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abstract

The Sidra Medicine Pediatric Precision Oncology Initiative

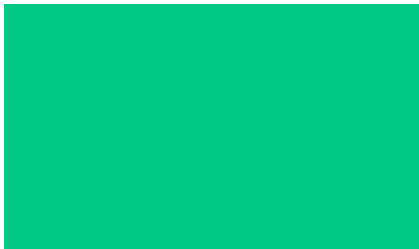
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abstract



The Sidra Medicine Pediatric Precision Oncology Initiative

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Introduction: Sidra Medicine has been Qatar's primary pediatric cancer center since May 2018, launching the Sidra Pediatric Cancer Registry in parallel. The cohort is predominantly of Arab (60%) and Asian (32%) ancestry. Diagnoses include Leukemia (33%), CNS malignancies (20%), followed by Lymphoma, Germ cell tumors, Neuroblastoma, and Sarcomas.

Methodology: Soon after clinic launch, we established the Sidra Cancer Biorepository (SPCB) to bank surplus diagnostic material from consented patients and serial blood along treatment. Stool sampling began in 2022 to study the microbiome; saliva was added in 2024. For enrolled patients, expedited Genomic Oncology Profiling (eGOP) comprises 90× tumor and 30× germline whole-genome sequencing, EPIC-array tumor methylation, and RNA-seq (~50M reads). Clinicians receive a Personal Cancer Genomics report, Cancer Predisposition report, fusion report, and-when applicable-a methylation-based CNS classification; since 2024, a PharmaCAT pharmacogenomics report is included. Clinical and multi-omics data are re-identified and managed in an in-house database.

Results: By September 2024, 489 pediatric patients were registered; 178 were enrolled in the precision oncology protocol. Major cancer groups (total/consented) were: Leukemia (150/52), CNS tumors (106/77), Lymphomas (51/12), Neuroblastoma (33/13), Germ cell tumors (28/23), Soft-tissue sarcomas (29/12), and Renal tumors (23/14).

Conclusion: Sidra Medicine has implemented an integrated registry-biorepository-multi-omics pipeline that delivers clinically actionable reports and a research-ready dataset for pediatric patients. Ongoing accrual and multi-layer profiling aim to accelerate precision oncology and generate broadly generalizable insights across diverse pediatric populations.