High Diagnostic Yield of a Novel HIV-TB Case Finding Strategy at Social Drinking Venues in Zambia

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BACKGROUND

- The high prevalence of unhealthy alcohol use (**UAU**) in sub-Saharan Africa is strongly associated with HIV acquisition and a greater risk of tuberculosis (**TB**).
- Integrated HIV and TB active case finding (**ACF**) strategy targeting persons with UAU at social drinking venues (**SDV**s) could be an efficient and scalable approach for improving the detection of both diseases in high-prevalence settings, but the potential effectiveness, acceptability, and feasibility is unknown.

METHODS

- A pilot study was conducted to evaluate a systematic HIV and TB ACF strategy among individuals at SDVs in two high HIV/TB burden communities in Lusaka, Zambia.
- SDVs in each community were systematically mapped; a simple observation-based score was used to identify venues with the highest TB transmission potential.
- Eligible participants were: (1) age ≥18 years, (2) an SDV patron or employee, (3) not currently receiving TB treatment, (4) willing to get tested for TB, and (5) without signs of intoxication.
- All participants had rapid HIV testing if they had a negative or unknown status.
- All participants were evaluated for TB regardless of symptoms using sputum Xpert Ultra and culture.
- TB symptoms were assessed and a digital chest X-ray (**CXR**) was conducted and read using qXR (qure.ai) computer-aided detection (CAD) software.
- Microbiologically-confirmed TB was defined by a positive sputum Xpert (including trace if no TB disease in the last 5 years) or culture result.
- Diagnostic yield and associated number needed to test (**NNT**) were determined for both new HIV and TB diagnoses.



Figure 1. Pictures from the pilot study demonstrating the feasibility of the strategy including portable CXRs (right)

HIV-TB case finding at social drinking venues in Zambia was acceptable, feasible, and detected previously undiagnosed HIV and TB in a large proportion of participants

RESULTS

Figure 2. Study flow diagram

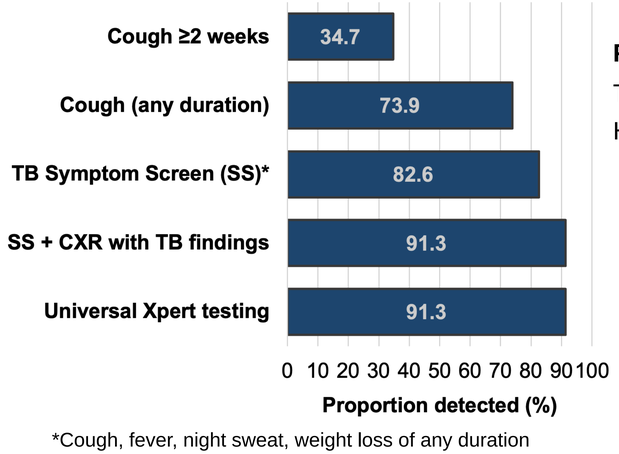
Table 1. Participant characteristics

	Overall (n=440)	Patrons (n=388)	Staff (n=52)
Age median (IQR)	37 (30-44)	37 (30-44)	38 (30-43)
Male Sex	312 (70.9)	284 (73.2)	28 (53.9)
Alcohol use disorder*	425 (96.9)	383 (98.7)	42 (80.8)
Smoking (current)	212 (48.2)	194 (50.0)	18 (34.6)
Known HIV diagnosis	134 (30.5)	116 (29.9)	18 (37.5)
Prior TB disease	71 (16.1)	64 (16.5)	7 (13.5)
Attend a SDV ≥6 days/ week	302 (68.6)	254 (65.5)	48 (92.3)
Typical SDV visit# duration, median (IQR)	6 (4-12)	6 (4-12)	12 (9-15)

*Defined by a positive AUDIT-C screen; #Typical shift for staff

Figure 3. Yield of new HIV and TB diagnoses among participants

Figure 4. Performance of screening algorithms for detecting microbiologically-confirmed TB (n=23)



*Cough, fever, night sweat, weight loss of any duration

RESULTS (cont.)

- 582 screened for eligibility, 440 (75.6%) included **(Fig. 2)**
- 423 (96.1%) previously tested for HIV, 134 (30.5%) known HIV positive, of which 127 (94.8%) were receiving ART.
- 81.0% (n=248/306) and 92.0% (n=405/440) felt it was likely they would contract HIV and TB, respectively, in the future.
- 3.3% (95%CI: 1.8-5.9; n=10) had a new HIV diagnosis (**NNT=30**), with a trend toward higher HIV yield among patrons (**Fig. 3**).
- 5.2% (95%CI: 3.5-7.7; n=23) had a new TB diagnosis (**NNT=19**), with a trend toward higher TB yield among staff (**Fig. 3**).
  - 60.9% (n=14) had a trace positive Xpert Ultra result.
- ≥1 new TB diagnosis at 7 (63.6%) of 11 venues included.
- 73.9% of persons with TB (n=23) had a cough; TB symptom screening detected 82.6%, and symptom plus CXR screening further improved performance (**Fig 4**).
- 99.2% of patrons and 100% of staff would participate in similar, future ACF activities if periodically offered by MOH.
- The factors most motivating participation in a future HIV-TB ACF program were: availability of multi-disease screening (97.7%) and learning someone at the SDV had TB (96.6%).

CONCLUSION

- HIV-TB ACF at SDVs was highly efficient and is a promising strategy for improving the detection of both HIV and TB.
- Additional research is needed to evaluate the effectiveness, implementability, and sustainability of this strategy at scale.

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