Updated: January 2016

Questions/comments/concerns/corrections should be addressed to either of the offices listed below or the appropriate university/state/federal administrative agency.

Richard Monahan
Director, Division of Radiology
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and/or

The Office of the Associate Dean of Clinical Affairs
INTRODUCTION

The purpose of the following guidelines is to standardize the institutional use of ionizing radiation for diagnostic procedures. Strict adherence will result in the least possible patient risk and provide maximum diagnostic yield.

This document is prepared in conjunction with:


The 2012 Illinois Emergency Management Agency, Illinois Administrative Code Title 32: Chapter II; part 360, Use of X-rays in the Healing Arts including Medical, Dental and Veterinary Medicine http://www.state.il.us/iema/legal/regs/RegChart.asp


Position papers from The American Academy of Oral and Maxillofacial Radiology will be reviewed by the director of radiology and may influence clinical protocol where applicable and consistent with the above requirements. www.AAOMR.org

This document is being published with the understanding that continual reevaluation is needed and the document will require ongoing modifications as the art and science of diagnostic imaging advances.

In any instance where Federal, State or University radiation safety codes are more stringent than the requirements set forth in this document, the more stringent regulation will apply.

Radiographic examinations may provide essential information for the diagnosis, treatment and prevention of dental disease and maxillofacial/craniofacial differences. When properly prescribed, acquired, interpreted and integrated with the medical history, clinical examination and patient dialogue, diagnostic images can be an indispensable and integral component of the practice of dentistry.
RADIATION SAFETY OFFICIALS

The University of Illinois at Chicago Radiation Safety Office and Associate Dean of Clinical Affairs at the College of Dentistry have the direct responsibility for the overall supervision of all ionizing radiation sources within the dental educational facility.

The division director of dental radiology is the designated liaison between the administrative offices of the college of dentistry and the radiation safety office of the university.

The university radiation safety officer has the authority and responsibility to establish, implement and monitor the following radiographic practices within the college.

The university radiation safety officer will:

1. Arrange for the periodic inspection of the dental school radiology facilities to be performed by a designate of the University Radiation Safety Department. That department shall maintain records of inspections and up-to-date certification of x-ray equipment. These records are available upon request from any authorized dental school administrative official, designated state representative or certifying organization authorized by the administration. In 2003, the state inspection schedule was changed from annual to every three years. This protocol is still in effect as of October 2015.

2. After written/email notification from an administrative official of the dental school, the designated university radiation officer will review plans for modification or locational changes of existing equipment and planned installation as well as location of new equipment within the college. He/she will issue a written report of their findings to the designated college official within a reasonable period of time.

3. Investigate any reported, suspected or observed incident concerning health hazards related to x-ray equipment usage or misuse of equipment within the College of Dentistry or, at their discretion, forward knowledge of such incidents or hazards to the appropriate university official and/or The State of Illinois Bureau of Radiation Safety, Illinois Emergency Management Agency (IEMA).

4. Make recommendations to the UIC College of Dentistry administration and/or director of dental radiology regarding radiation safety and quality assurance issues.

5. Notify the UIC College of Dentistry, Associated Dean of Clinical Affairs via letter of email of changes or modifications in the policy or regulations set forth by The Department of Radiation Safety, University of Illinois
Facilities and Equipment

1. Shielded operatories should be equipped with a transparent leaded panel to permit a constant view of the patient during exposure. Leaded glass or a substance of similar attenuation properties will be used. Operatories that have been approved for the use of ionizing radiation that do not incorporate shielding shall allow no obstruction that blocks the x-ray operator’s direct view of the patient while being imaged. In operatories equipped with intraoral dental x-ray equipment that do not have protective shielding, the operator must stand at least two meters from the tube head and out of the direct path of the primary beam. This protocol is in accordance with ADA/FDA guidelines and has been approved by The University of Illinois Radiation Safety Officer and the IEMA Radiation inspector of The State of Illinois. All ionizing radiation producing equipment within the college was registered with The State of Illinois IEMA division upon installation. The college underwent and successfully completed its five year State of Illinois onsite comprehensive radiology inspection in February 2015.

2. Each operatory will be provided with wall-mounted hangers for dedicated leaded/protective shielded apron and attached thyroid shield. Appropriate signs indicating the requirement to use the protective apron and thyroid shield will be posted at all times in all functional radiology operatories. Operatories that are designated for panoramic images, cephalometric images and conebeam computed (volumetric) tomography shall have appropriately designed protective aprons.

3. The University Radiation Safety Officer is to be informed of any proposed installation, equipment modification or change in location of radiographic equipment in order to be assured of the following:

   a. The inherent shielding or space plan of the operatory room is adequate for the safety of the operator and adjacent non-controlled areas (public areas).

   b. Operator controls and exposure termination indicators are in a position to be easily viewed and/or heard during exposure.

   c. The operatory is of sufficient dimensions so that the tube head can be easily and properly positioned for all exposures.

Note: it is the responsibility of the college space planning committee to ensure that wheelchair access is maintained for specifically designated radiology operatories.
4. All dental x-ray equipment employed in the course of patient care shall comply with the following provisions:

a. The tube head gantry shall keep the tube head stationary during radiation exposure.

b. The diameter of the useful beam at the exit of the Position Indicating Device (PID), as used for intraoral radiography, shall be no greater than 2.75 inches. Only open-end Position Indicating Devices will be used. So called “Cone” positioners are specifically prohibited within the College of Dentistry.

c. The Position Indicating Device must be of sufficient length to provide an acceptable target-to-skin distance.

d. The total filtration of the beam must not be less than 2.5 mm of aluminum equivalence when the generator is operated above 70 kVp, nor less than 1.5 mm of aluminum equivalence for equipment operating between 60 and 70 kVp. Equipment utilized for patient care will not be operated below 60kVp.

e. The exposure control switch shall be a “dead-person” type. All radiation emission must terminate once physical switch activation stops and/or after the pre-set time of exposure, whichever is the shortest time interval.

f. The x-ray unit shall have both an audible and visual indicator to signal exposure termination.

g. Newly installed x-ray units shall be registered with The State of Illinois Department of Public Health Radiation Control Program no later than 30 days after installation. Calibration of exposure levels must be done at the time of installation. Written documentation is necessary and must be filed with The University of Illinois at Chicago Department of Administrative Services, Environmental Health and Safety Office, Radiation Safety Section. The unit must not be used to make radiographic exposures on patients until it has been satisfactorily calibrated and registered with the above named Radiation Safety Section of the University. At h/h discretion, the University Radiation Safety Officer may allow initial usage of equipment based on an email authorization.

5. The University Radiation Safety Officer may inspect and/or request official inspection by the IEMA Bureau of Radiation Safety (formerly, Illinois State Radiology Department) of all x-ray units at the time of installation or a time
consistent with their scheduling requirements. Change of location, modification, tube replacement or a fixed time interval designated by the university may also call for inspection as per university protocol. The scope of these inspections shall include, but not be limited to:

a. An area survey of radiation levels in controlled areas and, if indicated, adjacent non-controlled areas.

b. The Half Value Layer of the useful beam for the average kVp employed.

c. Timer accuracy.

d. Output reproducibility.

e. Output in R/Second (or ugray/sec or recognized measurements acceptable to the scientific community and approved by the university/state)

6. Notification of any malfunction of a dental x-ray unit shall be made to the on-site supervising faculty member monitoring the exposure/testing. He/she will report malfunction to the Director of Radiology and/or The Associate Dean of Clinical Affairs.

The department head of the involved department is to be informed in writing or via email and the unit is to be made non-functional (unable to emit ionizing radiation) until satisfactory resolution and re-testing of the equipment is accomplished.

Other than minor maintenance/repair, the University Radiation Safety Officer must be notified in writing or via email so an inspection can be initiated pending his/her professional judgment.

7. Through the authority of the Associate Dean of Clinical Affairs or his/her designate, all department heads will allow the University Radiation Officer to inspect any radiology equipment within their department in accord with the university policy for periodic inspection and allow for reasonable random inspection as deemed appropriate by the Radiation Safety Office or The State of Illinois IEMA, Bureau of Radiation Safety.

8. Exposure operational information must be posted or electronically visible by each x-ray unit and include the following: correct kVp, mA, sensor type and recommend exposure time. Operational manuals for all radiology equipment shall be kept in the office of The Associated Dean of Clinical Affairs, the office of The Director of Radiology and posted online at the College intranet site.
Operator Qualifications and Authorization

Only those categories of operators defined in this section shall be considered authorized to operate dental x-ray equipment.

1. Students
   The operation of x-ray equipment by DMD/AS students under direct supervision is authorized provided:
   
   a. The student-operator shall have successfully completed instruction/demonstration/understanding/feedback that includes radiation physics, radiation safety, radiation protection, radiographic prescription (including ALARA) and infection control in radiology. A student must demonstrate competency in the clinical application of radiation safety, infection control in radiology and appropriate radiographic technique. This requirement is currently accomplished in Small Group Learning, the clinical demonstration/workshops via Central Radiology Rotations, reinforcement in patient care clinics and individual consultation with the Director of Radiology or his/her designate by appointment.

   b. All exposures on patients must be authorized by a member of the clinical faculty of the UIC/COD.

   c. Although the technical component of securing a diagnostic image may be delegated to a radiology technician, dental assistant or RDH, it is the primary responsibility of the authorizing faculty member to insure that necessary supervision is available and enforced.

2. Staff
   The operation of x-ray equipment by Dental School staff is authorized provided:

   a. The x-ray operator shall be a dental assistant, dental radiographic technician or registered dental hygienist.

   b. The radiographic exposure must be authorized by a member of the clinical faculty of UIC/COD.

   c. A member of the Dental School clinical faculty shall be available during image capture and for consultation or evaluation of the diagnostic acceptability of the image(s).

3. Faculty and Post-doctoral Residents
   All members of the Dental School faculty who are authorized to provide patient care and all post-doctoral students authorized to provide patient care are authorized to operate x-ray equipment. Specific department heads/program directors may limit this authorization as he/she deems appropriate/necessary. Authorization to operate one type of imaging system is not a blanket authorization to operate other types of imaging equipment.
4. Operation of cone-beam computed tomography equipment (CBCT) Only individuals who have been specifically authorized by a department head/specialty program director may prescribe, interpret and/or operate cone-beam computer tomography equipment.
Patient Radiographic Record

1. All radiographic examinations, including retakes and intra-treatment images, shall be authorized by a UIC/COD faculty member by prescription in the patient’s electronic health record (EHR). This record will specify the request date of the examination, authorization code of the faculty member and type of exposure(s) requested. The number of total completed exposures, including necessary retakes, shall be recorded. This information is intended to document the patient’s history of exposure to diagnostic ionizing radiation within the College of Dentistry and the types of radiographs used for diagnostic evaluation. This is done in recognition that the effects of ionizing radiation are cumulative. Specific codes are used for non-diagnostic images.

2. Radiographic examinations made outside the Central Radiology Clinic (example, the group practice clinics) are to be supervised by a clinical faculty member of the involved practice and must be authorized/recorded as above. The supervising faculty member is responsible for overseeing and assuring that proper radiation protection, college dictates on infection control and the radiographic prescription concept of ALARA are routinely adhered to in his/her clinic.

The Radiographic Examination Criteria for Patient Selection

1. No image will be taken without electronic prescription by an authorized UIC/COD clinical faculty member after conducting a clinical examination and a reviewing the medical history.

2. To maximize the benefits of the radiation exposure, the need for all radiographs should be determined by using high-yield criteria as the basis of professional judgement, as established through history, patient dialogue and clinical examination.

3. The need for radiographs for diagnosis/treatment planning, during treatment and post-operatively, and the frequency of recall radiographs should be based on 2012 ADA / FDA recommendations for the prescription of dental radiographic examination: "Dental Radiographic Examinations: Recommendations for Patient

4. Where pertinent and relevant prior images are available, they should be obtained and evaluated for diagnostic yield before any new radiographs are prescribed.

5. No radiograph or image will be made solely for the purpose of initial screening of patients for acceptability for treatment in the dental college unless there is a high likelihood of such acceptance. A clinical examination with be accomplished prior to ordering any image.

6. Patients/students/staff will not be exposed to ionizing radiation for teaching/training/demonstration purposes. There must be a diagnostic rationale evident before exposing any individual to ionizing radiation.

7. No image will be acquired solely for administrative purposes. Patients will not be exposed to ionizing radiation following treatment procedures solely to document completion of a procedure.

8. Patients will not be subjected to radiographic retakes solely for students to demonstrate technical proficiency. Retakes will be based on the need to acquire a diagnostic image with the requisite diagnostic yield needed to advance/maintain/establish the health of the patient.

9. Radiographs which do not meet diagnostic criteria must be retaken. These retakes are made under the supervision of and/or with the assistance of an instructor/technician.

10. Diagnostic images necessary to provide urgent care for a pregnant patient will be prescribed after informed consent and acquired with strict adherence to ALARA. While this protocol is routinely followed on all patients, pregnancy necessitates the clinician demonstrate a concern tailored to the patient’s condition.

11. While judicious clinical protocol dictates that radiographs for all patients be kept to a minimum, the child patient is of special concern due to his/her susceptibility to the direct and indirect effects of ionizing radiation. An image should not be taken on a child if the supervising clinician has a reasonable suspicion that, because of movement of the child, the likelihood of success is poor. Consultation with clinic managers/program directors should be considered in these instances.

12. The radiographic procedure(s) chosen will be predicated upon the basis of maximizing relevant diagnostic yield while minimizing patient exposure to ionizing radiation. Once the need for a radiographic examination is established, the principle of ALARA (as low as reasonably achievable) is integrated into all radiographic exposure decisions.
Policy for Prescribing Images on Pregnant Patients or Patients who state they may be Pregnant

1. For urgent care situations, any image deemed necessary for the diagnose and treatment of acute dental problems should be prescribed utilizing strict adherence to the concept of ALARA. Additionally, a faculty member may decide to authorize a specific image if the patient presents with a condition that is likely to worsen during pregnancy.

2. Images should not be taken for elective dental procedures if a patient is pregnant. This includes screening appointments for admission to the college.

3. In all cases appropriate protective measures (protective apron with thyroid collar if appropriate, appropriate sensor, proper infection control) must be followed.

4. Protective aprons should be removed immediately after the x-ray exposure since the weight and discomfort may be difficult for some pregnant patients to tolerate.

The above policy statement is consistent with the guidelines of The American Dental Association and American Academy of Oral & Maxillofacial Radiology.
Pregnant Radiation Operators and other concerns about Pregnancy and X-rays

Operators who are pregnant or think they may be pregnant should not be exposed to more than 5mSv (500 mrem) during the term of their pregnancy.

Students/staff/faculty who have concerns about occupational exposure to ionizing radiation should contact the UIC/COD Office of Clinical Affairs, UIC/COD Director of Radiology, the UIC Radiation Safety Office, The Illinois Emergency Management Agency (Bureau of Radiation Safety) and/or the Illinois State regulation agency of their choice.

UIC Radiation Safety Forms & Monitoring Devices are available directly from:

UIC Environmental Health and Safety Office Phone: 6-7429 Fax: 6-8776 Radiation Safety Section, 339 CSN, M/C 932 http://www.uic.edu/depts/envh

Form 8.2 122.A relates to Application for Radiation Dosimeter Service.

There is no charge to the applicant.

It is the obligation of pregnant/possibly pregnant equipment operators to contact the above agency and secure, utilize and renew monitoring devices as indicated.
Mandatory Faculty Authorization Prior to Exposing any Patient to Ionizing Radiation

All radiographic examinations, including retakes and intra-treatment images, shall be authorized by a UIC/COD faculty member by prescription in the patient’s dental electronic health record (EHR). This record will specify the request date of the examination, authorization code of the faculty member and type of exposure(s) requested. The number of total completed exposures, including necessary retakes, shall be recorded. This information is intended to document the patient’s history of exposure to diagnostic ionizing radiation within the College of Dentistry and the types of radiographs used for diagnostic evaluation. This is done in recognition that the effects of ionizing radiation are cumulative. Specific codes are used for non-diagnostic images.

Radiographic examinations made outside the Central Radiology Clinic (example, the group practice clinics) are to be supervised by a clinical faculty member of the involved practice and must be authorized/recorded as above. The supervising faculty member is responsible for overseeing and assuring that proper radiation protection, college dictates on infection control and the radiographic prescription concept of ALARA are routinely adhered to in his/her clinic.
Authorization and Interpretation of CBCT Scans

1. It must be recognized that CBCT subjects the patient to a relatively high radiation dose. As with all imaging, the Risk-Benefit Analysis must justify prescribing a CBCT study. ALARA must be followed. The field-of-view (FOV) must be limited to the anatomic region of interest. Since radiation dose is influenced by the voxel size, imaging parameters including resolution must be selected to address the necessary diagnostic yield of the imaging study.

2. Three-dimensional diagnostic imaging (conebeam computed tomography/volumetric tomography (CBCT/CBVT)) can only be ordered by a department head or their designate, the Associate Dean of Clinical Affairs and the Director of Radiology.

3. The faculty member who prescribes a CBCT scan is responsible for interpreting the data set and insuring that pertinent findings are recorded in the EHR. Anatomic areas outside the maxillofacial region must be reviewed for any anomalies/pathologic conditions that necessitate consultation/referral. Such referrals will be made in accordance with standard college policies.

4. Each department head shall establish what qualifications they deem necessary for a faculty member to be qualified to prescribe/interpret a CBCT scan. In order to maintain procedural uniformity within the college, a continuing education session entitled “CBCT: Navigation and Interpretation” is offered by the Division of Radiology throughout the year. All faculty authorized to order CBCT scans shall attend this session at the discretion of their department head. Additionally, the Director of Radiology shall, upon email request from any faculty member or specialty resident, provide individualized workshops on anatomy, pathology and the need of referral in regards to CBCT.

5. As with all images acquired at the college, the Director of Radiology is available upon request to evaluate any CBCT scan for diagnostic quality and diagnostic yield once it has been reviewed by the authorizing faculty member.
Guidelines for Frequency of Exposing Patients to Ionizing Radiation

Professional judgment and the needs of the patient for optimal diagnosis and treatment will determine the frequency of radiographic examination and not solely the period of time elapsed since the last examination (see exception below). In each case, consistent with the guidelines stated and cited in this document and subject to the legal doctrine of informed consent, the ultimate decision to prescribe a radiographic examination rests with the supervising clinician.

For category-based rationale/guidelines concerning the frequency of exposure as well as the type of imaging examination to prescribe, consult: 2012 ADA / FDA recommendations for the prescription of dental radiographic examination: "Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Radiation Exposure" (http://www.ada.org/news/7996.aspx) or visit the college intranet at http://intranet/depts/radio/index.htm

This document endorses the following time-related frequency of exposure:

In the practice of dentistry, patients often seek care on a routine basis in part because oral disease may develop in the absence of clinical symptoms. Since attempts to identify specific criteria that will accurately predict a high probability of finding interproximal carious lesions have not been successful for individuals, it was necessary to recommend time-based schedules for making radiographs intended primarily for the detection of dental caries. Each schedule provides a range of recommended intervals that are derived from the results of research into the rates at which interproximal caries progresses through tooth enamel. The recommendations also are modified by criteria that place an individual at an increased risk for dental caries. Professional judgment should be used to determine the optimal time between radiographic examinations within a suggested interval.

For a detailed explanation of endorsed time-related exposure criteria, please review:

"Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Radiation Exposure" (http://www.ada.org/news/7996.aspx) or visit the college intranet at http://intranet/depts/radio/index.htm
Guidelines for Prescribing Dental Images

LIMITING RADIATION EXPOSURE
Dental radiographs account for approximately 2.5 percent of the effective dose received from medical radiographs and fluoroscopies. Even though radiation exposure from dental radiographs is low, once a decision to obtain radiographs is made it is the dentist's responsibility to follow the ALARA Principle (As Low as Reasonably Achievable) to minimize the patient's exposure. Examples of good radiologic practice include

- use of protective aprons and thyroid collars, when appropriate; and
- limiting the number of images obtained to the minimum necessary to obtain essential diagnostic information.


Clinical faculty and students rendering patient care must be familiar with and adhere to the principles set forth in the 2012 ADA/FDA recommendations for the prescription of dental radiographic examination: "Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Radiation Exposure"(http://www.ada.org/news/7996.aspx)

2012 ADA/FDA Guidelines information is posted in all undergraduate clinics, Central Radiology suites and available college-wide @ http://intranet/clinics/chairside/home.htm

These guidelines have been electronically broadcast to all clinical faculty and represent the collective philosophy of the college regarding the prescription of dental radiographs.
Guidelines for Prescribing Dental Radiographs for New Patients

New patients to the College of Dentistry will be asked if recent radiographs are available during their screening visit. If recent images, films or acceptable duplicates are not available, then an appropriate radiographic examination will be ordered by a faculty member. If, at the screening examination, the evaluating clinician’s professional judgment is that the person presenting to the college is likely to become a member COD patient population, the clinician may prescribe a panoramic image which will serve as a diagnostic adjunct at the COE appointment and assist in facilitating patient care in a timely manner. Specific image prescription guidelines are available at: Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Radiation Exposure" (http://www.ada.org/news/7996.aspx) and at the UIC/COD intranet site.

Guidelines for Acquiring Dental Radiographs

1. No person other than the patient shall normally be in the x-ray operatory during the radiation exposure period. If assistance is required for children or physically challenged patients, non-occupationally exposed persons (preferably a member of the patient's family) may be asked to assist. No individuals who are occupationally exposed to radiation will be permitted to assist patients or to hold sensors in place during exposure. This category includes all students, all staff and all faculty. In rare instances, supervising faculty may alter this guideline. Please consult 2012 ADA / FDA recommendations for the prescription of dental radiographic examination: "Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Radiation Exposure"(http://www.ada.org/news/7996.aspx for rationale and recommendations.

2. Patients will be draped with one leaded/protective apron with leaded/protective thyroid shield for all intraoral images. Panoramic images, skull images and CBCT examinations will require special patient protection. Each operatory/clinical area will be provided with an appropriate hanger for each protective apron. Each operatory will have a dedicated apron - they will not be shared between operatories unless the x-ray source is shared between two adjacent operatories or a centralized highly visible area is appropriately designated.
During each exposure the operator must stand out of the primary beam and behind an adequate protective barrier that permits observation of and communication with the patient. If no protective barrier is present, operator should locate himself/herself at least 2 meters away from the radiation exit point and away from the direction of the primary beam. See: 2012 ADA / FDA recommendations for the prescription of dental radiographic examination: "Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Radiation Exposure"(http://www.ada.org/news/7996.aspx)

3. Only open ended, shielded Positioning Indicator Devises can be used. These devices must be commercially produced and in compliance with the State of Illinois Department of Radiation and Nuclear Safety and the requirements of the University of Illinois Department of Radiation Safety/IEMA.

4. If a malfunction is detected in an x-ray generating unit, the unit must be taken out of service until the corrections/recalibrations are made. It must be made non-functional until repair/replacement/reinspection is accomplished.

5. Students’ access to radiographic sensors will be controlled, monitored and authorized by a UIC/COD clinical faculty member.
Guidelines for Retaking Dental Images

Non-diagnostic images should be retaken by faculty or trained staff unless in their judgment the involved student can successfully retake the image. Retaking an image must be done under direct supervision. The technical reason for the retake must be identified by the student initially acquiring the image. If the student is unable to articulate the reason behind the non-diagnostic image it must be communicated to them by the supervising facility/trained staff. To restate this concept, the operator must know before he/she initiates the retake why the original image was non-diagnostic. In this way a repeated error is not committed which would unnecessarily subject the patient to additional ionizing radiation without gaining the diagnostic information required.

Occupational Exposure Monitoring

1. Monitoring of personnel, including clinical faculty and staff who are routinely involved in radiographic exposures, should be carried out using radiation monitoring badges supplied by and approved by the UIC Radiation Safety Officer. Upon request, copies of reports will be made available at no charge to the holder of the monitoring device or their designate.

2. Such records will be kept on file permanently and available for photocopying or electronic transmission upon request of any routinely occupationally exposed faculty member/staff. This category of personnel would include Dental Radiographic Technicians categories II and III as well as those acting as a Dental Radiographic Technician on a daily basis.

Reports are available at no charge from UIC Environmental Health and Safety Office Phone: 6-7429 Fax: 6-8776 Radiation Safety Section, 339 CSN, M/C 932 [http://www.uic.edu/depts/envh](http://www.uic.edu/depts/envh) Utilize form 8.2.123C for Radiation Exposure History Record.


4. Employees should not receive more than 50mSv (5 rem) each year. For added precaution, quarterly readings above 10 percent of the radiation protection guideline or 1.25 mSv (125 mrem) will be reported to the UIC Radiation Safety Officer and the Director of Radiology.
5. Operators who are pregnant should not be exposed to more than 5mSv (500 mrem) during the term of their pregnancy. Students/staff/faculty who have concerns about occupational exposure to ionizing radiation during pregnancy should contact the UIC/COD Director of Radiology, UIC/COD Director of Clinics, the UIC Radiation Safety Office or the Illinois State regulation agency of their choice.

UIC Radiation Safety Forms are available directly from:
UIC Environmental Health and Safety Office Phone: 6-7429 Fax: 6-8776
Radiation Safety Section, 339 CSN, M/C 932 http://www.uic.edu/depts/envh

Form 8.2 122.A relates to Application for Radiation Dosimeter Service. Radiation monitoring devices are not to be worn during such times that the wearer is subjected to diagnostic exposures. Radiation monitoring devices should not be taken outside the building or into the other health care colleges of UIC. There is no charge to the applicant.

Hand-held Intraoral Dental X-ray Units

Hand-held, battery-powered x-ray systems are available for intra-oral radiographic imaging within UIC/COD in strictly limited areas and are not available to predoctoral dental students. Current dosimetry studies (ADA/FDA) indicate that these hand-held devices present no greater radiation risk than standard dental radiographic units to the patient or the operator. No additional radiation protection precautions are needed when the device is used according to the manufacturer's instructions. These include: 1. holding the device at mid-torso height, 2. orienting the shielding ring properly with respect to the operator, and 3. keeping the cone as close to the patient’s face as practical.

Within the College of Dentistry all operators of hand-held units must be instructed on their proper storage. Due to the portable nature of these devices, they must be secured properly when not in use in order to prevent accidental damage, loss, or operation by an unauthorized user. Hand-held units are locked in work areas when not under the direct supervision of an individual authorized to use them. A hand-held device at UIC/COD is under the supervision and care of the clinical department that the device is assigned to. The Division of Radiology will not store, test, distribute, authorize or utilize any hand held radiation emitting device.
Radiation Safety Education

Clinic Faculty, staff and students will be provided with periodic up-to-date information concerning radiation safety and quality assurance. Posting on UIC/COD website and/or email notification shall be considered sufficient evidence of notification.

Radiation Infection Control Procedures

Please refer to the UIC/COD Infection Control Manual for specifics regarding appropriate/mandatory infection control procedures related to dental radiography. Portions of the document directly related to radiology are posted in each operatory of the central radiology clinic and the designated radiology operatories in the group practices.

Quality Assurance Procedures for Assessment of Radiographic Equipment

The following procedures for periodic assessment of the performance of radiographic equipment, image receptor devices, and abdominal/thyroid shielding are adapted from the National Council for Radiation Protection and Measurements report, “Radiation Protection in Dentistry.”

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Frequency</th>
<th>Method</th>
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<tbody>
<tr>
<td>Abdominal and Thyroid</td>
<td>Yearly</td>
<td>All protective shields should be evaluated for damage (e.g., tears, folds, and cracks) yearly using visual and manual inspection. If a defect in the attenuating material is suspected, radiographic or fluoroscopic inspection may be performed as an alternative to immediately removing the item from service. Consideration should be given to minimizing the radiation exposure of inspectors by minimizing unnecessary fluoroscopy.</td>
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<tr>
<td>Shielding</td>
<td>visual and manual inspection)</td>
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Intraoral Sensors

Damaged sensors or degraded image quality should be reported to supervising faculty, the Director of Radiology or The Associate Dean for Academic Affairs. Appropriate protocol is in place for manufacturer inspection and evaluation for replacement sensors as indicated. This procedure is initiated, monitored and implemented by the department where the sensor is utilized.

In Central Radiology, Conebeam Computed Tomography equipment (CBCT equipment) will be evaluated and documented monthly by the Director of Radiology of his/her designate using manufacturer-supplied test objects as well as in response to any degradation in image quality or software malfunction.

CBCT equipment outside Central Radiology will be monitored документed at least monthly by a designate of the department specified by the department head. Upon email request this requirement will be assigned to the Director of Radiology and his/her designate will monitor/document the specified CBCT equipment. An ongoing written/electronic record of monitoring and results will be kept on and available upon request by the Office of Clinical Affairs or appropriate college/university officer.

Above policy adopted from:
Dental Board Examination Patient

1. Requests for images on patients for board examinations must be electronically authorized by a faculty member.

2. The need for images must be established by clinical indication and professional judgement and must contribute to the proper diagnosis and treatment of the patient. Images will not be made for testing purposes only. The principle of ALARA will be strictly adhered to as with any other exposure to ionizing radiation.

3. Images made for, or as part of, board examinations must be made in compliance with the school’s policies on radiation safety, radiation protection, radiation prescription and infection control. In addition, all posted policy statements must be followed.

Location of all X-ray Equipment Operational Manuals

Copies of all operational manuals related to the operation of imaging equipment within The College of Dentistry can be found in the office of The Associate Dean for Clinical Affairs, the office of The Director of Radiology and Room 121-125, Office of the Radiology Clinic Coordinator.
Resources that Reflect/Illustrate College Policy

Reference Levels and Achievable Doses in Medical and Dental Imaging: Recommendations (2012)
National Council on Radiation Protection and Measurements
http://www.ncrppublications.org/Reports/172

2012: ADA updates dental radiograph recommendations

ADA 2012: Radiology – Patient Selection Criteria

Radiation Safety Requirements
2012 ADA Statement
http://www.ada.org/2760.aspx#1

ALARA
http://www.nrc.gov/reading-rm/basic-ref/glossary/alara.html

State Radiation Protection Programs: 2013 Directory
http://www.crcpd.org/Map/default.aspx

Radiation Exposure
2012 ADA Statement
http://www.ada.org/2760.aspx

ADA 2013 Oral Health Topics: Radiography
http://www.ada.org/5160.aspx?currentTab=2#guide-1

Recommendations for Prescribing Dental Radiographs
2012 ADA Statement
New Patient Being Evaluated for Oral Diseases
2012 ADA Statement

Limiting Radiation Exposure
2012 ADA Statement

Cone-beam computed tomography (CBCT)
2012 ADA statement on indications for CBCT examinations

Image Receptor Selection
2012 ADA statement

Patient Shielding and Positioning
2012 ADA statement

Radiation Equipment Operator Protection
2012 ADA statement

Hand-held intraoral dental X-ray Units
2012 ADA statement

Quality Assurance in Dental Radiology
2012 ADA statement
Radiation Risk Communication
2012 ADA statement

ADA Statement 2012: Experts question X-ray study
Association with brain tumors based on patient recall

ADA 2013 continuing education, online courses and seminars
http://www.ada.org/education.aspx

The American Academy of Oral and Maxillofacial Radiology
www.AAOMR.org
Resources for Patients/Public

Alliance for Radiation Safety in Pediatric Imaging: What parents should know about the safety of dental radiology

ADA 2012 statement on X-Rays: A Fact Sheet for the Public

ADA 2012 statement on X-Rays and Pregnancy: A Fact Sheet for the Public

Radiation and Pregnancy: A Fact Sheet for the Public
Center for Disease Control 2012 Statement
http://www.bt.cdc.gov/radiation/prenatal.asp

The State of Illinois Radiation Inspection Certificate
Current certificate is available in the office of the Director of Clinics and in the office of the Director of Radiology.

The State of Illinois Radiation Compliance Statement
Compliance statement is available in the office of the Director of Clinics and in the office of the Director of Radiology.
Questions/comments/concerns/corrections should be addressed to any of the individuals listed below and/or the appropriate university/state/federal administrative agency.

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The Office of the Associate Dean for Clinical Affairs  

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