

Malaria Epidemic Detection Initiative in Oromia, Ethiopia Newsletter

A partnership between Addis Continental Institute of Public Health, Tulane University, the Oromia Regional Health Bureau, MEASURE Evaluation & the United States Agency for International Development



President's Malaria Initiative



The One Year Journey: Malaria Epidemic Detection Initiative Project

Highlights:

- The project has completed one year
- The laboratory service quality has shown improvement

It has been full one year since the malaria epidemic detection project — formerly known as malaria sentinel surveillance project — started functioning in Oromia regional state. The project initially established five epidemic detection sites and later increased to ten. It is also expanding to health posts within the catchment areas of the 5 primary sites. Currently, there are six health posts in Kersa, 7 in Asendabo and 12 in Bulbula which will be included in the project.

Data collection began in April 2010 and later expanded to all ten sites by May of 2010. Initial trainings were conducted at the start of the project to familiarize health center and woreda staff with the concepts of the project, supportive recording formats, and the overall process. Supportive supervisory visits are conducted every 15 days for primary sites and every month for secondary sites. Supervisory visits serve to collect data from the sites in a timely fashion and also create the opportunity to provide guidance and support for the health center staff. In addition, quality control of laboratory diagnostics is an important component of the project. Slides are col-

lected for blinded rechecking at each supervisory visit, creating the opportunity for laboratory staff to receive regular feedback and support for their performance.

Data generated at the epidemic detection sites have been utilized to trigger and direct actions at project sites. For instance, increased numbers of malaria cases were observed in Bulbula during the month of June and a *Plasmodium vivax* epidemic was detected in Tulubolo in October. Upon detection of elevated case numbers appropriate actions were taken by woreda health office staff. Laboratory quality control data has also identified low percentages of agreement between facility and gold standard results in some locations. These results triggered further investigation and helped to identify problems with microscope function in Kersa and a need for refresher lab training in Guangua.

Challenges were of course anticipated during the process of project development and roll-out. At the beginning of the project, a lack of ownership of the project at the health facilities was a

concern; this was very visible through its observed effect on the quality of data generated from the sites. Fluctuations in data quality has been reported by the project team throughout the year and some problems especially with clinical data increased after the introduction of HMIS in some sites. Efforts to solve the above mentioned problem have included, review meetings with health centers as well as zonal and woreda health office staff, joint supervision together with Oromia Regional Health Bureau and exploration of adapting data collection instruments utilized by the HMIS system to provide adequate malaria related data. However generation of quality data which supports decision making at all levels is an ongoing process and will require long term commitment and support.

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Results of laboratory Quality Control at Malaria Epidemic Detection Sites

High quality laboratory based diagnosis is vital to malaria treatment and surveillance. In order to support epidemic detection site laboratories the project established a laboratory quality control system as one of its routine activities.

The lab quality control process includes storage of all malaria blood slides at the health facility. Each month ten slides are randomly selected at each site and blinded re-checking of the selected positive and negative blood films is conducted by a trained and experienced malaria mi-

croscopist. This process began in May, 2010.

Analysis of the lab quality control results are shown in Table 1. A total of 40 slides were collected from each site except for Tulu-Bollo; only 27 slides were collected as the slides were not properly stored. The agreement (total & species level) between the control and the facility result is indicative of high quality diagnostics at the facility level, while disagreement (false positive or negative results at the facility) between the two readings indicates problems. At Asebot health center both species level and total agreement were found to be 100%

while Guangua scored the lowest for both total and species level agreement, 67.5% and 38.1% respectively. Total agreement at Guangua indicates improvement, as compared with the previous quarter (53%). With the exception of three locations, Gunagua, Wolenchiti and Metehara, species level agreement was at least 80%.

In general, agreement on positivity of malaria is reasonable to high at most sites; however, improvement generally in species specific diagnosis is clearly needed. Ideally all sites should produce results with levels of agreement above 90%.

Table 1: Laboratory Quality control analysis from September to December, 2010

A	B	C	D	E	F	G	H	I	J	K	L	M
S #	Name of H.F	Total Slides checked	#of positive slides by facility lab Tech.	# Of Negative slides by facility lab tech	# Total Agreement by count(Hf with Control)	# Pf+ at Hf but -ve by control	# Pv+ at Hf but -ve by control	# Pf-ve at H.f but +ve at Control	# Pv-ve at H.f but +ve at Control	# +ve slides agreed at species level by both H.F and Control	Total agreement %	Species level Agreement%
1	Asebot	40	17	23	40	0	0	0	0	17	100	100
2	Asendabo	40	20	20	34	0	0	1	2	17	85	85
3	Bulbula	40	20	20	37	0	0	0	1	19	92.5	95
4	Dembi	40	15	25	35	1	1	0	1	12	87.5	80
5	Dera	40	20	20	37	0	2	0	1	18	92.5	90
6	Guangua	40	21	19	27	6	3	0	0	8	67.5	38.1
7	Metehara	40	21	19	34	0	3	1	0	16	85	76.2
8	Tulubolo	27	10	17	25	0	0	0	2	10	92.6	100
9	Wolenchiti	40	20	20	34	0	0	0	1	15	85	75
10	Kersa	40	20	20	19	20	0	0	1	0	47.5	0

N.B. $L = F/C * 100$

$M = K/D * 100$

Selected Results from Primary Sites

Figure1: Illustrates the trend in confirmed malaria cases since the commencement of sentinel surveillance data collection.

There was significant increases in the total malaria cases in June in Bulbulla and Asendabo; this is typical of the malaria transmission season for these locations. During October and November higher levels of cases occurred at most sites, consistent with the typical transmission pattern. However, at Tullu Bolo an epidemic of *P. vivax* cases occurred, pushing case levels at this location far beyond historical levels. While this epidemic has abated, case levels at TulluBolo remained high through the last quarter of 2010.

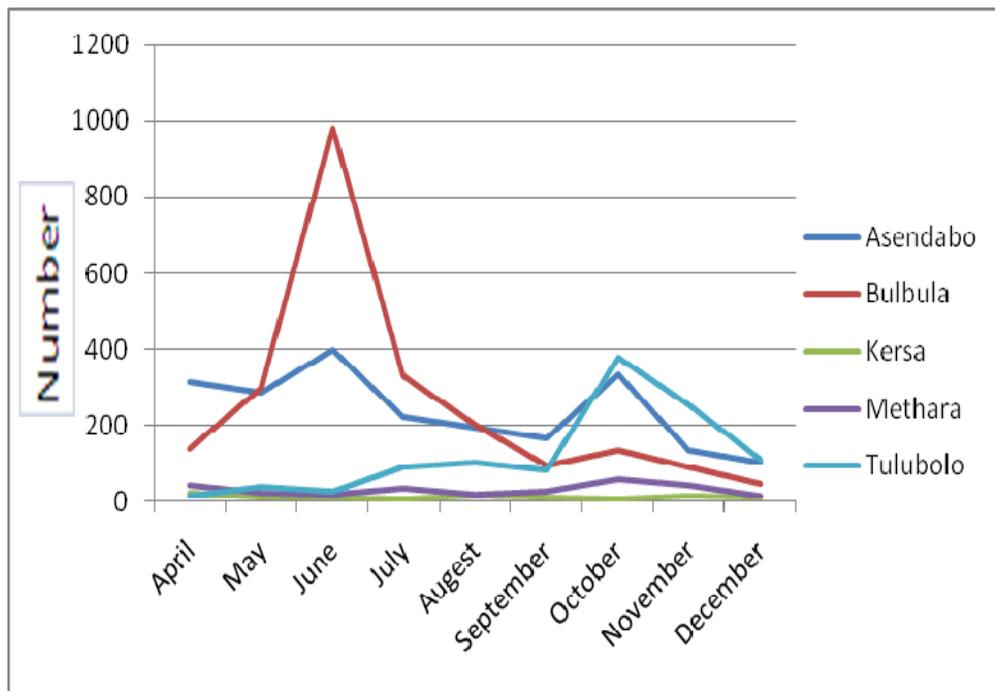


Figure 1: Trend in confirmed cases at the primary sites, April– December 2010.

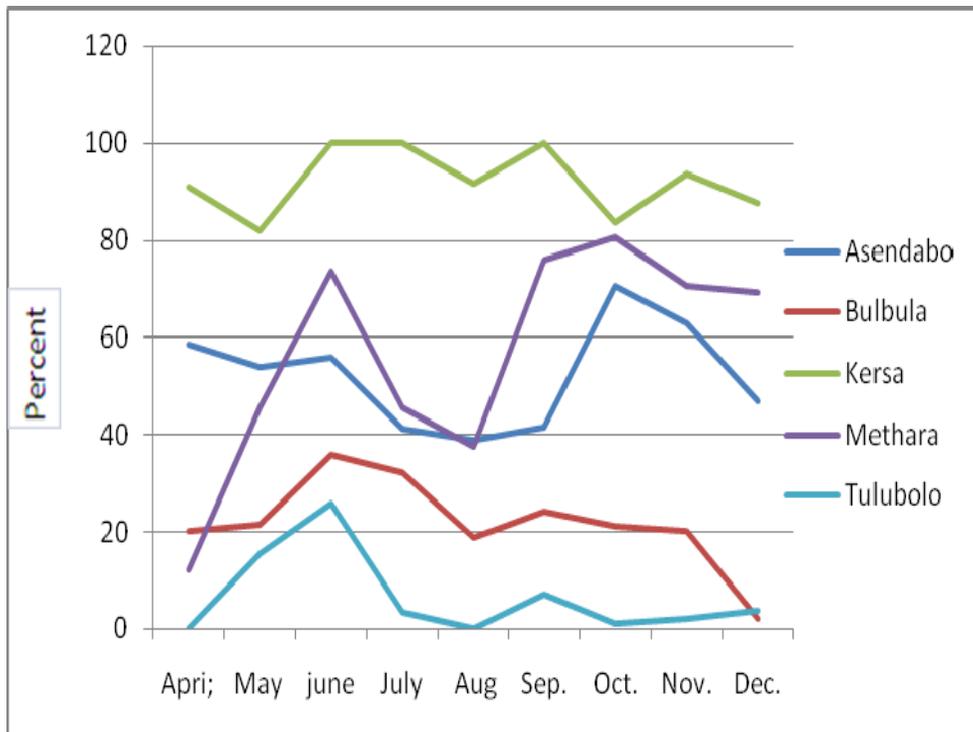


Figure2: Illustrates the percent of *Plasmodium falciparum* (*P.f.*) malaria out of all confirmed cases over the past nine months (April– December 2010).

In Metehara, and Asendabo, the contribution of *P.f.* cases to the total disease burden at the facility increased during the two malaria peak seasons. With the exception of Metehara the contribution of *P.f.* fell after October. Although the highest fraction of *P.f.* cases appears in Kersa the total number of malaria cases reported at this site is consistently lower than all other sites. At Tulubolo nearly all the cases were *Plasmodium vivax*, though small seasonal increases in *P.f.* cases were seen here as well.

Figure 2 Percent of confirmed cases due to *Plasmodium falciparum* at the primary sites, April–December, 2010.

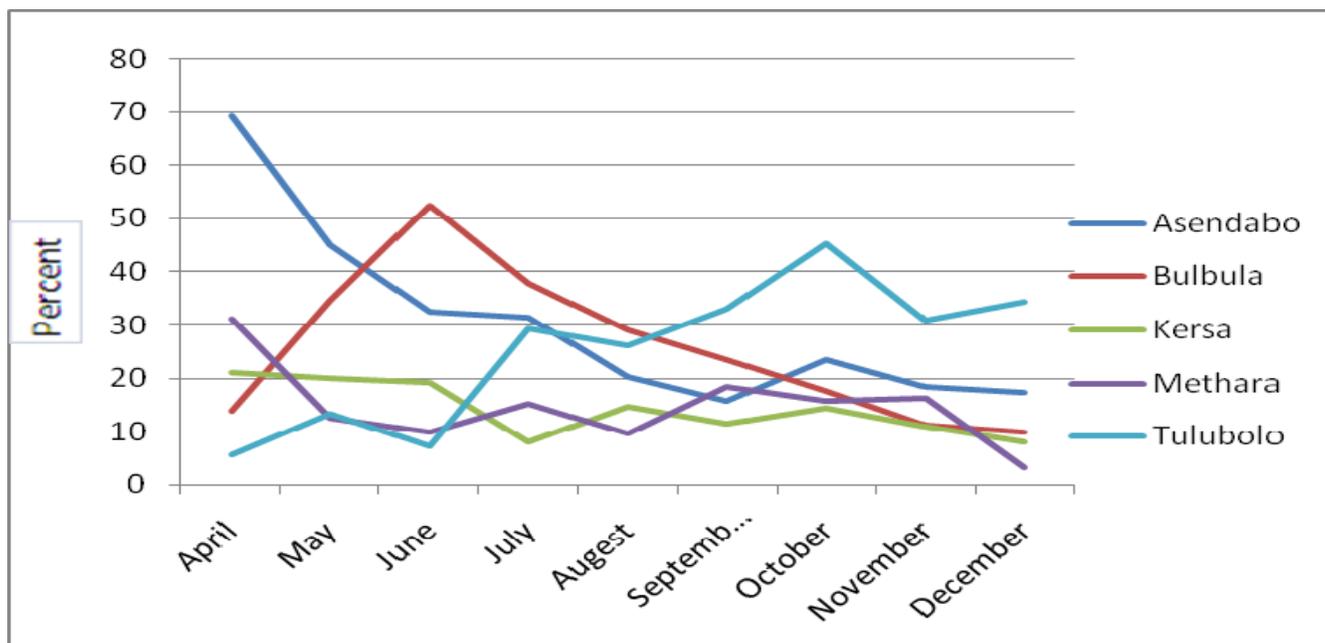


Figure 3: Malaria Test Positivity rate for primary sites April-December 2010

Figure 3: Illustrates trends in the Test Positivity Rate (TPR) at the five primary sites from April-December 2010. Rising TPR can be indicative of emergent epidemics or increasing malaria case burdens, though care must be taken to consider both changes in testing patterns and patient loads when interpreting such evidence.

In Bulbula and Asendabo, TPR has fallen at least since the peak malaria transmission season in June and July. While at Tulu bolo there was an increasing trend over the course of the year. TPR at this site rose dramatically during and preceding the vivax epidemic. Changes in Test Positivity Rates (TPR) could also be indicators of changes in laboratory performance or switches in diagnostics methods.

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