



وزارة الصحة
Ministry of Health

Basic Infection Control In Dental Setting



الإدارة العامة لمكافحة عدوى المنشآت الصحية
General Directorate of Infection Prevention and Control

Outlines

- Introduction
- Hand Hygiene
- Personal Protective Equipment
- Clinical Asepsis
- Opening of Instrument Packages
- Environmental Surfaces Infection Control
- Sterilization of Patient Care Items
- Sterilization Monitoring
- Infection control in Endodontics
- Dental Unite waterlines

Introduction

Patients and dental healthcare workers (DHCWs) may be exposed to infectious, viral, and bacterial agents in dental clinic via blood and other oral / respiratory secretions. Multiple potential sources for microbial cross-contamination and infection exist during treatment and instrument reprocessing



Hand Hygiene

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

Duration of the entire procedure: 40-60 seconds

0 Wet hands with water;

1 Apply enough soap to cover all hand surfaces;

2 Rub hands palm to palm;

3 Right palm over left dorsum with interlaced fingers and vice versa;

4 Palm to palm with fingers interlaced;

5 Backs of fingers to opposing palms with fingers interlocked;

6 Rotational rubbing of left thumb clasped in right palm and vice versa;

7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8 Rinse hands with water;

9 Dry hands thoroughly with a single use towel;

10 Use towel to turn off faucet;

11 Your hands are now safe.

How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

Duration of the entire procedure: 20-30 seconds

1a Apply a palmful of the product in a cupped hand, covering all surfaces;

1b Rub hands palm to palm;

2 Rub hands palm to palm;

3 Right palm over left dorsum with interlaced fingers and vice versa;

4 Palm to palm with fingers interlaced;

5 Backs of fingers to opposing palms with fingers interlocked;

6 Rotational rubbing of left thumb clasped in right palm and vice versa;

7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8 Once dry, your hands are safe.



World Health Organization

Patient Safety
A World Alliance for Safer Health Care

SAVE LIVES
Clean Your Hands



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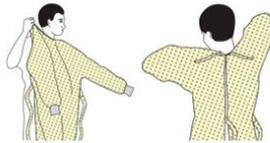
Personal Protective Equipment

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



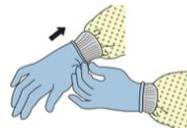
3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene



HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

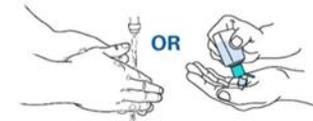


3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE



Clinical Asepsis

A. Before setting the patient

1. Perform hand hygiene
2. PPE
3. Clean and disinfect the surfaces that may be touched during patient treatment and which will not be protected by surface covers. These surfaces include the following (ex. Sink faucet handles , Handpieces connectors)
4. Disinfect the pre-cleaned surface by re-spraying it and letting it air dry or by wiping it dry if it is still wet after the prescribed contact time
5. Remove and discard mask and gloves and perform hand hygiene

Clinical Asepsis

Cover the following surfaces with the appropriate cover:

- Head rest.
- Control buttons on side of chair.
- Light handles.
- Unit light switch.
- Air / water syringe buttons/ handle.
- High-volume evacuator control.
- Unit control switches and hand-pieces and high volume evacuation
- Saliva ejector, hand piece, and air/water syringe hoses.
- Any other surface that may be touched during patient treatment.

cleaning and disinfection should be performed when not use barrier

Clinical Asepsis

B. After setting the patient

1. Open instrument packages or tray without touching the instruments.
2. Perform hand hygiene with proper technique and duration (preferably in view of patient).
3. Put on appropriate PPE according the procedure .
4. Connect sterile handpiece and sterile or disposable air water syringe tip, high volume evacuation tip, and saliva ejector tip

Clinical Asepsis

C. During patient treatment

1. Use rubber dam (if indicated)
2. Use high volume evacuation.
3. Touch as few surfaces as possible with saliva coated fingers.
4. Wash hands or use alcohol hand rub and re-glove with fresh gloves.
5. Do not leave the clinic with PPE (ex. lunchrooms, restrooms or outside the building.
6. changes PPE if visibly soiled.
7. Do not use items dropped on the floor or on other non-sterile surfaces.
8. Do not recap needles by hands.
9. Do not pass syringes with uncapped needles to someone else.
10. Look first before reaching for a sharp instrument.
11. When placing sharp instruments back on the instrument tray, make sure tips are not pointed up and make sure they are placed in a stable position.
12. Disinfect contaminated items before sending to the dental laboratory .
13. Do not handle files with contaminated gloves. Use an over glove or remove gloves and perform hand hygiene.
14. If exposed to a patient's blood or saliva, immediately contact the appropriate person to institute a post exposure medical evaluation

Clinical Asepsis

D. After patient treatment

1. Remove gloves and then the mask.
2. Put on fresh gloves and mask.
3. Place all the instruments back in the tray.
4. Place all the disposable sharps directly inside the sharp container.
5. Place non sharp disposable items in the plastic lined waste container at the unit.
6. Flush the air/water syringe, high speed hand piece, and ultrasonic scaler into the sink, cuspidor or container for 20-30 seconds.
7. Remove the entire surface covers (without touching the underlying surface and if touched should disinfect and clean it again) and discard in plastic-lined waste container at the unit.
8. Take/send instruments and handpieces to the decontamination/sterilization area.
9. Remove and dispose of the disposable gown (if used) in the plastic waste container.
10. Remove gloves and discard them in the plastic waste container.
11. Perform hand hygiene.

Opening of Instrument Packages

A. Before opening Package

1. Before opening instrument packages, the packages must be examined to ensure the seal is intact, and the integrity of the package is not broken in any way (e.g. through tears, perforations, or wetness).
2. The instrument packages should be opened without touching the instruments.
3. The packages should be opened with clean, ungloved hands after the patient is seated and then put on gloves just before first contact with the patient's mouth.
4. If the instrument package was opened with gloved hands, the gloves will become contaminated with any microorganisms on the outside of the packaging.

Opening of Instrument Packages

B. After opening Package

1. The internal chemical indicator must be checked to ensure the sterilization conditions have been reached within the package.
2. If the chemical indicator does not indicate that sterilization parameters have been met, the items should not be used for patient care and the package, along with the internal indicator, must be returned to the CSSD and the incident reported to the CSSD supervisor.

Environmental Surfaces Infection Control

A. Clinical surfaces

1. Clinical surfaces include dental chair, light handles, switches, dental radiograph equipment , dental chair-side ,computer, reusable container, drawer handles.
2. The spread of micro-organisms can be minimized by two methods:
 - a) using barriers,
 - b) cleaning and disinfecting.

➤ **Barriers** is the preferred method to prevent cross contamination. Materials include clear plastic wraps, bags, sheets .However, General cleaning and disinfection should be performed in the beginning and end of shift .

➤ **Cleaning and Disinfection** is achieved by using detergent or surface agents to remove organic matter, salts, and soil. The physical action of rubbing kills the microorganism.



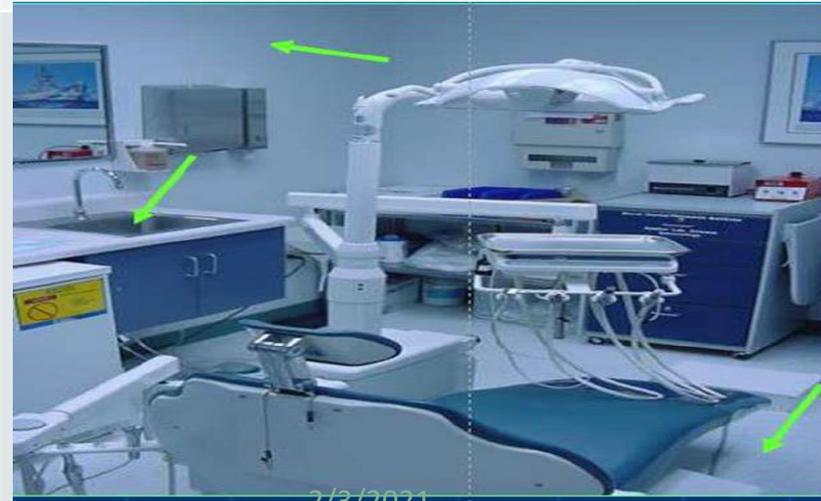
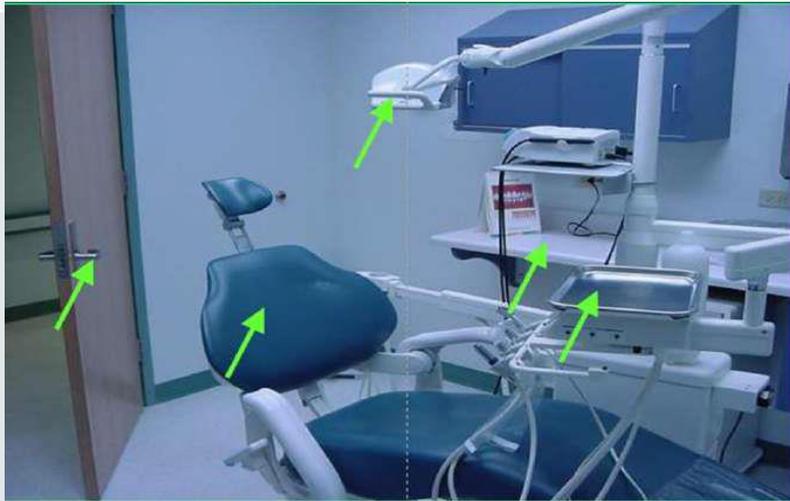
Environmental Surfaces Infection Control

B. Housekeeping Surfaces

1. Housekeeping surfaces are less likely to be contaminated, Ex. include floors, walls and sinks. These surfaces need to be cleaned only with water and detergent.
2. PPE must be worn by housekeepers.
3. Mops and cloths must be disinfected after every use, or better replaced with disposable ones.
4. Buckets and mops at the end of shift/day should be emptied, washed, dried. Making fresh cleaning solution each day, discarding any remaining solution, and allowing the container to dry. It should be stored in a safe and secure place.

Environmental Surfaces Infection Control

	Clinical surface	Housekeeping surface
Example	dental chair, light handles, switches, dental radiograph equipment, dental chair-side ,computer, reusable container	Floor , wall , snick
Frequency	At the begging of the day and between patients	<ol style="list-style-type: none"> 1. Floors and sinks should be cleaned daily. 2. Walls, window coverings, cleaned and disinfected at least every 3 months or according the dental center policy & procedure .



2/3/2021

Transporting Contaminated Items

1. Contaminated items should be sent to CSSD as soon as possible after use.
2. HCW must wear proper PPE for transporting dirty instruments (gloves, mask and face shield)to prevent aerosol.
3. If the items will not be sent to the CSSD immediately after procedure , a transporting gel should be applied to keep instruments wet (prevent drying of blood borne)to facilitate cleaning process.
4. Tissues, blood, and material debris should be removed from the contaminated instruments (by wiping with gauze) immediately, prior to transport to the decontamination area.
5. All disposable items should be removed from the kit prior to transportation.
6. The transport container should be closed, sealable and puncture resistant container.
7. The transport container should be considered contaminated. (biohazard logo should be posted on the container).

Sterilization of Patient Care Items

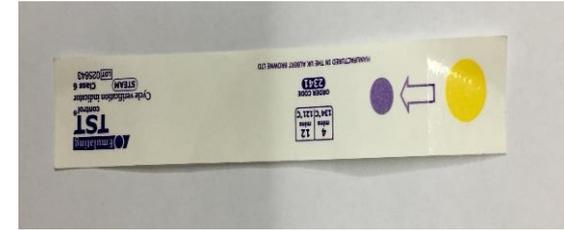
Receiving, Cleaning, and Decontamination Work Area

1. Use covered container to carry instrument .
2. Clean all visible blood and other contamination from dental instruments before sterilization or disinfection procedures.
3. Use automated cleaning equipment (e.g. ultrasonic cleaner or washer-disinfector) to remove debris .
4. Use work-practice controls that minimize contact with sharp instruments if manual cleaning is necessary (e.g. long-handled brush).
5. Wear puncture- and chemical-resistant/heavy-duty utility gloves for instrument cleaning and decontamination procedures.
6. Wear appropriate PPE (e.g., mask, protective eyewear, and gown) splashing or spraying is anticipated during cleaning

Sterilization of Patient Care Items

Preparation and Packaging:

Use an internal chemical indicator in each package. If the internal indicator cannot be seen from outside the package, also use an external indicator.



Storage Area for Sterilized Items and Clean Dental Supplies:

place the date of sterilization, and if multiple sterilizers are used in the facility, the sterilizer used, on the outside of the packaging material to facilitate the retrieval of processed items in the event of a sterilization failure

Infection Control In Endodontics

1- Barbed broaches :

These instruments are **difficult to clean**, even with washing machines or ultrasonic

cleaners, therefore barbed broaches should be **used once and discarded** in sharp containers



2. Endodontic files

Follow manufacturer's instructions

In the absence of manufacture instructions, the endodontic files should be considered as single-use devices and should be discarded immediately after use, because difficult for disinfection and sterilization.



Dental Unite Waterlines

❑ In the dental unite

1. Flushing for 2 minutes in the morning and for 20–30 seconds after each patient
2. Longer flushing is suggested after weekends.
3. Flushing at the beginning of the day should be performed without handpiece connected to the waterlines.
4. If the manufacture instructions are not available, water lines are disinfected daily /weekly with an approved MOH solution and as per the manufacturer's instructions.



❑ Water sample

- the number of bacterial counts of non-pathogenic bacteria in the water exiting the device into the oral cavity be as low as reasonably achievable without exceeding **500 cfu/ml**.
- water sampling is taken from all water outlets at all the clinics with a minimum frequency of semiannually and sent to microbiology lab.

DENTAL SERVICES DURING COVID-19 PANDEMIC

Outlines

- COVID 19 Cases
- Recommendations during Pandemic
- Respiratory Triage
- Personal Protective Equipment (PPE)
- Physical Distancing
- Providing Dental Treatment For With Suspected Or Confirmed Covid-19 Patient
- Environmental Cleaning and Disinfection

COVID 19 Cases

*For updated definitions of **Suspected** and **confirmed** COVID-19 case review the updated COVID-19 guidelines from Saudi CDC [Weqaia](#)*

1) COVID-19 Confirmed Cases

A person who meets the suspected case definition with laboratory confirmation of COVID-19 infection.

2) COVID-19 Suspected Cases

Clinical Presentation	Criteria
<p>1. Patient with acute respiratory illness (sudden onset of at least one of the following: fever¹ (measured or by history), cough, or shortness of breath)</p>	<p>Not required</p>
<p>2. Patient with sudden onset of at least one of the following: headache, sore throat, rhinorrhea, nausea or diarrhea</p> <p>AND in the 14 days prior to symptom onset, met at least one of the following criteria</p>	<ul style="list-style-type: none"> • Had contact² with a confirmed COVID-19 case <p>Or</p> <ul style="list-style-type: none"> • Lived in or worked in a facility known to be experiencing an outbreak of COVID-19
<p>3. Any admitted adult patient with unexplained severe acute respiratory infection (SARI), either Community Acquired Pneumonia (CAP) or Hospital Acquired Pneumonia (HAP).</p>	<p>Not required</p>

Recommendations during the Pandemic

A. Dental Team

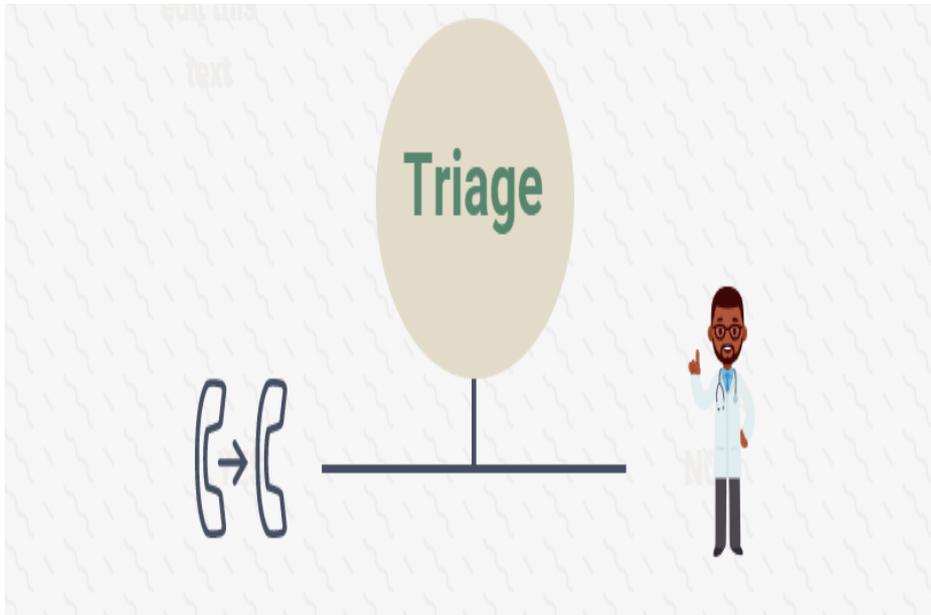
- Maintain *Safety*
- Applied updated *Guidelines*
- Enough *Training* and *Education*
- Limit the *Number of staff* in the practice at one time.
- Physical *Distance*
- Daily *Screening* for employee .
- Staff *Self-monitoring*.

Recommendations during the Pandemic

B. Dental Facility

- Single entrance door.
- Screen and applied universal masking and hand hygiene .
- Patient waiting areas should have chairs that are separated by 1.5-2 meters, alcohol dispensers, tissues touchless waste container and signs or media screens for cough etiquette and hand hygiene techniques.
- Post visual alerts (e.g., Signs, posters).

Respiratory Triage



Aerosol Generating Procedures in Dental Settings:

Common AGPs during dental care

Ultrasonic and sonic scalers , high-speed dental hand pieces (tooth preparation with air abrasion, air turbine hand piece)

Reduce Transmission Risk

1. Avoidance procedures that may increase risk of AGPs if possible, such as ultrasonic instrumentation.
2. Prioritize use of techniques that decrease risk of aerosolization (e.g., manual instrumentation, low-speed hand pieces, instruments without water spray, etc.) as possible as you can.
3. Use of high-volume evacuation/suction and dental rubber dams to minimize droplet, spatter, and aerosols

Personal Protective Equipment (PPE)

Treatment Area

Procedure/ Activity	Type of PPE
Non-aerosol generating procedures (NAGPs) in normal patients i.e. non- suspected or confirmed COVID-19.	<ul style="list-style-type: none"> • Surgical mask • Gloves • Eye protection OR face shield
Non-aerosol generating procedures (NAGPs) in suspected or confirmed COVID-19 patient	<ul style="list-style-type: none"> • Surgical mask • Gloves • Googles OR face shield • Protective gown
Aerosol generating procedures (AGPs) in normal patient	<ul style="list-style-type: none"> • Respirator (fit-tested, seal-checked) OR Surgical mask • Gloves • Eye protection OR face shield • Protective gown
Aerosol generating procedures (AGPs) in suspected or confirmed COVID-19 patient.	<ul style="list-style-type: none"> • respirator (fit-tested, seal-checked) • Gloves • Eye protection OR face shield • Protective gown
Cleaning and disinfection of operatory or treatment area	<ul style="list-style-type: none"> • Surgical mask • Gown • Gloves • Eye protection

Personal Protective Equipment (PPE)

Setting	Procedure/ Activity	Type of PPE
Reprocessing Area	Reprocessing of reusable instruments	<ul style="list-style-type: none">• Surgical mask• Heavy duty utility-gloves• Eye protection or face shield• Protective gown
Reception	Reception duties	<ul style="list-style-type: none">• Surgical mask• physical barrier• Maintain physical distancing
Staff Areas	Administrative and other tasks	<ul style="list-style-type: none">• Surgical mask• Maintain physical distancing

Physical Distancing

- Limiting visitors
- Encourage use of alternative mechanisms e.g. cell phone.
- Minimize the number of people in the waiting room.
- Patients encouraged to wait in a personal vehicle or outside the dental facility where they can be contacted by mobile phone when it is their turn for dental care.
- Minimize overlapping dental appointments.
- Arranging seating in waiting rooms so patients can sit at least 1.5-2 meter apart

Providing Dental Treatment For With Suspected Or Confirmed Covid-19 Patient

- Suspected or confirmed COVID-19 patients should be avoided from any non-emergency dental procedures and postponed until cleared.
- In case of emergency dental procedure and the procedure could not be delayed, the following measures must be applied:
 1. Dentists should require patients to rinse with an appropriate oral rinse for 60 seconds prior to examination of the oral cavity (examples include 1% povidone iodine or 1% - 1.5% hydrogen peroxide).
 2. When possible, dentists should minimize the use of intra-oral radiographs and consider using extra-oral radiographs.
 3. Dentists must avoid AGPs whenever possible and use the lowest aerosol-generating options when necessary.
 4. Use of high-volume evacuation/suction and dental rubber dams should be mandatory and not optional in case of AGPs.

Providing Dental Treatment For With Suspected Or Confirmed Covid-19 Patient

5. In case on non-avoidable AGPs, DHWs should wear a certified fit tested respirator /PAPR (or surgical facemask if a respirator is not available), gown, gloves, and eye protection, the number of DHWs present during the procedure should be limited to only those essential for patient care and procedure support, visitors should not be present during the procedure and if available portable high-efficiency particulate air HEPA filter could be used near the patient's chair
6. After AGP in dental treatment, the DHWs must maintain proper ventilation before the terminal cleaning & disinfection and utilization of the dental clinic for another patient.
7. Following an aerosol-generating procedure (AGP) DHWs must wait 15 - 30 minutes following completion of the clinical care and exit of the patient and all clinical staff before cleaning and disinfection, Delaying the process of terminal cleaning and disinfection is mandatory before re-using the same treatment room in order to allow the HVAC system, the portable HEPA filter or the natural ventilation to remove the aerosols since the air remains contaminated after the dental procedure
8. As possible, DHWs included in high risk group for COVID-19 infection should be restricted from dental care procedures with suspected or confirmed COVID-19 patients.

Thank You

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