

## Supplementary Online Content

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eTable 1. Characteristics of patients diagnosed with selected primary malignant neoplasms (N= 950,954) and second primary malignant neoplasms (N= 69,120), by age group at diagnosis, SEER, 1992-2008

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This supplementary material has been provided by the authors to give readers additional information about their work.

**Supplementary eTable 1. Characteristics of patients diagnosed with selected primary malignant neoplasms (N= 950,954) and second primary malignant neoplasms (N= 69,120), by age group at diagnosis, SEER, 1992-2008**

Characteristics	<15 years at diagnosis				15-39 years at diagnosis				≥40 years at diagnosis			
	First N = 15853		Second N = 101		First N = 123685		Second N = 2065		First N = 811416		Second N = 66954	
	N	%	N	%	N	%	N	%	N	%	N	%
Race/ethnicity												
Non-Hispanic White	8243	52.00%	51	50.50%	77,829	62.90%	1,351	65.40%	597,096	73.60%	53,078	79.30%
Black	1540	9.70%	10	9.90%	11512	9.30%	220	10.70%	66,134	8.20%	5,261	7.90%
Hispanic	4306	27.20%	26	25.70%	21030	17.00%	328	15.90%	69,539	8.60%	4,127	6.20%
Asian or Pacific Islander	1425	9.00%	13	12.90%	10247	8.30%	145	7.00%	67,628	8.30%	4,142	6.20%
American Indian/Alaska Native	208	1.30%	<5	1.00%	1221	1.00%	15	0.70%	4961	0.60%	304	0.50%
Unknown	131	0.80%			1846	1.50%	6	0.30%	6058	0.70%	42	0.10%
Sex												
Female	7108	44.80%	46	45.50%	73,136	59.10%	1,205	58.40%	590,431	72.80%	40,133	59.90%
Male	8745	55.20%	55	54.50%	50549	40.90%	860	41.60%	220,985	27.20%	26,821	40.10%
Year of diagnosis												
1992-1997	5213	32.90%	8	7.90%	43660	35.30%	503	24.40%	254,680	31.40%	10,266	15.30%
1998-2003	5724	36.10%	48	47.50%	42483	34.30%	778	37.70%	290,868	35.80%	25,529	38.10%
2004-2008	4916	31.00%	45	44.60%	37542	30.40%	784	38.00%	265,868	32.80%	31,159	46.50%
Cancer type/site												
Acute lymphoid leukemia <sup>a</sup>	5489	34.60%	8	7.90%	2036	1.60%	23	1.10%	2009	0.20%	180	0.30%
Acute myeloid leukemia <sup>a</sup>	1034	6.50%	34	33.70%	2611	2.10%	107	5.20%	14,812	1.80%	1,816	2.70%
Hodgkin lymphoma <sup>a</sup>	757	0.05%			8594	6.90%	45	2.20%	5718	0.70%	464	0.70%
Non-Hodgkin lymphoma <sup>a</sup>	1186	7.50%	8	7.90%	10224	8.30%	305	14.80%	75,462	9.30%	7,484	11.20%
Colorectal cancer <sup>b</sup>	26	<0.01%			6014	4.90%	105	5.10%	199,520	24.60%	19,867	29.70%
Cervical cancer <sup>b</sup>	11	<0.01%			10365	8.40%	84	4.10%	74,101	9.10%	4,026	6.00%
Ovarian cancer <sup>b</sup>	223	0.01%			3003	2.40%	47	2.30%	32,319	4.00%	1,857	2.80%
Testicular cancer <sup>b</sup>	188	0.01%			11742	9.50%	136	6.60%	4351	0.50%	139	0.20%

Thyroid carcinoma <sup>a</sup>	269	1.70%	<5	2.00%	15550	12.60%	167	8.10%	26,803	3.30%	2,083	3.10%
Melanoma <sup>a</sup>	226	1.40%	5	5.00%	15410	12.50%	314	15.20%	58,891	7.30%	7,537	11.30%
Breast carcinoma <sup>a</sup>	<5	<0.01%			19391	15.70%	502	24.30%	271,976	33.50%	17,938	26.80%
Soft-tissue sarcoma <sup>a</sup>	1188	7.50%	11	10.90%	10110	8.20%	150	7.30%	19,527	2.40%	1,919	2.90%
Bone sarcoma <sup>a</sup>	867	5.50%	15	14.90%	2147	1.70%	19	0.90%	2179	0.30%	194	0.30%
Central nervous system cancer <sup>b</sup>	4387	27.70%	18	17.80%	6488	5.20%	61	3.00%	23,748	2.90%	1,450	2.20%
Stage at diagnosis <sup>c</sup>												
Localized/regional	5665	35.70%	41	40.60%	88,453	71.50%	1,394	67.50%	597,841	73.70%	50,154	74.90%
Distant	7833	49.40%	57	56.40%	16925	13.70%	328	15.90%	145,587	17.90%	12,052	18.00%
Unstaged <sup>c</sup> /unknown	2355	14.90%	3	3.00%	18307	14.80%	343	16.60%	67,988	8.40%	4,748	7.10%
Vital status												
Alive	12119	76.40%	42	41.60%	92,849	75.10%	1,125	54.50%	382,218	47.10%	23,715	35.40%
Dead	3734	23.60%	59	58.40%	30836	24.90%	940	45.50%	429,198	52.90%	43,239	64.60%

Abbreviation: SEER, Surveillance, Epidemiology and End Results.

<sup>a</sup>Cancer type based on the SEER AYA site recode.

<sup>b</sup>Cancer type based on SEER site recode.

<sup>c</sup>Year of diagnosis refers to year of primary malignancy under "first" and second primary malignancy under "second".

<sup>d</sup>Leukemias are unstaged.

**Supplementary eTable 2. Frequency (percentage) of top three prior cancers<sup>a</sup> occurring in children, adolescents and young adults (AYAs) and older adults by diagnosis, SEER, 1992-2008**

Second Cancer	<15 years at diagnosis			15-39 years at diagnosis			≥40 years at diagnosis		
	Prior cancers <sup>a</sup>	n	%	Prior cancers <sup>a</sup>	n	%	Prior cancers <sup>a</sup>	n	%
Breast carcinoma <sup>b</sup>				Breast	370	76.9	Breast	9440	62.6
				Thyroid	37	7.7	Colorectal	1718	11.4
				Cervical	18	3.7	Cervical	1637	10.9
Thyroid carcinoma <sup>b</sup>				Breast	25	17.5	Breast	529	46.4
				Hodgkin lymphoma	19	13.3	Colorectal	153	13.4
				Melanoma	17	11.9	Cervical	125	11.0
Melanoma <sup>b</sup>				Melanoma	222	73.8	Melanoma	2100	50.7
				Breast	19	6.3	Breast	786	19.0
				Hodgkin lymphoma	16	5.3	Colorectal	493	11.9
Testicular carcinoma <sup>c</sup>				Testis	100	86.2	Testis	44	59.5
				Kaposi Sarcoma	5	4.3	Melanoma	9	12.2
				Melanoma of the skin	<5	3.5	Colorectal	5	6.8
Hodgkin lymphoma <sup>b</sup>				Non-Hodgkin lymphoma	18	45.0	Non-Hodgkin lymphoma	103	43.6
				Thyroid	6	15.0	Breast	42	17.8
				Kaposi Sarcoma	<5	10.0	Colorectal	37	15.7
Non-Hodgkin lymphoma <sup>b</sup>	Hodgkin lymphoma	<5	33.3	Kaposi Sarcoma	222	76.3	Breast	960	31.0
	Leukemia	<5	33.3	Hodgkin lymphoma	28	9.6	Colorectal	673	21.8
	Bones and joints	<5	16.7	Non-Hodgkin lymphoma	11	3.8	Non-Hodgkin lymphoma	336	10.9
Acute lymphoid leukemia <sup>b</sup>	Brain and Other Nervous System	5	83.3	Hodgkin lymphoma	<5	23.1	Breast	39	42.9
				Brain and other nervous system	<5	15.4	Non-Hodgkin lymphoma	12	13.2
	Leukemia	<5	16.7	Breast	<5	15.4	Thyroid	9	9.9
Acute myeloid leukemia <sup>b</sup>	Bones and joints	8	28.6	Hodgkin lymphoma	20	20.4	Breast	373	41.4
	Brain and other nervous system	7	25.0	Breast	18	18.4	Non-Hodgkin lymphoma	185	20.5
	Leukemia	7	25.0	Non-Hodgkin lymphoma	16	16.3	Colorectal	131	14.5

Second Cancer	<15 years at diagnosis			15-39 years at diagnosis			≥40 years at diagnosis		
	Prior cancers <sup>a</sup>	n	%	Prior cancers <sup>a</sup>	n	%	Prior cancers <sup>a</sup>	n	%
Soft-tissue sarcoma <sup>b</sup>	Brain and other nervous system	<5	33.3	Non-Hodgkin Lymphoma	41	31.3	Breast	338	36.0
	Leukemia	<5	33.3	Soft Tissue including heart	15	11.5	Colorectal	142	15.1
	Bones and joints	<5	16.7	Testis	12	9.2	Melanoma	108	11.5
Bone sarcoma <sup>b</sup>	Leukemia	<5	57.1	Hodgkin Lymphoma	<5	25.0	Breast	21	25.6
	Hodgkin lymphoma	<5	14.3	Breast	<5	12.5	Colorectal	14	17.1
	Non-Hodgkin lymphoma	<5	14.3	Soft Tissue including heart	<5	12.5	Melanoma	11	13.4
Colorectal cancer <sup>c</sup>				Colon and Rectum	40	48.8	Breast	2909	34.9
				Breast	5	6.1	Colorectal	2783	33.4
				Cervical	5	6.1	Cervical	862	10.3
Central nervous system cancer <sup>c</sup>	Brain and other nervous system	<5	30.8	Brain and other nervous system	18	36.0	Breast	218	35.7
	Leukemia	<5	30.8	Testis	7	14.0	Colorectal	136	22.3
	Non-Hodgkin lymphoma	<5	23.1	Melanoma	5	10.0	Melanoma	82	13.4
Cervical cancer <sup>c</sup>				Ovary	20	29.4	Breast	2315	69.7
				Colorectal	11	16.2	Colorectal	493	14.8
				Breast	10	14.7	Non-Hodgkin lymphoma	122	3.7
Ovarian cancer <sup>c</sup>				Cervical	17	40.5	Breast	910	61.8
				Breast	14	33.3	Cervical	181	12.3
				Thyroid	<5	7.1	Colorectal	169	11.5

Abbreviation: SEER, Surveillance, Epidemiology and End Results.

<sup>a</sup>All prior cancer types based on SEER site recode.

<sup>b</sup>Second cancer type based on the SEER AYA site recode.

<sup>c</sup>Second cancer type based on SEER site recode.

**Supplementary eTable 3. 5-Year relative survival and standard error (SE) of selected first and second primary malignant neoplasms by age group at diagnosis, SEER, 1992-2008**

Cancer site or type	<15 years at diagnosis		15-39 years at diagnosis		≥40 years at diagnosis	
	Relative survival	SE	Relative survival	SE	Relative survival	SE
All selected cancers						
First primary	79.68%	0.32%	80.55%	0.12%	69.78%	0.06%
Second primary	46.60%	4.97%	60.32%	1.09%	61.44%	0.23%
Breast carcinoma <sup>a</sup>						
First primary			81.48%	0.29%	86.76%	0.09%
Second primary			62.62%	2.18%	77.27%	0.39%
Thyroid carcinoma <sup>a</sup>						
First primary	98.59%	0.74%	99.66%	0.07%	94.35%	0.19%
Second primary			84.69%	2.85%	80.39%	1.08%
Melanoma <sup>a</sup>						
First primary	93.62%	1.69%	94.22%	0.20%	85.50%	0.19%
Second primary	80.64%	18.03%	93.10%	1.49%	77.75%	0.67%
Testicular cancer <sup>b</sup>						
First primary	96.59%	1.54%	95.51%	0.21%	94.63%	0.43%
Second primary			94.08%	2.15%	85.28%	3.74%
Hodgkin lymphoma <sup>a</sup>						
First primary	95.17%	0.79%	92.78%	0.29%	69.39%	0.68%
Second primary			71.59%	6.80%	53.88%	2.67%
Non-Hodgkin lymphoma <sup>a</sup>						
First primary	84.41%	1.06%	64.29%	0.48%	56.92%	0.21%
Second primary	62.55%	17.13%	22.44%	2.40%	53.79%	0.70%
Acute lymphocytic leukemia <sup>a</sup>						
First primary	87.14%	0.46%	48.19%	1.12%	16.93%	0.87%
Second primary	62.55%	17.13%	26.21%	9.20%	11.39%	2.47%
Acute myeloid leukemia <sup>a</sup>						
First primary	56.73%	1.56%	46.39%	0.99%	12.28%	0.29%
Second primary	29.44%	7.82%	23.48%	4.11%	9.50%	0.73%
Soft-tissue sarcoma <sup>a</sup>						
First primary	74.74%	1.29%	51.99%	0.51%	54.37%	0.40%
Second primary	54.60%	15.03%	39.42%	4.03%	49.32%	1.37%
Bone sarcoma <sup>a</sup>						
First primary	72.43%	1.53%	67.77%	1.03%	61.98%	1.15%
Second primary	60.06%	12.66%	63.46%	11.12%	36.99%	3.92%

Cancer site or type	<15 years at diagnosis		15-39 years at diagnosis		≥39 years at diagnosis	
	Relative survival	SE	Relative survival	SE	Relative survival	SE
Colorectal cancer <sup>b</sup>						
First primary	61.73%	9.57%	63.94%	0.63%	58.23%	0.13%
Second primary			48.82%	4.92%	53.17%	0.44%
Central nervous system cancer <sup>b</sup>						
First primary	71.27%	0.69%	64.21%	0.61%	15.65%	0.25%
Second primary	33.36%	11.12%	39.55%	6.29%	9.16%	0.81%
Cervical cancer <sup>b</sup>						
First primary	100.10%	0.00%	84.79%	0.36%	75.91%	0.18%
Second primary			73.27%	4.96%	66.13%	0.88%
Ovarian cancer <sup>b</sup>						
First primary	94.18%	1.59%	78.20%	0.77%	37.08%	0.29%
Second primary			64.15%	7.04%	36.34%	1.21%

Abbreviation: SEER, Surveillance, Epidemiology and End Results.

<sup>a</sup>Cancer type based on the SEER AYA site recode.

<sup>b</sup>Cancer type based on SEER site recode.