ASSESSING MALARIA EARLY WARNING CAPACITY:

Evaluation of the Malaria Epidemic Preparedness & Response Surveillance System in a Highland-Epidemic Setting, Kenya (2024)

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BACKGROUND

- Malaria remains a public health concern in Kenya's highlands and in the arid and semi-arid regions
- These areas experience seasonal, climate-driven malaria outbreaks
- The Malaria EPR system provides weekly data for threshold monitoring, facilitating early outbreak detection and response
- Strengthening surveillance is a priority under Kenya Malaria Strategy 2023 – 2027
- Periodic evaluation is needed to identify system gaps and strengthen surveillance performance

OBJECTIVES

- To evaluate the usefulness of the EPR surveillance system in informing case detection and public health action
- To assess key surveillance system attributes (simplicity, flexibility, acceptability, timeliness, data quality, and stability)
- To characterize malaria cases reported at the facility in 2024

STUDY AREA

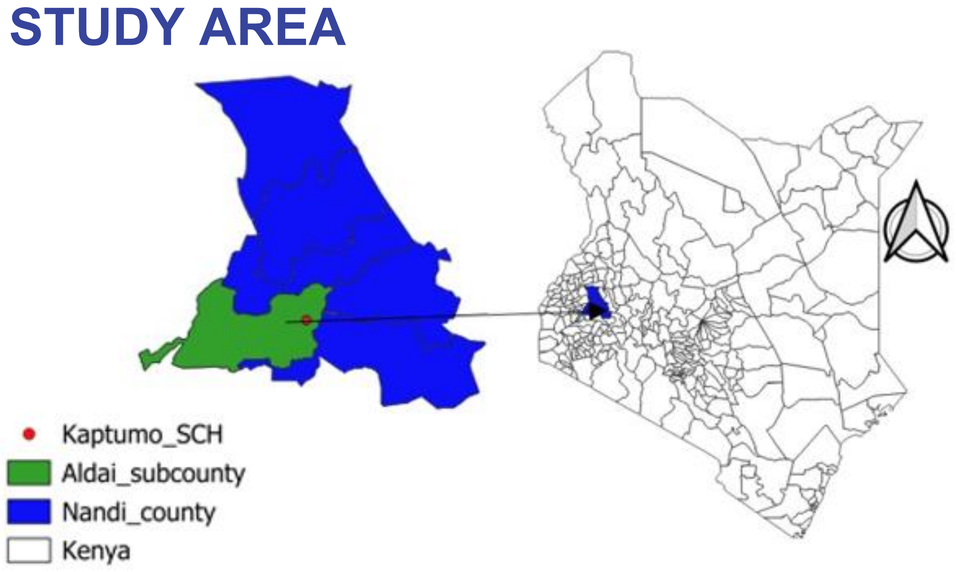

Figure 1: Map of Kenya showing Aldai Subcounty and Kaptumo SCH

STUDY DESIGN AND SAMPLING

Design: Cross-sectional mixed-methods evaluation

Framework: CDC Updated Guidelines for Evaluating Public Health Surveillance Systems

Data Sources: MOH 505 and MOH 705 A/B, KHIS reports, 14 KIIs

Data Collection: Routine surveillance data extracted from KHIS and facility registers, Structured questionnaires and KIIs with 14 health workers

Statistical analysis: Descriptive statistics , Congruence ratios

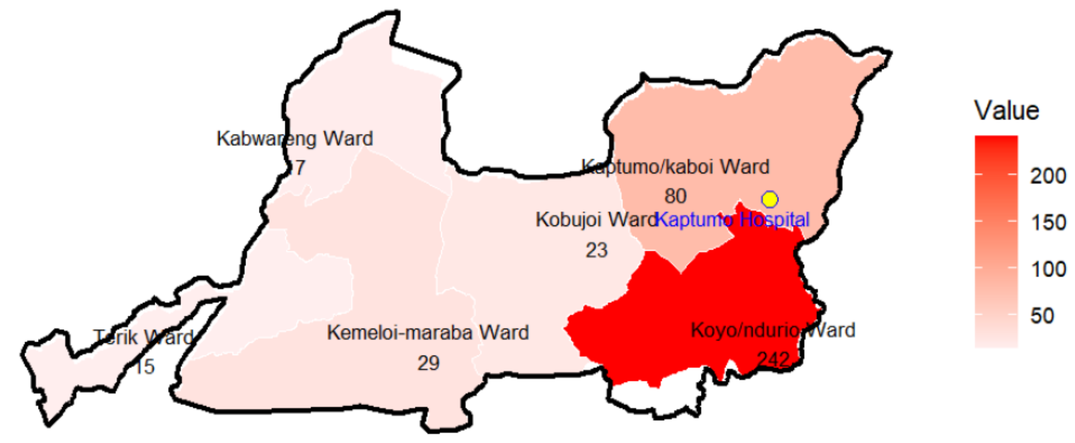

Figure 3: Spatial distribution of malaria cases in Aldai subcounty, 2024

RESULTS

Table 1: Table showing performance of malaria EPR surveillance system attributes at Kaptumo SCH, 2024

Attribute	Key Finding	Score	Performance
Usefulness	All staff (14/14) reported data informed actions	100%	Excellent
Acceptability	All (14/14) willing to engage	100%	Excellent
Simplicity	Most found procedures manageable (12/14)	86%	Good
Timeliness	Weekly reporting 76.9% (40/52)	77%	Moderate
Data Quality (Congruence)	Poor congruence (0.58, 237/406), Acceptable range 0.9-1.1	58%	Poor
Stability	Intermittent interruptions reported: Staff & Infrastructure gaps	80%	Good
Flexibility	Adapted to changes without major operational disruption	85%	Good

(< 60% weak performance; 60–79% moderate performance; ≥80% good performance according to previously conducted studies in other Africa countries)

Epidemiological Findings

- 406 confirmed malaria cases in 2024

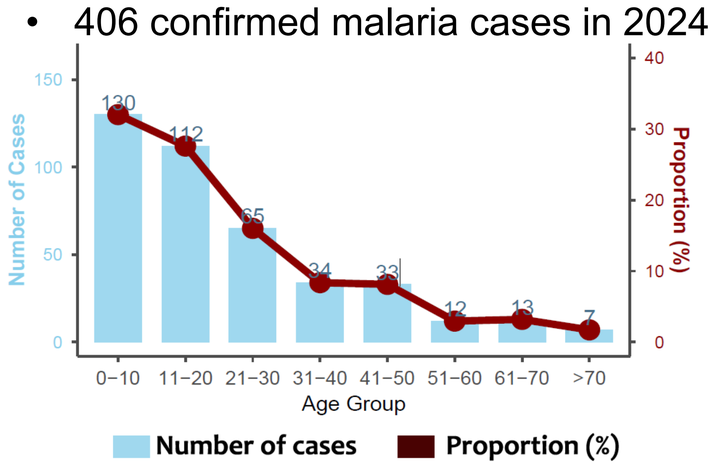

Figure 1: Age distribution of Malaria cases in Kaptumo Jan- Dec 52024 (n=406)

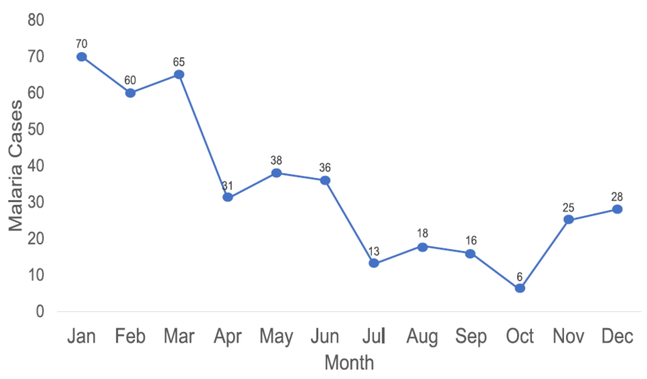

Figure 2: Temporal distribution of Malaria cases in Kaptumo SCH in the year 2024. Source = KHIS, 2026.

DISCUSSION

Strengths:

- ✓ High usefulness – Data were used for outbreak detection and case management, targeted hotspot interventions, and community sensitization.
- ✓ High stakeholder acceptability

Weaknesses:

- ✓ Inconsistent weekly reporting due to operational barriers
- ✓ Poor congruence between weekly and monthly reports
- ✓ Infrastructure and staffing challenges

CONCLUSION

The EPR system at Kaptumo SCH is valuable but has gaps in reporting and quality, limiting its early warning capacity for malaria outbreaks

Recommendations:

- Strengthen weekly reporting via mentorship and supervision
- Promote adoption of interoperable EMRs with KHIS such as Tiberbu and conduct routine data quality audits
- Improve digital infrastructure
- Hold regular data review meetings for timely interpretation and response

A functional surveillance system is only as effective as the quality of its data

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