

# Yield of Tuberculosis Contact Tracing among Veterans after Casual Exposure in Outpatient Clinic Setting

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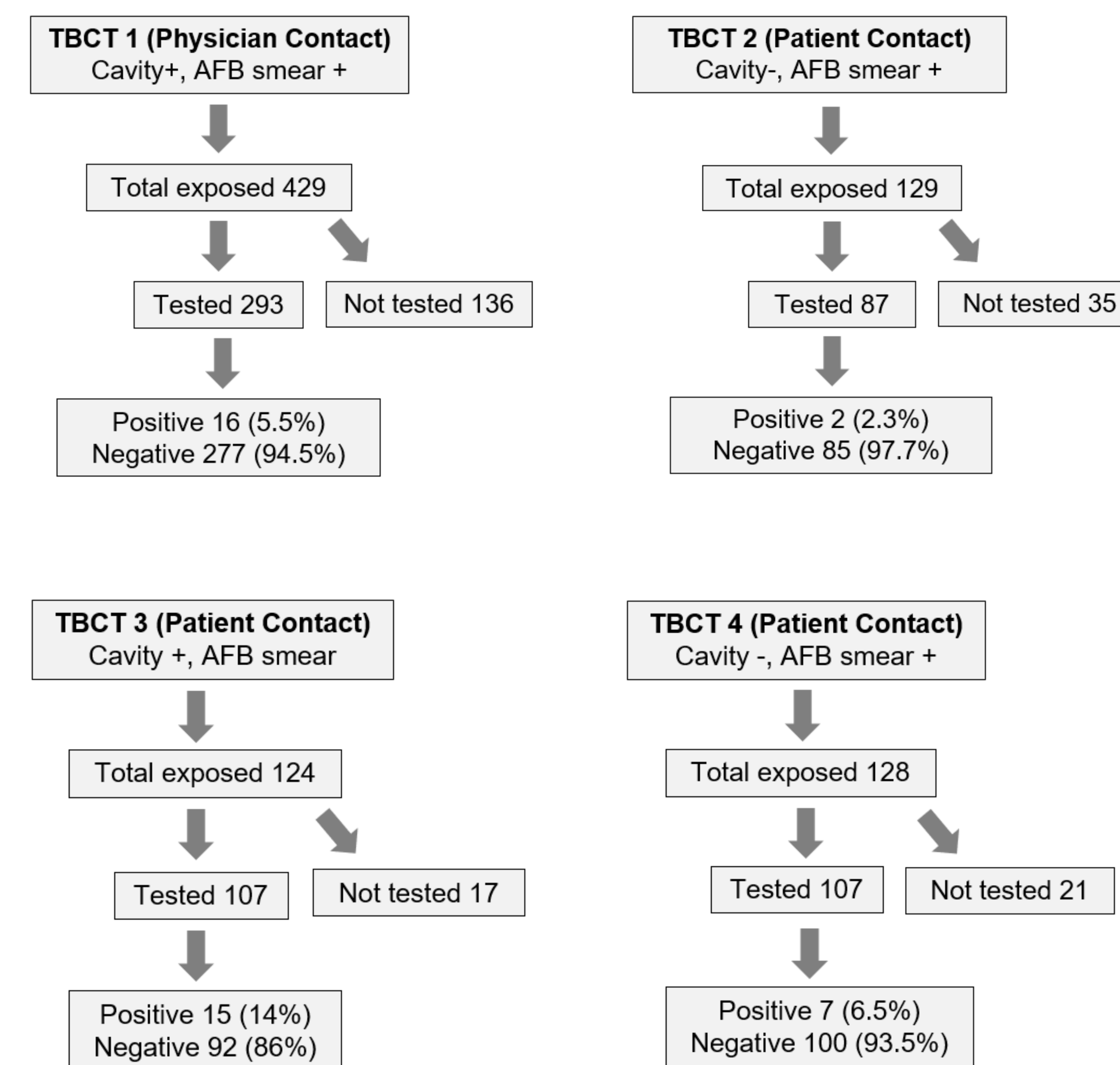
## Introduction

- Tuberculosis contact tracing (TBCT) is essential to detecting transmission and identifying new latent TB cases before they progress to active infection.
- The estimated prevalence of latent TB in California is 6%<sup>1</sup>.
- National and state guidelines emphasize focusing on long-duration and certain high-priority contacts<sup>2,3</sup>.
- Examples of high-priority contacts for TBCT include people living with HIV and those with certain medical comorbidities<sup>3</sup>.
- While data are limited, there is evidence for transmission in short duration/casual contact<sup>4</sup>.
- We describe the yield of TBCT among a high-priority cohort after casual exposure to active TB cases at VA clinics.

## Methods

- Between 2016-2018, VA Northern California Health Care System performed 4 episodes of TBCT among casual contacts of active TB cases in an outpatient clinic setting (Figure 1). IRB approval was obtained.
- Using check-in tracking software, we identified all patients who checked into a shared waiting area 1 hour before to 1 hour after the index patient's appointment. In the instance of the physician index case, all patients who kept appointments were included. Staff exposures were identified by Occupational Health (OH).
- Patients were tested via interferon-gamma release-assay (IGRA). Per OH protocol, staff contacts were tested by either IGRA or purified protein derivative (PPD). When possible, tests were offered at < 4 weeks and ≥ 8 weeks after exposure. If baseline was not available, tests were done at ≥ 8 weeks after exposure.
- High risk contacts were those with comorbidities as defined by guidelines<sup>3</sup>.
- For those who had a positive IGRA or PPD, the TBCT team collected data on TB symptoms, history of positive TB testing or prior TB exposure.
- Patients who had positive TB tests were defined as 'prevalent' cases and those who did not have prior documentation of a positive TB tests as 'new positive' cases.
- Prevalent and new positive cases were compared between different groups based on index patient characteristics. P-value was calculated using 2x2 chi-square test with a significance level of .05.
- Contacts with positive tests were offered infectious diseases consultation.

**Figure 1. Tuberculosis contact tracing in VA clinics 2016-2018**



**Table 1. Patient Characteristics**

Total	593
Age, years	65 (mean)
Sex	
Men (%)	571 (96.3)
Women (%)	22 (3.7)
High Risk (%)	305 (51)
DM (%)	223 (38)
CKD >= 3 (%)	112 (19)
Immunosuppressive med (%)	22 (4)
HIV (%)	4 (1)
Chronic alcoholism (%)	11 (2)
Head or Neck cancer (%)	5 (1)
Hematological and reticuloendothelial disease (%)	16 (3)
Malabsorption (%)	1 (0)
Low body weight (%)	7 (1)

**Table 2. Prevalence of IGRA positivity and rate of new positive IGRA (includes patient contacts only)**

	TBCT 1	TBCT 2	TBCT 3	TBCT 4	Total
Total Positive	16 (5.5%)	2 (2.3%)	15 (14%)	7 (6.5%)	40 (6.7%)
New Positive	10 (3.4%)	1 (1.1%)	9 (8.4%)	6 (5.6%)	26 (4.4%)
Total Tested	293	87	107	107	593

**Table 3. TB test positivity among exposed staff**

Staff	TBCT 1	TBCT 2	TBCT 3	TBCT 4	Total
Exposed	45	34	42	9	130
Tested	45	33	37	9	124
Positive	1	0	0	0	1

**Table 4. Prevalence of positive TB test and rate of new positive TB test among those who had contact with physician index case vs. non-physician index case (includes patients and staff contacts)**

	Physician Contact	Non-physician Contact	P-Value
Total Positive	17(5.0%)	24(6.3%)	0.46
New Positive	11(3.3%)	16(4.2%)	0.50
Total Tested	338	380	

**Table 5. Prevalence of IGRA positivity and a new positive IGRA among those with high risk vs. without high-risk comorbidities (patients contacts only)**

	High Risk	Not High Risk	P-value
Total Positive	21(6.9%)	19(6.6%)	0.89
New positive	15(4.9%)	11(3.8%)	0.51
Total	305	288	

## Results

- A total of 810 patients and 130 staff were exposed to 4 index cases (1 physician and 3 patients) and were offered TB testing (Figure 1).
- 593 patients (73%) presented for testing. Of these 96.3% were men and mean age was 65. 305 (51%) had comorbidities placing them as high priority contact (Table 1).
- A total of 40 (6.7%) patients tested positive for latent TB; 26 (4.4%) had no documentation of a prior positive TB test (Table 2).
- Among the 130 staff exposed in TBCT 1-4, 124 staff were tested, 1 test returned positive after exposure to a physician contact with TB.
- Patients exposed during a face-to-face visit to a physician who had cavitary active TB (TBCT 1), did not demonstrate a higher rate of IGRA positivity or new positive IGRA compared to exposures with patients through shared waiting rooms (TBCT 2-4) (Table 4).
- The rate of IGRA positivity or a new positive IGRA between high and low risk patients was not statistically significantly different (Table 5).
- Among 40 contacts with positive testing, 29 completed infectious diseases consults or PCP's evaluation and 8 patients were offered for treatment for latent TB.

## Conclusions/Limitations

- Given casual nature of exposure, TBCT among high risk population in outpatient clinics was low yield revealing a prevalence similar to California's estimated background prevalence.
- Presence versus absence of high-risk comorbidities and having direct contact with a physician with TB versus sharing a waiting room with a patient with TB were not associated with increased prevalence of TB test positivity/new TB test positivity.
- Only one of the staff had a positive TB test after exposure and that was to the physician index case. No staff tested positive after exposure to patient contacts.
- Limitations were that the exact duration or distance of casual contact was not known. Also, this is a study in a single health system/region.
- Decisions for TBCT should be individualized depending on the index case and contact characteristics. However, based on our findings, TBCT might not be needed in casual patient contacts of active TB in an outpatient clinic setting even among a population with high risk comorbidities. Contact tracing may be of greater utility for staff, with longer duration/closer contact or for other infectious diseases.

## References

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- Golub JE et al. Transmission of Mycobacterium tuberculosis through casual contact with an infectious case. Arch Intern Med. 2001 Oct 8;161(18):2254-8.