Pulling the network together: The ‘microclinic’ social network intervention for promoting engagement in HIV care on Mfangano Island, Kenya

Presented by: Matt Hickey
Retention is important but difficult

**Barriers to retention:**
- Structural
- Clinic factors
- Psychosocial

**Facilitators of retention:**
- Social capital

(Ware 2009)

Blocked by HIV-related stigma

Unlocking HIV treatment support

Catalyst
Activate social networks to collectively address a chronic health challenge

Recognizes that burden of disease, and solutions for effective management, are shared across social ties

Diabetes in Jordan
- RCT showed 1-unit ↓ in HbA1C
- Scaling up microclinics nationally through MOH

Obesity in Kentucky
- RCT showed 1-unit ↓ in BMI sustained over 10 months
- Scaling across several counties through partnership with CDC
Objectives

1. To evaluate the **feasibility** of a microclinic HIV intervention in a high-prevalence region in rural Kenya
2. To evaluate the impact of microclinics on **engagement in care**
3. To evaluate the impact of microclinics on **medication adherence**
Setting: Mfangano Island, Lake Victoria

Mfangano Island

HIV prevalence 24-28%
Study design

- Quasi-experimental design
- All patients on ART at Sena Health Center
- Patients in **East** were invited to form microclinic groups
- Patients from **North, South and West** were control
- ITT analysis
Microclinic intervention

Structure

- Patient-nominated groups
  - Both HIV + and -
- 28 CHWs facilitated group formation
  - 10 bi-weekly group meetings co-led by CHWs and VCT instructors
  - Meetings scheduled at time and location of each group’s choosing

Content

- Discussion topics at group meetings:
  - HIV and ART biology
  - Group support strategies & confidentiality
  - Community outreach

Optional final session: Group status disclosure
Measurements

- Clinic visit history obtained from EMR
  - LTFU tracing
  - post-transfer visit history
- Hair samples for drug level measurement
- Participant surveys and FDGs to understand mechanisms
  - Changes in stigma, HIV-related knowledge, social support

Outcomes:
- Engagement in care (90-day gaps, ‘time in care’)
Analysis: ‘time in care’

- Conceptually, the amount of time a patient spends adhering to clinic visit schedule
- Allows for discrimination between patients who miss a visit by one week vs. 3 months

(Time eligible for care) – (sum of gaps in care)

(time eligible for care)
Statistical analysis

- Cox proportional hazards model for 90-day disengagement
- GLM logit model for ‘time in care’
- Robust SEs to adjust for clustering

- Baseline covariates evaluated for inclusion in multivariate models:
  - age, sex, monthly income, distance to clinic, food insecurity, stigma, social support, HIV knowledge, time since ART initiation, CD4 count, WHO stage
Study enrollment

Eligible Patients
n=426

Enrolled in study
n=369 (87%)

Intervention Community
n=153

Joined microclinic
n=113 (74%)

Control Communities
n=216

Participated in microclinic
n=4 (2%)
# Baseline characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Intervention (n=153)</th>
<th>Control (n=216)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years, median)</td>
<td>37</td>
<td>37</td>
<td>0.40</td>
</tr>
<tr>
<td>Female (%)</td>
<td>63%</td>
<td>64%</td>
<td>0.85</td>
</tr>
<tr>
<td>Monthly income (USD, median)</td>
<td>$31</td>
<td>$31</td>
<td>0.09</td>
</tr>
<tr>
<td>Travel time to clinic (%)</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt;30 min</td>
<td>49%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>30-60 min</td>
<td>30%</td>
<td>37%</td>
<td></td>
</tr>
<tr>
<td>&gt;60 min</td>
<td>21%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Time on ART (years, median)</td>
<td>2.6</td>
<td>2.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Baseline CD4 (mean, cells/mm3)</td>
<td>415</td>
<td>372</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Education, marital status, stigma, HIV knowledge, social support, WHO stage were all similar.
### Group characteristics (n=34)

<table>
<thead>
<tr>
<th>Group characteristic</th>
<th>Median (IQR)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group size</td>
<td>13 (10-14.5)</td>
<td>4-18</td>
</tr>
<tr>
<td>Female (%)</td>
<td>78% (62-92%)</td>
<td>0-100%</td>
</tr>
<tr>
<td>Group VCT participation (%)</td>
<td>86% (78-92%)</td>
<td>40-100%</td>
</tr>
<tr>
<td>HIV-infected</td>
<td>43% (25-62%)</td>
<td>14-86%</td>
</tr>
<tr>
<td>Number HIV+</td>
<td>4 (2-8)</td>
<td>1-12</td>
</tr>
<tr>
<td>Number on ART</td>
<td>2 (1-5)</td>
<td>1-10</td>
</tr>
</tbody>
</table>
Fewer disengagement from care events in intervention community
As treated analysis

Cumulative incidence of 90-day disengagement from care

- Control (n=216)
- No microclinic (n=40)
- Microclinic (n=113)
Cox proportional hazards model

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Hazard Ratio</th>
<th>p-value</th>
<th>Robust 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Univariate model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention arm</td>
<td>0.53</td>
<td>0.056</td>
<td>0.28 - 1.02</td>
</tr>
<tr>
<td><strong>Multivariate model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention arm</td>
<td>0.48</td>
<td>0.026</td>
<td>0.25 - 0.92</td>
</tr>
<tr>
<td>Per year of ART experience</td>
<td>0.80</td>
<td>0.007</td>
<td>0.68 - 0.94</td>
</tr>
<tr>
<td>Travel time to clinic (%)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>&lt;30 min</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>30-60 min</td>
<td>0.60</td>
<td>0.13</td>
<td>0.30 - 1.2</td>
</tr>
<tr>
<td>&gt;60 min</td>
<td>0.70</td>
<td>0.29</td>
<td>0.36 - 1.4</td>
</tr>
</tbody>
</table>
Three weeks more ‘time in care’ per patient-year

Marginal risk differences (derived from logistic model)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Additional time in care (days)</th>
<th>Robust 95% CI (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Univariate model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention arm</td>
<td>17</td>
<td>3 - 31</td>
</tr>
<tr>
<td><strong>Multivariate model</strong>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention arm</td>
<td>22</td>
<td>10 - 34</td>
</tr>
</tbody>
</table>

* Adjusting for time since ART initiation, travel time to clinic, baseline HIV-related stigma
Selected themes from focus groups

- **Group cohesion following group disclosure**
  - *Male participant:* When kanyaklas went through group VCT, it helped a lot because we found that *my status is not mine alone.*

- **Support for defaulters and medication adherence**
  - *Female participant:* I happen to have a friend who was on drugs but was swayed by religious beliefs. She met some people who prayed for her and told her she was healed, thus should not continue with the drugs. It did not take long when the lady fell sick and was bedridden. We went to her home with few kanyakla members and took her to the hospital. The lady is really doing very well today.

  - *CHW leader:* I noticed my kanyakla helping a member who had a side effect that made him default from taking his medications. So a group visited him and taught him and from there he got back to care.
Discussion: engagement in care

- 50% reduction in 90-day gaps in care & 3 weeks of additional ‘time in care’ per person-year
  - Near complete follow-up (ltfu=5), including through transfers strengthens evidence that these are true gaps
  - ITT analysis minimizes selection bias

- Clinical relevance
  - Gaps in care associated with morbidity, mortality and virologic failure (Kranzer 2011)
  - Other engagement measures (e.g. visit adherence) also associated with virologic suppression (Mugavero 2012)
Conclusion

- Microclinics are a promising intervention for promoting engagement in care
  - Good uptake among patient population on Mfangano
- Embedded in social infrastructure - may be more sustainable than other similar interventions
  - Treatment supporters
  - Patient support groups
- Social network impact beyond individual patients
Next steps

- RCT of microclinic intervention in 8 rural clinics across 3 islands in Lake Victoria
Partners | Collaborators | Funders

Organic Health Response:
- Chas Salmen, MD MPhil
- Katie Fiorella, MPH
- Dan Omollo, BSc
- Brian Mattah
- Mfangano research group
- Community members and study participants

Kenya Medical Research Institute:
- Dr. Elizabeth Bukusi
- Dr. CT Muga
- Dr. Betty Njoroge

UCSF:
- Craig Cohen, MD MPH
- Elvin Geng, MD MPH
- Monica Gandhi, MD MPH
- Chris Stewart, MD
- Starley Shade, PhD MPH
- Peter Bacchetti, PhD
- Cinthia Blat, MPH

Microclinic International:
- Daniel Zoughbie, Dphil
- Hal Campbell, PhD
- Nancy Bui, MPH
- Leila Makarechi

Google
SEGAL Family Foundation
DORIS DUKE CHARITABLE FOUNDATION
National Institutes of Health
Rise Up Foundation
Matt Hickey | matt.hickey@ucsf.edu
Extra slides
GLM logistic ‘time in care’ model

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Odds Ratio</th>
<th>p-value</th>
<th>Robust 95% CI</th>
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<tr>
<td><strong>Univariate model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention arm</td>
<td>1.41</td>
<td>0.02</td>
<td>1.05 - 1.90</td>
</tr>
<tr>
<td><strong>Multivariate model</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intervention arm</td>
<td>1.57</td>
<td>0.001</td>
<td>1.21 - 2.03</td>
</tr>
<tr>
<td>Per year of ART experience</td>
<td>1.11</td>
<td>0.004</td>
<td>1.04 - 1.20</td>
</tr>
<tr>
<td>Travel time to clinic (%)</td>
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<tr>
<td>30-60 min</td>
<td>1.52</td>
<td>0.01</td>
<td>1.09 - 2.10</td>
</tr>
<tr>
<td>&gt;60 min</td>
<td>1.32</td>
<td>0.08</td>
<td>0.97 - 1.81</td>
</tr>
<tr>
<td>HIV-related stigma (per 1-pt increase on 17-point scale)</td>
<td>0.97</td>
<td>0.07</td>
<td>0.94 - 1.00</td>
</tr>
</tbody>
</table>