



# PHILIPPINE DENTAL ASSOCIATION INC.

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## Updates on the PDA Interim Guidelines on Infection Prevention for CoVid-19 Pandemic as of May 31, 2020

It has been 5 months since the emergence of the new virus, internationally recognized as the SARS CoV2 virus causing the disease COVID 19.

The unusual spread of the disease has caused a global pandemic, creating havoc in the health care system of all the nations it has invaded and crashed economies even of first world countries. Scientists worldwide are scrambling to produce a cure and vaccine to fight this global war. To date, the health community is bombarded with documents trying their best to explain pathophysiology and route of transmission. If there is clear understanding on the route of transmission, there will be clearcut guidelines for its prevention.

While several studies are on its way, the health community is trying its best to prevent the spread and prevent dental health workers from being infected during the delivery of care.

Dental professionals are at high risk of being infected and transmitting the virus because the work area deals directly with the oral cavity where saliva is believed to be a reservoir of SARS CoV2, and close proximity to the nasopharyngeal area where the virus is usually found. In addition, the use of dental equipment mist saliva during aerosol generating procedures (AGP) such as ultrasonic scaling, use of high-speed handpiece, 3-way syringe and high (surgical suction, high volume evacuators).<sup>1</sup> These risks are unique to dental interventions, where aerosol generation, handling of sharps, and proximity of the provider to the patient's oropharyngeal region is unavoidable.

**80% of confirmed CoVid-19 are asymptomatic<sup>2</sup> and unidentified cases are responsible for the infection of 79% of documented cases.<sup>3</sup>** Therefore adequate precautions must be taken in the dental office to prevent and avoid exposing both dentists and patients to self and cross contamination.

***On the theories of transmission, experts are looking into the transmission of the disease even in the absence of AGP, such as talking and breathing. This new development warrants further investigation, as of this writing, more evidences need to be analyzed.***

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<sup>1</sup> Transmission routes of 2019 nCoV and controls in dental practice. International Journal of Oral Science volume 12 Article9 (2020).

<sup>2</sup> Worldometer's CoVid-19 data. Disponível em <[www.worldometers.info/coronavirus#countries](http://www.worldometers.info/coronavirus#countries)> 03 April 2020

<sup>3</sup> Li R., Pei, S., Chen B., Song, Y, Zhang, T., Yang W et al Substantial undocumented infection of facilities the rapid dissemination of novel coronavirus (SARS-CoV-2) Science 2020.pii:eabb3221.



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The interim guidelines have been made specifically for COVID 19 and its impact on the dental practice. The contents of the guideline is based on published evidences made available to all professionals in aid of understanding the disease. In addition, guidelines provided by other authorities in different continents of the globe, were used as a basis, considering best practices and clinical experiences of countries hardest hit by the SARS CoV 2 virus.

These recommendations are intended to protect the Dental Health Workers (DHW), patients and prevent spread of the infection to the community. For these reasons, the PDA Science Committee together with the Specialty affiliates of PDA strongly recommend to be extremely cautious and be very meticulous in observing these protocols.

**It must be emphasized that there is no one solution to prevent infection of the DHW and cross-contamination in the dental setting. The use of protective personal equipment (PPE) MUST be layered with other measures including air engineering, universal infection control protocols, and meticulous disinfection with much consideration not to abuse the environment.**

With regards to dental treatment, most have been practicing universal health care precaution for the prevention of droplet transmission. However, more air engineering controls should be put in place to eliminate aerosols brought by heavy breathing, talking, sneezing, coughing, and most dental procedures. Clinicians should think of treatment alternatives in order to avoid misting out of saliva to prevent fomites and inadvertent transmission among the dental health workers.

It is still highly advisable to limit treatment to urgent dental care. Perform elective treatment when the safety of the entire team can be ensured.

Dr. Stephen B. Almonte  
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April 26, 2020

## **Memorandum to all PDA Members**

Last March 15, PDA cautioned members to treat urgent cases and that if we do so, we should be wearing the proper protective equipment in our clinic. The limitation of these PPE have led us to limit or completely close our practice. Since then, many have been asking, when can we operate normally and go back to our clinical practice.

What do we know right now?

- The virus, Severe Acute Respiratory Syndrome Corona Virus 2 or SARS CoV2 is presently circulating amongst communities, causing the disease now named COVID-19;
- It is present in the nasal passages and oral cavity, with the saliva as possible reservoir of the virus;
- The disease is HIGHLY CONTAGIOUS and can be transmitted through salivary droplets and can remain suspended in air once it is aerosolized through coughing, sneezing and through procedures generated by our dental instruments.
- The virus can remain active from 2 to 72 hours and remain viable on different surfaces.

Based on these facts, the members of the recommending team, comprising of the PDA Science Committee together with the Specialty Affiliate Societies, have unanimously agreed on the following:

1. We are still in the middle of the contagion, we will remain cautious in preventing the spread of the disease and assist in avoiding the spike that is happening in first world countries, losing precious lives. But as responsible health workers, we cannot ignore the need to attend to patients needing urgent management.
2. Limit treatment to non-Aerosol Generating Procedures (NAGP) while faithfully adhering strict infection control protocols.
3. Because this is an emerging disease, Recommendations will continue to be updated as new data becomes available.

The members of the recommending team consolidated various sources of infection control protocols to come up with an evidence-based practice guidelines during this time of covid-19.

When can we go back to dental practice?

*"Primum non nocere" First do no harm*

While we are all eager to go back to work and serve our patients, the ethical question lies whether we are actually prepared to do so. With the lack of personal protective equipments, we could be placing ourselves, our patients and staff including our family in danger because of the threat coming from the virus SARS-CoV2. Our moral obligation dictates that we should serve our community. However, we need to be properly guided in order to control the possibility of cross contamination in our dental offices.

Please take time to read and prepare for this new normal in dentistry.

In addition, the PDA Continuing Dental Education committee is currently preparing to conduct webinars related to these guidelines to further help our members adjust to this new norm in Philippine dental practice.

Lastly, Let me remind everyone that strict adherence to these guidelines does not guarantee our safety. Despite all precautions, please be reminded that infection may still arise. I strongly urge everyone to stay safe and to continue updating ourselves in this time of crisis. Let us be one in our government's effort in this fight against covid-19. Mabuhay ang Dentistang Filipino!

PDA EXECUTIVE BOARD

Stephen B. Almonte, DMD

# **Philippine Dental Association**

## **Interim Guidelines on Infection Prevention During COVID-19 Pandemic**







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## PDA INTERM GUIDELINES ON INFECTION PREVENTION DURING THE COVID 19 PANDEMIC

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### Background

The COVID-19, NCoV2 or Novel Coronavirus has become a worldwide health crisis. The novel corona virus belongs to a family of single-stranded RNA viruses known as Coronaviridae.<sup>1</sup> Some of the other RNA viruses discovered earlier which share similarities to it are SARS-CoV1 and MERS-CoV and they affect humans in a similar way by infecting the lower respiratory tract.<sup>2</sup> The transmission of the virus is thought to be via droplet entry into exposed mucous membranes, eyes, nasal cavity and mouth.<sup>3</sup>

Dental professionals are at high risk for being infected and transmitting the virus through aerosol generating procedures (AGP) such as ultrasonic scaling, use of high-speed handpiece, 3-way syringe and high (surgical suctions, high volume evacuators).<sup>4</sup> **These risks are unique to dental interventions, where aerosol generation, handling of sharps, and proximity of the provider to the patient's oropharyngeal region is unavoidable. 80% of confirmed CoVid-19 are asymptomatic<sup>5</sup> and unidentified cases are responsible for the infection of 79% of documented cases.<sup>6</sup>** Therefore adequate precautions must be taken in the dental office to prevent and avoid exposing both dentists and patients to self and cross contamination.

The following guidelines, specific for COVID 19 and its impact on the dental practice are based on the existing evidences available at the time of release. The recommendations contained in this paper have been thoroughly researched based on publication available, guidelines provided by other authorities in different continents of the globe, based on clinical experiences in countries hardest hit by the SARS CoV 2 virus. Some of the journal references are actually based on studies conducted on SARS and MERS due to limited documents directly pertaining to the behavior of SARS-CoV-2 virus, as such these guidelines are only interim and will need to be updated when more data is made available.

These recommendations are intended to protect the Dental Health Workers (DHW), patients and prevent spread of the infection to the community. For these reasons, the PDA Science Committee together with the Specialty affiliates of PDA strongly recommend to be extremely cautious and be very meticulous in observing these protocols.

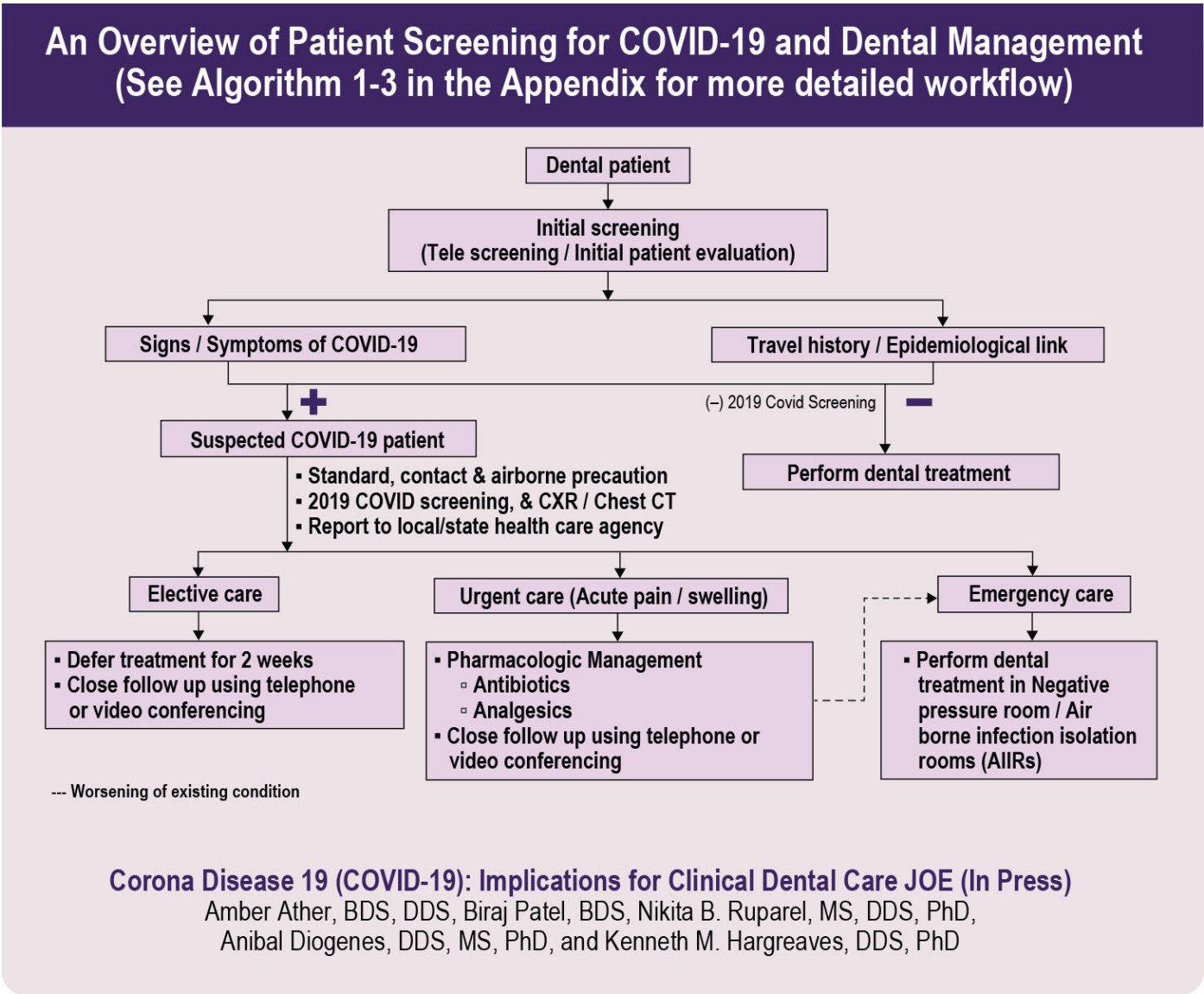
The purpose of these recommendations is to guide the dental professional and their staff in restarting their dental practice once the ECQ is relaxed or lifted. These guidelines and recommendations should not supersede or replace any existing laws, ordinances or memoranda ordered by the Philippine Government Health Authorities, as it pertains to the practice of dentistry in this time of CoVid-19 health crisis. To emphasize, each dentist is under professional obligation to follow the recommendations by government health authorities.<sup>7,8</sup>



I. OVERVIEW OF PATIENT SCREENING

Patient screening is foremost prior to a face to face consult. At the onset of the community transmission of COVID 19, everyone has been advised to take shelter at home to avoid a spike in the number of cases. It is inevitable that the disease will spread inspite of all precautions. Screening is one way of preparing the DHW, in preventing to be infected and at the same time serve those who need urgent dental care (UDC) and emergent life threatening conditions emanating from the oral cavity. In the absence of proper equipment to protect the DHW and engineering controls, the DHW is strongly advised to limit dental care to UDC and emergency cases. The following is the decision tree to guide the DHW on the path of treatment.

Figure 1



**\*COVID screening: Patients who need to undergo aerosol generating procedures should be required to present a valid test result (not more than 5 days old of Rt-PCR COVID-19, used and approved by the RITM and NIH).**



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## A. Dental Emergencies

### What Constitutes a Dental Emergency?

*The ADA recognizes that state governments and state dental associations may be best positioned to recommend to the dentists in their regions the amount of time to keep their offices closed to all but emergency care. This is fluid situation and those closest to the issue may best understand the local challenges being faced.*

#### DENTAL EMERGENCY

This guidance may change as the COVID-19 pandemic progresses. Dentists should use their professional judgement in determining a patient's need for urgent or emergency care.

**Dental emergencies** are potentially life threatening and require immediate treatment to stop ongoing tissue bleeding, alleviate severe pain or infection, and include:

- Uncontrolled bleeding
- Cellulitis or a diffuse soft tissue bacterial infection with intra-oral or extra-oral swelling that potentially compromise the patient's airway
- Trauma involving facial bones, potentially compromising the patient's airway

**Urgent dental care** focuses on the management of conditions that require immediate attention to relieve severe pain and/or risk of infection and to alleviate the burden on hospital emergency departments. These should be treated as minimally invasively as possible.

- Severe dental pain from pulpal inflammation
- Pericoronitis or third-molar pain
- Surgical post-operative osteitis, dry socket dressing changes
- Abscess, or localized bacterial infection resulting in localized pain and swelling
- Tooth fracture resulting in pain or causing soft tissue trauma
- Dental trauma with avulsion/luxation
- Dental treatment required prior to critical medical procedures
- Final crown/bridge cementation if the temporary restoration is lost, broken or causing gingival irritation
- Biopsy of abnormal tissue

#### Other urgent dental care:

- Extensive dental caries or defective restorations causing pain
  - Manage with interim restorative techniques when possible (silver diamine fluoride, glass ionomers)
- Suture removal
- Denture adjustment on radiation/ oncology patients
- Denture adjustments or repairs when function impeded
- replacing temporary filling on endo access openings in patients experiencing pain
- Snipping or adjustment of an orthodontic wire or appliances piercing or ulcerating the oral mucosa

#### DENTAL NON-EMERGENCY PROCEDURES

**Routine or non-urgent dental procedures includes but are not limited to:**

- Initial or periodic oral examinations and recall visits, including routine radiographs
- Routine dental cleaning and preventive therapies
- Orthodontic procedures other than those to address acute issues (e.g. pain, infection, trauma) or other issues critically necessary to prevent harm to the patient
- Extraction of asymptomatic teeth
- Restorative dentistry including treatment of asymptomatic carious lesions
- Aesthetic dental procedures

Updated 3/31/20

FOR THE LATEST UPDATES, VISIT [ADA.ORG/VIRUS](https://ada.org/virus)

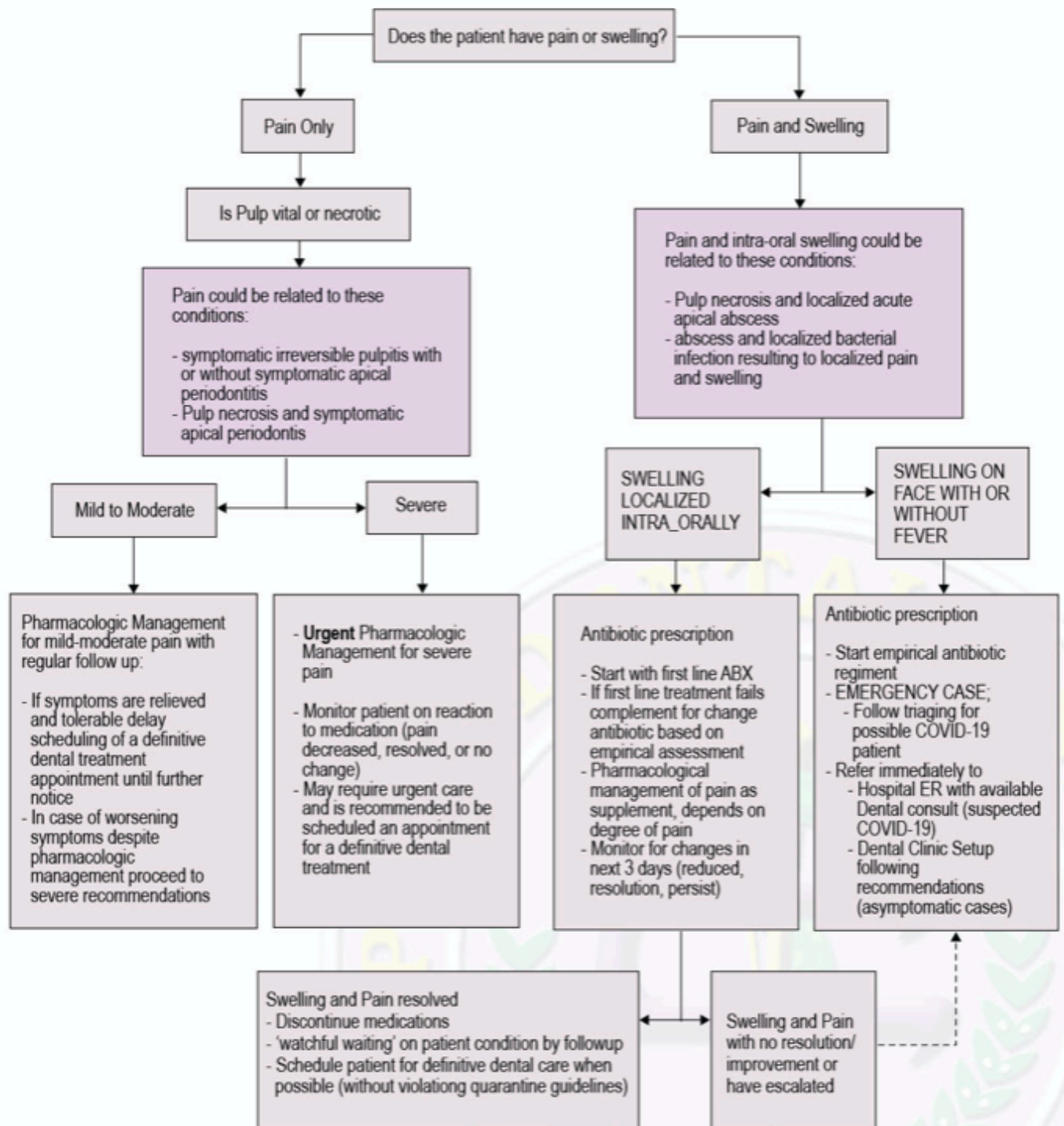




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## B. Pain Management



Source: PCOMS

Source: Philippine College of Oral Maxillofacial Surgeons



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## C. Recommendation on Analgesics

### Acute dental pain (moderate)

- Monitor pain after 24 hours for persistent pain (>3 days) and /or increasing intensity of pain (shift to emergency care)
- Pharmacologic pain management is advised to be done not exceeding 5 days, for persistent pain emergency consult and proper dental management is advised
- Paracetamol 1000mg every 6 - 8 hours
- Ibuprofen 600 mg (every 6 hours)
- Etoricoxib 90 mg (once a day)

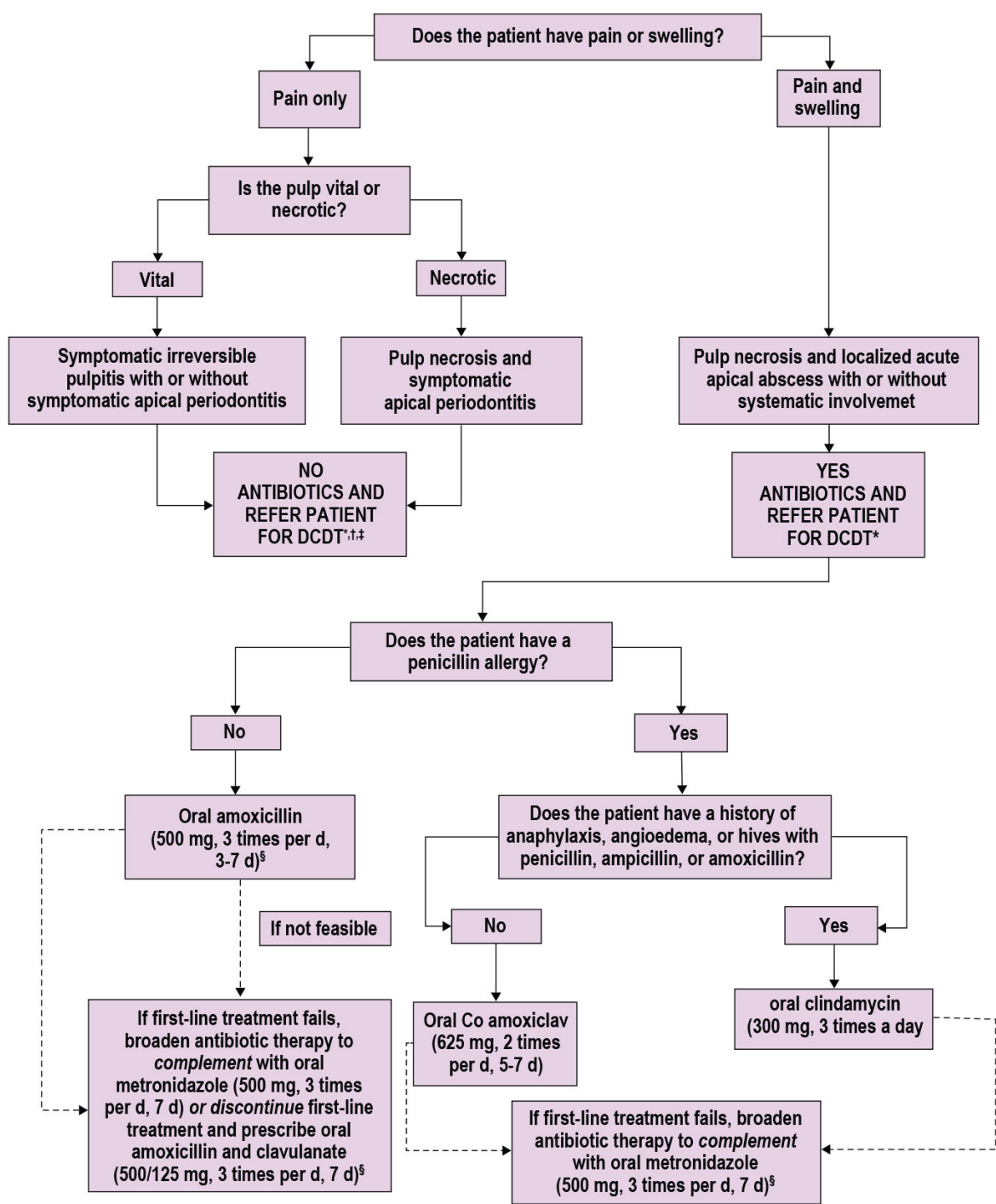
### Acute dental pain (severe)

- Monitor pain after 24 hours of persistent pain (>24 hours) and /or increasing intensity to intolerable pain and shift to emergency care
- Etoricoxib 120 mg (once a day)
- Celecoxib 200 mg (every 12 hours)
- Tramadol HCL 50 mg (every 8 hours)\* precaution advised due to CNS effect
- Tramadol HCL / Paracetamol 37.5 mg/325 mg (every 6 hours - max 8 tablets/day)

Source: Philippine College of Oral Maxillofacial Surgeons



D. Recommendation on Antibiotics



\*definitive conservative dental treatment  
Source: ADA



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## II. CLASSIFICATION OF DENTAL TREATMENT:

All dental treatment involves direct manipulation of the oral cavity, defying the one meter distance recommended by experts in avoiding transmission of SARS CoV2 virus. This involves direct contact with saliva which may generate droplets in the operator, post-consultation. In addition, use of equipment such as handpieces to restore teeth or use of electronic scalers for cleaning are some of the procedures which aerosolizes saliva, leaving fomites in the operator. Because of these, the dental team are encouraged to exercise extreme precaution during each dental procedure.

### A. Non-Aerosol Generating Procedure (NAGP)

All dental procedures which do not use air driven or powered instruments inside the oral cavity are considered as NAGP. Strict compliance with standard infection control procedures and droplet pre-cautions must be exercised at all times to prevent contact with salivary fluids emanating from the patient.

*While these procedures do not use devices to forcefully release saliva into the air, it may consequently produce aerosol because the patient's mouth is kept open for a prolonged period of time. These procedures continuously release heavy breathing and project salivary fluids - which could either way release the virus (if present on the patient) out in the operator. In addition, some procedures, initially contemplated as a simple procedure could lead to a more complicated treatment.*

The following are some examples of NAGP:

- a. Oral Examination
- b. Extra-Oral Radiograph
- c. Denture records taking, prosthodontic try-in, occlusal adjustments (extra-oral)
- d. FPD try-in and cementation (no in mouth adjustment with hand piece)
- e. Impression Taking

### B. Aerosol Generating Procedure (AGP)

Dental procedures which generate misting of saliva outside the patients' oral cavity are considered as AGP. Consequently, these procedures contaminate the entire operator leaving fomites and some pathogens suspended in the air until after the procedure. In addition, procedures lasting for several minutes, load the atmospheric environment of the operator with high pathogenic count.

While incessant crying is not a procedure, it however, generates volumes of salivary droplets which could be aerosolized by coughing and vomiting. Manifestation in children is mostly mild and they could be silent carriers of the virus.

Some of these procedures are:

- a. Restoration and tooth preparation with the use of high & low speed dental hand pieces
- b. Use of 3-way syringe
- c. Removal of calcar deposits using ultrasonic scalers and similar equipment

To reduce inhalation of pathogens in the operator during an AGP, specifically SARS CoV2 virus, if present in an asymptomatic patient, includes the following:

- a. Let patient rinse prior and during treatment with 0.2% povidone iodine or 1% hydrogen peroxide to reduce viral load in the saliva;
- b. Use rubber dam during restoration or preparation of the teeth;
- c. Adhere to engineering controls in air flow for the reduction of atmospheric pathogens; (III.A)
- d. Use of fluid repellent coveralls/isolation gowns, head caps, face & eye protection (goggles/face shields), mask and gloves. These MUST BE worn by both the operator and assistants. (see below on section A.3 Personal Protective Equipment)





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### III. PREPARATION OF THE DENTAL FACILITY AND TEAM:

Regardless of the dental procedure, all members of the dental team are at risk from COVID 19 due to the proximity of the DHW to the mouth and nose of the patient. Facility must be prepared considering air exchange, ease of cleaning and minimize exposure to the patient.

#### A. Workflow Process and Clinic Infrastructure

Study and apply a work-flow process specific to your practice scope and situation, i.e. location, size, infrastructure available.

- Fix or modify clinic treatment and non-treatment layout to make sure that appropriate infection control can be efficiently carried out and clean areas are persevered from contamination.
- Provide the patient screening area with hand disinfection facilities or 70% alcohol and if possible, a method of disinfecting shoes before entering the clinic.
- Maintain physical distancing in the waiting area (2 meters apart)
- Remove difficult to disinfect items like reading materials, toys, and other objects that may be touched by others.
- Train your staff in patient screening, proper donning and doffing of PPE, preparing and disinfecting the operators and other areas in your clinic, sterilization of your instruments, billing and receiving payment. (See graphic illustration on donning and doffing)
- Develop a way to isolate your operatory from other areas of the clinic to prevent aerosols from escaping to the other areas of the dental facility.
- Control air flow in your clinic. Make sure air flow in the operatory and waiting area moves away from you and your staff. It is recommended to frequently renew indoor air either by opening the windows or using mechanical ventilation, to allow an air exchange.
- The intent is to bring aerosolized air down to be siphoned out of the operatory. There are several mechanical devices to be able to control stale, infected air out of the operatory. But whatever device, the clinic may have, it is a must to allow infected air to be filtered out of the operatory and in the entire clinic space.
- However, it is the responsibility of the clinic staff that infected air to be delivered out should be sterilized so as not to infect other individuals where infected air is blown out.
- Provide a clean area for donning the PPE.
- Provide an area for doffing the PPE which should be at the exit of the contaminated area or immediately adjacent to it but away from clean areas.
- Provide two receptacles with covers (properly labeled) to receive and store single used contaminated PPE and reusable used/Contaminated PPE

(see appendix for recommended infection control equipment and methods)



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## B. Dental Team Monitoring

- Encourage all dental health workers (dentists, dental assistants, receptionists) to receive seasonal flu vaccinations
- All dental health workers exhibiting CoVid-10 or flu-like (fever, cough, general malaise) symptoms should not be made to report to work)
- Dental health workers who exhibit the above symptoms are classified as “Suspect” case under the revised Department of Health (DOH) guidelines.
- Self-monitoring for worsening of symptoms (fever, going and muscle pain, headache, dry cough, sore throat, shortness of breath. Gastro-intestinal pain /diarrhea) is advised. Should their symptoms worsen, they should report to the nearest hospital ER for training as soon as possible.

## C. Patient Appointments (see Fig. 1 and workflow algorithm 1-3)

It is recommended to do a two-phase triage.

First, screen cases over the phone, determine urgency of care, find out area of current residence and possible contact with confirmed CoVid 19 patients. Explain possible treatment options and infection control protocol in the clinic.

Second, during the appointment, give a questionnaire checklist for possible symptoms and contact exposure. Have patient sign informed consent on treatment options and waiver forms.

Precautions Prior to Face to face Consultation:

- Conduct an inventory of your PPE supplies and only appoint patients according to the availability of your PPE.
- NO PPE, NO TREATMENT
- Practice scheduled appointments only except for emergencies. (see what constitutes a dental emergency in Appendix)
- Schedule your patients apart to give enough time for disinfection of work areas
- Print and place reminders for patients to wear masks, avoid touching the face, hand sanitizing, cough etiquette and maintain physical distancing.

## IV. TYPES OF INFECTION CONTROL PRECAUTION

### A. Standard Infection Control Precaution (SICP)

SICP are a set of infection control practices used to prevent the transmission of diseases that can be acquired by contact with blood, body fluids, non-intact skin and mucous membranes. These measures are to be used when providing care of ALL individuals, whether or not they appear to be infectious or symptomatic.

All dental clinics / facilities should follow standard infection control precautions and transmission-based precautions to reduce the risk of transmission of coronavirus and ***it should be used by all staff, in all settings, always, for all patients.***<sup>9,10,11</sup>



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## B. Transmission-based precaution (TBP)

TBP are additional measures focused on the particular mode of transmission and are always *in addition* to standard precautions. They are grouped into categories according to the route of transmission of the infectious agent

**Contact precaution** - used to prevent and control infection transmission via direct contact or through bodily secretions or indirectly from the immediate care environment. This is the most common route of transmission. It is required for patients known or suspected to be infected. (e.g. Equipments, environmental surfaces)

**Droplet precaution** - used to prevent and control transmission of infection over short distances via droplets ( $>5\ \mu\text{m}$ ). It is required for patients known or suspected to be infected. A distance of approximately 2 meters around the infected individual is the area of risk. Droplets can be generated by coughing, sneezing, talking or during the performance of procedures (e.g. taking of periapical radiographs, placing/adjustment of orthodontic brackets, elastics and wires or impressions).

**Airborne precaution** - are required for patients who are known or suspected to be infected with microorganisms that can be transmitted to other patients/staff via the airborne route (e.g. Air compressor powered equipment, ultrasonic scalers).<sup>12</sup>

## V. DIFFERENT LAYERS OF DEFENSE AGAINST SARS CoV 2

The dental team should not rely on a single precautionary strategy. It must be emphasized that a single approach or device can only minimize the risk of infection to dental personnel and other patients. A single step will reduce the risk of infection by a certain percentage, another step added to the first will reduce the remaining risk, until such a time as the risk is minimal. This can be described as a **layering of protective procedures**.<sup>13</sup>

### A. Standard Infection Control Precaution

#### A.1 Personal Infection Control Precaution

a. **Hand Hygiene** - Wash hands with plain or antimicrobial soap or 70% alcohol or alcohol based sanitizers

- Remove watch and jewelry
- **WET** hands with clean warm or cold running water and add soap
- **LATHER** backs of hands, between fingers and under the nails
- **SCRUB** for at least 20 secs
- **RINSE** well under clean running water
- **DRY** using a clean towel or air dry

b. **Respiratory Etiquette**

- Require dental personnel, patients and companions to wear masks
- Post signages
- Provide tissues and no touch receptacles
- Offer hand washing resources or 70% alcohol solution



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## A.2 Environmental Infection Control

- Clean and disinfect the room and equipment according to universal health precautions on airborne infections.
- Clean, disinfect, or discard the surface barrier, supplies, or equipment located within 6 feet of symptomatic patients.
- 0.1% bleach is recommended for non porous surfaces but may damage colored fabrics
- 3% hydrogen peroxide is suitable for both porous and non porous surfaces <sup>14</sup>

### a. Clinical Contact Surfaces

- Light handles, switches, cuspidor, dental radiograph equipment, dental chairside computer, reusable containers of dental materials, drawer handles, faucet handles, countertops, pens, telephones, doorknobs)
- Disinfect surfaces that cannot be wrapped with a barrier (cuspidor)
- For surfaces that are difficult to clean, barrier protection can prevent contamination of these surfaces. Barriers include clear plastic wrap, bags, sheets, tubings and plastic-backed paper or other materials impervious to moisture.
- Dental staff should wear gloves during removal of barriers and discarded in between patients.
- Puncture-resistant utility gloves should be worn during cleaning and disinfection. For better protection against hazardous chemicals used during disinfection. <sup>15</sup>

### b. Instruments & Devices

- Do not disinfect when you can sterilize.
- Radiographs
- Always wear gloves and masks when imaging and handling contaminated film packets
- Extra oral imaging such as panoramic or Cone Beam Computed Tomography (CBCT), is preferred to avoid gag or cough reflex that occurs during intra oral imaging
- When intra oral imaging is warranted, use double barrier.

### c. Handpieces

- The *anti retractive valve* reduces the backflow of oral microorganisms into the tubes of the handpiece, which serves as an extra preventive measure for cross infection.
- Clean and sterilize handpieces and other intraoral instruments that can be removed from the air and water lines of dental units between patients
- Follow the manufacturer's instructions for cleaning, lubrication, and sterilization of handpieces and other intraoral instruments of handpieces
- Do not surface-disinfect, as these cannot adequately sterilize internal components of handpieces, use chemical sterilants or ethylene oxide gas (Sterrad) or autoclaves
- Place a plastic barrier prior to every patient use.<sup>16</sup>





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## A.3 Personal Protective Equipment

During this period of the COVID-19 outbreak, dentists may need to re-examine the type of PPE to be used.

### Levels of Protection

**Level One:** Recommended for staff who are at the reception and have low or minimal risk and will not enter the treatment areas nor participate in direct treatment of the patient. This consists of wearing of scrub suit/shirt, surgical mask, protective eyewear (not goggles).

**Level Two:** Recommended for staff members who are tasked to prepare instruments in non-contaminated areas, clean instruments in non-contaminated areas and move around areas adjacent to treatment areas but are not exposed directly to patients undergoing treatment. This is also recommended for staff and Health Care Providers (HCP) who will be providing non-AGP to patients. This consists of undergarment/scrub shirt/suit, water repellent gown, surgical mask, protective eyewear (not goggles), head cover and non-sterile examination gloves.

**Level Three:** Recommended for staff and HCP who are directly involved with patient care and in contact with patients in the treatment areas where AGP are expected. This is also recommended for persons responsible for post-treatment disinfection and removal of instruments from patient treatment areas. This consists of under garment/scrub shirt/suit, water repellent surgical gown (preferably ankle length and neck length), properly test-fitted respirator masks (NIOSH N95 or FFP), protective eyewear or goggles, head cover, face shield sterile surgical under gloves taped to wrist cuffs of gown and non-sterile examination overgloves.

**Level Four:** Recommended for persons with continuous or frequent exposure to highly contagious or airborne transmissible pathogens. This is what is commonly called a coverall or “bunny suit” and is impractical for dental office use. This consists of undergarment/scrub suit, single-piece, water-proof, head-to-toe (or ankle length) fitted suit with adjustable fit hood, undergloves taped to wrist cuffs, sealed and fitted goggles, face shield, fitted respirator mask and over-gloves.<sup>17</sup>

### (a) Respiratory Protection

#### Surgical Masks

Surgical masks differ from N95 Filtering Facepiece Respirators (FFPR) in a number of ways. Most importantly, medical masks do not seal to the face. They are fabricated from flexible material containing a filter that is thinner than that of the N95 FFPR, and they are meant to be open at the back edges for breath to escape, rather than the complete seal provided by the N95 FFPR. Medical masks are manufactured with various filtering capabilities and hence come in different grades. Medical masks, when at quality standards, are 3-ply, with a water resistant outer layer and a middle layer composed of electret material such as polyethylene or melt-blown polypropylene that is similar to that of the N95 FFPR, but not as thick. Electrostatic-based filters are a type of material that traps respiratory droplets and other particles by electrostatic charge attraction and therefore can have a relatively large pore size for good airflow/breathability<sup>18</sup>. Electrostatic filters make the medical masks and N95 FFPRs generally more effective than cloth masks. The ability of a medical mask (or cloth mask) to filter particles critically depends on the proportion of air that passes through the filter rather than through gaps around the mask, which is not filtered at all. Therefore, reducing the number and size of gaps by adjusting a medical mask to fit closely to the wearer’s face will enhance its protective function.<sup>19</sup>



## NIOSH Respirator N95, KN95



In contrast, N95 respirators are stiff masks with a filter that blocks 95% of particles measuring 0.3 microns in size, and are fit-tested to each healthcare worker to ensure they create a sealed barrier. Like most personal protective equipment (PPE), N95 masks are meant to be discarded after each use. But as a result of the shortage, the CDC has recommended its reuse.<sup>2021</sup>

- Good breathability with design that does not collapse against the mouth (e.g. duckbill, cone shape)
- Must be put on correctly and worn during the procedure
- Must fit snugly against the user's face to ensure that there are NO gaps between the user's skin and respiratory seal
- Must capture more than 95% of the particles from the air that passes through it.<sup>22</sup>

## NIOSH Filtering Facepiece Respirator (FFPR)

A negative-pressure half facepiece respirator is one that seals tightly to the face and fits over the nose and beneath the chin, covering your nose and mouth. When a user inhales the pressure inside, the facepiece is negative with respect to the ambient pressure outside the respirator. A person's lungs are the mechanism that draws air through the filter. An elastomeric respirator is commonly made from synthetic rubber or silicon material, and *filters* are attached to the face piece.<sup>23</sup>



A respirator with an exhalation valve provides the same level of protection to the wearer as one that does not have a valve. The presence of an exhalation valve reduces exhalation resistance, which makes it easier to breathe (exhale). Some users feel that a respirator with an exhalation valve keeps the face cooler and reduces moisture build up inside the facepiece. However, respirators with exhalation valves are generally not be used in situations when a sterile field must be maintained, such as during an invasive procedure in a surgical or procedural setting, because the exhalation valve allows unfiltered air exhaled by the wearer, potentially contaminated with microbes, to escape and possibly contaminate the sterile field. There may be other healthcare activities where respirators with exhalation valves are appropriate.<sup>24</sup>

### Three Key Factors Required for a Respirator to be Effective



Correct

Incorrect

1 The respirator must be put on correctly and worn during the exposure.

2 The respirator must fit snugly against the user's face to ensure that there are no gaps between the user's skin and respirator seal.

3 The respirator filter must capture more than 95% of the particles from the air that passes through it.

"If your respirator has a metal bar or a molded nose cushion, it should rest over the nose and not the chin area."

### Respirator Masks



### N95 Masks

NOT MEDICAL

MEDICAL



This valve lets germs escape.

If your mask has one, cover the holes with tape!

Respirator masks are NOT meant for healthcare workers. External valve has no filter thus, it does NOT protect others who come near the wearer. If the wearer coughs or sneezes through the valve, unfiltered droplets could travel through the opening and potentially infect anyone in range, especially when doing a sterile procedure like surgery. Same is true for half face and full face respirator silicon masks. Simply cover the external valves with surgical mask to ensure safety of others.



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## Understanding the Difference



Surgical Mask



N95 Respirator

Testing and Approval	Cleared by the U.S. Food and Drug Administration (FDA)	Evaluated, tested, and approved by NIOSH as per the requirements in 42 CFR Part 84
Intended Use and Purpose	Fluid resistant and provides the wearer protection against large droplets, splashes, or sprays of bodily or other hazardous fluids. Protects the patient from the wearer’s respiratory emissions.	Reduces wearer’s exposure to particles including small particle aerosols and large droplets (only non-oil aerosols).
Face Seal Fit	Loose-fitting	Tight-fitting
Fit Testing Requirement	No	Yes
User Seal Check Requirement	No	Yes. Required each time the respirator is donned (put on)
Filtration	Does NOT provide the wearer with a reliable level of protection from inhaling smaller airborne particles and is not considered respiratory protection	Filters out at least 95% of airborne particles including large and small particles
Leakage	Leakage occurs around the edge of the mask when user inhales	When properly fitted and donned, minimal leakage occurs around edges of the respirator when user inhales
Use Limitations	Disposable. Discard after each patient encounter.	Ideally should be discarded after each patient encounter and after aerosol-generating procedures. It should also be discarded when it becomes damaged or deformed; no longer forms an effective seal to the face; becomes wet or visibly dirty; breathing becomes difficult; or if it becomes contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.







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## Filtering out Confusion: Frequently Asked Questions about Respiratory Protection

### User Seal Check

Over 3 million United States employees in approximately 1.3 million workplaces are required to wear respiratory protection. The Occupational Safety and Health Administration (OSHA) (29 CFR 1910.134) requires an annual fit test to confirm the fit of any respirator that forms a tight seal on the wearer's face before it is used in the workplace.<sup>1</sup> Once a fit test has been done to determine the best respirator model and size for a particular user, a user seal check should be done every time the respirator is to be worn to ensure an adequate seal is achieved.



### What is a User Seal Check?

A user seal check is a procedure conducted by the respirator wearer to determine if the respirator is being properly worn. The user seal check can either be a positive pressure or negative pressure check.

During a **positive pressure user seal check**, the respirator user **exhales** gently while blocking the paths for air to exit the facepiece. A successful check is when the facepiece is slightly pressurized before increased pressure causes outward leakage.

During a **negative pressure user seal check**, the respirator user **inhales** sharply while blocking the paths for air to enter the facepiece. A successful check is when the facepiece collapses slightly under the negative pressure that is created with this procedure.

A user seal check is sometimes referred to as a fit check. A user seal check should be completed each time the respirator is donned (put on). It is only applicable when a respirator has already been successfully fit tested on the individual.

### How do I do a User Seal Check while Wearing a Filtering Facepiece Respirator?

Not every respirator can be checked using both positive and negative pressure. Refer to the manufacturer's instructions for conducting user seal checks on any specific respirator. This information can be found on the box or individual respirator packaging.

The following positive and negative user seal check procedures for filtering facepiece respirators are provided as examples of how to perform these procedures.

Source: Centers for Disease Control and Prevention

### How to do a positive pressure user seal check

Once the particulate respirator is properly donned, place your hands over the facepiece, covering as much surface area as possible. Exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure is being built up inside the facepiece without any evidence of outward leakage of air at the seal. Examples of such evidence would be the feeling of air movement on your face along the seal of the facepiece, fogging of your glasses, or a lack of pressure being built up inside the facepiece.

If the particulate respirator has an exhalation valve, then performing a positive pressure check may be impossible. In such cases, a negative pressure check should be performed.

### How to do a negative pressure user seal check



Negative pressure seal checks are typically conducted on particulate respirators that have exhalation valves. To conduct a negative pressure user seal check, cover the filter surface with your hands as much as possible and then inhale. The facepiece should collapse on your face and you should not feel air passing between your face and the facepiece.

In the case of either type of seal check, if air leaks around the nose, use both hands to readjust the nosepiece by placing your fingertips at the top of the metal nose clip. Slide your fingertips down both sides of the metal strip to more efficiently mold the nose area to the shape of your nose. Readjust the straps along the sides of your head until a proper seal is achieved.<sup>2</sup>

If you cannot achieve a proper seal due to air leakage, you may need to be fit tested for a different respirator model or size.

### Can a user seal check be considered a substitute for a fit testing?

No. The user seal check does not have the sensitivity and specificity to replace either fit test methods, qualitative or quantitative, that are accepted by OSHA (29 CFR 1910.134). A user should only wear respirator models with which they have achieved a successful test within the last year. NIOSH data suggests that the added care from performing a user seal check leads to higher quality donnings (e.g., reduces the chances of a donning with a poor fit).<sup>3</sup>

### Where can I Find More Information?

The information and more is available on the [NIOSH Respirator Trusted-Source webpage](https://www.cdc.gov/niosh/respirator/trusted-source).





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## (b) Eye and Face Protection

### Protective Lenses



Have reasonable fit around the temples and properly rest on top of the mask on the bridge of the nose. Usually these are made of scratch-resistant polycarbonate material and will withstand repeated disinfection with alcohol or properly diluted hypochlorite using a soft cloth. These will protect your eyes, however, they do not provide the same level of droplet protection as goggles. Therefore, these should not be used for infection control.

### Goggles

- Should have good seal with the skin of the face
- Flexible PVC frame to easily fit with all face contours with even pressure
- Enclose eyes and the surrounding areas
- Accommodate wearers with prescription glasses
- Clear plastic lens with fog and scratch resistant treatments
- Adjustable bands to secure firmly so as not to become loose during clinical activity, indirect venting to avoid fogging.
- May be reusable (provided appropriate arrangement for decontamination is in place) or disposable



### Face Shields



Face shields are meant to be used as barrier protection for the facial area and associated mucous membranes from airborne body fluids (blood, saliva, bronchial secretions, etc.) expelled as a result of various physiological processes (vomiting, coughing, sneezing, etc.) and medical, dental procedures. For improved protection from infectious agents, face shields should be, at a minimum, full face length with outer edges of the face shield reaching at least to the point of the ear, include chin and forehead protectors, and cover the forehead. Forehead cushions should be of sufficient dimensions to ensure that there is adequate space between the wearer's face and the inner surface of the visor to allow for the use of ancillary equipment (medical/surgical mask, respirator, eyewear, etc.). Cost-effective

considerations include disposable face shields vs. reusable models and those that offer replaceable parts. Although some models of industrial face shields could be used for infection control purposes (e.g., in the event of face shield shortages), they generally tend to be more expensive, heavier and bulkier than face shields used for infection control purposes.<sup>25</sup>



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## MATERIALS

	POLYCARBON- ATE	PROPIONATE	ACETATE	ACRYLIC
Advantages	Better optical quality	Better optical quality	Thin & lightweight	
	High impact resistance	High impact resistance	Optically clear	Optically clear
	Performs well even in high temperature	Performs well even in high temperature	Dimensionally stable	
	Harder to scratch	Harder to scratch		
Disadvantages	Less flexible	More flexible	Easily scratched	Discolors quickly
		More appropriate for chemical resistance applications		
	Expensive		Cheapest	cheap
Uses	Medical, Construction, Motorcycle Helmets	Medical, Construction, Motorcycle Helmets	DIY	Medical, Aerosol Boxes Motorcycle Helmets
Disinfection with Alcohol or bleach	YES (But not Iso-propyl)	YES (But not Iso-propyl)		NO weakens the structure

Table 2

### REPROCESSING OF EYE WEAR

- Step 1 wipe the eye protection, goggles or face shields using a disinfectant wipe or a soft wet clean cloth
- Step 2 add neutral detergent solution
- Step 3 rinse with clean running water to remove residue
- Step 4 Air dry or use absorbent towels
- Step 5 Disinfecting solution will depend on the eye/face protection material

### (c) GLOVES and GLOVE USE (See Recommendations in the Appendix)

Latex Surgical or examination or Nitrile and should be powder free, STRICTLY FOR SINGLE USE. **Double gloving** should be the new standard for all dentists.



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## (d) Coveralls & Isolation Gowns

	TYVEK	TAFETTA SBL (silver back lining)	POLY MICROFIBER	NON WOVEN
<b>Heat Stress</b>	Medium - high	High	High	low-medium
<b>Cost</b>	Expensive		Inexpensive	Inexpensive
<b>Material Characteristic</b>	Flashpun high density polyethylene fibers	Woven with polyester, nylon, acetate or other synthetic materials	Synthetic good for winter dries quicker	Fabric like
<b>Durability</b>	Noted for its strength and its resistance to tears and punctures	Plaible Does NOT Pill	Durable can withstabd many washings Quite soft	
<b>Uses</b>	Used to protect buildings during construction	Formal wear gowns		isolation or surgical gowns booties, head caps
<b>Reusable</b>	YES	YES	YES	MAYBE
<b>Breathability</b>	YES	NO	Better than polyesters	YES
<b>Liquid Permeability</b>	Water proof	Water repellent	Water repellent	Water repellent
<b>Seamless/ Lazer Sewn**</b>	YES	NO	NO	NO
<b>WASHING</b>				
<b>Cold water</b>	NO	YES	YES	NO
<b>Warm Water</b>	YES	NO	YES	NO
<b>Gentle Detergent</b>	YES	YES	YES	NO
<b>Hang</b>	YES	YES	YES	NO
<b>Sun Dry</b>	NO	NO	NO	NO
<b>SPRAYING Diluted bleach</b>	YES	YES	YES	NO
<b>Autoclave</b>	NO	Ask the supplier	Ask the supplier	NO

### REPROCESSING:

The most common method of reprocessing is to initially wash with soap/detergent and water followed disinfection<sup>(9)</sup>, then rinse with water and finally hang to air dry.


### Disinfection Alternatives:

- 1) soak with 0.1% sodium hypochlorite 5 minutes
- 2) soak with 3% hydrogen peroxide for 30 minutes



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	RECEPTION/ TRIAGE	CLEAN AREA NON AGP	OPERATORY NON AGP	OPERATORY AGP
<b>PERSONAL PROTECTIVE EQUIPMENT Recommendation</b>				
Single Gloves Non Sterile	NO	YES	YES	YES
Double Gloves Non Sterile	NO	NO	YES	YES
Half Facepiece Respirator	NO	NO	NO	YES
Properly Fitted N95	NO	NO	NO	YES
Surgical Mask	YES	YES	YES	Optional
Cloth Mask	NO	NO	NO	NO
Eyewear-Protective Polycarbonate (unsealed)	YES	YES	YES	YES (but always with face shield)
Eyewear - Fitted/Sealed Goggles	NO	YES (optional)	YES (optional)	YES (but always with face shield)
Face Shields	YES	YES	YES	YES
Single use Head Caps	OPTIONAL	PREFERRED	PREFERRED	PREFERRED
Coveralls (fluid repellent)	NO	NOT RECOMMENDED	NOT RECOMMENDED	Optional
Isolation Gown Long sleeved and ankle length (reusable)	NO	YES	YES	YES
Disposables	PREFERRED	PREFERRED	PREFERRED	PREFERRED
Reusable fluid repellent/ resistant	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
Apron	NO	NO	NO	OPTIONAL
Shoes: rubber soled, no laces	YES	YES	YES	YES
Booties	NO	NO	NO	YES

**\*Note**  
*Coveralls may offer better protection, however the difficulty in removing the suit and accidental self-contamination is highly possible. Aerosols produced by and during dental treatment is concentrated in the upper chest area, and this is also the area where one needs to unzip the suit. Here lies the danger of contamination during removal. With regard to the choice of material, consideration must be given to the local temperature. If the material induces too much sweating, constant touching of the face to wipe off sweat may negate the use of the protective barrier. Emphasis must be given on educating and training the entire dental team using video simulations rather than lectures to avoid nosocomial infection. Keep in mind, consistent wearing of PPE is more important than the type of PPE used.*

To avoid cross-contamination, PPE should be changed for every patient seen.<sup>26</sup>





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## SUMMARY



### “Contaminated” and “Clean” Areas of PPE

- **Contaminated – outside front**
  - Areas of PPE that have or are likely to have been in contact with body sites, materials, or environmental surfaces where the infectious organism may reside
- **Clean – inside, outside back, ties on head and back**
  - Areas of PPE that are not likely to have been in contact with the infectious organism



### Where to Remove PPE

- **At doorway, before leaving patient room or in anteroom\***
- **Remove respirator outside room, after door has been closed\***

**\*Ensure that hand hygiene facilities are available at the point needed, e.g., sink or alcohol-based hand rub**



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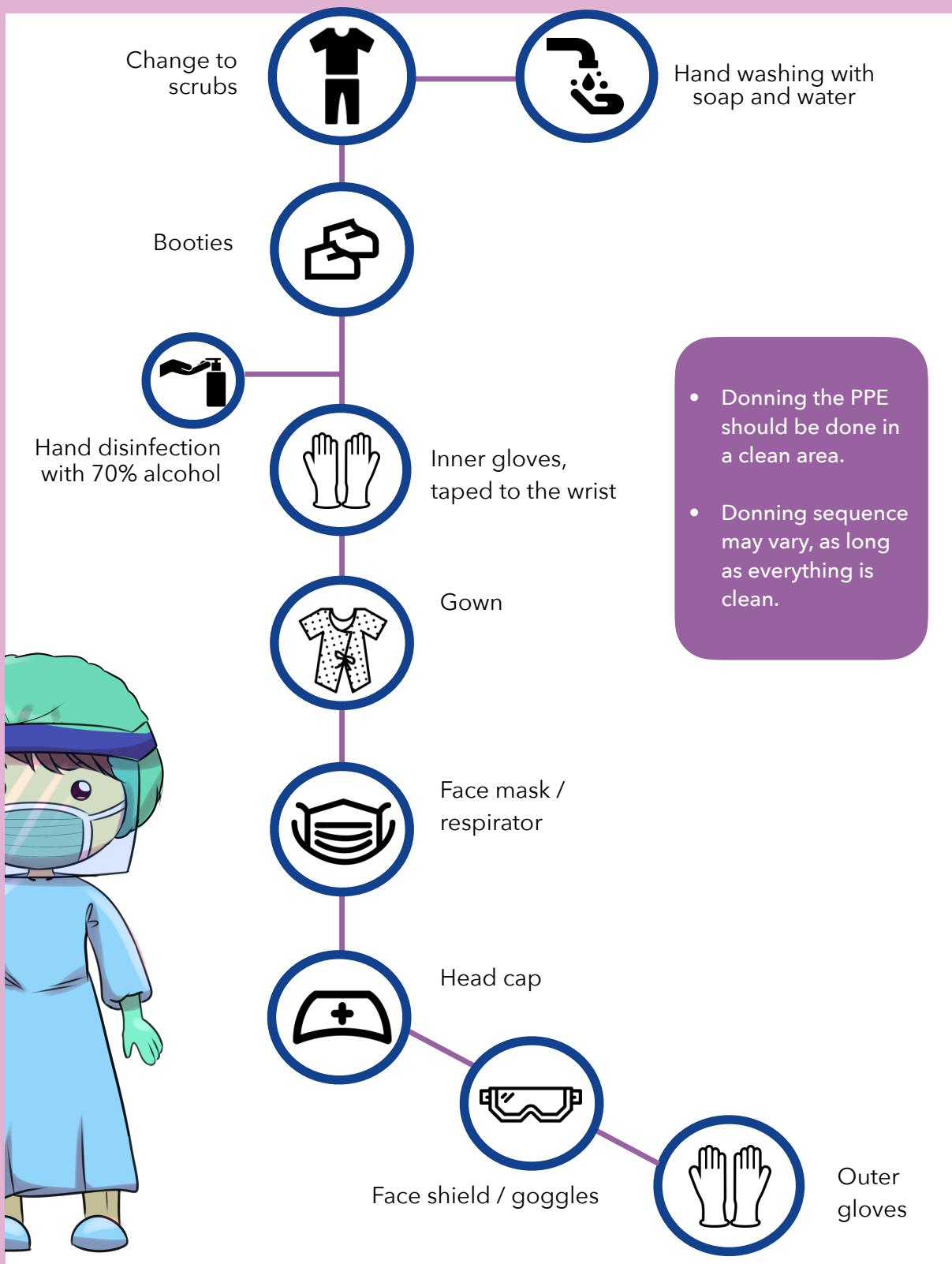
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## DONNING PPE

*Adapted from RITM; modified to suit the practice of Dentistry*



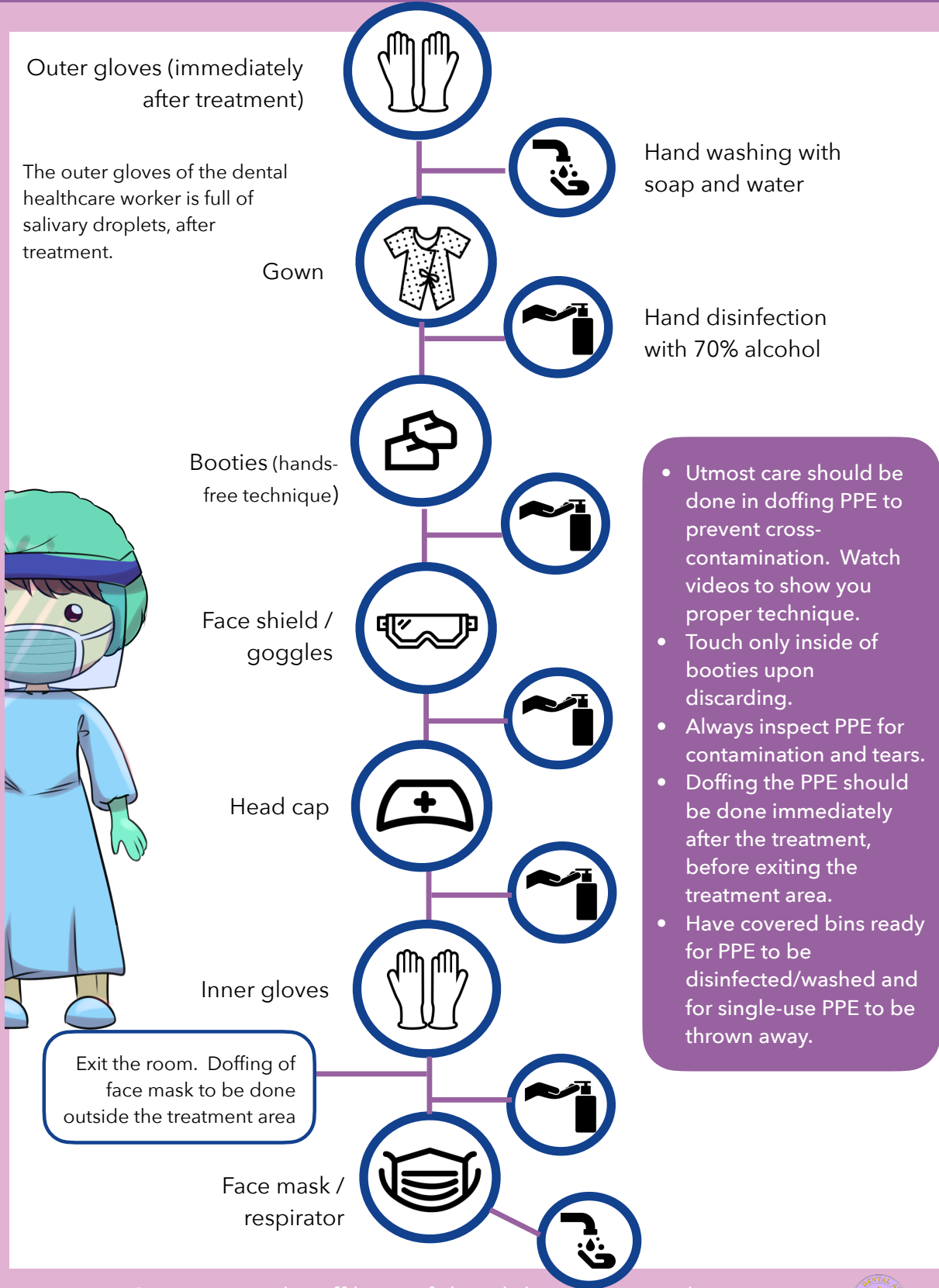
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# DOFFING PPE: reusable or disposable gown

Adapted from RITM; modified to suit the practice of dentistry



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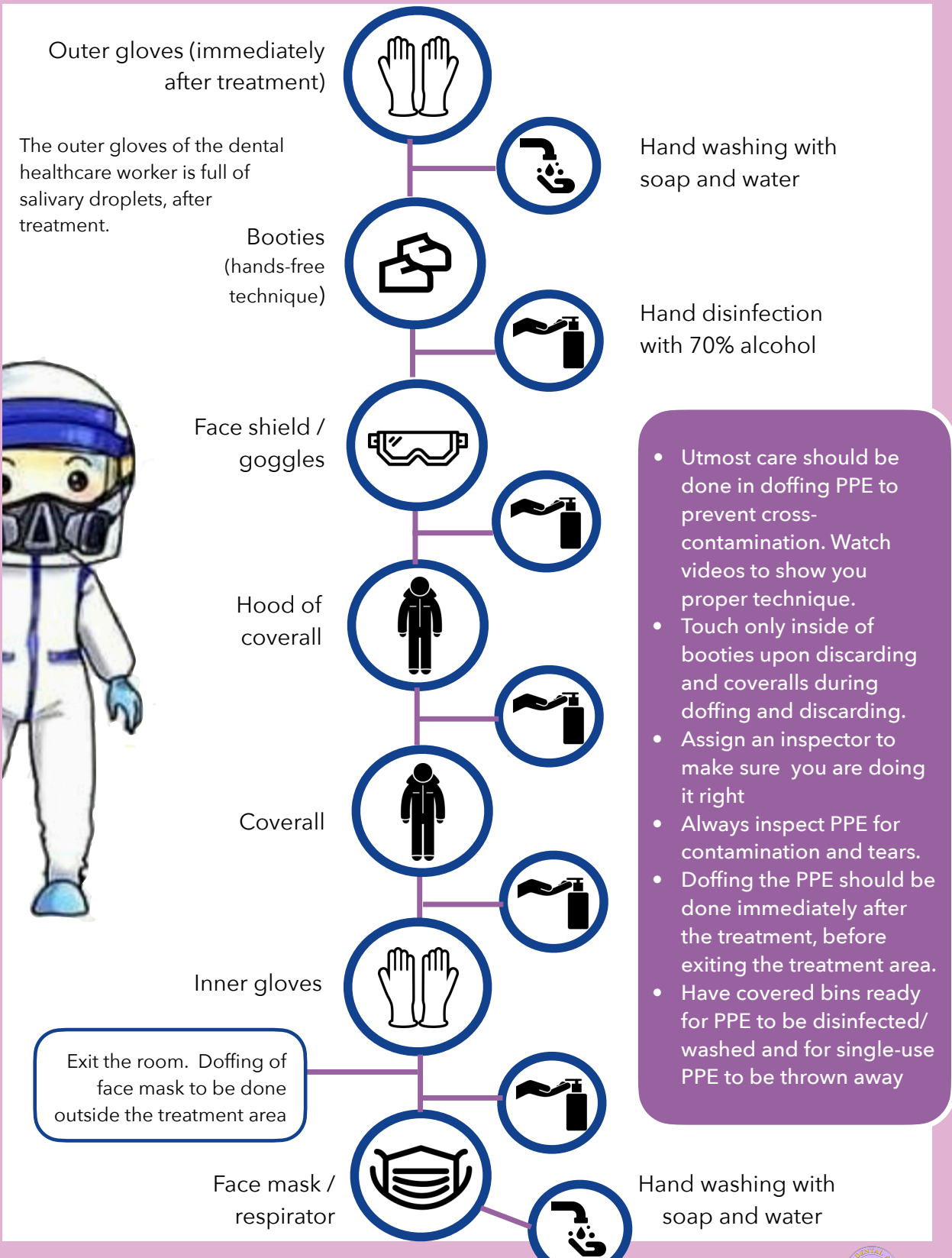
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## DOFFING PPE with coverall gown

Adapted from RITM; modified to suit the practice of dentistry



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## B. Transmission Based Precaution

### B.1 Routine Use of Pre procedural Rinse

- There is no scientific evidence which indicates that pre procedural rinsing prevents clinical infections among staff and patients
- It reduces viral load in the oral cavity
- 1% hydrogen peroxide or 0.2% povidone is recommended at the start and during entire procedure, since SARS-CoV-2 may be vulnerable to oxidation.<sup>27</sup>
- Rinse initially for 60 seconds, swab in children and patients who are unable to rinse.<sup>28 29</sup>

### B.2 Use of Rubber Dams

- Can significantly minimize the production of saliva and blood contaminated aerosol or splatter during aerosol generating procedures (AGP).
- Could significantly reduce airborne particles in a 3 foot diameter of the operational field by 70%.<sup>30</sup>

### B.3 Intra Oral Suction Machines

#### a. High Volume Evacuator (HVE)



- Preferred
- Tips are either discarded, or cleaned and disinfected after each use
- For clinics using centralized high vacuum evacuator systems, the gases are vented out and the liquid and particulates are directed down the drain, check where the air is vented.

#### b. Low Volume Evacuator (LVE)

- Not recommended
- Backflow from low volume saliva ejectors occurs when the pressure in the patient's mouth is less than that in the evacuator. Additionally, gravity pulls fluid back toward the patient's mouth whenever a length of the suction tubing holding the tip is positioned above the patient's mouth, or during simultaneous use of other evacuation (high-volume equipment).<sup>31</sup>
- Tips should be disposed of properly in an infectious waste container
- To avoid backflow episodes:
  1. Advise the patient to NEVER create a vacuum by sealing the lips around the ejector tip
  2. Advise the patient to NEVER suck on the ejector tip
- For portable LVEs, evacuate contents in an open area with flowing drainage while wearing appropriate PPE.



#### c. Vacuum Lines

- Hoses should be flushed with a volume of water and bleach for 10 minutes, NEVER more than 15 minutes<sup>32</sup>
- Filters located at the junction should be removed, cleaned and disinfected daily.



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## C. Mechanical Filtration for Aerosol Precaution

Because of the virulence of SARS CoV2 on fomites and its ability to remain suspended in air after being aerosolized during a dental procedure, extra precaution must be put in place to facilitate air exchange.

The following equipment are only recommendations and each dentist must inquire regarding the manufacturer's recommendations specific to their office set-up and size.

### C.1. HEPA Filtration Units

- High Efficiency Particulate Air (HEPA), is a designation used to describe filters that are able to trap 99.97 percent of particles that are 0.3 microns. That micron size (0.3) is referred to by scientists as the MPPS, or the most penetrating particle size. Scientists have found that particles of that size evade air filters more than larger or smaller particles. <sup>33,34,35</sup>
- Most modern HEPA filters consist of interlaced glass fibers that are twisted and turned in myriad directions to create a fibrous maze. As particles traverse this web, they're taken out of circulation.
- The US Center for Disease Control advises dental clinics to consider using HEPA air filtration units DURING and AFTER AGP to reduce particle and droplet counts.
- Further, CDC advises placement of the HEPA filter beside the patient's chair, NOT BEHIND the dental health worker.

### C.2. UV-C Units Efficacy and Safety

- Ultra Violet Germicidal Irradiation (UVGI) - an established means of disinfection and *can be used* to prevent the spread of certain infectious diseases. UVGI radiation kills or inactivates microbes by damaging their deoxyribonucleic acid (DNA). The principal mode of inactivation occurs when the absorption of photon forms pyrimidine dimers between adjacent thymine bases and renders the microbe incapable of replicating.
- Types:
  1. UV-C (100 - 280 nm) - Short wave
  2. UV- B (280-315 nm) - medium wave
  3. UV-A (315-400 nm) <sup>36,,37,38</sup>
- Factors influencing UVGI performance
  1. Irradiance and Dose - product of intensity and exposure duration
  2. Microbial sensitivity - (lacks evidence for SARS-CoV-2)
  3. Wavelength of received radiation
  4. Humidity - microbes found to be resistant at higher humidities
  5. Temperature - high or low temperatures may affect UVGI output of the low pressure mercury lamps or decrease the microorganism's sensitivity to UVGI.
- If used properly, following the manufacturer's instructions, they can be safe and effective in reducing airborne infection.
- UVGI decontamination is potentially hazardous to humans and must be done strictly following the manufacturer's instructions - UVGI may be absorbed by surfaces of the eyes and skin, short term exposure may result in photokeratitis and/or keratoconjunctivitis. Symptoms may manifest 6-12 hours after (Mild, sand in the eyes and tearing; mild to moderate, skin overexposure similar to sunburn; severe, eye pain).

*\* Note that there are no evidences on the use of UVGI on SARS CoV2.*

*Please check devices as some contain compressed mercury.*



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## C.3. Extra-Oral Vacuum Machines

- Dental procedures necessitating the use of equipments and machines, driven by air turbine, will create a spray of aerosolized saliva, inadvertently spreading the virus to the dental staff in very close range and may stay suspended contaminating the air within the operatory.
- The size of the aerosol determines the rate of their spread in the environment and the distance of distribution on surfaces.
- A machine which can suction the aerosol may decrease microbial contamination. However, these machines may be more sensitive to large particulates like bacteria or the smaller sized virus to about 0.5-5um only. The smallest size virus isolated for the SARS-CoV2 is 0.2um.
- This may not still effectively eliminate the minute sized SARS CoV2 virus, but it may still significantly reduce the microbial count within the operatory during an aerosol generating procedure.
- The direction and distance of the suction cone increases the ability of the machine to absorb aerosols. It has been suggested that absorption ability could be dependent on the power of the machine.<sup>39</sup>
- When combined with other measures, such as use of rubber dam, minimal treatment time, the use of EOVM may decrease viral exposure during AGP, since it adds another layer of protection for the dental team.
- After the procedure, some clinicians recommend to leave the machine open at a lower speed to further decontaminate the operatory.
- **HOWEVER, this is NOT to replace a negative air pressure environment recommended when managing COVID 19 positive patients. Nor should this allow complacency in using the device for aerosol generating procedures.**

### Note:

*Before purchasing any device, please do your research, consult experts to engineer air exchange; keep in mind that none of these devices have evidence in effectively eliminating minute sized SARS-CoV-2 virus.*



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## D. Waste Management of Hazardous Wastes 40

Dentistry has been found to be one of the professions with the highest risk of being infected with the COVID-19 virus because we work near the patient's mouth and are constantly exposed to their saliva and aerosols we produce during drilling of teeth and other dental procedures. As salivary glands have been found to be potential reservoirs for COVID-19 asymptomatic patients<sup>41</sup> everything that enters the patient's mouth or was in contact with the patient's saliva is considered INFECTIOUS and disposed of or treated as such.




Proper waste management becomes more important in the time of the COVID pandemic as dental clinics will be generating a higher amount of infectious and other wastes from increased used of PPE and more stringent infection control measures.

1. All infectious waste such as used gloves, single PPE must be placed in the yellow bag and covered during the workday. At the end of the day, this bag must be deposited in a suitable location outside of the clinic for waste disposal and away from the public and potential scavengers. Please make sure you make arrangements at your place of work where this is and find out how or when this waste can be disposed of properly.
2. Infectious PPE intended for reuse such as gowns, goggles, protective eyewear, face shields and respirator masks must likewise be placed in a separate bag or bin for after-hours disinfection.
3. Reusable gowns may be disinfected by washing them separately from your personal clothing. Disinfect the gowns by spraying or soaking them in a 0.1% chlorine bleach solution for 5 minutes and wash with detergent and water the usual way.
4. Polycarbonate & Propionate goggles, protective eyewear and face shields may be disinfected with 0.1% chlorine bleach solution, rinsed, wiped and dried.
5. Respirator masks may be reused only if they are not heavily or visibly soiled or were not exposed heavily to aerosols or droplets (NAGP procedures or very short AGP procedures) HOWEVER, the process of disinfecting involves subjecting these masks to dry heat (in an oven) at 70 degrees celsius for 30 minutes. The masks must be fit tested.

### D.1 Guidelines for Waste Management in Dental Clinics

- a. Segregate wastes at source and place appropriately colored containers/rash bags. the waste bins and place posters/infographics as to how to segregate wastes on or above the trash bins.



TYPE		COLOR
Non-infectious waste		Garbage area
• Food Waste or Organic Waste	• Green liner/bin	
• Bottles & cans Papers & Cartons	• Black liner/bin	
Aerosols & Pressurized Containers	Red liner/bin	Storage area
Infectious Waste (gloves, masks and other PPE's, cotton, gauze and anything that touched the patient's mouth and saliva)	Yellow liner/bin marked with the symbol 	Garbage area
Chemical Waste (chemical sterilizants, disinfecting solutions)	Excess chemicals stored in suitable containers and placed in yellow bag during disposal.	Storage area
Sharps	Red sharps container, should be puncture proof	Disposed of when container is ¾ full.





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(needles, surgical blades, suture needles, burs, endodontic files, reamers)	and marked with the symbol 	
Expired Pharmaceutical Waste*	Minute amounts – can be placed with the infectious wastes (yellow bag)	Garbage area
Pathologic Waste (extracted teeth, biopsy samples, excised tissues)	Yellow liner/bin 	Teeth with amalgam restorations should be disinfected and placed in container for amalgam wastes
Hazardous wastes (mercury, lead, used fixer solution)	Suitable well-sealed containers	Suitable storage area (for recycling)

Source: adapted from DOH Healthcare Waste Management Manual

\*\* Ideally, pharmaceutical wastes should not be disposed of in a yellow bin together with other infectious wastes, it should be separate or more importantly they can be returned to manufacturers (make it a part of your purchase of medications or pharmaceuticals). However, in minute amounts, they can be thrown together with infectious wastes, rather than thrown down the drain.

- b. Separate waste bins should be provided for each room
- c. For infectious wastes, waste bins should
  - Remain closed except when waste is discarded
  - Be pedal operated, to avoid touching infectious items
  - Be lined with appropriately colored bags
  - Be labelled and the date when it was generated written on the label
  - Be double bagged, sealed and outside sprayed with 0.5% sodium hypochlorite (NaOCl) disinfectant
  - Be filled to only 3/4 full
- d. The use of plastics should be minimized and alternative biodegradable materials should be used, whenever possible. Plastics can release harmful chemicals into the surrounding soil, pollute water sources and harm the ecosystem.

Possible ways of reducing plastic use in the dental office include:

- Use of reusable/washable surgical gowns
- Use of autoclavable stainless steel cups instead of disposable paper cups that are usually plastic lined
- Use of plexiglass or other plastics that can be disinfected for aerosol boxes instead of thin, disposable plastics.
- Minimize using disposable plastic sheets such as cling wrap as surface barriers for the dental chair and other objects. These surfaces can be easily disinfected by wiping with soap and detergent, diluted sodium hypochlorite solution or hydrogen peroxide solution.
- Invest in a high quality polycarbonate or other reusable face shields instead of disposable ones.



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e. HEPA, APR and PAPR filters are infectious wastes and are placed in the infectious waste container, properly labeled.

f. Waste from intramural high vacuum evacuators can be thrown down the drain/sink, under running water. Disinfect the sink with diluted sodium hypochlorite solution after. Standard waste water treatment kills COVID-19 virus, and “there is no evidence to date that COVID-19 virus has been transmitted via sewerage systems, with or without wastewater treatment.”<sup>42</sup>

g. For chemical wastes such as sterilizants and disinfectant solutions:

- Glutaraldehyde e.g. Cidex is a High Level Disinfectant (HDL) and releases noxious vapors. It is a hazardous waste and disposable should be through a waste contractor or waste treater. Glutaraldehyde waste should be stored in sealed containers and placed in yellow coded bags upon disposal/collection.
- Disposal of sodium hypochlorite (bleach solution) will depend whether the hypochlorite contains mercury and water treatment. Sodium hypochlorite solution that contains mercury should not be thrown down the drain but stored in suitable containers and classified as chemical waste. In clinics with access to waste water treatment, sodium hypochlorite (non-mercury containing) can be thrown down the drain. Sodium hypochlorite solution with or without mercury should not be thrown down the drain in clinics which use septic tanks.

As bleach solutions should be changed every day for maximum disinfecting action, mix only what is necessary for the day.

- Hydrogen peroxide solutions can be thrown down the drain.

h. Collection of Wastes. Infectious waste bags must be deposited in a suitable location outside of the clinic for collection.

Wastes generated by dental clinics are to be collected by:

- General Wastes  
Green bag and Black bag by Local Government Units (LGU). These wastes do not pose any danger to the general public and therefore can be collected by LGUs.
- Infectious Wastes  
Yellow bag for pathological, sharps, etc are to be collected by third party Treatment, Storage and Disposal (TSD) Facilities. List of registered Treatment, Storage and Disposal (TSD) Facilities are available at the Environmental<sup>43</sup>

i. Proprietors/owners of dental clinics must comply with the following laws:

## **DOH DM 2020-0157**

Guidelines in Cleaning and Disinfection in Various Settings as an Infection Prevention and Control Measure Against COVID-19

- On the use of sodium hypochlorite solution for disinfection of surfaces, disposed PPE's, and similar health care wastes
- Use of other types of disinfectant such as ammonium chloride, phenols, and hydrogen peroxide
- Use of appropriate PPE's for waste disinfection
- Practice of proper hand hygiene

## **DOH DM 2020-0157**

Interim Guideline on the Management of Health Care Waste in Health Facilities, Community Quarantine Units, and Temporary Treatment and Monitoring Facilities with Cases of Coronavirus Disease 2019 (COVID-19)



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- Categorizing all wastes of suspect, probable and confirmed COVID-19 patients are categorized as infectious waste
- Use of personal protective equipment must be used in handling infectious wastes
- Storage of infectious waste must follow safe retention until treat or collected
- 48 hours for cold season
- 24 hours for hot season

## **EMB MC 2020-15**

Addendum to the Interim Guidelines on Issuance of Special Permit to Transport (SPTT) for the transportation of hazardous wastes within the community quarantine period.

- Granting of permit to waste treaters of M501 to continue collection of infectious wastes.

## **Joint DENT-DOH Administrative Order 2005-02**

Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage and disposal of health care wastes.

- Define the jurisdiction, authority and responsibilities of the DENR and DOH with regard to health care waste management
- Provide guidelines to generators on handling, collection, transport, treatment, storage and disposal
- Applies to all health care waste generators, including owners and operators of TSD and final disposal facilities.

## **DOH AO 2007-0014**

Guidelines on the Issuance of Certificate of Product Registration for Equipment or Devices Used for Treating Sharps, Pathological and Infectious Waste

- Includes generators of HCW that use equipment and devices in treating sharps and infectious wastes should apply for Certificate of Product Registration (CPR)
- Approved technology may be used for treatment of sharps and disinfection technologies

## **Republic Act 9003**

Ecological Solid Wastes Management Act (ESWMA)

- Requires segregation of solid waste at the source including dental clinics by using separate container for each type of waste from all sources.
- Collection and transport of serrated generated waste or non-infectious waste are covered by RA9003 and disposed to landfill for disposal.
- Infectious wastes are governed by RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes Act, 1990)
- Infectious wastes once treated / disinfect may be treated similar to general waste



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## E. Infection and contamination prevention: the recommended use of PPE, personal disinfection, operator, disinfection, surface disinfection, and aerosol control practices as evidenced in scientific literature

ITEM/EQUIPMENT	HIGHLY RECOMMENDED	RECOMMENDED	NOT RECOMMENDED	OPTIONAL	SCIENTIFIC EVIDENCE
<b>PPE</b>					
<b>HEAD COVERING</b>					HIGH
Headcap (Single use)	✓				
Headcap (Reuseable)			✓		
<b>PROTECTIVE GOWN</b>					HIGH
Isolation Gown long sleeved/ankle length	✓				
Isolation Gown long sleeved/knee length		✓			
Isolation Gown Single Use	✓				
Isolation Gown Reusable*		✓			
<b>PROTECTIVE EYEWEAR</b>					HIGH
Polycarbonate wrap-around lens*	✓				
Sealed goggles**		✓			
Full face shield Single use	✓				
Full face shield Reusable		✓			
<b>PROCEDURE MASKS</b>					HIGH
Surgical Masks*		✓			
Respirator Masks**	✓				
Fabric/Cotton Masks			✓		
<b>PROCEDURE GLOVES</b>					HIGH
Double Gloving*	✓				
Single Gloving**	✓				
Non-sterile gloves	✓				
Sterile Surgical***				✓	





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ITEM/EQUIPMENT	HIGHLY RECOMMENDED	RECOMMENDED	NOT RECOMMENDED	OPTIONAL	SCIENTIFIC EVIDENCE
<b>SHOES AND SHOE COVERING</b>					HIGH
Shoe Covering Single Use	✓				
Rubber soled shoes Preferably Non-lace/ non-canvas, non-fabric	✓				
Leather/Fabric shoes			✓		
<b>HAND DISINFECTION</b>					HIGH
70% Alcohol or Alcohol-based sanitizers	✓				
Hand Washing with soap and water	✓				
<b>OPERATORY DECONTAMINATION EQUIPMENT</b>					
Portable UVC Units*	✓				HIGH
Portable HEPA Filtration Units**	✓				GOOD
Exhaust Fans	✓				
Aircon or electric fans	May be used with proper engineering protocols				
<b>OPERATORY SURFACE DISINFECTION</b>					
70% or > Alcohol	✓				HIGH
0.1% Chlorine Bleach*	✓				HIGH
Quaternary Ammonium		✓			GOOD
3% Hydrogen Peroxide**	✓				
Detergent/Soap		✓			HIGH
<b>AEROSOL CONTROL PRACTICES</b>					
Intra-oral High Volume Evacuator (HiVac)		✓			GOOD
Portable suction (HiVac)		✓			
<b>ITEM/EQUIPMENT</b>	<b>HIGHLY RECOMMENDED</b>	<b>RECOMMENDED</b>	<b>NOT RECOMMENDED</b>	<b>OPTIONAL</b>	<b>SCIENTIFIC EVIDENCE</b>
Extra-Oral Vacuum Unit*/ HVE				✓	LOW
Saliva Ejector			✓		LOW
Rubber Dam Isolation	✓				HIGH



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## Legend

### PPE:

\* Reusable Isolation Gowns must be made of moisture repellent material and withstand washing without deteriorating. Materials that may be water repellent are Taffeta, Taffeta with Silver Back Lining (SBL), Coated Taffeta, Spun Polypropylene Fabric

### Protective eyewear

\* Polycarbonate Wrap around Lenses: Recommended for use with a full face-shield when doing AGP since these are not sealed on the sides

\*\* Sealed goggles: Recommended for use with or without a face-shield since these are sealed around the periphery. However, there is the possibility of moisture retention or fogging on the inner lens of the goggles with time.

### Procedure masks

\* Surgical Masks: Must be of adequate thickness and impermeable to light to moderate droplets or aerosols. These may be worn for non-

AGP procedures or AGP procedures of short duration as long as this is used with a full face shield

\*\* Respirator Masks: Must be fitted properly with no peripheral leaks. These are worn together with other face protective equipment when moderate to long AGP are expected. Respirator masks may be disinfected and reused provided they are not soiled or directly aerosolized

### Procedure gloves

\* Double Gloving: Recommended when long procedures are expected and/or when procedures are done where there is danger of glove damage

\*\* Single Gloving: Recommended for short procedures and where there is no risk of glove damage

### Operatory decontamination equipment

The above equipment are only recommendations and each dentist must inquire regarding the manufacturer recommendations specific to their office set up and size.

\* UVC Units: UV decontamination is potentially hazardous to humans and must be done strictly following manufacturer's instruction

\*\* HEPA Filtration Units: Room filtration efficacy is affected by room size, room air movement (caused by air conditioners, electric fans) and unit maintenance

### Operatory surface decontamination

\* 0.1% Bleach: Recommended for non-porous surfaces but may damage colored fabrics

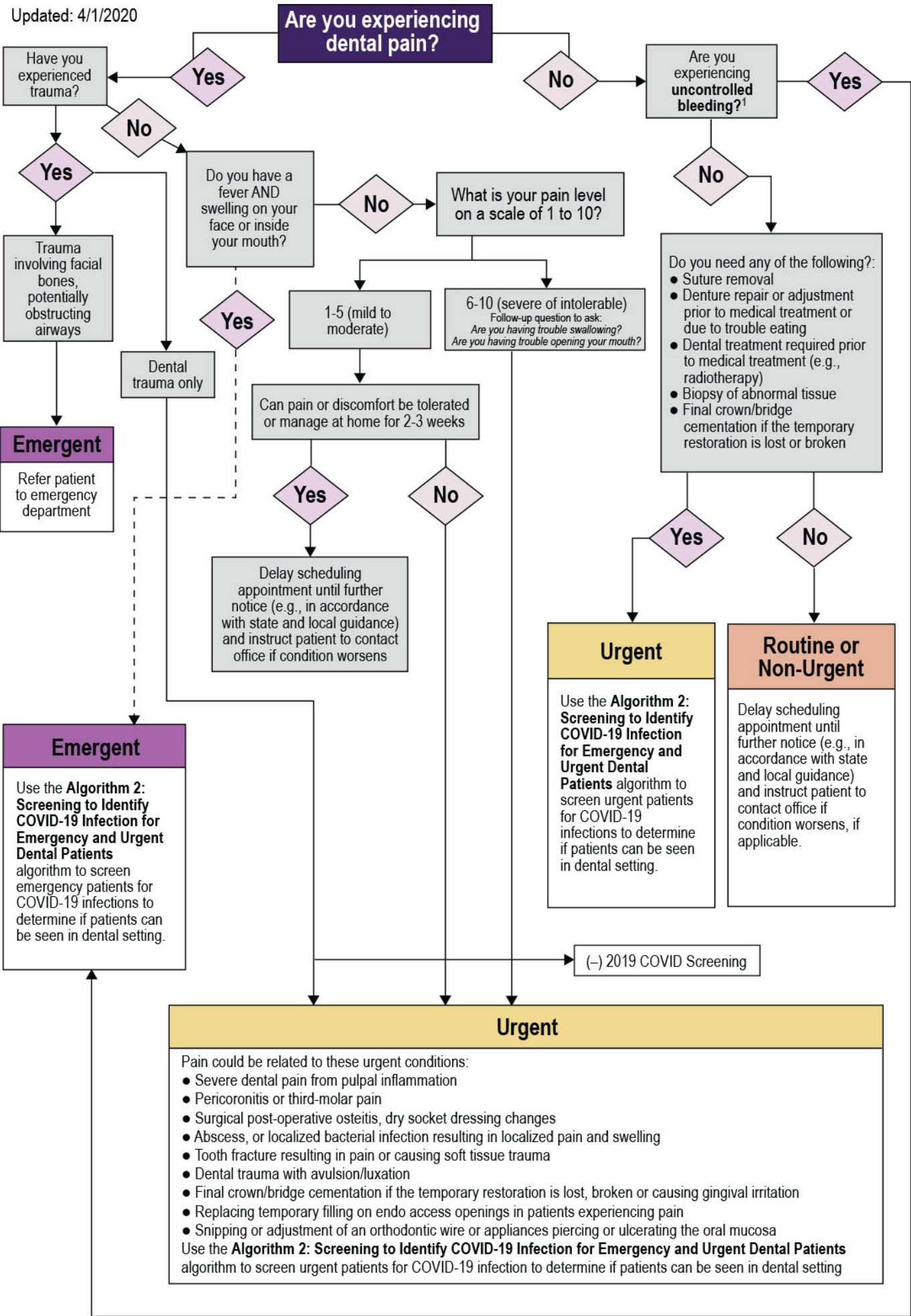
\*\* 3% Hydrogen Peroxide: Suitable for non-porous and porous surfaces



VI. APPENDIX

A. ADA Algorithms

ALGORITHM 1: Interim Guidance for Triaging Patients for Emergency and Urgent Dental Care







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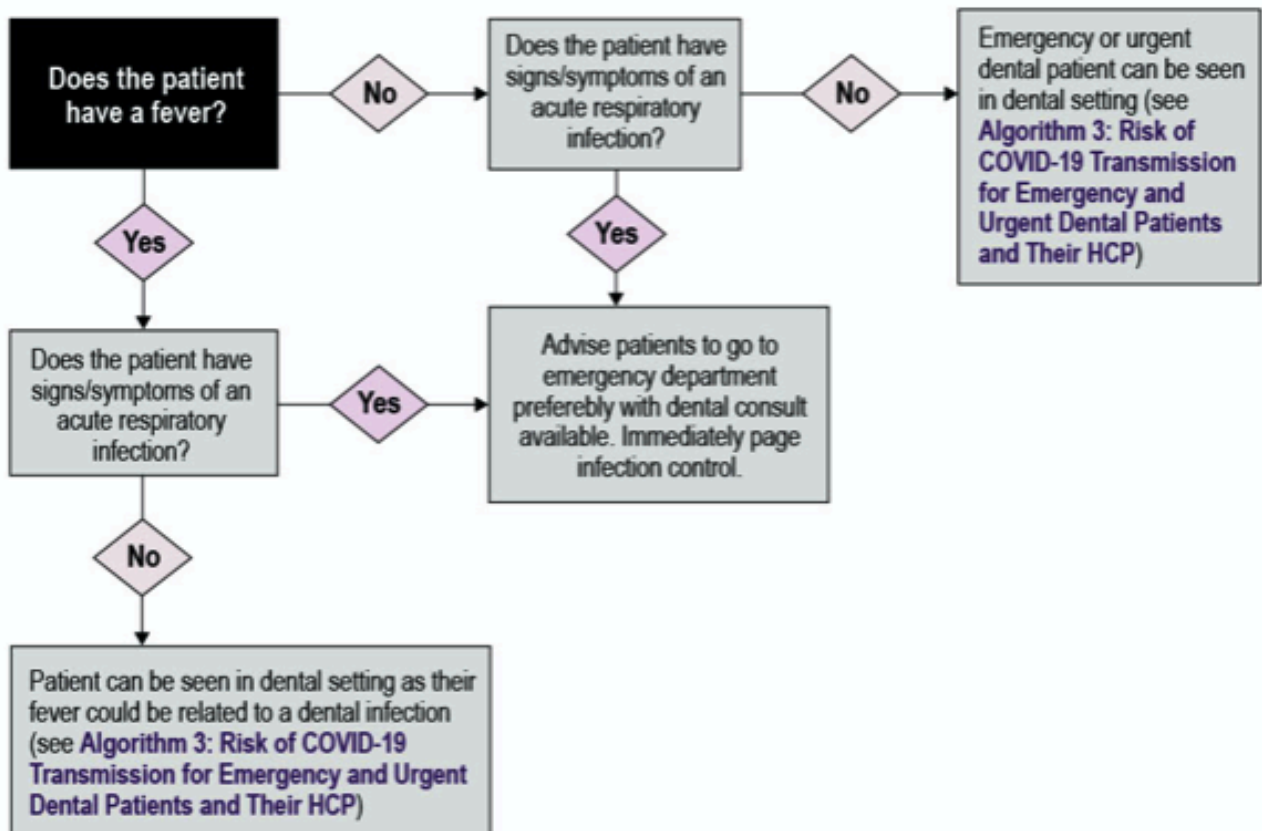
## ALGORITHM 2: Interim Guidance for Screening to Identify COVID-19 Infection for Emergency and Urgent Dental Care

Updated: 4/1/2020

### Summary of Procedures

1. Clinic staff should speak to all patients 1-2 working days (or sooner if able) before any scheduled session.
2. Call patients for whom in-person visit may not be necessary and issue can be solved without an office visit.

Emergency and urgent dental patients in this algorithm are being evaluated for COVID-19 infection signs/symptoms to determine in which clinical setting they should be seen. Patients with active COVID-19 infection should not be seen in dental settings per CDC guidance.



1. During screening procedure for COVID-19 infection, patients should be asked if they have tested positive for COVID-19 infection and if yes, the patient should be immediately referred to the emergency department for the management of the dental condition. If patient has previously tested positive for COVID-19 infection and 3 days have passed since symptoms have resolved, the patient can be seen in a dental setting (see Algorithm 1).
2. Fever in the absence of respiratory symptoms in the context of this algorithm should be strongly associated with an emergency or urgent dental condition (e.g., dental infection) if dental settings are to be used.
3. No companions should be invited inside the clinic, they should not sit in the waiting room, and patients with a fever being seen in dental setting should be given a mask if they don't have one already. As the patient's mask will come off during dental treatment, it should be placed back as soon as treatment is complete.
4. If patient has had exposure to an individual with suspected or confirmed COVID-19 infection, traveled to countries currently under a travel ban, or been exposed to confirmed SARS-CoV-2 biologic material (either themselves or via another individual), consider referring patient to a hospital setting. Risk of transmission increases with these exposures.
5. If the patient needs to be referred for COVID-19 testing, they should be given detailed instructions on when/where to go for testing, how to justify the need for testing to the testing facility visited, and how to contact the dental clinic to report test results. Clinic director and/or coordinators should maintain a list of patients who will not becoming in for in-person visits in charts or find another mechanism that fits into the clinic's workflow. It is critical that a list of dental patients that have been referred to other settings due to suspected COVID-19 infection be maintained.
6. Information about reporting suspected cases of COVID-19 infection can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/php/reporting-pui.html>





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## B. General Recommendation Checklist for Dental Clinics

### ALGORITHM 3: Interim Guidance to Minimize Risk of COVID-19 Transmission for Emergency and Urgent Dental Patients and Healthcare Workers

#### Guidelines Adopted in Italy for Dental Practitioners during the COVID-19 Emergency <sup>44</sup>

<b>Prior to dental treatment (patients at home)</b>	
Phone triage questionnaire	Provide limitations to dental office access
Organization of patient flux	Book appointments to avoid contemporaneity of patients
	No accompanying subjects if possible. When this is unfeasible, the accompanying person will be asked not to enter the practice and to wait outside
<b>Prior to dental treatment (patients entering the practice)</b>	
Body temperature measurement	Assess potential presence of fever via contactless thermometer
Hand hygiene (patient)	Use of hydroalcoholic solutions for hand disinfection when entering the dental office
Waiting room	Provide adequate ventilation
	Removal of all objects that could favor cross-infection
	Avoid long stay in the waiting room
	Avoid the contemporary presence of >2 patients
	Respect the distance of 1 m between patients
	Discourage the presence of accompanying people
Environment disinfection	Use of 0.1% sodium hypochlorite or 70% isopropyl alcohol for the disinfection of all surfaces
Nonclinical staff clothing	Application of face masks (filtering facepiece level 2 or 3), glasses
<b>Preparation to dental treatment (dentist and patient)</b>	
Patient preparation	Use of disposable shoe covers
	1-min mouth rinse with 0.2% to 1% povidone, 0.05% to 0.1% cetylpyridinium chloride, or 1% hydrogen peroxide
Clinical staff hand washing	Hand washing for at least 60 s and then 60% hydroalcoholic solution application prior to wearing gloves
Clinical staff clothing	Application of face masks (filtering facepiece level 2 or 3), shields, surgical glasses, long-sleeved water-resistant gown, surgical cap, shoe cover
<b>Dental treatment</b>	
Instruments	Preparation of all instruments in advance
Surfaces	Total protection through disposable covers
Minimizing aerosol production	Avoid, when possible, use of handpieces/ultrasonic instruments
	Use of rubber dam
	Surgical aspiration system
	If possible, prefer 4-hands technique
	Limit overall treatment time if possible
<b>After dental treatment</b>	
Ventilation	5-min air change strongly advised
Instruments	Removal of disposable protections from the surfaces
Personal protection	Disinfection of shields and glasses with 70% isopropyl alcohol
Hand hygiene (dentist)	Hand washing for at least 60 s and then 60% hydroalcoholic solution application

Operative checklist adapted by the authors and based on Italian recommendation documents.



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## C. Recommendation for Specific Dental Procedures

No.	SUBJECT	RECOMMENDATION	REASON
4.3.1	<b>MANAGEMENT PROTOCOL FOR ACUTE PULPITIS WITHOUT GENERATING AEROSOL</b>	<ul style="list-style-type: none"><li>● Preoperative administration of any nonsteroidal anti-inflammatory drug (NSAID) <i>1 h prior to the local anesthesia injection</i></li><li>● Local anesthesia with 2% lidocaine with 1: 100,000 epinephrine (1.8ml).</li><li>● Allow sufficient time (15 mins) for anesthesia to take effect</li><li>● If required use supplemental buccal infiltration with 4% Articaine with 1: 100,000 epinephrine (0.9 – 1.2ml) at the apex of the tooth to be treated<sup>(38-40)</sup> OR Intraligamentary injection 0.2ml of 2% lidocaine with 1: 100,000 epinephrine<sup>(41)</sup></li><li>● Buffered (alkalising) LA solution<sup>(42)</sup></li><li>● <b>Mechanical/ Chemomechanical</b> caries excavation methods -</li><li>● Dental dam isolation with high volume saliva ejectors.</li><li>● Four handed technique<sup>(19)</sup></li><li>● Caries excavation with sharp spoon excavator to remove soft caries or Carisolv+ spoon excavator</li><li>● <b>Slow speed micromotor handpiece without water spray</b> until pulp is exposed<sup>(19)</sup></li><li>● Perform Partial/complete <b>pulpotomy</b>.</li><li>● Arrest bleeding with sterile cotton or soaked with 3% NaOC applied with slight pressure. Place sterile dry cotton and provide temporary seal.<sup>(46)</sup></li><li>● If bleeding is not arrested, place arsenic-free <b>pulp devitaliser</b> and temporary filling.<sup>(19)</sup></li><li>● Prescribe <b>NSAIDs approved</b> by the local government health authorities for post-operative pain management (Table 1B)</li></ul> <p>Where indicated, <b>extraction</b> followed by suture placement.</p>	<p>To achieve optimal anesthesia</p> <p>To prevent aerosol production</p> <p>To provide interim relief</p> <p>Promote hemostasis</p>



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No.	SUBJECT	RECOMMENDATION	REASON
4.1	<b>PROCEDURES TO BE AVOIDED</b>	<b>AVOID ALL AEROSOL PRODUCING PROCEDURES</b> Avoid tooth preparation with air turbine or electric handpiece Avoid use of ultrasonic or sonic scalers	To prevent aerosol production
4.1.1	<b>PROCEDURES TO BE MINIMIZED</b>	Avoid Intraoral radiographs or should be performed cautiously  Avoid use of three way air- water syringe <sup>(43-45)</sup>	They tend to stimulate saliva secretion & induce coughing <sup>(29)(35)</sup>  To minimize aerosols
4.2	<b>GENERAL MEASURES</b>	Patient escorts should be discouraged and patient should be instructed to maintain physical distancing from others.  Preferable to give non-overlapping appointments.  Provide the patient with a surgical mask at the entrance of the clinic	To avoid disease transmission.
4.2.1	<b>PERSONAL PROTECTIVE EQUIPMENT (PPE)</b>	Prior to meeting the patient, the dentist should wear all PPE, including:  <b>Protective eyewear, Masks (N-95/ FFP 2/ FFP 3 equivalent), Gloves, Head cap, Face shields and protective outerwear.</b>	These are strongly recommended for <b>ALL</b> healthcare providers and support staff in the clinic/hospital settings <sup>(19)</sup>
4.3	<b>PRE-PROCEDURAL MOUTHRINSE</b>	1% hydrogen peroxide or 0.2% povidone-iodine (Chlorhexidine is <b>ineffective</b> against SARS-CoV-2)	To reduce the salivary load of oral microbes, including potential SARS-CoV-2 carriage <sup>(36,37)</sup> .





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No.	SUBJECT	RECOMMENDATION	REASON
4.3.2	EMERGENCIES THAT REQUIRE AEROSOL PRODUCING PROCEDURES	<div>1. Any procedure which would involve aerosol production; should <b>ONLY</b> be done in dental/medical set-ups equipped with negative pressure or <b>AIIR (AIRBORNE INFECTION ISOLATION ROOM) treatment rooms</b> which allow for complete disinfection to prevent cross-contamination.<sup>(19)</sup></div> <div>2. If the concerned dental set-up is not prepared with same, then patient should be <b>directed toward equipped dental centre in his area / the local medical authorities</b> for assessment and management<sup>(46)</sup>.</div>	To avoid disease transmission
4.4	DISINFECTION OF THE CLINIC SETTINGS	<i>General areas</i> - frequently clean and disinfect, including door handles, chairs, and desks. <i>Disinfectants</i> - Isopropyl alcohol, 0.5% sodium hypochlorite <i>Reusable instruments</i> - pretreated, cleaned sterilised, and properly stored.	
4.5	WASTE MANAGEMENT	Medical and domestic waste should be marked and disposed in accordance with the Biomedical Waste Management and Handling Rules 2016, 2018 <sup>(48,49)</sup>	





## D. Disinfection and Sterilization Protocols

### RECOMMENDED DISINFECTION AND STERILIZATION PROTOCOLS FOR DENTAL CLINICS TREATING PATIENTS DURING COVID-19 PANDEMIC

#### A. Treatment area/patient care area

- All critical, heat resistant semi critical instruments and handpieces should be cleaned and sterilized after each use or discarded.
- Heat sensitive semi-critical items can be processed with high-level disinfection eg. 2% Gluteraldehyde.
- High touch/clinical surfaces that are difficult to clean must be covered using a physical barrier for every patient or disinfected between patients. (Eg: 0.1% Sodium hypochlorite or 70% alcohol)
- Use moistened wipe/cloth to clean all surfaces with freshly prepared disinfectant solution. (Eg: 0.1% Sodium hypochlorite or 3% hydrogen peroxide). Always Discard remnant diluted solution
- Floor - Use Wet Mopping- Multi Bucket Technique : (i) Water followed by (ii) Detergent followed by (iii) Low Level Disinfectant like 3% hydrogen peroxide, 0.1% Sodium hypochlorite or EPA approved agents
- Mop heads and cleaning cloths must be decontaminated regularly by Laundering (heat disinfection) with detergent and drying at 80 °C and changed frequent
- Do not perform disinfectant fogging

#### B. Reception and patient waiting area

- Avoid sweeping with broom
- Use wet mop with warm water and detergent or hospital disinfectant (eg. 0.1% Sodium hypochlorite).
- Frequently touched surfaces must be disinfected frequently.

Note: Disinfectants approved by the Environmental Protection Agency, Disinfectant List Coronavirus Disease 2019 (COVID-19) 03/13/2020 are recommended for surface disinfection procedures. <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2> LAST UPDATED ON MARCH 13, 2020.

Source: International Federation of Endodontic Associations & Indian Endodontic Society



E. Infection Control in Prosthodontics

Recommended Disinfection Methods for Dental Laboratory Items

ITEM	PREFERRED METHOD	RECOMMENDED DISINFECTANT
<i>IMPRESSIONS</i>		
Alginates	Immersion (5-10 mins.)	1:10 Sodium hypochlorite / Iodophor Compounds / Phenolic Spray
Polysulfide/Silicone Rubber	Immersion (no more than 30 mins.)	1:10 Sodium hypochlorite / Iodophor Compounds / Phenolic Spray / Glutaraldehyde*
Polyether	Immersion (5-10 mins)	1:10 Sodium hypochlorite / Iodophor Compounds / Phenolic Spray
ZOE or ZO Non-Eugenol	Immersion	Iodophor Compounds or Glutaraldehyde*
Impression Compound	Spraying	1:10 Sodium hypochlorite / Iodophor Compounds / Phenolic Spray
<i>PROSTHESES**</i>		
Removable (acrylic/ porcelain)	Immersion (5-10 mins)	1:10 Sodium hypochlorite / Iodophor Compounds
Removable (metal/acrylic)	Immersion (5-10 mins)	1:10 Sodium hypochlorite / Iodophor Compounds
Fixed (metal/porcelain)	Immersion (5-10 mins)	1:10 Sodium hypochlorite / Iodophor Compounds
<i>CASTS***</i>	Spray until wet or immerse	1:10 Sodium hypochlorite / Iodophor Compounds (use 10 parts saturated Calcium Dihydrate solution)
Articulators/Facebows	Spray-wipe-spray	Iodophor Compounds / Phenolic Spray
Shade guides	Immersion or spary-wipe-spray	Iodophor Compounds / Phenolic Spray
Custom Impression Trays	Immersion or spray until wet (discard after use)	1:10 Sodium hypochlorite / Iodophor Compounds / Phenolic Spray
Wax Rims/Wax Bites	Rinse-spray-rinse-spray	Iodophor Compounds / Phenolic Spray

\* Glutaraldehyde should be used only when other disinfectants are not available.  
\*\* Should be thoroughly rinsed and stored in diluted mouthwash. Clean "Old" prostheses by scrubbing with antiseptic prior to disinfection.  
\*\*\* Never expose unglazed porcelain to any disinfectant (must handle as contaminated).  
\*\*\*\* Should not be disinfected until fully set (24 hrs.). Do not transport until fully dried.





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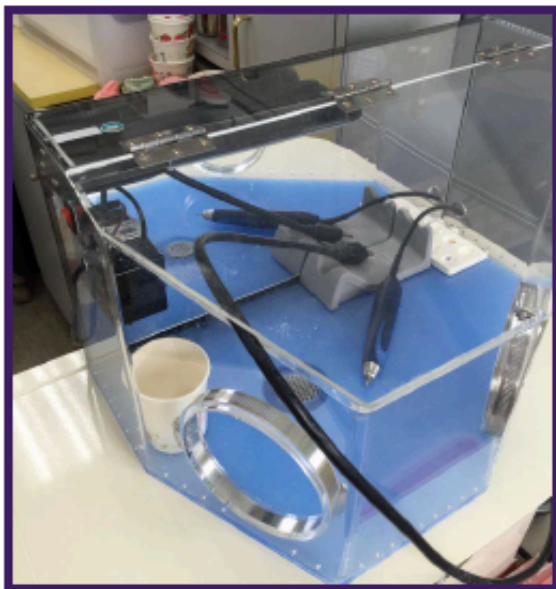
Disinfectants used by immersion method must be used only once, except glutaraldehyde. Proper disposal of used chemicals must be followed according to environmental laws.

Most reports indicate that the above-mentioned immersion technique, does not affect significantly the dimensional stability of the impression.

Clean and heat-sterilized heat-tolerant items used in the mouth (e.g., mental impression trays and face-bow forks).

### **Recommendation on the use of the lathe machine for grinding and polishing**

Use mask and face shield or goggles to avoid eye injury.



The prosthesis should be properly disinfected prior to grinding and polishing. Use metal enclosure or an acrylic box to contain aerosol and splatter when trimming dentures.

Sterilize or disinfect all attachments between use or dispose accordingly.

Use fresh pumice and pan liners for each work for each patient.

Source: Philippine Prosthodontic Society

F. Screening Form for Phase 2 Triage

Name: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_  
Complete Address: \_\_\_\_\_  
Contact Number: \_\_\_\_\_ Occupation: \_\_\_\_\_  
Body Temperature: \_\_\_\_\_

QUESTION	YES	NO
1. In the past 14 days, have you or any member of your household, traveled to any areas with known cases of COVID 19		
If so, please state the exact location		
2. In the past 14 days, have you or any member of your household has had any contact with any COVID 19 patient?		
3. Have you or any household member have any history of exposure to any COVID 19 biologocal material (e.g. saliva)		
4. Have you had any history of fever for the last 14 days?		

5. Have you had any symptoms in the last 14 days such as:	YES	NO	6. Urgent dental need question for the last 14 days such as:	YES	NO
cough			Uncontrolled dental/oral pain		
nausea			swelling		
diarrhea			bleeding		
loss of taste			infection		
Difficulty breathing			trauma		
Body ache					
loss of smell					
Fever					

7. Have you had any COVID 19 test?

Date of last test: \_\_\_\_\_

Type of test: \_\_\_\_\_

Result of test: \_\_\_\_\_

INFORMED CONSENT

Conforme (pls put your initial)

1. I give my full consent to have dental treatment done to me or my child(ren) in this time of pandemic caused by COVID-19 disease.	
2. I am aware that the virus can be transmitted by contact through surfaces and that it can be infective for 5 to 72 hours. I am aware that it is impossible to identify who is probable, suspect or COVID 19 positive. Because of this, treatment options are limited to urgent and emergent care to protect me, other patients and the dental staff.	
3. I recognize that the clinic is adhering to the strictest infection control protocols for my protection and as such, I agree to cover the fees that this entails.	
4. I fully understand the risk that because of the nature of the virus, by simply leaving my home, travelling to the clinic, the clinical procedures, and even by simply staying in the dental office, there is a chance of contracting the virus. Should I cocontract the virus, I hereby agree that I shall not hold the dental office liable.	
5. I am also giving my consent that in accordance to the IATF rules, my identity shall be revealed for possible contact tracing for the interest and safety of the community.	

For the good of the entire community, I am TRUTHFULLY answering the questionnaire and fully understand the informed consent form.

CONFORME:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Patient's or Guardian's Full Name

Relation to Patient

Date signed





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## G. Employee Consent Form

In order to prevent spread of COVID-19, please ensure that you follow the guidance listed below:

- Cover your mouth and nose with a tissue or your sleeve (not your hands) when you cough or sneeze;
- Throw all used tissues in the trash right away and wash your hands immediately after handling used tissues;
- Avoid touching your eyes, nose or mouth;
- Avoid close contact with people who are sick; and
- Clean and disinfect frequently touched objects and surfaces, such as your keyboard or mouse, using a regular household cleaning spray or wipe.

I understand that the symptoms listed below are representative of COVID-19:

- Fever
- Dry Cough
- Shortness of Breath
- Temperature
- Persistent pain or pressure in the chest
- Bluish lips or face

I understand that all travelers arriving from a country or region with widespread ongoing transmission, should stay home for 14 days to practice social distancing and monitor their health after their arrival.

I confirm that I do not display or currently have any of the symptoms that are representative of COVID19, which are outlined above:

I confirm that if I display any of these symptoms, I will be sent home immediately.

I confirm that my employer has the right to screen me for symptoms prior to every shift to protect patients and other employees from the spread of COVID-19.

I confirm that I have not traveled to any of the countries or regions with widespread ongoing transmission in the past 14 days.

I confirm, to the best of my knowledge, that I have not had close contact with an individual diagnosed with COVID-19 in the past 14 days. I, \_\_\_\_\_, consent to providing emergency treatment to patients in need during the COVID-19 outbreak.

I understand that based on what is currently known about COVID-19, the spread is thought to occur mostly from person-to-person via respiratory droplets among close contacts. I understand that close contact can occur from being within approximately 6 feet of someone with COVID-19 for a prolonged period of time or by having direct contact with infectious secretions from someone with COVID-19.

I understand that due to the unknowns of this virus, the number of patients that have been in the practice and the nature of the procedures performed here, that I have an increased risk of contracting the virus by being in the practice and by providing treatment in the practice.

I understand that dental procedures have the potential to include aerosol-generating procedures as well as anticipated splashes and sprays, which are some of the ways that COVID-19 can be spread.

Employee Name: \_\_\_\_\_

Employee Signature: \_\_\_\_\_

Date: \_\_\_\_\_

For Practice Use:

Employer Signature: \_\_\_\_\_



Date: \_\_\_\_\_



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## H. OPTIMIZING N95<sup>45,46,47,48,49,50,51</sup>


Anesthesia Informatics and Media Lab


## Can Facial Masks be Disinfected for Re-use?

(Measurement results by 4C Air Inc.)

Samples	Meltblown fiber filtration media		Static-charged cotton		E. Coli, Disinfection Efficiency
	Filtration efficiency (%)	Pressure drop (Pa)	Filtration efficiency (%)	Pressure drop (Pa)	
70°C hot air in oven, 30min	96.60	8.00	70.16	4.67	>99%
UV light, 30min	95.50	7.00	77.72	6.00	>99%
75% alcohol, soaking and drying	56.33	7.67	29.24	5.33	>99%
Chlorine-based disinfection, 5min	73.11	9.00	57.33	7.00	>99%
Hot water vapor from boiling water, 10min	94.74	8.00	77.65	7.00	>99%
Initial samples before treatment	96.76	8.33	78.01	5.33	

Conclusions: **DO NOT use alcohol and chlorine-based disinfection methods.** These will remove the static charge in the microfibers in N95 facial masks, reducing filtration efficiency. In addition, chlorine also retains gas after de-contamination and these fumes may be harmful.

Table 2: Data supplied courtesy of [Professor Yi Cui](#) | Materials Science and Engineering, Stanford University and [Professor Steven Chu](#) | Physics and Molecular & Cellular Physiology, Stanford University on behalf of 4C Air Incorporated.

### Method 1: N95 ISOLATION FOR 10 DAYS

- If you use a surgical mask and faceshield on top of your N95, the N95 should not be heavily contaminated by viral particles and a **10 day quarantine** inside the bag should be enough to kill any remaining virus.
- Make sure you place the paper bag in a dry atmosphere for 7 days - because the SARS COV-2 remains virulent for 7 days.
- Fitted prior to use
- The N95 may be re-disinfected and reused a maximum of 2-3 times using this method.

### Method 2: DRY HEAT STERILIZATION OF YOUR N95 at 75 degrees Celsius for 30 mins

- DO NOT PLACE THE N95 ON METAL SURFACE OR TOO CLOSE TO METAL, as the temperature on the metal surface is higher than air temperature. Use wooden barbecue sticks or a sushi mat.
- The N95 may be re-disinfected and reused a maximum of 2-3 times using this method.



### Method 3: COMBINATION OF ISOLATION AND DRY HEAT STERILIZATION

- Keep mask in paper bag for 10 days
- Perform Dry Heat Sterilization of the N95 mask
- The N95 may be re-disinfected and reused a maximum of 2-3 times using this method.



## I. OPTIMIZING COVERALLS & ISOLATION GOWNS

### A. Reusing your Medical Grade Tyvek Coveralls / Isolation Gowns<sup>52</sup>

SARS-CoV-2 is a biological viral contaminate therefore causing surface contamination; Consequently, the exterior of TYVEK Tychem® garments are able to be cleaned, disinfected and reused a limited number of times.

- For cleaning, use warm water, mild dishwashing liquid and a soft brush to remove any dirt from exterior surfaces.
- As per CDC guidelines for disinfection, diluted household bleach solutions, alcohol solutions with at least 70% alcohol, and most common EPA-registered household disinfectants should be effective to disinfect exterior surfaces.
- Follow the manufacturer's instructions for all cleaning and disinfection products (e.g., concentration, application method and contact time, etc.). From this list, diluted hydrogen peroxide or sodium hypochlorite (house-hold bleach) can be used to disinfect Tychem® garments.
- Thoroughly rinse the garments with clean, fresh water and allow to air-dry, DO NOT WRING

### Steps on Inspecting the PPE Before Re-Using

1. Lay the garment on a clean, smooth surface.
2. The inspection should include all areas of the suit.
3. Use a flashlight inside the suit to examine for holes, cuts, or tears. Confirm that any suspected visual imperfection is actually a void by using a small amount of water to confirm penetration. NOTE: For taped seam garments, visible stitch holes which are covered by seam sealing tape do not constitute a defect.
4. Examine garment seams. For taped seam garments, look for areas where seam tape has lifted away from the suit or where seam tape does not fully cover stitch holes. For bound seam garments, look for areas where the binding (top) fabric piece is missing or not fully attached. For sewn seam garments, look for areas where the sewing thread is missing or not fully attached.
5. Examine the entire garment for signs of damage. A breach, rupture, or hole of any component of the suit is cause for rejection. Note that for taped seam garments, the fabric, visor (if present), gloves (if present), and seam areas may have visual blemishes that do not affect barrier performance. Such blemishes can include areas adjacent to the seam tape that appear to be dull, white, or frosted.
6. Examine the garment zipper and zipper cover (if present) to make sure they are in good working order. Operate the zipper. Lubricate the zipper using paraffin wax, if needed. Engage the hook and loop tape (if present) on the zipper storm flap(s) to ensure appropriate adhesion. If the garment has double sided adhesive tape on the storm flap(s), ensure that there is tape along the length of each flap; do not remove protective tape covering until the suit is donned for use.
7. Examine any garment snaps, etc. to ensure they are in good working order.
8. Examine elastic (if present) to ensure it is not damaged
9. Examine garment labels to ensure they are attached and are legible.<sup>53,54</sup>



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## CONTRIBUTORS:

### PDA Science Committee

### Specialty Affiliates Interim guidelines during the Covid-19 pandemic

#### Links to the Guidelines of the Different Specialty Organizations:

APO - <https://drive.google.com/file/d/1JYWXUKpnDbjUca2XDSya1AXRqp-6Wglo/view?usp=sharing>

ESP - [https://drive.google.com/file/d/1K\\_avixvWRIOAhJfJNbdq6KSjISWFI9vs/view?usp=sharing](https://drive.google.com/file/d/1K_avixvWRIOAhJfJNbdq6KSjISWFI9vs/view?usp=sharing)

PADPH - <https://drive.google.com/file/d/1fIOVL9u5xhIVaRuHd1T5U5FVgU7Quzxe/view?usp=sharing>

PCOMS - [https://drive.google.com/file/d/1vDbeR6A4MNRXgQH\\_KQimpsMlsujWJXwv/view?usp=sharing](https://drive.google.com/file/d/1vDbeR6A4MNRXgQH_KQimpsMlsujWJXwv/view?usp=sharing)

PPDSI - <https://drive.google.com/file/d/14fNgnBpvUunJaNYeXjuoziliB1ILFHal/view?usp=sharing>

PSP - <https://drive.google.com/file/d/14XDaH61-YZ-aKCBlyBJhsDDO436gjeDc/view?usp=sharing>

PPS link - <https://drive.google.com/file/d/1zmILhq2XSEQ9yaUGwXI9VMycEPkqXYb1/view?usp=sharing>





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