MALARIA CONTROL PROGRAM

A mobile rapid reporting system to strengthen surveillance in support of malaria elimination

In Zambia, malaria affects over 4 million people each year, accounting for 30% of outpatient visits and 8,000 annual deaths. Over 50% of these deaths are children under five years of age and about 20% of maternal mortality is attributable to malaria. However, in the last several years, advances in prevention and treatment have resulted in marked reductions in illness and deaths from malaria. The National Malaria Control Program set a goal of malaria elimination in five zones.

Through the use of both new and existing tools and a more focused strategy, The Malaria Control and Evaluation Partnership in Africa (MACEPA), a program at PATH, is partnering with the Government of Zambia to chart its way toward this goal. MACEPA has supported the Ministry of Health in designing and introducing a rapid reporting system that records specific points of malaria burden and commodity data each week and sends the data to a central server by mobile phone. The information is immediately available to program managers at district, provincial, and national levels, allowing them to monitor and respond faster to prevailing conditions on the ground, avoid stock outs, and better target interventions.

Implementation date: January 2011

About MACEPA

Using District Health Information System (DHIS2) open source software and its Java-based Mobile Client, staff at the clinics report weekly on small carefully chosen data sets that includes the number of tests done, number of positive tests, number of people given malaria treatment and stock information. Low-cost mobile phones and prepaid SIM cards are supplied to the health workers. The system also extends surveillance into the communities within the health facility's catchment area through a network of community health workers (CHWs). A specially trained Data Community Health Worker (DCHW) is given the responsibility for reporting data into the DHIS2 server for groups of CHWs to improve on the disaggregation of focal transmission sites. The DCHW receives reports from the other CHWs on a monthly basis, concentrating data entry training to a smaller group of health workers and creating a cluster of data collectors around one reporter.

Only the DCHW is given a reporting mobile phone at the start of the project, but by consistently reporting timely data over a period of time, the other CHWs are able to work towards a cheaper non-Java-enabled phone. Both the DCHW and CHW receive an incentive in the form of airtime to mobile phones, improving communication channels locally for responding to malaria infections and the ability to report by DCHW. The phone and credits earned are used as a work tool, making it easier for clinic staff to reach individual health workers to alert them to malaria cases that require their attention. The DCHW and CHWs are also given a small financial incentive for completing the reporting work, based on timely reporting.

Evaluation and Results

Over 800 mobile phones in 23 southern Zambian districts have been equipped with DHIS2 software. Nearly 600 facilities have been trained, and an additional 1,200 CHWs report data through their catchment area's DCHW. Interactive dashboards of malaria surveillance and commodity data are available online. Data audits were conducted against the national health management information system (HMIS) and the malaria system also running on DHIS2 to identify process barriers to better data. An assessment was done on the use of these data. It revealed that the Rapid Report system to be a good monitoring tool for acquisition of timely data being used by district managers to improve malaria control in their areas, including identification of mentorship needs, indoor residual spraying and insecticide-treated nets distribution, focal testing and treating, as well as stock management.

- Providing low-end phones with 'just enough' capabilities reduces costs and risks of investments in the phones provided.

- Training is critical for supporting DHIS2 nationally and requires finding a training partner for the system.

- Tying reporting of data to talk time allocations encourages reporting and accountability at the end user level.

Conclusion

The malaria surveillance system delivers real time data for monitoring the disease burden and can be used as an evidence-based decision-making tool for eliminating malaria in Zambia's five targeted zones.

Geographic Coverage: Southern half of Zambia

Implementation Partners: PATH MACEPA, Zambia Ministry of Health, Akros Research, Inc.

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References:
1. Unicef. Zambia Fact Sheets: Malaria. No Date. Web.
2. DHIS2. Mobile community reporting. Using DHIS2 Java clients for Malaria community reporting in Zambia. No Date. Web.

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Lessons Learned

- Integrating within the national HMIS system allows wider stakeholder buy-in. Rolling out the mobile platform helped leverage additional developments on the main HMIS system, including establishing the community level HMIS system.

- DHIS2 is a complex system. Having a large and consistent user base in-country is the best way to develop communities of practice for data sharing, problem solving and learning

- The cost of hosting a local server can be expensive and may require dedicated technical skills that also are expensive. A hosted server option, such as Amazon Web Services or Linode.com, minimizes server deployment and maintenance costs and works well for these efforts.

- Using a platform such as DHIS2 that works across cellular network providers allows local users to use the network with the best local coverage.