

**Advancing Survivors' Knowledge (ASK) About Skin Cancer Study:
A Randomized Intervention within the Childhood Cancer Survivor Study (CCSS)**

Casey Daniel, PhD, MPH¹, Gregory Armstrong, MD², Robyn Keske, MSW, MPH¹, Jessica Davine, MSW, MPH¹, Aaron McDonald, PhD², Kim Sprunck-Harrild, MSW, MPH³, Catherine Coleman, MA⁴, Sebastien Haneuse, PhD, MSc⁵, Ann Mertens, PhD⁶, Karen Emmons, PhD⁷, Ashfaq Marghoob, MD⁸, Elena Elkin, PhD⁹, Stephen Dusza, DrPH¹⁰, Leslie Robison, PhD², Todd Gibson, PhD², Alan Geller, MPH, RN¹

¹Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, ²Department of Epidemiology and Cancer Control, St. Jude Children's Research Hospital, ³Department of Medical Oncology, Dana-Farber Cancer Institute, ⁴Department of Population Sciences, Dana-Farber Cancer Institute, ⁵Department of Biostatistics, Harvard T.H. Chan School of Public Health, ⁶Department of Pediatrics, Emory University, Emory Children's Center, ⁷Kaiser Permanente, ⁸Memorial-Sloan Kettering Cancer Center, ⁹Department of Epidemiology and Biostatistics, Memorial Sloan-Kettering Cancer Center, ¹⁰Department of Medicine, Memorial Sloan-Kettering Cancer Center

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ABSTRACT

Background: Advances in treatment and supportive care have increased childhood cancer five-year survival rates to greater than 80%. However, survivors previously treated with radiation therapy are at significantly increased risk of developing skin cancer as they age, relative to the general population. Therefore, the National Cancer Institute and the Children's Oncology Group have issued recommendations for childhood cancer survivors treated with radiation to perform monthly skin self-examinations and to receive a physician skin examination at least annually, as early detection has demonstrated markedly improved outcomes in the diagnosis and treatment of skin cancers in the general population, particularly melanoma. The goal of the present intervention study is to increase rates of 1) skin self-examinations and 2) physician skin examinations among adult survivors of childhood cancer treated with radiation.

Methods: This randomized controlled trial will recruit 801 survivors from CCSS; 267 participants in each of the three intervention arms. We will use a three-group comparative effectiveness design comparing: (1) patient activation and education (PAE) which includes specifically designed, targeted print and web-based materials over 12 months as well as 14 text messages sent throughout the study with the purpose of driving participants to the study website; (2) PAE **plus physician activation** (PAE + MD) adding targeted physician activation/educational materials about survivors' increased skin cancer risk and recommendations for conducting full-body skin examinations sent directly to the physician designated as the primary health care provider; and (3) PAE plus physician activation, **plus teledermoscopy** (PAE + MD +TD), adding participant receipt of a dermatoscope that participants can attach to their smartphones or tablets intended to empower them to photograph suspect moles or lesions for review by the study dermatologist. The primary outcomes will be assessed by questionnaires at baseline, 12-months (at the end of intervention), and 18-months (6 months post-intervention). Receipt of a physician skin examination will also be measured by chart review of medical records. In addition, website tracking for all 801 participants will provide insight into their use of the study website including number of visits to the site, pages visited, and time spent on the site.

Discussion: The current study addresses barriers to screening by providing educational and motivational information for both survivors and physicians regarding the value of regular and thorough skin examinations. It also utilizes innovative mobile health technology to encourage and motivate (i.e., activate) survivors to conduct skin self-examinations, request physician examinations, and obtain treatment when worrisome lesions are found. Finally, as a comparative effectiveness trial, this study isolates the effects of adding specific components to the patient activation intervention to test the most effective intervention for enhancing skin examination vigilance among this high-risk group.