Improving cost-effectiveness by managing HIV as a chronic disease in Uganda

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Background

The chronic care model (CCM) is an integrated, population-based approach to providing health care for those with chronic diseases that involves patient self-management, delivery system design and decision-support for clinicians and patients, and community involvement to ensure evidence-based care management over the long term (Figure 1).

While the CCM has been widely used in the United States and other developed settings for the management of chronic conditions such as diabetes and hypertension, its effectiveness and efficiency in managing people with HIV is unknown in low-resource settings.

We sought to determine the incremental cost-effectiveness of implementing this system of care in a district in Central Uganda.

Methods

In this controlled pre/post-intervention study in two districts, we collected data on CD4s and patient adherence from a random sample of clients receiving HIV services at any one of six sites, three intervention and three control facilities.

The intervention in the three facilities included learning sessions and monthly coaching visits from improvement experts over one year.

We used a difference-in-differences analysis, controlling for potential confounders.

Intervention

Twenty-five health care providers were oriented to the chronic care model by the intervention coaches consisting of health care improvement experts from the USAID ASSIST Project, clinicians involved in pilot implementation of CCM and district Ministry of Health staff.

The training addressed identifying service delivery problems and implementing changes to address them to empowering patients to actively manage their condition.

Following this orientation, the improvement coaches conducted eight monthly visits to each participating clinic. Team members provided feedback to clinic staff on successful practices, performance gaps and ideas on addressing them.

A staff member from each facility visited another participating site to learn about changes implemented there, and subsequently shared best practices.

One learning session was held to share successful changes across site, with participation of 29 health care workers from the three intervention sites.

Key changes implemented by providers in the three intervention sites included:

- Provision of visual reminders of recommended HIV patient care practices
- Written appointment reminders for patients
- Fastidious tracking of patient CD4s and acting on their findings
- Early identification and treatment for tuberculosis co-infection.

Results

The overall cost of the intervention from the perspective of the implementing party was 33,525,000 Ugandan Shillings or US$ 11,740, reaching a total of 7,016 patients enrolled for ART care in the participating clinics.

Total cost of the intervention per patient served as US $1.67.

Table 1 shows the results in terms of change in CD4 count and change in adherence to ART as reported by the clinician based on the most recent patient encounter:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention</th>
<th>Control</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in CD4 (univariate model)</td>
<td>86</td>
<td>15</td>
<td>0.149</td>
</tr>
<tr>
<td>Increase in CD4 (multivariate model)</td>
<td>235</td>
<td>146</td>
<td>0.077</td>
</tr>
<tr>
<td>Odds ratio of increased CD4</td>
<td>2.6</td>
<td>1</td>
<td>0.033</td>
</tr>
<tr>
<td>Odds ratio of increased CD4</td>
<td>3.2</td>
<td>1</td>
<td>0.022</td>
</tr>
<tr>
<td>End line CD4</td>
<td>517</td>
<td>519</td>
<td>0.983</td>
</tr>
<tr>
<td>Clinician-reported adherence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of participants</td>
<td>363</td>
<td>325</td>
<td></td>
</tr>
<tr>
<td>Odds ratio of lower adherence</td>
<td>0.39</td>
<td>1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Odds ratio of lower adherence</td>
<td>0.43</td>
<td>1</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table 1. Change in CD4 and adherence to ART attributable to the intervention

Our findings suggest that for modest expenditure, it is possible to improve process and outcome indicators of quality of care.

We recommended implementing the Chronic Care Model in HIV care settings in Uganda.

Conclusions

- Our findings suggest that for modest expenditure, it is possible to improve process and outcome indicators of quality of care.
- We recommended implementing the Chronic Care Model in HIV care settings in Uganda.

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