Information Technology Tools to Support the Scale Up of Viral Load Testing and Early Infant Diagnosis

Kenya’s National Viral Load & EID Dashboard

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National Viral Load Testing Laboratory Network

- Built on the successful EID Network
- 8 viral load testing laboratories
  - Abbott platform (18) – DBS, Plasma
  - Roche platform (13) – Plasma only
- Capacity ~2,000,000/year (EID Need: 80,000/year)
- Equipment placement; NOT procurement
- Price negotiated based on anticipated volume ($9.40/test)
NASCOP Website – Dashboards


Behind the Dashboards

• Started with EID testing in the lab
• Evolved to national dashboard
• Linked to courier system
• Notification of sample receipt by the lab
• Notification of testing completion
• Email result delivery

Motivation

• Impossible to run testing for thousands of facilities without automation
• Results lost of couldn’t be tracked with scale up
• Delayed return of results
• Basic data summary on excel insufficient
• Great demand for data by programs
Existing EID Systems Allowed VL Introduction

- Testing in the same machine/labs (VL & EID)
- Used the same LIS and Dashboards
- No CD4 program data motivated VL investment consistent with EID
- Started with the same computing EID hardware but reinvested within two years
- Redesigned the dashboards to incorporate VL and more data for all consumers
- Since EID numbers were small VL increased volumes leading to backlogs initially
Program Innovations Behind the System

• Data clerks at labs slowly being eliminated
  – Data entry at facilities by the facilities
  – Connection to EMRs for data (sample & results) transfer automation

• Sample receipt hubs
  – Sample transport coordinated
  – Access to results via online portal and printing for last mile

• Mobile phone access to retrieve results
  – USSD code used by clinician to check past & present results

• Electronic notifications
  – Notifications to facilities to log on and download results
  – Notification to patients on availability of results (EID)
  – Delivery of VL results to patients

• Monitoring of labs, partners, and facilities
  – Real time monitoring of testing and backlogs at the labs
  – Program monitoring of IPs
  – Program monitoring at facility, sub-county, and county levels
The National Viral Load Dashboard

Source: http://viralload.nascop.org/
Dashboard Shows Viral Load County Suppression
Dashboard Allows Analysis of Trends Over Time
Dashboard Allows Analysis of VL Suppression Across Regimens

Can assess:

- Number of tests per regimen
- Suppression rate
- Gender
- Age distribution

![Pie chart showing suppression rate](chart.png)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests With Valid Outcomes</td>
<td>277,536</td>
<td></td>
</tr>
<tr>
<td>Valid Tests &gt; 1000 copies/ml</td>
<td>40,709</td>
<td>Percentage Non Suppression</td>
</tr>
<tr>
<td>Valid Tests &lt; 1000 copies/ml</td>
<td>236,827</td>
<td>Percentage Suppression</td>
</tr>
<tr>
<td>Confirmatory Repeat Tests</td>
<td>2,777</td>
<td></td>
</tr>
<tr>
<td>Rejected Samples</td>
<td>1,802</td>
<td>Percentage Rejection Rate</td>
</tr>
</tbody>
</table>
Dashboard Allows Analysis by Age & by Implementing Partner

Can assess:

- Age categories
- Tests done
- Suppression
- Per county
- Partner
Dashboard Allows Partner Monitoring

Can assess:

- Number tests done and suppression
- Trends
- County performance
- Age
- Facilities
Dashboard Allows Monitoring of Facility Performance

Can assess:

• Tests
• Suppression
• Rejected samples
• Age
• Gender
• Trends
Website Allows Log-in for In-depth Analysis

- Facility log in
  - Batch number
  - Results
  - Patient details
  - Sample log-in
- Sub-county log-in
- County log-in
- Partner log-in
Dashboard Allows Real Time Monitoring of Network Performance

VL Dashboard/live

Source: http://viralloload.nascop.org/live
Dashboard Allows Tracking of Turnaround Time at Lab and National Level

- Testing trends
- Time from sample collection to receipt in the lab
- Time from receipt to testing
- Time from testing to release of results.
- Per lab and national
Four Strategies to Improve Delivery of Results

1. VL Dashboard - Facility Log in

2. API for EMR - Direct Delivery of Results

3. SMS Transmission of Results to clinicians

4. Email Transmission of Results to facility

5. SMS Transmission of Results to patients (roll out started)
Interesting Facts with the EID/VL Electronic System

• Designed/maintained by Kenyan students
• API for data exchange to EMRs, DHIS, etc.
• Continuous improvement based on increasing country need
  – Anyone can build their own monitoring systems by using data available through the API
• No names in the system, only patient numbers
• Open system, no licensing fees
• Cost-effective, not dependent on high maintenance fees dependent on an external party
• Revolutionary, changes as needs evolve
Thank you

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Abbott m2000