DENTAL RADIOLOGY

PURPOSE

This procedure defines the responsibilities for protective equipment, radiation and safety surveys, operating procedures and quality assurance programs for x-ray machines used on humans for diagnostic purposes in Dental Radiology.

POLICY

The Radiation Safety Committee is responsible for assuring that each individual who prescribes or uses any form of ionizing radiation in or on humans is properly qualified through training and experience that meets all regulatory requirements. Routine clinical uses of x-rays for diagnosis are controlled by qualified dentists and are not subject to review or approval by the Radiation Safety Committee. Research or experimental applications of radiation to humans must be reviewed and approved by the Human Uses Subcommittee of the Radiation Safety Committee (RPR 40).

Radiation safety and quality assurance procedures for the diagnostic use of x-rays are prepared, implemented and supervised by the Dentists of the University Hospital's Clinic Number Seven. The **Supervising Dentist (SD)** submits a copy of all new or revised diagnostic x-ray procedures involving any aspect of radiation protection and quality assurance to the **Radiation Safety Officer (RSO)** for review and documentation. The RSO submits comments, suggestions or proposed changes to the SD for action. The RSO reports on the status and acceptability of the procedures to the Radiation Safety Committee at least annually.

Users of x-ray machines for diagnostic purposes are responsible for radiation protection of employees and patients. Quality assurance for equipment and procedures is an integral part of the responsibility for patient welfare and is, therefore, the responsibility of the dental and administrative staffs of the University Clinics.

The RSO is responsible for assuring that all equipment, facilities, procedures and practices involving ionizing radiation comply with applicable federal and state laws and regulations, and that complete and accurate records of actions pertaining to radiation protection are maintained.

REGISTRATION

The RSO shall maintain complete records of the x-ray machines possessed by the Dental Department, based on information submitted by the SD for each machine. All x-ray machines must be registered annually with the Utah Division of Radiation Control (DRC). To avoid duplication or omission of records, **registration forms are to be submitted to the DRC only by the RSO**. The Dental Department shall reimburse the Radiological Health Department for the cost of registration.

INSPECTIONS

Each x-ray machine must be inspected at regular intervals (URC, R313-16). The inspection shall include machine function, film processing, facility design including shielding, operator procedures, documentation of operator qualifications, and evaluation of patient exposures. The RSO is responsible for assuring that appropriate inspections are performed and documented for all University x-ray facilities.

The Dental Clinic #7 employs the SD who maintains the records of regulatory consequence and communicates with the RSO. Any defect or malfunction identified by operators are to be documented and made available in writing to the SD, who is responsible for assuring that corrections are made and for the necessary documentation.

QUALITY ASSURANCE PROGRAMS

The Dental Clinic shall develop and maintain a quality assurance (QA) program in accordance with guidelines published by the U.S. Food and Drug Administration (FDA), and the National Council on Radiation Protection and Measurement (NCRP).

DENTAL X-RAY PROCEDURES

All dental x-ray procedures shall be performed according to radiation protection procedures in the University of Utah *Radiation Safety Manual and Procedures* and in compliance with URC Rules in chapter R313-28.

Required X-Rays
Deliberate exposure of an individual to the useful beam for training or demonstration purposes shall not be permitted unless there is a real diagnostic need for the exposure and the exposure is prescribed by the dentist. Only those x-ray exposures sufficient to provide necessary diagnostic information for proper patient management should be taken. The policy of limiting the number of x-ray films taken is particularly important for young patients and female patients who might be pregnant. Always ask if female patients of childbearing age might be pregnant. Use a shield, or lead apron to protect the abdomen and pelvis of pregnant patients.

Modern Equipment
Only dental x-ray equipment with properly designed collimation and adequate tube shielding shall be used. The unit shall have adequate filtration, shall be properly calibrated, and perform appropriately under clinical use conditions.

Film Holding
The x-ray operator shall not hold the film in place for the patient during exposure.

Patient Position During Exposure
During each exposure, the x-ray unit operator shall stand as far away as practical from the patient (at least 6 feet) and outside the path of the useful x-ray beam or behind a suitable barrier.

Occupancy During Radiography
Only persons require for the radiographic procedure should be in the x-ray suite during exposures. All persons in the room shall be adequately protected.

Stability Of The Tube Housing
Neither the tube housing nor the collimating cone shall be hand held during exposures.

Patient Exposure
As a general principle, the exposure to the patient should be kept to the practical minimum consistent with the clinical objective.

Training
The SD shall ensure that all Dentists, Dental Hygienist, and Dental Assistants involved in care of patients being x-rayed have received appropriate radiation safety training, be familiar with these policies and with the correct clinical use of the dental x-ray units. Documentation of radiation safety training for these personnel shall be provided by the SD to the Radiological Health Department. All staff dentists must meet the training requirements stated in chapter R313-28 of the DRC Rules. Dental Hygienists and Assistants must meet the DRC training requirements.

REFERENCES

National Council on Radiation Protection and Measurements, Bethesda, MD:

Dental X-Ray Protection, NCRP Report No. 35, 1970.

Quality Assurance for Diagnostic Imaging Equipment, NCRP Report No. 99, 1988.

Radiation Protection for Medical and Allied Health Personnel, NCRP Report No. 105, 1989.

Implementation of the Principle of As Low As Reasonably Achievable (ALARA) for Medical and Dental Personnel, NCRP Report No. 107, 1990.

University of Utah, *Radiation Safety Policy Manual* and Radiation Safety Procedures and Records.

Utah Department of Environmental Quality, Division of Radiation Control, *Utah Radiation Control Rules*:

Standards for protection against radiation, R313-15.

General requirements applicable to the installation, registration, inspection and use of radiation machines, R313-16.

Use of x-rays in the healing arts, R313-28.