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FROM: F.X. Massé, CHP, DABMP
SUBJECT: Typical Exposures
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Following are typical effective whole body radiation doses from common medical imaging procedures, including their related increase in lifetime cancer risk (BEIR VII) and the period of Natural Background radiation that delivers the equivalent radiation dose.

Exposure	Dose		Increase in Cancer Risk ¹	Natural Background Radiation Equivalence
	mSv	mrem		
One Year Natural Background Radiation	3	300	0.03 %	1 year
<u>Radiology²</u>				
4-View Mammography	0.4	40	0.004 %	1 month
Head CT	2	200	0.02 %	8 months
Chest CT	7	700	0.07 %	2.3 years
Abdomen CT	10	1000	0.1 %	3.3 years
Chest or Skull X-ray	0.1	10	0.001 %	12 days
KUB Exam	0.7	70	0.007 %	2 months
Upper GI with Fluoro	5	500	0.05 %	1.7 years
Dental Panoramic	0.01	1	0.0001 %	1 day
DEXA Hip	0.0001	0.01	0.000001 %	18 min
<u>Nuclear Medicine³</u>				
^{99m} Tc Tetrofosmin (Myoview) Cardiac Stress 33 mCi	9	900	0.09 %	3 years
^{99m} Tc Sestamibi (Cardiolite) Cardiac Stress 33 mCi	10	1000	0.1 %	3.3 years
²⁰¹ Tl Thallous Chloride Cardiac Stress 2 mCi	11.8	1180	0.118 %	3.9 years
⁶⁷ Ga Gallium Citrate tumor scan 5 mCi	18.5	1850	0.185 %	6.2 years
¹¹¹ In Indium WBC scan 0.5 mCi	6.7	670	0.067 %	2.2 years
¹²³ I NaI Thyroid Uptake (35%) 0.4 mCi	3.3	330	0.033 %	1.1 years
^{99m} Tc MDP Bone Scan 20 mCi	4.2	420	0.042%	1.3 years
^{99m} Tc Hepatolite Liver Scan 5 mCi	3.2	320	0.032%	1 year
^{99m} Tc HMPAO cerebral scan 20 mCi	6.9	690	0.069 %	2.3 years
¹⁸ F FDG PET Scan 10 mCi	7	700	0.007 %	2.3 years
¹³³ Xe Pulmonary Ventilation Scan 30 mCi	0.81	81	0.0081%	3 months
^{99m} Tc MAA Lung Scan 4 mCi	1.6	160	0.016%	6 months
Typical Radiologic or Nuclear Medicine Technologist Annual Dose	1	100	0.01 %	4 months
Airport Whole Body Scanner	0.0002	0.02	0.00002%	35 minutes
Cross Country Roundtrip Flight (NY to Seattle)	0.056	5.6	0.00056%	1 week
Normal Lifetime Natural Background Radiation	240	24000	2.4 %	80 years

¹Increase in cancer risk represents the BEIR VII theoretical risk to be added to the current average lifetime cancer risk of 42%. Therefore, a 1% increase implies a change in lifetime cancer risk from 42% to 43%. In a December, 2011, statement, AAPM states that "Risks of medical imaging at patient doses below 50 mSv for single procedures or 100 mSv for multiple procedures over short time periods are too low to be detected and may be negligible.

²NCRP Report #160, 2009. Ionizing radiation exposure of the population of the United States.

³RADAR (RADiation Dose Assessment Resource) website, accessed Nov 2011.

<http://www.doseinfo-radar.com>