

**Table 3. Comparison of Detriment of Nuclear Medicine Procedures with other Activities
Based on ICRP 60 Meth. For Adult**

Procedure	Activity (mCi)	Effective Dose {*A} (mrem)	Critical Organ {*B}	Critical Organ Dose {*B} (mrad)	Ovaries Dose {*B} (mrad)	Testes Dose {*B} (mrad)	% Annual US Avg Nat Bkgd	No. cigs smoked	No. miles driven
F-18 FDG tumor localization	20	1785	{*D} bladder wall	14,060	1,260	965	-	1305	1645
Ga-67 Citrate abscess scan/infection	8	2960	bone surface	19,240	2,340	1,540	-	2165	2725
I-123 Iodide thyroid scan	0.2	150	thyroid	2,520	10	5	45	110	140
I-125 sodium iothalamate glofil {*C}	0.03	0.14	kidneys	3.3	1.0	4.2	5	5	5
I-131 Iodide thyroid or TB scan	3	2045	thyroid	3,774,000	535	315	-	1495	1885
I-131 MIBG tumor localization	0.5	280	liver	1,445	140	110	80	205	260
In-111 DTPA CSF leak/cisternogram	1.5	200	{*D} bladder wall	2,390	140	110	60	150	185
In-111 OctreoScan neuro endo.tumor	6	1810		ND	ND	ND	-	1325	1670
In-111 Prostascint prost. Cancer {*F}	5	5000	liver	18,500	n/a	5,600	1390	3650	4600
In-111 WBC infection localization	0.5	760	spleen	10,915	245	60	-	555	700
Tc-99m Choletec hepatobiliary {*D}	6	555	gallbladder	2,445	425	380	-	410	515
Tc-99m DMSA renal scan	6	205	kidneys	4,220	80	40	60	150	190
Tc-99m DTPA renal scan	20	525	bladder wall	5,700	410	285	-	385	485
Tc-99m ECD-neurolyte brain scan {*B}	30	1225	bladder wall	8,105	870	390	-	895	1130
Tc-99m HMPAO brain scan	30	1210	gallbladder	5,665	780	260	-	885	1115
Tc-99m Lung ventilation DTPA aerosol	20	430	bladder wall	3,700	335	195	-	315	400
Tc-99m MAA lung perfusion	5	225	lungs	1,240	35	25	65	165	210
Tc-99m MAG3 renal scan	10	370	bladder wall	5,180	250	175	-	275	345
Tc-99m MDP bone scan	25	440	bladder	5,460	310	205	-	325	405
Tc-99m Pertechnetate Meckel's scan	15	635	ULI	1,555	480	180	-	465	585
Tc-99m Pertechnetate thyroid scan	5	215	ULI	520	160	60	60	160	200
Tc-99m PYP myo. infarct. scan	25	460	{*D} bone surf.	3,515	355	2,405	-	340	425
Tc-99m RBC GI Bleed & MUGA	25	570	spleen	1,025	430	310	-	420	525
Tc-99m Sestamibi myo. perfusion	30	1190	ULI	5,550	1,555	390	-	870	1095
Tc-99m Sestamibi parathyroid	20	795	ULI	3,700	1,040	260	-	585	735
Tc-99m Sulfur colloid bone marrow	15	450	liver	4,775	90	15	-	330	415
Tc-99m Sulfur colloid gastric empty	1	100	ULI	445	90	5	30	75	95
Tc-99m Sulfur colloid liver scan	6	180	liver	1,910	40	5	50	135	170
Tc-99m Sulfur colloid lymphoscint {*E}	2	40	lymph nodes	6,660	ND	ND	15	30	40
Tl-201 Chloride myocardial perfusion	3.5	3550	testes	10,360	1,235	10,360	-	2595	3270
Xe-133 Inhalation brain scan	60	70	lungs	185	25	25	20	55	65
Xe-133 Inhalation lung scan	20	25	lungs	65	10	10	10	20	25

*A - Comparative Analysis of Dosimetry Parameters for Nuclear Medicine (Effective Dose-ICRP 60) - Toohey & Stabin

*B - Radiation Dose Estimates to Adults and Children from Various Radiopharmaceuticals. April 30, 1996 RIDIC Oak Ridge Inst. For Science & Education

*C - Gofill-125 Iso-Tex Diagnostics Package Insert - A Schema for Absorbed Dose Calculation for Biologically Distributed Radionuclides. Sup. No. 1, MIRD Pamphlet No. 1, J. Nuc Med., p 7, 1968.

*D - Radiation Dose Estimates for Radiopharmaceuticals. M. Stabin, J. Stubbs, and R. Toohey April 30, 1996. RIDIC Oak Ridge Inst. For Science and Education.

*E - Radiopharmaceuticals for Lymphoscintigraphy: Including Dosimetry and Radiation Considerations. - D. Eshima, T. Tauconnier, L. Eshima, J. Thornback. Seminars in Nuc. Med., Vol. XXX, No.1 Jan. 20

*F - ProstaScint Product Information. Cytogen Corporation. Data Supplied by Oak Ridge Associated Universities. Radiopharmaceutical Internal Dose Information, 1984.

ND - Not Determined

Table 4. Comparison of Detriment of Nuclear Medicine Procedures with other Activities Based on ICRP 60 Meth. For Child (15 Yr - 55.2 kg)

Procedure	Activity (mCi)	Effective Dose [*A] (mrem)	Critical Organ [*B]	Critical Organ Dose [*B] (mrad)	Ovaries Dose [*B] (mrad)	Testes Dose [*B] (mrad)	% Annual US Avg Nat Bkgd	No. cigs smoked	No. miles driven
F-18 FDG tumor localization [*D]		0	bladder	0	0	0	0	0	0
Ga-67 Citrate abscess scan	4.6	2115	bone surf.	14,300	1,685	1,090	-	1545	1950
I-123 Iodide thyroid scan	0.2	235	thyroid	4,070	15	10	70	175	220
I-125 sodium iothalamate glofil [*C]	0.02	0.01	kidneys	5	5	5	5	5	5
I-131 Iodide thyroid or TB scan	1.6	179970	thyroid	3,374,400	360	215	-	131380	165575
I-131 MIBG tumor localization	0.2	525	liver	740	70	60	-	385	485
In-111 DTPA [*D]	0.9	105	bladder	1,035	75	60	30	80	100
In-111 WBC infection localization	0.46	890	spleen	13,960	275	75	-	650	820
Tc-99m DMSA renal scan	4.6	195	kidneys	3,915	80	45	55	145	180
Tc-99m DTPA renal scan	9.2	305	blad. wall	3,305	235	180	85	225	285
Tc-99m ECD-neurolite brain scan	18.4	785	blad. wall	6,335	675	330	-	575	725
Tc-99m HMPAO brain scan	18.4	940	gallbladder	3,950	610	205	-	690	865
Tc-99m Lung ventilation	4.6	135	bladder wall	1,090	100	65	40	100	125
Tc-99m MAA lung perfusion	4.6	290	lung	1,670	40	25	85	215	270
Tc-99m MAG3 renal scan	4.5	210	bladder wall	2,835	145	110	60	155	195
Tc-99m MDP bone scan	18.4	405	bladder	5,175	290	205	-	300	375
Tc-99m Pertechnetate Meckel's scan	9.2	535	ULI	1,230	375	150	-	395	495
Tc-99m Pertechnetate thyroid scan	4.6	270	ULI	615	190	75	75	200	250
Tc-99m RBC GI Bleed & MUGA	18.4	545	spleen	1,840	410	280	-	400	505
Tc-99m Sestamibi myo. perfusion	23	1440	ULI	5,450	1,535	395	-	1055	1325
Tc-99m Sestamibi parathyroid	23	1440	ULI	5,450	1,535	395	-	1055	1325
Tc-99m Sulfur colloid gastric empty	1	120	ULI	555	115	10	35	90	115
Tc-99m Sulfur colloid liver scan	4.6	180	liver	1,875	40	10	50	135	170
Tl-201 Chloride myocardial perfusion	3.7	3615	testes	26,015	1,645	26,015	-	2640	3330
Xe-133 Inhalation brain scan	27.6	30	lung	125	15	15	10	25	30
Xe-133 Inhalation lung scan	27.6	30	lung	125	15	15	10	25	30

*A - Comparative Analysis of Dosimetry Parameters for Nuclear Medicine (Effective Dose-ICRP 60) - Toohey & Stabin

*B - Radiation Dose Estimates to Adults and Children from Various Radiopharmaceuticals. April 30, 1996 RIDIC Oak Ridge Inst. For Science & Education

*C - Gofil-125 Iso-Tex Diagnostics Package Insert - A Schema for Absorbed Dose Calculation for Biologically Distributed Radionuclides.

Supplement No. 1, MIRP Pamphlet No. 1, J. Nuc Med., p 7, 1968.

*D - Annals of the ICRP Publication 53. Radiation Dose to Patients from Radiopharmaceuticals 1993.

Table 5. Comparison of Detriment of Nuclear Medicine Procedures with other Activities Based on ICRP 60 Meth. For Child (10 Yr - 32.0 kg)

Procedure	Activity (mCi)	Effective Dose {*A} (mrem)	Critical Organ {*B}	Critical Organ Dose {*B} (mrad)	Ovaries Dose {*B} (mrad)	Testes Dose {*B} (mrad)	% Annual US Avg Nat Bkgd	No. cigs smoked	No. miles driven
F-18 FDG tumor localization {*D}		0	bladder	0	0	0	0	0	0
Ga-67 Citrate abscess scan	3.2	2335	bone surf.	16,580	1,780	1,185	-	1705	2150
I-123 Iodide thyroid scan	0.2	355	thyroid	6,220	15	10	100	260	330
I-125 sodium iothalamate glofil {*C}	0.02	0.01	kidneys	5	5	3	5	5	5
I-131 Iodide thyroid or TB scan	1.2	209125	thyroid	3,907,200	375	225	-	152665	192395
I-131 MIBG tumor localization	0.32	475	liver	1,895	170	135	-	350	440
In-111 DTPA {*D}	0.6	100	bladder	980	75	70	30	75	95
In-111 WBC infection localization	0.32	920	spleen	14,210	275	80	-	675	850
Tc-99m DMSA renal scan	3.2	180	kidneys	3,675	80	40	50	135	170
Tc-99m DTPA renal scan	6.3	170	bladder wall	1,355	145	115	50	125	160
Tc-99m ECD-neurolite brain scan	12.6	550	bladder wall	2,565	515	220	-	405	510
Tc-99m HMPAO brain scan	12.6	890	gallbladder	3,450	560	180	-	650	820
Tc-99m Lung ventilation	3.2	105	bladder wall	585	80	50	30	80	100
Tc-99m MAA lung perfusion	3.2	290	lung	1,660	45	30	85	215	270
Tc-99m MAG3 renal scan	3	100	bladder wall	1,225	65	60	30	75	95
Tc-99m MDP bone scan	12.6	425	bladder	5,595	280	220	-	315	395
Tc-99m Pertechnetate Meckel's scan	6.3	525	ULI	1,400	330	130	-	385	485
Tc-99m Pertechnetate thyroid scan	3.2	270	ULI	715	170	65	75	200	250
Tc-99m RBC GI Bleed & MUGA	12.6	555	spleen	1,820	405	300	-	410	515
Tc-99m Sestamibi myo. perfusion	15.8	1545	ULI	5,850	1,520	445	-	1130	1425
Tc-99m Sestamibi parathyroid	15.8	1545	ULI	5,850	1,520	445	-	1130	1425
Tc-99m Sulfur colloid gastric empty	0.6	110	ULI	535	100	10	35	85	105
Tc-99m Sulfur colloid liver scan	3.2	190	liver	1,895	50	10	55	140	175
Tl-201 Chloride myocardial perfusion	2.5	9345	testes	138,750	1,760	138,750	-	6825	8600
Xe-133 Inhalation brain scan	18.9	30	lung	130	15	15	10	25	30
Xe-133 Inhalation lung scan	18.9	30	lung	130	15	15	10	25	30

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Table 6. Comparison of Detriment of Nuclear Medicine Procedures with other Activities Based on ICRP 60 Meth. For Child (5 Yr - 18.2 kg)

Procedure	Activity (mCi)	Effective Dose {*A} (mrem)	Critical Organ {*B}	Critical Organ Dose {*B} (mrad)	Ovaries Dose {*B} (mrad)	Testes Dose {*B} (mrad)	% Annual US Avg Nat Bkgd	No. cigs smoked	No. miles driven
F-18 FDG tumor localization {*D}		0	bladder	0	0	0	0	0	0
Ga-67 Citrate abscess scan	2.2	2475	bone surf.	18,725	1,795	1,305	-	1810	2280
I-123 Iodide thyroid scan	0.1	380	thyroid	6,660	15	10	-	280	350
I-125 sodium iothalamate glofil {*C}	0.02	0.01	kidneys	5	5	10	5	5	5
I-131 Iodide thyroid or TB scan	0.98	387985	thyroid	7,252,000	475	300	-	283230	356950
I-131 MIBG tumor localization	0.22	210	liver	1,955	180	150	60	155	195
In-111 DTPA {*D}	0.49	125	bladder	1,180	90	85	35	95	115
In-111 WBC infection localization	0.22	970	spleen	15,470	265	85	-	710	895
Tc-99m DMSA renal scan	2.2	180	kidneys	3,665	85	45	50	135	170
Tc-99m DTPA renal scan	4.3	175	bladder wall	1,370	145	125	50	130	165
Tc-99m ECD-neurolite brain scan	8.6	580	bladder wall	2,645	510	240	-	425	535
Tc-99m HMPAO brain scan	8.6	1015	gallbladder	4,140	575	205	-	745	935
Tc-99m Lung ventilation	2.2	110	bladder wall	635	85	60	35	85	105
Tc-99m MAA lung perfusion	2.2	300	lung	1,710	50	35	85	220	280
Tc-99m MAG3 renal scan	2.45	115	bladder wall	1,545	80	75	35	85	110
Tc-99m MDP bone scan	8.6	455	bladder	6,685	285	235	-	335	420
Tc-99m Pertechnetate Meckel's scan	4.3	560	thyroid	1,910	335	140	-	410	520
Tc-99m Pertechnetate thyroid scan	2.2	285	thyroid	980	175	75	80	210	265
Tc-99m RBC GI Bleed & MUGA	8.6	555	spleen	1,850	415	320	-	410	515
Tc-99m Sestamibi myo. perfusion	10.8	1675	ULI	6,395	1,520	480	-	1225	1545
Tc-99m Sestamibi parathyroid	10.8	1675	ULI	6,395	1,520	480	-	1225	1545
Tc-99m Sulfur colloid gastric empty	0.5	150	ULI	685	115	15	45	110	140
Tc-99m Sulfur colloid liver scan	2.2	190	liver	1,875	60	15	55	140	175
Tl-201 Chloride myocardial perfusion	1.7	8430	testes	113,220	1,825	113,220	-	6155	7760
Xe-133 Inhalation brain scan	12.9	35	lung	135	20	20	10	30	35
Xe-133 Inhalation lung scan	12.9	35	lung	135	20	20	10	30	35

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Table 7. Comparison of Detriment of Nuclear Medicine Procedures with other Activities Based on ICRP 60 Meth. For Infant (1 Yr - 9.8 kg)

Procedure	Activity (mCi)	Effective Dose {*A} (mrem)	Critical Organ {*B}	Critical Organ Dose {*B} (mrad)	Ovaries Dose {*B} (mrad)	Testes Dose {*B} (mrad)	% Annual US Avg Nat Bkgd	No. cigs smoked	No. miles driven
F-18 FDG tumor localization {*D}		0	bladder	0	0	0	0	0	0
Ga-67 Citrate abscess scan	1.45	2615	bone surf.	28,435	1,990	1,560	-	1910	2410
I-123 Iodide thyroid scan	0.1	710	thyroid	12,580	20	10	-	520	655
I-125 sodium iothalamate glofil {*C}	0.02	0.01	kidneys	5	5	5	5	5	5
I-131 Iodide thyroid or TB scan	0.4	304880	thyroid	5,772,000	360	225	-	222565	280490
I-131 MIBG tumor localization	0.15	110	liver	2,500	230	185	35	85	105
In-111 DTPA {*D}	0.2	90	bladder	890	65	70	25	70	85
In-111 WBC infection localization	0.15	1205	spleen	17,760	275	100	-	880	1110
Tc-99m DMSA renal scan	1.45	200	kidneys	4,185	100	50	60	150	185
Tc-99m DTPA renal scan	2.9	150	bladder wall	850	130	110	45	110	140
Tc-99m ECD-neurolite brain scan	5.8	560	gallbladder	4,940	410	215	-	410	520
Tc-99m HMPAO brain scan	5.8	1170	gallbladder	9,445	520	215	-	855	1080
Tc-99m Lung ventilation	1.45	120	bladder wall	755	90	65	35	90	115
Tc-99m MAA lung perfusion	1.45	370	lung	2,150	60	40	-	275	345
Tc-99m MAG3 renal scan	1	45	bladder wall	555	30	30	15	35	45
Tc-99m MDP bone scan	5.8	565	bladder	10,520	325	280	-	415	520
Tc-99m Pertechetate Meckel's scan	2.9	665	thyroid	2,470	365	155	-	490	615
Tc-99m Pertechetate thyroid scan	1.45	335	thyroid	1,235	185	80	95	245	310
Tc-99m RBC GI Bleed & MUGA	5.8	675	spleen	0	495	390	-	495	625
Tc-99m Sestamibi myo. perfusion	7.25	1755	ULI	4,295	1,235	485	-	1285	1615
Tc-99m Sestamibi parathyroid	7.25	1735	ULI	4,295	1,235	485	-	1270	1600
Tc-99m Sulfur colloid gastric empty	0.2	90	LLI	475	55	10	25	70	85
Tc-99m Sulfur colloid liver scan	1.45	230	liver	2,200	70	20	65	170	215
Tl-201 Chloride myocardial perfusion	1.2	9240	testes	106,560	2,355	106,560	-	6750	8505
Xe-133 Inhalation brain scan	8.7	45	lung	185	25	25	15	35	45
Xe-133 Inhalation lung scan	8.7	45	lung	185	25	25	15	35	45

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