

## SUPPLEMENTARY TABLES

**Supplementary Table 1. Relative risk of diabetes adjusted for: (1) race/ethnicity, sex, and attained age and (2) race/ethnicity, sex, attained age and body mass index (BMI) for the whole cohort and for individual diagnostic groups**

Characteristic	Not adjusted for BMI		Adjusted for BMI	
	RR* (95% CI)	P†	RR* (95% CI)	P†
All patients				
Sibling	Reference	—	Reference	—
Abdominal RT	2.79 (1.91, 4.07)	< .001	3.23 (2.20, 4.74)	< .001
No abdominal RT	1.71 (1.20, 2.45)	.003	1.75 (1.22, 2.52)	.003
Hodgkin Lymphoma				
Sibling	Reference	—	Reference	—
Abdominal RT	1.99 (1.23, 3.22)	.005	2.65 (1.63, 4.31)	< .001
No abdominal RT	1.28 (0.71, 2.32)	.42	1.41 (0.78, 2.56)	.26
Neuroblastoma				
Sibling	Reference	—	Reference	—
Abdominal RT	8.64 (4.30, 17.37)	< .001	9.02 (4.51, 18.05)	< .001
No abdominal RT	1.49 (0.64, 3.49)	.36	1.53 (0.66, 3.53)	.32
Wilms				
Sibling	Reference	—	Reference	—
Abdominal RT	3.74 (2.01, 6.97)	< .001	4.00 (2.12, 7.55)	< .001
No abdominal RT	0.72 (0.21, 2.50)	.60	0.77 (0.22, 2.68)	.68
CNS tumors				
Sibling	Reference	—	Reference	—
Abdominal RT	3.60 (1.85, 7.02)	< .001	3.48 (1.73, 7.01)	< .001
No abdominal RT	1.23 (0.70, 2.17)	.47	1.26 (0.71, 2.23)	.43
Other				
Sibling	Reference	—	Reference	—
Abdominal RT	2.49 (1.41, 4.39)	.002	2.81 (1.60, 4.96)	< .001
No abdominal RT	1.99 (1.37, 2.90)	< .001	2.00 (1.37, 2.93)	< .001

\*All relative risks are adjusted for attained age (continuous), race (white, non-Hispanic vs all others), and gender. BMI=body mass index; RR=relative risk; 95% CI=95% Confidence interval; RT=radiotherapy

† Relative risks and 95% CI were estimated using a generalized estimation equation model with a log-link function, and *P* values were obtained using a two-sided Wald test

**Supplementary Table 2. Demographic and treatment-related risk factors associated with diabetes risk in survivors of childhood cancer exposed and unexposed to abdominal radiation\***

Variable	Survivors exposed to abdominal RT		Survivors not exposed to abdominal RT	
	Relative risk (95% CI)†	P†	Relative risk (95% CI)†	P†
Age at diagnosis*	0.56 (0.36, 0.87)	.009	0.85 (0.61, 1.19)	.35
Sex		.84		.94
Female	Reference		Reference	
Male	1.04 (0.70, 1.55)		1.01 (0.75, 1.36)	
Race		.25		.01
White, non-Hispanic	Reference		Reference	
Black, non-Hispanic	1.95 (0.78, 4.85)		2.28 (1.31, 3.97)	
Hispanic	2.27 (0.79, 6.55)		1.71 (0.66, 4.40)	
Other	1.19 (0.58, 2.45)		1.56 (0.92, 2.66)	
BMI group		< .001		< .001
< 18.5	0.54 (0.17, 1.72)		1.07 (0.50, 2.30)	
18.5 – 24.9	Reference		Reference	
25 – 29.9	1.57 (0.99, 2.47)		1.72 (1.19, 2.49)	
≥30	4.43 (2.83, 6.95)		4.35 (3.12, 6.06)	
Cranial radiation		.78		.46
No	Reference		Reference	
Yes	0.93 (0.58, 1.50)		1.13 (0.82, 1.54)	
Alkylating agents		.20		.49
No	Reference		Reference	
Yes	1.30 (0.87, 1.94)		1.11 (0.82, 1.51)	
Corticosteroids		.22		.03
No	Reference		Reference	
Yes	0.76 (0.48, 1.19)		1.40 (1.04, 1.88)	
Anthracyclines		.45		--
No	Reference		--	
Yes	0.84 (0.54, 1.32)		--	
Abdominal RT dose		.90		--
0.1 – 9.9	Reference		--	
10 – 19.9	0.65 (0.17, 2.47)		--	
20 – 29.9	0.67 (0.18, 2.42)		--	
≥30	0.74 (0.21, 2.62)		--	
Total pancreas dose (Mean)		.24		--
0.1 – 9.9	Reference		--	
10 – 19.9	1.62 (0.67, 3.96)		--	
20 – 29.9	2.33 (0.95, 5.73)		--	
≥30	2.13 (0.82, 5.58)		--	
Pancreas tail dose (Mean)		.02		--
0.1 – 9.9	Reference		--	
10 – 19.9	1.15 (0.72, 1.85)		--	
20 – 29.9	2.20 (1.18, 4.12)		--	

≥30	2.52 (1.18, 5.38)		--	
Pancreas head dose (Mean)		.50		--
0.1 – 9.9	Reference		--	
10 – 19.9	1.30 (0.55, 3.05)		--	
20 – 29.9	1.64 (0.73, 3.70)		--	
≥30	1.22 (0.52, 2.85)		--	
Pancreas body dose (Mean)		.46		--
0.1 – 9.9	Reference		--	
10 – 19.9	1.46 (0.56, 3.77)		--	
20 – 29.9	1.95 (0.77, 4.94)		--	
≥30	1.67 (0.63, 4.44)		--	
V10 (pancreas % ≥10 Gy)		.36		--
0	Reference		--	
0.1 – 74.9	1.11 (0.27, 4.55)		--	
≥75	1.51 (0.37, 6.09)		--	
V20 (pancreas % ≥20 Gy)		.53		--
0	Reference		--	
0.1 – 74.9	1.08 (0.62, 1.89)		--	
≥75	1.35 (0.77, 2.37)		--	
V30 (pancreas % ≥30 Gy)		.79		--
0	Reference		--	
0.1 – 74.9	1.18 (0.72, 1.96)		--	
≥75	1.02 (0.60, 1.72)		--	

\* For all analyses, a GEE GLM model was fit adjusting for attained age (continuous) as well as the given predictor of interest. Radiation dose refers to the maximum tumor dose (maxTD) from summing all of the overlapping radiation fields prescribed to the abdomen and the mean dose to the whole pancreas and head, body, and tail of the pancreas. Radiation dose-volume metrics refer to the percent of the whole pancreas that received ≥10 Gy (V10), ≥20Gy (V20), or ≥30 Gy (V30) from radiation. BMI=body mass index; 95% CI=95% confidence interval; RT=radiation therapy. †Relative risks and 95% CI were estimated using a generalized estimation equation model with a log-link function, and *P* values were obtained using a two-sided Wald test

**Supplementary Table 3. Excess Odds Ratio Model**

Scenarios	$\beta$ -estimate	95% CI	<i>P</i> *
1. Model with dose			
Intercept	-4.35	-4.65, -4.05	<.001
Dose (continuous)†	0.093	0.04, 0.15	<.001
2. Model with dose plus the quadratic term			
Intercept	-4.64	-5.1, -4.1	<.001
Dose (continuous)†	0.22	0.01, 0.43	.04
Dose x Dose†	-0.0037	-0.009, 0.001	.16
3. Model including dose, age at diagnosis and interaction term			
Intercept	-6.06	-7.97, -4.14	<.001
Dose (continuous)†	0.78	-0.91, 2.47	.36
Age at diagnosis (continuous)	0.58	-0.72, 1.88	.38
Dose x age at diagnosis	-0.038	-0.13, 0.05	.42

\* *P* values were obtained using a two-sided Wald test. Beta estimate= $\beta$ ; confidence intervals=CI

†Dose=average pancreas tail dose