
Supplemental Table 1.**Dual-Tracer PET/CT and Contrast CT Protocols**

Scan protocol	Details
A Dual tracer PET/CT (Typical)	Two emission scan and two non-contrast limited whole body CT scan
B Dual tracer PET/CT + initial Acetate scan with a standard unenhanced Abdomen CT	Two emission scan, two non-contrast limited whole body CT scan and one unenhanced Abdomen CT scan
C Dual tracer PET/CT + initial Acetate scan with a standard unenhanced Abdomen CT + three phase contrast enhanced Abdomen CT	Two emission scan, two non-contrast limited whole body CT scan, one unenhanced Abdomen CT scan and a three-phase contrast enhanced Abdomen CT scan

Supplemental Table 2.**Characteristics of the whole cohort**

Variables	Total (n=14)
Age (Years) (Range)	60.0±19.48 (52-86)
Male gender (%)	85.7%
Body weight (Kg) (Range)	67.57±27.90 (51-98)
Height (cm) (Range)	165.57±12.6 (156-177)
BMI (Range)	24.58±8.98 (17.56-36.0)
Administered doses (MBq)	-
18F-FDG	328.77±89.78 (255.3-395.9)
11C-Acetate	481.79±136.36 (314.5-629)

Data are given as mean± standard deviation

Supplemental Table 3.

Organ Equivalent Dose and Effective Dose from 18F-FDG to Adult Male and Female Patients

Organ	Absorbed dose per unit activity administered (mSv/MBq)			Absorbed dose (mSv)		
	ICRP 106*	OLINDA/EXM†		ICRP 106*	OLINDA/EXM†	
	Adult (n=14)	Male (n=12)	Female (n=2)	Adult (n=14)	Male (n=12)	Female (n=2)
Adrenals	1.20E-02	1.28E-02	1.52E-02	3.95±1.08	4.32±1.06	4.20±0.88
Brain	3.80E-02	3.83E-02	4.15E-02	12.49±3.41	12.83±3.14	11.58±2.42
Breasts	8.80E-03	8.61E-03	1.07E-02	2.89±0.79	3.04±0.74	3.03±0.63
Gallbladder						
Wall	1.30E-02	8.36E-03	9.89E-03	4.27±1.17	2.70±0.66	2.76±0.58
LLI Wall	1.40E-02	1.39E-02	1.73E-02	4.60±1.26	4.73±1.16	4.69±0.98
Small Intestine	1.20E-02	1.23E-02	1.38E-02	3.95±1.08	4.05±0.99	3.86±0.81
Stomach Wall	1.10E-02	8.78E-03	1.08E-02	3.62±0.99	3.04±0.74	3.03±0.63
ULI Wall	1.20E-02	1.18E-02	1.47E-02	3.95±1.08	4.05±0.99	4.13±0.86
Heart Wall	6.70E-02	4.28E-02	5.51E-02	22.03±6.02	14.52±3.55	15.16±3.17
Kidneys	1.70E-02	1.05E-02	1.34E-02	5.59±1.53	3.71±0.91	3.58±0.75
Liver	2.10E-02	2.22E-02	2.85E-02	6.90±1.89	7.43±1.82	7.99±1.67
Lungs	2.00E-02	1.78E-02	2.32E-02	6.58±1.80	6.08±1.49	6.34±1.32
Muscle	1.00E-02	1.01E-02	1.23E-02	3.29±0.90	3.38±0.83	3.31±0.69
Ovaries	1.40E-02	-	1.86E-02	4.60±1.26	-	5.24±1.09
Pancreas	1.30E-02	1.11E-02	1.40E-02	4.27±1.17	3.71±0.91	3.86±0.81
Red Marrow	1.10E-02	1.02E-02	1.22E-02	3.62±0.99	3.38±0.83	3.31±0.69
Osteogenic						
Cells	-	1.58E-02	1.95E-02	-	5.40±1.32	5.24±1.09
Skin	7.80E-03	7.67E-03	9.31E-03	2.56±0.70	2.70±0.66	2.48±0.52
Spleen	1.10E-02	1.12E-02	1.39E-02	3.62±0.99	3.71±0.91	3.86±0.81
Testes	1.10E-02	1.14E-02	-	3.62±0.99	3.71±0.91	-
Thymus	1.20E-02	1.09E-02	1.42E-02	3.95±1.08	3.71±0.91	3.86±0.81
Thyroid	1.00E-02	1.01E-02	1.08E-02	3.29±0.90	3.38±0.83	3.03±0.63
Urinary						
Bladder Wall	1.30E-01	1.32E-01	1.80E-01	42.74±11.67	44.57±10.91	49.62±10.36
Uterus	1.80E-02	-	2.19E-02	5.92±1.62	-	6.06±1.27
Effective dose ‡	1.90E-02	1.83E-02	2.40E-02	6.25±1.71	6.08±1.49†	6.62±1.38†

*International Committee of Radiological Protection, Publication 106; † Patient specific average organ equivalent dose and effective dose by OLINDA/EXM; ‡Effective dose estimated by tissue weighting factors from ICRP publication 103.

Supplemental Table 4.

Organ Equivalent Dose and Effective Dose from ¹¹C-Acetate to Adult Male and Female Patients

Organ	Absorbed dose per unit activity administered (mSv/MBq)			Absorbed dose (mSv)		
	ICRP 106*	OLINDA\EXM†		ICRP 106*	OLINDA\EXM†	
	Adult (n=14)	Male (n=12)	Female (n=2)	Adult (n=14)	Female	
					Male (n=12)	(n=2)
Adrenals	3.40E-03	3.93E-03	4.36E-03	1.64±0.46	1.90±0.58	2.05±0.14
Brain	9.80E-04	9.08E-04	1.07E-03	0.47±0.13	0.44±0.13	0.50±0.03
Breasts	1.20E-03	1.38E-03	1.61E-03	0.58±0.16	0.67±0.20	0.76±0.05
Gallbladder Wall	3.40E-03	1.58E-03	2.37E-03	1.64±0.46	0.77±0.23	1.11±0.07
LLI Wall	1.30E-03	1.31E-03	1.53E-03	0.63±0.18	0.63±0.19	0.72±0.05
Small Intestine	1.70E-03	1.81E-03	1.99E-03	0.82±0.23	0.88±0.27	0.93±0.06
Stomach Wall	2.00E-03	1.47E-03	1.88E-03	0.96±0.27	0.71±0.22	0.89±0.06
ULI Wall	1.80E-03	1.93E-03	2.23E-03	0.87±0.24	0.93±0.28	1.05±0.07
Heart Wall	1.30E-02	1.30E-02	1.78E-02	6.26±1.76	6.28±1.90	8.37±0.56
Kidneys	5.20E-02	5.71E-02	6.18E-02	25.05±7.04	27.64±8.37	29.02±1.94
Liver	1.30E-02	1.63E-02	1.91E-02	6.26±1.76	7.91±2.39	8.96±0.60
Lungs	2.40E-03	1.80E-03	2.30E-03	1.16±0.32	0.87±0.26	1.08±0.07
Muscle	1.30E-03	1.44E-03	1.66E-03	0.63±0.18	0.70±0.21	0.78±0.05
Ovaries	1.40E-03	0.00E+00	1.75E-03	0.67±0.19	0.00±0.00	0.82±0.05
Pancreas	1.20E-02	9.21E-03	1.13E-02	5.78±1.62	4.45±1.35	5.30±0.35
Red Marrow	1.80E-03	1.64E-03	1.72E-03	0.87±0.24	0.79±0.24	0.81±0.05
Osteogenic Cells	-	2.03E-03	2.29E-03	-	0.980.30	1.08±0.07
Skin	1.00E-03	1.06E-03	1.21E-03	0.48±0.14	0.51±0.16	0.57±0.04
Spleen	2.90E-03	3.04E-03	3.29E-03	1.40±0.39	1.47±0.45	1.54±0.10
Testes	1.00E-03	1.06E-03	0.00E+00	0.48±0.14	0.51±0.15	0.00±0.00
Thymus	1.50E-03	1.87E-03	2.27E-03	0.72±0.20	0.90±0.27	1.06±0.07
Thyroid	1.20E-03	1.13E-03	1.23E-03	0.58±0.16	0.55±0.17	0.58±0.04
Urinary Bladder						
Wall	1.20E-03	1.21E-03	1.24E-03	0.58±0.16	0.58±0.18	0.58±0.04
Uterus	1.40E-03	0.00E+00	1.62E-03	0.67±0.19	0.00±0.00	0.76±0.05
Effective dose‡	3.50E-03	3.22E-03	3.81E-03	1.69±0.47	1.56±0.47	1.79±0.12

*International Committee of Radiological Protection, Publication 106; † Patient specific average organ equivalent dose and effective dose by OLINDA\EXM; ‡Effective dose estimated by tissue weighting factors from ICRP publication 103.

Supplemental Table 5.

Organ Equivalent Dose and Effective Dose from Dual tracer PET/CT with a non-contrast Abdomen CT to Adult Male and Female Patients

Organ	Dose from 18F-FDG and 11C-		Dose from CT [†]		Total dose	
	ACT [*]					
	Male (n=12)	Female (n=2)	Male (n=12)	Female (n=2)	Male (n=12)	Female (n=2)
Adrenals	6.22±1.29	6.25±0.74	31.49±12.01	23.16±2.47	37.71±13.01	29.40±1.73
Brain	13.27±3.17	12.08±2.38	2.09±1.26	1.52±0.35	15.36±4.11	13.60±2.74
Breasts	3.71±0.80	3.79±0.58	19.83±11.59	13.24±5.63	23.54±12.24	17.03±6.21
Gallbladder Wall	3.47±0.74	3.87±0.50	24.71±7.14	19.32±0.41	28.18±7.52	23.18±0.09
Colon	10.35±2.28	10.58±1.72	28.86±8.71	26.43±1.71	39.21±10.09	37.01±3.44
Small Intestine	4.93±1.07	4.79±0.74	25.51±8.44	25.21±3.01	30.43±8.99	30.00±3.76
Stomach Wall	3.75±0.81	3.92±0.57	28.58±8.31	22.90±0.40	32.33±8.79	26.82±0.97
Heart Wall	20.80±4.31	23.53±2.61	22.81±9.64	16.29±.85	43.61±12.93	39.82±7.46
Kidneys	31.36±8.57	32.60±1.19	36.41±9.74	27.60±0.27	67.77±13.64	60.20±0.92
Liver	15.34±3.24	16.96±1.07	36.56±9.82	28.88±0.06	51.90±11.41	45.84±1.13
Lungs	6.95±1.55	7.42±1.25	24.58±10.73	17.60±4.04	31.53±11.94	25.02±5.30
Muscle	4.07±0.89	4.09±0.64	20.62±7.86	16.58±3.93	24.69±8.54	20.67±4.57
Ovaries/Testes[§]	4.23±0.95	6.06±1.04	30.63±12.26	19.37±6.62	34.85±13.02	25.43±7.66
Pancreas	8.17±1.75	9.16±0.45	29.01±8.08	23.49±0.68	37.18±8.49	32.65±1.13
Red Marrow	4.17±0.90	4.11±0.64	15.31±5.69	12.36±2.56	19.48±6.36	16.47±3.20
Osteogenic Cells	6.38±1.40	6.32±1.02	19.04±7.26	15.61±3.32	25.42±8.34	21.92±4.34
Skin	3.22±0.70	3.05±0.48	15.71±7.28	12.08±3.01	18.92±7.81	15.12±3.49
Spleen	5.19±1.08	5.40±0.70	38.33±11.09	30.28±0.17	43.51±11.86	35.68±0.87
Thymus	4.62±0.99	4.92±0.73	24.92±9.82	17.27±5.97	29.53±10.46	22.19±6.70
Thyroid	3.92±0.87	3.61±0.59	38.84±28.23	23.75±4.24	42.77±28.77	27.36±4.84
Urinary Bladder Wall	45.15±10.94	50.20±10.32	18.36±6.05	20.78±7.51	63.51±15.49	70.98±17.83
Uterus	-	6.83±1.22	-	19.53±1.70	-	26.36±2.91
Effective dose[‡]	7.64±1.64	8.41±1.26	24.73±8.54	18.68±3.35	32.37±9.73	27.08±4.61

*Patient specific average dose calculated by OLINDA; †Two whole body CT with a non-contrast abdomen CT dose calculated by VirtualDose; ‡ Effective dose estimated by ICRP publication 103; § Ovaries for female patients/Testes for male patients.

Supplemental Table 6.

Organ Equivalent Dose and Effective Dose from Dual tracer PET/CT with a non-contrast Abdomen CT and a Triple-phase contrast CT to Adult Male Patients

Organ	Dose from 18F-FDG and 11C-		Total dose Male (n=4)
	ACT* Male (n=4)	Dose from CT† Male (n=4)	
Adrenals	5.90±1.80	64.77±27.88	70.67±29.60
Brain	12.55±3.77	3.68±0.91	16.22±4.68
Breasts	3.51±1.03	34.00±15.97	37.51±16.97
Gallbladder Wall	3.28±0.97	56.12±17.18	59.40±18.07
Colon	9.80±2.86	68.57±24.64	78.37±27.38
Small Intestine	4.67±1.36	57.74±21.98	62.40±23.25
Stomach Wall	3.55±1.04	65.03±21.02	68.58±22.01
Heart Wall	19.73±6.00	40.69±13.97	60.42±19.01
Kidneys	29.94±15.25	87.76±28.84	117.70±37.57
Liver	14.58±5.23	87.53±28.17	102.11±31.84
Lungs	6.58±1.92	44.10±14.82	50.68±16.68
Muscle	3.86±1.13	40.09±14.63	43.94±15.70
Testes	4.00±1.17	53.65±25.42	57.65±26.51
Pancreas	7.77±2.86	71.95±21.24	79.72±22.88
Red Marrow	3.95±1.16	29.39±10.08	33.34±11.14
Osteogenic Cells	6.05±1.77	36.38±12.56	42.42±14.23
Skin	3.04±0.89	29.76±10.72	32.80±11.57
Spleen	4.92±1.48	91.01±32.10	95.93±33.48
Thymus	4.37±1.28	43.94±11.86	48.31±12.79
Thyroid	3.72±1.09	63.47±12.88	67.19±13.96
Urinary Bladder Wall	42.68±12.95	34.34±14.84	77.02±27.63
Effective dose ‡	7.24±2.12	49.90±15.97	57.13±17.88

*Patient specific average dose calculated by OLINDA; †Two whole body CT with a non-contrast abdomen CT and a triple-phase contrast CT dose calculated by VirtualDose; ‡ Effective dose estimated by ICRP publication 103.