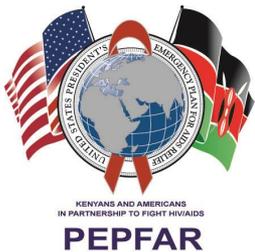


Towards Providing an Affordable and Sustainable Laboratory Information System for Developing Countries: Successful Implementation of an Open Source Laboratory Information System (BLIS) In Public Health Hospital Laboratories In Kenya

ASLM CONFERENCE -CAPE TOWN,SOUTH AFRICA

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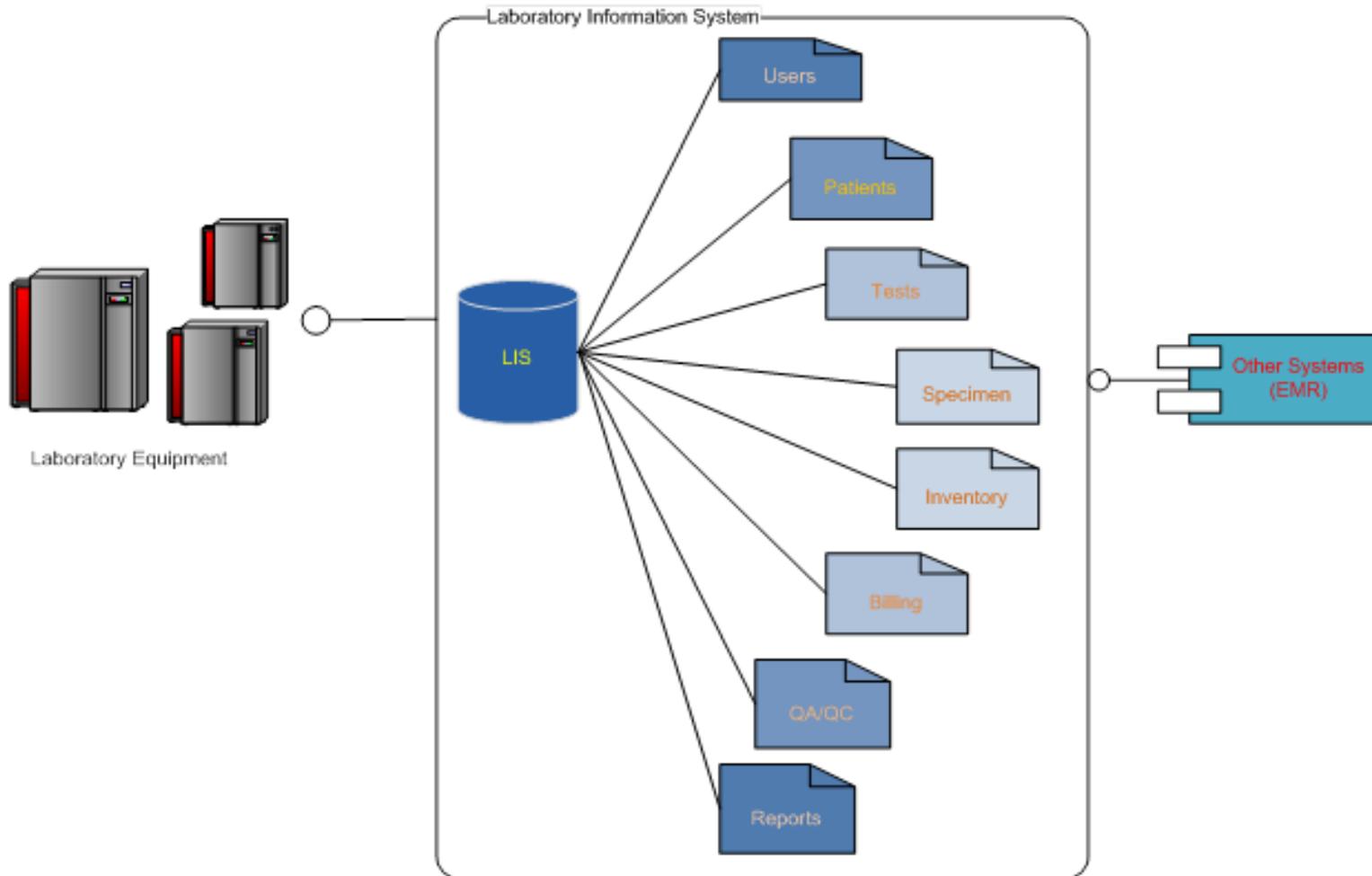
1.0 Introduction/Background

- ❖ Public Health facilities face the challenge of Improving the quality of Clinical Diagnostics Services.
- ❖ LIMS can improve many aspects of Testing Quality including Accuracy and Timeliness but is expensive to implement and maintain.
- ❖ CDC, APHL and the Ministry of Health(MOH) Kenya are collaborating with @iLabAfrica-Strathmore University to assess the functionality, customization and cost to implement an open source application for use in county/district level labs in Kenya.

1.1 LIS Public Health Sector Challenges

- ❖ Separate and often uncoordinated System Implementations for patient management and laboratory section in facilities/hospitals.
- ❖ Lack of Standards in Systems Implementation especially Electronic Medical Records(EMRs) to support lab operations.
- ❖ Lack of Lab Information Systems to manage workflows and improve efficiency in increasingly busy labs.
- ❖ As a result –Limited access to data especially at the National Level for planning and policy interventions.

1.2 The LIMS Challenge

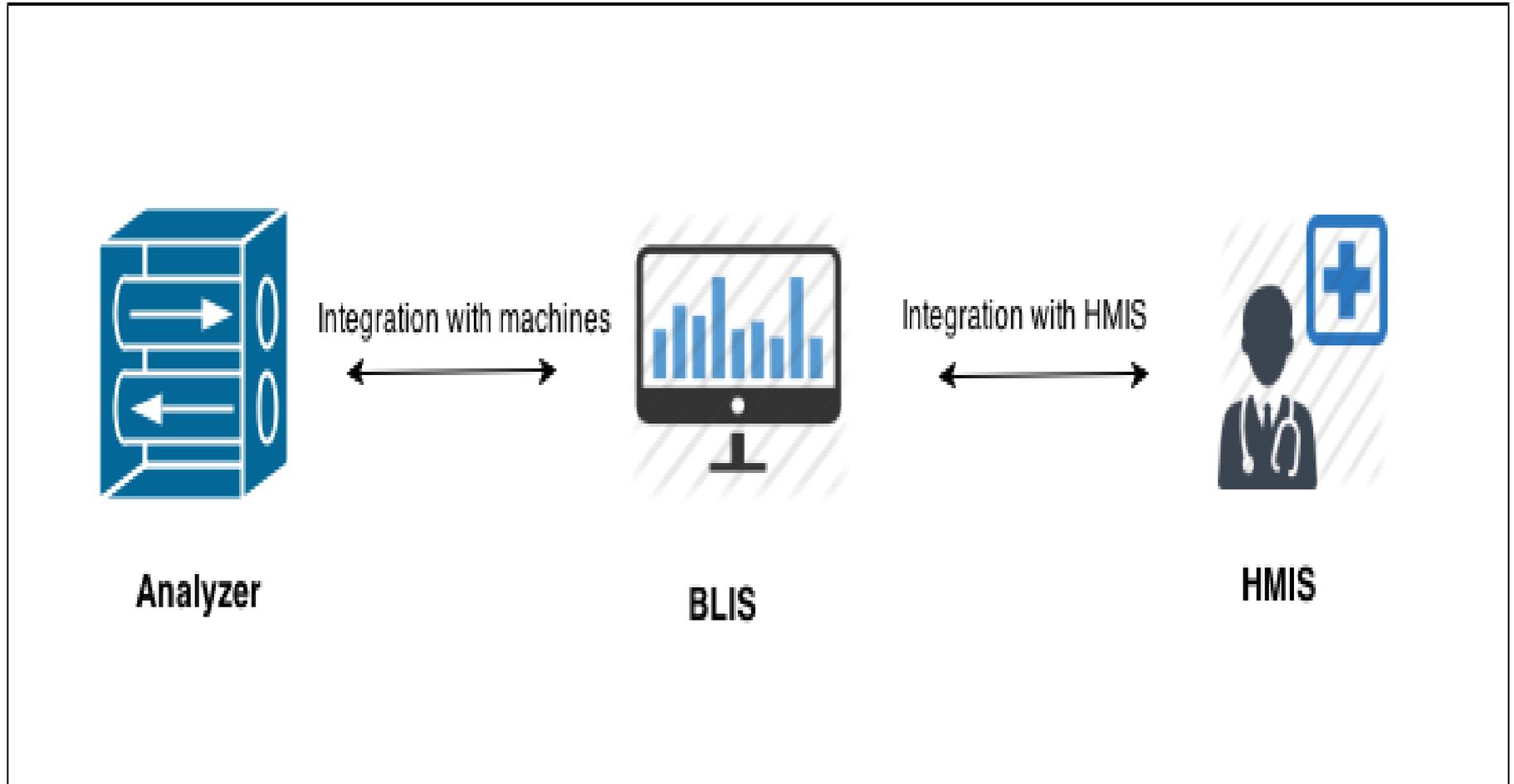


2.0 Methodology-BLIS Implementation

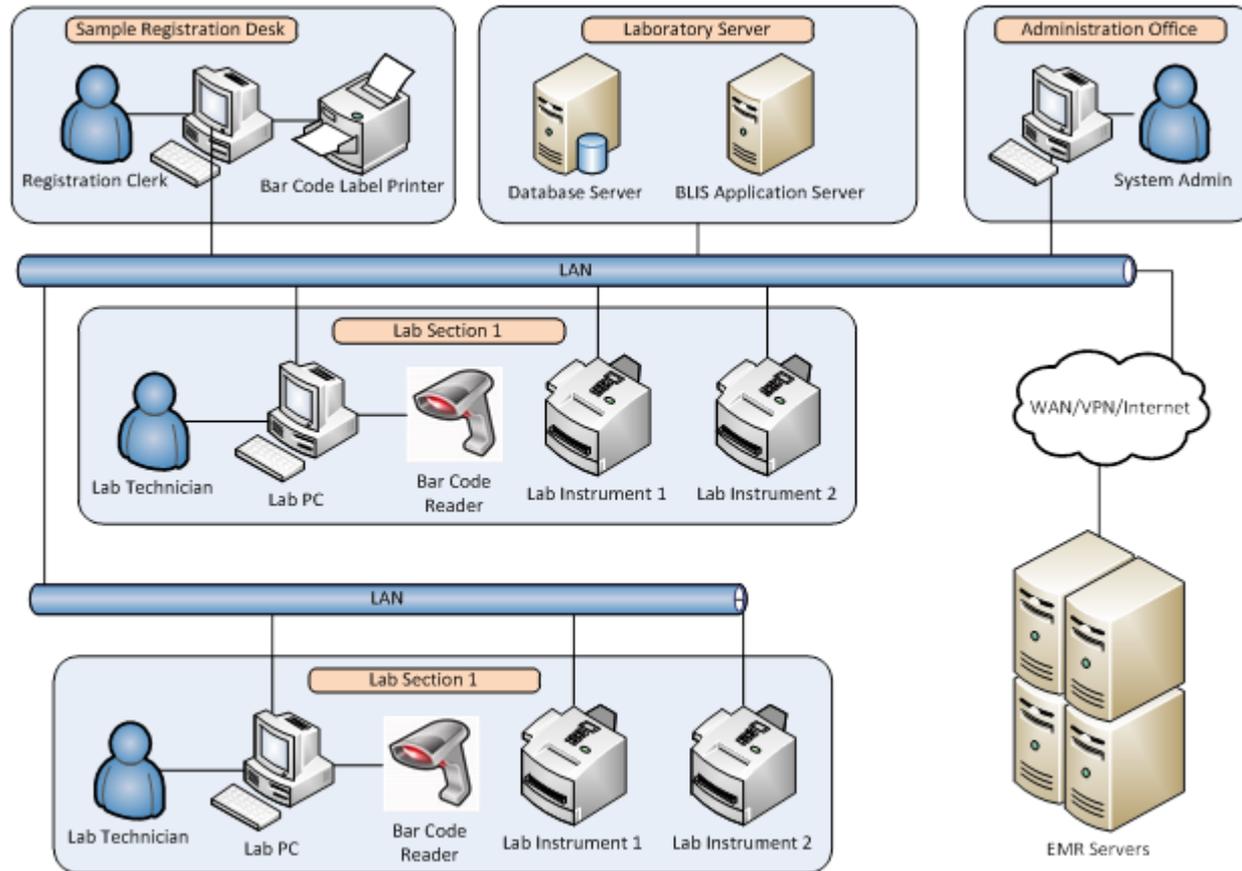
BLIS(Basic Lab Information System) was initially developed by the C4G group at Georgia Tech Institute and CDC Atlanta as a system for Low Resource Setting labs.

- Initial deployments are in Ghana, Cameroon with support from the C4G group.
- Lack of local technical capacity(customization and implementation) has hampered the deployment progress.
- @iLabAfrica-Strathmore University has taken this challenge to build and scale the local capacity for BLIS in Kenya.

2.1 The Proposed Solution



2.2 System Architecture

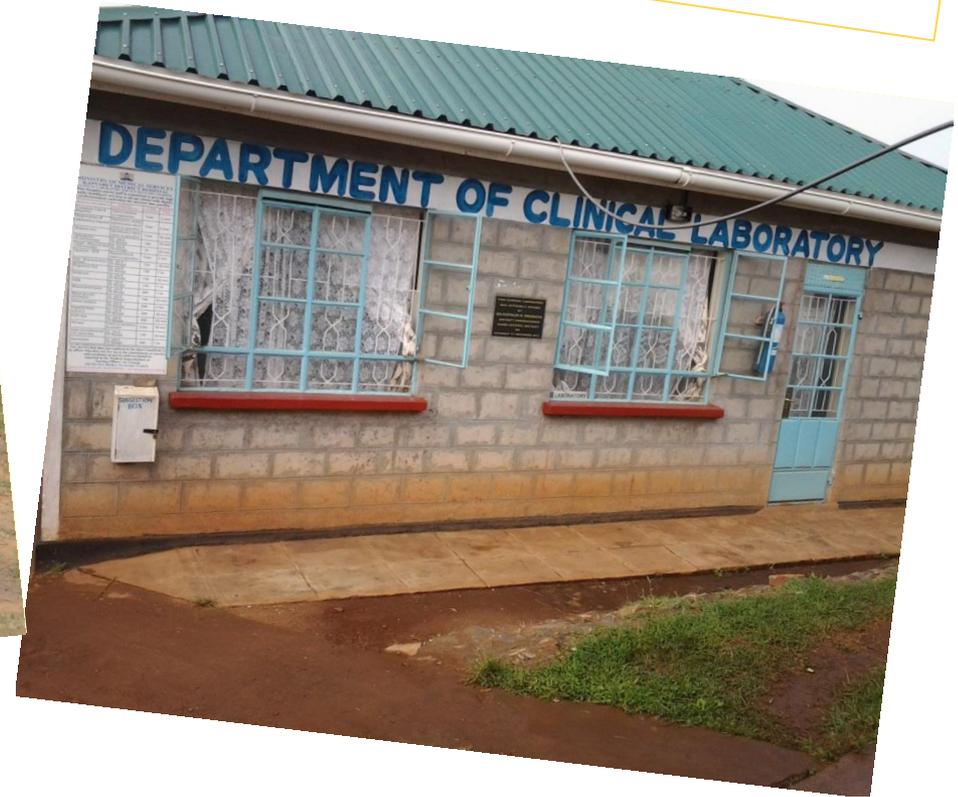


2.3 Implementation on site

Bungoma County Lab



Kapsabet County Lab



Operations at the Lab

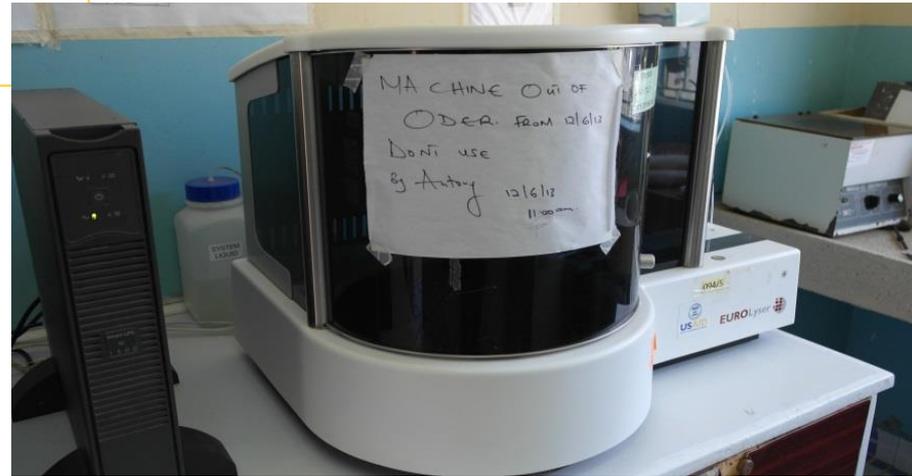
- Perform > 10,000 tests monthly including referral cases
- Lab sections(6) include- Microbiology, Biochemistry, parasitology, serology etc
- Most tests are done through microscopy and other tests are automated.
- 10-15 staff trained staff supported by student interns.



Operational Challenges in the Labs

Generic Across all the Public Labs in Kenya

- Inefficient Tracking of Specimens and Test results
- Lack of reporting tools-Manual
- Hospital EMR not serving the needs of the lab
- Understaffing and overworked
- Lack of instruments/old technology



FAMILY PLANNING REPORT 2012-2013 2013-2014														
	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	2013	2014
VPRL +ve	0	0	190	226									2	01 06 13
PMTCT	307	256	375	376									0	01 0
HIV +ve	11	8	10	15									36	155 475 432 508 401
NOT TESTED	9	9	9	12									5	05 11
													5	06 05 04
FP - NEW VISITS	114	110	143	110	180								73	93 175 111 77 127
REVISITS	241	241	277	530	1092	707							48	678 502 678 446
POSTNATAL CHECK UPS	88	84	92	79	105								29	4 50 159 95 77
CANCER CERVIX SCREENING	21	44	349	214	259								34	45 55 86 61 53
GUSP/PICOU (COO)	0	0	0	2	8								0	5 0 4 6 1
POSITIVE (Cocx)	0	4	4	5	3								0	8 8 4 4 2
CRYOTHERAPY DONE	0	1	4	2	2								0	2 3 0 0 0
PITC	14	15	74	35	-								-	- - - - -
POSITIVES	0	2	1	1	-								-	- - - - -
CLIENTS ON DMPA	373	385	51	42	49								149	283 362 399 206 485
ON C9551	874	389	131	132	190								239	171 163 162 137 175
CLIENTS ON IMPLANTS	16	26	1	1	17								69	69 79 237 22 56
IUCD INSERTIONS	1	1	26	17	35								62	98 70 12 18 80
B.T.I.V.A.C.E.O.M	0	1	2	1	1								10	18 18 11 10 15

3.0 Achievements-BLIS functional components

- a) Patient, Specimen, Test and Test result workflow tracking.
- b) Efficient user and usage monitoring including Turn around times of tests by staff.
- c) Quality control and Quality assurance enforced in all sections including Test results verification.
- d) Supporting of referral from within the hospital(inpatient tests) and also from satellite clinics
- e) Efficient report generation at various levels of detail

3.1 Project Achievements

1. Analysis of User Requirements through active participatory approach.
2. Customization of BLIS to meet the user requirements.
3. System Integration with Hospital EMR(Sanitas and Medboss) to receive lab test request and send back test results
4. Testing Instruments integration to BLIS- Celtac F, Gene Expert .
5. Launch of BLIS-Kenya in Bungoma and Kapsabet County Labs- 6 months

3.1 Achievements..cont

- 6) Bungoma lab now Tracking upto 15-16,000 tests per month with improved turn-around times.
- 7) Development of in-country technical capacity for ongoing support.
- 8) Development of a Local Open source community for skill transfer and support to other users and implementers in Africa.

Project -Sample Input Screen

BLIS v2.5 - Kenya

testlab1_admin

- Search
- Home
- Reception
- Sample Collection
- Tests**
- Reports
- Inventory

Tests

Test Queue - All Sections

Date:

October 30, 2013 - November 5, 2013

8 records found.

Lab Section:

All

Status:

Completed

All

HEMATOLOGY

MICROBIOLOGY

PARASITOLOGY

Search:

Specimen	Time Collected	Patient Name	Specimen Type	Test	Status	QView Results	Specimen		
2			Whole Blood	Full Haemogram	Not Verified	QView Results	Specimen		
HEMATOLOGY	50475	HEM-7		Whole Blood	Full Haemogram	Not Verified	QView Results	Specimen	
MICROBIOLOGY	50475	MIC-9	2013-11-01 08:44:06		Throat Swab	Throat swab for culture	Not Verified	QView Results	Specimen
HEMATOLOGY	-	HEM-13		Whole Blood	Bleeding time test	Not Verified	QView Results	Specimen	
HEMATOLOGY	-	HEM-18		Whole Blood	Full	Not Verified	QView Results	Specimen	

Results.....Cont

BLIS v2.5 - Kenya testlab1_admin

Home

Search Lab Requests

Search for Lab requests All pending lab requests

Search:

Registration Number	Name	Gender	Test(s) Requested		
175525	[REDACTED]	Male	Urinalysis - (2013-09-25 11:53:48) Clotting time test - (2013-10-22 08:57:43)	Lab request	View Profile
175528	[REDACTED]	Female	Full Haemogram - (2013-10-18 18:49:56)	Lab request	View Profile
101066	[REDACTED]	Male	SERUM AMYLASE - (2013-10-22 09:15:04)	Lab request	View Profile
86819	[REDACTED]	Female	BS for mps - (2013-11-01 09:18:32)	Lab request	View Profile

Project Results



Ministry of Health

KAPSABET DISTRICT HOSPITAL LABORATORY
KAPSABET TOWN, HOSPITAL ROAD
OPPOSITE POLICE LINE/DISTRICT
HEADQUARTERS
P.O. BOX 14,
KAPSABET TOWN.
Phone: +254 055-30401 Ext 203/208



Ministry of Health

LABORATORY REPORT

Date: 01-11-2013

Patient Name	██████████	Patient Sex	M
Patient Number	10	Patient Age	2 Years, 10 Months, 7 Days
Visit Number	20131101-2	Requesting Department/Facility	Bungoma District Hospital

All tests completed

Type	Tests Requested(Lab Section)	Lab Receipt Date	Collected By	Date Collected	Time Collected
Whole Blood	BS for mps(PARASITOLGY)	01-11-2013		01-11-2013	12:06

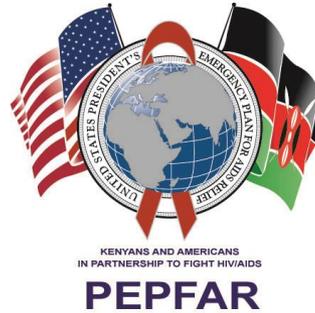
Results

Test	Date(Time Registered)	Comments	Analyte	Results/Value	Range	Results Entry Date	Remarks	Entered By	Verified By
BS for mps	01-11-2013(12:06:44)	-	BS for mps	Positive	-	01-11-2013	+++	██████████	Verification Pending

Launch of BLIS- Bungoma and Kapsabet



Acknowledgments



Questions and Answers

Thank You