CHAMPS

Child Health and Mortality Prevention Surveillance

Enhancing efficient laboratory results delivery to inform patient management, Siaya County Referral Hospital, Kenya

Case Study April 2026

Evans Ong'wen[1], Daniel Oyoo[1], Hellen Were[1], Chinelo Ogbuanu[2], Janet Agaya[3], Hellen Muttai[4], Victor Akelo[4], Portia C. Mutevedzi[2], Dickens Onyango[5]

1. *County Government of Siaya, Department of Health and Sanitation*
2. *Child Health and Mortality Prevention Surveillance (CHAMPS) Program Office, Taskforce for Global Health, Atlanta, Georgia, USA*
3. *Kenya Medical Research Institute, Center for Global Health Research, Kisumu, Kenya*
4. *Liverpool School of Tropical Medicine (LSTM), UK*
5. *County Department of Health, Kisumu, Kenya*

Summary

Laboratory services at Siaya County Referral Hospital (SCRH) cater for both outpatients and inpatients, as well as for feeder health facilities that refer samples to the hospital through a specimen referral network. As part of the Child Health and Mortality Prevention Surveillance (CHAMPS) laboratory results are collected as part of cause of death determination. A key gap noted was that results for inpatients were often left in pigeonholes, not systematically filed and not delivered to the wards in time to inform patient management. There was general reluctance among both laboratory staff and clinicians to collect or deliver the results, leading to delays, mismanagement of patients, and poor health outcomes.

As part of CHAMPS data-to-action, a presentation was made to the lab management team in Kisumu and Siaya Counties and highlighted the impact of these inefficiencies. A case example showed how delayed malaria test results contributed to a patient's death at SCRH. In response, the then laboratory manager, together with laboratory staff and clinicians, recognized the need for change and initiated efforts to improve the laboratory results delivery system. Five simple interventions were implemented that immediately improved results feedback and patient management. To date there are no in-hospital results that are kept in the pigeonhole and there is evidence of laboratory results driven patient management.

By embracing data-driven strategies, prioritizing documentation, and promoting a multidisciplinary approach, Siaya County Referral Laboratory has enhanced the quality of services provided to patients and achieved greater operational efficiency.

> *"By turning CHAMPS evidence into action, Siaya County Referral Laboratory transformed delayed results into timely patient care, stronger clinical decisions, and better health outcomes."*

01 Background and context

Siaya County Referral Hospital (SCRH) is the main referral facility for Siaya County, one of Kenya's 47 counties, and is the largest hospital in the region. SCRH is a 304-bed capacity hospital with an average occupancy rate of 72%. The hospital also supports 31 peripheral health facilities within the county (1).

In May 2019, when a new laboratory manager joined the team, he noted that there were many complaints, from the hospital patient management teams, that laboratory test results were not returned in a timely manner, delaying clinical decision-making. Some of these delays contributed to avoidable patient deaths, as critical treatment decisions were postponed. Additionally, there were reports of missing samples, resulting in no results being generated at all.

The lab processes involved placing laboratory results in pigeonholes for collection by clinical staff (Figure 1). However, due to huge workload, clinical teams rarely retrieved the results, leading to delays in appropriate and efficacious patient management especially with infectious conditions and drug-resistant infections.

Additionally, on 14 July 2021, the CHAMPS Data-to-Action (D2A) team as part of cause of death results dissemination invited laboratory and clinical staff to Kisumu County. Across all child deaths and stillbirths, CHAMPS findings showed that delayed health care remained a main contributor to deaths. A case in point was a patient referred from a small health centre in Siaya County to SCRH, who subsequently died from malaria. The case highlighted multiple lapses in the laboratory workflow that contributed to the patient's death. This example heightened the urgency to address inefficiencies in the laboratory–clinician interface at SCRH.

02 Intervention

Intense internal deliberations led to the adoption of the five key interventions detailed below:

- **Immediate Delivery of Laboratory Results During the Workday**:During regular working hours, the laboratory receptionist delivered test results directly to the respective wards immediately after the results were generated. The MO receiving the results would sign to acknowledge receipt and then place the results in the patients' folders to inform clinical management.
- **Morning Pickup of Laboratory Results by Medical and Clinical Officers:** Each morning, MOs and COs would stop by the laboratory to collect patient results on their way to the wards.
- **Special Delivery for Emergency or Critical Cases:** For emergency situations or cases with high or critical result values, lab personnel delivered results directly to the wards, particularly during night shifts or early mornings. In such instances, the doctor on call would sign to acknowledge receipt of the results.
- **Telephone Notifications to Departments and Wards:** Laboratory personnel would notify departments or wards by phone when results were ready. For instance, the GeneXpert machine used for TB diagnosis has functionality to store phone numbers and email addresses. Once the analysis was complete, results were automatically sent to the MO or CO who requested the test via the stored contact information. Additionally, laboratory staff would manually call the relevant department to communicate the results.
- **A laboratory register was introduced and expanding the lab system functionality to include specimen tracking.** The register captured key details including the name of the health worker who

submitted the sample, the laboratory attendant who received it, the exact time of receipt, and the time results were dispatched. Improvements were also made to the Funsoft Laboratory Management Information System (LMIS), which, despite being in operation since 2016/2017, had primarily been used for billing and generating laboratory requests at the clinician's desk Key enhancements to the LMIS system included:

- **Red alerts and blocking of requests for unavailable tests:** The system was configured to display red-coded alerts for tests that were unavailable and blocked to prevent clinicians from ordering unavailable tests.
- **Automated results delivery:** The system was upgraded to enable automated delivery of test results to the clinician's desk immediately after laboratory review.

To ensure compliance, the laboratory manager conducted spot checks. Notably, these gains have been sustained over four years, even with changes in the leadership of the laboratory.

Figure 1. Pigeonhole: Before and after the intervention

03 Impact of interventions

Since 2021 to date, these small interventions have led to significant reduction in laboratory results turnaround time from specimen collection to the delivery of results to the wards. Patient management and clinician satisfaction improved with better in-hospital patient outcomes. Management of patients improved as clinicians were enabled to make informed decisions on patient treatment guided by laboratory results. Specifically,

- **Timely availability of laboratory results.** The turnaround time from sample receipt to result delivery was drastically reduced for all tests. For example, TB test results that previously took 24–48 hours to be released were now available within 2–3 hours. The longstanding issue of missing laboratory results was effectively addressed, as each sample was tracked, and any delays or lapses were quickly identified and resolved.
- **Capacity building through data-driven action.** The laboratory manager, having been exposed to the value of using data for action (D2A), applied this approach to improve other aspects of the laboratory. By using D2A results that showed lapses in antimicrobial resistance (AMR) management, cultures were conducted from swabs collected across various hospital sites—including the operating theatre, wards, and newborn unit incubators—to analyse AMR patterns and inform therapeutic decisions and infection prevention efforts, demonstrating the power of data in driving clinical and operational improvements.

The robust documentation system remains critical to maintaining high standards in the Siaya County Referral Laboratory service delivery, as it enhances accountability, ensures traceability, and improves efficiency.
The adoption of a multidisciplinary approach—engaging MOs, COs, nurses, and laboratory staff—enabled the development of comprehensive solutions that improved the timeliness and efficiency of laboratory result delivery. Collaboration across specialties fostered a more coordinated effort, contributing to overall improvements in service quality.

04 References

1. Republic of Kenya. Annual Work Plan 13 (AWP): Siaya County Referral Hospital. 2024/2025.

05 Acknowledgements

1. The Siaya County Referral Hospital management.
2. Dr. Alexander Liech Adoyo: Medical Superintendent, Siaya.
3. Mr. Howard Muiyia: Clinical Officer In-charge Siaya County RH.
4. Ms Maureen Rapondi: Sub County Clinical officer Alego Usonga Sub-County and CHAMPS Focal person Karemo Ward.
5. Mr. Douglas Okoto, County Medical laboratory coordinator
6. The County Government of Siaya, Department of Health & Sanitation.

CHAMPS

Child Health and Mortality Prevention Surveillance (CHAMPS)

CHAMPS Health

@CHAMPS_Health

@CHAMPSHealth

Child Health And Mortality Prevention Surveillance

The CHAMPS network uses innovative approaches to generate and share knowledge that improves understanding and prevention of child mortality.

CHAMPS | A program of THE TASK FORCE FOR GLOBAL HEALTH