Alcohol Use is Associated with Incident TB Infection in HIV+ and HIV- Ugandan Adults

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BACKGROUND

Globally, an estimated 10% of TB disease is attributable to alcohol use. People who use alcohol may be at increased risk of TB disease as a result of spending more time in social venues (e.g. bars) where TB transmission is high, however the relationship between alcohol use and incident TB infection is unknown.

OBJECTIVE

To evaluate the associations between alcohol use and incident TB infection in a longitudinal cohort of tuberculin skin test (TST) negative adults

METHODS

Study Population & Design:

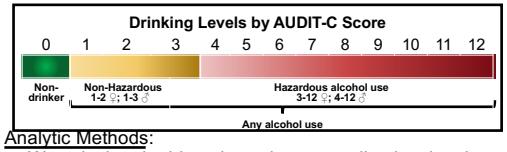
- Tuberculin skin test (TST) negative cohort of adults (≥15 years of age) in 4 rural communities in Eastern Uganda. All households participated in a longitudinal household survey nested in the SEARCH study (NCT:01864603). Households were randomly sampled and enriched for persons living with HIV.
- Participants with TST induration of 0mm at baseline (2015-16) were included in the TST negative cohort
- Follow-up TSTs were placed 1 year later (2016-17)

Primary Outcome:

- **Incident TB infection**, defined as a change in TST induration at reassessment from:
  - 0mm to >5mm if person living with HIV (PLWH)
  - 0mm to >10mm if HIV status unknown or negative

Exposure Variables:

- Alcohol use was assessed using the Alcohol Use Disorders Test-Consumption (AUDIT-C) and included:
  1. **any alcohol use** (AUDIT-C>0) vs. **no use** (AUDIT-C=0)
  2. **hazardous use** (AUDIT-C ≥3 for women, ≥4 for men) vs. **no use/non-hazardous use**



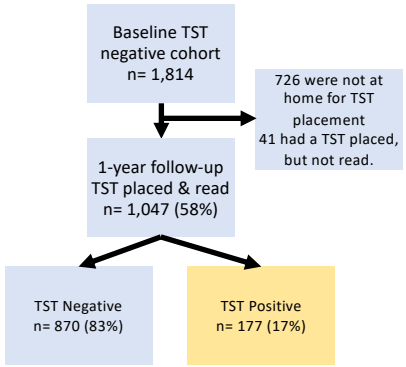
Analytic Methods:

- We calculated odds ratios using generalized estimating equations and used inverse probability weighting to account for incomplete measures.
- All models were adjusted for age, gender, household wealth, BCG, HIV status, and household TB contact.

People who use alcohol have *two-times higher odds* of incident **tuberculosis infection** compared to people who do not drink

RESULTS

Study Flow Diagram



Characteristics of participants

	Full cohort (n=1047)
Age (median IQR)	37.8 (21-49)
Female	700 (67%)
HIV positive	269 (26%)
Alcohol use Any Hazardous	 84 (8%) 36 (3%)
Household TB contact	21 (2%)
TST positive	177 (17%)

Association between Alcohol Use and Incident TB Infection

- At one-year follow-up, 177 (17%) adults met our definition of incident TB infection.
- Incident TB infection was more common in persons who reported any alcohol use compared to no use (27% vs. 16%, p=<0.01) and more common among people with hazardous alcohol use (16% vs. 39%, p<0.01) compared to nondrinkers/non-hazardous drinkers.
- **Alcohol use was positively associated with incident TB infection (aOR 2.0, 95% CI: 1.02-3.81, p=0.04) compared to no alcohol use.**
- Hazardous alcohol use was associated with incident TB infection (aOR 2.8, 95%CI: 1.1-7.1, p=0.03) compared to non-drinkers/non-hazardous drinkers.

RESULTS (cont.)

Predictors of Incident TB infection

	OR	aOR (95% CI)
Any alcohol use	2.0 (1.2-3.3)**	**2.0 (1.0-3.8)****
Female sex	0.9 (0.6-1.2)	0.9 (0.6-1.4)
Age	1.0 (0.99-1.00)	1.00 (0.99-1.0)
HIV-positive	0.9 (0.6-1.3)	1.03 (0.40-2.67)
Household TB contact within year prior	1.2 (0.4-3.5)	1.68 (0.52-5.30)
BCG Vaccination	1.8 (1.0-3.2)*	2.1 (1.0-4.4)*
Wealth Tertile Low Middle High	 Ref 0.6 (0.4-1.0) 0.5 (0.4-0.9)	 0.6 (0.3-1.1) 0.62 (0.35-1.1)

*=p<0.1; p<0.05

CONCLUSIONS

- In this longitudinal cohort of adults in Uganda, incident TB infection was high at 17%
- Incident TB infection was positively associated with alcohol use and increased with higher level of alcohol use (i.e. hazardous drinking)
- Incident TB was not associated with HIV-status or a known household TB contact.
- TB prevention efforts that focus on reducing transmission in venues shared by drinkers may decrease the latent TB reservoir in this TB risk group

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