

Facing a cancer diagnosis: empowering parents to speak with adolescents about sperm banking



Both pediatric oncologists and reproductive urologists share a joint responsibility to educate, treat, and advocate for male adolescent and young adult (AYA) cancer patients who require gonadotoxic therapy. The importance of fertility preservation coincides with the ever-growing number of pediatric cancer survivors, because most children now survive their malignancy into adulthood and ultimately desire family building. Unfortunately, the risk of infertility in this population is remarkably high. Green et al. reviewed the Childhood Cancer Survival Study cohort, ultimately including 6,224 men in their final analysis (1). Compared with healthy siblings, pediatric cancer survivors were roughly one-half as likely to have fathered children (hazard ratio 0.56, 95% confidence interval [CI] –0.49 to 0.63). The reproductive consequences were greatest with the use of alkylating agents and when radiation involved the testis. Fortunately, the solution for fertility preservation is often straightforward for boys who have entered puberty: preemptive sperm banking before any exposure of a reproductive insult.

For parents and male AYA patients facing a new cancer diagnosis, the process of sperm banking for future fertility can be overwhelming. In addition, the providers meeting with these patients may not feel comfortable with broaching the subject or are not prepared to practically facilitate referral (2). These conditions have resulted in poor rates of sperm banking for adolescent cancer patients, which have been reported to be as low as 17.8% by one large retrospective series (3). The low rate of utilization represents failure of counseling on the part of the treatment teams despite clear guidelines from organizations including the American Society of Clinical Oncology, the American Society for Reproductive Medicine, the National Comprehensive Cancer Network, and the Association of Pediatric Hematology/Oncology Nurses (2, 3).

Several groups have attempted to identify the barriers related to fertility preservation in pediatric oncology. To better understand these impediments, one must first appreciate the unique perspectives of providers, parents, and the patients themselves. Fuchs et al. petitioned the attitudes and practices of 326 oncology providers, which included physicians, nurses, and advanced practice nurses (2). Within their cohort, 92% of respondents reported no history of formal training in fertility preservation. Consequently, only 48% of providers were familiar with intracytoplasmic sperm injection, a basic fertility intervention available to these patients and a marker of overall understanding. Although 93% of responding physicians reported routinely discussing fertility preservation with their adolescent patients, only 78% reported feeling comfortable with the topic. It is intuitive to suspect that sperm banking outcomes

coincide with provider competence and comfort with the material.

In addition, it has been observed that the provider's perception of the parent(s)' and patient's interests in fertility preservation often does not align with their actual attitudes and concerns (4). Providers tend to focus on expediting treatment because they typically believe that parents prioritize timely oncologic therapy over fertility. Clinicians may also perceive many adolescent males to be uninterested, embarrassed, or too immature to consider sperm banking. Unfortunately, these misperceptions result in superficial and brief discussions of future fertility. Meanwhile, parents are rarely embarrassed to discuss the subject of fertility and are appreciative of the dialogue. In the parents' minds, prioritizing expedited cancer treatment is not mutually exclusive of fertility preservation, which is actually interpreted as a sign of hope. Also, it is now well known that many adolescent male patients are interested in future family building and prefer engagement in these types of discussions. Common to both patient and parent is the hindsight desire that providers be more proactive.

Stein et al. broadened our understanding of attitudes toward fertility preservation by attempting to separately characterize the perspectives of patients and their parents, and if they exist, any conflicts of interest among these stakeholders (4). Both parties expressed significant regret that fertility preservation was not adequately addressed at the time of cancer diagnosis. These feelings became most apparent to the patients as they survived their diagnosis, began relationships, and started to entertain the notion of family building with their partners. Many patients stressed their immaturity at the time of treatment and the need for both provider and parent to propel fertility preservation as a worthwhile objective. Parents, however, often perceived that their children were much more equipped for these conversations. This discordance between the patient's actual maturity and their maturity as perceived by their parents may give the AYA patient inappropriate responsibility for driving fertility preservation as a priority (4).

In this issue of *Fertility and Sterility*, Klosky et al. elucidate the impact that parental influence has on fertility preservation outcomes (5). These data are clinically relevant because parental factors can be influenced through appropriate counseling. Within their cohort, 55% of patients attempted sperm banking, for which 83% successfully resulted in cryopreservation of a sample. The authors demonstrate that parents who actively recommended sperm banking to their children imparted an odds ratio [OR] of 3.7 (95% CI 1.18–11.76) in favor of attempted banking. The significance of this relationship was more pronounced when the recommendation came from the father, with a resulting OR of 8.3 (95% CI 3.0–22.8). Finally, there was a weak but statistically significant relationship of the parents' perceived self-efficacy to facilitate a banking attempt.

The data of Stein et al. and Klosky et al. highlight the unique environment that exists among male AYA patients diagnosed with cancer. In contrast to adult cancer

patients, treatment of AYA patients requires a much more coordinated attempt on the part of the treating provider, primary caretaker, and patient. In addition, parents need to take more of a leadership role, which may be facilitated through the guidance of providers. The parental attitudes as well, especially regarding self-efficacy, are undoubtedly heavily influenced by provider guidance and counseling. Likely, the most noteworthy implication of this study is the required involvement of not one but both parents, if present, in the care of AYA cancer patients. It seems that the idea of a supportive “team” would portend a more comprehensive outlook and an even higher rate of fertility preservation. To help facilitate this, both parents and patients require better provider input, intervention, and informational resources. Herein lies immense opportunity to diminish a major barrier to pretreatment sperm banking.

Future work should continue to explore and define actionable interventions that clinicians can take during fertility discussions. Additional future cohorts should also include underrepresented populations to allow for generalizability, because cultural and religious differences are likely to be important. Such studies will allow providers to leverage the opportunity uncovered by the Klosky et al. data and thereby ensure that all parents can be empowered to help their sons to preserve fertility.

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