

# **The Family-centered Adolescent Sperm banking decision Tool for adolescent males with cancer: Development, Testing, Adaptation and Implementation**

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Advances in childhood cancer therapies have resulted in >80% five-year survival rates. With nearly 500,000 childhood cancer survivors in the U.S., there is a growing need to address and mitigate late effects of treatment. Fertility impairment occurs in about half of male childhood cancer survivors and can negatively impact quality of life. Sperm banking is an established and widely available form of fertility preservation. Despite recognizing the value of future parenthood and guidelines to bank sperm before treatment, banking remains underutilized among male adolescents with cancer, especially at hospitals with low resources. Studies show adolescent males are more likely to bank sperm prior to cancer treatment if: 1) their institution has dedicated fertility services, 2) their provider recommends banking, and 3) their parents recommend it. To improve equitable care and access to sperm banking opportunities, family-centered decision tools, and strategies to implement these tools, are critical. Our team developed the Family-centered Adolescent Sperm banking Tool (FAST) and tested it prospectively among families of adolescent males newly diagnosed with cancer. We found the FAST prompted deeper thinking and facilitated family communication about parenthood goals and banking, and that sperm banking rates increased significantly. Given feasibility and equity considerations (i.e., short time frame, variety of settings in which fertility counseling is delivered), the objective of the R01 is to adapt the FAST to a web-based tool that can be accessed in inpatient/outpatient/non-clinical settings, identify implementation strategies for high and low-resourced settings, and test these in a three-site pilot study among 110 families of adolescent males (13-21 years of age) newly diagnosed with cancer. Specifically, our team will: 1) adapt the FAST (design and delivery) based on patient and caregiver stakeholder feedback (usability testing), which will result in a web-based tool that is functional, acceptable to families, and feasible to implement pre-cancer treatment; 2) conduct rapid contextual inquiry using a mixed-methods approach with clinician stakeholders, to identify tailored implementation strategies for the web-based FAST in both high and low-resourced pediatric cancer centers, prepare for adoption into clinical pathways, and ensure fidelity and sustainability, and 3) pilot the web-based FAST and tailored implementation strategies locally and at 2 additional sites (1 high and 1 low-resourced) to examine feasibility, acceptability, and impact on banking rates (pre-/post design) to prepare for a larger multi-site hybrid implementation-effectiveness trial. Findings will result in an innovative decision tool that can be easily accessed on the web and implemented at a wide variety of high and low-resourced settings to facilitate banking decisions among adolescent males with cancer. These efforts will optimize long-term outcomes by expanding opportunities for parenthood and contributing to improved quality of life in a growing population of survivors, including underserved populations.