

High Risk Allogeneic HSCT: Myeloablative, GVHD, or TBI Pediatric Surveillance & Follow-up Guidelines

ATTACH PATIENT ID

	Months/ Years from end of therapy	Date	H&P	CBC, retics LDH	Chem	Metabolic	TSH/ T4	LH, FSH, Test or Est	Urine tests	ECHO#	PFTs	DEXA BMD	Thyroid US	Eyes	Audio	Neuropsych assessment	Other		
Early FU Clinic	24		+	+	+		+				+			+	+		Live vaccine *		
	30		+	+															
	36		+	+	+	+	+							+					
	42		+	+															
	48		+	+	+			+						+					
	60		+	+	+	+	+					+	+	+					
Late Effects Clinic	6 years		+				+												
	7		+			+	+							+					
	8		+				+												
	9		+			+	+							+					
	10		+				+						+		+				
	11		+			+	+							+					
	12		+				+												
	13		+			+	+								+				
	14		+				+												
	15		+			+	+						+	+					
	16		+				+												
	17		+			+	+								+				
18		+				+	+												
Notes				Then PRN	Lytes, Ca, Mg, PO4, Cr, urea, LFTs,	Non-fasting glucose, HbA1C, IGF-1 and lipids. Continue Q6mo if immune therapy; Q1y if high BMI		Baseline age 11 y Rpt Q1y	U/A, urine Prot: Cr & Alb: Cr ratio	#Insert frequency based on cardiac guidelines	Spirom etry & MBW only. Refer to Resp if too young or sympt				Q1y if age <5y; Q2y age 6- 12y then PRN	First assessment prior to school entry. Repeat at school transitions if ongoing concerns	* Live vaccine re- immunizations at 2y if no active GVHD or ongoing immune suppression		

* See alternate screening schedule if no Graft-vs-Host Disease
 # If patient on study, refer to study protocol for additional testing
 ## Use "PED RESP Pulmonary Function Test module" CST
 powerplan.

Further Surveillance

Dentistry
Gynecology

Semen Analysis
Anti-Mullerian Hormone

Breast MRI and Mammogram
Colonoscopy

Annual

Annual from age 16 years or earlier if clinical concerns. Cervical cancer screening from age 21 y

From age 18y in males if moderate or high risk

From age 12y in females if CED \geq 6 g/m² or pelvic RT; or earlier if clinical concerns. Rpt Q2-3y if normal. Refer to Pediatric Gynecology if abnormal

From later of age 25y or 8y after exposure if chest RT

From later of age 30y or 5y after exposure to abdominal RT

Cardiac Surveillance Guidelines (BC)

Anthracycline Dose*	Radiation Dose**	Recommended Frequency of Echo***
<100 mg/m ²	< 15 Gy	No screening
<100 mg/m ²	15 Gy to < 30 Gy	Every 5 years
≥ 100 mg/m ² to <250 mg/m ²	<15 gy	Every 5 years
≥ 100 mg/m ² to <250 mg/m ²	>15 Gy	Every 2 years
Any	> 30 Gy	Every 2 years
≥250 mg/m ²	Any	Every 2 years

*Based on total doses of doxorubicin or the equivalent doses of other anthracyclines

**Based on radiation dose with potential impact to heart (radiation to chest, abdomen, spine [thoracic, whole], total body [TBI]) COG LTFU Guidelines version 6.0 (Oct 2023)

***Consider increased frequency if known high risk genetic variant for anthracycline toxicity

Anthracycline Equivalent Dose

Agent	Correction factor
Doxorubicin	1.0
Daunorubicin	0.5
Epirubicin	0.67
Mitoxantrone	10.0
Idarubicin	5.0

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Risk of Prolonged Oligospermia or Azoospermia

Agent	Possible Risk	High Risk
Cyclophosphamide	> 4g/m ²	> 7.5 g/m ²
Busulphan		> 600 mg/m ²
Melphalan		> 140 mg/m ²
Ifosfamide	> 42 g/m ²	> 60 g/m ²
Procarbazine	> 3 g/m ²	> 4 g/m ²
Chlorambucil		> 1.4 g/m ²
BCNU	> 300 mg/m ²	> 1 g/m ²
CCNU		> 500 mg/m ²
Cisplatin	> 300 mg/m ²	> 600 mg/m ²
Testicular RT dose	> 200 cGy	> 1200 cGy

*Lower doses are still possible risk

1. Green J Clin Oncol 2010;28:332-9
2. Meistrich Pediatr Blood Cancer 2009;53:261-6
3. Wyns Human Reprod Update 2010;16(3):312-328

Risk of Premature Ovarian Insufficiency or Infertility

Agent	Possible Risk	High Risk	Ref
CED	> 4 g/m ²	> 8 g/m ²	1
Procarbazine	> 2 g/m ²	> 4 g/m ²	2
Cisplatin	> 300 mg/m ²		3
Dactinomycin	>12.2 mg/m ²		4
Ovarian RT dose*	> 100 cGy	> 1000 cGy	5

*Age dependent (see nomogram⁵)

^Bevacizumab can cause ovarian failure; possibly acute and transient only⁶

1. Green Pediatr Blood Cancer 2014;61(1):53-67
2. Van der Kaaji J Clin Oncol 2012;30(3):291-299
3. Solheim Gyne Oncol 2015;136(2):224-229
4. Van Den Berg Hum Reprod 2018; 33(8):1474-1488
5. Wallace Int J Radiat Oncol;62(3):738-744
6. Imai Molec Clin Oncol 2017;6:807-810

Cyclophosphamide Equivalent Dose (CED)

Agent	Correction factor
Cyclophosphamide	1.0
Ifosfamide	0.244
Procarbazine	0.857
Chlorambucil	14.286
BCNU	15
CCNU	16
Melphalan	40
Thiotepa	50
Nitrogen Mustard	100
Busulphan	8.823

Green Pediatr Blood Ca 2014;61:53-67