

**Conclusions and quality of the evidence of mental health disorders in survivors of childhood, adolescent, and young adult cancer**

<b>What is the risk for suffering from mental health disorders/symptoms in survivors of childhood, adolescent and young adult (CAYA) cancer?</b>	
<b>Psychiatric Healthcare Utilization</b> <sup>70-74</sup>	
<b>Prevalence of Psychiatric Healthcare Utilization in survivors</b>	
Survivors of CAYA cancer utilize psychiatric care: the rate of psychiatric healthcare utilization ranged from 2 to 10% <sup>70-73</sup>	
<b>Prevalence of Psychiatric Healthcare Utilization in survivors vs. comparisons</b>	
Increased prevalence of psychiatric healthcare utilization in survivors of CAYA cancer vs. comparisons	<b>Level B</b> <sup>70,71,73,74</sup>
<b>Depression and other Mood Disorders</b> <sup>8,9,12,14,27,29,30,32,33,35,40,72,75-96</sup>	
<b>Prevalence of Depression and other Mood Disorders in survivors</b>	
Survivors of CAYA cancer are at risk for depression and other mood disorders: the prevalence of depression and mood disorders ranged from 2 to 40% <sup>8,9,12,27,29,30,32,35,72,76-83,86,88,90-92,94-96</sup>	
<b>Prevalence of Depression and other Mood Disorders in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to experience clinically significant depression and mood disorders vs. siblings	<b>Level A</b> <sup>29,32,33,35,76,85,88,95</sup>
Survivors of CAYA cancer are more likely to experience clinically significant depression vs. general population norms	<b>Level A</b> <sup>8,9,90,91</sup>
<b>Symptoms of Depression in survivors vs. comparisons</b>	
Survivor of CAYA cancer have increased symptoms of depression vs. siblings	<b>Level C</b> <sup>12,14,75,79,83,84,87,93</sup>
Survivor of CAYA cancer have increased symptoms of depression vs. general population norms	<b>Level C</b> <sup>9,12,40,83,89,91</sup>
<b>Anxiety</b> <sup>8,9,11,12,14,27,28,30,35,40,72,75-85,87-97</sup>	
<b>Prevalence of Anxiety in survivors</b>	
Survivors of CAYA cancer are at risk for anxiety: the prevalence of clinically significant anxiety ranged from 1 to 27% <sup>8,9,11,12,27,30,35,72,76-83,88,90-92,94-97</sup>	
<b>Prevalence of Anxiety in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to experience clinically significant anxiety vs. siblings	<b>Level A</b> <sup>35,76,85,88,95</sup>
Survivors of CAYA cancer are more likely to experience clinically significant anxiety vs. general population norms	<b>Level A</b> <sup>8,9,90,91</sup>
<b>Symptoms of Anxiety in survivors vs. comparisons</b>	
Survivors of CAYA cancer have increased symptoms of anxiety vs. siblings	<b>Level C</b> <sup>12,14,75,79,83,84,87,93</sup>
Survivors of CAYA cancer have increased symptoms of anxiety vs. general population norms	<b>Level C</b> <sup>9,12,28,40,83,89,91</sup>
<b>Psychological Distress</b> <sup>8,9,11,12,14,27,30,40,70,75,77,79,82-85,87,90,92,93,96-104</sup>	
<b>Prevalence of Psychological Distress in survivors</b>	
Survivors of CAYA cancer are at risk for psychological distress: the prevalence of psychological distress ranged from 2 to 35% <sup>8,9,11,12,14,27,30,40,70,75,77,79,82-84,90,92,96-102,104</sup>	
<b>Prevalence of Psychological Distress in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to experience clinically significant psychological distress vs. siblings	<b>Level C</b> <sup>11,70,75,85,101,103</sup>
Conflicting evidence regarding prevalence of psychological distress in survivors of CAYA cancer vs. general population norms	<b>Conflicting evidence</b> <sup>9,40</sup>
<b>Symptoms of Psychological Distress in survivors vs. comparisons</b>	
Survivors of CAYA cancer have increased symptoms of psychological distress vs. siblings	<b>Level C</b> <sup>12,14,75,79,83,84,87,93</sup>
Conflicting evidence regarding symptoms of psychological distress in survivors of CAYA cancer vs. general population norms	<b>Conflicting evidence</b> <sup>9,12,40,83,98,99</sup>

<b>Post-traumatic stress disorder (PTSD), Stress-related mental disorders (SRMD), and post-traumatic stress symptoms (PTSS)<sup>28,31,35,41,72,75,90-92,104-108</sup></b>	
<b>Prevalence of PTSD, SRMD, and PTSS in survivors</b>	
Survivors of CAYA cancer are at risk for PTSD, SRMD, and PTSS: the prevalence of PTSD ranged from 1 to 18%, the cumulative incidence of all SRMD diagnoses was 18%, and the prevalence of post-traumatic stress symptoms ranged from 12 to 71% <sup>28,31,35,41,72,75,90-92,104-108</sup>	
<b>Prevalence of PTSD, SRMD, and significant PTSS in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to meet partial or full criteria for PTSD or SRMD vs. comparisons.	<b>Level B</b> <sup>28,35,41,75,91,107</sup>
<b>Externalizing Problems<sup>29,32,33,80,87</sup></b>	
<b>Prevalence of Externalizing Problems in survivors</b>	
Survivors of CAYA cancer are at risk for externalizing behavior problems: the prevalence of behavior problems ranged from 12 to 22% <sup>29,32,80</sup>	
<b>Prevalence of Externalizing Problems in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to experience clinically significant behavioral problems vs. siblings	<b>Level C</b> <sup>29,32,33</sup>
<b>Symptoms of Externalizing Problems in survivors vs. comparisons</b>	
Survivors of CAYA cancer have increased symptoms of anger vs. siblings	<b>Level C</b> <sup>87</sup>
<b>Suicidal Ideation &amp; Death by Suicide<sup>8,74,80,90,109-113</sup></b>	
<b>Prevalence of Suicidal Ideation and Death by Suicide in survivors</b>	
Survivors of CAYA cancer are at risk for suicidal ideation, attempted suicide, and death by suicide: prevalence of suicidal ideation ranged from 5 to 12%, prevalence of attempted suicide ranged from 1 to 4%, prevalence of death by suicide ranged from 0.1 to 1.6% <sup>8,74,80,90,109-113</sup>	
<b>Prevalence of Suicidal Ideation and Death by Suicide in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to experience suicidal ideation vs. comparisons	<b>Level C</b> <sup>8,90,109,110</sup>
Survivors of CAYA cancer are more likely to experience death by suicide vs. comparisons	<b>Level C</b> <sup>74,112,113</sup>
<b>Other Mental Health Disorders and Symptoms<sup>8,9,88,114</sup></b>	
<b>Prevalence of Other Mental Health Disorders and Symptoms in survivors</b>	
Survivors of CAYA cancer are at risk for <b>obsessive compulsive symptoms</b> : the prevalence rate of clinically significant obsessive compulsive symptoms was 10.5% <sup>9</sup>	
Survivors of CAYA cancer are at risk for <b>attention deficit/hyperactivity disorders</b> : the prevalence of attention deficit/hyperactivity disorders was 13% <sup>114</sup>	
Survivors of CAYA cancer are at risk for <b>panic</b> : the prevalence of panic was 7% <sup>8</sup>	
<b>Prevalence and Symptoms of Other Mental Health Disorders and Symptoms in survivors vs. comparisons</b>	
Survivors of CAYA cancer are more likely to experience schizophrenia and psychotic disorder vs. comparisons	<b>Level C</b> <sup>88</sup>
Survivors of CAYA cancer are more likely to experience personality disorders vs. comparisons	<b>Level C</b> <sup>88</sup>
Survivors of CAYA cancer are equally likely to experience obsessive-compulsive symptoms vs. comparisons, but more likely to report fewer symptoms	<b>Level C</b> <sup>9</sup>
Survivors of CAYA cancer are more likely to experience attention deficit/hyperactivity disorders vs. the general population	<b>Level C</b> <sup>114</sup>
Survivors of CAYA cancer are more likely to experience panic vs. the general population	<b>Level C</b> <sup>8</sup>

What are the key risk factors for developing mental health disorders in survivors of CAYA cancer?					
	Depression	Anxiety	Psychological distress	PTSD, PTSS, SRMD	Suicidal ideation
<b>Clinical risk factors</b>					
Age at diagnosis	No <sup>B,32,33,76,83,115</sup>	–	–	No for PTSS <sup>A,28,104,108</sup>	–
Longer time since diagnosis	–	–	–	No <sup>B,28,108</sup>	–
Primary cancer diagnosis	–	–	No <sup>B,12,85,100,116</sup>	–	–
Tumor location	–	No <sup>B,89,116</sup>	–	–	–
Late effects	Yes <sup>↑</sup> <sub>B,12,14,27,33,35,83,96</sub>	Yes <sup>↑</sup> <sub>B,11,12,14,27,35,83,96</sub>	Yes <sup>↑</sup> <sub>B,9,11,12,14,27,83,90,100,102</sub>	Yes <sup>↑</sup> <sub>B,35,90,96,108</sub>	–
Pain	Yes <sup>↑</sup> <sub>B,35,77</sub>	Yes <sup>↑</sup> <sub>B,35,77</sub>	–	–	–
Seizures	–	–	–	–	Yes <sup>↑</sup> <sub>B,80,109</sub>
History of depression	–	–	–	–	Yes <sup>↑</sup> <sub>A,80,109,110</sub>
Mental health problems	–	–	–	Yes <sup>↑</sup> <sub>B,31,104</sub>	–
<b>Demographic risk factors</b>					
Female sex	–	Yes <sup>↑</sup> <sub>B,8,11,12,35,76,83,85,89,115,116</sub>	Yes <sup>↑</sup> <sub>B,9,11,12,14,83,85,90,92,98,100,102,115,116</sub>	Yes <sup>↑</sup> <sub>B,28,35,90,104,107,108</sub>	No <sup>B,8,80,110</sup>
Older age at study	Conflicting <sup>B,12,32,76,77,83,89,115</sup>	–	–	–	No <sup>B,8,80,109,110</sup>
Lower educational achievement	Yes <sup>↑</sup> <sub>B,8,14,77,83,86,115</sub>	Yes <sup>↑</sup> <sub>B,8,11,77,83,85,115</sub>	Yes <sup>↑</sup> <sub>B,11,77,83,85,98,100,102,115</sub>	Yes <sup>↑</sup> <sub>A,104,107,108</sub>	–
Unemployment	–	Yes <sup>↑</sup> <sub>B,8,14,77,83</sub>	Yes <sup>↑</sup> <sub>A,77,83,92,100,102</sub>	Yes <sup>↑</sup> <sub>B,107,108</sub>	–
Marital status	Yes <sup>↑</sup> in unmarried survivors <sup>B,8,14,83,115</sup>	–	Yes <sup>↑</sup> in unmarried survivors <sup>B,83,90,92,100,115</sup>	Yes <sup>↑</sup> in unmarried survivors <sup>B,90,107,108</sup>	Yes <sup>↓</sup> in married or divorced survivors <sup>B,8,109</sup>
Lower annual income	–	Yes <sup>↑</sup> <sub>B,8,11,14,83,85</sub>	Yes <sup>↑</sup> <sub>B,11,14,83,85,92,99,100</sub>	–	–
Health insurance status	No <sup>B,77,83</sup>	No <sup>B,77,83,85</sup>	Yes <sup>↑</sup> with no insurance <sup>A,77,83,85</sup>	–	–
Race/ ethnicity/ immigration status	No <sup>B,32,83,115</sup>	–	–	No <sup>B,28,107</sup>	–
<b>Treatment-related risk factors</b>					
Surgery	–	No <sup>B,12,83,85,115</sup>	–	–	–
Radiotherapy	Conflicting <sup>12,32,33,35,76,83,89,115</sup>	No <sup>B,12,35,83,85,89</sup>	No <sup>B,12,83,85</sup>	–	–

Only risk factors with at least Level B evidence are presented in this table. In the **Supplemental Table** we present the complete list of all risk factors identified. Conflicting=Conflicting evidence; No=No statistically significant association; Yes=statistically significant association: ↑ increased risk for/ ↓ decreased risk for; – =not tested or no risk factor of at least Level B evidence; PTSD: post-traumatic stress disorder, PTSS: post-traumatic stress symptoms; SRMD: stress-related mental disorder. Dark blue indicates Level A evidence; medium blue indicates Level B evidence; light grey indicates conflicting evidence. Non-significant results were not color coded to increase readability. No risk factors of at least Level B evidence identified for behavioral problems, mental healthcare visit, panic, suicide, or first severe mental health event.

<b>Does the risk of developing poor mental health change over time in survivors of CAYA cancer?</b>	
The risk of anxiety and depression does not change over time in the majority of survivors of CAYA cancer. However, there is also a suggestion that the risk of anxiety and depression may increase over time for 10-12% of survivors or decrease for 15-16% of survivors. Additionally, persistent or increasing symptoms of depression and anxiety were more prevalent in survivors than siblings.	Level C <sup>34,35</sup>

<b>How sensitive are commonly used diagnostic tools for self-reported, parent-reported, different age groups, format and different clinical issues?</b>	
<b>Adult Measures</b>	
There is evidence that the <b>Brief Symptom Inventory-18 (BSI-18)</b> is a reliable and valid measure of clinically significant emotional distress in adult survivors of childhood, adolescent, and young adult cancers.	Level A <sup>37-40</sup>
Some evidence suggests that the <b>Distress Thermometer (DT)</b> with a cut-off of $\geq 3$ can be used as a screening measure for psychological distress in adult survivors of childhood, adolescent, and young adult cancers. The DT score was associated with anxiety, positive and negative affect, but not with depression.	Level C <sup>30,42,43</sup>
Some evidence suggests that the <b>Posttraumatic stress response Diagnostic Scale (PDS)</b> is a valid measure of clinically significant distress in adult survivors of childhood, adolescent, and young adult cancers, but is not able to reliability identify clinically significant functional impairment.	Level C <sup>41</sup>
<b>Youth Measures</b>	
Some evidence suggests that the <b>Distress Rating Scale (DRS)</b> or the <b>Distress Thermometer (DT)</b> are not ideal to identify psychological distress in pediatric and adolescent survivors of cancer. Agreement between parent's and children's ratings of the DRS is limited in pediatric and adolescent survivors of cancer. The DT score was associated with negative affect, but not with depression, or positive affect in pediatric and adolescent survivors of cancer.	Level B <sup>30,45</sup>
Some evidence suggests that the <b>Distress Screening Tool (DST)</b> ; self-report and caregiver report) is a reliable and valid measure to screen for distress in pediatric and adolescent survivors of cancer.	Level C <sup>46</sup>
Some evidence suggests that the <b>Benefit and Burden Scale for Children (BBSC)</b> is a reliable and valid measure of psychological adjustment to potentially traumatic experiences in child and adolescent survivors of cancer.	Level C <sup>44</sup>
Some evidence suggests that the <b>Beck Youth Inventories-II</b> is a reliable measure of anxiety and depression in child and adolescent survivors of cancer. However, agreement between parent's and children's ratings of the <b>Beck Youth Inventories</b> was limited.	Level C <sup>37,45</sup>

<b>What is the effect of any intervention in the treatment of mental health symptoms for survivors of CAYA cancer?</b>	
<b>Effect of Cognitive Behavioral Therapy</b>	
Cognitive behavioral therapy can be useful in the treatment of anxiety, depression, and post-traumatic stress symptoms among survivors of CAYA cancer	Level B <sup>48,49</sup>
<b>Effect of Group Social Skills Training</b>	
No effect of social skills training in improving mental health symptoms in pediatric and adolescent survivors of cancer	Level C <sup>117</sup>
<b>Effect of Family Group Intervention for PTSS</b>	
A family group intervention can be useful in the treatment of post-traumatic arousal symptoms in pediatric and adolescent survivors of cancer	Level C <sup>50</sup>
<b>Effect of participating in musical training</b>	
Some evidence suggests that participating in weekly musical training can be useful in the treatment of depression in pediatric and adolescent survivors of cancer.	Level C <sup>51</sup>

Level A, representing high quality evidence; Level B, moderate quality evidence; and Level C, representing low quality evidence.

**Supplemental Table. Complete list of risk factors for depression, anxiety, psychological distress, post-traumatic stress, and behavioral problems in childhood, adolescent, and young adult cancer survivors**

	Depression <sup>§</sup>	Anxiety <sup>§</sup>	Psychological distress <sup>§</sup>	PTSD, PTSS, SRMD <sup>§</sup>	Behavioral problems <sup>§</sup>
<b>Clinical risk factors</b>					
Age at diagnosis	No <sup>B,21,22,24,37,67</sup>	Yes↓ with older age at dx <sup>C,d,21,24,67</sup>	Yes↑ with younger age at dx <sup>C,18,24,48,50,52,67</sup>	Yes↑ for SRMD if aged 6-11 years at dx <sup>C,59</sup> No for PTSS <sup>A,47,53,60</sup>	No <sup>C,22,37</sup>
Longer time since diagnosis	No <sup>C,24</sup>	No <sup>C,24</sup>	Yes↑ <sup>C,24,30,49,50</sup>	No <sup>B,47,60</sup>	-
Primary cancer diagnosis	No <sup>C,19</sup>	Yes↑ for survivors of Hodgkin disease, sarcoma & Ewing's sarcoma, bone tumors <sup>C,19,36,68</sup>	No <sup>B,19,36,50,68</sup>	Yes↑ for SRMD in survivors of hematologic cancers, and brain/ CNS/ eye/ orbital cancers <sup>C,59</sup> Yes↓ for PTSS in survivors of leukemia/non-Hodgkin lymphoma treated with CRT, and of CNS tumors <sup>C,53,60</sup>	-
Tumor location	No <sup>C,44</sup>	No <sup>B,44,68</sup>	No <sup>C,68</sup>	-	-
Risk group <sup>e</sup>	No <sup>C,44</sup>	No <sup>C,44</sup>	-	-	-
SMN or recurrence	No <sup>C,21,67</sup>	No <sup>C,21,67</sup>	Yes↑ <sup>C,30,46,67</sup>	No <sup>C,58</sup>	-
Late effects <sup>f</sup>	Yes↑ <sup>B,19,24,29,33,34,37,39</sup>	Yes↑ <sup>B,19,24,29,33,34,39,46</sup>	Yes↑ <sup>B,18,19,24,27,34,39,46,50,52</sup>	Yes↑ <sup>B,27,29,33,60</sup>	Yes↑ <sup>C,n,37</sup>
Scarring, disfigurement, or persistent hair loss	Yes↑ <sup>C,22,67</sup>	Yes↑ <sup>C,67</sup>	Yes↑ <sup>C,67</sup>	-	No <sup>C,22</sup>
Pain	Yes↑ <sup>B,14,29</sup>	Yes↑ <sup>B,14,29</sup>	Yes↑ <sup>C,14</sup>	Yes↑ <sup>C,29</sup>	-
Obesity (BMI≥30)	-	-	Yes↑ <sup>C,46</sup>	-	-
Former or current smokers	-	Yes↑ <sup>C,46</sup>	Yes↑ <sup>C,46</sup>	-	-
Drinking behavior	Yes↑ with lower age at drinking initiation <sup>C,29</sup>	Yes↑ with lower age at drinking initiation <sup>C,29</sup>	-	No association with lower age at drinking initiation <sup>C,29</sup>	-
	No association with heavy/ risky drinking <sup>C,29</sup>	No association with heavy/ risky drinking <sup>C,29</sup>	-	No association with heavy/ risky drinking <sup>C,29</sup>	-
Physical activity	Yes↓ with sufficient physical activity <sup>C,31</sup>	No <sup>C,31,46</sup>	Yes↑ with lower levels of physical activity <sup>C,46</sup>	-	-
Past perceived life threat	-	-	-	Yes↑ <sup>C,47</sup>	-
Mental health problems	-	-	-	Yes↑ <sup>B,k,53,59</sup>	-
Posttraumatic stress	-	-	Yes↑ <sup>C,30</sup>	-	-
<b>Demographic risk factors</b>					
Female sex	Yes↑ <sup>C,14,19,21-24,26,29,37,39,44,67</sup>	Yes↑ <sup>B,19,21,24,26,29,36,44,46,67,68</sup>	Yes↑ <sup>B,18,19,24,27,30,36,39,46,48,50,52,67,68</sup>	Yes↑ <sup>B,27,29,47,53,58,60</sup>	No <sup>C,22,37</sup>
Older age at study	Conflicting <sup>14,19,21,22,24,26,44,67</sup>	Yes↑ <sup>C,14,19,21,24,26,36,44,67,68</sup>	Yes↑ <sup>C,18,19,24,30,36,39,48,49,67-69</sup>	Yes↑ <sup>C,47,58,60</sup>	No <sup>C,22</sup>
Lower educational achievement	Yes↑ <sup>B,14,23,24,26,39,67</sup>	Yes↑ <sup>B,14,24,26,36,46,67</sup>	Yes↑ <sup>B,14,24,36,46,48,50,52,67</sup>	Yes↑ <sup>A,53,58,60</sup>	-
Unemployment	Yes↑ <sup>C,14,24,26</sup>	Yes↑ <sup>B,14,24,26,39</sup>	Yes↑ <sup>A,14,24,30,50,52</sup>	Yes↑ <sup>B,58,60</sup>	-
Marital status	Yes↑ in unmarried survivors <sup>B,g,24,26,39,67</sup>	Yes↑ in unmarried survivors <sup>C,g,24,26,67</sup>	Yes↑ in unmarried survivors <sup>B,g,24,27,30,50,67</sup>	Yes↑ in unmarried survivors <sup>B,g,27,58,60</sup>	-
Lower <sup>h</sup> annual income	Yes↑ <sup>C,22-24,26,37</sup>	Yes↑ <sup>B,24,26,36,39,46</sup>	Yes↑ <sup>B,24,30,36,39,46,49,50</sup>	Yes↑ <sup>C,58</sup>	Yes↑ <sup>C,22,37</sup>
Health insurance status	No <sup>B,14,24</sup>	No <sup>B,14,24,36</sup>	Yes↑ with no insurance <sup>A,14,24,36</sup>	-	-
Race/ ethnicity/ immigration status	No <sup>B,22,24,67</sup>	Yes↑ in non-white survivors <sup>C,24,36,39,67,68</sup>	Yes↑ in non-white survivors <sup>C,24,30,36,46,52,67,68</sup>	No <sup>B,47,58</sup>	No <sup>C,22</sup>
			Yes↑ in survivors with immigration status <sup>C,18</sup>		
Parents' educational achievement	No <sup>C,19</sup>	No <sup>C,19</sup>	No <sup>C,19</sup>	-	-

Sibling status	-	-	Yes↑ without siblings <sup>C,18</sup>	-	-
<b>Treatment-related risk factors</b>					
Surgery	Yes↑ <sup>C,i,19,24,67</sup>	Yes↑ after thoracotomy <sup>C,46</sup> No <sup>B,i,19,24,36,67</sup>	Yes↑ after craniotomy <sup>C,46</sup> Yes↑ <sup>C,i,19,24,36,67</sup>	-	-
Chemotherapy	Yes↑ after intense chemotherapy <sup>C,19,21,23,24,37,44</sup>	Yes↑ after certain types of chemotherapy <sup>C,19,21,24,36,44,46</sup>	Yes↑ after treatment with alkylating agents <sup>C,19,24,30,36,46,52</sup>	No <sup>C,58</sup>	Yes↑ after combination of intrathecal methotrexate and cranial irradiation, or after anthracyclines <sup>C,22,37</sup>
Cranial irradiation	-	Yes↓ <sup>C,21,24,29,36,39,67</sup>	Yes↓ <sup>C,24,30,36,39,48,52,67</sup>	-	Yes↑ <sup>C,22</sup>
Radiotherapy	Conflicting <sup>19,21,22,24,29,37,44,67</sup>	Yes↑ after abdominal <sup>C,46,68</sup> or limb radiation <sup>C,68</sup> No <sup>B,j,19,24,29,36,44</sup>	Yes↑ after abdominal radiation <sup>C,68</sup> No <sup>B,j,19,24,36</sup>	Yes↑ <sup>C,29,58,60</sup>	Yes↑ after abdominal radiation <sup>C,37</sup>
Bone marrow transplantation	No <sup>C,19</sup>	No <sup>C,19</sup>	No <sup>C,19</sup>	Yes↑ <sup>C,59</sup>	-
Treatment duration	-	-	No <sup>C,48</sup>	-	-
Treatment intensity	-	-	-	No <sup>C,47</sup>	-

**Note:** Dark blue indicates Level A evidence; medium blue indicates Level B evidence; light blue indicates Level C evidence; light grey indicates conflicting evidence. **Abbreviations:** BMI=body mass index, CAYA=childhood, adolescent, and young adult, CNS=central nervous system, CRT=chemoradiotherapy, dx=diagnosis, PTSD=post-traumatic stress disorder, PTSS=post-traumatic stress symptoms, SMN=second malignant neoplasm, SRMD=stress-related mental disorders

<sup>A</sup> Level A evidence

<sup>B</sup> Level B evidence

<sup>C</sup> Level C evidence

<sup>§</sup>Conflicting=Conflicting evidence; No=No statistically significant association; Yes=statistically significant association: ↑ increased risk for/ ↓ decreased risk for; -=not tested

<sup>d</sup> in lymphoma and sarcoma survivors

<sup>e</sup> localized disease vs. metastases

<sup>f</sup> Chronic health conditions, or late effects, or poor health status

<sup>g</sup> unmarried, or single, or widowed/divorced/separated survivors

<sup>h</sup> or unstable

<sup>i</sup> surgery (not further specified)

<sup>j</sup> radiotherapy (not further specified)

<sup>k</sup> in survivors with a previous mental disorder diagnosis, and survivors with more psychological distress, more worries, and higher perceived stress

**Supplemental Table. Complete list of risk factors for mental healthcare visit, panic, suicidal ideation, suicide, and first severe mental health event in childhood, adolescent, and young adult cancer survivors**

	Mental healthcare visit <sup>§</sup>	Panic <sup>§</sup>	Suicidal ideation <sup>§</sup>	Suicide <sup>§</sup>	First severe mental health event <sup>§,n</sup>
<b>Clinical risk factors</b>					
Age at diagnosis	Yes↑ with older age at dx <sup>C,11</sup>	-	Yes↑ with younger age at dx <sup>C,12,61,62</sup>	Yes↑ if aged 15-19 years at dx <sup>C,65</sup>	Yes↓ when diagnosed between 5-14 years <sup>C,11</sup>
Longer time since diagnosis	-	-	-	No <sup>C,65</sup>	-
Treatment era	No <sup>C,11</sup>	-	-	Yes↑ if diagnosed 1971-1979, or 1990-1999 <sup>C,65</sup>	No <sup>C,11</sup>
Primary cancer diagnosis	No <sup>C,11</sup>	-	Yes↑ for survivors of CNS disease <sup>C,62</sup>	No <sup>C,65</sup>	No <sup>C,11</sup>
SMN or recurrence	No <sup>C,11</sup>	-	-	-	No <sup>C,11</sup>
Late effects <sup>f</sup>	-	-	Yes↑ <sup>C,61,62</sup>	-	-
Pain	-	-	Yes↑ <sup>C,61,62</sup>	-	-
Seizures	-	-	Yes↑ <sup>B,12,61</sup>	-	-
History of depression	-	-	Yes↑ <sup>A,12,61,62</sup>	-	-
Psychoactive medication use	-	-	Yes↑ <sup>C,12</sup>	-	-
Number of hospital admissions	-	-	No <sup>C,62</sup>	-	-
<b>Demographic risk factors</b>					
Female sex	Yes↑ for females <sup>C,11</sup>	Yes↑ for females <sup>C,26</sup>	No <sup>B,12,26,62</sup>	No <sup>C,65</sup>	No <sup>C,11</sup>
Older age at study	-	No <sup>C,26</sup>	No <sup>B,12,26,61,62</sup>	No <sup>C,65</sup>	-
Country	-	-	-	Yes↑ in Denmark <sup>C,1,65</sup>	-
Lower educational achievement	-	No <sup>C,26</sup>	No <sup>C,26</sup>	-	-
Unemployment	-	Yes↑ <sup>C,26</sup>	Yes↑ <sup>C,26</sup>	-	-
Marital status	-	No <sup>C,26</sup>	Yes↓ in married <sup>m</sup> survivors <sup>B,26,61</sup>	-	-
Annual income	No <sup>C,11</sup>	No <sup>C,26</sup>	No <sup>C,26</sup>	-	Yes↓ with higher income <sup>C,11</sup>
Health insurance status	-	-	Yes↓ with insurance <sup>C,61</sup>	-	-
<b>Treatment-related risk factors</b>					
Surgery	No <sup>C,i,11</sup>	-	Yes↑ if only treatment was observation or surgery <sup>C,12</sup>	-	No <sup>C,i,11</sup>
Chemotherapy	No <sup>C,k,11</sup>	-	-	-	No <sup>C,k,11</sup>
Cranial irradiation	No <sup>C,11</sup>	-	-	-	Yes↓ after CNS irradiation <sup>C,11</sup>
Bone marrow transplantation	No <sup>C,11</sup>	-	-	-	No <sup>C,11</sup>
Treatment intensity	No <sup>C,11</sup>	-	-	-	No <sup>C,11</sup>

**Note:** Dark blue indicates Level A evidence; medium blue indicates Level B evidence; light blue indicates Level C evidence; light grey indicates conflicting evidence. **Abbreviations:** BMI=body mass index, CAYA=childhood, adolescent, and young adult, CNS=central nervous system, CRT=chemoradiotherapy, dx=diagnosis, PTSD=post-traumatic stress disorder, PTSS=post-traumatic stress symptoms, SMN=second malignant neoplasm, SRMD=stress-related mental disorders

<sup>A</sup> Level A evidence

<sup>B</sup> Level B evidence

<sup>C</sup> Level C evidence

<sup>§</sup>Conflicting=Conflicting evidence; No=No statistically significant association; Yes=statistically significant association: ↑ increased risk for/ ↓ decreased risk for; -=not tested

<sup>f</sup> Chronic health conditions, or late effects, or poor health status

<sup>i</sup> surgery (not further specified)

<sup>k</sup> chemotherapy, or more specifically high-dose methotrexate, corticosteroids, and cyclophosphamide equivalent dose

<sup>l</sup> in Denmark, but not Finland or Sweden (SALiCCS cohort)

<sup>m</sup> or divorced

<sup>n</sup> emergency department visit, hospitalization, or suicide