

Black children with cancer three times less likely to receive proton radiotherapy than white children

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A deep concern among pediatric oncologists has been confirmed by the data: Black children enrolled in national clinical trials have been found to be three times less likely to receive proton radiotherapy than their white counterparts. Previous studies have shown that proton radiotherapy is equally effective at treating cancer and may decrease the incidence of long-term side effects in children compared to other forms of radiation therapy. But a retrospective analysis led by investigators from Brigham and Women's Hospital has found racial disparities in the use of the therapy for patients enrolled in trials. Results are published in *JAMA Oncology*.

"We were motivated to carry out this investigation based on our anecdotal experiences in clinic that children who receive [proton therapy](#) are predominantly white," said corresponding author Daphne Haas-Kogan, MD, chair of the Department of Radiation Oncology at the Brigham. "The strongest evidence for proton therapy is in [childhood cancer](#), and we were concerned that imbalances in who receives this treatment could translate to long-term health disparities in our patients. This question was particularly urgent to us because of the rapidly growing number of proton centers in the country, which could potentiate any existing disparities if there is imbalanced distribution and use of these expensive technologies."

"We found that even when we think we are treating patients in as

standard a way as possible, we may not be offering the same access to advancements in treatment," said lead author Danielle Bitterman, MD, a resident in the Department of Radiation Oncology at the Brigham.

"These results call for introspection and to proactively address barriers to access to make sure patients who most need proton therapy are prioritized based on medical need so that these treatments are distributed equitably and fairly."

Proton radiotherapy is a high-cost, limited resource but may offer increased quality of life for pediatric patients compared to standard photon therapy. Cancer centers that offer proton radiotherapy are concentrated in [metropolitan areas](#) and may require travel or even relocation for families seeking treatment.

Most children with cancer enroll in clinical trials. To assess access to proton radiotherapy, Haas-Kogan, Bitterman and colleagues analyzed data from children enrolled in the Children's Oncology Group prospective trials between 2010 and 2018. They found that among 1,240 patients, approximately 85 percent received photon therapy and 15 percent received proton therapy.

Black pediatric patients were less likely to receive proton therapy than non-Hispanic white patients. While the study is retrospective and could not account for all confounding variables, the team did adjust for many confounders, including distance to the [cancer](#) center, metastatic disease and more. Even with these adjustments, Black patients remained less likely to receive [proton therapy](#).

The study did not assess survival or patient side effect outcomes and cannot make conclusions about the clinical effect of the imbalance in proton treatment on patients. However, the findings suggest that Black [children](#) with solid cancers may be at higher risk for more side effects, some of which may be severe and lifelong.

"Future research should drill down on whether and how geography contributes to disparities, as this could guide more ethical distribution of high cost technologies," said Haas-Kogan. "And, perhaps most importantly, health care provider bias and racism may influence referral and treatment patterns for high cost medical treatments. This needs to be measured, recognized, and addressed in order to narrow the glaring health care disparities in our country."

More information: Danielle S. Bitterman et al, Race Disparities in Proton Radiotherapy Use for Cancer Treatment in Patients Enrolled in Children's Oncology Group Trials, *JAMA Oncology* (2020). [DOI: 10.1001/jamaoncol.2020.2259](https://doi.org/10.1001/jamaoncol.2020.2259)

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