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Use of Routine Clinical Laboratory Data to Determine Disease Prevalence and Diagnostics Services Provided in Kenya

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Presentation Outline

- Background and Objective
- Methods
- Results
- Limitations and Conclusions

Background

- Disease surveillance an important function of health laboratories
- In established health systems, clinical laboratory results used as early warning systems for outbreaks
- Laboratory systems in most developing countries cannot support passive surveillance because:
  - Low testing capacity for disease conditions (Lack of equipment, reagents, skilled staff)
  - Unreliable test results (Lack of quality management systems)
  - Weak test reporting systems (Lack of laboratory information management systems)

Background (2)

- Kenya Medical Laboratory Policy Guidelines (2006)
  - Strengthen LIMS to provide accurate data for planning
- National Medical Laboratory Strategic Plan (2006 -2010)
  - Ensure each district laboratory submits regular reports
- Laboratory Central Data Unit (CDU) established (2006)
  - Regularly collates national routine clinical laboratory data

Objective:

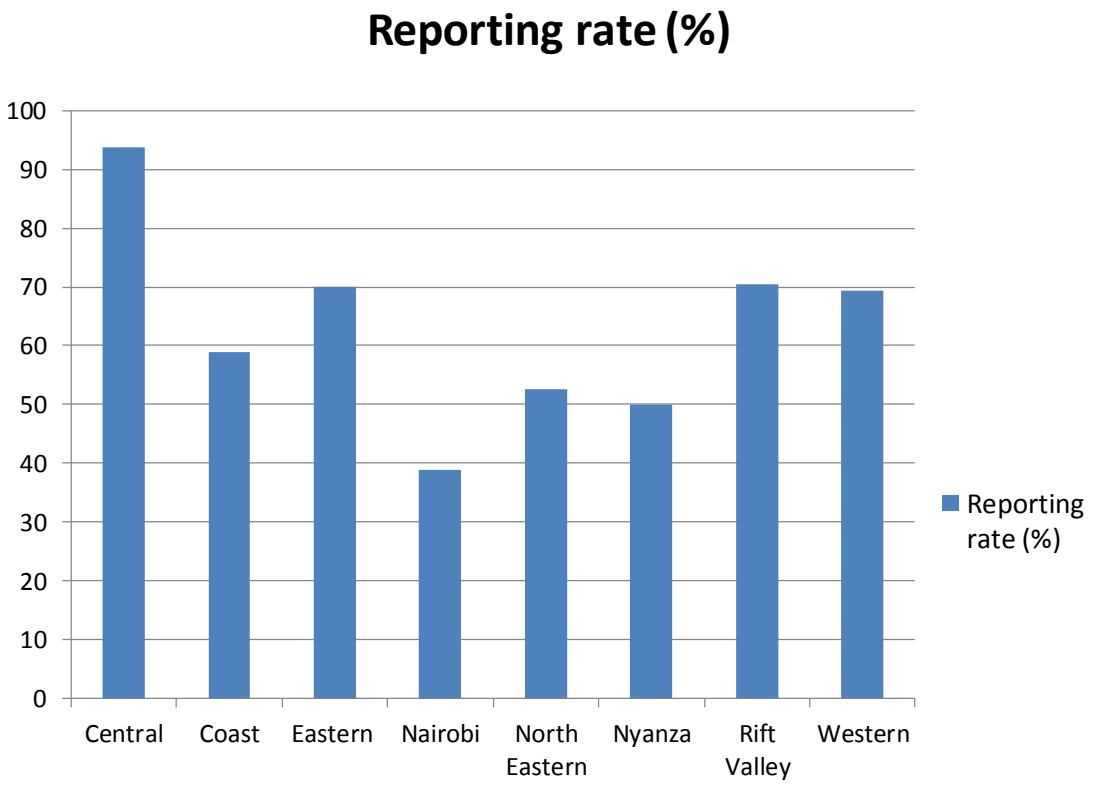
- Analyze routine clinical laboratory data at CDU to inform:
  - National Disease epidemiology
  - National laboratory testing capacity

Methods

- Reviewed laboratory data from all 172 districts in Kenya
- Data aggregated by the District Medical Laboratory Technologists every quarter and submitted to the CDU
- Data collected comprises:-
  - **Source (District/Province)**
  - Number and affiliations of facilities reporting
  - **Numbers of tests done and outcomes**
  - Referral of samples and some QA data
- Data received from July 2010 to June 2011 were analyzed

Reporting rate for all regions (2010-2011)

- Reporting rate ranged from 38.9% to 93.8%
- Median 64.1%
- Region with lowest reporting rate is closest to the CDU

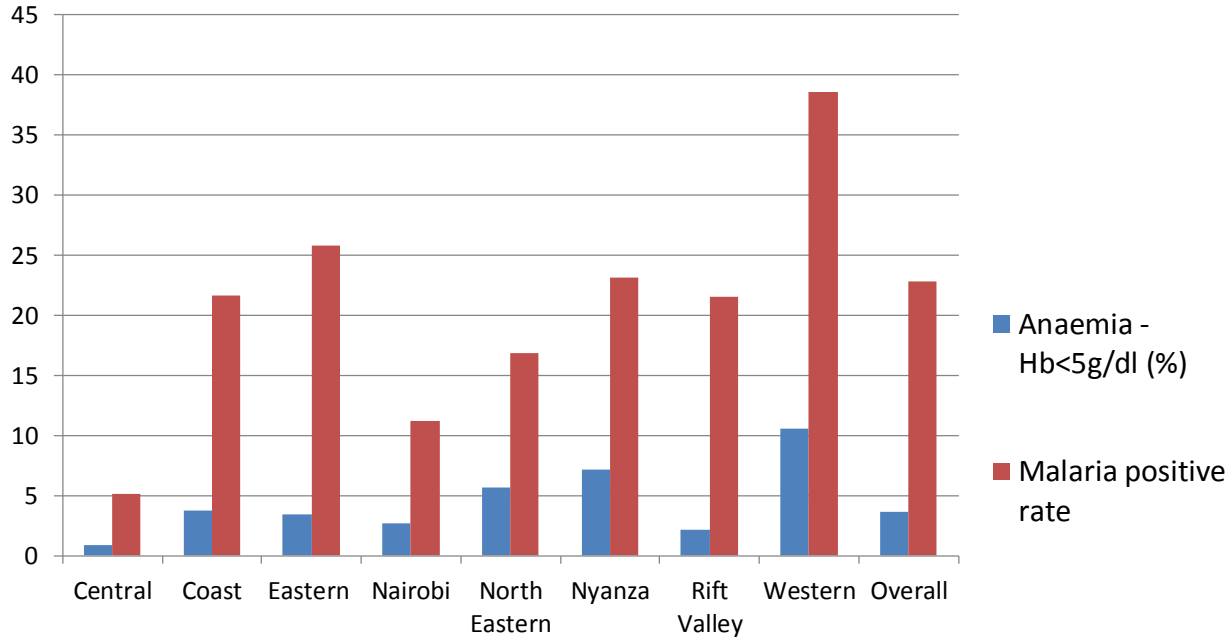


National laboratory workload analysis 2010/2011

- Significant variation in test frequency
- Malaria tests most frequent
- Most infrequently provided tests are bacterial examinations

TEST	NUMBER
Malaria	3,579,894
HIV	1,313,821
Haemoglobin	971,478
Blood glucose	498,299
TB Microscopy	375,926
Blood X-Match	45,744
Bacterial exam	39,341

Epidemiology of anaemia and malaria



- Severe anaemia rate ranged from 0.9% in Central to 10.6% in Western
- These regions also had lowest and highest malaria positive rates (5.1% and 38.6% respectively)

Regional mapping of diabetes, TB and HIV

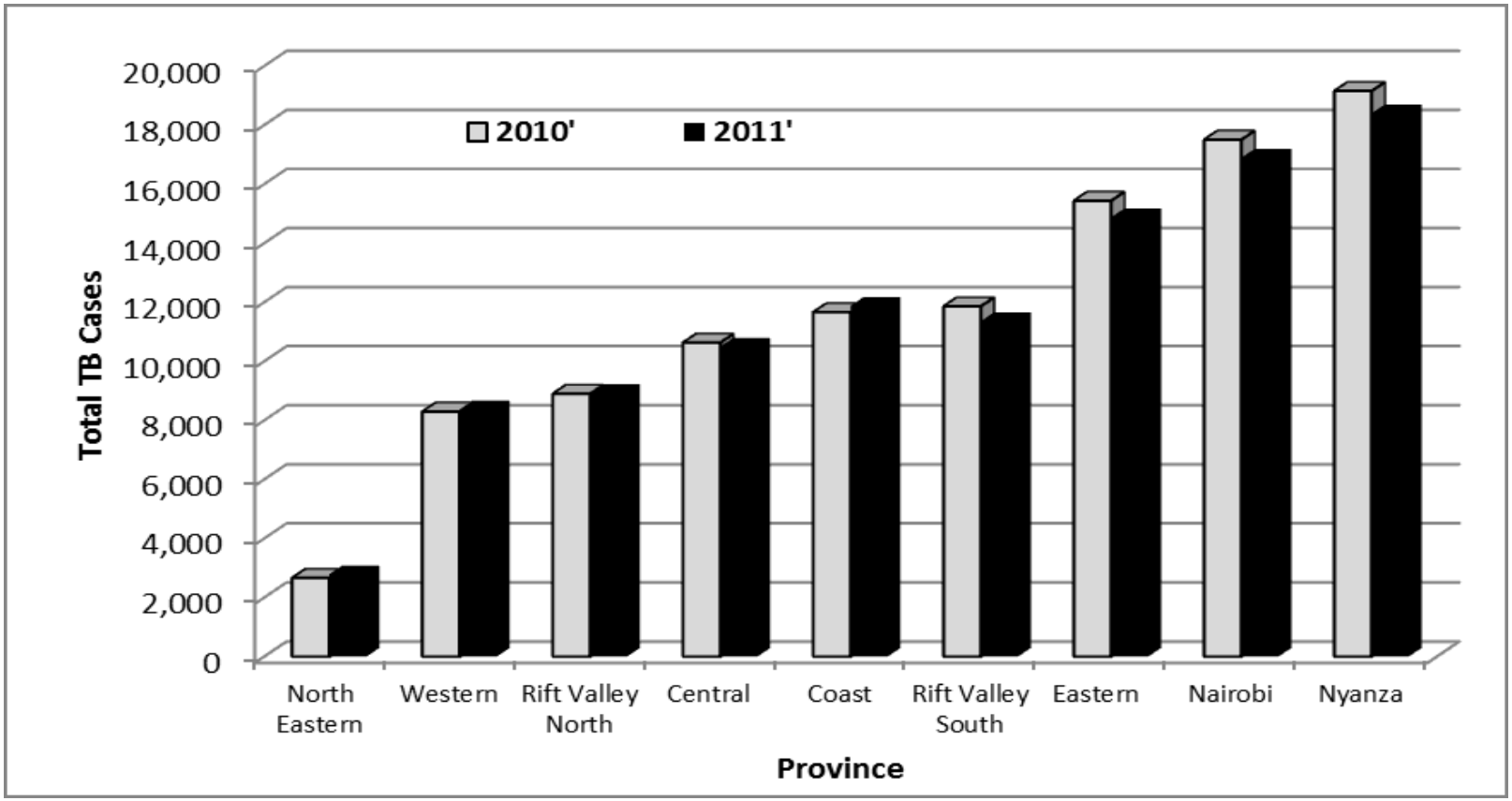
Region	Diabetes (%)	New TB Positivity rate(%)	HIV Positive Rate (%)
Central	2	11.7	5.2
Coast	6.8	8.9	6.1
Eastern	**0.5**	**14.7**	**3.5**
Nairobi	1	13.2	9.6
North Eastern	1.6	9.6	2
Nyanza	**3.2**	**12.8**	**14.1**
Rift Valley	8.6	12.7	3.9
Western	5.9	11.1	4.9
Overall	3.7	12.4	7.4

Discussion

Analysis of routine clinical laboratory data has revealed regional variations in:

- Distribution of disease conditions
  - Severe anaemia
  - HIV
  - New TB cases
  - New Diabetes cases
- National disease statistics from laboratory data corroborates other national reports

Kenya TB case load by province: 2009-2011



Source: DLTLD Annual Report 2011

Discussion

- Analysis showed low laboratory capacity to provide:
  - Microbiology services (39,341) bacterial tests)
  - Blood transfusion services (45,744 GXM)

"For the ***essential health services***, the least available services are **laboratory**, imaging and palliative care services" Kenya SARAM 2013 Report

- Weak laboratory services may contribute to
  - Irrational antibiotic use leading to resistance emergence
  - Inability to support acute management of haemorrhage leading to maternal mortality

Limitations and Conclusions

Limitations:

- Data Quality – Incomplete data and Accuracy

Conclusions:

- Analysis of routine clinical laboratory data has shown it can be useful for:
  - Disease epidemiology as passive surveillance tool
  - Laboratory management – National laboratory services monitoring
- Further strengthening of reporting system with identification of indicators is planned

Acknowledgements

MINISTRY OF HEALTH, KENYA

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Thank you