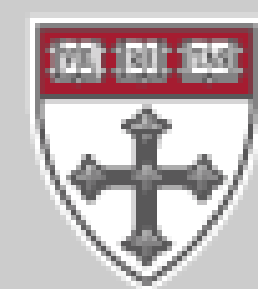


Does HIV Treatment Availability Encourage People to Learn their HIV Status?



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Motivation

Many HIV-infected persons in South Africa, especially men, do not know their status, a crucial first step to obtaining care. Expansion of HIV treatment may increase disclosure, reduce stigma, and increase testing leading to improved progression through the cascade of care. We estimate how a person's ART eligibility affects their household member's HIV status knowledge.

Methods

Data

Data are from a longitudinal demographic surveillance site in KZN, South Africa and by the Africa Health Research Institute.

- Socio-demographic data collected via routine household surveys
- CD4 counts and ART enrollment are collected in clinics
- Datasets linked at the individual level
- We used the household survey and clinic-based data collected between 2005 and 2013.
- N= 22,965 individuals in 5697 households

Analysis

We conducted a regression discontinuity analysis that exploits the CD4 count threshold for ART eligibility in South Africa to evaluate the causal intent-to-treat (ITT) effect of ART eligibility on a household member's knowledge of their own HIV status.

Identification strategy:

We use a regression discontinuity design based on the threshold rule (CD4<200) used to determine ART eligibility in South Africa during the study period. Regression discontinuity (RD) designs can generate unbiased causal estimates when a decision rule assigns a treatment to patients who score above (or below) a cutoff value on a continuously measured variable. Because there is some random noise in CD4 count measurements, patients near the cutoff value are similar in both observable and unobservable characteristics. The only difference is in treatment assignment, therefore patients with a baseline CD4 count just over 200 serve as a valid counterfactual to those with a baseline count just under 200. We can interpret the difference in outcomes between those just above vs. just below the cutoff as the true causal effect of the treatment.

Exposure and outcome:

Exposure status is assigned based on the CD4 count of the first tester in each household.

- Household members of an individual with a baseline CD4 count below 200 (the cutoff for eligibility in South Africa prior to August 2011) are considered exposed, while those household members of individuals whose baseline test was above the 200 cutoff are unexposed. (Fig. 1)
- The primary outcome is an individual's self-reported knowledge of their HIV status.
- We stratify the analysis by gender of the household member to assess the effect separately for men.

Estimation:

Comparing outcomes at the threshold point for ART eligibility is done using a linear regression with a binary variable for CD4 count below 200. Standard errors are clustered at the household level.

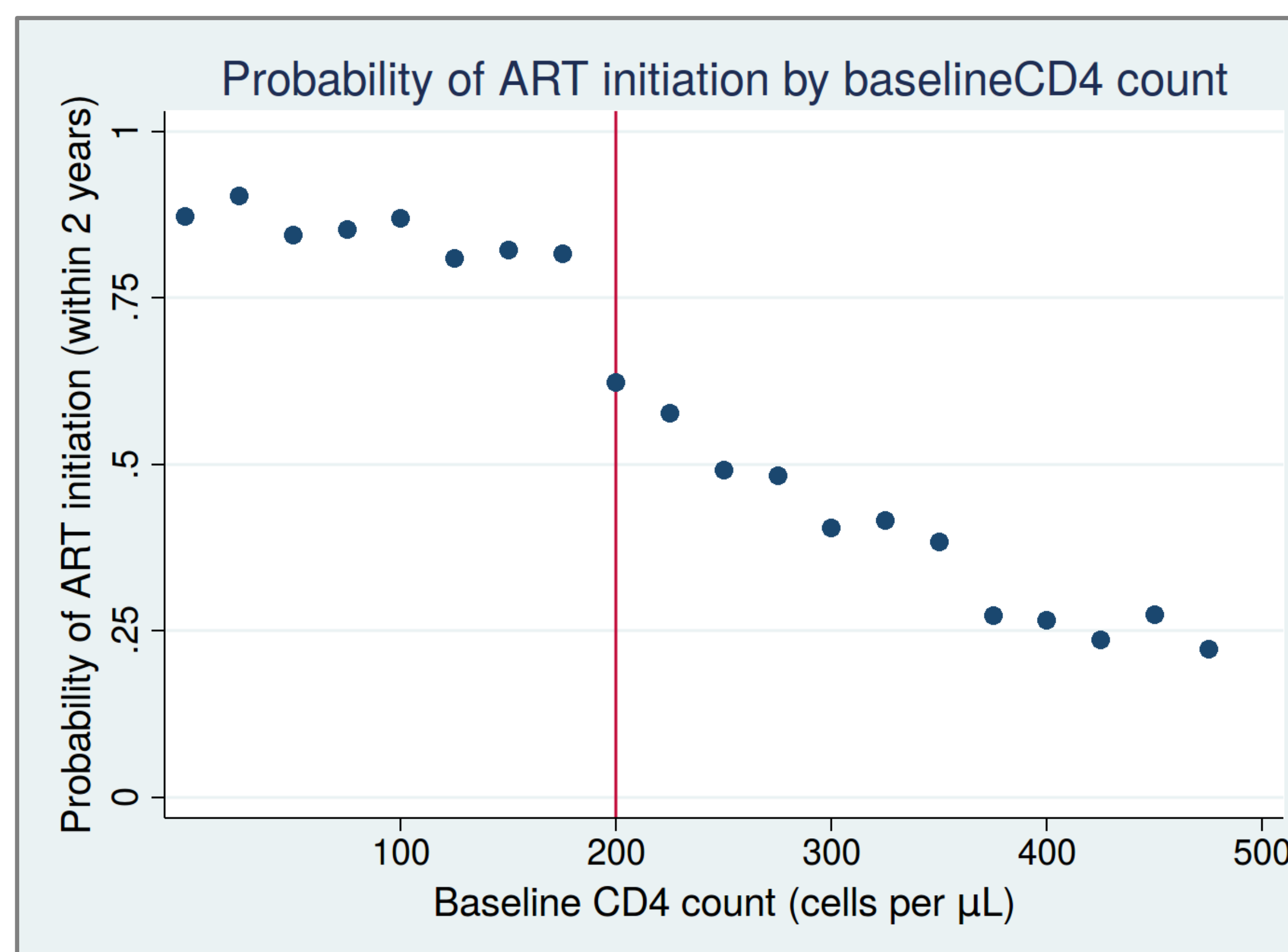


Figure 1: The probability that an individual enrolls on ART jumps at the CD4=200 cutoff, allowing an intent-to-treat comparison between households with an ART-eligible member and those without.

Results

ART led to a 17 percentage point increase in HIV status knowledge among the patient's male household members relative to a baseline level of 7% (17 pp, 95% CI 12, 22). (Fig. 2)

- There was no effect among female household members, possibly because of higher baseline rates of status knowledge (17% vs 7% in men) or because most first testers were female (76% of households).
- The results were robust to variation in bandwidths and functional forms, inclusion of covariates, and falsification tests.

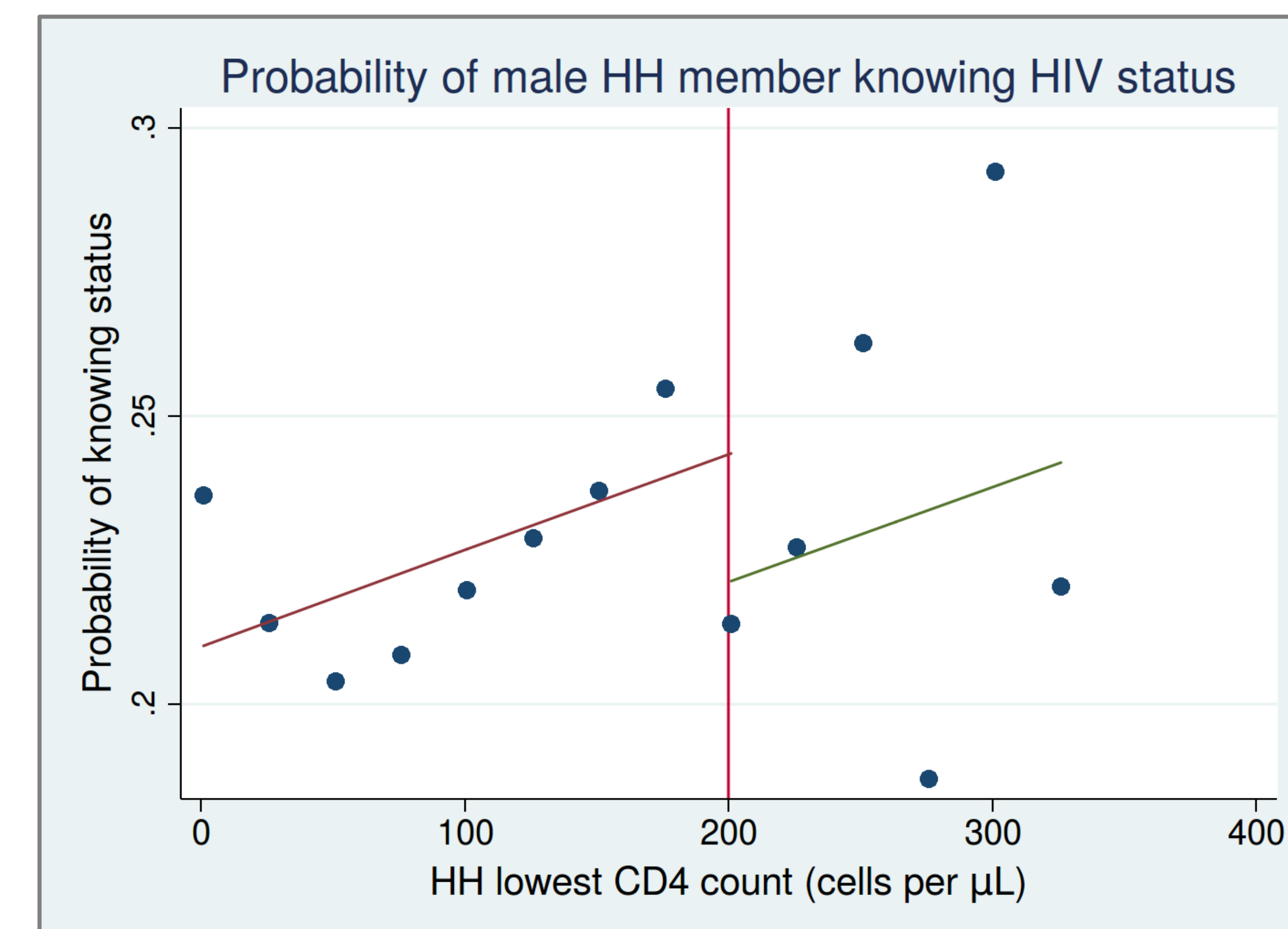


Figure 2: The probability of male household members knowing their HIV status is discontinuously higher for those where the first tester in the household was eligible for ART (below CD4=200) compared to those just above.

Conclusions

Living with someone who is eligible for ART increased men's likelihood of reporting that they knew their HIV status. Although prior studies have noted a correlation between ART expansion and testing rates, this study is among the first to causally link ART initiation to increased awareness of HIV status among household members. This effect may be due to increased testing, or to updating of beliefs about HIV status based on partner's status. In designing the next generation of ART programs, such household-level spillover effects could be harnessed to increase HIV status knowledge and ART uptake among men.

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