

**Supplementary Table 1** ERRs per 100 mGy for cancer incidence by cumulative organ doses by sex, job title, and alternative lag years among South Korean diagnostic medical radiation workers, 1996–2017

Cancer sites (ICD-10 code)	Sex		Job titles		Lag (10-year for solid, 5-year for non-solid cancer)
	Male	Female	Physician	Non-physician	
All cancers combined (C00-C96)					
Cases	2,093	1,299	1,688	1,704	3,392
*ERR (95% CI)	0.10 (-0.26, 0.46)	3.94 (2.26, 5.62)	0.38 (-0.30, 0.97)	0.08 (-0.30, 0.45)	0.10 (-0.25, 0.45)
Solid cancers (C00-C81)					
Cases	1,948	1,272	1,594	1,626	3,220
ERR (95% CI)	0.14 (-0.24, 0.52)	4.52 (2.71, 6.34)	0.27 (-0.31, 0.86)	0.12 (-0.27, 0.51)	0.10 (-0.26, 0.46)
Solid cancers other than thyroid					
Cases	1,593	641	1,260	974	2,234
ERR (95% CI)	0.23 (-0.18, 0.65)	2.32 (0.69, 3.95)	0.35 (-0.29, 1.00)	0.22 (-0.21, 0.65)	0.21 (-0.19, 0.61)
Solid cancers other than thyroid and lung					
Cases	1,461	614	1,159	916	2,075
ERR (95% CI)	0.15 (-0.27, 0.58)	2.39 (0.67, 4.10)	0.31 (-0.35, 0.98)	0.13 (-0.30, 0.57)	0.14 (-0.27, 0.54)
All-hematopoietic cancers (C81-C96)					
Cases	145	27	94	78	172
ERR (95% CI)	-0.54 (-2.08, 1.01)	1.14 (-6.04, 8.31)	1.57 (-3.06, 6.19)	-0.55 (-1.98, 0.88)	0.01 (-2.07, 2.10)
Stomach (C16)					
Cases	308	58	198	168	366
ERR (95% CI)	-0.06 (-0.93, 0.81)	-0.23 (-2.44, 1.98)	-0.59 (-1.60, 0.42)	-0.14 (-1.00, 0.72)	-0.37 (-1.04, 0.31)
Colorectal (C18-C20)					
Cases	311	40	226	125	351
ERR (95% CI)	0.18 (-0.79, 1.14)	-0.38 (-1.45, 0.70)	0.21 (-1.42, 1.83)	0.44 (-0.70, 1.57)	0.46 (-0.65, 1.57)
Liver (C22)					
Cases	185	9	128	66	194
ERR (95% CI)	0.22 (-1.04, 1.49)	-0.26 (-3.06, 2.53)	3.38 (-0.81, 7.58)	1.28 (-0.77, 3.33)	1.49 (-0.55, 3.53)
Pancreas (C25)					
Cases	54	7	39	22	61
ERR (95% CI)	-0.09 (-1.95, 1.76)	-0.23 (-4.97, 4.50)	-0.58 (-2.73, 1.56)	-0.13 (-1.99, 1.74)	-0.38 (-1.79, 1.03)
Lung (C33-C34)					

Cases	132	27	101	58	159
ERR (95% CI)	1.16 (-0.76, 3.08)	1.73 (-3.59, 7.04)	0.89 (-1.71, 3.50)	1.19 (-0.78, 3.17)	0.99 (-0.79, 2.77)
Non-melanoma skin (C44)					
Cases	34	4	26	12	38
ERR (95% CI)	-0.14 (-3.01, 2.73)	-0.29 (-7.55, 6.97)	0.40 (-5.75, 6.55)	-0.27(-3.06, 2.53)	-0.37 (-2.75, 2.01)
Female breast (C50)					
Cases	-	326	108	218	326
ERR (95% CI)	-	-0.38 (-0.68, -0.08)	0.25 (-2.85, 3.34)	-0.21(-2.51, 2.09)	15.1 (7.00, 23.2)
Prostate (C61)					
Cases	156	-	121	35	156
ERR (95% CI)	-0.25 (-1.01, 0.51)	-	1.00 (-1.19, 3.19)	-0.37(-1.11, 0.37)	-0.24 (-1.02, 0.54)
Kidney (C64)					
Cases	112	10	80	42	122
ERR (95% CI)	0.02 (-1.75, 1.78)	-0.35 (-3.72, 3.02)	0.74 (-2.86, 4.34)	-0.37(-1.83, 1.09)	-0.21 (-1.80, 1.38)
Bladder (C67)					
Cases	60	2	44	18	62
ERR (95% CI)	0.27 (-1.62, 2.16)	-0.37 (-4.00, 3.27)	1.44 (-2.99, 5.87)	0.52(-1.79, 2.83)	0.51 (-1.64, 2.67)
Brain and CNS (C70-72)					
Cases	27	16	19	24	43
ERR (95% CI)	-0.31 (-3.27, 2.65)	-0.16 (-9.18, 8.85)	-0.17 (-5.52, 5.18)	-0.33(-3.36, 2.70)	-0.30 (-3.25, 2.65)
Thyroid (C73)					
Cases	355	631	334	652	986
ERR (95% CI)	-0.28 (-1.38, 0.81)	0.87 (-2.22, 3.96)	0.11 (-1.81, 2.04)	-0.38(-0.86, 0.10)	-0.38 (-0.61, -0.15)
NHL (C82-C85, C96)					
Cases	49	12	40	21	61
ERR (95% CI)	-0.07 (-3.11, 2.96)	-0.50 (-8.41, 7.42)	1.51 (-5.70, 8.72)	-0.50(-3.07, 2.06)	-0.55 (-2.47, 1.37)
Leukemia (C91-C95)					
Cases	51	7	26	32	58
ERR (95% CI)	0.02 (-4.54, 4.58)	-0.57 (-4.46, 3.31)	-0.74 (-7.08, 5.60)	0.09(-4.74, 4.92)	-0.51 (-4.16, 3.15)

\*Adjusted for attained age (<25, 5-year intervals from the age of 25 to 84,  $\geq$ 85 years), sex, birth year (<1960, 1960-1969, 1970-1979,  $\geq$ 1980), and duration of employment (<1, 1-5, 5-10,  $\geq$ 10).

CI, confidence interval; ERR, excess relative risk; ICD-10, International Classification of Diseases and Related Health Problems, 10th Revision; CNS, central nervous system; NHL, non-Hodgkin's lymphoma.

**Supplementary Table 2** ERRs per 100 mGy for cancer incidence by cumulative organ doses excluding adjustment for employment duration among South Korean diagnostic medical radiation workers, 1996–2017

Cancer sites (ICD-10 code)	ERR <sup>*</sup> /100 mGy (95% CIs)
All cancers combined (C00-C96)	0.04 (-0.26, 0.33)
Solid cancers (C00-C81)	0.04 (-0.26, 0.34)
Solid cancers other than thyroid	0.12 (-0.21, 0.45)
Solid cancers other than thyroid and lung	0.06 (-0.28, 0.40)
All-hematopoietic cancers (C81-C96)	-0.03 (-1.83, 1.77)
Stomach (C16)	-0.38 (-0.88, 0.12)
Colorectal (C18-C20)	0.08 (-0.70, 0.86)
Liver (C22)	1.36 (-0.26, 2.97)
Pancreas (C25)	-0.38 (-1.58, 0.82)
Lung (C33-C34)	0.79 (-0.56, 2.14)
Non-melanoma skin (C44)	-0.36 (-2.48, 1.76)
Female breast (C50)	-0.32 (-1.48, 0.84)
Prostate (C61)	-0.37 (-0.96, 0.21)
Kidney (C64)	-0.38 (-1.52, 0.77)
Bladder (C67)	0.43 (-1.27, 2.14)
Brain and CNS (C70-72)	-0.31 (-2.70, 2.09)
Thyroid (C73)	-0.35 (-1.12, 0.42)
NHL (C82-C85, C96)	-0.29 (-2.78, 2.20)
Leukemia (C91-C95)	-0.53 (-3.33, 2.26)

\*Adjusted for attained age (<25, 5-year intervals from the age of 25 to 84, ≥85 years), sex, and birth year (<1960, 1960-1969, 1970-1979, ≥1980). CI, confidence interval; ERR, excess relative risk; ICD-10, International Classification of Diseases and Related Health Problems, 10th Revision; CNS, central nervous system; NHL, non-Hodgkin's lymphoma.