GUIDANCE DOCUMENT CERTIFICATION

I have reviewed this guidance document or proposed guidance document and I certify that it complies with sections §227.10 and §227.11 of the Wisconsin Statutes.

I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is not explicitly required or explicitly permitted by a statute or a rule that has been lawfully promulgated.

I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is more restrictive than a standard, requirement, or threshold contained in the Wisconsin Statutes.

James Greer

Name of Individual Certifying this Document/Proposed Document

Director, Bureau of Health Services

Title

James Greer

Signature

Date Signed

Department of Corrections – Wisconsin
Office of the Secretary
Wis. Stat. § 227.112(6)
DOC-2910 (6/2019)
Policies

The Division of Adult Institutions shall ensure all aspects of dental radiography shall be performed in a manner that is adequate to obtain diagnostic information while limiting the exposure of both inmate patients and dental staff to levels as low as reasonably achievable.

References

Introduction to Infection Control for Radiography, University of Washington School of Dentistry Health & Safety
Guidelines for Infection Control in Dentistry, USAF, 2004
DHS DPH P45027 – Notice to Employees
DAI Policy 500.40.16 – Attachment 1 – DOC Guide for X-Ray Safety Procedures for Dental Facilities
DAI Policy 500.40.16 – Attachment 2 – Safe Radiographic Practices
DAI Policy 500.40.16 – Attachment 3 – Infection Control for Digital Radiography

Definitions, Acronyms and Forms

ALARA – As low as reasonably achievable
BHS – Bureau of Health Services
DHS – Department of Health Services
DOC – Department of Corrections

DOC-3575 – Delegation of Authority to Make Dental Radiographs
DOC-3577 – Dental Radiation Safety Checklist
Dosimeter – Device to measure the dosage of scatter radiation received by the wearer of the dosimeter.
Chapter: 500 Health Services

Subject: Dental Radiation Procedure and Safety

DSU – Dental Services Unit

RSM – Radiation Safety Manual

RSO – Radiation Safety Officer

URSO – A dentist designated as the on-site Unit Radiation Safety Officer for that DSU.

PROCEDURES

I. This policy incorporates the Wisconsin DHS Division of Public Health Guide for X-Ray Safety Procedures for Dental Facilities, modified to DOC as Attachment 1.

II. Each DSU Shall Have One Unit Dentist Designated as the URSO Who is Responsible to:
   A. Assure all radiation safety policy and procedures are complied within the DSU at all times.
   B. Maintain and update the DAI Policy 500.40.16 – Attachment 1 whenever changes in staffing or practice occur.
   C. Assist Dentist Supervisor in training or arranging for training of all unit dental staff in the safe operation of the x-ray equipment, processors and processor testing devices, and obtain staff signatures upon completion of the training on Attachment 1 of this policy.
   D. Daily assure all staff properly exposes film in a manner safe for operator, patient and other dental staff in the work area.
   E. Manage dosimeter use in the DSU, if applicable.
      1. Determine whether dosimeters are needed for each staff person.
      2. Receive, review and store dosimeter reports quarterly.
      3. Give resigning staff their dosimeter reports, if requested.
      4. If available, obtain any dosimeter reports for staff who are employed outside the DOC.
   F. Delegate, assign and monitor the following radiation safety procedures and assure the performance of the procedure is logged when performed per Attachment 3 of this policy:
      1. Maintenance of x-ray processor equipment and chemical changes per manufacturer’s directions.
      2. Weekly testing of each processor using either a Crabtree device or 11-step wedge as appropriate.
   G. Annually audit the DSU using the DOC-3577 – Radiation Safety Checklist, to assure compliance, and discuss the results with the Dentist Supervisor.
H. Assure Radiation Protection Services is advised for registration purposes when new x-ray machines are acquired or when old x-ray machines are disposed of.

I. Assure initial registration and/or disposal information is faxed to BHS Central Office.

J. Delegate authority to make dental radiographs to dental staff using verbal direction or when the dentist is not on site via DOC-3575 – Delegation of Authority to Make Dental Radiographs.

III. Each DSU Shall Maintain On-Site, a Radiation Safety Manual Binder Which Includes:
   A. A current copy of DAI Policy 500.40.16, including a current version of Attachment 1 – DOC Guide for X-Ray Safety Procedures for Dental Facilities completed specifically for that DSU.
   B. Master copies of all required postings.
   C. Guidelines for Prescribing Dental Radiographs – American Dental Association.
   D. All completed and active radiation-related records, checklists and logs.
   E. Quarterly Dosimetry Reports, if applicable.
   F. A copy of or link to the Wisconsin Administrative Code Ch. DHS 157 should be located electronically in the DSU’S Group File.

IV. Each DSU Shall Post:
   A. A notice describing the location in the DSU where the radiation employee rights and obligations (DHS 157.88) can be found.
   B. DHS PPH 45027, “Notice to Employees”.
   C. X-Ray Settings chart at each x-ray machine.
   D. A copy of the current radiation license at each x-ray machine.
   E. The film processor logs for both chemistry change and maintenance, in the processor room.
Bureau of Health Services: ___________________________ Date Signed: ____________
  James Greer, Director

  ___________________________ Date Signed: ____________
  Ryan Holzmacher, MD, Medical Director

  ___________________________ Date Signed: ____________
  Mary Muse, Nursing Director

  ___________________________ Date Signed: ____________
  Dr. Barbara De Lap, Dental Director

Administrator’s Approval: ___________________________ Date Signed: ____________
  Cathy A. Jess, Administrator
REFERENCES

DEFINITIONS, ACRONYMS, AND FORMS

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   B.
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      2.
         a.
         b.
         c.
      3.
   C.

II.

III.

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I. Staff

II. Inmate

III. Other
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Introduction

Dental facilities are required by Wisconsin Administrative Code DHS 157.74 to have operating and safety procedures for radiography. These policies and procedures apply to any employee who operates the x-ray equipment. The sample procedures in this guide are generic. Dental facilities must prepare procedures that are specific for their facilities. By using this guide, a facility may create its own unique set of operating and safety procedures. Not all sections of this guide will apply to all facilities. For example, if the facility uses digital imaging and does not have conventional film processing, then the processing and darkroom sections will not apply. This guide is to remain on file at the facility and be available for inspection by DHS inspectors.

Any changes in the facility registration such as change of address or ownership, must be sent to the department within 30 days of the change. Change of ownership requires re-registration with full fees paid by the new owner. Addition of new equipment or the replacement of old equipment needs to be reported also. Changes to the registration information may be faxed to (608) 267-4799 or mailed to Division of Public Health, Radiation Protection Section, PO Box 2659, Madison WI 53701-2659.

The pertinent sections of DHS 157 that apply to dentists are: Subchapter I, III, VIII, X, XI, XII. Within Subchapter VIII, DHS 157.74, .75, .77 (for ceph and pan units), .78 and .86. The Code may be retrieved from the DHS web site: https://docs.legis.wisconsin.gov/document/administrativecode/DHS%20157.74(2)

(DHS REV 08/11)
Radiation Operating and Safety Procedures

The DOC Dental Unit shall use this guide as is and fill in the appropriate information that is requested in each section. OPERATING AND SAFETY PROCEDURES FOR:

DSU: ____________________

The Unit Radiation Safety Officer (URSO) is HSM/Dr. __________________________.

The following procedures have been established to minimize radiation exposure to patients and employees. They are provided to comply with rules enforced by the Wisconsin Department of Health Services, Section of Radiation Protection. These rules require that each dental x-ray facility be registered with the Department of Health Services.

I. Operation Training and Safety Requirements
   A. Training Requirements for X-Ray Machine Operators
      1. All newly hired x-ray machine operators must be trained in the safe operation of the x-ray equipment, selection of proper technique from a technique chart, patient radiation protection and proper film processing. X-ray machine operators need to be trained on each piece of x-ray equipment they will be operating. Though they may have operated similar equipment in the past, each unit has some unique operating characteristics.
      2. Upon completion of x-ray training staff should sign date the log Appendix A of this Guide.

   B. Individual Radiation Monitoring Requirements
      1. Employees who operate dental x-ray machines are required to be assigned an individual radiation monitoring device (personal dosimeter) if they are likely to be exposed to 5 mSv (500 mRem) per year. If previous radiation monitoring records show that it is unlikely that a person will be exposed to 5 mSv, then monitoring is not required. Re-testing every five years should be conducted to ensure all employees are following the radiation safety policies. State radiation protection staff inspects all dental offices about every three to four years. During the inspection radiation measurements are made at the operator positions to determine whether dosimeters will be required.
      2. Changes made to the office configuration such as relocation of x-ray equipment or replacement of one type of equipment with another (pan for intra-oral) requires re-testing with monitors to ensure that adequate operating procedures are in place.
      3. New offices require monitoring of personnel for one year to ensure adequate protection for the operators. Monitoring may be discontinued if the results indicate that no employee is likely to receive 5 mSv in a year.
      4. If monitoring devices are worn, they shall be worn at the neck level or on the upper torso. If a protective apron is worn because the operator needs to be less than six feet from the tube or patient, the monitoring device must be worn at the collar outside the apron. If any badge wearer exceeds the 5 mSv (500 mR) in a year, all wearers will have to change badges every month until the cause of the high reading is determined.
      5. DHS 157.88 in Subchapter X discusses the requirements for notifying the employee of their monitoring results. Each employee who wears a monitor should be shown the monitor report and acknowledge seeing the results by initialing the report by their name. Names may be used for identifying each employee or an employee number may be used for identification.
      6. Records of employee exposure must be retained, even after the employee has left employment at the facility. Upon departure, each employee must receive a copy of their final monitoring report that shows their exposure for the entire employment period. The information on the periodic monitor report may be recorded on facility letterhead and include the phrase "This report is furnished to you under the provisions of Wisconsin Administrative Code, Chapter DHS 157, Radiation Protection. You should retain this report for future reference".
      7. Staff who do not routinely operate the x-ray equipment do not need to be monitored.
Situations may exist where office staff is routinely within 6 feet of the x-ray tube when it is operated. The situation should be evaluated to determine whether staff in those areas need to be monitored.

8. Digital intraoral imaging systems (DR) substantially reduce the radiation exposure to the patient and the operators. Generally, DR systems reduce the patient and operator exposure by 80-90%. CR systems reduce patient and operator exposure by 60-70%. Offices that are 100% digital generally do not need to provide personal dosimetry except for declared pregnant workers or workers who must assist patients during radiography.

9. Dosimetry devices may be obtained from whichever of the following is in contract with DOC:
   a. GlobalDosimetry Service 800-251-3331 or DOC approved vendor.

C. Holding of patients and/or film
   1. Holding film in the patient's mouth by the operator shall be avoided. Film holding devices must be used unless there are patient management issues that may require parents, guardians or staff to hold the film in position.
   2. If someone must hold a film in position, the following precautions must be taken:
      a. Always try to use a remote holding device to stabilize the film position.
      b. The person holding the film should always wear an apron.
      c. If the film must be held in position using a finger, always try to have a non-employee (ex: patient) hold the film.
      d. If an employee must hold the film with a finger, the person is limited to 350 such exposures a year and must wear a ring badge dosimeter. Any more will exceed the permitted occupational exposure to the extremities.
      e. No employee may be assigned the task of holding a film on a regular basis.
   3. The tube housing shall not be held during an exposure by any person, either staff or parents. If the tube support assembly is unstable and the tube drifts during an exposure, the unit should be taken out of service and repaired.

D. Posting Notices and Instructions to Workers
   1. The "Notice to Employees" form needs to be posted on an employee bulletin board or in a employee accessible area. The notice to employees form applies to all staff, not just the x-ray machine operators.
   2. Employees must read the "Notice to Employees" sign posted on the dental office bulletin board.
   3. The "Notice to Employees" form can be printed from the DHS web site: http://www.DHS.state.wi.us/dph_beh/BEH/notcemp.pdf
   4. The certificate of registration, issued by the department annually at the time of x-ray installation registration renewal, the operating and safety procedures and any notices of violations involving radiological working conditions are located in the DSU's: RADIATION SAFETY MANUAL.
   5. The employee rights and obligations as a radiation worker are found in DHS 157.88. (This may also be printed from the DHS web site listed above and is located in Subchapter X.)

E. Occupational Radiation Dose to X-ray Machine Operators
   1. Occupational dose limits for x-ray machine operators are found in s. DHS 157.22 in Subchapter III. If any x-ray machine operator is pregnant or becomes pregnant, she may voluntarily inform the Radiation Safety Officer (RSO) or employer in writing of the pregnancy. If the RSO or employer is informed of the pregnancy, the employer must ensure that the dose to the embryo or fetus does not exceed 5 mSv (500 mrem) during the entire pregnancy and no more than 0.5 mSv (50 mrem) in any month. The dose to the monitoring device worn at the waist level is considered to be the fetal dose. Pregnant x-ray machine operators shall be monitored for radiation exposure. If the x-ray machine operator chooses to wear a leaded apron and have dosimetry, two monitors are recommended; one device will be worn at the neck and the second under the apron at the waist level. If an apron is not worn, only one monitor may be assigned and that shall be worn at the waist level.
   2. If an x-ray machine operator does not declare their pregnancy in writing, for radiation safety
purposes they are not considered to be pregnant and the 50 mSv (5 Rem) occupational exposure limit applies.

3. If you suspect there has been an excessive exposure or a radiation incident such as unintentional exposure of yourself or another employee, immediately notify the URSO.

4. **Top Ten Dosimeter Do's and Don'ts**
   a. **DO WEAR IT** when working. It has no value in your locker or purse.
   b. **DON'T WEAR IT** when you are receiving x-rays for your own health care.
   c. **DON'T WEAR IT** away from the workplace. Leave your dosimeter in the same place every day when you leave the office so you know where it is.
   d. **DON'T WEAR IT** under your apron unless you are wearing two dosimeters, one at the neck level outside the apron and one under the apron. This applies to pregnant workers.
   e. **DO TURN IT IN** on time. Time gaps make analysis more difficult, less accurate and reduces legal and historical value of the reports.
   f. **DO PLACE** the control dosimeter in a radiation-safe area; the dose to the control is subtracted from each dosimeter and needs to be accurate.
   g. **DO REPORT LOST OR DAMAGED** dosimeters immediately. Prevent damage by not leaving your dosimeter in areas of high temperature such as your dashboard or in the clothes dryer.
   h. **DON'T PLACE** a dosimeter in an area for testing of stray radiation. Additional dosimeters can be assigned for testing.
   i. **DON'T SHARE** dosimeters; this is illegal. An average total for a shared dosimeter is meaningless to each individual.
   j. **DON'T TAMPER** with your dosimeter or anyone else’s. The reports are legal documents and are regarded as real exposures received. Tampering with dosimeters is grounds for dismissal.

F. **Multiple Employers or Work sites**
   1. If an x-ray machine operator works in more than one facility and wears a dosimeter in each facility, each such employee is responsible for reporting their exposure from each job to each employer. The cumulative exposure from each job is the occupational exposure limit.
   2. No x-ray machine operator is allowed to receive more than 50 mSv (5 rem) from all employment during a calendar year.

G. **Patient Safety**
   Patient radiation safety practices include:
   1. Using the lowest possible radiation exposure for each exam by using the fastest film speed and the shortest exposure time.
   2. Avoiding repeat x-rays by using the correct setting and technique.
   3. Positioning the tube head and film carefully.
   4. Providing the patient with a leaded apron.

II. **X-ray Machine Operation**
   A. **X-ray Machine Operator Position during Exposure**
      1. The x-ray machine operator must be able to continuously communicate with the patient. The x-ray machine operator position must allow the operator to convey any verbal instructions to the patient.
      2. During the exposure, the employee must stand at least six feet from the useful beam or behind a protective barrier and not in the direction that the tube was pointed. (Most employees step into the hallway because drywall provides adequate protection).

   B. **Use of a Settings/Technique Chart (Guide Appendix D)**
      1. Technique charts are required for systems with adjustable settings, such as kV, time or pulses and mA (x-ray tube current).
      2. The use of a technique chart aids in reducing the exposure to the employee and patient by providing a standard technique for a given machine regardless of the employee operating the equipment.
3. The chart must be posted near the control panel of each x-ray machine, near the control where the technique is adjusted.
4. If the exposure values can be adjusted from outside the room, then the chart should be posted near the control where the employee adjusts the technique. If you are switching from film to digital imaging, be sure to post new technique charts.

C. X-ray Beam Restriction and Alignment
1. Use the beam limiting devices (cone) provided on the x-ray machine. Never take a patient x-ray without a cone on the tube head. Beam limiting devices must meet the requirements of DHS 157.78. The short, black plastic cones are no longer permitted as they allowed too much scatter radiation exposure to the patient. They must be replaced with the shielded, lead lined, cylinder, open-ended cones. (Measurements have shown a scatter reduction to the patient of up to 75 percent by changing to the shielded cone).
2. Multipurpose units used for intra-oral and cephalometric exams must use the appropriate alignment devices and secure the tube head at the specified distance for proper beam size and alignment.

D. Use of Mobile or Portable Machines
During the exposure using a mobile or portable x-ray device the x-ray machine operator:
1. Must be positioned so that his/her exposure to scatter radiation is as low as reasonably achievable (ALARA) (e.g. 6 feet or more away).
2. Should never be in line with the direct beam.
3. If the x-ray machine operator must be closer than 6 feet from the patient, the operator must wear a lead apron.
4. No person may hold the x-ray tube housing during the exposure. A stand or other means of support shall be used during the exposure. There is the possibility of electric shock from improper grounding is the machine is hand-held.

III. Film Processing
NOTE: Facilities with digital imaging and no "wet chemistry" processing capability are not required to comply with this section.
A. Film Handling and Storage
1. Unexposed film is stored in a location in each operatory where the useful beam does not strike it.
2. Unexposed film is safe in the operatory as long as it is not stored in line with the direct beam of the x-ray tube.
3. Large quantities of unexposed film (more than used in one month) should be stored according to the manufacturer requirements.
4. Film may be frozen for long term storage of up to two years. Frozen film should be allowed to thaw at room temperature for at least 24 hours before use.
5. For automatic processors, run blank films through the processor at the beginning of the workday to clean the transport system if recommended by the manufacturer.

B. Film Processor: Systems Testing for Quality Control
1. Quality control of the processing “system” is an often over-looked area of radiography yet it is the most critical to consistent, quality images.
   a. Check expiration dates on film and chemicals periodically.
   b. Rotate new film or chemicals so the oldest are used first.
   c. Dispose of films or chemicals that reach the expiration date.
   d. Replace chemicals according to the manufacturer’s or chemical supplier’s recommended interval, which is or no longer than one month. Document date replaced.
   e. Clean the processor according to manufacturer’s recommendations, document.
   f. Use the logs provided in the appendices to this Guide.
C. Film Processor Testing Procedures

1. Test processor chemistry activity at least once a week (less for part time DSUs) using a density comparison technique, such as the Dental Radiographic Quality Control Device (Crabtree)® or a density step wedge such as the 76-025-4000 Dental Aluminum Step Wedge from Cardinal Health/Nuclear Associates®.

2. Purchasing Processor Testing Devices
   a. Step wedges may also be hand-made by using dental lead foil from film packets. Stagger a group of four lead foils to create steps of different thicknesses to create a wedge shape.
   b. *A Dental Radiographic Quality Control Device® (Crabtree) device is a tool used to compare the density of dental films exposed using the device to a standard film strip which comes with the device. A copper plate in the device creates a density when the film is exposed to x-ray. The films taken at various times of the month can be compared to see if the chemistry is becoming exhausted and needs to be replaced.
   c. The DRQCD® CRABTREE device is available by:
      i. calling DRCQD at (970) 470-0859, or Fax (970) 476-5126 or
      ii. Write DRQCD, P.O. Box 5126, Vail, CO 1658
   d. Other density comparison devices, such as an aluminum step wedge, may be used as well. The wedge is placed on the film and exposed to the same technique from the same tube head each time. The films are processed and compared with the master film created when the processor chemistry is first replaced. The master film is stored and used for the weekly comparison. A master film needs to be made each time the chemistry is changed. Contact your supplier for more information.
   e. Other 3"x6" 11 step wedge suppliers include:
      i. Cone Instruments – 800-321-6964
      ii. Dental Step Wedge – 866-722-3368
      iii. NOTE: Mention of a device, product or service does not constitute an endorsement by the department and serves only as a representation of the types of devices, products or services which are available.

D. Film Processor: Testing Logs (Appendix B & C)

1. Appendix B – Crabtree/Step Wedge Tests Log
   a. Processor Maintenance Log
   b. Chemical Change Log

2. State inspectors will check to see if the processor Quality Control (QC) is being performed but will not expect to see historical records or old films. They will check for current and most recent films.

3. The processor chemistry change log and processor maintenance log sheets should be posted in the film processing area.

E. Leaded Shielding garments and devices shall be fluoroscopically or radiographically inspected at least every 2 years for defects and replaced if defective. If visual inspection reveals possible defects, radiographic or fluoroscopic inspections shall be performed. Leaded shielding garments and devices include aprons, gloves, vests, skirts, thyroid shields and gonadal shield.
GUIDE – APPENDIX A

Complete on-line training annually on Cornerstone: Radiology Safety
GUIDE – APPENDIX B

CRABTREE &/OR STEP WEDGE TEST & PROCESSOR LOGS

Calendar YEAR:________

Identify X-ray Machine: □ Intraoral #1 □ Intraoral #2 □ Intraoral #3 □ Panoramic (non-digital)

Film Speed: □ D □ E □ F

Exposure Factors: KVP________ mA ________ Timer Settings __________

Acceptable Density Step Recorded: □ 3 □ 4 □ 5

<table>
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<tr>
<th>Date Test Film Exposed</th>
<th>Density match on Device: Step Number</th>
<th>Density Step Number Acceptable?</th>
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<th>Date Processor Solutions Changed</th>
<th>Date Processor Cleaned</th>
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GUIDE – APPENDIX C

Instructions for Registering X-ray Devices:

To register x-ray devices at a new location, or register a change in ownership: Fill out form DPH 7097—Application for Registration of Ionizing Radiation Devices (PDF, 25 KB), and return, with the appropriate fee made payable to the Department of Health Services, to:

Wisconsin Department of Health Services
Division of Public Health
X-ray Device Registration
P.O. Box 2659
Madison, WI 53701-2659

To register changes in the number of tubes (new x-ray devices or a change in the tube count), for those locations currently registered with the Department of Health Services, send the above address the following information:

- X-ray device registration ID number
- Device detail
  - Manufacturer
  - Model number
  - Serial number
  - Max kVp & Max mA
  - Year installed
- No fee is required when adding or changing device information to a current registration. The change in device information will appear on your next annual renewal notice.

Please Note:

1. Multiple x-ray units at a single radiation installation and under the control of one person may be registered on a single registration application and for one fee.
2. If the units/sources are located at separate addresses, each installation will require a separate registration and fee.
3. Registration of sources of ionizing radiation must be made by the person in control.
4. Renewal registration applications are sent out by DHS in November of each year.

If you have questions, please contact staff at the Division of Public Health for assistance.

Surveys/Inspections:

DHS Radiation Protection personnel conduct survey inspections of x-ray units to determine compliance with DHS 157. After an inspection, a copy of the report will be sent to the registrant.
GUIDE – APPENDIX D

RADIATION WORKERS NOTICE

EMPLOYEE RIGHTS & OBLIGATIONS

ARE LOCATED IN THIS DSU’S:

DENTAL X-RAY SAFETY MANUAL

(SEE DHS 157.88)

RADIATION WORKERS:

EMPLOYEE RIGHTS & OBLIGATIONS

ARE LOCATED IN THIS DSU’S:

DENTAL X-RAY SAFETY MANUAL

(SEE DHS 157.88)
Infection Control for Radiography

The following are guidelines to be followed in the taking and processing of dental radiographs. The guidelines are slight modifications of those recommended by the American Academy of Oral and Maxillofacial Radiology (Oral Surg Oral Med Oral Pathol 1992;73:248-9).

Operatory and Equipment Management

- Items such as ear rods, chin rests, and head positioners that cannot be removed for cleaning and sterilization shall be disinfected with Biocide.
- Materials and instruments used during the appointment shall be kept on work surfaces that are covered, or disinfected with Biocide.
- Disinfect faucets, handles, and soap dispensers that are not covered, or may be touched by hands during the appointment.
- Dispose of all contaminated disposables as infectious waste by sealing them in a plastic bag and placing the bag in the Hazardous waste container.
- Cover the exposure switch, cone and X-ray head with a clean plastic cover during use.
- Cover chair adjustment controls.
- Obtain film packets and other radiographic materials and devices before donning gloves.

Clinical Protocol

- Universal precautions are to be exercised during the taking and processing of radiographs.
- Wash hands before and after wearing gloves which are to be worn during the taking and processing of radiographs.
- Keep clean film packets in a clean container and place the contaminated exposed packets on a work surface.
- Touch only covered surfaces during the radiographic procedure.
Film Processing: Use of a Daylight Loader

- Place a clean paper towel on the bottom of the daylight loader.
- Place the container of contaminated packets into the loader along with a paper cup to hold wrapping debris.
- Close the loader lid and don a pair of gloves.
- Open packets one at a time. Grasp only the edges of the film to slide the film out halfway from the wrapping and insert the film into the film slot using the wrapping as a protective handle. Discard wrappings into the empty paper cup.
- When finished, remove all debris from the loader. Sort through the wrappings and place all lead foils in a special container near the developer. The other debris can be discarded in the general waste containers.

Use of a Darkroom

- Put on a pair of gloves and place two paper towels on the work surface.
- Open packets one at a time. Grasp only the edges of the film to remove them from the packets and drop them onto one of the clean paper towels.
- Discard wrappings onto the other paper towel.
- When all films are unwrapped, remove the lead foils from the wrappings and place them in a special container. The other debris can be discarded in the general waste containers.
- Remove your gloves and wash your hands.
- Insert the films into the developer slots.
- Re-wash your hands when you are finished.
I. **General Considerations**
   A. Digital radiography sensors come into contact with mucous membranes and are considered semicritical devices. Ideally, they should be cleaned and heat-sterilized or high-level disinfected between patients.
   B. At this time, however, the sensors cannot withstand heat sterilization or complete immersion in a high-level disinfectant. Therefore, these devices should, at a minimum, be barrier protected by using a Food and Drug Administration (FDA)-cleared barrier to reduce gross contamination during use. However, use of a barrier does not always protect from contamination. To minimize the potential for patient cross-contamination, the Centers for Disease Control and Prevention recommends cleaning and disinfecting the sensor with an Environmental Protection Agency (EPA)-registered intermediate-level (i.e., tuberculocidal) disinfectant after removing the barrier and before use on another patient.

II. **Infection Control for Sensors**
   A. Cover the sensor and any cords that may contact intraoral surfaces or contaminated hands with an FDA-cleared plastic sensor sleeve, and over that, a medium-sized finger cot.
   B. After the procedure remove both barriers and discard appropriately.
   C. Between patients, clean and disinfect (spray-wipe-spray) the sensor with an EPA-registered disinfectant with intermediate-level (i.e., tuberculocidal) activity. Using disinfecting cloths/wipes with intermediate-level activity may be easier than spraying the sensor and then wiping it.
      1. Note: for best results use an ethanol (80%) based product.
      2. Note: chlorine-based (e.g., bleach) products may be too corrosive to use on the sensors and should be avoided.
   D. Consult with the equipment manufacturer if you have any additional questions or concerns about specific disinfection procedures or product compatibility.

III. **Infection Control for Radiographic Positioning Devices**
   A. Most positioning devices are heat tolerant. Before re-use on a patient: clean, package, and heat sterilize.
   B. If disposable positioning devices are used, use once and dispose of appropriately. Do not attempt to re-use.

IV. **Infection Control for Computer Equipment in the Dental Operatory**
   A. General Considerations
      1. Many items cannot be properly cleaned and disinfected or sterilized so avoiding contamination is important. Good hand-hygiene is important. Before touching any office equipment, ensure your hands are clean, and if wearing gloves select a powder-free brand.
      2. Place computer equipment which is unlikely to be touched during treatment (e.g., CPU, monitor) in a location where it won’t be contaminated with direct spray or spatter. Consider installing a clear barrier shield, which can be disinfected, and place the equipment behind
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it. This would allow visualization of the equipment during patient treatment and minimize or prevent contamination.

3. **Cover all surfaces that will be contacted with gloved or contaminated hands or that may be contaminated by spatter/spray with plastic barriers.**

B. **Infection control for keyboard**
   1. Single use plastic disposable cover (e.g., plastic sheets, self-adhesive plastic, headrest cover): change between patients.
   2. Reusable preformed plastic keyboard covers that fit over the keyboard: clean and disinfect between patients.

C. **Infection control for mouse**
   1. Single use plastic disposable cover (e.g., plastic sheets, self-adhesive plastic): change between patients.
   2. Use a headrest cover and place your gloved hand into the headrest cover, then use the mouse normally. The mouse is outside the headrest cover and is not covered. After removing your hand from the headrest cover, attempt to keep it propped open so you can place your hand back into it if necessary. Discard the headrest cover after each patient.

**Selected References**
USAF Guidelines for Infection Control in Dentistry, 2004