

# Predictors of decision to pursue fertility preservation prior to gonadotoxic therapy in male pediatric, adolescent, and young adults patients

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# Pediatric cancer

- Increasing incidence with almost 16,000 cases diagnosed between 0-19 years of age in US in 2018.
- Improving survival due to advent of more effective multimodal therapies
  - >80% now surviving into adulthood
- Recent interest in late effects on fertility with ever-growing number of survivors
  - Less gonadotoxic therapies
  - Fertility preservation (FP)

# Fertility preservation

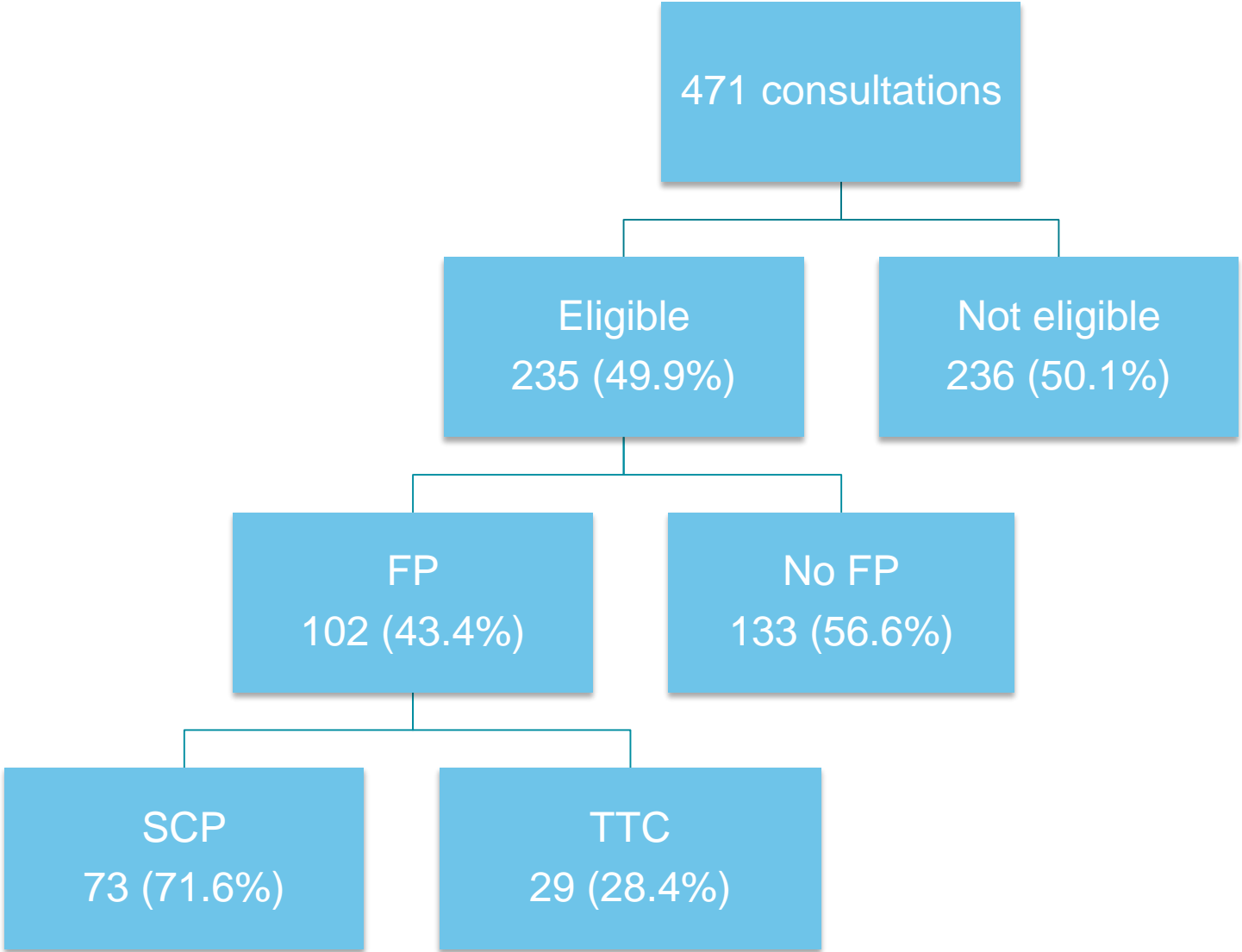
- Sperm cryopreservation (SCP)
  - Most established option for FP
  - Should be offered to all adolescent and young adult patients prior to gonadotoxic therapy.
- Testicular tissue cryopreservation (TTC)
  - Experimental
  - Greatest potential for FP before puberty

# Objective

- To identify the factors that influence the decision to pursue FP prior to gonadotoxic therapy in male pediatric, adolescent, and young adult patients.

# Methods

- Retrospective cohort study for male patients who were evaluated for FP between September 2013 and October 2018
- Risk stratification based on cyclophosphamide equivalent dosing
  - Low: <20% of permanent azoospermia
  - Intermediate: 20-80%
  - High: >80%
- Exclusions
  - Consultation for FP declined by family
  - Prior consultation for FP
  - Second opinion
  - Observation only
  - Surgery only
  - Exposure to chemotherapy within 3 months of SCP
  - Phase I clinical trial
  - Palliative therapy



	FP (n=102)	No FP (n=133)	p-value
Age in years, median (IQR)	15.5 (12.6-17.6)	10.8 (2.8-16.3)	<0.001
Pubertal development, n (%)			
Pre-pubertal	29 (28.4)	80 (60.2)	<0.001
Peri- or post-pubertal	73 (71.6)	53 (39.8)	
Race, n (%)			
White	69 (67.6)	87 (65.4)	0.93
Middle Eastern	17 (16.7)	20 (15.1)	
Black	8 (7.8)	14 (10.5)	
Other	6 (5.9)	10 (7.5)	
Refused or unknown	2 (2.0)	2 (1.5)	
Primary language, n (%)			
English	85 (83.3)	111 (83.5)	1.00
Other	17 (16.7)	22 (16.5)	
Religion, n (%)			
Christian	47 (46.1)	61 (45.9)	0.99
Muslim	18 (17.6)	22 (16.5)	
Other	1 (1.0)	1 (0.8)	
Refused or unknown	36 (35.3)	49 (36.8)	

	FP (n=102)	No FP (n=133)	p- value
Insurance, n (%)			
Private	66 (64.7)	61 (45.9)	<b>0.01</b>
Public	18 (17.6)	46 (34.6)	
International	16 (15.7)	20 (15.0)	
None or self pay	2 (2.0)	6 (4.5)	
Prior treatment, n (%)	14 (13.7)	25 (18.8)	0.38
Risk assessment, n (%)			
Low	8 (7.8)	20 (15.1)	<b>0.01</b>
Intermediate	22 (21.6)	12 (9.0)	
High	61 (59.8)	93 (69.9)	
None	11 (10.8)	8 (6.0)	
Care team, n (%)			
Bone marrow transplant	35 (34.3)	62 (46.6)	<b>0.04</b>
Neuro-oncology	7 (6.9)	14 (10.5)	
Leukemia/Lymphoma	24 (23.5)	28 (21.1)	
Solid cancer	33 (32.4)	29 (21.8)	
Other	3 (2.9)	0 (0.0)	



	Adjusted OR*	p-value*
Pubertal development		
Pre-pubertal	1.00 (reference)	--
Peri- or post-pubertal	12.34	<b>&lt;0.001</b>
Insurance		
Private	5.40	0.08
Public	1.21	0.85
International	6.82	0.06
None or self pay	1.00 (reference)	--
Risk assessment		
Low	1.00 (reference)	--
Intermediate	5.93	<b>0.004</b>
High	4.53	<b>0.01</b>
None	3.80	0.07
Care team		
Bone marrow transplant	1.00 (reference)	--
Neuro-oncology	0.37	0.12
Leukemia/Lymphoma	0.45	0.17
Solid cancer	0.54	0.24
Other	0.23	0.98

\* Multivariate logistic regression analysis

# Conclusions

- A peri- or post-pubertal status as well as an intermediate- and high-risk stratification were associated with pursuing FP.
- Further research is needed to better characterize the barriers to FP in this population.



Thank You