Measuring Impact and Cost of Uganda’s Specimen Referral and Hub Transport System

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Overview

- In order to increase access to quality lab diagnostics, MoH and its health development partners decided to invest in a sample transport system.
- This system involves setting up local networks centered around regional hospitals, district hospitals and health centers called hubs.

- A hub is a key health facility within the sub region with functional lab services
- We elevate its laboratory capacity by improve the infrastructure, equipment profile, man power and institute a quality system
- The hub then becomes a referral lab for sites within its catchment and only refers highly specialized samples
• Using GIS, we map a zone around it within 30 to 40km radius
• We locate all health facilities within that catchment and the road network
• We provide a motorbike and a rider, who through preset schedules reaches each one of the 25 to 30 health facilities under the hub catchment at least once a week
• At each visit the rider picks samples from the sites and drops results of the previous visit
• 100 hubs have been set up across the country reaching between 2500 to 3000 health facilities (about 90% coverage)

• The hub performs a wide range of tests that can not be done at the lower sites including chemistry, CD4, CBC, gene expert etc. and only refers high tech tests to central referral labs

• Because of its potential to revolutionize labs services beyond HIV, this model was seen as a best practice that needed to be evaluated to understand its impact and cost
Methodology

Descriptive and quantitative data was collected from 5 hubs and 3 lower facilities attached to each of the 5 hubs by:

- Direct observation of the intervention
- Interviews with different stakeholders (KII, IDI)
- Review of patient records/patients chart reviews
- Archival records for program

Costing data

- Program or donor expenditure records/reports
- Program or donor inventory data and or/stock cards
- Interviews with key stakeholders
Results

• Since 2011 with 19 Hubs, the system has grown to 100 Hubs servicing close to 3000 health facilities (about 90% coverage).

• System transports 3,000 EID samples per week and 18,000 viral Load samples per week.

• This has enabled improvement of patient outcomes such as HIV viral suppression is at 91.3% and reduced infants positivity rates from 10.3% in October 2011 to 3.9% in June 2016.

• NSRTN is used to transport all sample types including but not limited to; EID, TB, Histopathology, Surveillance, Outbreak investigations, Quality control panels, sickle cell, CD4, CBC, Chemistry, VL, Hepatitis B among others.

• Reduced EID turn around time from 49 days to 14 days
Costing

Program costing for year 2015

Cost per Sample Transported via Masaka hub

Comparison of unit cost for 2015 and 2017

<table>
<thead>
<tr>
<th></th>
<th>VL/EID</th>
<th>CD4</th>
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<tbody>
<tr>
<td>Personnel</td>
<td>$0.41</td>
<td>$0.40</td>
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<tr>
<td>Direct</td>
<td>$0.22</td>
<td>$0.25</td>
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<tr>
<td>Indirect</td>
<td>$0.19</td>
<td>$0.15</td>
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<tr>
<td>Postage</td>
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<td>'Other' costs</td>
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<td>Buildings</td>
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<tr>
<td>Equipment</td>
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<tr>
<td>Trainings</td>
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<tr>
<td>Other Running Costs</td>
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<td>$0.14</td>
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<tr>
<td><strong>Total cost per sample transported</strong></td>
<td><strong>$1.58</strong></td>
<td><strong>$0.98</strong></td>
</tr>
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</table>
Conclusions/Next Steps

• Hub System has transformed the paradigm of laboratory services by reorganizing the lab services to few service points, which are more efficient and higher quality.
• The system has provided unprecedented access to critical diagnostic services.
• The system has reduced the costs of sample transport and it will continue to go down as more samples are transported.

Next steps

• An additional motor bike and rider show be given to each hub to increase the frequency of site visits
• Put a hub coordinator in every health regional to oversee the operations of the hubs in the respective health region.
• Funding for the Hub Transport System heavily relies on donor support, so there is need to lobby for government funding for sustainability.
• Introduce a sample tracking in the transport system
• Improve courier services by engaging a more medically oriented mechanism.