Cost analysis of integrated HIV and Sexual Reproductive Health Services in Kenya and Swaziland

Anna Vassall presenting work by: Carol Dayo Obure, Sedona Sweeney, Fern Terris-Prestholt, Christine Michaels-Igbokwe, Integra Research Initiative, Anna Vassall, Charlotte Watts
Introduction

- Global policy interest in improving the efficiency of HIV services (UNAIDS Strategic Investment Framework)

- On-going studies determinants of HIV costs

- Scarce evidence on the costs and potential efficiency gains of integrated service provision

Hypothesis

Integration of HIV and SRH services may impact efficiency in different ways

- **Economies of scale:**
  - Increased coverage of services -> using under-utilised capacity
  - Volume cost savings

- **Economies of scope:**
  - Shared use of common infrastructure, equipment and staff

- **Reduction in patient costs**
Study design

- Objectives:
  - Does integration result in a more optimal utilization of existing infrastructure and human resources? (technical efficiency)
  - What are the costs of integrated HIV and/or SRH services?
  - How do costs vary by type of integration?

- Outcome measure - ‘average (unit) cost per service’
Data Collection Methods

- **Comprehensive** cost analysis in 40 health facilities for 2008/09 and 2010/11

- **Perspective**: health provider

- **Activities** costed: Facility/MCH/FP unit (FP, PNC, STI management, HTC, cervical cancer screening, and HIV treatment/care).

- **Staged** (PAR then costing)

- **Top-down** (scale) and **bottom up** (joint production)
Data Collection Methods

- Intensive costing methods (3-4 weeks per site), in-country skilled data collectors
- Quality control
- Data sources:
  - Observations, records, interviews
  - Staff time interviews, then observations, timesheets
  - Service data collected from routine monitoring data
  - In addition data available from client flow, facility assessments
Analysis

- ‘Real world’ study design;
  - National policy to integrate services
  - Simultaneous interventions (vouchers, human resource policies)
  - Staff movements (contamination) between sites

- Integration, (not the intervention) and cost and efficiency
  - Limited data on the nature and costs of integration policy
  - Measurement of integration
Implementation is variable: need for independent ‘measure’ of integration

Readiness Assessment

Readiness for integration

Implementation Process

Intervention development

Implementation

Extent of service integration achieved (‘Index of integration’)

Physical integration

Service outcomes

Improved quality of care

Improved efficiency of SRH & HIV services

• UNIT COST

Increased service utilisation

• SCALE EFFECT

Health & behaviour outcomes

Improved health outcomes

Population level trends: overall decline in service use; XXX integrated service demand and use

Unmet needs ...

DCE preferences

Community

Users

• Priority is to avoid multiple trips to save time and money

• Some preference for integration of FP services into specialist HIV Units/sites
Key analysis questions

Setting the scene - baseline

1. Is there potential for integration to improve efficiency?

Resource use

2. To what extent do we observe changes in (physical) integration?
3. Are changes in utilisation over time associated with changes in integration? (main study + service statistics)
4. How is staff workload impacted by integration?
5. How is technical efficiency impacted by integration?

Costs

6. What are the costs of different integrated SRH/HIV services?
7. Is integration associated with lower costs?
Methods of analysis

- 40 pre-post case studies
- Two types of analytical approaches

  - Descriptive analysis of resource use and costs
  - Econometric analysis
    - DEA (examines technical efficiency)
    - Cost analysis (uni-variate analysis - scale/integration and cost)
    - Follow-on work (multi-variate analysis)
Question 1: Setting the scene

Baseline - Is there potential for integration to improve efficiency?
Unit costs per visit 2008/9

- Ca cervix screening visit
- FP visit
- HIV care and treatment visit
- PITC visit
- PNC visit
- STI visit
- VCT visit

Unit cost per visit (excluding drugs and diagnostics) US$ 2011
## Variation in PITC and VCT costs - 2008/9

### Kenya

<table>
<thead>
<tr>
<th>Hospital</th>
<th>DH</th>
<th>SDH</th>
<th>HC</th>
<th>SRH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PITC visit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCT visit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Swaziland

<table>
<thead>
<tr>
<th>Hospital</th>
<th>HC</th>
<th>PHU</th>
<th>SRH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PITC visit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCT visit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Average unit cost per visit (US$ 2011)
Unit costs by input type - VCT and PITC - 2008/9

Unit cost per visit (minus drugs and supplies) for HIV care and treatment 2008/9

**Kenya**

- DH (N=2)
- SDH (N=3)
- HC (N=4)
- SRH (N=6)

**Swaziland**

- Hospital (N=1)
- HC (N=5)
- PHU (N=1)
- SRH (N=2)
Examining the links between staff flexibility, workload, and service delivery in the context of SRH and HIV service integration

S. Sweeney, C.D. Obure, F. Terris-Prestholt, C. Michaels-Igbokwe, C. Watts, the Integra Research Team, A. Vassall
Questions 2-4

Resource use

2. To what extent do we observe changes in (physical) integration?

3. Are changes in utilisation over time associated with changes in integration? (main study + service statistics)

4. How is staff workload impacted by integration?
   - Are there POTENTIAL economies of scope to be gained from integration?
   - Analysis of staff integration and workload
Methods (1)

- **Core MCH services**: family planning (FP), post-natal care (PNC), antenatal care (ANC)

- **Non-core services**: STI management (STI), voluntary HIV testing and counselling (VCT), provider-initiated HIV testing and counselling (PITC), cervical cancer screening (CaCx), and HIV treatment and care
Methods (2): Data Sources

- Key informant interviews with staff, time sheets and direct observations of services
  - Staff time was allocated as a percentage of clinical staff full-time equivalency (FTE) according to service mix and time use
  - Workload was estimated as the number of outpatient visits per clinical staff FTE per day
- Process and output data collected from routine monitoring registers
  - Service was considered ‘present’ if > 10 visits recorded per year, and if staff FTE was > 0
Methods (3): Data Analysis

- Objectives:
  - Observe the improvements in resource integration from baseline to endline
  - Identify the relationship between non-core service availability and human resource integration
  - Evaluate the effect of improvements in integration on staff workload

- Data analysed in Stata and Excel
  - Due to small sample sizes and potential confounding factors, this analysis is descriptive
Resource Integration Indicators

- Human Resource Integration
- Physical Resource Integration
- Service Availability in the MCH Unit
- Service Availability in the Facility

Example: HIV Testing and Counselling

<table>
<thead>
<tr>
<th>More integrated</th>
<th>Less integrated</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCT conducted for all MCH clients within MCH unit, by MCH nurses</td>
<td>MCH clients referred to a separate HCT unit, staffed by HCT counsellor or lab technician</td>
</tr>
</tbody>
</table>
QUESTION 2:
TO WHAT EXTENT DO WE OBSERVE CHANGES IN PHYSICAL INTEGRATION?
Changes in Resource Use Indicators from Baseline to Endline

Percentage of Total Possible Range of Services

Baseline (2008-2009)
- Human Resource Integration
- Physical Resource Integration
- Service availability in MCH/FP unit

Endline (2010-2011)
- Service availability in facility
Changes in Resource Use Indicators from Baseline to Endline (2)

Changes in Resource Integration Indicators

- % Change in Physical Resource Integration
- % Change in Human Resource Integration
- % Change in service availability in the MCH/FP Unit
- % Change in service availability within the facility
Improvements in Resource Integration from Baseline to Endline

- Physical Resource Integration Improved
- Human Resource Integration Improved
- Service Availability Within the Facility Improved
- Service Availability within MCH Unit Improved
QUESTION 3: ARE CHANGES IN UTILISATION OVER TIME ASSOCIATED WITH CHANGES IN INTEGRATION??
Variation in Facility Outputs

Total Outpatient Visits at Baseline and Endline

- Ca Cervix Screening Visit
- FP Visit
- HIV Care and Treatment Visit
- PITC Visit
- PNC Visit
- STI Visit
- VCT Visit

Total Annual Outpatient Visits

Baseline vs Endline

four outliers over 20000 excluded
Increase in Scope: Impact on Utilization

Service Mix and Utilization at Facility Level

Change in Annual Outputs

<table>
<thead>
<tr>
<th>Service</th>
<th>PITC</th>
<th>STI</th>
<th>HIV Care and Treatment</th>
<th>PNC</th>
<th>Ca Cervix Screening</th>
<th>VCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Added</td>
<td>1,459</td>
<td>754</td>
<td>645</td>
<td>495</td>
<td>152</td>
<td>1,747</td>
</tr>
<tr>
<td>Service Dropped</td>
<td>-680</td>
<td>-90</td>
<td>37</td>
<td>152</td>
<td>147</td>
<td>-156</td>
</tr>
<tr>
<td>No Change</td>
<td>40</td>
<td>37</td>
<td>2,711</td>
<td>147</td>
<td>66</td>
<td>66</td>
</tr>
</tbody>
</table>

Legend:
- **Service Added**
- **Service Dropped**
- **No Change**
QUESTION 4: ARE THERE POTENTIAL ECONOMIES OF SCOPE TO BE GAINED FROM INTEGRATION?
Increase in Scope: Which services are added / dropped?

Changes in Service Mix from Baseline to Endline

<table>
<thead>
<tr>
<th>Service</th>
<th>Facilities Adding Service</th>
<th>Facilities Dropping Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>PITC</td>
<td>n = 4</td>
<td>n = 4</td>
</tr>
<tr>
<td>Ca Cervix</td>
<td>n = 7</td>
<td>n = 12</td>
</tr>
<tr>
<td>Screening</td>
<td>n = 4</td>
<td>n = 3</td>
</tr>
<tr>
<td>STI</td>
<td>n = 12</td>
<td></td>
</tr>
<tr>
<td>MCH Unit</td>
<td>n = 12</td>
<td></td>
</tr>
<tr>
<td>PITC (stand alone)</td>
<td>n = 12</td>
<td></td>
</tr>
<tr>
<td>HIV Care and Treatment</td>
<td>n = 6</td>
<td></td>
</tr>
<tr>
<td>Facility Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Facilities Adding Service

Facilities Dropping Service
Increase in Scope: Patterns in Human Resource Integration

Service Mix and HR Consolidation in MCH unit

Percent change from baseline in number of services provided per staff

- PITC: 32% increase, 1% increase, -6% decrease
- Ca Cervix Screening: 33% increase, -3% decrease, -6% decrease
- STI: 13% increase, 7% increase, -6% decrease
- HIV Care and Treatment: 4% increase, -28% decrease, -28% decrease
- VCT: 16% increase, 1% increase, 1% increase

Service Added | Service Dropped | No Change
Increase in Scope: Patterns in Human Resource Integration

Total time duration across all consultations (n=13266) - Kenya

- Other services (n=9669): Median 7.0, Mean 13.6
- PITC only (n=658): Median 8.0, Mean 15.0
- FP only (n=2117): Median 11.0, Mean 20.0
- Integrated PITC and FP (n=822): Median 11.0, Mean 20.0

Duration in minutes

Blue bars represent Median, and red bars represent Mean.
QUESTION 5: ANALYSIS OF STAFF WORKLOAD AND STAFF INTEGRATION
Variation in staff workload

Staff Workload at Baseline and Endline

- Ca Cervix Screening Visit
- FP Visit
- HIV Care and Treatment Visit
- PITC Visit
- PNC Visit
- STI Visit
- VCT Visit

Workload (Outpatient Visits / Staff FTE / Day)

Baseline vs Endline

0 20 40 60 80
HR Integration and staff workload

<table>
<thead>
<tr>
<th>Service</th>
<th>Less Integrated (n = 58)</th>
<th>More Integrated (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CaCx (p = 0.44)</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>FP (p = 0.26)</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>STI (p = 0.28)</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>PITC (p = 0.06)</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>VCT (p = 0.42)</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>HIV Care (p = 0.78)</td>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>

CaCx (p = 0.44)
FP (p = 0.26)
STI (p = 0.28)
PITC (p = 0.06)
VCT (p = 0.42)
HIV Care (p = 0.78)
Changes in Staff Workload and HR Integration

Changes in Workload and Human Resource Integration

- Ca Cervix Screening Visit (p = 0.53)
- PITC Visit (p < 0.00)
- STI Visit (p = 0.12)
- VCT Visit (p = 0.89)
- HIV Care and Treatment Visit (p = 0.19)

- Least change in HR integration (n = 29)
- Most change in HR integration (n = 11)
### Average Change in Staff Workload

<table>
<thead>
<tr>
<th>Country</th>
<th>2008-2009</th>
<th>2010-2011</th>
<th>p value (t-test)</th>
<th>F ratio (p value) (ANOVA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya (n = 30)</td>
<td>17.42</td>
<td>15.17</td>
<td>0.32</td>
<td>0.86 (0.36)</td>
</tr>
<tr>
<td>Swaziland (n = 10)</td>
<td>13.81</td>
<td>15.36</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>HR Integration</td>
<td></td>
<td></td>
<td></td>
<td>2.04 (0.16)</td>
</tr>
<tr>
<td>Least change (n = 29)</td>
<td>17.72</td>
<td>14.88</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Most change (n = 11)</td>
<td>13.34</td>
<td>16.09</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>Facility Type</td>
<td></td>
<td></td>
<td></td>
<td>4.71 (0.00)</td>
</tr>
<tr>
<td>Hospital (n = 2)</td>
<td>10.71</td>
<td>24.87</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>District Hospital (n = 5)</td>
<td>15.86</td>
<td>15.65</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>Sub District Hospital (n = 6)</td>
<td>10.11</td>
<td>16.24</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Health Centre (n = 17)</td>
<td>19.40</td>
<td>10.54</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Public Health Unit (n = 2)</td>
<td>17.60</td>
<td>21.78</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>SRH Clinic (n = 8)</td>
<td>16.79</td>
<td>20.04</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
<td></td>
<td>0.87 (0.43)</td>
</tr>
<tr>
<td>FP (n = 12)</td>
<td>16.25</td>
<td>14.67</td>
<td>0.67</td>
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</tr>
<tr>
<td>PNC (n = 20)</td>
<td>16.57</td>
<td>13.61</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>SRH (n = 8)</td>
<td>16.79</td>
<td>20.04</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
<td>6.51 (0.01)</td>
</tr>
<tr>
<td>Rural (n = 23)</td>
<td>16.97</td>
<td>12.03</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Urban (n = 17)</td>
<td>15.90</td>
<td>19.52</td>
<td>0.21</td>
<td></td>
</tr>
</tbody>
</table>
Summary

- Integration was not scaled up uniformly
- Service availability in the MCH unit was the least common improvement seen, and was only possible with other indicators of resource integration also in place
- Facilities which added HIV care and VCT on average saw a lower workload and lower integration scores
- PITC, CaCx and STI can potentially be added into the MCH unit more easily
- Especially for PITC, integration seems to be associated with less staff time per patient and a higher workload
Acknowledgements

Ministry of Health, Swaziland
Ministries of Health, Kenya
Family Health Options Kenya (FHOK)
Family Life Association of Swaziland (FLAS)

Learn more at:
www.integrainitiative.org

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Technical Efficiency and Costs of Integrated HIV and SRH Services in Kenya and Swaziland

Carol Dayo Obure, Sedona Sweeney, Fern Terris-Prestholt, the Integra Research Team, Anna Vassall, Charlotte Watts
Introduction

- Does integration result in more optimal utilization of existing infrastructure and human resources?
- How is technical efficiency impacted by integration?
- What are the costs of different integrated SRH/HIV services?
- Is integration associated with lower costs?
## Data and methods

### Inputs
- 1. Clinical and non clinical staff FTEs
- 2. Capital stock (unit size)

### Outputs
- Outpatient client visits for 6 HIV and SRH services

### Explanatory variables
- Facility characteristics: size (categorised by bed capacity); ownership (public/private); and level of integration (composite integration score).
- Environmental factors: Catchment population; and Proportion of HIV client visits.

### Analysis
- Two stage Data Envelopment Analysis (DEA)
  1. Output oriented DEA model
  2. Tobit regression of bias corrected DEA scores against environmental variables
Methods (2) - Data envelopment analysis

- Linear programming technique for identifying optimal combinations of inputs and outputs based on actual performance of comparable units.

- DEA creates a piecewise linear best practice frontier based on observed data with efficient facilities lying on the frontier and any deviation from the frontier is measured as inefficiency.
Methods (3) - Data envelopment analysis

Figure 1. Output-oriented DEA model
Results - Relative efficiency scores

Technical efficiency scores

- Dvokolwako
- Eldoret FHOK
- Engineer
- FLAS Manzini
- Kangari
- Kauwi
- Kigumo
- Kitla
- Kinwara
- Kisumu FHOK
- Kithi
- KSI
- Kyambeke
- Nakwuni
- Mankayane
- Matsanjeni
- Mavindini
- Mbabane
- Mbitini
- Meru FHOK
- Miambe
- Muranga
- Mutito
- Nairobi West FHOK
- Nakuru FHOK
- Ngorano
- Nhlangano
- Njibini
- Nungunzi
- Nyahururu
- Nyeri
- RFM
- Ruiru
- Sithobela
- Thika FHOK
- Warazo
- Yatta

2009  2011
## Results - Relative technical efficiency

<table>
<thead>
<tr>
<th></th>
<th>Observations</th>
<th>Mean (SD)</th>
<th>Kruskal-Wallis test (P-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (2008/2009)</td>
<td>40</td>
<td>0.71 (0.28)</td>
<td></td>
</tr>
<tr>
<td>2 (2010/2011)</td>
<td>40</td>
<td>0.76 (0.31)</td>
<td>0.3432</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>60</td>
<td>0.68 (0.30)</td>
<td></td>
</tr>
<tr>
<td>Swaziland</td>
<td>20</td>
<td>0.91 (0.18)</td>
<td>0.0020</td>
</tr>
<tr>
<td><strong>Facility size</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large (150-350 beds)</td>
<td>14</td>
<td>0.84 (0.23)</td>
<td>0.0070</td>
</tr>
<tr>
<td>Medium (10-90 beds)</td>
<td>18</td>
<td>0.55 (0.31)</td>
<td></td>
</tr>
<tr>
<td>Small (&lt; 10 beds)</td>
<td>48</td>
<td>0.78 (0.29)</td>
<td></td>
</tr>
<tr>
<td><strong>Ownership</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>16</td>
<td>0.82 (0.28)</td>
<td>0.1206</td>
</tr>
<tr>
<td>Public</td>
<td>64</td>
<td>0.71 (0.30)</td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>34</td>
<td>0.86 (0.22)</td>
<td>0.0047</td>
</tr>
<tr>
<td>Rural</td>
<td>46</td>
<td>0.64 (0.31)</td>
<td></td>
</tr>
</tbody>
</table>

**No of efficient units on frontier**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1 (2008/2009)</td>
<td>15/40 (38%)</td>
<td></td>
</tr>
<tr>
<td>Year 2 (2010/2011)</td>
<td>22/40 (55%)</td>
<td></td>
</tr>
</tbody>
</table>
## Results - Determinants of efficiency

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.916</td>
<td>2.86</td>
</tr>
<tr>
<td>Year 2010/11</td>
<td>0.096</td>
<td>1.18</td>
</tr>
<tr>
<td>Swaziland</td>
<td>0.345*</td>
<td>1.90</td>
</tr>
<tr>
<td>Catchment population</td>
<td>-0.024</td>
<td>-0.42</td>
</tr>
<tr>
<td>Proportion of HIV visits</td>
<td>0.383</td>
<td>0.92</td>
</tr>
<tr>
<td>Integration index</td>
<td>-0.134</td>
<td>-1.31</td>
</tr>
<tr>
<td>Public</td>
<td>-0.032</td>
<td>-0.13</td>
</tr>
<tr>
<td>Rural</td>
<td>-0.409*</td>
<td>-1.81</td>
</tr>
<tr>
<td>Medium facility (10-90 beds)</td>
<td>-0.147</td>
<td>-0.61</td>
</tr>
<tr>
<td>Small facility (&lt; 10 beds)</td>
<td>0.173</td>
<td>0.79</td>
</tr>
<tr>
<td>Number of observations</td>
<td></td>
<td>80</td>
</tr>
</tbody>
</table>

*Statistical significance at the 10% level
Summary

- Considerable variation in TE but on average high level of TE across study sites

- Associations found between TE and country, facility size and location

- No clear evidence to support conventional assumption that more integrated health facilities operate more efficiently
What are the costs of different integrated SRH/HIV services?

Is integration associated with lower costs?
Breakdown of total annual MCH and HIV unit cost by service type - Kenya

- Other MCH visit
- CWC visit
- VCT visit
- STI visit
- PNC visit
- PITC visit
- HIV care and treatment visit
- FP visit
- Ca cervix screening visit

<table>
<thead>
<tr>
<th>Year</th>
<th>Hospital (N=1)</th>
<th>District Hospital (N=5)</th>
<th>Sub District Hospital (N=6)</th>
<th>Health Centre (N=12)</th>
<th>SRH Clinic (N=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
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<tr>
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<tr>
<td>2011</td>
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</tr>
</tbody>
</table>
Breakdown of total annual MCH and HIV unit cost by service type - Swaziland

- Other MCH visit
- CWC visit
- VCT visit
- STI visit
- PNC visit
- PITC visit
- HIV care and treatment visit
- FP visit
- Ca cervix screening visit
Breakdown of total annual service costs by input type - Kenya

<table>
<thead>
<tr>
<th>Service</th>
<th>2009</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCT visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV care visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ca cervix screening visit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- Salaries
- Capital
- Other recurrent
- Drugs
- Diagnostics and supplies
Breakdown of total annual service costs by input type - Swaziland

- **VCT visit**
  - 2011: 40% Salaries, 25% Capital, 25% Other recurrent, 10% Drugs, 0% Diagnostics and supplies
  - 2009: 40% Salaries, 25% Capital, 25% Other recurrent, 10% Drugs, 0% Diagnostics and supplies

- **STI visit**
  - 2011: 35% Salaries, 20% Capital, 20% Other recurrent, 20% Drugs, 5% Diagnostics and supplies
  - 2009: 35% Salaries, 20% Capital, 20% Other recurrent, 20% Drugs, 5% Diagnostics and supplies

- **PNC visit**
  - 2011: 30% Salaries, 30% Capital, 20% Other recurrent, 20% Drugs, 10% Diagnostics and supplies
  - 2009: 30% Salaries, 30% Capital, 20% Other recurrent, 20% Drugs, 10% Diagnostics and supplies

- **HIV care visit**
  - 2011: 40% Salaries, 20% Capital, 20% Other recurrent, 20% Drugs, 0% Diagnostics and supplies
  - 2009: 40% Salaries, 20% Capital, 20% Other recurrent, 20% Drugs, 0% Diagnostics and supplies

- **FP visit**
  - 2011: 45% Salaries, 25% Capital, 20% Other recurrent, 10% Drugs, 0% Diagnostics and supplies
  - 2009: 45% Salaries, 25% Capital, 20% Other recurrent, 10% Drugs, 0% Diagnostics and supplies

- **Ca cervix screening visit**
  - 2011: 40% Salaries, 25% Capital, 25% Other recurrent, 10% Drugs, 0% Diagnostics and supplies
  - 2009: 40% Salaries, 25% Capital, 25% Other recurrent, 10% Drugs, 0% Diagnostics and supplies
Increases in unit cost per visit over time

- **Kenya**
  - Ca Cx
  - FP
  - HCT
  - HIV
  - PNC
  - STI

- **Swaziland**
  - Ca Cx
  - FP
  - HCT
  - HIV
  - PNC
  - STI

**Unit cost per visit (US$ 2011)**

- **2009**
- **2011**
Variation in unit costs over time

Unit cost per visit (US$ 2011) excluding drugs and diagnostics

STI
PNC
HIV
HCT
FP
Ca Cx

2009 2011
Unit costs for HIV counselling and testing services over time

(Unit cost per visit (USD 2011) excluding diagnostics)
Unit costs per visit (US$ 2011) for HIV care visits - including drugs and diagnostics

- **Swaziland**
  - SRH Clinic: Endline 20.00, Baseline 10.00
  - HIV Clinic: Endline 60.00, Baseline 30.00
  - Public Health Unit: Endline 50.00, Baseline 25.00
  - Health Centre: Endline 60.00, Baseline 30.00
  - Hospital: Endline 60.00, Baseline 30.00

- **Kenya**
  - Sub District Hospital: Endline 15.00, Baseline 10.00
  - District Hospital: Endline 20.00, Baseline 10.00
  - Hospital: Endline 20.00, Baseline 10.00

**Kenya**
- Sub District Hospital: Endline 15.00, Baseline 10.00
- District Hospital: Endline 20.00, Baseline 10.00
- Hospital: Endline 20.00, Baseline 10.00
Unit cost per visit and integration score

Graphs by Service

Is the integration associated with costs?
## Association between changes in unit costs and measures of integration (Correlation coefficients)

<table>
<thead>
<tr>
<th>Measures of scale and integration</th>
<th>FP (Obs=80)</th>
<th>Ca Cx (Obs=49)</th>
<th>PNC (Obs=64)</th>
<th>STI (Obs=55)</th>
<th>PITC (Obs=64)</th>
<th>VCT (Obs=60)</th>
<th>HIV (Obs=58)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>-0.003</td>
<td>-0.18</td>
<td>0.29</td>
<td><strong>-0.73</strong></td>
<td>-0.04</td>
<td>-0.08</td>
<td>-0.04</td>
</tr>
<tr>
<td>Range of services in the facility</td>
<td>0.13</td>
<td>0.25</td>
<td>0.31</td>
<td>-0.20</td>
<td>0.16</td>
<td>0.67***</td>
<td>0.26</td>
</tr>
<tr>
<td>Range of services in the MCH unit</td>
<td>-0.006</td>
<td>0.29</td>
<td>0.05</td>
<td><strong>-0.38</strong></td>
<td>-0.12</td>
<td>0.38**</td>
<td>0.38</td>
</tr>
<tr>
<td>Range of services per clinical staff</td>
<td>0.07</td>
<td>-0.11</td>
<td>-0.25</td>
<td>-0.13</td>
<td>0.06</td>
<td>0.22</td>
<td>-0.05</td>
</tr>
<tr>
<td>Range of services per room</td>
<td>0.15</td>
<td>0.22</td>
<td>-0.06</td>
<td>0.07</td>
<td>0.17</td>
<td>0.16</td>
<td>-0.03</td>
</tr>
<tr>
<td>Resource use index</td>
<td>-0.02</td>
<td>-0.003</td>
<td>-0.09</td>
<td>-0.26</td>
<td>0.03</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>Client flow index</td>
<td>0.21</td>
<td>0.11</td>
<td>0.04</td>
<td>-0.03</td>
<td><strong>0.32</strong>*</td>
<td><strong>0.99</strong>*</td>
<td>0.18</td>
</tr>
</tbody>
</table>
Next steps - further work

- Quality dimensions to be incorporated in subsequent analysis of TE

- Multivariate analysis - determinants of costs of integrated HIV and SRH services
Cost analysis of integrated HIV and Sexual Reproductive Health Services in Kenya and Swaziland

Anna Vassall presenting work by: Carol Dayo Obure, Sedona Sweeney, Fern Terris-Prestholt, Christine Michaels-Igbokwe, Integra Research Initiative, Anna Vassall, Charlotte Watts
SUMMARY

Setting the scene

1. Baseline - is there potential for integration to improve efficiency?
   ■ Yes, variation in unit costs
   ■ Although most clinics moderately efficient, some clinics with very high costs
   ■ Substantial variation in workload
   ■ Under-utilised capacity
   ■ VCT suggests that stand-alone may be less efficient (but this needs to weighed with other factors)
Key analysis questions

Resource use

2. To what extent do we observe changes in physical integration?
3. What changes in utilisation do we observe during integration over time?
4. How is staff workload impacted by integration?
5. How is technical efficiency impacted by integration?

- Limited movement in physical integration on the aggregate level
- Differences by facility
- Uniform increases in utilisation, HCT increases associated with new service provision (and integration)
- Staff workload may be higher with more integration (but not significant/or controlled)
- Services times fall, but possibly at the expense of quality
- No association between technical efficiency and integration
Key analysis questions

Costs

6. What are the costs of different integrated SRH/HIV services?

7. Is integration associated with lower costs?
   - HIV costs dominating MCH/FP services not only in high prevalence settings
   - Some suggestion of possible economies of scope and scale; association at best weak and hard to establish due to multiple drivers of costs; and limited movement over time in integration
   - Possible increase in costs in other areas (such as VCT)
Policy and practice recommendations

- **Blueprint or not?**
  - **Blueprint**
    - Inefficiency clear
    - In practice, organisational change difficult to achieve at scale
    - Do we wait for the evidence?
  - **Not blueprint - tailored**
    - Readiness assessment should precede integration policy
    - Efficiency gain highly setting specific
    - Risks also clear
      - Adding new services may increase utilisation
      - Over-work and quality concerns
    - Need to determine resourcing (not just investment, but recurrent)
    - Importance of monitoring systems
      - Simple workload indicators
Ministry of Health, Swaziland
Ministries of Health, Kenya
Family Health Options Kenya (FHOK)
Family Life Association of Swaziland (FLAS)

Learn more at:
www.integrateinitiative.org

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