

**Supplemental Table 1. Treatment variables evaluated, by primary cancer diagnosis**

Primary Cancer Diagnosis	Treatment variables
Acute lymphoblastic leukemia	Cranial radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Alkylating agents ( $\geq 6000$ mg/m <sup>2</sup> , < 6000 mg/m <sup>2</sup> ) High dose methotrexate (yes/no) Dexamethasone (yes, no) Prednisone (yes, no)
Astrocytoma, medulloblastoma	Cranial radiation (yes, no) Alkylating agents ( $\geq 6000$ mg/m <sup>2</sup> , < 6000 mg/m <sup>2</sup> ) Vincristine (yes, no) Prednisone (yes, no)
Hodgkin lymphoma	Chest radiation ( $\geq 30$ Gy, < 30 Gy) Splenectomy (yes/no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> ) Alkylating agents ( $\geq 7,700$ mg/m <sup>2</sup> ) Bleomycin (yes/no)
Non-Hodgkin lymphoma	Cranial radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Alkylating agents ( $\geq 6000$ mg/m <sup>2</sup> , < 6000 mg/m <sup>2</sup> ) High dose methotrexate (yes/no) Dexamethasone (yes, no) Prednisone (yes, no)
Wilms tumor	Abdominal/flank radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Vincristine (yes, no)
Neuroblastoma	Cranial radiation (yes, no) Chest radiation (yes, no) Abdominal radiation (yes, no) Pelvic radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Alkylating agents ( $\geq 6000$ mg/m <sup>2</sup> , < 6000 mg/m <sup>2</sup> ) Cisplatin (yes, no) Autologous transplant (yes, no)
Soft tissue sarcoma	Cranial radiation (yes, no) Chest radiation (yes, no) Abdominal radiation (yes, no) Pelvic radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Alkylating agents ( $\geq 6000$ mg/m <sup>2</sup> , < 6000 mg/m <sup>2</sup> ) Vincristine (yes, no) Methotrexate (yes, no) Amputation (yes, limb sparing, neither)
Ewing sarcoma	Chest radiation (yes, no) Pelvic radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Methotrexate (yes, no) Dexamethasone (yes, no) Amputation (yes, limb sparing, neither)
Osteosarcoma	Chest radiation (yes, no) Pelvic radiation (yes, no) Anthracyclines ( $\geq 250$ mg/m <sup>2</sup> , < 250 mg/m <sup>2</sup> ) Alkylating agents ( $\geq 6000$ mg/m <sup>2</sup> , < 6000 mg/m <sup>2</sup> ) High dose methotrexate (yes/no) Vincristine (yes, no) Dexamethasone (yes, no) Bleomycin (yes, no) Amputation (yes, limb sparing, neither)

Gy=Gray, mg=milligrams, m<sup>2</sup>=square meters

**Supplemental Table 2. Grade 3 and 4 chronic health conditions scored according to Common Terminology Criteria of Adverse Events (CTCAE) v4.03 with adaptations**

Category	Chronic Condition	Grade 3 Definition	Grade 4 Definition
Vision and Eye	Cataract	<ul style="list-style-type: none"> <li>• Cataracts, requiring surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Blindness	<ul style="list-style-type: none"> <li>• Legally blind in only one eye</li> </ul>	<ul style="list-style-type: none"> <li>• Legally blind in both eyes or loss of an eye</li> </ul>
Hearing	Loss of Hearing	<ul style="list-style-type: none"> <li>• Hearing loss requiring a hearing aid</li> <li>• Deafness in one ear not completely corrected by hearing aid</li> </ul>	<ul style="list-style-type: none"> <li>• Deafness in both ears not completely corrected by hearing aid</li> </ul>
Speech		<ul style="list-style-type: none"> <li>• Aphonia</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
Pulmonary	Emphysema	<ul style="list-style-type: none"> <li>• Emphysema, requiring medication</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Pulmonary fibrosis	<ul style="list-style-type: none"> <li>• Requiring oxygen therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Other respiratory conditions	<ul style="list-style-type: none"> <li>• Primary pulmonary hypertension</li> </ul>	<ul style="list-style-type: none"> <li>• Chronic respiratory failure</li> <li>• Respiratory arrest</li> <li>• Respirator dependency status</li> </ul>
Cardiovascular	Coronary artery disease	<ul style="list-style-type: none"> <li>• Myocardial infarction, angina, or coronary heart disease not requiring a cardiac catheterization but on anti-anginal medication</li> </ul>	<ul style="list-style-type: none"> <li>• Myocardial infarction, requiring cardiac catheterization, angioplasty, or coronary artery bypass graft</li> </ul>
	Congestive heart failure	<ul style="list-style-type: none"> <li>• Congestive heart failure, requiring medication</li> </ul>	<ul style="list-style-type: none"> <li>• Heart transplant</li> </ul>
	Arrhythmia	<ul style="list-style-type: none"> <li>• Arrhythmia , requiring pacemaker</li> </ul>	<ul style="list-style-type: none"> <li>• Ventricular fibrillation/flutter</li> </ul>
	Valvular heart disease	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Heart valve replacement</li> </ul>
	Stroke	<ul style="list-style-type: none"> <li>• Occlusion of cerebral arteries</li> </ul>	<ul style="list-style-type: none"> <li>• Stroke / Cerebrovascular Accident (CVA)</li> </ul>
	Pericardial disease	<ul style="list-style-type: none"> <li>• Pericardial disease requiring surgical intervention</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Other cardiac conditions	<ul style="list-style-type: none"> <li>• Thromboangiitis obliterans (Buerger’s disease)</li> <li>• Hypotension, unspecified</li> <li>• Other chronic pulmonary heart diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Thromboembolic disease	<ul style="list-style-type: none"> <li>• Blood clot in head, lung, arm, leg, or pelvis, NOS</li> </ul>	<ul style="list-style-type: none"> <li>• Pulmonary embolism and infarction</li> <li>• Embolism and thrombosis of unspecified artery</li> </ul>
	Other vascular conditions	<ul style="list-style-type: none"> <li>• Aorta-subclavian-carotid bypass</li> <li>• Other (peripheral) vascular shunt or bypass</li> <li>• Other repair of aneurysm</li> <li>• Repair of arteriovenous fistula</li> </ul>	<ul style="list-style-type: none"> <li>• Other excision of vessels, aorta, abdominal (aorta)</li> </ul>
	Hypertension	<ul style="list-style-type: none"> <li>• Hypertensive chronic kidney disease</li> <li>• Hypertensive heart disease</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
Gastrointestinal	Hepatitis	<ul style="list-style-type: none"> <li>• Cirrhosis</li> </ul>	<ul style="list-style-type: none"> <li>• Liver transplant</li> </ul>
	Intestinal obstruction	<ul style="list-style-type: none"> <li>• Surgery for intestinal obstruction</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>

Renal	Renal failure	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Dialysis or kidney transplant</li> </ul>
	Urinary incontinence	<ul style="list-style-type: none"> <li>• Neurogenic bladder</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Other renal conditions	<ul style="list-style-type: none"> <li>• Nephrotic syndrome with unspecified pathological lesion in kidney</li> </ul>	<ul style="list-style-type: none"> <li>• Rupture of bladder, non-traumatic</li> </ul>
Musculoskeletal	Amputation	<ul style="list-style-type: none"> <li>• Total ostectomy, femur</li> <li>• Disarticulation of elbow</li> <li>• Amputation through humerus, Upper arm amputation</li> <li>• Disarticulation of shoulder</li> <li>• Interthoracoscapular amputation, Forequarter amputation</li> <li>• Disarticulation of knee</li> <li>• Amputation above knee, Amputation of leg through femur, Amputation of thigh</li> <li>• Disarticulation of hip</li> <li>• Abdominopelvic amputation, Hemipelvectomy, Hindquarter amputation</li> <li>• Lower leg or ankle reattachment, reattachment of leg NOS</li> <li>• Traumatic amputation of arm and hand (complete) (partial), unilateral, at or above elbow</li> <li>• Upper limb amputation</li> <li>• Lower limb amputation</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Joint replacement	<ul style="list-style-type: none"> <li>• Joint replacement</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
Neurological	Balance	<ul style="list-style-type: none"> <li>• Problems with balance or ability to manipulate objects, severe</li> </ul>	<ul style="list-style-type: none"> <li>• Problems with balance or ability to manipulate objects, disabling</li> </ul>
	Paralysis	<ul style="list-style-type: none"> <li>• Disorders of accessory [11th] nerve</li> </ul>	<ul style="list-style-type: none"> <li>• Paralysis</li> </ul>
	Other neurological conditions	<ul style="list-style-type: none"> <li>• Intracranial ventricular shunt or anastomosis</li> <li>• Ventricular shunt to abdominal cavity and organs</li> <li>• Irrigation and exploration of ventricular shunt</li> <li>• Replacement of ventricular shunt</li> <li>• Multiple sclerosis</li> <li>• Difficulty in walking</li> </ul>	<ul style="list-style-type: none"> <li>• Coma</li> </ul>
Hematologic		<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Aplastic anemia</li> </ul>
Endocrine	Thyroid Nodules	<ul style="list-style-type: none"> <li>• Thyroid nodules, requiring surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Diabetes	<ul style="list-style-type: none"> <li>• Diabetes requiring insulin</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	Gonadal Dysfunction	<ul style="list-style-type: none"> <li>• Post ablative ovarian failure or testicular hypo- function</li> <li>• Premature menopause, onset &lt;40 years of age</li> <li>• Absence of menstruation, onset &lt;40 years of age</li> <li>• Ovarian failure</li> <li>• Female infertility, associated with anovulation</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>

		<ul style="list-style-type: none"> <li>• Female infertility, unspecified origin</li> <li>• Other ovarian failure</li> <li>• Azoospermia</li> <li>• Male infertility unspecified</li> </ul>	
	Other Hormone Conditions	<ul style="list-style-type: none"> <li>• Pan hypopituitarism</li> <li>• Diabetes insipidus</li> <li>• Corticoadrenal insufficiency</li> <li>• Glucocorticoid deficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
Secondary Neoplasms	Secondary Neoplasms	<ul style="list-style-type: none"> <li>• Thyroid carcinoma</li> <li>• Benign meningiomas requiring resection</li> <li>• Lobular cancer in situ of the breast</li> </ul>	<ul style="list-style-type: none"> <li>• Invasive malignancies</li> <li>• Ductal carcinoma in situ of the breast</li> </ul>

**Supplemental Table 3. Treatment and chronic conditions by decade - Acute Lymphoblastic Leukemia**

Treatment	1970-1979 (N=1361)		1980-1989 (N=1714)		1990-1999 (N=2544)	
	N	%	N	%	N	%
Cranial radiation	1088	82.8	849	50.4	606	23.9
Mean (SD) dose (cGy)	2333	(537)	1985	(485)	1919	(572)
Alkylating agent*	514	37.8	982	57.6	1584	62.6
Mean (SD) (mg/m <sup>2</sup> )	7935	(7267)	6412	(6036)	4774	(6152)
Anthracycline†	488	35.9	1152	67.6	2134	84.3
Mean (SD) (mg/m <sup>2</sup> )	289	(163)	185	(193)	144	(155)
High dose methotrexate‡	33	2.4	416	24.3	1036	40.7
Prednisone	1322	97.2	1612	94.1	2212	86.9
Dexamethasone	75	5.5	313	18.3	1211	47.6
Chronic condition grade 3-4	247	18.1	214	12.5	368	14.5

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27) †cumulative anthracycline dose in doxorubicin equivalents (17); ‡High dose methotrexate cumulative intravenous dose  $\geq$  4300 mg/m<sup>2</sup>

**Supplemental Table 4. Treatment and chronic conditions by decade - Astrocytoma**

Treatment	1970-1979 (N=369)		1980-1989 (N=501)		1990-1999 (N=763)	
	N	%	N	%	N	%
Cranial radiation	202	58.0	220	45.5	199	26.4
Mean (SD) dose (cGy)	5157	(551)	5555	(868)	5311	(1026)
Alkylating agent*	33	9.0	67	13.5	68	9.0
Mean (SD) (mg/m <sup>2</sup> )	4513	(9243)	5017	(5637)	11950	(8094)
Prednisone	9	2.5	14	2.8	8	1.0
Vincristine	29	7.9	62	12.4	100	13.1
Chronic condition grade 3-4	180	48.8	159	31.7	186	24.4

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27)

**Supplemental Table 5. Treatment and chronic conditions by decade - Medulloblastoma**

Treatment	1970-1979 (N=107)		1980-1989 (N=156)		1990-1999 (N=257)	
	N	%	N	%	N	%
Cranial radiation	99	98.0	139	93.9	231	90.2
Mean (SD) dose (cGy)	5100	(694)	5447	(1171)	5539	(724)
Alkylating agent*	40	37.4	89	58.2	203	79.3
Mean (SD) (mg/m <sup>2</sup> )	3096	(4136)	7130	(6397)	12361	(8591)
Prednisone	24	22.4	33	21.3	2	0.8
Vincristine	40	37.4	92	59.4	208	80.9
Chronic condition grade 3-4	57	53.3	65	41.7	125	48.6

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27)

**Supplemental Table 6. Treatment and chronic conditions by decade - Hodgkin Lymphoma**

Treatment	1970-1979 (N=824)		1980-1989 (N=827)		1990-1999 (N=771)	
	N	%	N	%	N	%
Chest radiation	683	85.2	657	81.9	517	67.9
Mean (SD) dose (cGy)	3766	(725)	3312	(970)	2753	(770)
Alkylating agent*	501	60.9	560	68.0	544	71.8
Mean (SD) (mg/m <sup>2</sup> )	8411	(5544)	7475	(4079)	7425	(5210)
Anthracycline†	92	11.2	360	43.7	666	87.9
Mean (SD) (mg/m <sup>2</sup> )	304	(124)	209	(88)	191	(70)
Bleomycin	38	4.7	311	38.9	483	63.7
Splenectomy	614	74.7	470	57.9	64	9.3
Chronic condition grade 3-4	319	38.7	185	22.4	138	17.9

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27), †cumulative anthracycline dose in doxorubicin equivalents (17)



**Supplemental Table 7. Treatment and chronic conditions by decade - Non-Hodgkin Lymphoma**

Treatment	1970-1979 (N=347)		1980-1989 (N=517)		1990-1999 (N=566)	
	N	%	N	%	N	%
Cranial radiation	91	27.4	80	15.8	49	8.7
Mean (SD) dose (cGy)	2753	(850)	2464	(860)	1925	(1033)
Alkylating agent <sup>*</sup>	290	84.3	487	94.4	517	91.8
Mean (SD) (mg/m <sup>2</sup> )	9834	(9712)	8515	(7260)	7163	(6664)
Anthracycline <sup>†</sup>	154	44.8	372	72.1	494	87.6
Mean (SD) (mg/m <sup>2</sup> )	402	(765)	274	(120)	193	(98)
High dose methotrexate <sup>‡</sup>	29	8.4	77	14.9	210	37.1
Prednisone	299	86.9	442	85.5	433	76.5
Dexamethasone	21	6.1	57	11.0	125	22.1
Chronic condition grade 3-4	96	27.7	116	22.4	87	15.4

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

<sup>\*</sup>cumulative alkylating agent dose in cyclophosphamide equivalents (27), <sup>†</sup>cumulative anthracycline dose in doxorubicin equivalents (17), <sup>‡</sup>high dose methotrexate cumulative intravenous dose  $\geq$  4300 mg/m<sup>2</sup>

**Supplemental Table 8. Treatment and chronic conditions by decade - Wilms Tumor**

Treatment	1970-1979 (N=398)		1980-1989 (N=259)		1990-1999 (N=427)	
	N	%	N	%	N	%
Abdominal radiation	304	79.2	128	51.0	204	48.1
Mean (SD) dose (cGy)	2784	(755)	1748	(708)	1350	(651)
Anthracycline*	103	26.0	129	50.0	233	54.6
Mean (SD) (mg/m <sup>2</sup> )	272	(95)	228	(82)	189	(93)
Vincristine	336	84.8	251	96.9	418	97.9
Chronic condition grade 3-4	84	21.1	37	14.3	41	9.6

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative anthracycline dose in doxorubicin equivalents (17)

**Supplemental Table 9. Treatment and chronic conditions by decade - Neuroblastoma**

Treatment	1970-1979 (N=289)		1980-1989 (N=177)		1990-1999 (N=247)	
	N	%	N	%	N	%
Cranial radiation	13	4.6	19	11.0	26	10.6
Mean (SD) dose (cGy)	3073	(1714)	2550	(1743)	1453	(665)
Chest radiation	81	28.4	23	13.3	37	15.1
Mean (SD) dose (cGy)	2368	(878)	2116	(1155)	1613	(677)
Abdominal radiation	115	40.4	31	17.9	56	22.9
Mean (SD) dose (cGy)	2288	(985)	2120	(1185)	1910	(861)
Pelvic radiation	68	23.9	19	11.0	36	14.7
Mean (SD) dose (cGy)	2218	(927)	1700	(871)	1651	(719)
Alkylating agent*	183	63.3	96	55.2	137	56.1
Mean (SD) (mg/m <sup>2</sup> )	15609	(16263)	8845	(6601)	9434	(7929)
Anthracycline <sup>†</sup>	41	14.2	74	42.5	125	51.4
Mean (SD) (mg/m <sup>2</sup> )	349	(160)	185	(90)	193	(99)
Cisplatin	4	1.4	65	37.1	113	46.1
Hematopoietic stem cell transplant	1	0.3	14	7.9	37	15.0
Chronic condition grade 3-4	72	24.9	50	28.2	57	23.1

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27), <sup>†</sup>cumulative anthracycline dose in doxorubicin equivalents (17)

**Supplemental Table 10. Treatment and chronic conditions by decade - Rhabdomyosarcoma**

Treatment	1970-1979 (N=287)		1980-1989 (N=233)		1990-1999 (N=232)	
	N	%	N	%	N	%
Cranial radiation	74	27.1	68	29.7	64	27.8
Mean (SD) dose (cGy)	4992	(928)	4449	(1416)	4554	(1184)
Chest radiation	31	11.4	21	9.2	20	8.7
Mean (SD) dose (cGy)	3713	(1333)	3295	(1318)	2234	(1306)
Abdominal radiation	36	13.2	31	13.5	23	10.0
Mean (SD) dose (cGy)	3731	(1161)	3803	(1400)	3139	(1483)
Pelvic radiation	77	28.2	56	24.5	39	16.9
Mean (SD) dose (cGy)	4337	(1155)	4413	(1009)	4212	(1257)
Alkylating agent*	250	87.1	181	78.4	190	81.9
Mean (SD) (mg/m <sup>2</sup> )	19360	(14228)	15288	(9064)	21640	(10032)
Anthracycline <sup>†</sup>	110	38.3	136	58.4	74	31.9
Mean (SD) (mg/m <sup>2</sup> )	339	(158)	360	(114)	294	(134)
Amputation	5	1.7	1	0.4	3	1.3
Chronic condition grade 3-4	128	44.6	89	38.2	66	28.4

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27), <sup>†</sup>cumulative anthracycline dose in doxorubicin equivalents (17)

**Supplemental Table 11. Treatment and chronic conditions by decade - Ewing Sarcoma**

Treatment	1970-1979 (N=142)		1980-1989 (N=198)		1990-1999 (N=181)	
	N	%	N	%	N	%
Chest radiation	41	30.1	39	20.1	39	21.7
Mean (SD) dose (cGy)	3048	(1625)	3487	(1471)	2738	(1751)
Pelvic radiation	24	17.6	46	23.7	37	20.6
Mean (SD) dose (cGy)	4833	(1035)	5032	(978)	4482	(1533)
Anthracycline*	104	73.2	189	95.5	180	99.4
Mean (SD) (mg/m <sup>2</sup> )	361	(96)	376	(133)	349	(100)
Dexamethasone	1	0.7	27	13.6	35	19.3
Vincristine	136	95.8	198	100	177	97.8
Amputation	15	10.6	23	11.6	18	9.9
Chronic condition grade 3-4	46	32.4	67	33.8	49	27.1

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative anthracycline dose in doxorubicin equivalents (17)

**Supplemental Table 12. Treatment and chronic conditions by decade - Osteosarcoma**

Treatment	1970-1979 (N=295)		1980-1989 (N=375)		1990-1999 (N=302)	
	N	%	N	%	N	%
Chest radiation	24	8.2	3	0.8	2	0.7
Mean (SD) dose (Gy)	2476	(1745)	3600	(2263)	5650	(5445)
Pelvic radiation	4	1.4	2	0.5	3	1.0
Mean (SD) dose (Gy)	5425	(2748)	3400	(2263)	3950	(2899)
Alkylating agent*	140	47.6	267	71.2	213	70.5
Mean (SD) (mg/m <sup>2</sup> )	5713	(2932)	6932	(9482)	9621	(5692)
Anthracycline†	240	81.6	326	86.9	283	93.7
Mean (SD) (mg/m <sup>2</sup> )	389	(135)	365	(147)	370	(103)
High dose methotrexate‡	168	56.9	228	60.8	202	66.9
Dexamethasone	7	2.4	62	16.5	45	14.9
Vincristine	173	58.8	146	38.9	18	6.0
Bleomycin	37	12.8	189	52.9	28	9.3
Amputation	236	80.3	193	51.5	69	22.8
Chronic condition grade 3-4	260	88.1	279	74.4	197	65.2

SD=Standard deviation, cGy=centigray, mg=milligrams, m<sup>2</sup>=squared meters, N=number, %=percent

\*cumulative alkylating agent dose in cyclophosphamide equivalents (27), †cumulative anthracycline dose in doxorubicin equivalents (17), ‡high dose methotrexate cumulative intravenous dose ≥ 4300 mg/m<sup>2</sup>

**Supplemental Table 13. Percent of survivors with adverse health status outcomes and relative risk (RR) with 95% confidence intervals (95% CI) for adverse health status outcomes for the comparison of outcomes for survivors within treatment decade to all siblings. Cancer-related pain and anxiety outcomes limited to survivors with 1970-79 as a reference group.**

<b>Outcome</b>	<b>Decade</b>	<b>Total N</b>	<b>%</b>	<b>RR</b>	<b>95% CI</b>
Poor general health	Siblings	3149	5.4	1.0	
	1970-79	4618	11.2	2.1	(1.8, 2.5)
	1980-89	4669	11.7	2.3	(2.0, 2.7)
	1990-99	5279	13.7	2.6	(2.2, 3.1)
Functional impairment	Siblings	3149	2.7	1.0	
	1970-79	4618	12.7	4.8	(3.8, 6.1)
	1980-89	4669	12.1	4.9	(3.9, 6.1)
	1990-99	5279	11.8	4.5	(3.6, 5.6)
Activity limitation	Siblings	3149	6.0	1.0	
	1970-79	4618	12.8	2.5	(2.1, 2.9)
	1980-89	4669	11.8	2.3	(1.9, 2.6)
	1990-99	5279	12.6	2.4	(2.0, 2.8)
Poor mental health	Siblings	3149	10.1	1.0	
	1970-79	4618	17.5	1.8	(1.6, 2.1)
	1980-89	4669	17.4	1.7	(1.5, 2.0)
	1990-99	5279	18.0	1.8	(1.6, 2.0)
Any of above 4 domains	Siblings	3149	18.0	1.0	
	1970-79	4618	33.1	1.9	(1.8, 2.1)
	1980-89	4669	32.3	1.8	(1.7, 2.0)
	1990-99	5279	33.9	1.9	(1.7, 2.1)
Cancer -related pain	1970-79	4618	9.6	1.0	
	1980-89	4669	10.7	1.1	(1.0, 1.3)
	1990-99	5279	12.0	1.3	(1.1, 1.4)
Cancer-related anxiety	1970-79	4618	13.3	1.0	
	1980-89	4669	14.1	1.1	(1.0, 1.2)
	1990-99	5279	15.0	1.1	(1.0, 1.2)

N=Number, RR=relative risk, %=percent, CI=confidence interval

Adjusted for attained age, sex and race, sampling weights applied

**Supplemental Table 14. Percentage with adverse health status outcomes among survivors by diagnosis and treatment decade, RR (95% CI) for outcome, adjusted for attained age, survival time, race/ethnicity, and sex (decade), and additionally for treatment (decade-treatment) or grade 3-4 chronic conditions (decade-chronic conditions)**

			Poor General Health				Functional Impairment				Activity Limitation			
			%	Decade	Decade + Treatment	Decade + Chronic Condition	%	Decade	Decade + Treatment	Decade + Chronic Condition	%	Decade	Decade + Treatment	Decade + Chronic Condition
Diagnosis	Era	N*		RR (95% CI)	RR (95% CI)	RR (95% CI)		RR (95% CI)	RR (95% CI)	RR (95% CI)		RR (95% CI)	RR (95% CI)	RR (95% CI)
Acute lymphoblastic leukemia	1970-79	1361	9.5	1.0	1.0	1.0	10.3	1.0	1.0	1.0	8.6	1.0	1.0	1.0
	1980-89	1714	9.9	0.9 (0.8, 1.0)	0.9 (0.8, 1.0)	0.9 (0.8, 1.0)	8.5	1.0 (0.8, 1.1)	1.0 (0.9, 1.2)	1.0 (0.9, 1.1)	8.4	0.9 (0.8, 1.0)	0.9 (0.8, 1.0)	0.9 (0.8, 1.1)
	1990-99	2544	13.9	<b>1.2 (1.1, 1.4)</b>	<b>1.1 (1.0, 1.3)</b>	<b>1.2 (1.1, 1.4)</b>	9.1	0.9 (0.8, 1.1)	1.1 (0.9, 1.3)	1.0 (0.9, 1.1)	11.2	1.1 (1.0, 1.3)	1.3 (1.1, 1.5)	1.1 (1.0, 1.3)
Astrocytoma	1970-79	369	13.3	1.0	1.0	1.0	33.4	1.0	1.0	1.0	21.1	1.0	1.0	1.0
	1980-89	501	15.3	1.1 (0.9, 1.3)	1.3 (0.8, 2.0)	1.1 (0.9, 1.3)	28.9	1.1 (1.0, 1.3)	0.9 (0.7, 1.1)	1.1 (1.0, 1.3)	15.4	1.0 (0.8, 1.2)	0.7 (0.5, 1.1)	1.0 (0.9, 1.2)
	1990-99	763	14.2	1.0 (0.8, 1.2)	1.4 (0.9, 2.2)	1.1 (0.9, 1.3)	18.1	<b>0.7 (0.6, 0.8)</b>	<b>0.7 (0.6, 0.9)</b>	<b>0.8 (0.7, 0.9)</b>	12.5	<b>0.8 (0.7, 0.9)</b>	<b>0.8 (0.5, 1.2)</b>	<b>0.9 (0.7, 1.0)</b>
Medullo-blastoma	1970-79	107	17.8	1.0	1.0	1.0	45.8	1.0	1.0	1.0	17.9	1.0	1.0	1.0
	1980-89	156	14.8	0.9 (0.7, 1.2)	0.8 (0.4, 1.4)	0.9 (0.7, 1.3)	28.6	0.9 (0.7, 1.1)	0.7 (0.5, 1.0)	0.9 (0.7, 1.1)	12.4	0.8 (0.6, 1.0)	0.6 (0.3, 1.4)	0.8 (0.6, 1.1)
	1990-99	257	17.6	1.1 (0.8, 1.5)	0.7 (0.4, 1.4)	1.1 (0.8, 1.4)	26.5	0.9 (0.8, 1.1)	0.7 (0.5, 1.1)	0.9 (0.7, 1.1)	19.5	1.3 (1.0, 1.7)	1.2 (0.5, 2.7)	1.3 (1.0, 1.7)
Hodgkin lymphoma	1970-79	824	13.5	1.0	1.0	1.0	7.5	1.0	1.0	1.0	12.3	1.0	1.0	1.0
	1980-89	827	13.7	1.1 (0.9, 1.3)	1.3 (0.9, 1.8)	1.1 (0.9, 1.3)	6.4	1.0 (0.8, 1.3)	1.1 (0.6, 1.9)	1.0 (0.8, 1.3)	10.2	1.0 (0.8, 1.2)	1.0 (0.7, 1.5)	1.0 (0.8, 1.2)
	1990-99	771	15.3	1.1 (0.9, 1.2)	0.9 (0.6, 1.5)	1.1 (1.0, 1.3)	7.9	1.1 (0.9, 1.4)	1.0 (0.5, 1.9)	1.2 (1.0, 1.5)	11.2	1.0 (0.8, 1.2)	0.8 (0.5, 1.3)	1.1 (0.9, 1.3)
Non-Hodgkin lymphoma	1970-79	347	10.8	1.0	1.0	1.0	6.2	1.0	1.0	1.0	9.2	1.0	1.0	1.0
	1980-89	517	11.3	1.0 (0.9, 1.3)	1.1 (0.8, 1.4)	1.1 (0.8, 1.3)	9.0	1.1 (0.9, 1.4)	1.2 (0.9, 1.6)	1.1 (0.9, 1.4)	9.3	1.0 (0.8, 1.3)	1.1 (0.8, 1.4)	1.0 (0.8, 1.3)
	1990-99	566	11.7	1.1 (0.9, 1.3)	1.1 (0.8, 1.5)	1.2 (0.9, 1.5)	10.5	1.3 (1.0, 1.6)	1.5 (1.1, 2.2)	1.4 (1.1, 1.8)	9.6	1.0 (0.8, 1.3)	1.2 (0.8, 1.6)	1.1 (0.9, 1.4)
Wilms tumor	1970-79	398	8.0	1.0	1.0	1.0	6.9	1.0	1.0	1.0	7.9	1.0	1.0	1.0
	1980-89	259	5.9	0.7 (0.5, 1.1)	0.7 (0.5, 1.1)	0.7 (0.5, 1.1)	5.8	1.0 (0.7, 1.5)	1.0 (0.6, 1.6)	1.0 (0.7, 1.6)	9.7	1.2 (0.9, 1.6)	1.2 (0.9, 1.7)	1.2 (0.9, 1.6)
	1990-99	427	9.4	1.4 (1.0, 1.9)	1.4 (1.0, 2.0)	1.5 (1.1, 2.1)	4.0	0.7 (0.4, 1.0)	0.7 (0.4, 1.0)	0.7 (0.5, 1.1)	6.6	0.9 (0.7, 1.3)	1.0 (0.7, 1.3)	1.0 (0.7, 1.3)
Neuro-blastoma	1970-79	289	9.1	1.0	1.0	1.0	8.0	1.0	1.0	1.0	11.3	1.0	1.0	1.0
	1980-89	177	14.3	1.2 (0.9, 1.6)	1.2 (0.9, 1.7)	1.2 (0.9, 1.6)	12.5	1.3 (0.9, 1.8)	1.1 (0.7, 1.7)	1.2 (0.9, 1.7)	12.2	1.1 (0.8, 1.5)	1.1 (0.7, 1.6)	1.1 (0.8, 1.5)
	1990-99	247	12.3	1.1 (0.8, 1.5)	0.9 (0.7, 1.3)	1.1 (0.8, 1.6)	9.5	0.9 (0.6, 1.3)	0.7 (0.5, 1.2)	1.0 (0.7, 1.3)	10.2	0.8 (0.6, 1.2)	0.8 (0.5, 1.3)	0.9 (0.6, 1.2)
Rhabdomyo-sarcoma	1970-79	287	11.6	1.0	1.0	1.0	11.8	1.0	1.0	1.0	10.5	1.0	1.0	1.0
	1980-89	233	13.5	1.2 (0.9, 1.6)	1.6 (0.8, 3.2)	1.2 (0.9, 1.6)	12.8	1.1 (0.9, 1.5)	1.8 (0.9, 3.6)	1.1 (0.9, 1.5)	7.1	0.8 (0.5, 1.1)	0.8 (0.3, 1.8)	0.8 (0.5, 1.1)
	1990-99	232	9.9	0.9 (0.7, 1.2)	1.3 (0.7, 2.6)	0.9 (0.7, 1.3)	11.4	1.0 (0.7, 1.3)	1.5 (0.8, 2.9)	1.0 (0.7, 1.3)	9.9	1.1 (0.8, 1.5)	1.3 (0.6, 2.7)	1.1 (0.8, 1.5)
Ewing sarcoma	1970-79	142	16.2	1.0	1.0	1.0	16.0	1.0	1.0	1.0	26.8	1.0	1.0	1.0
	1980-89	198	12.2	0.9 (0.7, 1.3)	0.5 (0.2, 1.2)	0.9 (0.7, 1.3)	15.8	1.0 (0.8, 1.4)	1.1 (0.5, 2.3)	1.0 (0.7, 1.3)	18.5	0.8 (0.6, 1.0)	0.6 (0.4, 1.0)	0.8 (0.6, 1.0)
	1990-99	181	10.5	0.8 (0.6, 1.2)	0.6 (0.3, 1.3)	0.8 (0.6, 1.2)	16.2	1.1 (0.8, 1.5)	1.2 (0.5, 2.6)	1.2 (0.9, 1.6)	24.8	1.1 (0.9, 1.3)	0.9 (0.5, 1.4)	1.1 (0.9, 1.4)
Osteosarcoma	1970-79	295	12.8	1.0	1.0	1.0	17.7	1.0	1.0	1.0	28.1	1.0	1.0	1.0
	1980-89	375	9.4	0.8 (0.6, 1.1)	0.7 (0.4, 1.3)	0.8 (0.6, 1.1)	16.5	0.9 (0.8, 1.1)	1.1 (0.7, 1.7)	1.0 (0.8, 1.2)	26.6	0.9 (0.8, 1.1)	0.9 (0.7, 1.3)	0.9 (0.8, 1.1)
	1990-99	302	16.3	<b>1.4 (1.1, 1.7)</b>	<b>1.1 (0.6, 2.1)</b>	<b>1.4 (1.1, 1.8)</b>	21.7	1.2 (1.0, 1.4)	1.6 (1.0, 2.6)	1.2 (1.0, 1.5)	34.1	1.2 (1.0, 1.4)	1.2 (0.8, 1.7)	<b>1.2 (1.1, 1.4)</b>



**Table 14 (continued). Percentage with adverse health status outcomes among survivors by diagnosis and treatment decade, RR (95% CI) for outcome, adjusted for attained age, survival time, race/ethnicity, and sex (decade), and additionally for treatment (decade-treatment) or grade 3-4 chronic conditions (decade-chronic conditions)**

			Poor Mental Health				Pain				Anxiety			
			%	Decade	Decade + Treatment	Decade + Chronic Condition	%	Decade	Decade + Treatment	Decade + Chronic Condition	%	Decade	Decade + Treatment	Decade + Chronic Condition
Diagnosis	Era	N*		RR (95% CI)	RR (95% CI)	RR (95% CI)		RR (95% CI)	RR (95% CI)	RR (95% CI)		RR (95% CI)	RR (95% CI)	RR (95% CI)
Acute lymphoblastic leukemia	1970-79	1361	17.3	1.0	1.0	1.0	7.5	1.0	1.0	1.0	11.3	1.0	1.0	1.0
	1980-89	1714	16.3	0.9 (0.8, 1.0)	0.9 (0.8, 1.0)	0.9 (0.9, 1.0)	9.5	1.0 (0.9, 1.1)	0.9 (0.8, 1.1)	1.0 (0.9, 1.2)	12.2	0.9 (0.9, 1.1)	1.0 (0.9, 1.1)	1.0 (0.9, 1.1)
	1990-99	2544	19.3	1.1 (1.0, 1.2)	1.1 (1.0, 1.2)	1.1 (1.0, 1.2)	13.7	<b>1.3 (1.1, 1.4)</b>	<b>1.2 (1.0, 1.4)</b>	<b>1.3 (1.1, 1.5)</b>	16.1	<b>1.2 (1.1, 1.3)</b>	<b>1.2 (1.1, 1.4)</b>	<b>1.2 (1.1, 1.3)</b>
Astrocytoma	1970-79	369	18.4	1.0	1.0	1.0	8.5	1.0	1.0	1.0	12.9	1.0	1.0	1.0
	1980-89	501	22.1	1.1 (1.0, 1.3)	1.1 (0.8, 1.5)	1.2 (1.0, 1.3)	13.6	1.3 (1.1, 1.6)	1.7 (1.0, 2.8)	1.3 (1.1, 1.6)	14.5	1.1 (0.9, 1.3)	1.0 (0.7, 1.6)	1.1 (0.9, 1.3)
	1990-99	763	17.6	0.9 (0.8, 1.0)	0.9 (0.6, 1.2)	0.9 (0.8, 1.1)	10.7	1.0 (0.8, 1.2)	1.2 (0.7, 2.1)	1.1 (0.9, 1.3)	10.9	0.8 (0.7, 1.0)	0.8 (0.5, 1.2)	0.9 (0.7, 1.0)
Medullo-blastoma	1970-79	107	26.3	1.0	1.0	1.0	12.6	1.0	1.0	1.0	14.3	1.0	1.0	1.0
	1980-89	156	14.0	0.8 (0.6, 1.0)	0.6 (0.4, 1.1)	0.8 (0.6, 1.1)	5.8	0.7 (0.4, 1.1)	0.4 (0.1, 1.1)	0.7 (0.4, 1.2)	11.9	1.0 (0.7, 1.4)	0.8 (0.4, 1.6)	1.0 (0.7, 1.5)
	1990-99	257	17.3	1.0 (0.8, 1.3)	0.8 (0.4, 1.4)	1.0 (0.8, 1.3)	7.0	1.0 (0.6, 1.6)	0.5 (0.2, 1.5)	1.0 (0.6, 1.6)	9.8	0.8 (0.6, 1.2)	0.4 (0.1, 1.1)	0.8 (0.6, 1.1)
Hodgkin lymphoma	1970-79	824	18.4	1.0	1.0	1.0	6.4	1.0	1.0	1.0	16.0	1.0	1.0	1.0
	1980-89	827	18.5	1.1 (1.0, 1.2)	1.0 (0.7, 1.3)	1.1 (1.0, 1.2)	6.2	1.0 (0.8, 1.3)	1.3 (0.8, 2.3)	1.0 (0.8, 1.3)	17.3	1.1 (1.0, 1.2)	1.1 (0.8, 1.5)	1.1 (1.0, 1.2)
	1990-99	771	15.8	0.9 (0.8, 1.0)	0.6 (0.4, 0.9)	0.9 (0.8, 1.1)	8.1	1.3 (1.0, 1.6)	1.5 (0.8, 3.0)	1.4 (1.1, 1.7)	18.8	1.1 (1.0, 1.3)	1.0 (0.6, 1.4)	1.1 (1.0, 1.3)
Non-Hodgkin lymphoma	1970-79	347	17.7	1.0	1.0	1.0	8.1	1.0	1.0	1.0	11.8	1.0	1.0	1.0
	1980-89	517	17.4	1.0 (0.8, 1.2)	1.1 (0.9, 1.4)	1.0 (0.8, 1.2)	9.1	1.1 (0.9, 1.4)	1.3 (0.9, 1.7)	1.1 (0.9, 1.4)	12.6	1.0 (0.8, 1.2)	1.0 (0.7, 1.2)	1.0 (0.8, 1.2)
	1990-99	566	17.1	1.0 (0.8, 1.1)	1.0 (0.8, 1.4)	1.0 (0.8, 1.2)	8.9	1.1 (0.8, 1.4)	1.0 (0.7, 1.4)	1.1 (0.9, 1.5)	14.7	1.2 (1.0, 1.4)	1.1 (0.8, 1.5)	1.2 (1.0, 1.4)
Wilms tumor	1970-79	398	14.4	1.0	1.0	1.0	7.8	1.0	1.0	1.0	9.5	1.0	1.0	1.0
	1980-89	259	13.6	0.9 (0.7, 1.2)	0.9 (0.7, 1.1)	0.9 (0.7, 1.2)	3.1	0.6 (0.4, 1.0)	0.6 (0.4, 1.0)	0.6 (0.4, 1.0)	12.6	1.2 (0.9, 1.5)	1.1 (0.8, 1.4)	1.2 (0.9, 1.5)
	1990-99	427	15.1	1.1 (0.9, 1.3)	1.0 (0.8, 1.3)	1.1 (0.9, 1.4)	5.2	1.1 (0.7, 1.6)	0.9 (0.6, 1.4)	1.1 (0.7, 1.6)	9.7	1.0 (0.7, 1.2)	1.0 (0.8, 1.3)	1.0 (0.8, 1.3)
Neuro-blastoma	1970-79	289	15.4	1.0	1.0	1.0	7.4	1.0	1.0	1.0	11.1	1.0	1.0	1.0
	1980-89	177	18.3	1.4 (1.0, 1.8)	1.7 (1.2, 2.5)	1.3 (1.0, 1.8)	9.4	1.2 (0.8, 1.8)	1.3 (0.8, 2.1)	1.1 (0.7, 1.7)	11.4	1.0 (0.7, 1.4)	1.1 (0.7, 1.6)	1.0 (0.7, 1.4)
	1990-99	247	11.6	0.7 (0.5, 0.9)	0.6 (0.4, 0.8)	0.7 (0.5, 0.9)	7.3	0.9 (0.5, 1.3)	1.0 (0.6, 1.6)	0.9 (0.6, 1.4)	9.0	0.9 (0.6, 1.3)	0.9 (0.6, 1.3)	0.9 (0.6, 1.3)
Rhabdomyosarcoma	1970-79	287	17.7	1.0	1.0	1.0	14.6	1.0	1.0	1.0	16.7	1.0	1.0	1.0
	1980-89	233	17.7	1.1 (0.8, 1.3)	1.0 (0.6, 1.6)	1.0 (0.8, 1.3)	14.5	1.1 (0.8, 1.4)	1.2 (0.7, 2.0)	1.1 (0.8, 1.4)	18.0	1.1 (0.9, 1.4)	1.1 (0.7, 1.8)	1.1 (0.8, 1.3)
	1990-99	232	15.6	0.9 (0.7, 1.2)	0.8 (0.5, 1.3)	0.9 (0.7, 1.2)	11.3	0.8 (0.6, 1.1)	0.9 (0.5, 1.5)	0.8 (0.6, 1.1)	14.4	0.9 (0.7, 1.1)	0.9 (0.5, 1.4)	0.9 (0.7, 1.2)
Ewing sarcoma	1970-79	142	17.7	1.0	1.0	1.0	21.4	1.0	1.0	1.0	23.0	1.0	1.0	1.0
	1980-89	198	17.8	1.0 (0.8, 1.3)	1.4 (0.7, 2.6)	1.0 (0.8, 1.3)	21.0	1.0 (0.8, 1.2)	1.0 (0.6, 1.7)	0.9 (0.7, 1.2)	14.1	0.8 (0.6, 1.0)	0.7 (0.4, 1.3)	0.8 (0.6, 1.0)
	1990-99	181	19.5	1.1 (0.8, 1.4)	1.6 (0.9, 3.1)	1.1 (0.8, 1.4)	24.2	1.1 (0.9, 1.4)	1.2 (0.7, 2.1)	1.1 (0.9, 1.4)	20.1	1.1 (0.8, 1.4)	1.0 (0.6, 1.9)	1.1 (0.8, 1.4)
Osteosarcoma	1970-79	295	16.8	1.0	1.0	1.0	23.9	1.0	1.0	1.0	13.5	1.0	1.0	1.0
	1980-89	375	17.3	0.9 (0.7, 1.1)	0.9 (0.6, 1.4)	0.9 (0.7, 1.1)	23.4	0.9 (0.8, 1.0)	1.1 (0.8, 1.6)	0.9 (0.8, 1.1)	14.9	1.0 (0.8, 1.2)	1.1 (0.7, 1.8)	1.0 (0.8, 1.2)
	1990-99	302	24.8	<b>1.3 (1.1, 1.5)</b>	<b>1.7 (1.0, 2.7)</b>	<b>1.3 (1.1, 1.5)</b>	36.6	<b>1.4 (1.2, 1.6)</b>	<b>1.6 (1.1, 2.4)</b>	<b>1.4 (1.3, 1.7)</b>	19.5	1.3 (1.0, 1.5)	1.4 (0.8, 2.4)	1.3 (1.0, 1.6)

%=percent, RR=relative risk, CI=confidence interval

Regression models used a binomial distribution with a log link. All models adjusted for attained age, survival time, sex, race and sampling weights. Model fit was assessed by examining Akaike Information Criteria. Final models all had AIC differences (when compared to a model adjusted only for attained age, survival time, sex, race and sampling weights) of  $\geq 10$ , N\*=number – displayed Ns for acute lymphoblastic leukemia survivors are weighted. **Bold text indicates RR estimates with  $p < 0.05$**