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PERSONNEL DOSIMETRY POLICY:

I. POLICY:

- All personnel who spend significant time in an ionizing radiation producing area such as x-ray and nuclear medicine technologists, radiologists, cardiologists, and other physicians should wear a current radiation badge monitor. All above personnel who are likely to receive a whole body equivalent dose of at least 500 mrem (5 mSv) in one year must wear a radiation badge monitor.

- The Radiation Safety Officer will be responsible for the distribution, collection, review, and filing of radiation badge records.

- Control badges must be kept away from sources of radiation, heat, and moisture.

- The radiation badge shall be worn at the collar.

- The radiation badge shall be worn outside any personnel lead apron or thyroid shield.

- The radiation badge shall not be given to anyone else to wear.

- Badge must not be brought to a second radiology site. A separate badge must be obtained and worn from each radiology worksite.

II. CARE AND HANDLING:

- When not in use, radiation badges must be stored away from heat, radiation, moisture, and chemical fumes.

- Radiation badge must be exchanged each month, or as instructed by the Radiation Safety Officer.

III. REPORTS:

- Dosimeter badges will be processed monthly by a contract service accredited by NVLAP. Reports will be posted in each area as they are received from the service. Past reports are to be stored forever.

- The reports will be reviewed promptly by the Radiation Safety Officer each month for unexpectedly high or low readings. Exposures of over 125 mrem/quarter will be investigated and documented. Verified exposures of over 5000 mrem/year will be reported to the NYS and Westchester County Departments of Health.

- Personal copies of past or present reports can be obtained from the Radiation Safety Officer.
POLICY FOR PATIENT HOLDING DURING X-RAY EXAM:

I. RESTRAINING DEVICES SHOULD BE USED:

Restraining devices must always be tried first for uncooperative patients. Examples of restraining devices are:

1. sand bags  
2. heavy lead apron  
3. tape  
4. Pediatric restrainer

II. WHEN RESTRAINING DEVICES CANNOT BE USED:

A. They may not work for these projections/situations:

1. Drunk or drugged patients  
2. Severely mentally retarded patients  
3. Senile patients  
4. Young children and babies.

B. Who should hold the patient:

The first choice would be a male family member over 18, next a female family member over 50 years old, and lastly a staff member of the clinic.

The following individuals SHALL NOT HOLD patients:

1. Anyone under 18 years of age.  
2. Occupationally exposed (eg, x-ray technologists, radiologists).

C. Protective Devices:

Any person holding a patient during an x-ray exposure must wear a full length lead apron and lead gloves of at least 0.50 mm Pb equivalent. No part of the holder's body shall be in the useful x-ray beam.

D. Log Book for Holder:

Any time a person holds a patient during an x-ray exposure, this event shall be recorded in the Patient Holding Log. This log will include the date, the number of views held, the name of the holder, and the reason for holding. The log shall be reviewed by the Radiation Safety Officer periodically to assure there are no abuses of the holding policy, and that no single individual is consistently holding.
**PATIENT HOLDING LOG:** Every holder SHALL wear a lead apron AND use leaded gloves.
Every holder SHALL wear the Instadose dosimeter on outside of lead apron. Record dose below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name of Holder</th>
<th>Holder Radiation Dose</th>
<th>Reason for Holding</th>
<th>View and Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(EXAMPLE) 2/31/2012</td>
<td>Joanna Doe</td>
<td>2 mrem</td>
<td>Uncooperative Toddler</td>
<td>CXR AP (1) CXR Lat (2)</td>
</tr>
</tbody>
</table>
POLICY REGARDING USE OF GONADAL SHIELDING:

I. GONADAL SHIELDING DEVICES SHOULD BE USED:

A. Testicular Shielding:
   - Should always be used when the testes are typically in the primary x-ray field, such as examinations of pelvis, hip, and upper femur.
   - Should always be used when the testes may be in the x-ray field or within 5 cm of the primary x-ray field. This may be the case for abdominal films, lumbar spine, lumbosacral spine, IVP, BE and GI abdominal scout films. **This will especially be the case for pediatric cases.**
   - As a basis for judgment, testicular shielding should be considered whenever the pubic symphysis will be visualized on the film.

B. Ovarian and Fetal Shielding:
   - Ovarian shielding is frequently impractical because the exact location of the ovaries is not usually known, and the use of a shield will often obscure needed structures.
   - It should be used whenever practical, such as for lower spine and femur films.
   - Lead aprons may be wrapped around the abdomen for chest CT exams to lower the anxiety of mother. **However, the lead must never be scanned in the scout nor axial images,** as this may cause the AEC to **INCREASE** the dose the fetus.

C. Use of Gonadal Shields:
   - Shields can be commercial gonadal shields, lead rubber cutouts, half aprons, or lead gloves with a lead thickness of at least 0.5 mm.
   - The gonadal shields should be carefully placed to provide protection **WITHOUT** obscuring needed information so as to prevent retakes.

II. GONADAL SHIELDS NEED NOT BE USED IN THESE CASES:

A. For Individuals Aged 50 or Over:
The reproductive potential of these individuals is quite negligible according to HHS (FDA) 80-8035.

B. For Impractical Views:
Whenever the use of gonadal shielding could compromise the clinical objectives of the examination. **This will often be the case in female exams of the pelvic and abdominal area and for all CT exams in which the shield might be in the direct beam.**
POLICY FOR SHIELDING SCOLIOSIS PATIENTS:

I.  GONADAL SHIELDS:

Gonadal shields shall be used on all male patients.

Gonadal shields should be used on female patients whenever the information needed is not obscured.

II.  BREAST SHIELDING (FEMALE):

All patients will be radiographed in P/A projection rather than A/P which will reduce the x-ray exposure to the breasts by about 95%, and breast shielding will not be needed. Lateral views, when needed, must use breast shields or collimation to prevent direct x-ray exposure to breasts.

III.  SPEED OF IMAGE RECEPTOR SYSTEM:

The fastest image receptor system speed consistent with the image quality needed shall be used to reduce radiation exposure, ie at least 400 speed.

- For Fuji CR, an S-number of 400-600 shall be the aim.
- For Samsung DR, a DI of -2 to -3 should be used.
POLICY FOR X-RAY STUDIES OF PREGNANT and POSSIBLY PREGNANT PATIENTS:

I. The Pregnancy Status of ALL Female Patients Must be Determined for Every X-Ray Exam Involving Abdomen or Pelvis:

   • Every female patient between 12 and 50 years old undergoing such an exam shall be questioned by the X-Ray technologist as to the possibility that she could be pregnant. The following question should be asked:
     - To the best of your knowledge, could you be Pregnant?

   • If the answer is NO, perform the x-ray exam.
   • If the answer is YES, do not perform the x-ray exam, but send the patient to the ordering physician for a discussion of:
     - the risks and benefits of performing the exam,
     - the risk of waiting until the end of the pregnancy to perform the x-ray,
     - possible non-ionizing imaging studies that might also provide the needed diagnostic information.

   • If the answer is NOT SURE, results from a pregnancy test should be required before administering x-rays. Send patient back to the ordering physician for discussion of how to proceed.

II. Pregnancy Testing:

Female patients from 12 to 50 years old who are undergoing an x-ray involving the abdomen or pelvis who are not sure of their pregnancy status will require the results of a pregnancy test obtained within 72 hours prior to the x-ray exam. Either a blood or urine test is acceptable.

III. X-Ray Exams NOT Involving Abdomen or Pelvis:

Perform the exam. Even if the patient is pregnant, there will be negligible increased risk to the fetus of birth defects and cancer from this exam. Abdominal shielding should be used.
POLICY FOR PREGNANT RADIATION WORKERS:

I. Fetal Exposure Limits For Declared Pregnant Radiation Workers:

New York State 10NYCRR Part 16 contains the following requirements for the dose to an embryo-fetus dose due to occupational exposure of a declared pregnant woman:

- The deep dose equivalent from occupational exposure during the entire pregnancy shall not exceed 5 mSv (500 mrems).
- Working conditions shall be adjusted to avoid a monthly deep dose equivalent rate of more than 0.5 mSv/month (50 mrems/month).

II. Work Assignment Policy for Declared Pregnant Radiation Workers:

- Formal ‘Declaration of Pregnancy” is voluntary. It must be done in writing, to the Radiation Safety Officer. The declaration is confidential, but notification of the employee supervisor is encouraged to help minimize fetal dose.
- Whenever reasonable, pregnant employees should not be assigned to those tasks that involve the highest radiation exposure, such as operating fluoroscopy units.
- Adjustment of working conditions is not required if past history does not indicate doses of more than 50 mrem/month.
- If the employee elects not to declare in writing, she will be classified, monitored, and given work assignments as a non-pregnant employee.

III. Monitoring of Radiation Exposure During Pregnancy:

- Declared pregnant radiation workers shall obtain and wear a second dosimeter badge at the abdomen level, always under any lead apron.
- The Radiation Safety Officer will review the declared pregnant radiation worker dosimeter badge information on a monthly basis and report the readings to the Radiation Safety Committee.

IV. Additional Instructions to Radiation Workers:

- All radiation workers will be instructed of the risks of prenatal radiation exposure, the recommended guidelines, and the recommendation to inform the RSO if pregnant.

V. Obligations of Radiation Workers:

- A pregnant radiation worker is encouraged to declare to the RSO immediately upon learning that she is pregnant. This declaration will be in writing, and will be kept confidential, unless approved for release by the pregnant employee.
- If she elects not to declare in writing, she will be classified, monitored, and given work assignments as a non-pregnant worker.