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THE HEBREW UNIVERSITY OF JERUSALEM

HADASSAH SCHOOL OF DENTAL MEDICINE (HUHSDM) INFECTION PREVENTION AND CONTROL (IPC) STANDARDS

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Content:

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5-8 The dental school must establish and enforces a mechanism to ensure adequate preclinical/clinical/laboratory asepsis, infection, and biohazard control and disposal of hazardous waste, consistent with the accepted dental practice.

1 GENERAL

The Hebrew University – Hadassah School of Dental Medicine (HUHSDM) is committed to cause no harm to their patients and to provide a safe and healthful workplace for all HUHSDM dental health care workers (DHCWs) and other personnel in their practice. Due to the biologic nature of the oral cavity, as well as the nature of dental and oral health care, the transmission of infectious diseases before, during, or after dental and oral health care is possible. This Infection Prevention and Control (IPC) Manual gathers into one publication the principal policies and procedures related to IPC at The HUHSDM clinics.

Dental health care workers (DHCWs) are defined as employees (attending doctors, hygienists, and assistants), volunteers, residents, and students whose activities involve contact with patients or with blood or other body fluids from patients. Policies and procedures enumerated in this IPC manual apply to each DHCW at HUHSDM clinics and laboratories. Failure to comply with these policies and procedures may result in removal from the school's clinics. Enforcement of all HUHSDM clinical policies and procedures contained within this IPC manual is the responsibility of clinical faculty members operating in conjunction with the Director of Students' Clinics and the Head of the IPC Committee.

1.1 BACKGROUND

1.1.1 MODES OF TRANSMISSION

Pathogens can be transmitted in dental/oral health care settings through:

1.1.1.1 DIRECT TRANSMISSION: Direct physical contact with blood, oral fluids, or other substances from infected patients.

1.1.1.2 INDIRECT TRANSMISSION: Contact with an intermediate contaminated object (instruments, computer/electronic equipment, or environmental surfaces).

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1.1.1.3 DROPLET TRANSMISSION: Contact of conjunctival, nasal, or oral mucosa with droplets (spatter) containing microorganisms generated from an infected person and propelled a short distance (by coughing, sneezing, or talking).

1.1.1.4 AIRBORNE TRANSMISSION: Inhalation of aerosols or microorganisms that can remain suspended in the air.

1.1.1.5 OTHER TRANSMISSION: Contact a vehicle such as food or water causing the transfer of the pathogen.

1.1.2 CRITERIA FOR INFECTION

Infection transmission through any of the above-mentioned routes requires that all of the following conditions are met:

1.1.2.1 PATHOGENIC ORGANISM: The presence of a pathogenic organism of sufficient virulence and in adequate numbers to cause disease.

1.1.2.2 RESERVOIR OR SOURCE The presence of a reservoir or source (for example - blood) that allows the pathogen to survive and multiply.

1.1.2.3 VEHICLE OF TRANSMISSION: The presence of a vehicle of transmission from the source to the host.

1.1.2.4 PORTAL OF ENTRY: The presence of an appropriate portal of entry through which the pathogen can enter the host (for example - needle-stick injury).

1.1.2.5 SUSCEPTIBLE HOST: The presence of a susceptible host (e.g someone who is not immunized).

The simultaneous occurrence of these criteria for infection transmission is referred to as the **CHAIN OF INFECTION.** Effective IPC procedures must interrupt one or more links in this chain.

1.1.3 COVID-19 PANDEMIC. A novel disease emerged in Wuhan, China, in late 2019. The disease was designated by the World Health Organization (WHO) on February 12, 2020, as Coronavirus disease 2019 (COVID- 19). The disease is caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) virus. The virus exponentially spread in countries around the world, and eventually led the WHO to declare COVID-19 a pandemic. The updates in the manual include specific changes due to the COVID-19 pandemic.

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2 POLICIES AND PROCEDURES

2.1 PURPOSE: The major purpose of the **Infection Prevention and Control (IPC)** program is to prevent the transfer of pathogens between contaminated items and individuals. To that end, there is a need to classify the policies and procedures and enforce a mechanism to ensure adequate preclinical, clinical, and laboratory asepsis, infection and biohazard control, and disposal of hazardous waste, consistent with the accepted dental practice of all patients at HUHSDM. Because of the realities of the oral environment, creating a medical level surgical operating room level is not necessary or possible; however, DHCWs at HUHSDM must strive to efficiently create an environment which is as pathogen-free as possible

2.2 POLICY: The HUHSDM 's Infection Prevention and Control (IPC) policy has been developed to comply with the current updated regulations of the: (1) Israeli Ministry of Health, including those of the Israeli Dental Health Division at the Ministry of Health guidelines and updates[1] ; (2) The Center for Disease Control and Prevention Guidelines for Infection Control in Dental Health-Care Settings[2-5].

2.3 HUHSDM STAFF OBLIGATIONS: This policy applies to all HUHSDM Dental health care workers (DHCWs), which refers to all paid and unpaid personnel in the dental health-care setting who might be occupationally exposed to infectious materials, including body substances (blood, saliva, etc.) and contaminated supplies, equipment, environmental surfaces, water, or air.

DHCWs include dentists, dental hygienists, dental assistants, dental laboratory technicians (in-office and commercial), residents, students, trainees, contractual personnel, and other persons not directly involved in patient care but potentially exposed to infectious agents (e.g., administrative, clerical, housekeeping, maintenance). These include staff employees, volunteers, and outside contractors.

All new DHCWs are instructed on this policy.

2.4 INFECTION PREVENTION AND CONTROL (IPC) COMMITTEE

The HUHSDM's Committee of Infection Prevention and Control (IPC) is responsible for the discussion, creation, and implementation of the policy of the above issues of preclinical, clinical, and laboratory asepsis, infection and biohazard control and disposal of hazardous waste.

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The HUHSDM 's IPC Committee developed these written IPC plans and procedures based on evidence-based guidelines, regulations, or standards tailored HUHSDM dental setting. The HUHSDM IPC plan is accessible to all DHCW's and will be reviewed at least annually and updated as often as changes in positions, tasks, or procedures required. The head of the HUHSDM IPC Committee is assigned to create, maintain, coordinate and evaluate the infection prevention and control policies, enforces this plan regularly, and maintain communication with all staff members to address specific issues or concerns related to infection prevention. The members of the HUHSDM 's IPC Committee Participate in the extra-Faculty Infection Control Committee of the Division of Dental Health of the Israeli Ministry of Health.

2.5 EQUIPMENT AND SUPPLIES MANAGEMENT: The administrative manager of HUHSDM student's dental clinic as well as each administrative manager in each department should ensure that equipment and supplies relevant to IPC (e.g.: hand hygiene products, safer devices to reduce percutaneous injuries, and personal protective equipment) are available. It is also their responsibility to add a label to each product indicating the dates of opening and expiration date, and in the case of disposable syringes to add a label with the type of substance (e.g: Sodium Hypochloride or normal saline, etc.), to avoid confusion.

2.6 MONITORING AND ENFORCEMENT*:* Daily, during each patient visit, attending faculty are responsible for monitoring and enforcing the student's infection control practice as part of their clinical teaching according to this IPC guidelines, and also assess and grade their IPC related performance. Records of these assessments are used combined with routine assessments made by the designated inspectors to evaluate the performance of the students. Students violating these practices will be notified, and if not improving their practices, will be summoned for hearings in front of the Director of Students' Clinic, the Dean, and may be dismissed from the school's clinics.

3 INFECTION PREVENTION EDUCATION AND TRAINING

3.1 EDUCATION PROGRAMS FOR DENTAL HEALTH CARE WORKERS: Ongoing education and training of DHCWs are critical for ensuring that infection prevention policies and procedures are understood and followed. Education on the basic principles and practices for preventing the spread of infections is provided to all DHCWs at HUHSDM. Training includes both DHCWs' safety and patient safety. Education and training are provided during orientation

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of new faculty DHCW to the setting and also when new tasks or procedures are introduced as well as at regular intervals (i.e ., annually).

The training includes:

1. Mandatory IPC online training for HUHSDM's DHCW.
2. Mandatory online training "Hands hygiene and asepsis " (available at https://pob.hadassah.org.il/lomda/) for all healthcare providers in Hadassah Medical Center, (including DHCWs).

Annual training and updates are performed at each department and records are maintained.

3.2 EDUCATION PROGRAMS FOR STUDENTS.

Students are instructed of HUHSDM guidelines, policies, and procedures during two courses:

1. D4-97822 “Infectious diseases – control and prevention”
2. D4-97850 “Professionalism, Ethics and Practice management II”.

In these two courses, The Director of Students' Clinics as well as the head of the IPC Committee review with the students the concept as well as the policies contained within this manual. Besides this basic education, there are orientation and refreshers meetings before the beginning of each clinical year. All students receive this IPC manual, which is updated annually by the School's IPC Committee. The manual is available in all clinical stations, as a PDF document.

Furthermore, IPC training includes:

1. Mandatory IPC online training for HUHSDM's DHCW.
2. Mandatory online training "Hands hygiene and asepsis " (available at https://pob.hadassah.org.il/lomda/) for all healthcare providers in Hadassah Medical Center, (including the dental students).
3. Mandatory training on dental treatment during the COViD-19 outbreak is provides for HUHSDM's DHCW

3.3 DEVELOPMENT OF A PROTOCOL AND EDUCATION FOR DHCWS DURING THE COVID-19 PANDEMIC.

A detailed working protocol was developed during the COVID-19 outbreak. The protocol was delivered to the students and staff via Zoom extra-curriculum lectures. All Zoom lectures were recorded and uploaded on the course Moodle/HUJI-site. Students were able to retrieve the presentations on the Moodle/HUJI course site at any time.

Student's clinic methods and adjustments. Clinical activity in the students' clinic was delayed and renewed on May 3rd. The activity was renewed according to the Israeli Ministry

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of Health (MOH) guidelines. Gradual treatment comeback started from minimal activity focused only on emergency treatments and after two weeks expanded to regular treatment activity, according to the developed guidelines.

4 INFRASTRUCTURE

4.1 DENTAL UNIT WATERLINES AT HUHSDM

Dental unit waterlines (i.e narrow-bore plastic tubing that carries water to handpieces, air/water syringe, and ultrasonic scaler) can become heavily colonized with waterborne microorganisms, including bacteria, fungi, and protozoa; which form a biofilm on the interior surface of the waterline, which not a supportive environment for bacteria commonly found in the oral cavity.

High numbers of these opportunistic microorganisms are particularly dangerous to a susceptible host that includes DHCW or patients that are immunocompromised or have lung diseases (cystic fibrosis, chronic bronchitis, or bronchiectasis).

The water in the treatment position must meet the drinking water quality requirements, according to the Head of Public Health Services' Circular "Guidelines for Supervision of Medical Institutions Water Park", number 5/2012, or any other document that updates it.

The CDC recommends that dental unit water used in nonsurgical procedures measure less than or equal to 500 colony-forming units of heterotrophic bacteria per milliliter (≤500 CFU/mL) of water, the standard set for drinking water by the Environmental Protection Agency (EPA)[6].

Regular waterline inspections are performed at HUHSDM by the Microbiology laboratory of the Institute of Dental Sciences at HUHSDM. Water from the High-speed of Units of several units is collected into sterile tubes. Immediately, 100 microliters from each tube are plated in LB agar (BD- Difco) plates incubated aerobically at 37°C. Plates are examined after 24 hours and the bacterial load in each tested dental unit waterline is recorded. The results of these inspections are kept at the Dean's office.

4.2 AIR CONDITIONING SYSTEM

The clinic operates an air conditioning system and a fresh air replacement and supply system according to guideline AC-01of the Israeli Ministry of Health[7].

4.3 INSTALLATION OF SEPARATION WALLS DURING THE COVID-19 OUTBREAK.

Teaching was performed under binding social distancing rules that required a substantial decrease in the number of students that can work at the same time in a given clinic space; separation walls were built in the student clinic space, thus reducing the communal shared

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space; working in "capsule teams" of one instructor per a small group of students' (ratio of 1:4 teacher/student ratio) with as much as possible fewer shifts between teams.

5 PRINCIPLES OF BEHAVIOUR AT HUHSDM DENTAL CLINICS

5.1 GENERAL DRESS CODE AT THE HUHSDM:

General dress code at HUHSDM dental clinics and laboratories include clean and modest clothing, including:

(1) A shirt that is not worn and wrinkled, not overly loud in its color and design.

(2) Long pants (Shorts, worn and tattered jeans are not acceptable).

(3) Closed shoes (outside the clinic or laboratory, sandals are permitted).

(4) Women may wear a (not too short) skirt or a dress.

(5) Head coverings are allowed if for religious reasons.

(6) Men should appear shaved or with a neat beard.

(7) clinical dress “scrubs” -(pants and shirts) should be worn at all times during clinical sessions. Scrubs may be worn also during non-clinical sessions such as lectures. When commencing clinical procedures, they should put on the scrub a disposable gown (See 7.2.1.2).

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5.2 FOODS, DRINKS AND BEHAVIOR OF DHCW AT HUHSDM CLINICS

Eating, drinking, smoking, applying cosmetics, or handling contact lenses is prohibited in the dental operatories, laboratories, sterilization areas, medical waste storage areas, or in any work area where there is a reasonable likelihood of occupational exposure.

Food and drink may not be stored in refrigerators, freezers, shelves, cabinets, or on countertops or benchtops where blood or other potentially infectious materials are present. Food and drink may only be stored in designated break areas in each department. All refrigerators must be labeled appropriately.

5.3 PERSONAL EQUIPMENT AND DECORATIONS

The presence of personal equipment is prohibited in the dental operatories, laboratories, sterilization areas, medical waste storage areas, or in any work area where there is a reasonable likelihood of occupational exposure. All personal equipment (e.g. backpacks and water bottles) and decorations should be stored in the personal lockers of the students. The equipment of other DHCW should be kept in designated lockers or office rooms at each department.

6 INFECTION CONTROL DURING THE PRETREATMENT PERIOD

6.1 PRE-TREATMENT SCREENING PROCEDURE DURING THE COVID -19 OUTBREAK

During the outbreak, a screening procedure is employed to identify a suspected case of COVID-19. Presenting patients, persons accompanying them, and staff can be asymptomatic. Therefore, all patients and accompanying persons to the dental clinic during the outbreak of COVID-19 should be screened to identify asymptomatic and suspected cases of COVID-19.

6.1.1 TRIAGE PROCEDURE AND PATIENTS FLOW

Triage screening procedures. Triage screenings are performed one day before the dental meeting as well as at the entry to the clinic/phantom lab.

6.1.1.1 TRIAGE SCREENINGS ONE DAY BEFORE THE DENTAL MEETING

Triage screenings are performed one day before the dental meeting for both the students and the patients. Initial screening of the next day patient was accomplished via telephone by the student, using a mandatory form of Hadassah Medical Centers. Instructions for patients were also included in the telephone call. The students also filled the mandatory form regarding self-assessed symptoms of COVID-19 and were instructed to stay home if they are sick.

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6.1.1.2. TRIAGE SCREENING UPON ENTRY TO THE CLINIC/PHANTOM LAB. A student in charge performed a triage at the entrance to the clinic/phantom lab. The student use PPE that include a long-sleeved disposable gown, disposable cap, and a surgical face mask. Mandatory form of Hadassah Medical Centers is available in Hebrew, Arabic, English, and Russian. These self-administered questionnaires are completed by the patient or his/her guardian and include the name, identity number, and signature. The triage procedure also includes measurement of the temperature of patients and the accompanying person using a contact-free forehead thermometer. Visible signs and symptoms of respiratory problems are also included in the triage. This information is kept in the records for tracing in case of an epidemiologic investigation.

6.2 PREPARATION OF THE DHCW BEFORE TREATMENT. All DHCW's involved with patient care should prepare themselves for the incoming patient with the proper protective equipment. The working station should be prepared before the patient enters treatment. Unnecessary items should be removed from the operatory. The operatory should be arranged to facilitate thorough cleaning following each patient.
Prearranged tray set-ups should be used for routine or frequently performed procedures whenever possible. The use of prearranged trays eliminates the need to enter drawers and cabinets after the DHCW has started a procedure. Sterile trays and instrument packages should be opened immediately before use to decrease contamination of contents.

The DHCW should preplan the materials needed during treatment and set out all instruments, medications, and impression materials needed for a patient. This includes burs and rubber dam setups.

Equipment and surfaces that will become contaminated during treatment should be covered using a barrier to prevent contamination of these surfaces and items or to disinfect them after treatment.

Sterilized handpiece and attachments as well as sterilized scaler and tip should be assembled. All water lines should be flushed for at least 2 minutes at the beginning of the day to flush out microbes that may have accumulated overnight.

6.3 MANDATORY CHECKLIST. Before the initiation of the treatment, the students fill a mandatory checklist that includes all the above mentioned necessary steps needed to provide treatment. Clinical teaching is allowed only after the checklist is filled.

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7 INFECTION CONTROL DURING THE TREATMENT PERIOD- ROUTINE PRACTICES AND STANDARD PRECAUTIONS:

To prevent the spread of pathogens, HUHSDM applies IPC policy during patient care using, among other methods, the concept of **ROUTINE PRACTICES.** This concept is combined with the older term of **UNIVERSAL PRECAUTIONS AND STANDARD PRECAUTIONS** (the need to treat blood and body fluids from all patients as potentially infective) with body substance isolation (designed to reduce risk of transmission of pathogens from moist body surfaces). Thus, Routine Practices are based on the premise that all patients are potentially infectious, even when asymptomatic, and that the same safety standards of practice should be used routinely with all patients to prevent exposure to blood, body fluids, secretions, excretions, mucous membranes, non-intact skin or soiled items and to prevent the spread of microorganisms. Standard Precautions are the minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered. These practices are designed to both protect DHCWs and prevent DHCWs from spreading infections among patients.
ROUTINE PRACTICES includes **HAND HYGIENE** and the use of **PPE**.

7.1 HAND HYGIENE. Hand hygiene is the most important measure to prevent the spread of infections among patients and DHCWs. Guidelines for proper hand hygiene are according to the Israeli Director General's Circular of 24/2009[8] as well as the CDC guidelines[2-5]. An online training (https://pob.hadassah.org.il/lomda/) is mandatory for all new healthcare providers at Hadassah Medical Center, including all DHCWs. This online program thoroughly addresses indications and techniques for hand hygiene practices before performing routine and surgical procedures.
Hand hygiene should be performed :(1) At the beginning of the workday with two consecutive 15-second hand washes; (2) When hands are visibly soiled; (2) After barehanded touching of instruments, equipment, materials, and other objects likely to be contaminated by blood, saliva, or respiratory secretions;(3) Before and after treating each patient;(4) Before putting on gloves and again immediately after removing gloves.

7.1.1 ROUTINE DENTAL EXAMINATIONS AND NONSURGICAL PROCEDURES:

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All DHCWs should use plain liquid soap (handwashing), cool or warm (not hot) water for at least 15 seconds, and single-use towels. Hands should be thoroughly dried after washing. Soap and water should be used when hands are visibly soiled (e.g., blood, body fluids); otherwise, an alcohol-based (medical grade-minimum 70% alcohol) hand rub may be used by dispensing two full pumps. Sufficient product is required to remain in contact with the hands for a minimum of 15 seconds. Hands should be rubbed until dry as the alcohol can cause glove material degradation resulting in loss of glove integrity.

7.1.2 SURGICAL PROCEDURES: Before surgical procedures, DHCWs should perform a surgical hand scrub with antimicrobial soap (hand antisepsis) with Chlorhexidine Scrub 4% before putting on sterile surgeon's gloves.

7.1.3 FINGERNAILS. Fingernails are a common area of bacterial contamination and therefore should be kept short and trimmed to thoroughly clean underneath and prevent glove tears. During the initial hand wash, sterile nail brushes or disposable orangewood sticks may be used to clean cuticles and under fingernails. Long natural or artificial nails must be avoided. Freshly applied nail polish on natural nails is acceptable, provided fingernails are kept short. Nail Gel must be avoided according to the addition (Reference 122430238418) to the Director General's Circular of 24/2009[8].

Chipped nail polish must be avoided because as it can harbor microorganisms that are not removed by hand washing

7.1.4 SUPPLIES FOR HAND HYGIENE. The administrative manager of HUHSDM student's dental clinic is responsible to ensure that all hand hygiene products are used, stored, and dispensed according to the manufacturer's instructions. Liquid products should be stored in closed containers and dispensed from either disposable containers or from containers/pumps that have been washed, disinfected, and thoroughly dried between refilling. Liquid products should not be added to a partially empty dispenser or "topped up", due to the risk of bacterial contamination. Manufacturers of hand hygiene products should be consulted regarding any possible interaction with hand lotions, soaps, and alcohol-based hand rubs. If using latex gloves, petroleum-based lotions should be avoided during the workday, as these may weaken the glove material, resulting in increased glove permeability.

Hand hygiene is always the final step after removing and disposing of Personal protective equipment (PPE).

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7.2 USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment (PPE) includes wearable equipment that is designed to protect DHCWs from exposure to or contact with infectious agents. PPE is worn as part of Routine Practices to cover personal clothing and skin of the hands, arms, and face from exposure to splashing or spraying of blood, saliva, or other potentially infectious materials, and from introducing the surface flora into deeper tissues by traumatic or environmental injury. PPE should protect the conjunctival mucosa of the eyes, as well as the lining mucosa of the respiratory tract. Primary PPE includes protective clothing, gloves, face masks, and protective eyewear. Sufficient PPE is provided to ensure it is accessible to all DHCWs.

7.2.1 PROTECTIVE CLOTHING: The protective clothing should cover skin and the personal clothing during examinations and procedures, and is worn over the clinical dress "scrubs".

7.2.1.1 PROTECTIVE CLOTHING FOR INSTRUCTORS/CLINICAL TUTORS AND STUDENTS. Instructors and students at the clinic should wear clinical dress "scrubs" (see 5.1) under a disposable gown and shall wear a name tag above the upper left pocket. Dental scrubs should be worn during all clinical sessions and when commencing clinical procedures. The disposable gown is supplied and available in each operatory.

7.2.1.2 CLEANING, DISPOSAL, REPAIR, AND REPLACEMENT OF PROTECTIVE CLOTHING. The standard defines contaminated laundry as laundry that has become soiled with blood or other potentially infectious materials or may contain sharps. It is prohibited for employees/students at HUHSDM to take contaminated laundry home to clean.

Protective clothing will be cleaned, laundered, repaired, replaced, and disposed of at no cost to employees/students. HUHSDM uses the laundry services of Hadassah Medical Center.

All protective clothing must be removed before DHCW leave the work area. PPE must also be removed immediately, or as soon as possible after it is penetrated by blood or other potentially infectious materials. After PPE is removed, it must be placed in containers that are marked with the biohazard label for storage and transportation to the

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laundry services. All Laundry handled is treated as infectious until certified wash, dry, and fold processes are completed.

7.2.2 PPE USE DURING THE VARIOUS STAGES OF CLINICAL SESSIONS

There are unique needs for protection at the different stages of clinical sessions.

7.2.2.1 PEE DURING EXAMINATIONS, TREATMENTS/PROCEDURES: In addition to the protective clothes all DHCWs should use: PPE that includes a long-sleeved water-resistant disposable gown, a disposable cap, an N-95 mask worn under a surgical face mask, a face shield as well as protective eyewear and gloves. All eyes should be covered with eyewear with side shields. The masks cover the mouth and nose, and beard. All DHCWs should in addition to safety glasses for the patient.
Guidelines for donning and doffing PPE and respirators, as well as guidance for extended use and limited reuse of N95 mask, are followed. The staff should discard all PPE within the treatment room and not leave the room with any of the disposable items. PPE designed to be re-used (protective eyewear and clothing) should be cleaned according to the manufacturer's instructions.

7.2.3 GLOVES: Gloves do not replace the need for proper hand hygiene (see 4.1). Appropriate hand hygiene must be performed immediately before donning gloves, and immediately after removing them. Gloves should be stored in a cool dry location and never exposed to a heat source. The integrity of gloves should be monitored after donning and during use, particularly when manipulating metal instruments. If the glove is compromised (manufacturing defect, punctured or torn during use), the glove must be removed immediately and changed after hand hygiene has been performed.
The type of gloves selected for use depends on the procedure being performed. Types of gloves include:(1**) Patient Examining Gloves** – are used for examinations, procedures involving contact with mucous membranes and skin, as well as laboratory duties and for some minor to moderate surgical procedures. These are latex, nitrile, or nitrile blends, (2) **Sterile Surgical Gloves** – are used for surgical procedures. These are sterile, hand size-specific, and made of latex, nitrile or nitrile blends, polyurethane or styrene-based copolymers, (3) **Utility, Industrial, or General Gloves** – are used for cleaning and disinfection procedures, such as instrument processing and operatory cleanup for greater operator protection. These are nitrile

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or latex-nitrile blends, chloroprene/neoprene blends, butyl rubber, fluoro-elastomer, polyethylene, or another vinyl copolymer.

Further spread of contamination while wearing gloves should be kept by (1) keeping hands away from anything unrelated to the procedure that may contaminate their hands, including the face, keys, cell phones, food, etc.(2) limiting surfaces touched, (3) removing gloves when leaving work areas and performing hand hygiene. All computerized equipment including computer boards and mouse as well as personal phones are used either without gloves or are covered with plastic.

7.2.4 MASKS: During the COVID-19 pandemic, an N-95 mask is worn under a surgical face mask in all dental examinations and treatments/procedures. The respiratory mucosa of all DHCWs must be protected by wearing the masks that cover the nose, mouth, and chin during all dental procedures that have the possibility of producing aerosols, splashes, sprays, or spatter of blood, saliva, or other body fluids. The mask should be either on or off; it should never be worn around the neck or with the nose exposed. Single-use disposable masks must be removed by the ear-loop or string tie and properly disposed of after use. DHCWs should avoid touching the mask itself.

N-95 masks are used in extended use and limited reuse manner according to guidelines provided by the CDC. Surgical masks should be changed between patients or more often if it becomes contaminated or wet during the procedure or from the DHCW exhaled moist air during a longer procedure.

Mask selection must be applicable to the aerosol environment of the procedure being performed and the manufacturer's instructions should be followed. Due to the COVID-19 pandemic and to prevent inhalation of small particles that may contain airborne infectious agents such as Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) virus a particulate-filter respirator N95 should be worn at the clinic during the pandemic at all clinical examinations and treatments. These respirators are used in the context of a complete respiratory protection program. Such a program includes training and fit-testing of the respirator to ensure an adequate seal between the edges of the respirator and the DHCW face.

7.2.5 PROTECTIVE EYEWEAR: DHCWs should wear protective eyewear with solid side shields or a face shield during dental procedures that have the possibility of producing tooth or

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dental debris, aerosols, splashes, sprays, or splatter of blood, saliva, or other body fluids. Prescription eyeglasses are not acceptable by themselves and should only be worn underneath the eyewear or face shields.

Protective eyewear should be washed, rinsed, and dried between patients according to the manufacturer's recommendations. If the eyewear becomes visibly contaminated it should be cleaned and disinfected with intermediate-level disinfectant wipes.

7.2.5.1 EYE-WASH STATIONS: are installed in the preclinical area and clinics, available in the oral health care facility, to aid in managing any chemical or body fluid splashes, sprays, or spills into the eyes of a DHCW or patient. Staff is orientated as to the location, function, and indications for use of the eye-wash stations. The eyewash station should be cleaned and checked regularly according to the manufacturer's instructions to ensure proper water flow. Portable eye-wash devices must be checked for an expiry date on the solution.

7.3 TECHNIQUES TO MINIMIZE AEROSOLS

Procedures involving blood or other potentially infectious materials should be performed in a manner to minimize splashing, spraying, spattering, and generating droplets of the substances. High volume evacuation, proper patient positioning, and dental rubber dam will be used whenever possible to minimize splashing and spraying of blood or other potentially infectious materials. High volume suction should be used to minimize contact with saliva and reduce contaminated aerosol or spatter. When using the three-way syringe, water should be used before air.

7.3.1. PROPHYLACTIC MOUTH RINSE. During the COVID-19 outbreak, an antiseptic oral rinse (1% hydrogen peroxide) may be used before any dental procedure. For children under the age of six years, the application of the mouth rinse should be done using a gauze pad. It is also recommended to apply the mouth rinse on endodontically treated teeth after the rubber dam is placed and the access opening is established. Patients should be encouraged to keep good oral hygiene during the outbreak.

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7.4 RESPIRATORY HYGIENE / COUGH ETIQUETTE

Respiratory hygiene/cough etiquette infection prevention measures are designed to limit the transmission of respiratory pathogens spread by droplet or airborne routes. The strategies target primarily patients, individuals accompanying patients to the dental setting who might have undiagnosed transmissible respiratory infections. During the COVID-19 outbreak, DHCWs or anyone with signs of illness including cough, congestion, runny nose, or increased production of respiratory secretions, are not allowed to enter the facility.

7.4.1 MEASURES FOR PREVENTION:

7.4.1.1 SIGNS AT ENTRANCES: signs at entrances with instructions to patients with symptoms of respiratory infection are not allowed to enter the dental school, and if urgent dental treatment is needed, the treatment is performed via the emergency room of Hadassah hospital, and the treatment is performed in a negative pressure room.

7.4.1.2 WAITING AREAS DURING THE COVID-19 OUTBREAK - Patients in the waiting area are separated by 2 meters and also waiting for areas for students upon delivery of dental equipment. Shared items such as toys, pens, and magazines are not placed in waiting areas. Waiting time is kept to a minimum to minimize the number of people present.

7.4.1.3 ACCOMPANYING PERSONS DURING THE COVID-19 OUTBREAK. During the COVID-19 outbreak, accompanying persons are not allowed to enter the dental facility unless a patient who is a minor or a patient has an intellectual or developmental disability.

7.4.1.4 HAND HYGIENE: Resources for performing hand hygiene in or near waiting areas are provided. Hand sanitizers with 70% alcohol are provided in all waiting and patient care areas. Signs showing proper handwashing techniques are placed close to soap dispensers.

8 DENTAL HEALTH CARE WORKERS IMMUNIZATION PROGRAMS

Immunization of DHCWs before they are placed at risk for exposure is most efficient and effective. Specifically, healthcare students (i.e dentistry, dental assisting, dental hygiene), may be exposed to various diseases during their studies and in their careers. Health workers,

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healthcare students, and administrative workers in Israel, including HUHSDM DHCWs, are required to be vaccinated, according to the Director General's Circular of 08/2016: Vaccination of Healthcare Students and Health System Employees[9].

Immunization is mandatory for all new employees at HUHSDM, including students, who must show certification that they are immunized before commencing clinical experience. Secretaries of the administration of health institutes are not included in these definitions.

8.1 RECEIPT OF THE VACCINE

All DHCWs at HUHSDM are informed about recommended immunizations. The cost of performing the vaccinations is borne by the student. It is the employer's responsibility to act to vaccinate DHCWs whom the employer employs. The vaccines shall be provided and funded by the employer. This obligation relates to all DHCWs employed in the employer's framework, including contractors' employees or external suppliers operating within the employer's premises, employees of health corporations, and volunteers.

When attending to receive the vaccine, the DHCWs should bring the following documents:

(1) Immunization card or another document that shows past vaccinations or antibody titer,

(2) Results of the tuberculin test (Mantoux) from the Israel Lung and Tuberculosis Association or hospital. It is recommended to perform the Mantoux test before the process of completing the vaccinations. Therefore all new healthcare providers in Hadassah Medical Center, including the dental students are screened for tuberculosis (TB) upon hire.

8.2 DHCWS' IMMUNIZATION PROGRAM: Below is a summary of the DHCWs' immunization program, from the above Circular:

	Vaccines and Examinations								
Program	**Tuberculin**	**Influenza (during the period that the vaccine against seasonal influenza is given)**	**Tdap (Tetanus, Diphtheria, Pertussis)**	**MMR**	**Chickenpox (varicella)**	**Polio**	**HBV**	**Anti-HBs**	**Anti-BC-HBs-Ag**
Special Groups (Physician, Dentist, Nurse, Paramedic, Dental Hygienist)	+	+	+	+	+		+	+	

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Maximum Program: Workers who perform Invasive Exposure Prone Procedures	+	+	+	+	+	+	+	+	+

Employees who decline to accept hepatitis B vaccination or other vaccinations: (1) Must sign an appropriate declination statement and (2) Should be educated regarding their exposure risk.

8.2.1. INFLUENZA VACCINE DURING THE COVID-19 OUTBREAK. Dental health care workers in Israel are listed in the priority list for Influenza vaccine. All DHCW are encouraged to be vaccinated in their HMO. In Israel vaccination is free of charge and all Israeli citizens have mandatory health insurance. Influenza vaccination is performed according to the priority list that was developed by the Ministry of Health.

9 DENTAL HEALTH CARE WORKERS SAFETY: EXPOSURE PREVENTION AND MANAGEMENT

9.1 SIGNIFICANT EXPOSURES exist when any of the following events occurs: (1) Percutaneous injury, where the skin of a DHCWs is punctured by a contaminated needle or sharp instrument (blood is released), (2) Blood, saliva, or other body fluid is splashed onto non-intact skin, which includes all exposed skin that is chapped, abraded or has dermatitis. , (3) Blood, saliva, or other body fluid is splashed onto mucosa of the eyes, the mouth, or the nose. Exposure to a patient's blood or saliva on intact skin is not considered significant.

9.2 EXPOSURE PREVENTION Exposure to blood or saliva by Significant Exposures is the risk of acquiring a blood-borne pathogen in the dental health-care setting. Every effort should be made by all DHCWs to avoid these injuries. The following measures are used to prevent exposures at HUHSDM:

9.2.1 ROUTINE PRACTICES: Routine Practices includes hand hygiene, the use of PPE, as discussed above.

9.2.2 SHARPS SAFETY (ENGINEERING AND WORK PRACTICE CONTROLS)

Sharps include but are not limited to needles, scalers, laboratory knives, burs, explorers, endodontic files, and reamers. Most exposures in dentistry are preventable; therefore,

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HUHSDM has policies and procedures available addressing sharps safety. DHCWs should be aware of the risk of injury whenever sharps are exposed. When using or working around sharp devices, DHCP should take precautions while using sharps, during the cleanup, and during disposal. Engineering and work practice controls are the primary methods to reduce exposures to blood and or other potentially infectious material from sharp instruments and needles.

9.2.2.1 ENGINEERING CONTROLS: Engineering controls are technology-based designs for equipment, and devices intended to reduce percutaneous exposures. Examples include automated instrument washers and dental units designed to shield burs on handpieces.

9.2.2.2 WORK-PRACTICE CONTROLS: When engineering controls are not available or appropriate, work-practice controls should be used. Work-practice controls are behavior-based and are intended to reduce the risk of blood exposure by changing the way DHCWs perform tasks. Work-practice controls include facility practices established to reduce aerosols, handling, using, assembling, or cleaning contaminated sharp instruments, equipment or appliances, and practices to ensure the proper use of sharps containers Work-practice controls may include but are not limited to:

1. High volume evacuation must be used in a heavy aerosol environment for example with ultrasonic use and highspeed handpieces.
2. Avoiding or using extreme caution when passing sharps during four-handed dentistry.
3. Needles should not be passed between DHCWs during four-handed dentistry.
4. Burs should be removed before disassembling the handpiece from the dental unit.
5. Fingers should not be used in tissue retraction or palpation during suturing and administration of anesthesia.
6. All sharps from an instrument tray are identified and removed before instrument cleaning.
7. All used disposable syringes and needles, scalpel blades, and other sharp items are placed in approved puncture-resistant sharps containers located at the point of care or as close as feasible to where the items were used.
8. Puncture-resistant containers are labeled "biohazard and disposing of" according to regulations specified in the Israeli Standard 4501.

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9. All needles should be capped before and immediately after use, including changing the carpule and discarding.
10. Needles should not be recapped, manipulated, or bent by using both hands or any other technique that involves directing the point of a needle toward any part of the body of the DHCW or other personnel's body.

11. Needles should be recapped between uses and before disposal using a needle guard, in a **one-handed scoop technique**, preferably against a rigid body, or an engineered sharps injury protection device (needles with re-sheathing mechanisms). The needle should be discarded after use in the sharps container.

Controlled closing procedure - For a more detailed explanation of the technique see a video on

https://www.youtube.com/watch?v=AYUbpBLceTg

12. Needles should be capped before removing the needles from the syringe for disposal.
13. When using one needle for multiple injections on the same patient, the needle must be recapped between each use.
14. The use of one needle per injection should be considered to minimize the risk of infection from needle sticks.
15. Extreme caution should be used when contaminated sharp instruments are passed between DHCWs or other personnel during four-handed dentistry.
16. Instruments should be kept organized on the work surface to reduce the risk of sharps injury.
17. Extreme caution should be used whenever contaminated sharp instruments are processed for sterilization. Wearing sturdy puncture-resistant utility gloves is needed for instrument

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processing while keeping in mind that no glove is foolproof and therefore handling these instruments by the handful should be avoided.

10 POST EXPOSURE MANAGEMENT PROTOCOL

Significant Exposures are dealt with immediately. In case of significant exposures the following procedures should be followed according to the Head of Public Health Services' Circular number 6/2015 from 2/2015: "Prevention of infection with type B and C viral hepatitis after exposure to blood and/or other body fluids"[10] as well as Hadassah Medical centers protocol: "Treatment in the event of an employee being exposed to blood or discharge of patient No. 01-15-02-03" and following the procedures of the CDC[2-5]. The following items are followed:

1. Remove the gloves or immediate clothing, if necessary, to assess the extent of the injury.
2. Immediately allow the wound to bleed freely but do not squeeze it. Then wash the area, including the puncture or wound with running water and anti-bacterial soap. Disinfect with alcohol. Exposed eye, mouth, or nose mucosa should be flushed with copious amounts of sterile water. An eyewash station is located in each clinic/laboratory labeled eyewash station (see 7.2.5.1 Eye-wash stations). Do not apply caustic agents or inject antiseptic agents into the wound.
3. It is important to explain to the source (in most cases the patient) the procedure and the importance of performing the tests as soon as possible. An **Exposure Document** should be completed and filed within the patient medical file and in a dedicated file within the control unit of the students' clinic.
4. The one pierced (victim) must approach, with the source and with the Exposure Document to one of the following two options:

   Personnel Clinic - This clinic should be assessed during working hours (Sunday through Thursday, 8:00 - 15:00). This clinic is located in the old hospital building, 7th floor, phone 76347. The victim (i.e DHCW including students) must appear with two yellow serological tubes taken from the source or with the source themselves (if no one can take blood). The Worker's Health Clinic team will fill in the appropriate work accident forms and blood will be taken from the Source. The serology test from the source should be conducted with the source's consent to test for risk factors for infection (HBV, HCV, HIV), and also from the victim, to negate the possibility of being a carrier.

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Emergency room (ER): When the personal clinic is closed (e.g evenings or weekends) and up to 24 hours from the time of the exposure, access the ER. Two files will be filled: both for the source and the victim. At the end of the stay in the ER - the charging bill must be taken and kept. The following day after registration of the form at the Personnel Clinic - will be filled out with the Dean's secretary - **Work Injury Procedure Form** TL 250 for exemption from payment. If there are administrative problems in the ER the DHCW should contact the **general hospital nurse (74168/9).**

5. If the patient (the source) refuses to be examined, the person will have to go to the personal clinic to register and assess the need for **Post Exposure Prophylaxis (PEP)** by a qualified health care professional. In the case of HIV - If required, anti-retroviral drugs to treat an HIV exposure should be given according to the Head of Public Health Services' Circular number 5/10 of 09/2010: "Guidelines for preventing HIV infection after exposure to blood or after unprotected sexual intercourse"[11].
6. After taking blood, it is the responsibility of the one pierced (the student) to report to the main assistant of the clinic where the incident occurred. The immediate report and the implementation of the tests as soon as possible are important in preventing infection with blood-borne diseases and in work accident insurance.

Following the exposure, the DHCW should fill out an online form of "Adverse Event Report" available at: **https://goo.gl/usGkPS.**

Or scan this barcode:

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Immediate actions to be taken after exposure of an Employee / Student / Volunteer to blood and/or bodily fluids. For detailed information, see the Hadassah procedure: "Treatment in the event of an employee being exposed to blood or discharge of patient No.

Exposure to blood and / or body fluids

Local treatment:

- Wash the damaged skin with running water and anti-bacterial soap
- Disinfect with alcohol
- Wash your eyes/mucosa with tap water or sterile water
- Report to the supervisor in the department where the incident occurred and to the direct supervisor.

Known exposure

Taking blood from the patient in two test tubes Serological and storage in the refrigerator

Unknown exposure source

During the hours of the Personnel Health Clinic (Sun - Thurs 8:00-15: 00)

The exposed employee will immediately arrive at the clinic with the patient's tubes and stickers, and there will be an evaluation of tests, treatment, and training.

When the clinic is inactive (evening, night, weekend, holiday, and holiday)

The on-call head nurse must be informed immediately.
The exposed employee will immediately arrive at the ER to open a file and take blood samples for hepatitis B, hepatitis C, and HIV
A consultation with the on-duty infectious disease doctor will be conducted at the ER, whether an urgent HIV test is required (if the source of exposure is known) and whether HIV / HBV preventive treatment is required.
The employee should be referred for further treatment, registration, and follow-up at the employee's health clinic

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11 STERILIZATION AND DISINFECTION OF PATIENT-CARE ITEMS AND DEVICES

11.1 CLASSIFICATION OF CONTAMINATED PATIENT CARE ITEMS

Reusable patient-care items such as dental instruments, handpieces, devices, and equipment, can be categorized as critical, semi-critical, or non-critical, depending on the potential risk for infection associated with their intended use. This categorization is based on a modified Spaulding classification[12,13] and the CDC Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008[14].

11.1.1 CRITICAL ITEMS. Critical items are those items that are used to penetrate soft tissue or bone, enter into or contact the bloodstream, or other sterile or non-sterile body tissue. Examples of these items include, but are not limited to periodontal scalers dental burs, dental dam clamps, endodontic files, dental implant drills, and all other surgical instruments. Critical patient care items have the greatest risk of transmitting infection and must be sterilized by heat. If a critical item is heat-sensitive, then it should be replaced with a single-use disposable item.

11.1.2 SEMI-CRITICAL ITEMS. Semi-critical items are those items that only come in contact with mucous membranes or non-intact skin, and therefore have a lower risk of transmission. Examples of such items are mouth mirrors, amalgam condensers, reusable dental impression trays, mouth props; plastic prophy angles, rubber dam frames, and radiography aids such as XCP film/Phosphor plate holders. As the majority of semi-critical patient care items in dentistry are heat tolerant, all heat-tolerant semi-critical items must be sterilized. If a semi-critical item is heat-sensitive, then it should be replaced with a heat-tolerant or disposable single-use item. If none are available, chemical sterilization should be used by processing the item using high-level disinfection. at HUHSDM the item is processed using soaking in disintegrating liquid, followed by washing and brushing, and then soaking the item for 10 minutes in the high-level disinfectant CIDEX OPA (ortho-Phthalaldehyde Solution 0.55%) according to the manufacture's guidelines.

For pipelines at the end of the day a flow of non-corrosive fluid that is not frothy, such as sodium hypochlorite, should be used.

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11.1.2.1 DENTAL HANDPIECES AND ASSOCIATED ATTACHMENTS: Dental handpieces and associated attachments, including high-speed and low-speed motors, dental air-water triple syringe, and reusable prophylaxis angles are considered semi-critical. Nevertheless, since their internal surfaces can become contaminated with patient materials during use, these pieces of equipment should always be heat sterilized between patients and not high-level or surface disinfected.

Pre-use, water should be delivered for 20 seconds in the dental handpieces (LS, HS + Triple syringe). After treatment, the drill should be carefully removed, and then water should be delivered for 20 seconds. The following steps include external cleaning with quarterly ammonium swabs, lubrication, and autoclave sterilization.

11.1.2.2 RADIOGRAPHY ITEMS

SENSORS are also considered semicritical and should be protected with a disposable barrier to reduce contamination during use., followed by clean and use disinfectant with intermediate-level (i.e., tuberculocidal claim) activity between patients. (what do we use?).

XCP EXTENSION CONE PARALLELING INSTRUMENTS should be heat-sterilized and packed in sealed packages until used.

11.1.3 NON-CRITICAL ITEMS. Non-critical items are those items that only contact intact skin, which serves as an effective barrier to microorganisms. Non-critical patient care items pose the least risk of transmission of infection. Examples include blood pressure cuffs, pulse oximeters, bib chains, facebow , x-ray tube. In most cases, cleaning, or if contaminated by blood, saliva, or other body fluid, cleaning followed by disinfection with an intermediate-level disinfectant is sufficient. Cleaning or disinfection of some non-critical items may be difficult or may damage the surfaces. In those instances, the use of disposable barriers to protect these surfaces may be a preferred alternative.

Note: **If a single-use item is available it should be used whenever possible.**

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11.1.4 SUMMARY OF MODIFIED CDC/SPAULDING CLASSIFICATION OF CONTAMINATED PATIENT CARE ITEMS[13]

Classification	Description	Dental Clinic/Laboratory Examples	Relative Risk of Disease	Surface Recycling Processes
Critical	Penetrates tissue; contacts open tissue; enter into or contact the bloodstream or other sterile or non-sterile body tissue	Cutting instruments; surgical burs including dental implant drills, files, and needles; handpieces and scaler tips, dental dam clamps	High	Heat sterilization; sterile, single-use disposable
Semi-Critical	Contacts mucosa	Hand instruments (non-cutting): mouth mirrors, amalgam condensers, mouth props, plastic prophy angles, rubber dam frames, reusable dental impression trays	Intermediate	Heat sterilization; single-use disposables; chemical sterilization should be used only on items that are heat sensitive.
Non-Critical	No intraoral contact. Contacts unbroken skin	Blood pressure cuffs, pulse oximeters, bib chains, facebow , radiograph headcone	Low	Clean with detergent (no blood or saliva); intermediate-level disinfection if visibly contaminated with blood†; disposable barriers

†Some examples include iodophors, combination synthetic phenolics, bromides, and sodium hypochlorite.

11.2 THE STERILIZATION PROCESS AT HUHSDM

The goal of sterilization is to break the chain of infection and eliminate the potential for a patient to patient transmission. Critical items and heat-tolerant semi-critical items must be sterilized by autoclave. All newly purchased critical and semi-critical instruments/items that are received non-sterile must be inspected and sterilized before first use, following the manufacturer's instructions (eg. burs, matrix bands, stainless steel crowns).

To achieve sterilization multiple instrument processing steps are needed. These steps include disassembly and sorting, cleaning, rinsing, drying, inspection, corrosion reduction, packaging, sterilization, cooling, drying, storage, and delivery. These steps are followed by the sterilization team and all other DHCW to ensure that all instruments are adequately processed and safe for re-use on patients.

11.2.1 CENTRAL STERILIZATION FACILITY. The sterilization process occurs in a designated central sterilization facility which serves as the central processing area for the

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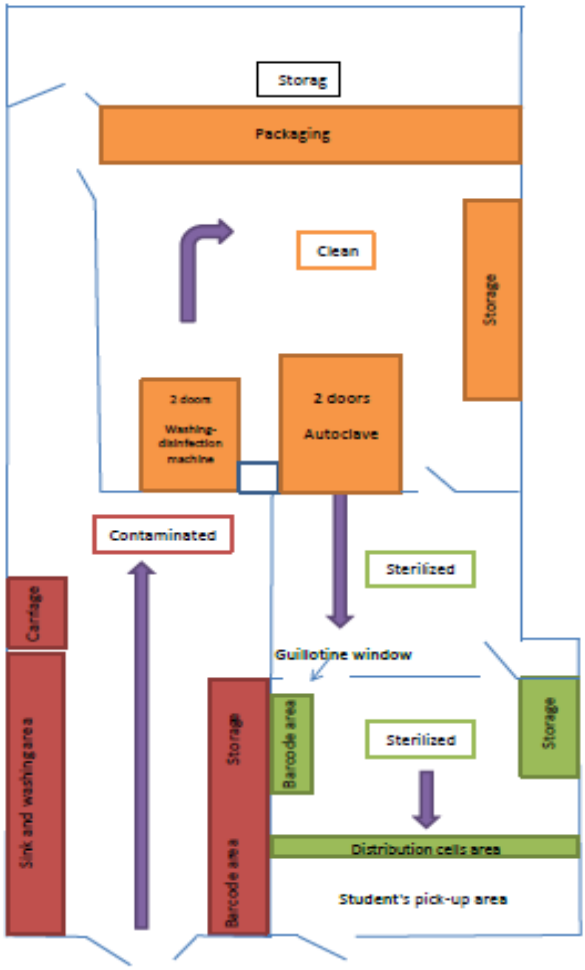
sterilization process at HUHSDM. The sterilization room is found on the basement floor and contains adequate space and specialized equipment for the sterilization process. The sterilization room is one-directional and has the following clear sections for (1) Receiving, cleaning, and decontamination ("Dirty section"),(2)Preparation and packaging ("Clean section"), (3) Sterilization, and (4) Storage of sterilized instruments ("Sterile area").

These sections are separated from each other to control traffic flow by walls (or by a visible line on the floor – between the clean and sterile areas), to control one-way traffic of instruments, and contain contaminants generated during processing. Space is adequate for the volume of work anticipated and the items to be stored.
The following chart describes the central sterilization room:



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11.2.2 THE CENTRAL STERILIZATION TEAM. The sterilization process at HUHSDM is a complex process that demands that only qualified and trained personnel will work at the Sterilization Unit. The head of the Sterilization team was trained and qualified by the sterilization authorities of the Hadassah Medical Center, during several weeks of hands-on training, and he is provided with ongoing training and regular monitoring for quality assurance by the IPC Committee of and the Director of the student's Clinic, as well as the HMC sterilization authority. Under his supervision and on-site training, four more workers are employed, two for the day shift, and two stays for the evening sterilization cycles, making sure all instruments are ready for the next day.

11.2.3 CONTROL PRACTICES FOR PROCESSING AND CLEAN-UP OF ITEMS:

Work-practice controls must be used when processing critical items. DHCW and all other personnel at the sterilization unit should wear masks, glasses, and utility gloves as aerosols may be released when hand scrubbing. PPE should be worn during instrument decontamination to avoid exposure from splashing.

Contaminated instruments must be handled carefully to prevent exposure to sharp instruments that can cause a percutaneous injury. Instruments that have been used on a patient should be handled with puncture-resistant utility gloves during operatory clean-up (see Gloves,7.2.3).

11.2.4 TRANSPORTATION OF INSTRUMENTS TO THE STERILIZATION ROOM:

Instruments are placed in a cassette at the point of use to prevent percutaneous injuries during transport to the instrument processing area. All cassettes are put in a soiled instrument closed cart. The cart is transferred to the sterilization compound at a known schedule (typically twice a day) by the sterilization team.

11.2.5 CLEANING: The surface of an instrument cannot be sterilized if there is blood, saliva, and other debris adhering to the surface. Cleaning involves using cleaning agents with water to remove debris, organic, and inorganic contamination. All instruments must be cleaned within 24 hours of usage. The method of cleaning will depend on the debris/materials present on the instrument so the processes may overlap:

(1) It is recommended that Instruments will be cleaned immediately after use by soaking in Aniosyme, followed by hand rinsing and scrubbing. When hand scrubbing, utility gloves should

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be used along with running water to help contain aerosols (see Gloves, 4.2.3). When personnel is using a long-handled brush, instruments should be held in a downward direction and brushed away from the user. A hand full of instruments must not be cleaned at one time. (2) In case there is no possibility of soaking, then the use of an enzymatic product is recommended by spraying with Aniosyme to degrade, followed by cleaning by the automated washer in the sterilization room. The automated washer at the HUHSDM sterilization facility is specifically designed for washing medical instruments, which is recommended as the best option for cleaning instruments.

If rust inhibitors are applied to items, follow the manufacturer's instruction. The sharpening of contaminated instruments presents a risk for disease transmission through accidental exposures. Sterilized instruments that require sharpening must be sharpened at the point of care to maintain sterility. If they are not used immediately, they must be reprocessed in the automated washer, sterilized, and stored for future use.

11.2.6 INSTRUMENT PREPARATION AND PACKAGING FOR STERILIZATION: The instruments are still contaminated at this stage. Therefore, before heat-processing instruments, the DHCW should make every effort to rinse away or remove biological debris, disinfecting solutions, chloride solutions, and highly alkaline detergents. These substances can cause pitting or staining of metal surfaces. Manufacturer's instructions should be followed to correctly process metals (e.g: titanium and carbon steel scalers). Packaging together items of widely dissimilar metals should be avoided because of the potential for electrolytic damage to instrument surfaces.

Before processing all instruments must be dry. Cleaned instruments should be inspected and placed into cassettes, wrapped, or packaged for sterilization. Packaging and wrapping materials designed for sterilization must be used according to the manufacturer's instructions. An

external and separate internal chemical indicator must be used with every instrument package. Biological indicators should be used once a week. The correct placement of the indicators should be according to the manufacturer's instructions.

11.2.7 LOADING THE STERILIZER CHAMBER: Packages and cassettes must be fully dried before placement in the sterilizer. Items must be placed in the sterilizer according to the manufacturer's instructions. The chamber should not be overloaded and adequate space must

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be allowed between items. Bagged items should be placed on trays with the paper side facing up. The trays should not be overloaded and items should be spread in a single layer. Hinged instruments should be sterilized in the open and unlocked position (eg. forceps). The sterilization of sharpening stones/cards must follow the manufacturer's instructions.

11.2.8 STERILIZATION: Heat-tolerant dental instruments are sterilized in an oral health care facility using steam under pressure (autoclave). The sterilization is performed using medical sterilization equipment specifically designed for the sterilization of instruments. Sterilization times, temperatures, and other operating parameters must be used as recommended by the manufacturer of the autoclave.

Items must be arranged in the autoclave in such a way as to permit the free circulation of the steam. The manufacturer's instructions for loading the sterilizer regarding capacity and arrangements of the instruments or packs within the sterilizer chamber must be followed. Instrument packs must be allowed to dry inside the sterilization chamber before opening, removing and handling, to avoid wicking of moisture and, potentially, microorganisms from hands or gloves. The date, time are be stamped on the product wrapping by automatic machine. Instrument cassettes or trays containing sterilized instruments must remain in sterilization packaging to maintain sterility during storage.

11.2.9 TRANSPORTATION FROM CENTRAL STERILIZATION FACILITY TO THE CLINIC

After taking out the packages from the autoclave chamber, they are put on a cart (different type than the "soiled" cart, to avoid confusion), and taken to the clinic. This transportation is done by the sterilization team, usually twice a day. All transportation of carts is done on separate elevators than those patients use.

11.2.10 STORAGE: All instruments after sterilization, including handpieces and burs, are kept centrally. All instruments (including cutting burs) must be stored in a sterile state in closed storage until the point of use. The use of a bur block for the storage of cutting burs is no longer accepted unless the bur block is cleaned, packaged, and sterilized after each patient.

12 ENVIRONMENTAL INFECTION PREVENTION AND CONTROL

12.1 TYPES OF ENVIRONMENTAL SURFACES

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Environmental surfaces in the dental operatory do not contact the patient directly, however, these surfaces can become contaminated during patient care, and then act as a reservoir for microbial contamination. Transmission of this type occurs through personnel hand contact, or by touching the surface with a contaminated instrument. Pathogens can be transferred to instruments, hands, nose, mouth, or eyes of DHCW and patients.

Environmental surfaces can be divided into:

12.1.1 CLINICAL CONTACT SURFACES: Usually contacts dental personnel, but not patients. These surfaces may come in direct contact with a DHCW gloved hand, direct spray, spatter, aerosols, or contact with contaminated instruments. Thus these surfaces can be directly contaminated with blood, saliva, bodily fluids, or water containing bodily fluids These surfaces can contaminate other instruments, devices, hands, or gloves, thus have a minimal, but potential risk of infectious disease transmission. Clinical contact surfaces include dental unit surfaces, laboratory equipment, and radiology equipment. Examples would include operative surfaces, reusable containers of dental materials, faucet handles, light handles, switches, dental radiograph equipment, chairside computer keyboards and monitors, drawer handles and doorknobs, pens, and other writing utensils, and telephones.

12.1.2 HOUSEKEEPING SURFACES: These surfaces rarely contact dental personnel or patients and therefore have limited risk of disease transmission, unless they inadvertently come in direct contact with DHCW hands, patient-care items, or dental appliances. Examples would include floors, walls and sinks, and countertops.

12.2 SURFACES INFECTION PREVENTION AND CONTROL

Proper hand hygiene, wearing of PPE as well as surface protection using either surface barriers or cleaning and disinfection, are essential to minimize such potential contamination. Any soiled instruments should be removed from the surface. An important first step in disinfecting any surface is cleaning. Cleaning removes debris such as organic matter that interferes with the microbial inactivation by a disinfectant.

12.2.1 INFECTION PREVENTION AND CONTROL OF CLINICAL CONTACT SURFACES:

Clinical contact surfaces should be protected to avoid cross-contamination. Surface protection is accomplished by either: (1) Cleaning and disinfecting with an intermediate-level disinfectant, or (2) Using surface barriers.

12.2.1.1 CLINICAL CONTACT SURFACES CLEANING AND DISINFECTION

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All clinical contact surfaces that have been contaminated or may have been contaminated must be cleaned and disinfected between patients and at the end of the workday using an intermediate-level disinfectant. DHCW or other personnel must wear appropriate PPE while cleaning and disinfecting clinical contact surfaces.

Disinfection may be accomplished at HUHSDM by the **wipe-discard-wipe** method. Clinical contact surfaces such as the dental chair, lamp, and handles (including drawer handles and doorknobs handles) should be wiped with Quarterly Ammonium swabs between patients. Once-daily these surfaces should be wiped with Sodium Hypochloride (1000 ppm), and then wiped with water to prevent corrosion and stain of clothes. Blood spills or splashes, saliva, or other bodily fluids must be contained and managed as quickly as possible to reduce the risk of contact by patients and DHCW, using sodium hypochloride.

When using disinfectants, the manufacturer's directions must be precisely followed. Strict attention must be given to the proper use of the product concerning the method of application and duration of application. The disinfecting step must keep the surface wet for the prescribed length of time according to the manufacturers' instructions.

Applications of cleaning chemicals by aerosol or trigger spray bottles may cause eye injuries or induce or compound respiratory problems or illness. Following best practices, apply cleaning chemicals to a wipe before using.

To make daily cleaning easier treatment areas must be kept clear of unnecessary equipment and supplies. Manufacturers' instructions should be consulted regarding the compatibility of devices and equipment with liquid chemical disinfectants.

CLINICAL CONTACT SURFACES CLEANING AND DISINFECTION DURING THE COVID-19 PANDEMIC. Proper disinfectants are used against SARS-CoV-2, according to the MOH guidelines. The adequate time between patient appointments is taken to prepare the treatment room properly, and allow appropriate disinfection and environmental cleaning. The routine disinfection of all clinical and administrative surfaces within the dental clinic/phantom lab is reinforced.

12.2.1.2 CLINICAL CONTACT SURFACES BARRIER PROTECTION

Clinical contact surfaces and equipment can be protected from contamination using surface barrier protection, particularly if they are difficult to pre-clean before disinfection.

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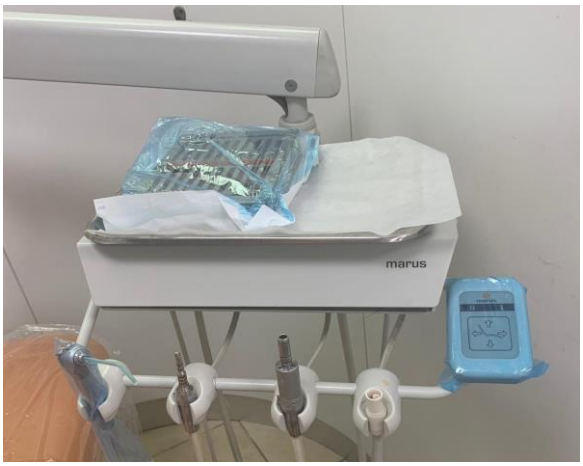
At HUHSDM the following items are covered with plastic barriers and replaced between patients: dental chairs including the handles of the chair backs and arms, headrest, control buttons, and control panel, light handles, dental chairs switches, countertops, dental air-water syringe, computer keyboards, mouse, light cures and x-ray cone.



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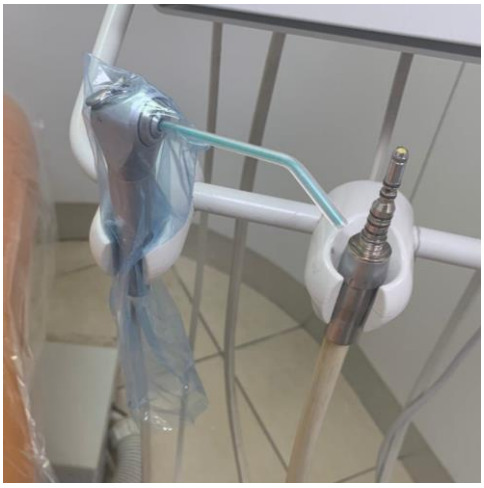

DHCW or other personnel should ensure those surface barriers are appropriately secured. Surface barrier protection is particularly effective for those clinical contact surfaces that are difficult to clean and disinfect due to surface topography or material chemical incompatibilities.

Surface barriers become contaminated during patient care. While gloved, surface barriers should be carefully removed and discarded between patients. Following removal of the surface barrier, the clinical contact surface should be examined to

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ensure it did not become inadvertently contaminated. If contaminated, the surface should be cleaned and disinfected with an intermediate-level disinfectant.

Following removal of the surface barrier, gloves should be removed, hand hygiene must be performed and clean surface barriers should be placed before the next patient treatment.

12.2.1.3 INFECTION CONTROL PROCEDURES FOR RADIOGRAPHY

Before the patient enters and exits the radiography station (phosphor) the following items should be disinfected using a quarterly ammonium wipe and then covered with dispensable barrier: (1) button, 2) door, 3) X-ray tube, 4) apron. Insertion into the scanner should be done with clean hands and without gloves. The film can be dropped on silk paper near the scanner's position with the active part down or working with four hands.

Infection control of radiography items such as sensors and XCP extension cone paralleling Instruments is discussed in section 11.1.2.2.

12.2.2 INFECTION PREVENTION AND CONTROL OF HOUSEKEEPING SURFACES

Although housekeeping surfaces, such as floors, walls, and sinks, have a limited risk of disease transmission in dental health care settings, frequent cleaning with diluted detergents or household low-level disinfectants is required.

If the surface becomes contaminated with blood, saliva, or other bodily fluids, the surface must be cleaned and then disinfected with an intermediate-level disinfectant (Sodium Hypochloride).

Blood spills or splashes, saliva, or other bodily fluids must be contained and managed as quickly as possible to reduce the risk of contact by patients and DHCW. The DHCW and other

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personnel should wear appropriate PPE. The visible organic material should be removed with absorbent material (disposable paper towels discarded in a leak-proof container).

Floors should be clean, and spills must be quickly cleaned up. Routine disinfection of floors, windows, walls, drapes, window blinds, and other vertical surfaces is not necessary unless the surfaces are known or are suspected to be contaminated.

Cleaning tools, such as mop heads or cleaning cloths, should be cleaned after use and allowed to dry before reuse. Single-use, disposable mop heads and cloths are available and should be used to avoid spreading contamination.

Diluted solutions of detergents or disinfectants, if prepared in dirty containers, stored for long periods, or prepared incorrectly, may become reservoirs for microorganisms. Manufacturers' instructions for preparation and use should be followed. A fresh cleaning solution should be made each day, discarding any remaining solution and allowing the container to dry between uses.

Carpeting and cloth furnishings must not be used in patient care areas since these are difficult to clean and cannot be reliably disinfected. Mechanical rooms should also be kept extremely clean and outside air supply systems should be considered.

12.2.3 SUMMARY OF MODIFIED CDC/SPAULDING CLASSIFICATION OF CONTAMINATED ENVIRONMENTAL SURFACES[13]

Classification	Description	Dental Clinic/Laboratory Examples	Relative Risk of Disease	Surface Recycling Processes
Clinical contact surfaces	Usually contacts dental personnel, but not patients	Dental unit surfaces; laboratory equipment; radiology equipment	Very low	Clean with detergent (no blood or saliva) and low-level disinfection (HIV/HBV label claim); intermediate-level disinfection if visibly contaminated with blood; disposable barriers
Housekeeping surfaces	Rarely contacts dental personnel or patients	Floors; walls; countertops	Minimal	If no obvious blood, sanitize with detergent; intermediate-level disinfection if visibly contaminated with blood

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13 INFECTION PREVENTION AND CONTROL FOR IMPRESSIONS AND DENTAL LABORATORY

13.1 INFECTION PREVENTION AND CONTROL FOR CONTAMINATED ITEMS TO BE TRANSPORTED TO OR RECEIVED FROM THE LABORATORY

The DHCW should disinfect all patient contaminated items to be transported to the laboratory, such as impressions, prostheses, bite registrations, and models.

The DHCW should disinfect and properly mark an impression before it is being transferred to the laboratory. During the disinfection of impressions, the DHCW should wear proper protective gear to include a coat, protective eyewear, facemask, and disposable gloves.

The impressions should be rinsed thoroughly under running water and then soaked in Sodium hypochloride solution (1000 ppm - 1-liter water tablet) for 20 minutes, excluding alginate which is soaked for 10 minutes. All impressions should be rinsed thoroughly under running water after disinfection. Delivery to and from the lab will be carried in a sealed bag or sealed container with a sticker confirming that disinfection was carried out, the date and manner of disinfection. The DHCW should also clean and disinfect dental devices received from the dental laboratory before and after trying-in in the patient's mouth.

13.2 INFECTION CONTROL PRACTICES FOR THE DENTAL LABORATORY

The laboratory must disinfect the impressions and works upon receipt from the clinic, according to guideline number 1.9 of the Israeli Dental Health Division at the Ministry of Health: "Guidelines For safety and hygiene in dental labs[15] or any other document that updates it.

In the lab, a receiving area should be established separately from the production areas. These areas should be cleaned and disinfected daily with the appropriate cleaner. Laboratory work surfaces should be decontaminated with appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed. Equipment that has been contaminated with blood or other body fluids should be decontaminated and cleaned before being repaired in the laboratory or transported to the manufacturer. Contaminated material used in the laboratory should be disposed of in accordance with the policy for the disposal of potentially infectious waste.

The laboratory staff will disinfect each impression or work that had been received. Each case should be disinfected and properly marked as such before it is returned to the clinics.

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DHCW's in the production area should wear proper protective gear to include a laboratory coat, protective eyewear, facemask, and disposable gloves. All DHCW's should remove gloves and wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.

14 WASTE MANAGEMENT

The oral health care facility is responsible for the waste until it is safely removed from the premises. Dental waste of concern requires special storage, handling, neutralization, and disposal, according to the regulation number 1.8 or its updates, published by the Israeli Dental Health Division at the Ministry of Health:" Waste Management instructions in the dental setting"[16].

14.1 TYPES OF WASTE

The standard defines waste as:

14.1.1 GENERAL WASTE: Non- infectious and non- hazardous waste.

14.1.2 INFECTIOUS WASTE. May be divided into sharp and non-sharp medical waste:

14.1.2.1 CONTAMINATED SHARP MEDICAL WASTE

Contaminated sharps include any item or device that may penetrate the body including needles, syringes with needles, surgical cutting burs, ampoules, and other sharp items.

14.1.2.2 CONTAMINATED NON-SHARP MEDICAL WASTE :

(1) **Solid waste** is soaked or saturated with blood or saliva, such as gauze so saturated with blood following surgery that it is freely dripping blood or could easily release liquid blood if compressed.

(2) **Liquid or semi-liquid** blood or other potentially infectious materials, including saliva in dental procedures that are visibly contaminated with blood.

(3) **Pathological and microbiological wastes** containing blood or other potentially infectious materials, including extracted teeth or other human tissues.

14.1.3 HAZARDOUS WASTE -includes expired medicines and environmentally hazardous substances (mercury, fixer, developer, and any other dangerous material).

14.2 MANAGEMENT OF DIFFERENT TYPES OF WASTES

14.2.1 MANAGEMENT OF GENERAL WASTE: General waste in the students' clinic is kept in plastic waste bins with a tight lid that is handcuffed in a disposable plastic bag for single use.

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There is a 50L bin for every two operatories, and also next to each x-ray room. General waste is evacuated from the clinic according to the clinic's schedule (usually twice a day) and is disposed of at the Waste Disposal Placement following Hadassah Medical Center house-hold regulations. The waste bins should be evacuated at sufficiently frequent intervals to prevent overfilling and will be emptied when filled to 75% of its volume or at least once a day. The waste-bins are emptied by pulling the bag out of it. Before removing the bag from the bin, the housekeeping staff should make sure to tie it and make sure that liquid and waste do not disperse from it.

14.2.2 MANAGEMENT OF CONTAMINATED SHARP MEDICAL WASTE: All used disposable syringes and needles, scalpel blades, and other sharp items are placed in approved closable, puncture-resistant sharps containers located at the point of care or as close as feasible to where the items were used. These puncture-resistant containers are constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping. The containers are labeled "biohazard and disposing of" according to regulations specified in the Israeli Standard 4501 (see 9.2.2.2 Work-Practice Controls).
At the students' clinic, there are sharps containers at each operatory. Sharps containers should be replaced when filled to the “Fill Line” 'i.e 75% full, below the opening. When it reaches that level, the lid should be closed and locked, and the container should be placed in the regulated waste container for disposal. Closing before removal is essential to prevent the contents from spilling or protruding from the container during handling, storage, and transport.
At the students' clinic, there are sharps containers at each operatory. The clinic manager is responsible to check the state of the containers weekly, to determine if they are being replaced at sufficiently frequent intervals to prevent overfilling and arrange replacement when needed.

14.2.3 MANAGEMENT OF CONTAMINATED NON-SHARP MEDICAL WASTE: These include solid waste soaked or saturated with blood or saliva (gauze so saturated with blood following surgery that it is freely dripping blood or could easily release liquid blood if compressed). Non-sharp medical waste should be placed in a sturdy, leak-resistant bag. This bag should be labeled as "bio-hazardous" waste. The exterior of the bag should not be contaminated before disposal. If the exterior of the bag is contaminated or punctured, the bag should be placed in a second sturdy bag, similarly labeled. All bags should be securely closed

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for transportation and disposal. Oral health care facilities should dispose of general and medical waste daily to avoid accumulation.

The contaminated waste will be transferred to the designated concentration center for contaminated waste at Hadassah Medical Center until its disposal by authorities companies.

14.3 PROTOCOL FOR THE USE OF EXTRACTED TEETH FOR LEARNING PURPOSES

Specimens of blood, oral and maxillofacial biopsies or other potentially infectious materials are not handled in our students' clinics. Some basic training demands the use of extracted teeth, mainly in the pre-clinical lab.

The protocol for the use of extracted teeth for learning purposes is based on the 2016 CDC document: “What are the recommendations for using extracted teeth in educational settings?"[17].

The only change is that our current recommendation is to use 1000PPM chlorine instead of formalin.

The following actions must be taken:

14.3.1 STAGE 1 - INITIAL DISINFECTION

Since the tooth may have sharp edges (similar to sharp instruments), the extracted tooth should be carefully inserted into a glass jar for soaking in a chlorine 1000PPM liquid. At least for 24 hours (bleach).

14.3.2 STAGE 2 - STERILIZATION / FINAL DISINFECTION

a. If the tooth is without amalgam, autoclave sterilization should be performed by inserting the sterilized tooth into a sterilization bag and sterilizing with heat

b. If the tooth has amalgam restoration, there is a potential health hazard associated with possible mercury vaporization and exposure, therefore the tooth should be sterilized in a 1000PPM chlorine solution for two weeks.

14.4 MANAGEMENT OF HAZARDOUS WASTE will be collected in a suitable plastic container labeled as "Hazardous waste".

14.4.1 AMALGAM RESIDUE COLLECTION: Amalgam is a potential source of mercury vapor. Amalgam waste will be collected after each procedure and weekly from the traps. This scrap amalgam will be stored in an unbreakable sealed lid container (dry). The container will be filled with Glycerin, that covers the leftovers, and labeled

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"Hazardous waste". These containers of amalgam scraps will be stored in each operatory. The administrative manager of the HUHSDM student's dental clinic will be responsible for picking up the scrap amalgam on a regular schedule.

14.4.2 USED FIXERS AND DEVELOPERS COLLECTION will be done in separate, non-fragile containers. When the plastic container is filled to about 75% of its volume, the hazardous waste will be transferred to the designated concentration center for hazardous waste at Hadassah Medical Center until its disposal by authorities companies.

14.5 SUCTIONED FLUIDS. All containers with blood or saliva (suctioned fluids) may be safely poured into a utility sink, drain, or toilet, which drains into a sanitary sewer system or septic tank. DHCW should wear appropriate PPE during this task.

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