USING AN IS FRAMEWORK TO ASSESS THE IMPACT OF SOUTH AFRICA’S CENTRAL CHRONIC MEDICINE DISPENSING AND DISTRIBUTION PROGRAM

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Road map

- Background on CCMDD in South Africa
- Study design issues
  - “best case” and “reality” scenarios
- Implementation science framework for study design and measures
Attrition from public sector HIV clinics

- Clinic congestion
- Staff shortages
- Decreased quality
- Key drivers of attrition for people on ART – ~2/3 in care at 5 years

Govindasamy, 2012; Haas, 2018; Image: Institute for healthcare improvement www.ihi.org
CCMDD (Central Chronic Medicine Dispensing and Distribution)

- Clinic
- Prescription
- Pharmacy Direct
- Pick-up Points
- Defaulter notification
- Drug delivery
- Drug return
- SMS
- Patient
Research question

- **Would community pick-up points**—like churches, community centers— for ART and NCD medication dispensing be effective?

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
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<tbody>
<tr>
<td>More convenient for patients</td>
<td>Less adherence support</td>
</tr>
<tr>
<td>Decongest clinics</td>
<td>Fewer opportunities to identify problems</td>
</tr>
<tr>
<td>May be easier to scale up</td>
<td>May be easier to “fall through the cracks”</td>
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</table>
Scenario 1: best case – AKA you set the rules

You want to evaluate the individual-, clinic-, and community-level impacts of the CCMDD program *before* adoption in 10 public sector clinics in Umlazi township.

- All clinics must implement the program eventually.

How would you design the study?
One possibility: stepped-wedge design

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Time</th>
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<tbody>
<tr>
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<td>6</td>
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- **Control**: Unexposed to CCMDD
- **Intervention**: Exposed to CCMDD
Scenario 2: reality
AKA you are not in charge

You approach the Department of Health about evaluating the individual-, clinic-, and community-level impacts of the CCMDD program *after* adoption in the 10 clinics in Umlazi.

- Clinics report ~20% of eligible patients decline participation in CCMDD

How would you design the study?
Using observational data to evaluate treatment effects:
Propensity score matching

CCMDD enrollees
“treatment”

CCMDD non-enrollees
“controls”
Virologically Suppressed
What to Measure?
What to Measure?

- Adoption
- Reach
- Implementation
- Effectiveness
- Maintenance

Clinics use pickup points

Eligible patients enroll in CCMDD

Access ART in the community

Virologically suppressed

Suppression & implementation at 36mo

RE-AIM
### Example questions informed by PRISM domain

<table>
<thead>
<tr>
<th>PRISM domain</th>
<th>Sample questions</th>
<th>Stakeholder</th>
</tr>
</thead>
</table>
| **Organizational Readiness** | How is the program consistent with [detracts from] the work responsibilities of providers?  
                                | What could be done to make CCMDD more compatible with the clinic?                  | Clinic Staff and Administrators                 |
| *(Motivation: compatibility)* |                                                                                  |                                                |
| **Organizational Readiness** | What kinds of supports are there, in terms of trainings or technical assistance, for staff to implement the program?  
                                | What kind of feedback do you receive on performance?                                | Clinic Staff and Administrators                 |
| *(Intervention-specific capacity)* |                                                                                  |                                                |
Study overview

Aim 1 – **patient level** (cohort study)
- What factors influence uptake and outcomes on CCMDD?

Aim 2 – **clinic level** (mixed methods)
- What are facilitators and barriers to CCMDD adoption?

Aim 3 – **community level** (EHR data)
- Does CCMDD expansion lead to higher number of people virologically suppressed in community? LTFU?
Conclusion

- We need to study strategies to promote long-term ART – implementation matters!
- CCMDD has potential to offer more convenient services, decongest clinics.
- This study is an example of how we can use observational data and an IS framework to inform Department of Health and policy makers.
CCMDD Study Team

**South African team**
Hilary Thulare (AIDS Healthcare Foundation)
Sandile Tshabalala (KZN Department of Health)
Sabina Govere (AIDS Healthcare Foundation)

**US Team**
Robert Parker (MGH)
Laura Bogart (RAND)
Bridget Bunda (MGH)

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# RE-AIM evaluation

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Main outcome</th>
<th>Aim</th>
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<tbody>
<tr>
<td>Reach</td>
<td><strong>Patient-level</strong> measure of % eligible patients prescribed CCMDD, % eligible using CCMDD, and predictors of program uptake by patient factors</td>
<td>Aim 1</td>
</tr>
<tr>
<td>Effectiveness</td>
<td><strong>Patient-level</strong> measure of virologic outcomes comparing CCMDD participants with eligible non-participants at 12 months</td>
<td>Aim 1</td>
</tr>
<tr>
<td>Adoption</td>
<td><strong>Clinic-level</strong> measures of extent of CCMDD implementation and determinants of adoption identified using PRISM domains</td>
<td>Aim 2</td>
</tr>
<tr>
<td>Implementation</td>
<td>Qualitative interviews with patients, staff and managers on barriers and facilitators</td>
<td>Aim 2</td>
</tr>
<tr>
<td>Maintenance</td>
<td><strong>Clinic-level</strong> measure of % virologically suppressed at 3 years and changes in virologic suppression over time, based on baseline organizational factors</td>
<td>Aim 3</td>
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