

Supplementary Box 1: Medication Categories by AHFS Drug Classes

Antidepressants

- 28:16.04.12 Monoamine Oxidase Inhibitors
- 28:16.04.16 Selective Serotonin and Norepinephrine Reuptake Inhibitors
- 28:16.04.20 Selective-Serotonin Reuptake Inhibitors
- 28:16.04.24 Serotonin Modulators
- 28:16.04.28 Tricyclics and Other Norepinephrine-Reuptake Inhibitors
- 28:16.04.92 Antidepressants, Miscellaneous

Anxiolytics, Sedatives, Hypnotics

- 28:12.04 Barbiturates, Anticonvulsants
- 28:12.08 Benzodiazepines, Anticonvulsants
- 28:24.04 Barbiturates
- 28:24.08 Benzodiazepines
- 28:24.92 Anxiolytics, Sedatives, and Hypnotics, Miscellaneous

Anticonvulsants

- 28:12.04 Barbiturates, Anticonvulsants
- 28:12.08 Benzodiazepines, Anticonvulsants
- 28:12.92 Anticonvulsants, Miscellaneous
- 28:12.20 Succinimides
- 28:12.12 Hydantoins

Non-Opioid Analgesics

- 28:08.04.08 Cyclooxygenase-2 (COX-2) Inhibitors
- 28:08.04.92 Other Nonsteroidal Anti-inflammatory Agents
- 28:08.04.24 Salicylates
- 28:08.92 Analgesics and Antipyretics, Miscellaneous
- 28:32.28 Selective Serotonin Agonists

Opioids

- 28:08.08 Opiate Agonists
- 28:08.12 Opiate Partial Agonists
- 28:10 Opiate Antagonists

Muscle Relaxants

- 12:20.04 Centrally Acting Skeletal Muscle Relaxants
- 12:20.08 Direct-acting Skeletal Muscle Relaxants
- 12:20.12 GABA-derivative Skeletal Muscle Relaxants
- 12:20.20 Neuromuscular Blocking Agents
- 12:20.92 Skeletal Muscle Relaxants, Miscellaneous

Neuroleptics

- 28:16.08.04 Atypical Antipsychotics
- 28:16.08.08 Butyrophenones
- 28:16.08.24 Phenothiazines
- 28:16.08.32 Thioxanthenes
- 28:16.08.92 Antipsychotics, Miscellaneous
- 28:28 Antimanic Agents

Stimulants

- 28:20.92 Anorexigenic Agents and Respiratory and Cerebral Stimulants, Miscellaneous
- 28:20.04 Amphetamines
- 28:92 Central Nervous System Agents, Miscellaneous
- 24:08.16 Central Alpha-Agonists (for clonidine and guanfacine)
- 28:20.80 Wakefulness-promoting Agents (for Armodafinil)

Brinkman TM, Ullrich NJ, Zhang N, et al. Prevalence and predictors of prescription psychoactive medication use in adult survivors of childhood cancer: A report from the Childhood Cancer Survivor Study. *Journal of Cancer Survivorship*. 2013;7(1):104-114.

Brinkman TM, Zhang N, Ullrich NJ, et al: Psychoactive medication use and neurocognitive function in adult survivors of childhood cancer: A report from the childhood cancer survivor study. *Pediatric Blood & Cancer*. 2012;60:486-493

Supplementary Tables

-Supplementary Table 1: Comparison between Survivors who Completed Self-evaluation of Functional Outcomes at Adulthood versus Survivors who did not Complete Self-evaluation†

Clinical Characteristics	Survivors with adult functional data	Survivors without adult functional data	<i>P</i>
	(N=3114) n (%)	(N=2551) n (%)	
Year of completion of baseline survey			<0.001
1992 - 1999	2537 (60.7)	1641 (39.3)	
2000 - 2009	192 (47.9)	229 (52.1)	
2010 - 2015	385 (35.9)	681 (64.1)	
Sex			<0.001
Male	1536 (48.7)	1511 (51.3)	
Female	1578 (59.5)	1040 (40.5)	
Race			<0.001
White/non-Hispanic	2610 (56.5)	1923 (43.5)	
Others	463 (43.4)	554 (56.6)	
Not specified	41 (34.0)	74 (66.0)	
Health Insurance			<0.001
Yes	2886 (59.3)	1828 (40.7)	
No	173 (51.6)	143 (48.4)	
Not specified	41 (34.0)	74 (66.0)	
Household Income			<0.001
< \$60,000	1763 (52.1)	1548 (47.9)	
≥\$60,000	1198 (58.1)	797 (41.9)	
Not specified	153 (41.8)	206 (58.2)	
History of epilepsy			<0.001
No	2863 (54.6)	2231 (45.4)	
Yes	240 (44.2)	311 (55.8)	
History of migraine/headache			0.02
No	2455 (54.4)	1925 (45.6)	
Yes	651 (51.0)	618 (49.0)	
Cancer-related Pain			0.27
No	2689 (59.8)	1646 (40.2)	
Mild	254 (55.7)	189 (44.3)	
Moderate	109 (58.8)	77 (41.2)	
Severe	37 (54.7)	35 (45.3)	
Diagnosis			<0.001
Leukemia	1300 (53.8)	976 (46.2)	
Central nervous system tumor	462 (51.0)	444 (49.0)	
Hodgkin Disease/Non-Hodgkin Lymphoma	148 (51.0)	142 (49.0)	
Wilms tumor	518 (61.8)	320 (38.2)	
Neuroblastoma	485 (52.2)	445 (47.8)	
Soft tissue sarcoma/ Osteosarcoma	201 (47.3)	224 (52.7)	
Age at Diagnosis (years) *	2.7 (1.5-4.2)	2.8 (1.5-4.4)	<0.001
Chemotherapy			
Anthracyclines			0.01
Yes	1001 (60.4)	657 (39.6)	

	No	1370 (64.3)	760 (35.7)	
Alkylating Agent				<0.001
	Yes	1138 (58.0)	823 (42.0)	
	No	1233 (67.5)	595 (32.5)	
IV Methotrexate (cumulative) mg/m ² Mean(SD)				0.40
IT Methotrexate (cumulative) mg/m ² Mean(SD)				0.23
Anti-tumor Antibiotic				0.82
	Yes	1300 (60.8)	838 (39.2)	
	No	1239 (60.5)	810 (39.5)	
Corticosteroids				0.21
	Yes	1219 (59.7)	824 (40.3)	
	No	1320 (61.6)	824 (38.4)	
Enzymes				0.43
	Yes	1017 (61.4)	640 (38.6)	
	No	1522 (60.2)	1008 (39.8)	
Epipodophyllotoxins				0.34
	Yes	322 (60.8)	208 (39.2)	
	No	2049 (62.9)	1207 (37.1)	
Heavy Metals				<0.001
	Yes	163 (45.3)	197 (54.7)	
	No	2376 (62.1)	1451 (37.9)	
Plant Alkaloids				0.002
	Yes	1868 (62.1)	1139 (37.9)	
	No	671 (56.9)	509 (43.1)	
Radiation				<0.001
	None	2007 (56.3)	1439 (43.7)	
	Brain <20 Gy	473 (58.5)	308 (41.5)	
	Brain 20-35 Gy	153 (44.8)	177 (55.2)	
	Brain >35 Gy	275 (46.5)	316 (53.5)	
Body only (Chest, abdomen, pelvis) Radiation				0.02
	No	2364 (54.5)	1854 (45.5)	
	Yes	750 (51.0)	697 (49.0)	
Psychoactive Medication Use in Adolescent				
Use of any psychoactive medication				
	No	2614 (55.0)	2014 (45.0)	<0.001
	Yes	500 (47.7)	537 (52.3)	
Antidepressants				
	No	3028 (54.0)	2453 (46.0)	0.007
	Yes	86 (44.7)	98 (55.3)	
Anxiolytics/sedatives/hypnotics				
	No	3075 (53.7)	2517 (46.3)	0.92
	Yes	39 (54.2)	34 (45.8)	
Anticonvulsants				
	No	2958 (54.2)	2362 (45.8)	0.001
	Yes	156 (45.6)	189 (54.4)	
Non-opioid analgesics				
	No	3029 (53.5)	2494 (46.5)	0.23
	Yes	85 (58.5)	57 (41.5)	
Opioids				
	No	2972 (54.2)	2371 (45.8)	<0.001

	Yes	142 (43.4)	180 (56.6)	
Muscle relaxants	No	3102 (53.7)	2540 (46.3)	0.49
	Yes	12 (46.8)	11 (53.2)	
Neuroleptics	No	3095 (53.9)	2518 (46.1)	<0.001
	Yes	19 (33.2)	33 (66.8)	
Stimulants	No	2996 (53.7)	2446 (46.3)	0.84
	Yes	118 (53.1)	105 (46.9)	
Behavior Problems Index				
Depression/Anxiety	No	2318 (58.6)	1499 (41.4)	0.71
	Yes	575 (59.2)	365 (40.8)	
Headstrong Behavior	No	2445 (59.6)	1508 (40.4)	0.001
	Yes	446 (53.7)	356 (46.3)	
Attention Deficit	No	2344 (59.1)	1476 (40.9)	0.19
	Yes	546 (56.8)	389 (43.2)	
Peer Conflict/Social Withdrawal	No	1993 (59.0)	1261 (41.0)	0.44
	Yes	897 (57.9)	603 (42.1)	
Antisocial	No	2450 (59.6)	1513 (40.4)	0.001
	Yes	442 (53.8)	350 (46.2)	
Placement in special education	No	1831 (54.6)	1425 (45.4)	0.05
	Yes	1074 (52.0)	950 (48.0)	

† The demographics, treatment characteristics, psychoactive drug use at adolescence and behavior functioning (BPI) were compared between survivors who completed self-evaluation of adult functional outcomes at longitudinal follow-up *versus* survivors who did not complete self-evaluation. All statistical estimates from the data, including percentages, were calculated with sampling weights to account for under-sampling of survivors of acute lymphoblastic leukemia diagnosed from 1987-1999.

* Presented as median (interquartile range)

Supplementary Table 2: Comparison of Psychoactive Medication Use in Survivors vs Sibling Controls

Use of psychoactive medications	Survivors (N=5665)	Siblings (N=921)	
	(%)	(%)	RR (95%CI)
Any psychoactive medication	1037 (18.3)	61 (6.6)	2.97 (2.27- 3.89)
By each medication class:			
Antidepressants	184 (3.2)	13 (1.4)	2.64 (1.42- 4.92)
Anxiolytics/sedatives/hypnotics	73 (1.3)	1 (0.1)	*
Anticonvulsants	345 (6.1)	8 (0.9)	8.69 (3.84-19.65)
Non-opioid analgesics	142 (2.5)	8 (0.9)	2.32 (1.15- 4.71)
Opioids	322 (5.7)	16 (1.7)	2.72 (1.65- 4.50)
Muscle relaxants	23 (0.4)	2 (0.2)	*
Neuroleptics	52 (0.9)	5 (0.5)	*
Stimulants	223 (3.9)	21 (2.3)	2.58 (1.50- 4.45)

Models are adjusted for sex, age and race

* Risk comparisons were not conducted for Anxiolytics/Sedatives/Hypnotics, Muscle Relaxants and Neuroleptics due to limited sample size within the sibling group.

Supplementary Table 3: Proportion of Survivors and Siblings who Reported Psychoactive Medications Use by Baseline Survey Era[†]

Baseline Survey Era	Groups	1992 – 1999 (n=4178)		2000 – 2009 (n=421)		2010 – 2015 (n=1066)	
		n	(%)	n	(%)	n	(%)
Any psychoactive drug	Survivors	740	(17.7)	102	(22.7)	195	(17.1)
	Siblings	49	(6.3)	0	(0)	12	(11.2)
By categories:							
Antidepressants	Survivors	83	(2.0)	34	(7.2)	67	(5.8)
	Siblings	10	(1.3)	0	(0)	3	(2.8)
Anxiolytics/sedatives/hypnotics	Survivors	48	(1.1)	9	(2.4)	16	(1.8)
	Siblings	0	(0)	0	(0)	1	(0.9)
Anticonvulsants	Survivors	247	(5.9)	37	(8.1)	61	(5.2)
	Siblings	6	(0.8)	0	(0)	2	(1.9)
Non-opioid analgesics	Survivors	116	(2.8)	4	(0.6)	22	(2.1)
	Siblings	8	(1.0)	0	(0)	0	(0)
Opioids	Survivors	295	(7.1)	10	(1.4)	17	(1.6)
	Siblings	16	(2.0)	0	(0)	0	(0)
Muscle relaxants	Survivors	17	(0.4)	1	(0.1)	5	(0.5)
	Siblings	2	(0.3)	0	(0)	0	(0)
Neuroleptics	Survivors	25	(0.6)	6	(1.6)	21	(2.0)
	Siblings	4	(0.5)	0	(0)	1	(0.9)
Stimulants	Survivors	112	(2.7)	39	(9.4)	72	(5.6)
	Siblings	13	(1.7)	0	(0)	8	(7.5)

[†] Percentages calculated on total number of participants for whom data was available and weighted to reflect modified sampling of survivors in expansion cohort.

Supplementary Table 4: Factors Associated with Psychoactive Medication Use in Adolescent Survivors of Childhood Cancer

Associated Factors	Any Psychoactive Medication		Antidepressant		Anxiolytics/ sedatives/ hypnotics		Anticonvulsants		Non-opioid analgesics		Opioids		Muscle relaxants		Neuroleptics		Stimulants	
	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
Demographics factors†																		
Sex																		
Female (vs male)	0.94	0.82-1.08	1.13	0.81-1.58	1.17	0.63-2.20	1.03	0.79-1.35	1.35	0.94-1.94	1.08	0.82-1.41	1.24	0.46-3.32	0.84	0.41-1.71	0.59	0.43-0.80
Race																		
Others (vs White/non-Hispanic)	0.76	0.63-0.92	0.52	0.32-0.84	0.64	0.27-1.50	0.78	0.56-1.10	1.24	0.80-1.94	0.67	0.45-1.02	1	0.17-5.96	1.36	0.57-3.28	0.43	0.25-0.71
Age at baseline (years)	1	0.97-1.04	1.13	1.04-1.22	1.02	0.86-1.20	0.97	0.91-1.03	1.01	0.92-1.10	1	0.94-1.07	1.14	0.92-1.42	1	0.85-1.18	0.94	0.88-1.01
Age at diagnosis (years)	1	0.97-1.04	1.04	0.95-1.15	1.07	0.92-1.25	0.94	0.87-1.01	1.04	0.94-1.14	1.06	0.99-1.15	1.12	0.93-1.36	1.24	1.00-1.53	0.96	0.87-1.05
Socioeconomic factors†																		
Health insurance																		
Yes (vs none)	1.07	0.80-1.43	1.47	0.73-2.94	0.22	0.03-1.55	0.59	0.31-1.12	1.73	1.00-3.01	0.91	0.53-1.57	1.39	0.36-5.41	1.38	0.49-3.95	0.99	0.47-2.08
Household income < \$60000 (vs ≥\$60,000)	1.29	1.07-1.56	1.33	0.79-2.22	1.47	0.67-3.24	1.31	0.92-1.87	1.22	0.77-1.92	1.88	1.34-2.65	1.4	0.41-4.75	1.53	0.56-4.16	0.84	0.54-1.30
Cancer diagnosis *																		
Leukemia (vs others)	1	0.84-1.18	0.64	0.43-0.96	2.08	0.97-4.49	1.51	0.97-2.35	1.04	0.69-1.55	0.89	0.66-1.20	1.37	0.46-4.10	0.63	0.29-1.36	0.78	0.55-1.11
CNS tumor (vs others)	2.21	1.91-2.57	1.31	0.90-1.90	4	2.01-7.94	9.11	6.66-12.5	1.09	0.64-1.86	1.44	1.01-2.05	2.26	0.66-7.74	0.64	0.26-1.54	1.2	0.85-1.70
Chemotherapy ‡																		
IV MTX (per 10mg/m ²)	1	1.00-1.00	1	1.00-1.00	1	1.00-1.00	1	1.00-1.00	1	1.00-1.00	1	1.00-1.00	††		1	1.00-1.00	1	1.00-1.00
IT MTX (per 100mg/m ²)	0.98	0.92-1.04	0.8	0.67-0.95	1.18	1.01-1.38	1.05	0.92-1.21	0.92	0.80-1.07	0.89	0.79-1.00	††		0.82	0.61-1.10	1.03	0.93-1.14
Cranial Radiation ‡																		
CRT <20 Gy (vs none)	0.90	0.71-1.12	0.80	0.44-1.44	0.65	0.28-1.54	0.57	0.33-1.00	1.69	1.05-2.73	1.28	0.85-1.93	††		0.96	0.35-2.58	0.48	0.28-0.81
CRT 20-35 Gy (vs none)	1.20	0.84-1.71	1.06	0.42-2.68	0.18	0.01-2.65	0.76	0.34-1.71	1.79	0.86-3.73	1.04	0.50-2.14	††		0.47	0.06-3.64	1	0.42-2.36
CRT >35 Gy (vs none)	1.96	1.64-2.33	0.78	0.46-1.31	2.02	0.99-4.11	5.36	4.01-7.18	1.49	0.83-2.68	1.64	1.09-2.48	††		0.82	0.31-2.22	1.16	0.74-1.81
Seizures §																		
Yes (vs none)	4.03	3.57-4.55	1.98	1.34-2.92	6.65	3.73-11.9	43.66	32.1-59.4	1.34	0.78-2.29	1.3	0.88-1.93	1.31	0.28-6.27	3.41	1.56-7.47	1.75	1.20-2.56
Pain §																		
Headache/migraine																		
Yes (vs none)	1.53	1.34-1.75	1.94	1.42-2.65	1.23	0.64-2.36	1.14	0.90-1.44	2.83	1.97-4.06	2.37	1.76-3.19	0.53	0.15-1.91	1.14	0.56-2.31	1.13	0.82-1.58
Cancer related bodily pain																		
Mild (vs none)	1.44	1.18-1.77	1.24	0.77-1.99	3.31	1.42-7.71	1.26	0.88-1.79	1.62	0.89-2.96	2.19	1.50-3.19	2.38	0.63-8.96	1.13	0.41-3.13	1.41	0.86-2.31
Moderate (vs none)	1.99	1.60-2.47	2.55	1.48-4.38	3.49	1.38-8.83	1.46	1.04-2.05	3.53	2.08-5.99	2.57	1.59-4.16	6.5	2.01-21.0	3.33	0.94-11.8	0.89	0.42-1.90
Severe (vs none)	2.36	1.75-3.18	2.51	1.02-6.20	8.01	2.83-22.7	2.21	1.35-3.59	4.11	2.05-8.23	4.14	2.38-7.20	13.41	2.25-79.8	1.41	0.20-10.0	0.96	0.30-3.05

† Outcomes were analyzed adjusting for demographic and socioeconomic variables

* Outcomes are analyzed adjusted for demographic and socioeconomic variables and cancer diagnoses

‡ Outcomes are analyzed adjusted for demographic and socioeconomic variables and treatment variables

§ Outcomes are analyzed adjusted for demographic and socioeconomic variables, seizure and pain

†† Risk comparisons for the use of Muscle Relaxants were not conducted for treatment variables due to limited sample size.

Supplementary Table 5: Pattern of Reported Psychoactive Medication Use from Adolescence (baseline) to Adulthood (follow-up) Among Survivors (N=3193) †

Use of psychoactive medication	Persistent users*		New-onset users		Former users		Non-users	
	n	%	n	%	n	%	n	%
Any psychoactive medication	250	(7.9)	479	(14.8)	264	(8.3)	2200	(69.1)
By categories:								
Antidepressants	36	(1.3)	349	(10.7)	51	(1.5)	2757	(86.4)
Anxiolytics/Sedatives/Hypnotics	8	(0.4)	55	(1.7)	33	(1.1)	3097	(96.8)
Anticonvulsants	101	(3.1)	119	(3.5)	61	(2.0)	2912	(91.4)
Non-Opioid	10	(0.4)	72	(2.1)	75	(2.2)	3036	(95.3)
Opioids	11	(0.3)	73	(2.1)	131	(3.8)	2978	(93.8)
Muscle relaxant	4	(0.1)	21	(0.6)	8	(0.2)	3160	(99.0)
Neuroleptics	3	(0.1)	40	(1.2)	16	(0.5)	3134	(98.1)
Stimulants	43	(1.4)	63	(2.1)	82	(2.7)	3005	(93.7)

† Percentages calculated on total number of participants for whom data was available and weighted to reflect modified sampling of survivors in expansion cohort.

* Persistent users: Survivors with reported use of psychoactive medication at both adolescence and young adulthood

‡ New-onset users: Survivors with no reported use of psychoactive medication at adolescence but reported use at young adulthood

§ Former users: Survivors with reported use of psychoactive medication at adolescence but did not report use at young adulthood

†† Non-users: Survivors with no reported use of psychoactive medication at both adolescence and young adulthood

Supplementary Table 6: Association between the Use of Psychoactive Medications at Adolescence and Emotional Distress at Adulthood Among Survivors

Use of psychoactive medication	Anxiety*	Depression*	Somatization*	Post-traumatic Symptoms†
	RR (95% CI) ‡	RR (95% CI) ‡	RR (95% CI) ‡	RR (95% CI) ‡
Any psychoactive medication (overall)	1.05 (0.74-1.50)	0.95 (0.68-1.32)	1.22 (0.85-1.75)	1.05 (0.77-1.44)
By categories:				
Antidepressants	0.84 (0.42-1.70)	1.28 (0.78-2.09)	0.67 (0.33-1.39)	1.43 (0.85-2.41)
Anxiolytics/sedatives/hypnotics	0.32 (0.05-2.22)	0.70 (0.22-2.17)	0.61 (0.15-2.56)	0.38 (0.05-2.63)
Anticonvulsants	0.61 (0.27-1.37)	0.61 (0.32-1.15)	0.86 (0.46-1.62)	1.06 (0.61-1.83)
Non-opioid analgesics	1.56 (0.87-2.79)	1.05 (0.57-1.93)	1.71 (0.84-3.51)	0.95 (0.50-1.81)
Opioids	1.06 (0.56-2.01)	1.24 (0.76-2.01)	1.72 (1.09-2.73)	1.14 (0.70-1.85)
Muscle relaxants	1.13 (0.21-6.14)	0.96 (0.16-5.64)	3.22 (1.25-8.33)	1.98 (0.63-6.23)
Neuroleptics	1.40 (0.46-4.33)	1.07 (0.35-3.26)	0.42 (0.06-2.83)	2.13 (1.01-4.51)
Stimulants	1.14 (0.65-2.00)	1.23 (0.71-2.12)	0.94 (0.50-1.78)	0.70 (0.34-1.47)

* Distress will be defined as T-scores ≥ 63 (90th percentile) for each subscale within the Brief Symptom Inventory (BSI)

† An overall positive endorsement of post-traumatic symptoms was defined by the report of at least one re-experiencing symptom, at least three avoidance symptoms and at least two arousal symptoms.

‡ Relative risks (RR) and 95% confidence intervals (CI) from multivariable models are adjusted for age, sex and race, intravenous and intrathecal methotrexate doses, and cranial radiation dose; and presence of depression/anxiety problems during adolescence

Supplementary Table 7: Association between the Use of Psychoactive Medications at Adolescence and Health-related Quality of Life at Adulthood Among Survivors

Use of psychoactive medication	Performance Function*	Role Physical*	Bodily Pain*	General Health*	Vitality*	Social Functioning*	Role Emotional*	Mental Health*
	RR (95% CI) †	RR (95% CI) †	RR (95% CI) †	RR (95% CI) †	RR (95% CI) †	RR (95% CI) †	RR (95% CI) †	RR (95% CI) †
Any psychoactive medication	3.13 (2.35-4.18)	1.90 (1.43-2.53)	1.53 (1.17-1.99)	1.43 (1.14-1.80)	1.35 (1.09-1.67)	1.53 (1.18-1.98)	0.98 (0.77-1.25)	0.96 (0.74-1.25)
By categories:								
Antidepressants	2.17 (1.32-3.57)	2.29 (1.47-3.56)	1.48 (0.92-2.38)	1.59 (1.06-2.36)	1.30 (0.86-1.97)	2.02 (1.39-2.93)	1.53 (1.03-2.26)	1.04 (0.61-1.77)
Anxiolytics/sedatives/ Hypnotics	6.55 (3.74-11.48)	4.17 (2.30-7.55)	2.14 (1.21-3.77)	1.32 (0.66-2.67)	0.61 (0.22-1.66)	2.81 (1.72-4.58)	0.94 (0.45-2.00)	1.24 (0.62-2.50)
Anticonvulsants	3.41 (2.31-5.05)	2.25 (1.45-3.49)	1.18 (0.76-1.81)	1.13 (0.78-1.65)	1.08 (0.74-1.58)	2.03 (1.40-2.95)	0.98 (0.65-1.49)	1.04 (0.68-1.59)
Non-opioid analgesics	1.27 (0.64-2.52)	1.67 (1.00-2.80)	2.15 (1.36-3.38)	1.58 (1.01-2.48)	1.70 (1.19-2.42)	1.22 (0.70-2.14)	1.20 (0.77-1.86)	0.92 (0.53-1.58)
Opioids	2.47 (1.70-3.59)	1.62 (1.05-2.49)	1.99 (1.44-2.74)	1.71 (1.27-2.30)	1.70 (1.29-2.26)	1.37 (0.96-1.96)	1.03 (0.69-1.53)	1.22 (0.83-1.80)
Muscle relaxants	3.75 (1.18-11.95)	0.95 (0.15-6.07)	3.19 (1.80-5.66)	0.97 (0.27-3.47)	1.50 (0.67-3.40)	1.16 (0.35-3.83)	1.13 (0.32-4.04)	0.55 (0.09-3.30)
Neuroleptics	1.70 (0.60-4.81)	0.85 (0.22-3.35)	2.40 (1.29-4.48)	0.91 (0.32-2.56)	0.88 (0.35-2.21)	2.09 (1.19-3.69)	1.17 (0.48-2.85)	0.94 (0.35-2.56)
Stimulants	1.86 (1.18-2.96)	1.43 (0.89-2.29)	0.82 (0.49-1.37)	0.78 (0.50-1.23)	1.26 (0.87-1.81)	0.82 (0.52-1.30)	0.84 (0.54-1.31)	0.98 (0.65-1.46)

* Impairment is defined as scores falling below a T-score of 40 (1 standard deviation below the mean)

† Relative risk (RRs) and 95% confidence intervals (CIs) from multivariable models are adjusted for age, sex and race; intravenous and intrathecal methotrexate doses, and cranial radiation dose; presence of depression/anxiety, peer conflict/social withdrawal and antisocial problems during adolescence.

Supplementary Table 8: Characteristics and Social Attainment Outcomes of Adult Survivors of Childhood Cancer who were >25 Years of Age during Follow-up

Clinical Characteristics		N=585 n (%)
Year of completion of baseline survey		
	1992 – 1999	579 (99.0)
	2000 – 2009	6 (1.0)
Age at diagnosis (years) *		2.62 (1.43-3.81)
Age at baseline (years) *		17 (17-18)
Age at Follow-up (years) *		25 (25-26)
Sex		
	Male	305 (52.1)
	Female	280 (47.9)
Race		
	White/non-Hispanic	489 (83.6)
	Others	93 (15.9)
	Not specified	3 (0.5)
Health Insurance		
	Yes	538 (92.0)
	No	37 (6.3)
	Not specified	10 (1.7)
Household Income		
	< \$60,000	338 (57.8)
	≥\$60,000	212 (36.2)
	Not specified	35 (6.0)
Diagnosis		
	Leukemia	254 (43.4)
	Central nervous system tumor	66 (11.3)
	Hodgkin Disease/Non-Hodgkin Lymphoma	55 (9.4)
	Wilms tumor	98 (16.8)
	Neuroblastoma	63 (10.8)
	Soft tissue sarcoma/ Osteosarcoma	49 (8.4)
Social Attainment Outcomes		
Highest Education Attainment		
	Below college graduate	354 (60.5)
	College graduate and above	230 (39.3)
	Not specified	1 (0.2)
Employment status		
	full time Employed	393 (67.2)
	Not full time Employed	192 (32.8)

* Presented as median (interquartile range)

Supplementary Table 9: Association between Psychoactive Medication Use at Adolescence and Social Attainment during Adulthood Among Survivors†

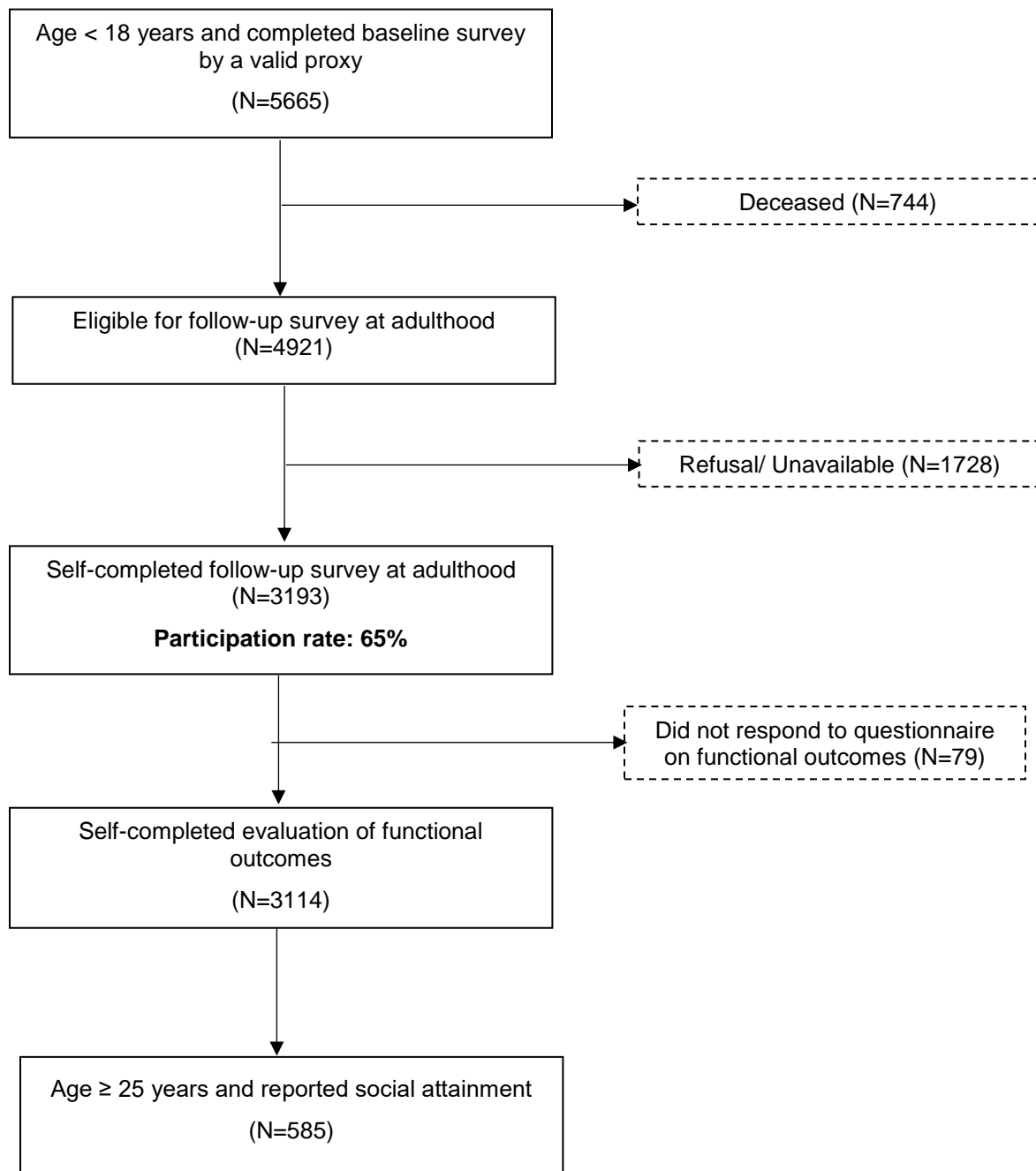
Use of psychoactive medication	Education attainment	Employment status
	Below College Graduate	Not Employed Full-time
	RR 95% CI *	RR 95% CI *
Any psychoactive medication	1.21 (1.04-1.41)	1.60 (1.23-2.08)
By categories:		
Antidepressants	1.35 (0.93-1.96)	1.34 (0.75-2.40)
Anxiolytics/sedatives/hypnotics	1.66 (1.27-2.15)	1.66 (0.76-3.62)
Anticonvulsants	1.18 (0.97-1.45)	2.15 (1.60-2.89)
Non-opioid analgesics	1.13 (0.82-1.55)	1.06 (0.52-2.13)
Opioids	1.24 (1.00-1.53)	1.34 (0.85-2.12)
Muscle relaxants	1.45 (1.27-1.65)	‡
Neuroleptics	1.02 (0.62-1.69)	1.68 (0.92-3.08)
Stimulants	1.38 (0.89-2.14)	2.79 (1.77-4.40)

† This analysis on social attainment was conducted in the subgroup of survivors who were above the age of 25 years old during the follow-up surveys

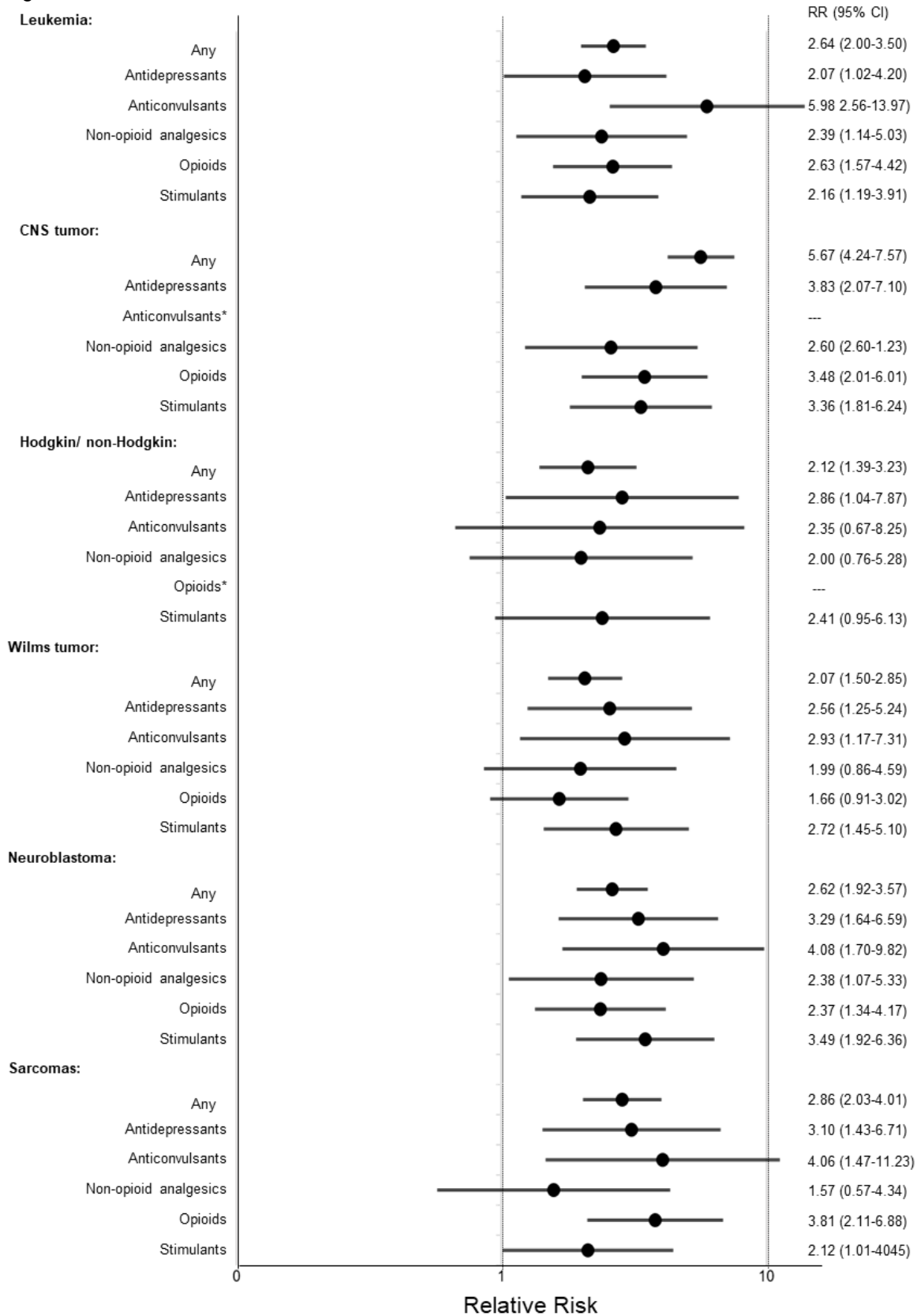
* Relative risks (RRs) and 95% confidence intervals (CIs) from multivariable models adjusted for sex, age and race, socioeconomic status, intravenous and intrathecal methotrexate doses, and cranial radiation dose

‡ Risk comparisons were not conducted for Muscle Relaxants to limited sample size.

Supplementary Figure 1: Flow Diagram of Study participation of Survivors from the Childhood Cancer Survivor Study



Supplementary Figure 2: Comparison of Psychoactive Medication Use in Survivors vs Sibling Controls by Diagnoses



Each dot and whisker represents the relative risk (RR) estimate and 95% confidence interval (CI), respectively, on a logarithmic scale.

Models are adjusted for sex, age and race

The sarcoma group includes osteosarcoma and other soft tissue sarcomas

Risk comparisons were not conducted for Anxiolytics/Sedatives/Hypnotics, Muscle Relaxants and Neuroleptics for all diagnoses due to limited sample size within the sibling group.

*Risk comparison was not presented graphically for Anticonvulsants within the CNS tumor group due to the large and unstable estimate (RR=30.0, 95%=13.4-67.5) obtained from the small number of individuals on psychoactive medication in the sibling group.

*Risk comparison was not conducted for Opioids within the Hodgkin and non-Hodgkin disease group due to limited sample size within the sibling group.