



DEPARTMENT OF THE NAVY  
BUREAU OF MEDICINE AND SURGERY  
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IN REPLY REFER TO  
BUMEDINST 6220.9B  
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BUMED INSTRUCTION 6220.9B

From: Chief, Bureau of Medicine and Surgery  
To: Ships and Stations Having Medical and Dental Personnel

Subj: HEALTHCARE-ASSOCIATED INFECTION PREVENTION AND CONTROL PROGRAM

Ref: (a) through (z), see enclosure (1)

Encl: (1) Reference List  
(2) Definitions  
(3) Acronyms  
(4) Dental Infection Control Guide

1. Purpose. To provide policies and guidelines to Navy medical treatment facilities (MTFs), dental treatment facilities (DTFs), branch medical clinics, and shipboard and Marine Corps field medical units to establish effective infection prevention and control (IP/C) programs that meet or exceed the requirements of enclosure (1), references (a) through (t) and in congruence with references (u) through (z). Enclosure (2) lists definitions of terms used in this instruction. Enclosure (3) lists acronyms that are relevant to IP/C. This instruction is a complete revision as well as the integration of Bureau of Medicine and Surgery (BUMED) Instruction 6600.10A and must be read in its entirety.

2. Cancellation. BUMEDINST 6220.9A and BUMEDINST 6600.10A.

3. Background

a. References (q) through (t) apply to Budget Submitting Office (BSO) 18 activities and reference (d) requires infection prevention and control committees (IPCCs) to be established in MTFs and DTFs. Stand alone DTFs may either comply independently or via merger and collaboration with adjoining MTF IP/C programs to meet the requirements of this instruction. Regulations in reference (l) spell out the requirements related to occupational exposures to bloodborne pathogens while reference (m) lists numerous dental and infection control-related guidelines, available at: <http://www.cdc.gov/hai/>. Enclosure (4) provides a guide when incorporating dental-specific requirements into a command's comprehensive IP/C program.

b. A well organized and fully supported IP/C program will detect infections in a timely manner; identify trends signaling changes in the occurrence of an event; detect outbreaks; identify risk factors associated with infection; provide an estimate of the magnitude of the event being monitored; assess the effectiveness of prevention and control efforts; and lead to improved

practices by health care providers. It will reduce the occurrence of healthcare associated infections (HAIs), improve the quality of medical/dental care, and reduce the costs of operating hospitals and clinics.

#### 4. Policy

a. Commanders, commanding officers (COs), and officers in charge (OICs) of MTF and DTFs, senior medical department representatives on shipboard, and/or assigned to Marine Corps bases must establish IP/C programs following the policies and guidelines provided in this instruction. Whenever significant variations occur, the MTF/DTF shall document the reasons for those modifications in the Healthcare-Associated Infection Prevention and Control (HAIPC) Program and advise the BUMED infection prevention consultant of the plan to come into compliance.

b. Infection surveillance is an essential part of the HAIPC Program. It is critical in identifying outbreaks, emerging infectious diseases, antibiotic-resistant organisms (AROs), and bioterrorist events so that infection prevention measures can be instituted. Surveillance programs in health care facilities should be integrated to include infection prevention, performance improvement, patient safety, and public health activities.

c. The concepts of IP/C apply to all shipboard and Marine Corps field medical and dental units. Senior commanders shall address IP/C guidelines, based on the policies presented in this instruction, which meet the needs of different classes of ships or field medical and/or dental units. Medical and Dental Department representatives, assigned to ships or Marine Corps field medical and dental units, must be familiar with the principles of IP/C discussed in this instruction. Questions or problems concerning HAIs may be referred to medical staff in the chain of command, the nearest Navy environmental and preventive medicine unit, or BUMED infection preventionist (IP) subject matter expert (SME).

d. Commands must ensure that all staff personnel, including new personnel, volunteers, and students, are educated in the principles and procedures for preventing HAIs. Training must occur during their initial indoctrination and at least annually thereafter plus additionally on an as-needed basis.

e. Commands must ensure that all personnel, including direct and indirect care providers, administrators, ancillary services, volunteers, students, and others who come within 3 feet of patients, receive and maintain appropriate vaccination against seasonal influenza per reference (b).

f. Department of Defense (DoD) requires Service participation in the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) Patient Safety Program via a data use agreement per reference (c). Eligible MTF and DTFs must join the

NHSN Navy Service Group and the DoD Patient Safety Center Group following the protocol described in reference (y), available at: <http://www.cdc.gov/nhsm/library.html>. As of September 2010, all bedded health care facilities as well as clinics attached to a bedded facility are eligible for participation in NHSN. Navy MTF and DTFs must implement the NHSN Device-Associated Module to enter ventilator-associated pneumonia (VAP) and central line-associated bloodstream infection (CLABSI) data on patients (adults, children, and neonates) in critical care areas plus enter multidrug resistant organism (MDRO) Laboratory-Identifier (LabID) Events from whole-house surveillance of all inpatients and outpatients. As new modules become available, BUMED in conjunction with Navy Medicine (NAVMED) Region Commanders will determine further modules that must be added.

g. IPs will act as liaisons for construction/renovation/mitigation projects by providing infection control risk assessments (ICRAs) and working with facilities, administration, construction workers, and others to help ensure patient safety from transmission of infectious diseases related to each project.

#### 5. HAIPC Program Components

a. HAIPC program covers all aspects of health care operations. Implementation requires the cooperation of the entire staff; including medical, dental, nursing, administration, and all department heads. The goal of the proactive HAIPC Program is to have zero tolerance for HAIs, taking action to prevent or minimize effects of such adverse events.

b. Senior administration and Executive Committee of the Medical Staff (ECOMS) and Executive Committee of the Dental Staff (ECODS) commitment and support, evidenced through appropriation of sufficient resources to manage HAIPC activities.

c. Designating an IP to coordinate all aspects of the program and IP/C staff as appropriate to coordinate all aspects of the program and to communicate HAIPC activities to key administrative personnel. As a vital component of the program, the IP shall:

(1) Report directly to Medicine, Infectious Diseases, or Dental clinically, as appropriate and Patient Safety, Risk Management, and Quality administratively.

(2) Have access to all facility and professional staff data.

(3) Be knowledgeable about facility operations, including clinical practice, legal issues, accreditation standards, Federal rules and regulations, and possess good oral communication and writing skills.

d. Support of the professional staff and their participation in HAIPC activities.

- e. Integration with risk management and sharing of information and findings from measurement and assessment activities on the quality of patient care and services.
- f. Establishing a formal system of HAIPC. This information shall be gathered from microbiology reports, medical records, occupational health, Composite Health Care System (CHCS)/Armed Forces Health Longitudinal Technology (AHLTA), patient safety reports, surveillance activities, patient reports and complaints, etc.
- g. Prioritize concerns related to HAIPC.
- h. Investigate all targeted HAIPC outcomes in patients, staff, and/or visitors.
- i. Analyze data for trends and patterns.
- j. Educating every member of the organization to practice and promote HAIPC activities.
- k. Continually reviewing cutting-edge literature, programs, services, and technology to address HAIPC implications associated with provision of health care.
- l. Scheduling meetings with health care workers (HCWs) and facility committees for receipt and review of HAIPC data or direct membership in these committees.
- m. Annual IP/C plans and recommendations must be devised based upon the previous year's experience and data such as surveillance findings, current or expected Joint Commission accreditation standards, review of literature, and expected construction/renovation activities. Leadership, Patient Safety Program, and involved personnel will be given feedback regarding findings at least annually and more often as appropriate per references (q) through (t). Minutes and plans will be signed off by leadership via the usual command communication structure.
- n. Routine microbiological surveillance of hospital or clinic environments adds little to infection prevention/control and should be restricted to investigations of outbreaks when recommended by the IP or IPCC Chairman. Refer questions to the BUMED IP SME.
- o. Regulated medical waste (RMW) and general trash must be collected, treated, stored, disposed of, and managed following relevant local regulations and guidelines provided in reference (h). Contracts and memoranda of understanding (MOUs) for waste management must be consistent with reference (m).
- p. Commands must oversee reporting of communicable diseases per reference (g) and local or State requirements.
- q. Each IP/C program will use standard definitions of HAIs as specified by the NHSN per reference (y). NHSN data collection forms will be used.

- r. Benchmarking will allow data comparisons at multiple levels for purposes of performance improvement.
- s. Hygiene initiatives must be actively implemented to comply with the CDC Guideline for Hand Hygiene in Healthcare Settings, per reference (m).
- t. Cleaning, disinfecting, and sterilizing of reusable medical and dental equipment must be managed by an integrated centralized training program that is conducted by sterile processing department (SPD) SMEs with infection control oversight for all personnel reprocessing reusable devices. Certification of SPD SMEs is desirable, but may not always be feasible. Centralized standard training with statements of competency must be documented in recipients' training records before they perform these functions. Training must occur during initial indoctrination of reprocessing personnel and at least annually thereafter plus on an as-needed basis. Policies and procedures must be in place on maintenance and reprocessing of all reusable medical equipment following manufacturers' instructions as appropriate. See references (n) and (o).
- u. Any critical or semi-critical single use devices (SUDs) should be discarded after use. Non-critical SUDs that are reprocessed by a third party reprocessing facility must comply with Federal Drug Administration (FDA) regulation per reference (z). Any MTF using a third party reprocessing facility must: (1) confirm that the company is registered with FDA, (2) verify that the company has FDA 510(k) clearance or a premarket approval to reprocess the devices under consideration, and (3) obtain a copy of FDA's clearance letter, and make decisions on informed consent based on input from the facility's legal and risk management departments.
- v. Dental unit waterline monitoring and treatment must follow CDC Dental Guidelines in reference (m) and Environmental Protection Agency (EPA) standards of less than 500 colony-forming units per millimeter (CFU/ml). Dental waterline monitoring or treatment will be conducted following dental unit manufacturers' recommendations. Any treatment protocol must follow the use of an EPA- or FDA-approved hospital grade germicide and/or manufacturers' recommendations for any reusable patient care equipment.
- w. Dialysis monitoring must follow current CDC guidelines per reference (m) in relation to water quality and for the preparation of concentrates and dialysates.
- x. IPs will participate in emergency preparedness including, but not limited to, serving on the MTF Emergency Preparedness Committee. As such, they will bring their expertise to activities such as reviewing and revising readiness plans, policies, and procedures related to emerging, re-emerging, and bioterrorist pathogens; responding to emergencies; and participating in drills.

## 6. HAIPC Program Requirements

- a. The program is guided by a written plan that includes at a minimum:

- (1) Program objectives reflecting the MTF, DTF, or facility philosophy.
- (2) Organization and responsibilities.
- (3) A designated IP who reports directly to Medicine, Infectious Diseases, or Dental clinically as appropriate and Patient Safety, Risk Management, or Quality administratively.
- (4) An annual ICRA.
- (5) An annual performance improvement plan that is based on cutting-edge literature, findings of the annual ICRA, Navy, DoD, Federal, and local regulations, and in keeping with the mission and vision of the individual facility.

b. HAIPC Education

- (1) Include HAIPC information in orientation programs for:
  - (a) New employees.
  - (b) New residents and interns.
  - (c) New medical and dental staff appointees.
- (2) IP to oversee education and continuing education programs on HAIPC topics upon orientation as well as annually and more often as needed. These may consist of classroom sessions, lectures, and/or web-based sessions.

c. IPs shall have e-mail and internet capability.

7. Responsibilities

a. BUMED Infection Control Consultant (BUMED-M3/5)

- (1) Interprets DoD, Secretary of the Navy, and Chief of Naval Operations policies and provides guidance for Navy-wide HAIPC Program implementation.
- (2) Monitors implementation and coordination of medical and dental HAIPC Programs in fixed (shore-based with permanent structures) MTFs and DTFs by the Medical Inspector General oversight and NAVMED Regions via assistance visits as requested or required.
- (3) Provides HAIPC consultation, educational support, and HAIPC-related information to Navy MTFs and DTFs.

(4) Reviews HAI-related sentinel events reported centrally by MTFs and DTFs. Uses data abstracted from NHSN, Navy and Marine Corps Public Health Center (NMCPHC), as well as any other related individual reports.

(5) Maintains an HAIPC database.

b. Naval MTF and DTFs

(1) Naval MTF and DTFs must establish and maintain IP/C programs following the requirements in this instruction for hospitals, ambulatory clinics, behavioral health facilities, and home care programs. These programs must include active IPCCs, infection surveillance programs, IP/C manuals plus departmental standard operating procedures (SOPs) to reduce the risks of HAIs, and continuing education programs for personnel. Consultation and advice on such programs may be obtained from the BUMED IP SME.

(2) Commanders, COs, or OICs will appoint an IPCC to implement the HAIPC Program per reference (d). The size and makeup of the IPCC must be commensurate with the size and complexity of the facility. The committee must include a chairman, representative from each of the major clinical services (dental, medical, and surgical), all IPs, and others as assigned by the commander, CO, or OIC. The chairman shall be a physician or dentist who is involved in clinical practice and has knowledge of or interest in IP/C or in infectious diseases. An epidemiologist or physician preventive medicine officer, when assigned to the MTF or DTF, shall be included as an essential part of the IP/C team and a permanent member of the IPCC. All Navy IPCCs must meet at least quarterly per reference (u), and minutes will inform leadership via the usual command communication structure.

(3) Commanders, COs, and OIC must designate, in writing, an individual responsible for the implementation of the IP/C program. At a minimum, each inpatient MTF should have an IP position that is a 1.0 fulltime equivalent (FTE) to oversee the IP/C program. Additional IPs at a ratio of 0.8 to 1.0 FTEs are advised for every 100 occupied acute care beds, or portion thereof, as described in reference (v); and/or 1.0 FTE IP for managing approximately 30 to 40 intensive care unit (ICU) beds as described in reference (w).

(4) At a minimum, each ambulatory care or dental directorate of MTF and DTFs with oversight over other branch health clinics, standalone dental clinics, or any combination thereof, must establish a 1.0 FTE IP position to oversee the infection prevention program. The IP provides consultative direction and assistance in administering the IP/C programs in each clinic. Additional IPs may be required based on the number of clinics and workload, specifically the number of ambulatory care and dental visits per year in their calculations. Freestanding ambulatory care facilities, including DTFs, must also have recommended staffing of at least 1.0 FTE IP for up to 200,000 ambulatory care and dental visits per year as cited in references (w) and (x).

(5) IPs should be trained in microbiology and infectious diseases, basic epidemiology, infection surveillance, outbreak investigation, disinfection/sterilization methods and technologies, and basic biostatistics as a basis for understanding IP/C. IPs in charge of IP/C programs must receive documented education in basic concepts of infection surveillance, prevention, and control from an accredited program providing continuing education credits. This can be from professional associations such as the Association for Professionals in Infection Control and Epidemiology (APIC), the Society of Healthcare Epidemiologists of America (SHEA), or other accredited programs that may be associated with relevant specialized educational training such as universities or public health. An IP's time should be divided among the following activities: surveillance, data management, policy and procedure development, education, employee health, quality improvement, consulting, and investigating potential outbreaks as described in reference (p) , available at: <http://www.apic.org/>. Priorities are set that include:

- (a) Establishing a reliable, focused surveillance program.
- (b) Streamlining data management activities.
- (c) Analyzing HAI rates.
- (d) Aiming for zero HAIs.
- (e) Educating staff regarding prevention techniques
- (f) Identifying opportunities for performance improvement.
- (g) Taking a leadership role on performance improvement teams.
- (h) Developing and implementing action plans that outline the steps needed to accomplish each objective.

Certification in infection control (CIC) by the Certification Board of Infection Control is strongly recommended. The IP should report to the medical or dental directorate administratively and the IPCC Chairman clinically. The IP shall have a close working relationship with the IPCC Chairman to maximize the IP/C program. Navy IP program will be overseen by the BUMED IP SME to interpret requirements and facilitate interoperability.

c. NAVMED Regions shall provide technical support and assistance for HAIPC-related issues, by request, to naval medical and dental activities; and may contact BUMED IP SME for additional assistance.



d. Commanders, COs, OICs, and Senior Medical and Dental Department Representatives of MTFs and DTFs shall:

(1) Implement an effective, flexible, integrated, and comprehensive HAIPC Program guided by a written plan.

(2) All cases in MTF and DTFs involving serious injury, prolonged disability, or death secondary to HAIPC problem, regardless of whether the patient is in active duty or civilian status, need to be reported to Patient Safety and Risk Management locally and at BUMED.

8. Reporting Requirements

a. Per references (c) and (j), all eligible MTFs and DTFs shall report HAIs via CDC's NHSN.

b. MTFs and DTFs shall submit special interest items upon request.

9. Confidentiality. Infection Control records are considered Quality Assurance records per Title 10, United States Code, Section 1102; therefore, all such documents must be labeled with the following statement: Quality Assurance documents and records created per this instruction are medical Quality Assurance materials within the meaning of Title 10, United States Code, Section 1102 and are, therefore, exempt from the requirements of the Freedom of Information Act.

10. Reports. The reporting requirements for this instruction were established by the CDC NHSN and reference (g).



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<http://www.med.navy.mil/directives/Pages/default.aspx>

## REFERENCE LIST

- (a) DoD 6025.13-R of June 11, 2004
- (b) ASD(HA) Policy Memo 08-005 of 4 Apr 2008
- (c) ASD(HA) Policy Memo 08-020 of 4 Dec 2008
- (d) BUMEDINST 6010.13
- (e) BUMEDINST 6010.21
- (f) BUMEDINST 6224.8A
- (g) BUMEDINST 6220.12B
- (h) BUMEDINST 6280.1A
- (i) BUMEDINST 6320.82A
- (j) BUMED memo of 8 Jan 2009 (NAVMED Policy 09-001)
- (k) OPNAVINST 6320.7A/Marine Corps Order 6320.4
- (l) Title 29 CFR § 1910.1030
- (m) CDC and HICPAC, Infection Control Guidelines for Isolation Precautions, Dental, Multidrug Resistant Organisms, Hand Hygiene, Disinfection and Sterilization, Environment, Surgical Site Infection, Intravascular-Related Infection, and Pneumonia – Current Editions
- (n) AAMI, Good Hospital Practice: Steam Sterilization and Sterility Assurance, Current Edition; Association for the Advancement of Medical Instrumentation, Arlington, VA (NOTAL)
- (o) AAMI, Good Hospital Practice: Steam Sterilization Using the Unwrapped Method (Flash Sterilization), Current Edition; Association for the Advancement of Medical Instrumentation, Arlington, VA (NOTAL)
- (p) APIC, APIC Text of Infection Control and Epidemiology – Current Edition
- (q) The Joint Commission Hospital Accreditation Standards – Current Edition (NOTAL)
- (r) The Joint Commission Standards for Ambulatory Care – Current Edition (NOTAL)
- (s) The Joint Commission Behavioral Health Standards – Current Edition (NOTAL)
- (t) The Joint Commission Home Health Standards – Current Edition (NOTAL)
- (u) Friedman C. Infection Prevention and Control Programs. In: Carrico R, ed. APIC Text of Infection Control and Epidemiology, 3<sup>rd</sup> ed. Washington, DC: APIC; 2009:1-8
- (v) O’Boyle C, Jackson M & Henly SJ. Staffing Requirements for Infection Control Programs in US Health Care Facilities: Delphi Project. *Am J Infect Control* 2002;30:321-333
- (w) Friedman C, Chenoweth C. A Survey of Infection Control Professionals Staffing Patterns at University Health System Consortium Institutions. *Am J Infect Control* 1998;26:239-244
- (x) Friedman C, Chenoweth C. Infection Control Staffing Patterns. *Am J Infect Control* 2001;29:130-132
- (y) National Healthcare Safety Network (NHSN) Manual, Patient Safety Component Protocol, 2009
- (z) FDA. Medical Devices; Reprocessed Single-Use Devices; Requirement for Submission of Validation Data. Federal Register. Volume 71

## DEFINITIONS

1. Communicable Disease. An illness due to a specific infectious agent or toxic products which arises through transmission of that agent or its products from an infected person, animal, or inanimate reservoir to a susceptible host, either directly or indirectly.
2. Critical Devices. Critical devices confer a high risk for infection if they are contaminated with any microorganism, including bacterial spores. This category includes surgical instruments, cardiac and urinary catheters, implants, and ultrasound probes used in sterile body cavities. Reusable critical devices require sterilization. Thus, it is *critical* that objects that enter a sterile tissue or the vascular system must be sterile, because any microbial contamination could transmit disease. Any semi-critical devices that may contact both normally sterile tissue and non-intact skin or mucous membranes should be sterilized if they are heat tolerant.
3. Healthcare-Associated Infection (HAI). An HAI is an infection whose manifestations are not evident either at admission or within a likely incubation period for acquisition outside the health care facility. Infections may originate from endogenous or exogenous sources. HAIs may develop during hospitalization or as a consequence of inpatient or ambulatory medical/dental care. An infection is not considered an HAI if it was present or incubating at the time of admission or ambulatory treatment, unless it is related directly to a previous admission or ambulatory treatment. In general, infections are not considered HAIs unless the onset of the infections occurs more than 48 hours after the time of admission or treatment.
4. Infection. The entry and development or multiplication of an infectious agent in the body of a host. The result may be overt clinical (infectious disease) or subclinical (inapparent infection) disease.
5. Infectious Agent. An organism (i.e., virus, rickettsia, bacteria, fungus, protozoa, helminth, or prion) that is capable of producing infection or infectious disease.
6. Infectious Disease. A clinically manifested disease of man or animal resulting from an infection.
7. Non-critical devices. Non-critical devices do not ordinarily touch the patient or touch only intact skin. Intact skin acts as an effective barrier to most microorganisms; therefore, the sterility of items coming into contact with intact skin is *not critical*. Examples of non-critical items include bedpans, blood pressure cuffs, crutches, bed rails, bedside tables, patient furniture, and floors. In contrast to critical and some semi-critical items, most non-critical reusable items may be decontaminated where they are used and do not need to be transported to a central processing area. They may be cleaned by an Environmental Protection Agency (EPA)-registered, low-level disinfection.

8. Semi-critical devices. These medical devices contact mucous membranes or non-intact skin. This category includes respiratory therapy and anesthesia equipment, some dental equipment, gastrointestinal endoscopes, bronchoscopes, laryngoscope blades, esophageal manometry probes, endocavitary probes, cystoscopes, anorectal manometry catheters, infrared coagulation probes, and diaphragm fitting rings. They should be free from all microorganisms; however, small numbers of bacterial spores may be present. Intact mucous membranes such as those of the lungs or the gastrointestinal tract generally are resistant to infection by common bacterial spores, but susceptible to other organisms such as bacteria, mycobacteria, and viruses. Semi-critical items of such reusable devices minimally require high-level disinfection using chemical disinfectants.

## ACRONYMS

AHLTA	Armed Forces Health Longitudinal Technology
APIC	Association for Professionals in Infection Control and Epidemiology
ARO	Antibiotic-Resistant Organisms
BSO	Budget Submitting Office
BUMED	Bureau of Medicine and Surgery
CDC	Centers for Disease Control and Prevention
CFU/ml	Colony-forming units per milliliter
CHCS	Composite Health Care System
CIC	Certification in Infection Control
CLABSI	Central Line-Associated Bloodstream Infection
CO	Commanding Officer
CSR	Central Sterilization Room
DoD	Department of Defense
DTF	Dental Treatment Facility
DTR	Dental Treatment Room
DUWL	Dental Unit Waterline
ECODS	Executive Committee of the Dental Staff
ECOMS	Executive Committee of the Medical Staff
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FTE	Full-Time Equivalent
HAI	Healthcare-Associated Infection
HAIPC	Healthcare-Associated Infection Prevention and Control
HCW	Health Care Worker
HVE	High Volume Evacuator
ICRA	Infection Control Risk Assessment
ICU	Intensive Care Unit
IP	Infection Preventionist
IP/C	Infection Prevention and Control
IPCC	Infection Prevention and Control Committee
LABID	Laboratory-Identified
MTF	Medical Treatment Facility
MOU	Memorandum of Understanding
MDRO	Multidrug Resistant Organism
NAVMED	Navy Medicine
NHSN	National Healthcare Safety Network
NMCPHC	Navy and Marine Corps Public Health Center
OIC	Officer in Charge
OPIM	Potentially Infectious Materials
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment

RMW	Regulated Medical Waste
SDS	Sulfate Dihydrate Solution
SHEA	Society for Healthcare Epidemiologists of America
SME	Subject Matter Expert
SOP	Standard Operating Procedure
SPD	Sterile Processing Department
SUD	Single Use Device
VAP	Ventilator-Associated Pneumonia
ZOE	Zinc Oxide and Eugenol

**DENTAL INFECTION CONTROL GUIDE**

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## INTRODUCTION

This Guide provides standard operating procedures (SOPs) related to the implementation of specific dental infection prevention and control (IP/C) practices in the dental setting. The contents of this Guide may not supplant Navy Medicine instructions, only augment them. These practical SOPs are subservient to the basic instruction that must be followed. It represents a compilation of consultative guidelines based on scientific evidence, best current practices, and expert consensus. The Guide offers a menu of options, among which facilities can choose to develop or enhance their setting-specific infection control policies and practices.

The unique nature of many dental procedures, instrumentation, and patient-care settings may require specific strategies directed to preventing the transmission of pathogens among dental health care workers (HCWs) and their patients. Recommended infection control practices are applicable to all settings in which dental treatment is provided. Clinical dentistry is practiced under two basic conditions that require the application of infection control measures to mitigate the risk of cross-contamination. These two conditions are defined by the risk of exposure to blood and other potentially infectious materials (OPIM).

The first of these conditions is typified by settings that involve low risk environments of care and are characterized by minimal opportunities for exposure to blood and OPIM through spatter and aerosols. A visible spray is created during the use of rotary dental and surgical instruments (e.g., hand pieces, ultrasonic scalers) and air-water syringes. This spray contains primarily a large-particle spatter of water, saliva, blood, microorganisms, and other debris. This spatter travels a short distance and settles out quickly, either on the floor, nearby surfaces, the dental health care personnel providing care, or the patient. This spatter can commonly be seen on face shields, protective eyewear, and other surfaces immediately after the dental procedure, but after a short time, it may dry clear and not be easily visible. The spray may also contain some aerosol. Aerosols take considerable energy to generate, consist of particles less than 10 microns in diameter, and are not typically visible to the naked eye. Aerosols can remain airborne for extended periods of time and may be inhaled. Low risk encounters usually include clinical and radiologic examinations, but may also include the use of rotary instruments with rubber dam or high velocity evacuation, as determined by an assessment of the risk involved.

The second condition is typified by settings that significantly increase the potential for exposure to blood and OPIM through spatter and aerosols. These high risk encounters include the use of rotary instruments, scalpels, and other mechanical and non-mechanical instrumentation without high-velocity evacuation or rubber dam isolation.

While the direct patient care setting, known as the dental treatment room (DTR), figures prominently in clinical dentistry, there are other environments of care that must be considered. These areas include the dental laboratory, central sterilization area, and dental radiography. The same litmus test used to determine high and low risk in direct patient care settings pertains to these environments as well.



Processes designed to prevent the spread of infection between patients, through commonly accepted infection control practices of disinfection and sterilization, do not differ between encounters regardless of whether or not the encounter is considered high or low risk. In contrast, the extent and level of personal protective equipment (PPE) donned by staff is determined by a risk assessment of the potential for the spread of blood and OPIM. Application of this principle should be one's guide when evaluating areas of the facility where dental care is delivered and determining the IP/C practices that are appropriate to those areas.

## CHAPTER 1

### DENTAL TREATMENT ROOM INFECTION CONTROL PROCEDURES AND CONSIDERATIONS

DTR infection control procedures are an essential component of an IP/C program. The following guidance demonstrates an example of a systematic approach to applying basic infection control principles in the DTR. This guidance is not all-inclusive and primarily relates to non-surgical dental specialty areas. Clinics are encouraged to use this document as a template for developing individualized protocols for DTR infection control procedures and motivate local training.

#### 1. Preparation of the DTR

##### a. General considerations:

(1) No eating, drinking, or manipulating of contact lenses in the DTR.

(2) All items used in patient care should be stored in closed cabinets or drawers. Mobile carts used for patient care should not be cluttered with excess materials. Bulk items should be organized and covered to prevent gross or cross contamination. Use caution when retrieving items from bulk storage areas to ensure other remaining items are not contaminated.

(3) Electric fans are incompatible with infection control principles and should not be in DTRs. Fans distribute dust and particulate matter, contaminating instruments and equipment. Facilities management should be notified immediately when temperature and humidity levels are outside design standards for patient care and manipulation of dental materials.

b. Begin each day with a hand wash of 15 seconds minimum duration, or whatever latest Centers for Disease Control and Prevention (CDC) guidelines advise, from fingertips to the wrist with soap and lukewarm water.

c. Remove, cover, or secure all unnecessary items to prevent cross-contamination. A clutter-free DTR demonstrates to patients that infection control practices are being followed.

d. Use water that meets Environmental Protection Agency (EPA) regulatory standards for drinking water ( $\leq 500$  colony forming units (CFUs/mL of heterotrophic water bacteria) for routine (i.e., non-surgical) dental treatment output water. If using water bottles, fill dental unit water bottle according to manufacturer's recommendations. Add continuous-use dental unit waterline (DUWL) cleaning product if indicated. Note: Follow dental unit and water bottle manufacturer's instructions for products and protocols for maintenance and monitoring DUWL quality.

e. Barrier protection: place protective plastic covers on clinical contact surfaces such as headrest, dental unit control switches, air and water line hoses, light handles, chair side microscope maneuvering handles, light curing unit, and other hard-to-clean areas and equipment. If a surface cannot be cleaned adequately, it should be protected with barriers that are changed between patients. Note: Plan this process carefully for efficient use of time, barrier material, gloves, and disinfectant. Only clinical contact surfaces and those areas contaminated by splash and spatter need to be covered during treatment or disinfected between patients.

f. Have appropriate instruments and supplies ready to begin treatment at the scheduled appointment time. This includes all necessary PPE (hair covers, gloves, masks, eye protection, etc.) for the technician and the provider. Note: Do not open packs in advance of the patient's arrival. Do not leave packs open or unattended for extended periods before use.

g. Check all sterilized instrument packs and packages to ensure they are intact and the external chemical indicator has changed to the appropriate color.

h. Ensure solutions are properly labeled per patient safety standards and command policy.

## 2. Treatment

a. Seat the patient. Use standard precautions and treat all patient blood and body fluids as potentially infectious.

b. Provide the patient with an antiseptic pre-procedural mouth rinse and safety glasses.

c. Open sterile instrument trays, pack(s) or cassettes with clean, ungloved hands and without directly touching the contents. Leave wrapping material underneath as a barrier for the work surface. Observe internal indicator strip(s) for color change.

d. Perform hand hygiene and don gloves and PPE as required.

e. Connect hand pieces, air and water syringes, saliva ejector, and high-volume evacuation tips. Ensure these devices are functioning properly.

f. Providers must perform hand hygiene before donning and after removal of gloves. Sterile gloves are used for invasive surgical procedures.

g. Use the unit dose concept for dispensing dental materials. Unit dose concept is the quantity of materials or supplies required to treat a single patient. Adhere to unit dose guidelines when dispensing disposable items. Preferably, include expendable items, including cotton products, in instrument packs before sterilization when possible. Sterilized packages of sterilizable supplies should be available for backup. When considering dental restorative

materials, single dose unit are preferable and should be used where possible. Extra materials that may be required during treatment should be available in packaged form, or must be retrieved without cross contaminating other materials or equipment. Do not enter drawers or cabinets with contaminated gloves. Use a clean technique to retrieve needed items (e.g., sterile cotton forceps or pliers, an over-glove barrier, or remove gloves and perform hand hygiene).

- h. Use pre-sterilized burs and files, or manufacturer's pre-packaged single-use burs.
- i. Use cotton products for patient treatment that have been sterilized (within instrument packs or individual packages, such as paper or plastic peel pouches).
- j. Use rubber dental dam, high volume evacuator (HVE) and other protective barriers, engineering and work practice controls wherever possible.
- k. Use one handed "scoop" technique or recapping safety device to recap anesthetic needles.
- l. Complete charting and computer entries after removing gloves and performing hand hygiene.
- m. Remove PPE and perform hand hygiene before leaving the treatment area. Adhere to command policy for appropriate attire outside the DTR to prevent cross contamination. For example, wear a clean lab coat when exiting DTR to conduct business elsewhere in the clinic or admin spaces to prevent cross contamination to the maximum extent possible.

### 3. DTR turn-around procedures between patients

- a. Wear appropriate gloves and PPE while handling contaminated instruments and cleaning contaminated surfaces.
- b. Place all disposable sharps in designated sharps container in the DTR.
- c. Dispose of all non-sharp, regulated medical waste following local policy.
- d. Instruments may be wiped carefully with moist gauze. Enzymatic detergent products to prevent drying of saliva, blood, and debris may also be used. Place instruments in cassette tray (or properly labeled and approved container) for transport to the central sterilization room (CSR). Reminder: Critical and semi-critical items must be heat sterilized after cleaning following local CSR standard operating procedures.
- e. Flush water and air for 20-30 seconds after each patient from any device connected to the dental water system that enters the patient's mouth (e.g., hand pieces, ultrasonic scalers, air and water syringes). This procedure is intended to physically flush out patient material that might

have entered the turbine, air, or waterlines. Even with anti-retraction valves, which are commonly found in some dental units, flushing devices for a minimum of 20-30 seconds after each patient is still recommended.

f. Remove dental hand piece(s), including slow speed hand piece motors, and other intraoral instruments that can be removed from air and waterline couplings of dental units. Follow manufacturer's instructions for cleaning, lubrication, and sterilization of hand pieces and other intraoral instruments and devices removed from dental units. Always discard any SUDs after use on a patient.

g. Disinfect eyewear.

h. Remove and dispose of all disposable barriers, trying not to contaminate surfaces. Clean and disinfect clinical contact surfaces that were not barrier protected with an EPA-registered hospital disinfectant with a tuberculocidal claim (i.e., intermediate-level). Follow manufacturer instructions related to concentration, cleaning or disinfection process, PPE, and exposure times for disinfection. For unprotected or exposed equipment, consult with dental product manufacturers for compatibility of cleaners and disinfectants with equipment surfaces.

i. Remove gloves and perform hand hygiene to exposed skin surfaces.

j. Don a fresh pair of gloves. If instrument cassettes are used, rewrap cassette, hand piece(s), bur block, and other instruments used in inner layer of original sterilization wrap. Wrapping cassette trays in inner liner of wrap or cloth minimizes sharps injuries during transport to CSR. Transport to receiving side of CSR or designated holding space. Note: The method of transporting contaminated instruments from the DTR to CSR is based on the result of the clinic's risk assessment and may require more stringent containment and labeling per Occupational Safety and Health Administration (OSHA) standards. Risk assessment factors include walking distance to CSR, amount of traffic encountered, CSR in different building, local and regional laws if transport is across jurisdictional lines, etc.).

k. Remove gloves, perform hand hygiene, and dispose of face mask when exiting wherever instrument drop-off area is located, where possible. When discarding a face mask, handle only by the elastic or cloth tie strings. If a hand hygiene unit is not immediately available, return to the DTR without touching any surfaces while enroute and dispose of gloves and perform hand hygiene in the DTR.

l. Complete disinfection process of DTR as necessary. Continue preparation for next patient as described in paragraph 1.

4. Securing the DTR at the end of the day

- a. Wear appropriate gloves, face protection, and eye protection while cleaning contaminated surfaces.
- b. Clean and disinfect all contact surfaces, dental unit surfaces, and countertops with an EPA-registered disinfectant per command policy. To facilitate cleaning, treatment rooms should be free of all unnecessary equipment and supplies.
- c. Empty and clean amalgam trap container per local policy and dental unit manufacturer's recommendations.
- d. Flush and clean the HVE system per manufacturer's recommendations.
- e. Flush and clean each water line and suction hoses per local policy. Follow manufacturer's instructions if waterline treatment products are used. Follow manufacturer's instructions for cleaning and maintenance of dental unit water bottles.
- f. Dispose of regulated waste per local policy.
- g. Clean and disinfect sink area.
- h. Ensure only DTR cleaning materials and no patient care items are stored under the sink.
- i. Inventory consumable unit dose packs, replenish as necessary per local policy.  
Note: Routinely check for expiration dates on solutions, materials and dispensable items per command policy.
- j. Remove PPE (clean and disinfect reusable PPE) and perform hand hygiene.

5. Additional Information. For sample illustrations of barrier techniques, unit dose concepts, and other DTR IP/C information, go to:

<https://wwa.nko.navy.mil/portal/navymedicine/dentalcorps/home/dentalcorpsinfectioncontrol>

## CHAPTER 2

### INFECTION CONTROL IN THE DENTAL LABORATORY

1. The implementation of infection control practices when using the services of a dental laboratory is an important element of a facility's overall IP/C program. All members of the dental team should follow current standard precautions when handling contaminated items based on the assumption that all patients are capable of transmitting infectious diseases. As described by OSHA, "Standard Precautions" indicates that all blood, saliva, and body fluids in the health care setting should be treated as potentially infectious. Prostheses and oral impressions, the two most common patient care items that rely on dental laboratory support, carry a multitude of oral microorganisms originating from dental plaque, blood, and saliva. Some of these organisms are known to survive for up to 7 days within prosthetic materials. Therefore, items removed from the oral cavity must be disinfected or sterilized before being transported to the dental laboratory. Conversely, prostheses intended for the oral cavity must be properly disinfected before being transported from the dental laboratory to the DTR. Barrier control is another essential element to an effective laboratory infection control program. An effective barrier system will include PPE, environmental and equipment barriers, and creation of a physically separate decontamination area for processing contaminated materials in both the DTR and the dental laboratory. If these precautions are taken, the risk for contamination of clinical staff, dental laboratory personnel and equipment, as well as patients who receive dental laboratory related services, is significantly mitigated.

2. Two functional areas need to be considered when developing dental laboratory infection control procedures: The DTR and the Dental Laboratory. Each of these areas presents unique infection control risks requiring special considerations to ensure a safe health care environment.

a. DTR Procedures

(1) Handling of laboratory-related patient care items and equipment:

(a) After removal from the patient's mouth, thoroughly rinse the item under running tap water to reduce the amount of saliva, blood, and microorganisms.

(b) Prostheses, impressions, orthodontic appliances, and other materials should be further cleaned with running tap water and mechanical debridement, if necessary, if residual bio-burden is visualized.

(c) After cleaning the item, use an EPA-registered intermediate-level hospital disinfectant to reduce the bio-burden. It is important to follow the manufacturer's instructions exactly to achieve the desired antimicrobial effect. To accomplish sub-surface disinfection of acrylic items, place the item in a resealable plastic bag containing the intermediate-level disinfectant and place in an ultrasonic cleaner according to manufacturer's instructions.

(d) Thoroughly rinse the item under running water to remove residual disinfectant.

Note: Disinfectant should not be added to the plastic bag or other transport device used to carry prostheses or impressions because excessive exposure time to the disinfectant may damage the item. An important consideration for dental laboratory infection control is to avoid damage and distortion of prosthetic material while preventing transfer of potentially infectious material to other patients and staff.

(e) If blood or other forms of bio-burden become visible, repeat the cleaning and disinfecting process. Always follow impression material manufacturer recommendations when selecting disinfectant to ensure both thorough disinfection and material compatibility.

(f) Disinfect pliers and other special orthodontic instruments that do not come in direct contact with blood and saliva.

(g) General Guide for Selection of Disinfectants

<b>Impression Material</b>	<b>Agent(s)</b>
Alginate	Iodophors; Dilute Sodium Hypochlorite Solution
Polysulfide	Iodophors; Dilute Sodium Hypochlorite Solution; Complex Phenolics
Silicone	Iodophors; Dilute Sodium Hypochlorite Solution; Complex Phenolics
Polyether*	Iodophors; Dilute Sodium Hypochlorite Solution; Complex Phenolics
Zinc Oxide and Eugenol (ZOE) Impression Paste	Iodophors
Reversible Hydrocolloid	Iodophors; Dilute Sodium Hypochlorite Solution
Impression Compound	Iodophors; Dilute Sodium Hypochlorite Solution

\* Use approved disinfectant with short-term exposure time (<10 Minutes).

(h) Heat tolerant equipment that has been placed in the patient's mouth must be sterilized between each use. Examples include the face-bow bite-fork and reusable metal impression trays.

(i) Place casts and prostheses in resealable plastic bags to prevent contact with adjacent materials, the shipping box, foam insulation, or paperwork. Be sure to include specific method used to clean and disinfect the item on the laboratory request form. If documentation citing method of disinfection is not received from the DTR, the item is considered contaminated and final disinfection of the item should be performed by the dental laboratory.



(2) Unit dose management of bulk supplies helps prevent cross contamination.

(a) Use individual unit-dose packaging whenever possible.

(b) If unit dose packaging is not available, dispense only enough supplies and material to complete the entire procedure when using such items as petroleum jelly, impression materials, waxes, pressure disclosing or indicator paste, disposable brushes, and orthodontic brackets and wires.

(c) All unused material is discarded after the procedure and not used for other patients.

b. Dental Laboratory Procedures

(1) Communication between the dental treatment facility (DTF) and the laboratory concerning infection prevention procedures is essential. Contaminated items should be disinfected prior to transport from the dental office to the laboratory and vice versa. Materials originating from either the treatment area or dental laboratory that are not decontaminated are subject to OSHA regulations regarding transport and shipping of potentially infectious materials. Disinfected items should be clearly labeled and the method of disinfection indicated on the work request (DD Form 2322, Dental Laboratory Work Authorization); otherwise, the receiving organization should assume the items are contaminated and require disinfection before the item is used.

(2) Whenever possible the dental laboratory should have three separate work areas: a receiving area, a production area for new work, and a production area for repair work. The receiving area is separate from the production areas and creates a physical barrier for handling, cleaning, and disinfecting all incoming and outgoing items.

(3) Some dental laboratories operate as “clean laboratories” and only accept items into the laboratory that have been appropriately disinfected. No special precautions are required in the receiving area of a clean laboratory.

(4) When handling impressions without documentation of disinfection the following precautions are required:

(a) Wear gloves and other appropriate personal protective attire and utilize proper equipment when handling, cleaning, and disinfecting impressions.

(b) Thoroughly rinse and clean dental impressions under running water before pouring. If blood or other forms of bio-burden become visible, repeat the cleaning and disinfecting process. Note: Always follow impression material manufacturer recommendations when selecting disinfectant.

(c) Thoroughly rinse disinfected impressions under running tap water to remove residual disinfectant. Note: Always follow disinfectant recommended exposure time to ensure thorough decontamination of material.

(5) When handling prostheses without documentation of disinfection the following precautions are required:

(a) Wear gloves and other appropriate personal protective attire and equipment when handling, cleaning, and disinfecting prostheses. Laboratory staff must remove PPE before moving into uncontaminated lab areas.

(b) Treat all prostheses that have been worn by a patient as contaminated. These items should be thoroughly cleaned and disinfected before handling, and acrylic devices should be considered contaminated even after disinfection is performed, due to the porous nature of acrylic.

(c) Scrub prostheses and other oral appliances with a brush using anti-bacterial soap or use an ultrasonic cleaning unit. Calculus and other patient deposits must be removed before attempting to disinfect the item. Do not use the same brush for multiple cases.

(d) Clean and disinfect all prostheses before returning them to the dental clinic.

(6) Miscellaneous Laboratory Items and Equipment

(a) Sterilization of Lab Items. Use disposable laboratory items whenever possible. Clean and heat sterilize heat tolerant items used in the mouth (e.g., metal impression trays and face-bow forks). Heat sterilize reusable items, such as burs, polishing points, lab knives, and other instruments that are used on contaminated or potentially contaminated patient care items. Note: Heat-sensitive items should be disinfected following manufacturer's recommendations.

(b) Unit Dose System

1. Dispense only enough materials needed to perform a particular project.
2. Discard any excess material after completion of the project.

(c) Lathe

1. The machine should be cleaned and disinfected daily.
2. Pumice should be replaced daily.
3. Clean, disinfect, and sterilize pumice brushes at least daily.

4. Always wear protective eyewear, ensure lathe Plexiglas is properly positioned, and activate vacuum ventilation system (at least 200 feet per minute continuous suction) before turning on the lathe.

(d) Pumice Mix

1. Prepare pumice mix using appropriate disinfectant following manufacturer's instructions, or use premixed pumice mix.

2. Use a different pumice and pumice mixing cup for each case.

(e) Ultrasonic Cleaning Unit

1. Keep covered at all times to reduce aerosolization.

2. Change cleaning solution when visibly dirty and daily at a minimum.

3. Disinfect ultrasonic tank with an EPA-registered, intermediate-level, hospital-grade disinfectant at least daily and before adding fresh cleaning solution.

4. Use resealable plastic bags or cups to house the item being cleaned when possible.

5. Perform routine aluminum foil test on ultrasonic cleaning unit and maintain record of results.

(f) Calcium Sulfate Dihydrate Solution (SDS). Prepare any slurry water necessary from fresh set stone, which was not poured against an impression.

(g) Denture Wax-up

1. Never use saliva to polish wax patterns.

2. Immersion in disinfectant may cause distortion of wax patterns. To prevent distortion, use rinse-spray-rinse-spray method with an EPA-registered intermediate-level disinfectant and follow manufacturer instructions for contact time.

(h) Case Pans

1. Line case pans or other holding containers with a disposable plastic barrier.

2. Discard the barrier upon completion of the prosthesis, and clean and disinfect the case pan between cases.

(i) Maintain separate instruments and materials for use on new prostheses and contaminated prostheses.

1. Change rag wheels, brushes, acrylic burs, and pumice after each use when utilized on prostheses that have been placed in the oral cavity.

2. Designate burs and instruments for new prostheses.

3. If available, use separate polishing lathes for new prostheses and prostheses that have been placed in the oral cavity.

4. Change pumice and brushes used on new prostheses daily when used for new or non-contaminated prostheses. At a minimum, clean and disinfect rag wheels daily. Heat sterilization is preferred.

(j) Follow manufacturer instructions for maintenance, cleaning, and disinfection of lab equipment, instruments, and tools.

1. Clean and disinfect environmental surfaces daily or when visibly contaminated or soiled. Use surface barriers where appropriate.

2. Use an EPA-registered hospital disinfectant following manufacturer instructions.

3. Always verify material compatibility with disinfectant.

(k) Do not allow 'rush' cases to jeopardize the separation of contaminated and non-contaminated materials and instruments.

(l) Eating, drinking, smoking, applying cosmetics or lip balm, and handling of contact lenses in laboratory spaces should be prohibited.

(7) PPE

(a) Face masks must be used when there is potential for splash, spatter, spray, or exposure to aerosols created while working with contaminated materials or performing disinfection procedures.

(b) Eye protection

1. Wear shatter-resistant eye protection with side shields for protection against projectiles, splashes, splatter, and spray, especially when operating rotary equipment.

2. OSHA-approved eye protection should always be used while handling hazardous chemicals such as disinfectants.

3. Ensure functional emergency eyewash station is readily available. Daily checks that are documented are required for eyewash stations.

(c) Gloves

1. Wear gloves when working on potentially contaminated items.

2. Replace gloves immediately if they become compromised.

3. Bacteria rapidly multiply under gloves; therefore, wash hands immediately after removal.

4. Chemical resistant utility gloves should be used when cleaning and disinfecting equipment and surfaces.

(d) Gowns, Lab Coats, and Lab Jackets

1. Wear a clean gown or lab coat daily to protect personal clothing and uniforms from contamination. Disposable gowns may be used.

2. When using PPE for decontamination of prosthetics, remove before moving into uncontaminated lab areas.

3. Do not wear protective gown outside the dental laboratory.

(8) Hand Hygiene

(a) Proper hand hygiene is critical to prevent the spread of infection and disease.

(b) Wash hands or use alcohol-based hand rub before and after donning gloves, upon beginning work and throughout the day when needed.

(c) Wash hands with soap and water or use alcohol-based hand rub before leaving the laboratory.

(d) Always use soap and water if your hands are visibly soiled.

(e) Keep fingernails short with smooth, filed edges to allow thorough cleaning and to prevent glove tears.

(f) Artificial fingernails are prohibited when having direct contact with patients at high risk (i.e., immunocompromised patients or those undergoing oral surgery).

(g) Do not wear hand or nail jewelry if it makes donning gloves more difficult or compromises the fit and integrity of the glove.

## CHAPTER 3

### INFECTION CONTROL IN DENTAL RADIOGRAPHY

Dental personnel must maintain infection control standards in the radiology area identical to those used in the DTR since Standard Precautions apply when processing radiographs to reduce the risk of cross-contamination. Both radiographic equipment and film can become contaminated and may result in the transmission of infectious agents. As with all other clinical areas, staff should follow scrupulous hand hygiene practices and wear gloves when placing intraoral films and handling contaminated film packets.

1. Using Film Positioning Devices. Heat tolerant film-positioning devices must be cleaned and heat sterilized between patients. Use of disposable items eliminates the need for sterilization between patients and is an acceptable option.
2. Using Panoramic Unit Bite Blocks
  - a. Use a disposable panoramic unit bite block cover for each patient.
  - b. When disposable covers are not available, bite blocks must be cleaned and heat sterilized between patients.
3. Intraoral Film Packets without Plastic Infection Control Barriers
  - a. Using gloves, place intraoral film packets removed from a patient's mouth directly into a disposable container such as a paper cup.
  - b. Transfer the film and disposable container to the darkroom, exercising special care not to contaminate environmental surfaces (doors, doorknobs, etc.).
  - c. While wearing the gloves used to take the radiograph, open the film packets and drop the film onto a clean paper towel without touching the film.
  - d. Discard film wrappers and the disposable container directly into a lined refuse container to prevent contamination of the darkroom work surfaces.
  - e. Remove and dispose of gloves, perform hand hygiene, and then feed the uncontaminated film into the developer.
4. Darkroom. Disinfect all counter surfaces daily.

5. Developing Intraoral Film Packets without a Plastic Infection Control Barrier using an Automatic Film Processor with a Daylight Loader

a. The highest risk in this procedure is contamination of the fabric light shield sleeves. Since there is no practical way to disinfect this material, the following guidance helps prevent contamination:

- (1) Place the exposed film in a paper cup previously set aside for this purpose.
- (2) Remove soiled gloves, perform hand hygiene, and put on a pair of clean gloves.
- (3) Place the cup through the top of the processing box and close the lid.
- (4) Place gloved hands through the light shield, unwrap the film packet, and drop the film onto the surface inside the loader.
- (5) Place the film wrappers into the cup. Remove the gloves, turn them inside out, and place in the paper cup.
- (6) Drop the film into the chute for developing.
- (7) Remove hands from the loader, lift the lid, and dispose of paper cup and waste.
- (8) Perform hand hygiene.

b. If the fabric light shield sleeves become contaminated, they must be sterilized or replaced following manufacturer guidance.

6. Developing Intraoral Film Packets with a Plastic Infection Control Barrier using an Automatic Film Processor with a Daylight Loader

a. Using a plastic infection control barrier on film packets minimizes risk of contamination of the fabric light shield sleeves. Since there is no practical way to disinfect this material, the following guidance helps prevent contamination:

- (1) Using gloves, take the barrier-covered film packets removed from the patient's mouth. Carefully tear the plastic barriers in half and drop the uncontaminated film packets directly into a disposable container, such as a paper cup.
- (2) Dispose of the contaminated plastic barriers directly into a lined refuse container.
- (3) Remove soiled gloves and perform hand hygiene.
- (4) Transfer the film and disposable container to the darkroom.



(5) Place the cup through the top of the processing box and close the lid.

(6) Place ungloved hands through the light shield, unwrap the film packet, and drop the film into the slot for developing.

(7) Remove hands from the loader, lift the lid, and dispose of paper cup and waste.

(8) Perform hand hygiene.

b. If the fabric light shield sleeves become contaminated, they must be sterilized or replaced following manufacturer guidance.

7. X-ray Chair. Using an EPA-registered intermediate-level disinfectant, disinfect at least daily and whenever visibly contaminated.

8. X-ray Tube Head and Controls

a. Use surface barriers to protect clinical contact surfaces, such as x-ray tube head, switches, and control panels. Be careful that these coverings do not interfere with the flow of cooling air to the x-ray tube head.

b. Change surface barriers after each patient.

c. When wiping the tube head and controls with liquid disinfectants, exercise care to prevent disinfectant from leaking into the tube head seams and exposure controls.

9. Digital Radiology Considerations

a. Digital sensors and other high-tech instruments that come into contact with oral mucous membranes are considered semi-critical devices. However, intraoral digital sensors are not currently designed to withstand immersion in a high-level disinfectant or heat sterilization. Consequently, digital sensors should be protected using an FDA-approved barrier or cover to reduce contamination. Approved barriers may not always fully protect the digital sensor from contamination; therefore, always consult instrument manufacturer for proper barrier, disinfection and sterilization procedures.

b. Computer equipment has become commonplace in the DTR as advances in technology become readily available. Follow manufacturer recommendations for cleaning and disinfecting computer equipment. Proper management prevents contamination from occurring. Use impervious barriers or plastic shields for computer keyboard and mouse if gross contamination is likely to occur during patient-care activities. Do not touch unprotected computer equipment with contaminated gloves. Many flat screen displays can be damaged by intermediate-level disinfectants. The computer monitor manufacturer should be consulted for appropriate cleaning procedures.

## CHAPTER 4

### SELECTED REFERENCES USED IN DEVELOPING THIS GUIDE

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