Imaging Procedures and Radiation Exposure

Imaging procedures are used to take pictures of the interior parts of the body to help your health care team make a diagnosis.

Common imaging procedures we perform are:

- CT (Computed Tomography) Scans
- Mammography
- MRI (Magnetic Resonance Imaging)
- Nuclear Medicine
- Ultrasounds
- X-rays

Some imaging procedures use ionizing radiation, while others do not.

This brochure will explain more about exposure to ionizing radiation from imaging tests compared to naturally occurring background radiation.

To learn more, visit www.radiologyinfo.com or call Queen's Imaging to speak to a Radiation Safety Officer at 808-691-4771.
Is the radiation used for my test dangerous?
Low level radiation exposure, like the amounts typically used for common imaging procedures, has made a significant difference in the early diagnosis and treatment of serious health problems.

Exposure to low level radiation has not been definitively shown to cause an increased risk of cancer.

What has Queen’s Imaging done recently about patient safety and radiation exposure from imaging?
We are committed to minimizing patient radiation exposure through regular equipment maintenance, and periodic review and optimization of our scanning techniques. Our team includes a Radiation Safety Officer who monitors radiation levels to ensure the lowest possible exposure.

How much radiation will be used in my X-ray or CT Scan?
The exact amount of radiation needed for an imaging test will vary depending on one’s height, weight and the shape of the body.

Patients who are overweight or heavy-set, may require the use of more radiation in order for the X-rays to penetrate the body.

The radiation doses listed below are typical amounts expected for an average sized patient.

Queen’s Imaging does its best to use the smallest amount of radiation that is needed to produce high quality images.

<table>
<thead>
<tr>
<th>TESTS:†</th>
<th>Radiation Exposure (Typical Effective Dose)</th>
<th>Comparable Amount of Natural Occurring Background Radiation</th>
<th>Number of Flights from NY to Seattle with Comparable Radiation Exposure</th>
<th>Percent of Annual Occupational Dose Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT Scan of the Abdomen and Pelvis</td>
<td>10 mSv</td>
<td>3.3 years</td>
<td>360</td>
<td>20%</td>
</tr>
<tr>
<td>CT Scan of the Head</td>
<td>2 mSv</td>
<td>240 days</td>
<td>72</td>
<td>4%</td>
</tr>
<tr>
<td>Chest X-Ray</td>
<td>0.1 mSv</td>
<td>12 days</td>
<td>3.6</td>
<td>0.2%</td>
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<tr>
<td>Mammography</td>
<td>0.4 mSv</td>
<td>7 weeks</td>
<td>14.4</td>
<td>0.8%</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>No Radiation</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MRI</td>
<td>No Radiation</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

† Adapted from http://www.radiologyinfo.org and Dauer Lt, AJR 2011; 196:756-761.
* Annual occupational dose limit for a radiation worker is 50 mSv/Year - U.S. Nuclear Regulatory Commission.