CASE STUDY

Improving Malaria Case Management through Accuracy and Completeness of Data in the District Health Information System (DHIS): Case of Siaya, Busia, and Kakamega Counties

Summary
Facilities in three high malaria burden counties (Siaya, Busia and Kakamega) formed Work Improvement Teams (WITs) in October 2015 to improve malaria case management data quality and reporting. They reviewed their malaria source documents in comparison with the reported DHIS data and identified gaps. The WITs developed a number of changes to test, which included: data quality audits, data validation, continuing medical education (CME), and on-the-job training on proper documentation. Through these efforts, within 5 months, 50% of their reported data in DHIS was accurate. By May 2017, 95% of facilities in the three counties had complete and accurate malaria data in DHIS.

Background
Busia, Siaya, and Kakamega are malaria endemic counties in Kenya surrounding Lake Victoria with a prevalence rate of 27% compared to the national prevalence rate of 8% (National Malaria Indicator Survey 2015).

The USAID Applying Science to Strengthen and Improve Systems project (ASSIST), with funding from the President’s Malaria Initiative (PMI), began supporting quality improvement (QI) with a focus on documentation and reporting in the three focus counties in October 2015. ASSIST is currently implementing malaria QI activities in 45 facilities across five counties in Kenya, two of which are focused on malaria in pregnancy.

Implementation
In August and September 2015, it was identified by the ASSIST QI advisor and monitoring and evaluation (M&E) team that the counties did not have sub-county QI teams despite having been trained on the Kenya Quality Model for Health (KQMH) in June 2014 (Figure 1). The KQMH stipulates in its dimensions on leadership that at every health level there should be a functional QI team. In this regard, sub-county teams were

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Figure 1: Timeline of QI work
formed in conjecture with the facility based work improvement teams (WITs) (which were functional and running in some facilities after the training in June 2014) in an attempt to mainstream QI at facility, sub-county, and county levels. However, most of the teams formed were dormant due to national and county teams being hesitant to buy in to the QI work. In October 2015 teams were re-sensitized on QI and new teams were formed where needed. Following QI trainings from ASSIST on malaria case management, the WITs were formed between January and February 2016 at the facilities were formed and included: the nursing officer in charge of the departments, clinician in charge of the out-patient departments, the facility pharmacists, laboratory technologist, and health record departments. The WITs were supported by QI coaches who in most incidences are clinicians within the facilities.

In order to identify gaps, the teams together with their QI coaches and ASSIST QI Officers, reviewed their data on completeness and accuracy of data reported on DHIS. They realised that their data was inaccurate and not in tandem with DHIS data. The WIT conducted a fishbone analysis to determine root causes of these gaps and developed changes to test to improve documentation and reporting on malaria case management. They decided their first change would be to have the data persons clean all the data as well as have the Sub-County Health Records Information Officer (SCHRIO) provide on-the-job training and mentorship to the health records staff in the facility on malaria case management documentation and reporting. They provided mentorship on timely, accurate and complete data reporting as well as weekly data review and cleaning in both the DHIS and the source documents (Figure 2).

**Figure 2: Snapshot of validated data in Matungu Sub-County Hospital, Kakamega County**

| Months | Under 5 | | Over 5 | |
|--------|---------| |---------| | | | | | |
|        | Suspected | Confirmed | Suspected | Confirmed | | | | | |
| Dec-16 | 512 | 561 | 258 | 189 | 630 | 651 | 193 | 193 | |
| Jan-17 | 1017 | 1612 | 456 | 432 | 1210 | 1210 | 320 | 348 | |

Quarterly data validation was identified as a key component of the change ideas that would assist in the improvement process. This was done by comparing facility based reported data with validated data and source documents with data reported on DHIS. The team also developed a cascade template that would be used to ensure and monitor if all data was accurately completely and timely filled.

On a weekly basis, the teams sat down together to assess their data, clean it, and use this data for decision making. They looked at the documentation tools such as the tally sheets used to calculate the number of patients who were malaria suspects and those with confirmed malaria. In their weekly reviews teams began to see improvements. For instance, when reporting stock of malaria commodities (rapid test kits, AL medicine) most facilities would not accurately fill the data on DHIS. When it came to receiving M-RTKs and AL from Kenya Medical Supply Authority (KEMSA), based on data indicated in the DHIS, most facilities would experience stock outs before the end of the month. After the data cleaning, data validation, mentorship, coaching and formation of QI teams, there was a shift in this indicator and facilities reduced the frequency of stock outs of AL and m-RTKs.

**Results**
Since the WIT began their continuous validation processes, the percentage of accurately and completely filled data in the DHIS has greatly improved (see Figure 3). By May 2017, 95% of facilities in the three counties had complete and accurate malaria data in DHIS.

Facilities previously reported cases in which patients were treated on AL yet they had not been tested for malaria. When further investigated with the PMI team, it was discovered that there were various causes that led to this and the main one was the lack of m-RTKs or electricity to conduct microscopy (for the facilities that owned a microscope). When probed further it came to the attention of the PMI team that stocks of commodities were distributed based on the malaria cases reported in the DHIS meaning a facility cannot receive more m-RTKs or ALs if the reported malaria cases are low.

The improvement on data reporting has therefore not only improved accuracy and completeness of data in the DHIS, but has reduced stock-outs of key commodities because KEMSA is now basing supply distribution on accurate needs. This improves facilities’ ability to follow the key malaria case management dimensions: Test-Treat-Track (3T) model as stipulated by the National Malaria Control Programme, Ministry of Health, and the World Health Organization (WHO).

**Figure 3: Facilities with complete and accurate malaria data in DHIS in 3 malaria case management Counties (Oct 2015-May 2017)**

Facilitating Factors
The counties attribute their success to the PMI, county health management teams; facility leads, especially departmental leads who form the QI teams and WITs; and above all the Health Records department.

**Lessons Learned**
- Continuous shared and peer learning sessions between QI team is core to QI.
- County governments are generally receptive to QI initiatives as they are viewed from a cost effectiveness perspective. For instance, when you look at the cost in poor documentation of
malaria RTKs and ALs stock, it results in over stocking of drugs which is expensive for the county.

- Enhanced partner coordination through county technical working groups (TWG) is a useful approach for implementation of QI approaches. The county malaria coordinator formed a malaria TWG. The TWG brought together all sub county malaria coordinators, county pharmacist, county medical laboratory technologist, county health records officer, and the county director for health on a quarterly basis. The TWG monitored the progress of the QI teams, reviewed their reports, and gave recommendations on areas for improvement. This led to accountability and even one language when reporting to PMI on these counties.

- Increasing data demand and information use. Counties now realise the importance of accurate and complete data reporting, namely that it leads to quality decision making for instance in procurement of drugs, nets and other malaria case management initiatives. This is among the most important factors leading to QI.

**Next Steps**

Encouraged by what they have achieved, the CHMT, QI teams and WITs are exploring other ways to strengthen accurate, timely and completely recorded/reported data in the DHIS.