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Using Social Networks to Reach Individuals With Low CD4 at High Risk of Death

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BACKGROUND

- *Can a social network strategy based on outreach to social contacts of HIV+ persons in care identify HIV+ individuals with low CD4+ (CD4+<200 cells/mm^3) who are out of care?*

Individuals with low CD4 are at high risk of death without antiretroviral therapy. Those with low CD4 who are out of care may have social connections to HIV+ individuals are are in care. Social networks share risk factors and health behaviors and may represent and opportunity to increase engagement in care among high risk individuals

METHODS

- Adult (≥15 years) residents enumerated during a 2013-2014 census in 32 rural Kenyan and Ugandan communities in the SEARCH Study (NCT01864603) named social contacts in five domains: health, money, emotional support, food, and free time.
- Named contacts were matched to enumerated residents to build social networks among 150,395 adult residents; 135,484 (90%) were tested for HIV; 117,593 had at least one contact and were included in analyses.
- **Target population:** HIV+ adults with CD4 < 200 and out of care
- We evaluated strategies for reaching this target population based on outreach to 1st degree contacts of two index populations:
  - **Index population 1:** all HIV+ adults in care
  - **Index population 2:** HIV+ adults in care with CD4<350.
- For each strategy we calculated:
  - **Coverage:** % of the target population potentially identified
  - **Number needed to screen** (NNS): # of persons outreached to per target individual identified
  - Ratio of coverage and NNS of each index population relative to the other.
- Clustering was quantified with an assortative mixing coefficient
- *p*-values based on randomly permuting node labels

Outreach through the social networks of HIV+ persons in care may be an effective way to reach HIV+ with CD4 < 200 cells/mm^3 who are out of care

RESULTS

Figure 1. Study population

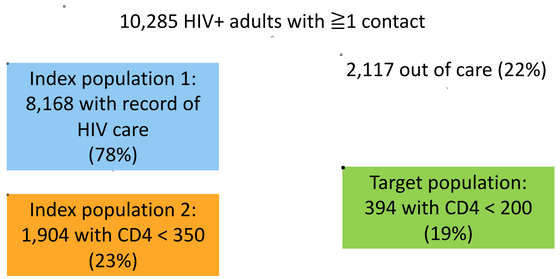


Table 2. Average degree and assortative mixing coefficient for index and target populations

	Average degree (# 1st degree contacts)	Assortative mixing coefficient
All HIV+ in care	4.3	0.10
CD4 < 350 in care	4.4	0.02
CD4 < 200 out of care	4.1	0.009

Table 1. Coverage, Coverage Ratio, Number needed to screen (NNS), and NNS Ratio for 1) a strategy of outreach to 1st degree contacts of HIV+ with CD4<350; and 2) a strategy of outreach to 1st degree contacts of all HIV+ persons to reach the target population of HIV+ individuals with CD4<200 not on ART

Index population	Coverage	Coverage ratio (vs index = CD4<350)	Coverage ratio (vs index = all HIV+)	Number needed to screen (NNS)	NNS ratio (vs index = CD4 <350)	NNS ratio (vs index = all HIV+)
CD4 < 350 in care (n = 1688)	15% (p<0.001)	--	0.35	31 (p<0.001)	--	0.60
All HIV+ in care (n = 6988)	40% (p<0.001)	2.85	--	52 (p<0.001)	1.68	--

CONCLUSIONS

- HIV+ with CD4 < 200 who are out of care have social connections to other HIV+ who are in care
- Outreach through the social networks of HIV+ persons in care may be an effective way to reach HIV+ with CD4 < 200 who are out of care
- Outreach through all HIV+ adults in care reaches more of the target population, but requires outreach through more individuals

ADDITIONAL KEY INFORMATION

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Collaborators

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