Effect of Tracing on Time to Return for LTFU HIV Patients

David Chen & Max Murphy

10/14/2019

Group Introduction

- David Chen
  - Masters of Biostatistics with interests in approaches to optimal dynamic treatment and psychiatric disorders
- Max Murphy
  - PhD. Biostatistics working on malaria transmission dynamics jointly with Dr. Rasmus Nielsen at UCB and Dr. Bryan Greenhouse at UCSF

Study Background

- A study was conducted in Zambia to improve estimates of baseline mortality due to HIV
- A subset of individuals who were lost to follow up were assigned to receive extra care through follow up outreach by community health workers
- What are the impacts of this type of intervention
  - Returning people to care
  - Maintaining care over time.

Target Population

Pop 1

Zambian, HIV positive adult patients on ART who are lost to follow-up ($\geq$ 90 days late for their last appointment or $\geq$ 180 days without clinic visit for patients with no appointment recorded at last visit).

Pop 2

Patients satisfying the above criteria who have also already returned to care.

Data 1

Data is $O = (W, A, \tilde{T}, \Delta)$, where $\tilde{T} = \min(T, C)$ and $\Delta = \mathbb{I}(T \leq C)$

- $W =$ province, facility type, facility size, gender, marital status, education, income, age, WHO HIV stage at enrollment, medication possession ratio, enrollment CD4, initiation CD4, last CD4, HIV status disclosed, time enrolled, time on ART, time lost, number of prior lost events
- $A =$ Assignment to tracing as defined as in-depth review of paper and EMRs, phone calls, in-person tracing in community (using bicycles, public transport, study vehicles, or motorcycles) by peer health workers at least 3 times.
- $T =$ Time to patients' first post-LTFU clinic visit
- $C =$ Time to end of study

Data 2

Data $O = (W, A, \tilde{T}, \Delta)$, where $\tilde{T} = \min(T, C)$ and $\Delta = \mathbb{I}(T \leq C)$

- W stays the same
- A stays the same
- $T =$ Time to patients' first missed post-return appointment or 90 day period without visit or appointment (relapsed LTFU)
- $C =$ Time to end of study

Target Parameter

$S(t) \mid A = 1$ and $S(t) \mid A = 0$ where

$$S_a(t) = \prod_{s \in [0,t]} \{1 - d\lambda_{0,a}(s)\}$$
$$= \prod_{i=1}^{K} \{1 - \lambda_{0,a}(s_i)\}$$

We're interested in comparing the impact of tracing assignment on (1) time to return to care and (2) retention in care.

Challenges

- Prior experience suggests we will likely be utilizing simulation heavily because our available data may not be suited for this analysis.
  - Actual delivery of treatment occurs over an unknown period of time, so we'll be assuming A is delivered immediately upon being LTFU
  - The full data set is very large, often results in computational challenges

Contributions

We anticipate work will be conducted jointly across all tasks with equal contributions by both parties