



THE REPUBLIC OF UGANDA



## UGANDA MALARIA SURVEILLANCE PROJECT

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### Inpatient Surveillance Monthly Report

April 2012

#### Introduction

The Uganda Malaria Surveillance Project (UMSP) was formed in 2001 as collaboration between researchers at the Makerere University-University of California San Francisco malaria research collaboration and the Ministry of Health. Although Uganda's Health Management Information System (HMIS) remains the primary source of malaria morbidity and mortality data, there are several limitations to this data. To address some of these limitations, UMSP started an inpatient health facility-based surveillance system in different epidemiological settings. The program began in 2010 with the goal of including 6 sentinel district hospitals by July 2011. The objective of this surveillance system is to provide accurate and timely data on malaria morbidity and mortality patterns among hospitalized children at participating sites to help guide policy makers and other stakeholders.

This monthly report is comprised of a table and graphs highlighting malaria indicators of morbidity and mortality including treatment practices at participating sites for a specified month. The table below provides a summary of the total number of hospitalized children per site who fulfil each of the criteria for specified indicators. For each indicator a bar graph allowing for comparison of results across the sites is generated, each bar representative of the results (in proportions) for each site for that particular indicator.

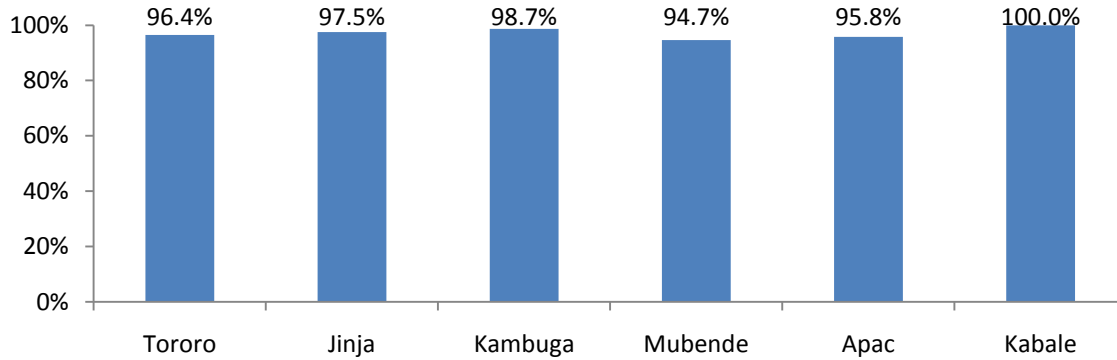
A list of definitions of terms used in the report and a table showing the numerators and denominator used to determine the indicators as proportions are included in the Appendix section (last page).

#### Absolute numbers of children hospitalized

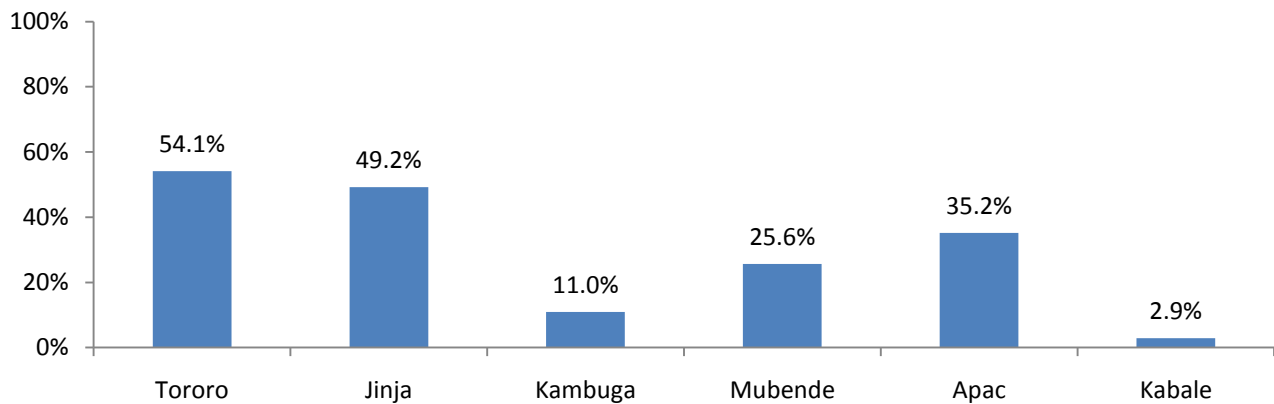
Site	Total	Hospitalized children under 5 years of age only						
		< 5 years	Any malaria lab test result	Clinical diagnosis of malaria	Lab confirmed malaria	Lab confirmed complicated malaria	Any death	Lab confirmed death with malaria
Tororo Hospital	227	196	189	105	100	79	3	0
Jinja Hospital	715	596	581	293	224	147	25	4
Kambuga Hospital	87	75	74	8	7	7	0	0
Mubende Hospital	189	169	160	43	35	31	15	2
Apac Hospital	98	71	68	25	11	5	2	0
Kabale Hospital	194	172	172	5	5	4	7	1

Data below only includes children under 5 years of age admitted to the hospital

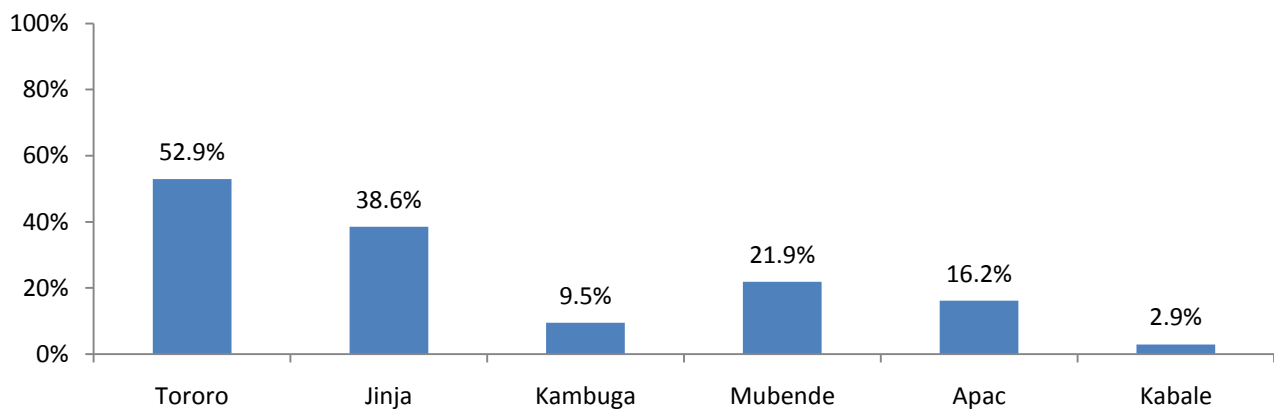
**Proportion of patients with any malaria diagnostic test result during hospitalization**



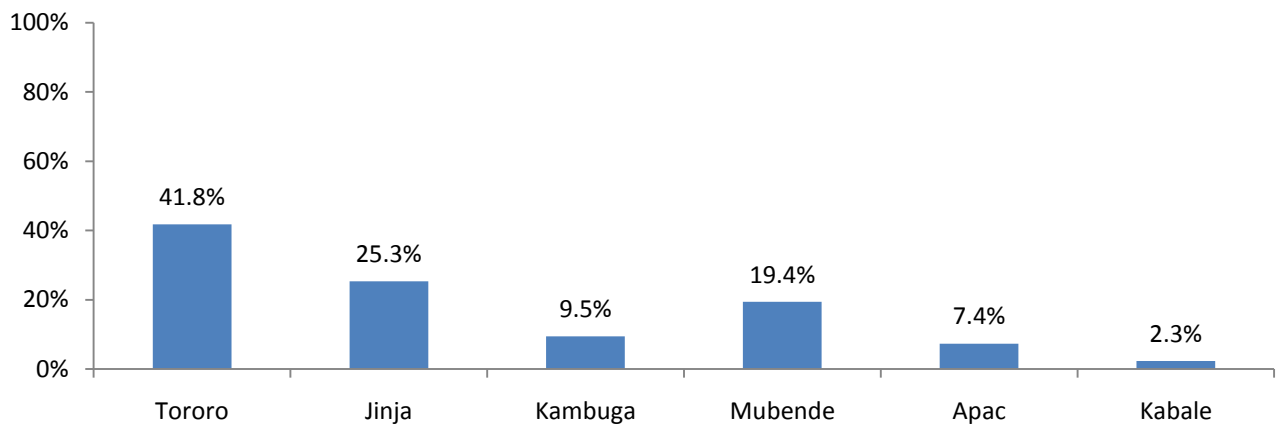
**Proportion of patients with clinical diagnosis of malaria at discharge**



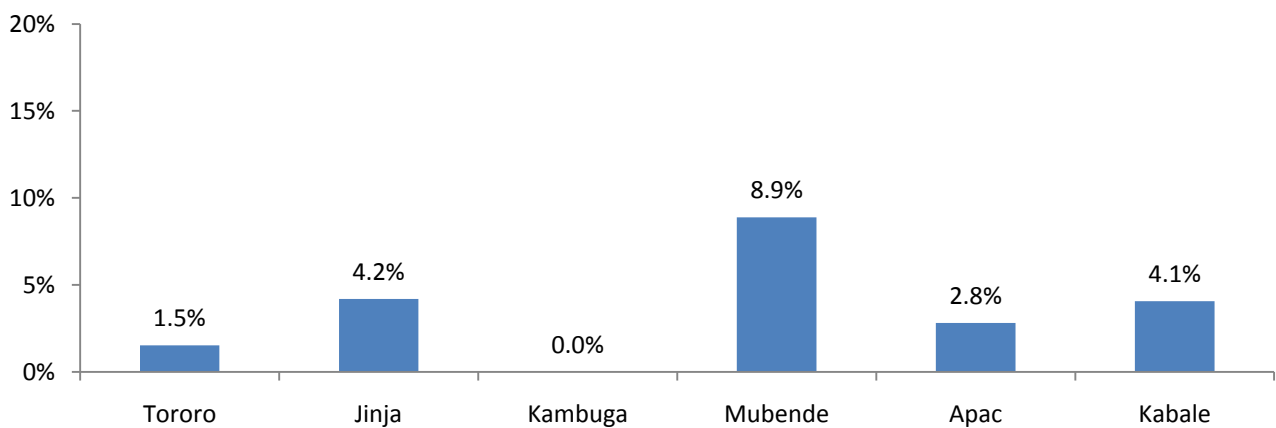
**Proportion of patients with laboratory confirmed malaria**



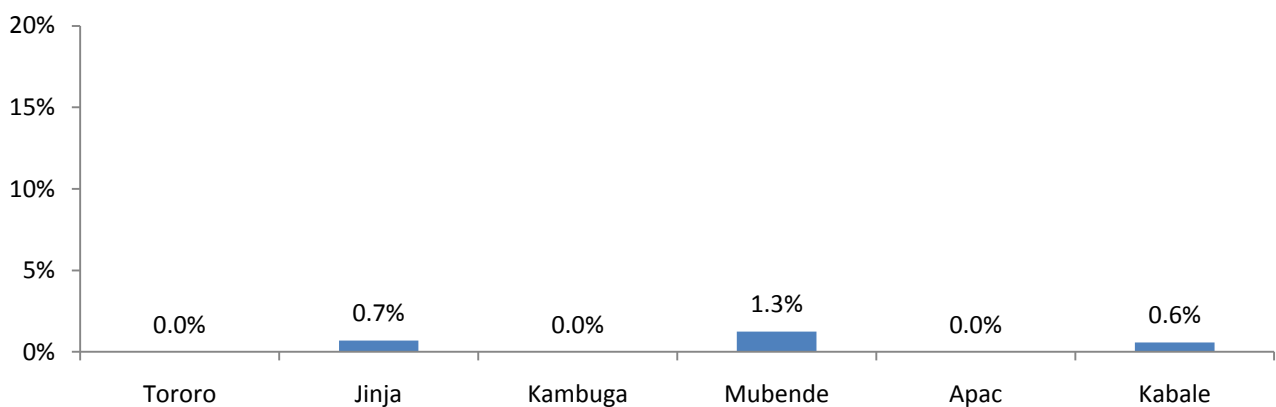
### Proportion of patients with laboratory confirmed complicated malaria



### Proportion of patients who died from any cause during hospitalization

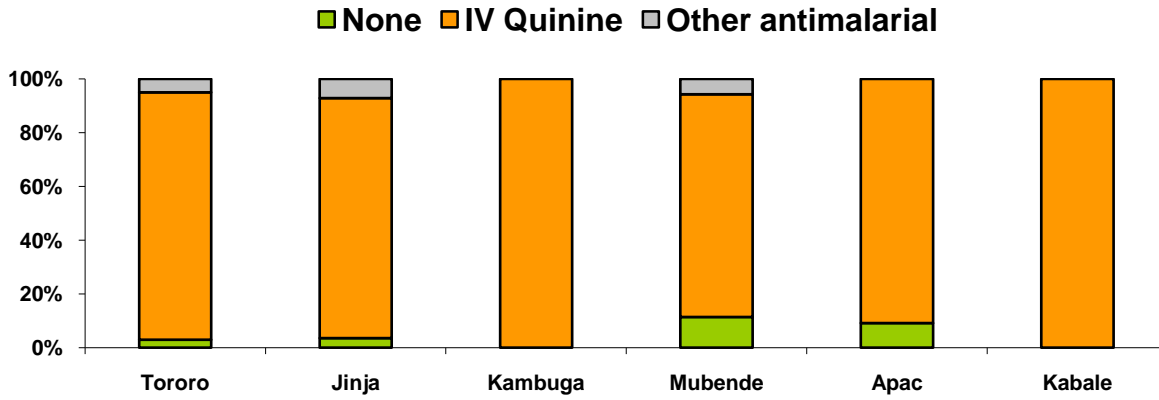


### Proportion of patients who died with laboratory confirmed malaria during hospitalization

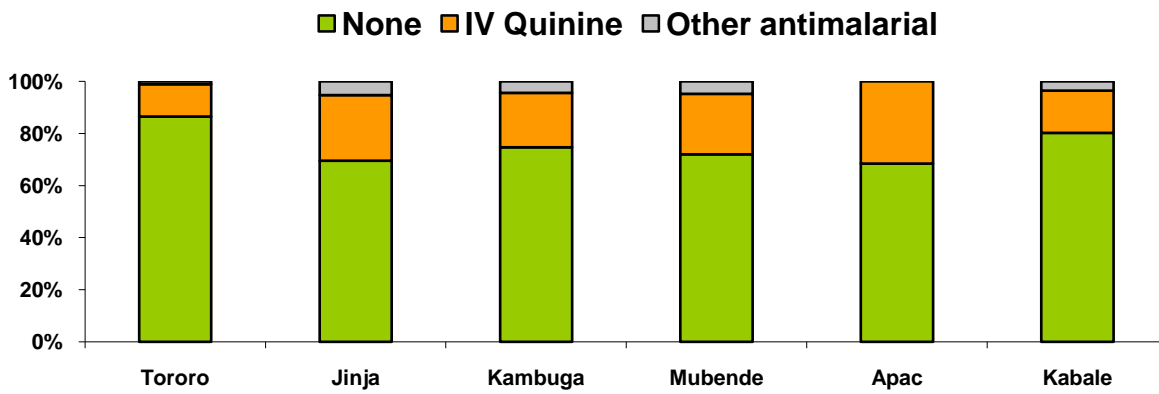


# Antimalarial treatment practices based on laboratory testing

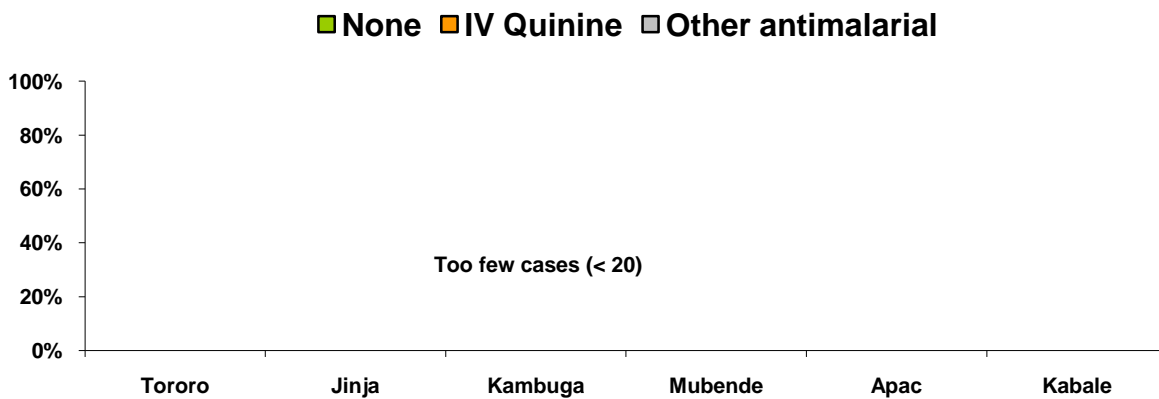
## Any positive laboratory test result



## Only negative laboratory test results



## No laboratory test done



### Laboratory Quality Control (QC) results

UMSP is currently validating accuracy of individual microscopist's (WHO: Any persons reading blood smears for malaria parasites) in reading blood smears for malaria parasites at all sentinel sites. Prior to starting the exercise, the site laboratories were switched from using Field stain to Giemsa stain, the recommended gold standard technique for malaria microscopy. Microscopists at all sites were first trained on the Giemsa staining technique, mounting slides with cover slips labeling of slides and slide storage of all the slides read in the month.

For each microscopist, 50 slides were randomly sampled from slides collected over a period of one month and re-read by expert microscopist's based at the UMSP central laboratory. If a microscopist read less than 50 slides in a month, all slides were re-read. Both the first (site microscopist) and second (expert microscopist) reader results were double entered and compared. Sensitivity and specificity results were considered when assessing performance of microscopists and sites. Microscopist's with sensitivity and/or specificity scores < 85% were contacted and re-trained. The table below shows results for January and February, more will follow subsequently as they are processed.

Hospital	Jan 12					Feb 12				
	Number of slides		Results			Number of slides		Results		
	Positive	Negative	Sensitivity	Specificity	% Agreement	Positive	Negative	Sensitivity	Specificity	% Agreement
<b>Tororo</b>	56	166	95%	90%	90%	68	273	93%	90%	90%
<b>Jinja</b>	35	151	94%	100%	99%	28	210	93%	97%	96%
<b>Kambuga</b>	8	82	50%	100%	95%	7	235	86%	97%	97%

In January, slides from 15 microscopists (3 inpatient sites) were examined; Tororo (6), Jinja (4) and Kambuga (5). Three microscopists from Tororo scored less than 85% sensitivity or specificity and these were retrained. In Jinja, all except one microscopist performed well. Two of the five microscopists in Kambuga were also retrained as sensitivity was less than 85%. In February, 18 microscopists were assessed; Tororo (7), Jinja (5) and Kambuga (6). A marked improvement in performance was noted at all these sites, however one microscopists in Jinja still scored less than the 85% cut off for sensitivity. The UMSP lab team visited Jinja lab to address possible reasons for this score.

## Appendix I. Definitions

**Laboratory confirmed malaria:** Any hospitalized child with a positive malaria test (thick blood smear or RDT) result

**Clinical diagnosis of malaria:** Any hospitalized child with a final discharge diagnosis of malaria (confirmed or unconfirmed) as indicated by the clinician.

**Laboratory confirmed complicated malaria:** Any hospitalized child with a positive malaria test result and fulfils any of the following: 1) any criteria for severe malaria. 2) one or more general danger signs (vomiting everything, inability to drink, feed or breastfeed, lethargy or unconscious or convulsions) or 3) dies during hospitalization

### Indicators expressed as proportions

Indicator	Definition
Proportion of hospitalized children < 5 years of age with malaria diagnostic test result	<p><b>Numerator:</b> Number of hospitalized children &lt; 5 years of age with a malaria test result</p> <p><b>Denominator:</b> Number of hospitalized children &lt; 5 years of age</p>
Proportion of hospitalized children < 5 years of age with a clinical diagnosis of malaria	<p><b>Numerator:</b> Number of hospitalized children &lt; 5 years of age with a final diagnosis of malaria</p> <p><b>Denominator:</b> Number of hospitalized children &lt; 5 years of age with any final diagnosis</p>
Proportion of hospitalized children < 5 years of age with laboratory confirmed malaria	<p><b>Numerator:</b> Number of hospitalized children &lt; 5 years of age with a positive malaria lab test</p> <p><b>Denominator:</b> Number of hospitalized children &lt; 5 years of age with a malaria test result</p>
Proportion of hospitalized children < 5 years of age with complicated malaria	<p><b>Numerator:</b> Number of hospitalized children &lt; 5 years of age with + lab test and complicated malaria</p> <p><b>Denominator:</b> Number of hospitalized children &lt; 5 years of age with a malaria test result</p>
Proportion of hospitalized children < 5 years of age who died of any cause	<p><b>Numerator:</b> Number of hospitalized children &lt; 5 years of age who died of any cause</p> <p><b>Denominator:</b> Number of hospitalized children &lt; 5 years of age with a disposition</p>
Proportion of hospitalized children < 5 years of age who died with malaria	<p><b>Numerator:</b> Number of hospitalized children &lt; 5 years of age who died with a positive malaria lab test</p> <p><b>Denominator:</b> Number of hospitalized children &lt; 5 years of age with a malaria test result &amp; disposition</p>
Antimalarial treatment practices	<p><b>Numerator:</b> Number in each treatment category stratified by malaria test results</p> <p><b>Denominator:</b> Totals for each malaria test results strata</p>