



## Improving Malaria Reporting by Village Health Teams under Integrated Community Case Management: A Policy Brief:

Authors: **Gerald B. Rukundo\*<sup>1</sup>**, **Benon Kwesiga<sup>1</sup>**, **Alex Riolexus Ario<sup>1</sup>**

<sup>1</sup>**Uganda Public Health Fellowship Program, Kampala, Uganda**

---

### Executive Summary

*Malaria remains among the leading causes of morbidity and mortality in children under 5 years of age. To address this gap, in 2010 Uganda adopted the Integrated Community Case Management (iCCM) strategy to promote community level management of malaria among children under 5 years of age. This ICCM strategy is implemented by Village health teams (VHTs) who record and report malaria cases treated. Presently, recording and reporting malaria cases is paper based and this has presented many challenges. The use of paper brings unnecessary data incompleteness & delays in reporting. Poor data recording practices by VHTs and lack of supervision, often affect data quality. Unlike health facilities which report on a weekly and monthly basis, VHTs report on a quarterly basis. This often leads to under-utilization of malaria surveillance data generated by VHTs. To improve on reporting and data utilization, there is a need to harmonize the frequency of reporting to the DHIS2 by both VHTs and health facilities. There is a need by ministry of health to pilot digital reporting to improve on data quality and timeliness. Mobile reporting system could reduce the time required for malaria treated cases to be reported by the VHTs to the district, and national levels. The mobile reporting system is a feasible option to assist with early detection of malaria outbreaks.*

### Background

Uganda is a malaria endemic country with active transmission in 99% of the country putting approximately 39 million people at risk [1]. The most vulnerable populations are pregnant women and children under 5 years of age. According to the 2016 Uganda demographic and health survey (UDHS), the malaria prevalence among children under 5 years of age by rapid diagnostic test (RDT) was at 30% [1]. The 2018-2019 malaria indicator survey found the malaria prevalence of children under 5 at 17%.

Malaria remains among the leading causes of morbidity and mortality in children under 5 years of age [2,3]. To address this gap, in 2010 Uganda with support from United Nations Children's Fund (UNICEF), adopted the Integrated Community Case Management (iCCM) strategy to promote community level management of malaria among children under 5. The iCCM strategy was initially rolled out in 22 districts but later expanded to other districts, most especially in areas considered to be hard to reach with limited access to health care.



Currently the iCCM strategy is being implemented by village health teams (VHTs) and has demonstrated that the use of VHTs expands malaria treatment areas hence resulting into reduction of malaria morbidity and mortality [4,5]. Under this strategy, VHTs are usually given health information management (HMIS) tools to record and report malaria cases treated. The current reporting rate by VHTs to the national health information system remains low compared to health facility reporting.

Several studies have demonstrated the ability of VHTs to collect epidemiological data on a variety of diseases, including malaria [6-12]. In poorly-resourced countries, community-based surveillance systems are best suited to complement health facility (HF)-based surveillance. Community-based surveillance systems provide quantitative estimates of disease burden in a defined population and service delivery indicators for disease control measures [16] but remain under-exploited in relation to malaria.

Public health surveillance, has been defined as the "ongoing systematic collection, analysis, and interpretation of data critical to the planning, implementation, and evaluation of public health interventions" [17,18]. Effective use of such surveillance data requires timely dissemination to all relevant stakeholders [17,18]. Effective systems for detecting and reporting malaria infection in human populations have an increasingly important role to play as control steadily progresses towards elimination so that infection and disease become more focal in time and space and additional interventions are increasingly targeted in response to surveillance data [19,20].

As we move towards malaria elimination, reporting malaria cases becomes increasingly critical, to halt continuing transmission.

Currently, there are two categories of VHTs that report malaria cases. These include VHTs who work under the Ministry of Health (MOH) system and partners. The VHTs under MOH are volunteers who use paper to report malaria cases to the nearest health facility on a quarterly basis. The health facility then reports directly to the district where data is entered into the district health information system (DHIS2). Partner VHTs are supported by donors & small programs. They move door to door selling medical products and receive incentives depending on the number of medical products sold. They report directly to the donor platforms using mobile technology. Presently, there are challenges in the reporting systems used by the VHTs to report malaria cases.

### **Importance of the problem**

The current HMIS guidelines allows health facilities to report weekly, monthly, and quarterly malaria cases to the DHIS2 and yet VHTs report on quarterly basis. Due to the difference in frequency of reporting, data generated by the VHTs is never utilized while responding to malaria outbreaks. The contribution of VHTs to malaria control in Uganda is usually underestimated and yet they treat a considerable high number of children under 5. To effectively manage malaria



epidemics and move towards elimination, timely provision of accurate malaria surveillance data is necessary [21].

The completeness, accuracy, and timeliness of HMIS used by VHTs is often inadequate. These systematic weaknesses undermine stakeholder confidence in the reliability of this data and, consequently lead to its under-utilization for decision-making and planning [22]. Data quality is usually compromised due to multiple reporting forms, registers, and reporting levels. Most times VHTs fail to report malaria cases upwards due to many factors such as lack of transport to deliver reports to the facility, stock out of reporting tools, and inability to comprehend reporting tools.

To control and eventually eliminate malaria from Uganda there is a need to detect, treat, and notify cases in a timely way. Strengthening the malaria surveillance system in Uganda will allow more efficient and targeted allocation of resources to help interrupt transmission and achieve total malaria.

### **Critique of current policy options**

Presently, the national malaria control program uses paper-based reporting system, whereby VHTs perform malaria testing and record the individual's information on a paper form. Data is then aggregated at the end of every quarter and has to pass through multiple reporting levels to reach the District health information system (DHIS2). Use of paper by VHTs in reporting presents many challenges. Use of paper brings unnecessary data incompleteness & delays in reporting. Poor data recording practices and lack of supervision, affect surveillance data quality. In some settings, failure of VHTs to completely report upwards in the reporting chain has resulted into aggregation of incomplete datasets and generalized under-reporting of malaria burden in communities. Most times, reporting is affected by lack of transport, motivation, and poor terrain. Additionally, the guideline of VHTs reporting to higher levels of the health system on a quarterly basis is slow for any rapid action. The use of weekly malaria surveillance data to quickly identify malaria outbreaks leaves data generated by VHTs on quarterly basis redundant. Due to slow reporting by VHTs, data are never utilized by epidemiologists. Additionally, multiple reporting forms and registers used by the VHTs coupled with multiple reporting levels compromise data quality.

In contrast VHTs supported by partners use mobile phone-based application tool, which allows to report malaria testing results on-the-spot, with the aim of allowing stakeholders' access to up-to-date data in real-time. Additionally, the VHTs supported by partners' report to an independent platform. The MOH and partner VHT reporting systems don't interact and therefore data is never aggregated. Failure to integrate the two reporting systems gives a wrong impression on the actual number of malaria cases treated by VHTs and may lead to under-estimation of the malaria burden in the country.



### Recommendations

The frequency of reporting to the DHIS2 by both VHTs and health facilities need to be aligned to effectively identify the true malaria burden at any given moment. To improve on data quality and timeliness, multiple reporting tools and levels need to be eliminated. Like partners, MOH needs to pilot digital reporting to avoid unnecessary delays and improve data quality. Mobile reporting system reduces the time required for diagnosed cases to be reported by the health care facility to district, and national levels. The mobile reporting system is a feasible option to assist with early detection of malaria outbreaks. To minimize over reporting of malaria cases, there is a need to integrate the two parallel VHT reporting systems (under MOH & partners). Data generated by VHTs needs to be utilized by epidemiologists and public health planners.

### References

1. Uganda malaria Annual report 2017/2018
2. Marsh DR, Hamer DH, Pagnoni F, Peterson S. Introduction to a special supplement: evidence for the implementation, effects, and impact of the integrated community case management strategy to treat childhood infection. *Am J Trop Med Hyg.* 2012;87:2-5.
3. World Health Organization. WHO/UNICEF joint statement integrated community case management (iCCM): an equity-focused strategy to improve access to essential treatment services for children. Geneva and New York; 2012.
4. Lemma H, Byass P, Desta A, et al (2010) Deploying artemether-lumefantrine with rapid testing in Ethiopian communities: impact on malaria morbidity, mortality and healthcare resources. *Tropical Medicine and International Health* 15, 241–250
5. Kamal-Yanni MM, Potet J, Saunders P (2012) Scaling-up malaria treatment: a review of the performance of different providers. *Malaria Journal* 11, 414.
6. Hamainza B, Moonga H, Sikaala C, Kamuliwo M, Bennett A, Eisele T, Miller J, Seyoum A, Killeen G. Monitoring, characterization and control of chronic, symptomatic malaria infections in rural Zambia through monthly household visits by paid community health workers. *Malar J.* 2014;13:128. doi: 10.1186/1475-2875-13-128.
7. Counihan H, Harvey SA, Sekeseke-Chinyama M, Hamainza B, Banda R, Malambo T, Masaniga F, Bell D. Community health workers use malaria rapid diagnostic tests (RDTs) safely and accurately: results of a longitudinal study in Zambia. *Am J Trop Med Hyg.* 2012;87:57–63. doi: 10.4269/ajtmh.2012.11-0800
8. Kalyango JN, Rutebemberwa E, Alfven T, Ssali S, Peterson S, Karamagi C. Performance of community health workers under integrated community case management of childhood illnesses in eastern Uganda. *Malar J.* 2012;11:282. doi: 10.1186/1475-2875-11-282.



9. Alba S, Hetzel MW, Nathan R, Alexander M, Lengeler C. Assessing the impact of malaria interventions on morbidity through a community-based surveillance system. *Int J Epidemiol.* 2011;40:405–416. doi: 10.1093/ije/dyq240. [PubMed] [CrossRef] [Google Scholar]
10. Hopkins H, Talisuna A, Whitty CJ, Staedke SG. Impact of home-based management of malaria on health outcomes in Africa: a systematic review of the evidence. *Malar J.* 2007;6:134. doi: 10.1186/1475-2875-6-134.
11. Rutta AS, Francis F, Mmbando B, Ishengoma D, Sembuche S, Malecela E, Sadi J, Kamugisha M, Lemnge M. Using community-owned resource persons to provide early diagnosis and treatment and estimate malaria burden at community level in north-eastern Tanzania. *Malar J.* 2012;11:152. doi: 10.1186/1475-2875-11-152.
12. WHO. *Disease Surveillance for Malaria Elimination: An Operational Manual.* Geneva: World Health Organization; 2012. [
13. Chanda P, Hamainza B, Moonga HB, Chalwe V, Pagnoni F. Community case management of malaria using ACT and RDT in two districts in Zambia: achieving high adherence to test results using community health workers. *Malar J.* 2011;10:158. doi: 10.1186/1475-2875-10-158.
14. Ruebush TK, II, Godoy HA. Community participation in malaria surveillance and treatment.
15. The Volunteer Collaborator Network of Guatemala. *Am J Trop Med Hyg.* 1992;46:248–260.
16. Oum S, Chandramohan D, Cairncross S. Community-based surveillance: a pilot study from rural Cambodia. *Trop Med Int Health.* 2005;10:689–697. doi: 10.1111/j.1365-3156.2005.01445.x
17. Thacker SB, Berkelman RL. Public health surveillance in the United States. *Epidemiol Rev.* 1988;10:164–190.
18. WHO. *Manual on Epidemiology Evaluation and Surveillance in Malaria Eradication.* Geneva: World Health Organisation; 1962.
19. Wetterhall SF, Pappaioanou M, Thacker SB, Eaker E, Churchill RE. The role of public health surveillance: information for effective action in public health. *MMWR Morb Mortal Wkly Rep.* 1992;41(Suppl):207–218.
20. Barclay VC, Smith RA, Findeis JL. Surveillance considerations for malaria elimination. *Malar J.* 2012;11:304. doi: 10.1186/1475-2875-11-304.
21. Baker EL, Jr, Ross D. Information and surveillance systems and community health: building the public health information infrastructure. *J Public Health Manag Pract.* 1996;2:58–60. doi: 10.1097/00124784-199623000-00016.
22. de Savigny D, Binka F. Monitoring future impact on malaria burden in sub-saharan Africa. *Am J Trop Med Hyg.* 2004;71:224–231.