protective measures for the dental professionals***

Based on the possibility of the spread of 2019-ncov infection, three-level protective measures of the dental professionals are recommended for specific situations. [1]

***Primary protection***

Standards for protection of staff in clinical setting is necessary. Wearing disposable working cap, disposable surgical mouth mask and working clothes, protective eyewear or face shield and disposable nitrile or latex gloves, if necessary.

***Secondary protection***

These are standard to be followed by dental protection for advanced. Wearing disposable doctor cap, to protect eyes from the aerosols and debris protective eyewear or face shield

should be worn throughout the treatment and disinfected between patient. Working clothes (white coat) with disposable isolation clothing or surgical clothes outside, and disposable latex gloves. When performing aerosol generating procedures (using high-speed handpiece, air-water syringe, and ultrasonic scaler), a particulate respirator that is at least as protective as a National Institute for Occupational Safety and Health (NIOSH)-certified N95, European Standard Filtering Face Piece 2 (EU FFP2), or equivalent, was used.

***Tertiary protection***

Protection should be strengthened when in patient with suspected or confirmed 2019-ncov infection. Although a patient with 2019-ncov infection is not expected to be treated in the dental clinic, in the unlikely event that this does occur, and the dental professional cannot avoid close contact, special protective outwear is needed. When performing emergency dental treatment with suspected COVID-19 cases, a higher level of respiratory protection should be considered, such as EU FFP3 respirators conforming to European Standard 149 (EN149).

If protective outwear is not available, working clothes (white coat) with extra disposable protective clothing outside should be worn. In addition, disposable doctor cap, protective goggles, face shield, disposable surgical mask, disposable latex gloves, and impermeable shoe cover should be worn.

***Potential Exposure Guidance [17]***

Even when DHCP screen patients for respiratory infections, they may treat a dental emergency patient who is later confirmed to have COVID-19.

DHCP should institute a policy to contact all patients who received emergency dental care in the dental setting 48 hours after receiving emergency care. DHCP should ask patients if they are exhibiting any signs or symptoms of COVID-19. If a patient reports signs or symptoms of COVID-19, refer the patient to their medical provider for assessment and follow CDC's Healthcare Personnel with Potential Exposure Guidance.

***Preprocedural mouth rinse***

2019-nCOV is vulnerable to oxidation, preprocedural mouth rinse containing oxidative agents such as 1% hydrogen peroxide or 0.2% povidone is recommended, for the purpose of reducing the salivary load of oral microbes, including potential 2019-ncov carriage.[1] A preprocedural mouth rinse would be most useful in cases when rubber dam cannot be used.

***Rubber dam isolation***

During dental procedures that generate aerosols, rubber dam provides barrier protection from the primary source and will virtually eliminate all pathogens emerging from respiratory secretion. If the rubber dam is placed correctly, the only source of contamination would be the tooth that is undergoing treatment.[18]

One disadvantage of using the rubber dam is that it is not feasible in procedures that require subgingival instrumentation, such as subgingival restoration and subgingival crown margin preparation.[12]

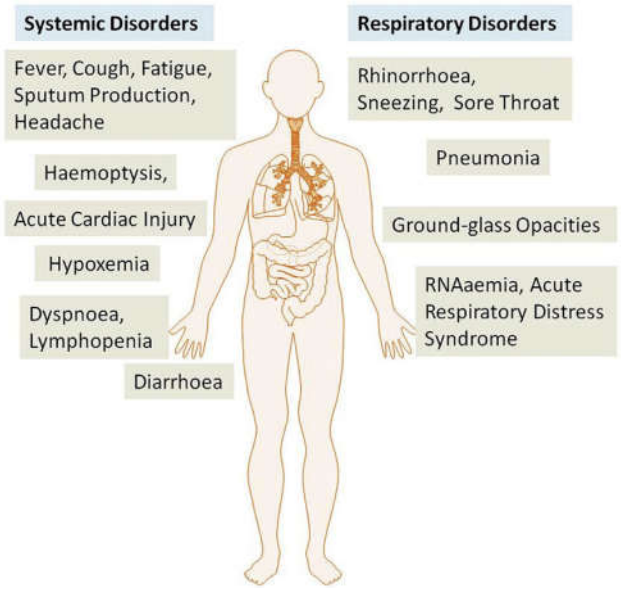


**Figure 1** the systemic and respiratory disorders caused by COVID 19 infection [11]

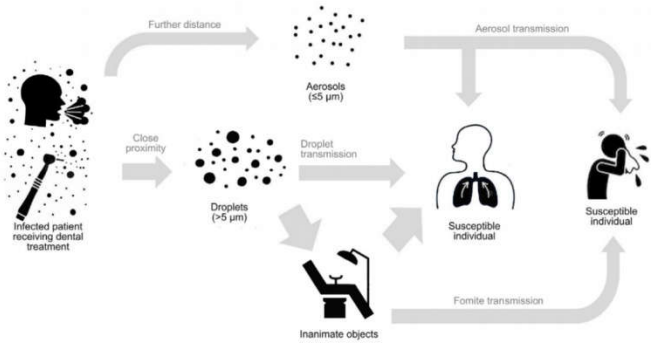


**Figure 2** different routes of transmission in dental setting: aerosol, droplet, and fomite [12]

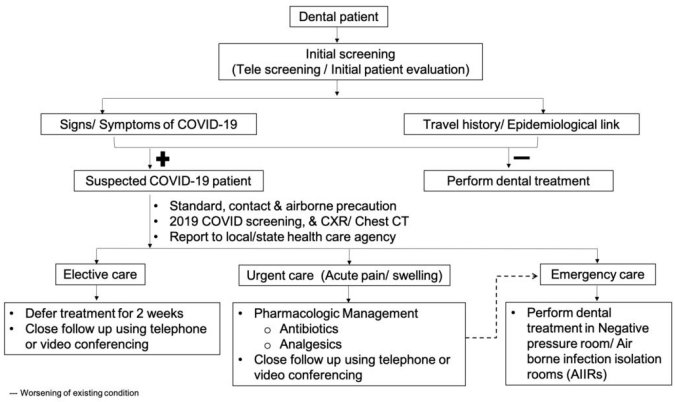


**Figure 3** an overview of patient screening for COVID -19 and dental management [15]

**Table 1** Strategies to reduce droplet generation in different dental disciplines [12]

| Dental discipline | Special precaution |
|---|---|
| Restorative and Pediatric Dentistry | Consider using chemo mechanical caries removal or atraumatic restorative techniques to avoid aerosol transmission during cavity preparation.<br>If rotary instrumentation must be performed, rubber dam isolation is necessary.<br>Rubber dam must be used during endodontic treatment. |
| Endodontics | Root canal treatment usually requires a number of instruments and devices, hence minimizing unnecessary hand contact with equipment in the dental office to reduce possibility of fomite transmission. |
| Periodontics | manual scaling and polishing techniques are recommended. |
| Prosthodontics | Impression trays should be selected and adjusted to right size to avoid gag and cough reflex. Topical anaesthesia can be applied to soft palate before impression making.<br>Oral cavity must be suctioned carefully to avoid gag reflex.<br>Tooth preparations should be done using modified technique of rubber dam isolation such as split dam technique.<br>During removable partial denture or complete denture try-in, avoid touching other objects in the dental office after contacting patient's saliva<br>Upon removal from patient's mouth, dental prosthesis, impressions, and other prosthodontics materials (e.g., bite registration) should be thoroughly disinfected by a disinfectant having at least intermediate level activity |
| Oral-maxillofacial surgery | When performing simple extraction, treat the patient in a supine position to avoid working in the breath way of a patient |

***Anti-retraction high-speed dental handpiece***

Study has shown that the anti-retraction high-speed dental handpiece can significantly reduce the backflow of oral bacteria and HBV into the tubes of the handpiece and dental unit as compared with the handpiece without anti-retraction function.[18] Anti-retraction dental handpiece with specially designed anti-retractive valves or other anti-reflux designs reduce the problem of dental unit contamination in most intraoral clinical situations and are strongly recommended as an extra preventive measure for cross infection.[20]

Different Strategies to reduce droplet generation in different dental disciplines are mentioned in the table 1.

***After dental care***

1. The disposables worn by the patient and the dentists should be removed and disposed with the washed gloved hands to avoid skin contact with possible aerosols on the disposables.
2. The patient should be advised to wear his mask immediately after the procedure.
3. The assistant should clear all used instruments, equipment and disposables with gloved hands and all PPE worn.
4. The instruments should be left in covered tray with alcohol-based disinfectant for minimum 20-30 minutes followed by cleaning the instruments in an Ultrasonic bath and finally autoclaving them.
5. The equipment like handpieces, drills three-way tips, etc should be cleaned with soap and water, followed by chemical disinfection, before autoclaving.
6. Use of Ultrasonic cleaning baths is compulsory.

***Disinfection of the clinic settings [17]***

All surfaces of contact on the dental chair, furniture suctions etc should be thoroughly cleaned and disinfected immediately with an alcohol-based disinfectant [ Bacillol etc] before the assistant removes his/her gloves. The patient consulting chair and the dentist consultation table also should be disinfected after the patient leaves the office, before the next patient.

Disinfectants such as ethanol 70-90%; chlorine-based products (e.g., hypochlorite) at 0.1% (1000 ppm) for general environmental disinfection or 0.5% (5000 ppm) for blood and body fluids large spills; or hydrogen peroxide >0.5%. are proved to be effective against SARS-CoV-2. The minimal time recommended of exposition to the surface for these disinfectants is one minute1 or according to the manufacturer instructions.[4]

1. The floor of the operatory should be mopped with the Three-bucket technique or with 1% sodium hypochlorite and detergent after each patient.
2. The dental operatory and reception should be fumigated every day before closing down with commercial fumigators or with Liquid Formalin and potassium permanganate crystals.
3. Liquid Formalin to be poured on the potassium permanganate crystals and the room to be closed overnight.
4. The next day enter with mask and ventilate the room 30 minutes prior to usage.

***Removal/filter of contaminated air***

There are several methods to remove/filter contaminated air in treatment areas; the two most commonly used devices include the inexpensive high-volume evacuator (HVE) and the expensive high efficiency particulate arrestor (HEPA) filters.
HVE filter: It is a suction device that helps remove air at a rate of up to 2.83 $m^3$ per minute. It is the easiest way to remove dental aerosols as they are generated and could effectively reduce contamination caused by the operating site by 90%.[21] However, the device should be held at a proper distance (approximately 6–15 mm) from the active ultrasonic tip. One limitation of the HVE is that without a dental assistant, clinicians might face difficulty in operating it using one hand. There are modified HVEs available in the market to address this problem.

HEPA filter: It is an air filtration device that can remove 99.97% of the particles measuring 0.3 am in diameter. One disadvantage is that the filter may become a source of microbes if the retained microorganisms proliferate and enter back into the filtered air. In addition, soiled HEPA filters are difficult to clean and expensive to replace.[22]

***Management of medical waste***

The medical waste (including disposable protective equipment after use) should be transported to the temporary storage area of the medical institute timely.

The disposables including used needles, syringes blades etc should be properly sealed in bio-medical waste bags and disposed on a daily basis. The medical and domestic waste generated by the treatment of patients with suspected or confirmed 2019-ncov infection are regarded as infectious medical waste. Double-layer yellow colour medical waste package bags and "gooseneck" ligation should be used. The

surface of the package bags should be marked and disposed according to the requirement for the management of medical waste.[1]

***Laboratory Work Protocols***

All dental impressions going to the laboratory, ideally should not be more, as only emergency work has to carried out, should be disinfected thoroughly in the dental office before dispatch.

***Proposed disinfection protocol is***

1. Thoroughly wash the impression in running water after removing it from the mouth and gently scrub it with brush and liquid detergent under running water.
2. Immerse the impression in a solution of 5.25% Sodium Hypochlorite with 1:10 dilution or according to the manufacturer's instructions. The solution should be changed daily.
3. Use of disinfectant spray for immersion sensitive impression material release disinfectant into air. thus, increasing the chance of personal exposure.
4. Dental practices should create separate receiving and cleaning/disinfecting areas to handle all items sent to an off-site laboratory or when dealing with the items in a laboratory within the practice. This area should be equipped with running water.
5. lathe should have plexiglass front and the ventilation system should be operating. The air-suction motor should be capable of producing an air velocity of at least 200 ft/min.[23]
6. All items coming from the oral cavity must be sterilized or disinfected properly before work starts in the laboratory and then again prior to their return to patients.

***Informed consent and acknowledgement***

Informed consent should be designed as a part of process of obtaining a patient's agreement, followed after discussion of necessary treatment plan, risks involved in treatment as well as alternative to a procedure. It is advised that dentist uses their judgement to determine a patient's need for urgent or emergency care and whether or not it is appropriate to treat with recommended PPE. Documentation should include specific steps taken by dentist to minimize risk and maximize protection for patient as well as dentist and dental staff, notes to be added on why procedure is emergency (or not) and that patient was given opportunity to clear all doubts. it should include questionnaire indicating that patient was given chance to disclose all the necessary history.

## CONCLUSION AND SUMMARY

The rampant spread of SARS-cov-2 worldwide increases the likelihood that dental health care professionals will treat this subset of the patient population. Universal precautions are crucial to minimize the spread of this virus and its associated disease. It is advisable to assess the emergencies use clinical judgement to aid in decision making., every patient should be treated as potentially infected by this virus, and all dental practices need to update their infection control policies, engineering controls, and supplies. Health care providers must keep themselves up-to-date about this evolving disease and train their staff to undertake levels of screening and implement preventive measures, allowing dental care to be provided while mitigating the spread of this novel infection. In conclusion, health care professionals have the duty to protect the public and maintain high standards of care and infection control.

**Conflict of interests:** NIL

## References

1. Peng, X., Xu, X., Li, Y. *et al.* Transmission routes of 2019-nCoV and controls in dental practice. Int J Oral Sci. 2020; 12:9. https://doi.org/10.1038/s41368-020-0075-9
2. WHO, 2020. Coronavirus Disease 2019 (COVID-19): Situation Report, 11. World Health Organization, Geneva, Switzerland. (Last accessed on May 16, 2020)
3. WHO, 2020, Coronavirus disease 2019 (COVID-19): situation report-22. World Health Organization, Geneva, Switzerland. (last accessed on May 16, 2020)
4. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200225-sitrep-36-covid-19.pdf?sfvrsn=2791b4e0_2
5. Situation Report-115 situation in numbers total and new cases in last 24 hours. Available at (Accessed on May 16, 2020)
6. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports
7. Chan, JF, *et al*. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. Lancet.2020;395(10223),514–523.
8. Del Rio, C, Malani, PN. 2019 novel coronavirus-important information for clinicians. JAMA .2020;323(11):1039-1040. doi:10.1001/jama.2020.1490.
9. Backer, JA, Klinkenberg, D, Wallinga, J. Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20–28 January 2020. Euro Surveill. 2020; 25(5). doi:10.2807/1560-7917.ES.2020.2825.2805.2000062.
10. Guan, W-J *et al*. Clinical characteristics of 2019 novel coronavirus infection in China. 2020; MedRxiv. 2020.02.06.20020974; doi: https://doi.org/10.1101/2020.02.06.20020974
11. Liu K, Fang YY, Deng Y, *et al*.Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province [published online ahead of print, 2020 Feb 7]. *Chin Med J* (Engl). 10.1097/CM9.0000000000000744. doi:10.1097/CM9.0000000000000744
12. Wang D, Hu B, Hu C, *et al*. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus–Infected Pneumonia in Wuhan, China. *JAMA*.2020; 323(11):1061–1069. doi:10.1001/jama.2020.1585
13. Hussin A. Rothan and Siddappa N. Byrareddy, Journal of Autoimmunity, 2020. https://doi.org/10.1016/j.jaut.2020.102433
14. Ge *et al*. Possible aerosol transmission of COVID-19 and special precautions in dentistry. J Zhejiang Univ-Sci B.2020; 1:8 (ahead of print) https://doi.org/10.1631/jzus.B2010010
15. Chen J. Pathogenicity and transmissibility of 2019-nCoV-A quick overview and comparison with other emerging viruses. Microbes Infect.2020;22(2),69–71. doi:10.1016/j.micinf.2020.01.004

16. ADA Interim Guidance for Minimizing Risk of COVID-19 Transmission. Available at https://www.ada.org/~/media/CPS/Files/COVID/ADA_COVID_Int_Guidance_Treat_Pts.pdf?
17. Ather A. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. J Endod.2020;46 (5) in press:1-12.https;//doi.org/10.1016/j.joen.2020.03.008
18. WHO, 2020a. Clinical Management of Severe Acute Respiratory Infection when Novel Coronavirus (2019-nCoV) Infection is Suspected: Interim Guidance. World Health Organization, Geneva, Switzerl and Centers for Disease Control and Prevention. (COVID-19) in Healthcare Settings. Available https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html, https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html)Accessed on May 16 2020
19. Harrel SK, Molinari J.Aerosols and splatter in dentistry: a brief review of the literature and infection control implications. J Am Dent Assoc .2004;135(4),429-437. https://doi.org/10.14219/jada.archive.2004.0207 l
20. Hu, T., Li, G., Zuo, Y. & Zhou, X. Risk of hepatitis B virus transmission via dental handpieces and evaluation of an anti-suction device for prevention of transmission. Infect. Control Hosp. Epidemiol. 2007;28:80–82.
21. Samaranayake LP, Peiris M. Severe acute respiratory syndrome and dentistry: a retrospective view. J Am Dent Assoc.2004;135(9):1292–1302. doi: 10.14219/jada.archive.2004.0405
22. Narayana T V, Mohanty L, Sreenath G, Vidhyadhari P. Role of preprocedural rinse and high-volume evacuator in reducing bacterial contamination in bioaerosols. J Oral Maxillofac Pathol .2006;20:59-65. https://doi.org/10.4103/0973-029X.180931
23. Chuaybamroong P, Chotigawin R, Supothina S, Sribenjalux P, Larpkiattaworn S, Wu CY. Efficacy of photocatalytic HEPA filter on microorganism removal. Indoor Air.2010 ;20 (3):246–254. doi:10.1111/j.1600-0668.2010. 00651.x
24. Miller CH, Palenik CJ. Infection Control and Management of Hazardous Materials for the Dental Team. 3rd ed. St Louis, Mo: Mosby Year-Book. 2004.

**How to cite this article:**

Ajit Jankar *et al* (2020) ' Coronavirus Disease 2019 (Covid 19): Current and Future Perspective in Dental Practice', *International Journal of Current Advanced Research,* 09(05), pp. 22062-22068.
DOI: http://dx.doi.org/10.24327/ijcar.2020.22068.4348

*******