



Feasibility and Impact of Rapid Newborn Screening for Sickle Cell Disease in Tanzania: Results from the Tabora Region Pilot Program

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Introduction

- Tanzania carries one of the highest global burdens of SCD, with an estimate ~11,000 births annually affected.
- Tabora is one of the largest and most rural regions, with 2.1-2.5% affected newborns (pilot estimate).
- In sub-Saharan Africa, 50-80% of children with SCD die before age 5 without early diagnosis and preventive care.
- Most infants with SCD in Tanzania remain undiagnosed at birth, delaying antibiotics, malaria prophylaxis, and hydroxyurea.
- Point of care (POC) newborn screening offers a scalable, low-cost platform for early identification and timely linkage to life saving treatment.

Objectives

- Evaluate feasibility of POC newborn screening using HemoTypeSC in rural Tabora primary healthcare facilities
- Assess prevalence of SCD and carrier states in the screened population
- Compare rapid tests results with Gazelle Hb electrophoresis for confirmatory accuracy.
- Establish a referral and follow up model connecting infants with SCD to care

Implementation methodology for SickCare Project.

- Capacity building to primary healthcare service providers involved in screening activities.
- Screening is conducted to all newborns and symptomatic under 5 yrs at Labor ward and RCH unit. (i.e 23039 children were tested between February 2025 to November 2025).
- 95% off all newborns were screened in 19 primary healthcare facilities
- Children identified with SCD were enrolled to start clinics at designated clinic facilities where they are receiving proper management and care including antibiotics, anti-malaria etc.
- Positive samples were collected and sent to DH for confirmatory tests using HB
- Electrophoresis technology and result sent back to the families and primary facilities.
- Comparison outcomes indicated 99.9% similarity between HemoTypeSC rapid test and Hb Electrophoresis results.



Screening Results from February 2025 to July 2025

(Accummulative of all 19 SickCare Project Health Facilities)

Screening results	No of Tests	% of results
Normal Hemoglobin HbAA	18,972	82.33%
SCD Trait (HbAS)	3,472	15.07%
Confirmed SCD Cases (HbSS)	591	2.56%
SCD Variant (HbSC)	5	0.03%
SCD Variant (HbAC)	3	0.01%

283 positive samples confirmed 99.9% concordance between HemoTypeSC and Gazelle electrophoresis

Conclusion to findings

- Rapid newborn screening using POC tools is feasible, accurate, and highly scalable across rural Tanzania health facilities.
- The prevalence of HbSS and HbAS in Tabora reinforces the urgent need for routine national newborn screening
- Near-perfect concordance (99.9%) between rapid and confirmatory testing validates POC methods for widespread adoption.
- Early identification enabled prompt initiation of life-saving care, supporting significant reduction in SCD-related under 5 mortality

Future Strategy

- Scale newborn screening to additional primary healthcare facilities and DH.
- Implement national digital reporting system for surveillance.
- Increase confirmatory testing capacity by wider distribution of Gazelle electrophoresis.
- Conduct longitudinal outcome studies including assessment of Hydroxyurea impact in early childhood.

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Supporting Partner



Scan to watch SickCare Project Documentary

