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ZTV HOPE: ACTIVE VERSUS PASSIVE CASE FINDING - MAKING THE CASE FOR MIXED APPROACHES

Ms Nga Nguyen, Associate HIV-TB Programs Director, Freundeskreis für Internationale Tuberkulosehilfe e.V. (FIT), Vietnam

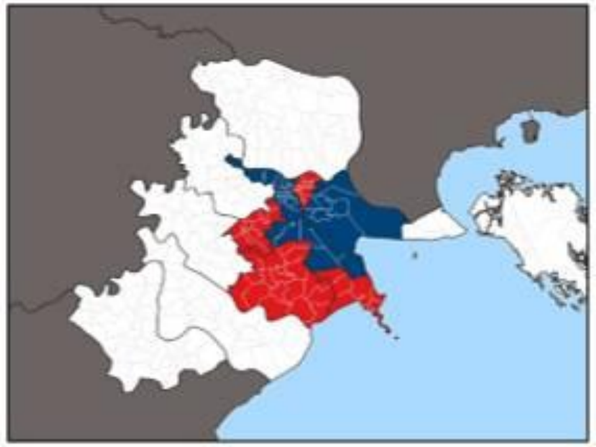
GENERAL PROJECT INFORMATION

1. **Project name**: Zero TB Viet Nam Health Economic & Operational Performance Evaluation (ZTV HOPE)
2. **Sponsor**: L'Initiative (France)
3. **Locations**: Hai Phong, Can Tho and Quang Nam
4. **Duration**: 06/2020 – 12/2023
5. **Total grant amount**: 450.000 Euro

INTERVENTION AREAS

Viet Nam

1) Hai Phong



Intervention Districts
Duong Kinh
Hai An
Hong Bang
Le Chan

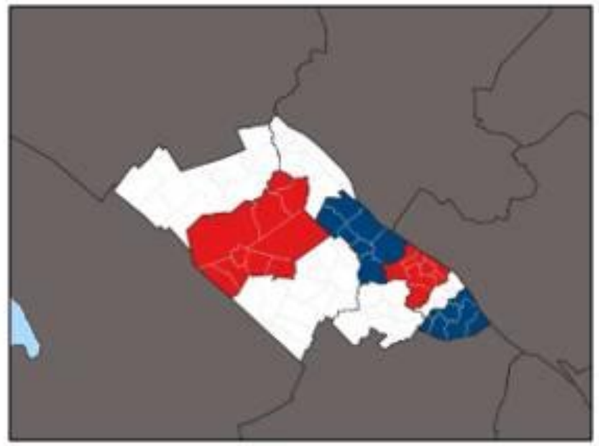
Control Districts
Do Son
Kien An
Kien Thuy
Ngo Quyen

2) Quang Nam

Intervention Districts
Hoi An

Control Districts
Tam Ky

3) Can Tho



Intervention Districts
Cai Rang
O Mon

Control Districts
Binh Thuy
Co Do

Map Legend

- Intervention District
- Control District
- Non-Intervention & Non-Control District
- Outside Province

TARGET POPULATIONS

1. Household contacts

2. Community contacts

Key populations

3. Health-seeking persons

5. Elderly (≥50)

4. Old TB patients
People with TB symptoms

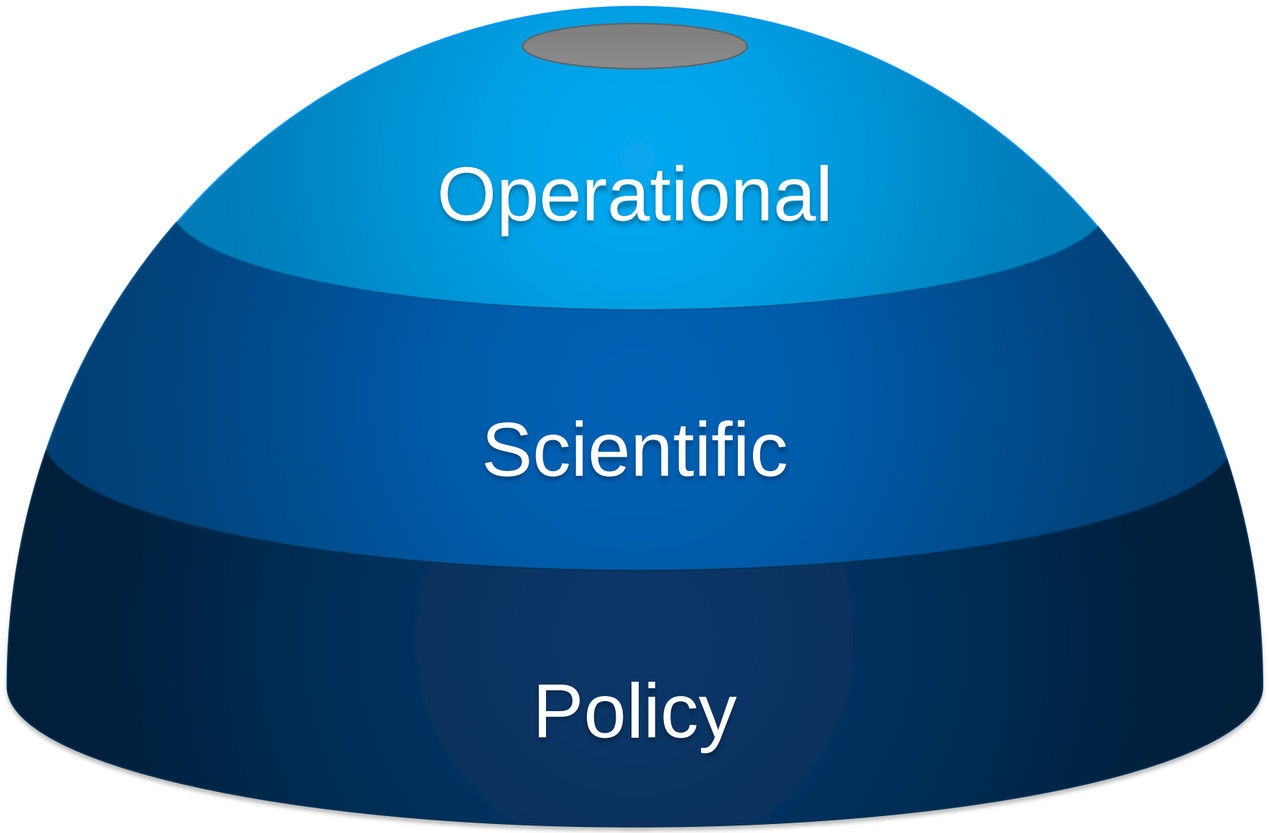
INTERVENTIONS

1. Enhanced contact investigations using chest X-ray (CXR) screening and the Xpert MTB/RIF (Ultra) assay

2. Community-based CXR screening events

3. TB infection testing and TB preventive treatment (TPT) provision

PROJECT OUTPUTS



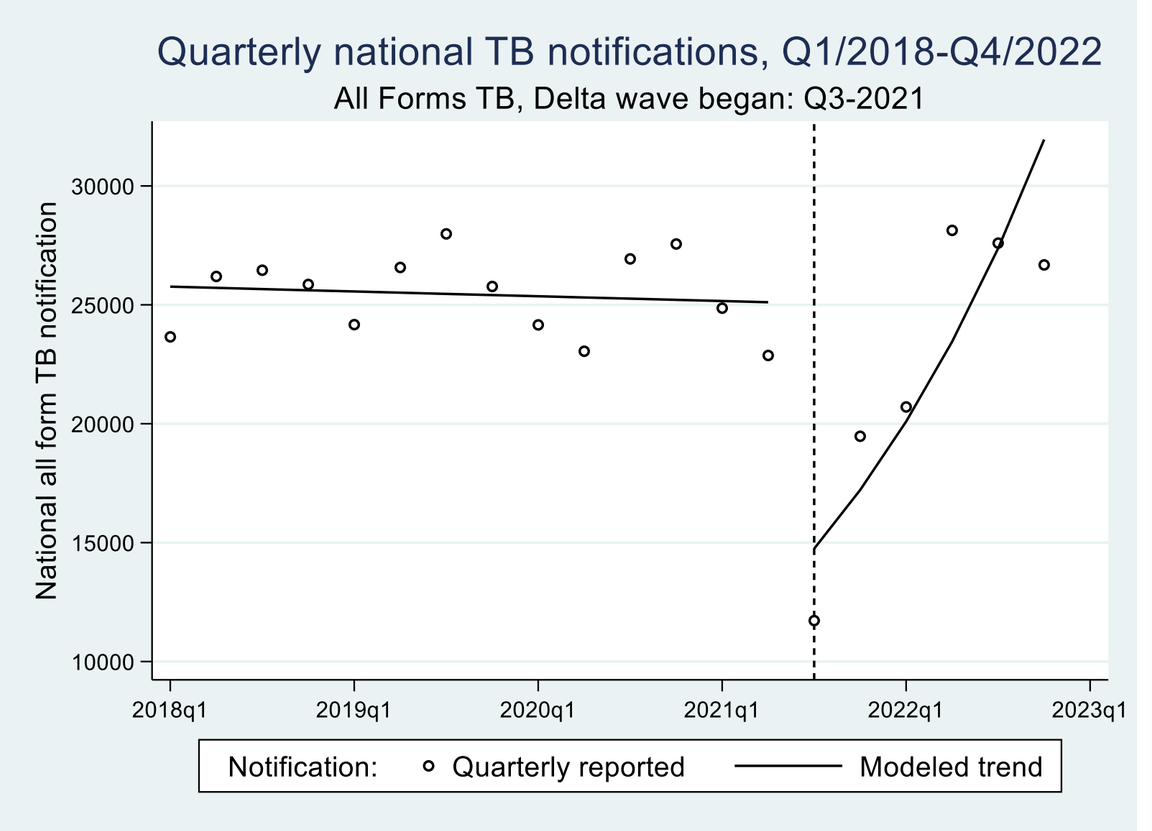
- 690 persons with active TB
- 939 persons with LTBI

- 2 abstracts at int'l conferences
- 2 published manuscripts

- 1 baseline workshop
- 1 results dissemination workshop

COVID-19 IMPACT AND RECOVERY

- As COVID-19 deaths mounted, TB care infrastructure was repurposed for COVID-19 control and the country was placed on total lockdown.
- The Delta-wave resulted in drastic declines in national and regional TB notifications, effectively grinding project activities to a complete stop.
  - **National all forms TB notifications declined by 38% (IRR=0.62; p<0.001) in Q3-2021; Declines in notifications ranged from 15.2% (Northwest) to 46.6% (Mekong Delta) during the Delta wave and were significant in all regions (0 < p ≤ 0.032) except the Northwest (p=164).**
- As vaccination coverage improved, the project resumed activities by integrating TB screening into COVID-19 vaccination events
  - **Notifications recovered at +15%/quarter thereafter. The average recovery rate of TB case notifications ranged from 7.4% (Red River Delta) to 20.8% (Mekong Delta) per quarter; recovery trends were significant across all regions (0 < p ≤ 0.025).**
- The rapid recovery highlighted the strong commitment of GVN to re-establish TB care and prevention immediately after the Delta outbreak was under control.



FINAL OPERATIONAL RESULTS

1. By the end of the project (as of 26 Jan 2024), a cumulative total of 2,079 people with all presentations of TB have been initiated on appropriate treatment (DS-TB, DR-TB, TPT)

- Screened a cumulative total of 55,749 people by CXR (Male:Female Ratio [MFR] = 1:1.2)
- Diagnosed 605 people with All Forms TB (MFR = 3.66:1) and linked to care 95% (MFR = 3.58:1); includes 13 (2.1%) people with MDR-TB (all men) and 3 (0.6%) children with TB, 100% linked to care for both subgroups
- This reflects a yield=1.1% (1,087/100,000) and a Number Needed to Screen (NNS)=92
- 1,503 people have been linked to TPT (MFR = 1:1.2) using 3HP (67%), 3HR (33%) and 6H (0.1%)

2. ZTV HOPE has achieved 128% (2,079/1,629) of the target of all presentations of TB treated

- Achieved 83% (576/690) of active TB target and 160% (1,503/939) of TPT target

CONTACT INVESTIGATIONS

	Hai Phong	Quang Nam	Can Tho	Total
Contact investigations conducted	1,389	371	398	2,158
Persons verbally screened*	4,144	1,942	854	6,940
Persons screened by chest X-ray (CXR)	1,466 (35%)	1,008 (52%)	486 (57%)	2,960 (43%)
Persons diagnosed with TB	35	25	15	74
Persons linked to TB treatment	**34 (97%)**	**25 (100%)**	**15 (100%)**	**74 (99%)**
--Detection rate (per 100,000 CXR screens)	*2,387*	*2,480*	*3,086*	*2,534*

* Includes community and neighborhood contacts in the community

- Facility-based X-ray screening remains a barrier for Double-X algorithm adherence (43% of eligible contacts screened by CXR), particularly for contacts who otherwise feel healthy
- High yield of TB achieved among those able/willing to be screened by CXR – detection rate of 2,534 / 100,000 is 14.4x higher than the national incidence rate (176 / 100,000)

COMMUNITY ACF

	Hai Phong	Quang Nam	Can Tho	Total
Days of mobile X-ray screening	64	30	92	186
People verbally screened	27,051	9,106	22,333	58,490
People screened by CXR	21,910 (81%)	8,896 (98%)	21,983 (98%)	52,789 (90%)
People diagnosed with TB	97	53	381	531
People linked to TB treatment	**90 (93%)**	**53 (100%)**	**359 (94%)**	**502 (95%)**
--Detection rate (per 100,000 CXR screens)	*443*	*596*	*1,733*	*1,006*

- Hai Phong yields are below WHO's recommended TB yields for ACF (500/100,000), meaning future screening events should mobilize key populations for TB in advance of screening

TB INFECTION TESTING AND TPT

	Hai Phong	Quang Nam	Can Tho	Total
People injected with tuberculin	7,415	3,198	1,840	12,453
People returning for skin test reading	6,957 (94%)	2,904 (91%)	1,414 (77%)	11,275 (91%)
People with a positive skin test	1,494 (21%)	798 (27%)	158 (13%)	2,497 (22%)
People starting TPT	**895 (60%)**	**412 (52%)**	**196 (96%)**	**1,503 (60%)**
People successfully completing TPT	**551 (62%)**	**332 (81%)**	**173 (88%)**	**1,056 (70%)**

- After induration thresholds were lowered for household contacts from 10mm to 5mm, the positivity rates has markedly improved
- People are primarily being linked to 3HP (67%) procured with support from the Global Fund

CHANGES IN TB NOTIFICATIONS

	All Forms of TB Notifications		Change in Notifications	Additionality
	Baseline	Intervention		
Intervention Areas	**3,219**	**3,076**	**-143 (-4.4%)**	**+9.0%**
Hai Phong	1,598	1,298	-300 (-18.8%)	+8.7%
Quang Nam	302	253	-49 (-16.2%)	-3.7%
Can Tho	1,320	1,525	205 (+15.5%)	+20.6%
Control Areas	**2,320**	**2,008**	**-312 (-13.4%)**	**-**
Hai Phong	738	535	-203 (-27.5%)	-
Quang Nam	382	334	-48 (-12.6%)	-
Can Tho	1,200	1,139	-61 (-5.1%)	-

- Largest relative increase in TB notification occurs in Can Tho, where activity outputs are highest
- Intervention period includes COVID-19 disruption, so project impact may be underestimated

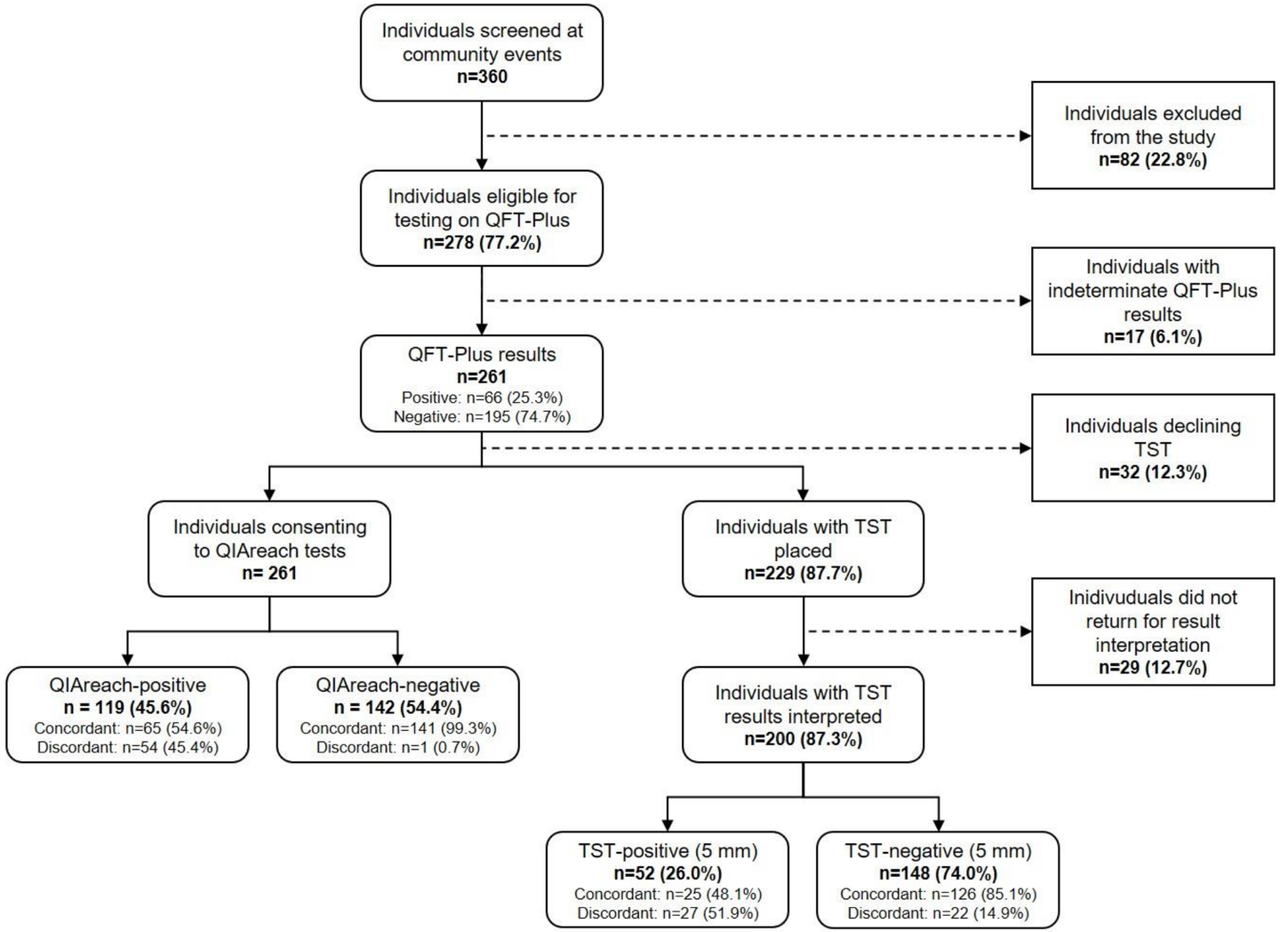
SUMMARY OF SCIENTIFIC OUTPUT PROGRESS

Scientific objectives were revised due impact of COVID-19 on data collection and quality; new objectives include:

1. **Compare diagnostic performance of the QIAreach assay with the current standard of care for diagnosis of LTBI**
2. **Compare catastrophic costs incurrence in TB-affected households between community-based active case finding (ACF) and programmatic passive case finding (PCF)**
3. **Assess the yield of integrated screening for TB at COVID-19 care and prevention events**

QIAREACH TBI ASSAY EVALUATION

- We compared the diagnostic performance and accuracy of QIAreach QuantiFERON-TB assay (QIAreach) to TST and the QuantiFERON-TB Gold Plus assay (QFT-Plus)
- QIAreach sensitivity=98.5%; specificity=72.3%
- TST sensitivity=53.2%; specificity=82.4%
  - **TST sensitivity was significantly lower than QIAreach but specificity was statistically equivalent**
- Despite QIAreach's higher sensitivity at equivalent specificity to TST, the high number of false positive results and low specificity limit its utility and highlight the continued need to expand the diagnostic toolkit for TB infection
- **Manuscript published in *Scientific Reports* in September 2023**, DOI: 10.1038/s41598-023-42515-1



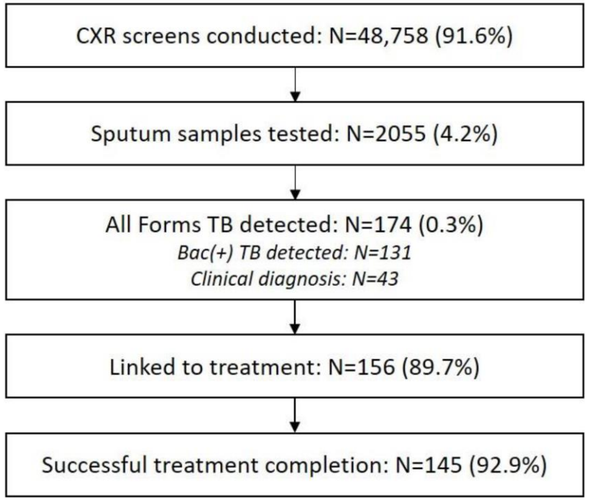
PATIENT COST COMPARISON

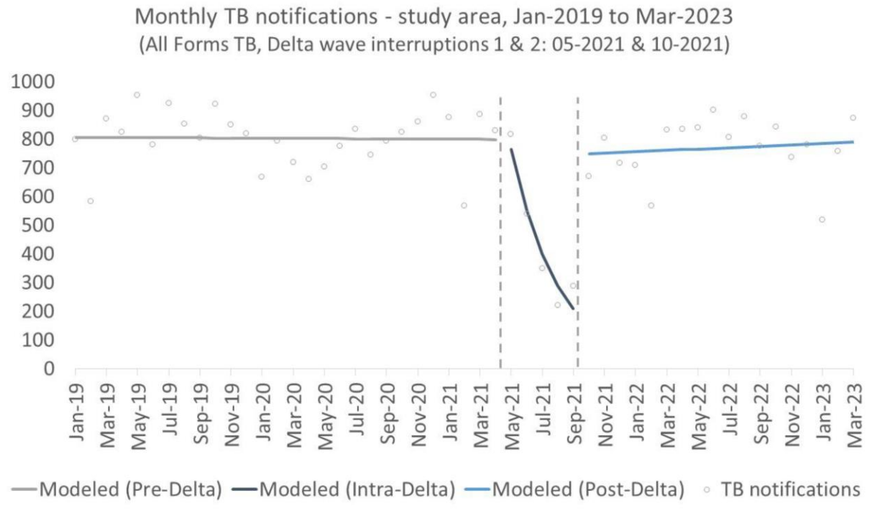
- We assessed the socio-economic impact of ACF compared to people passively diagnosed with TB
- ACF had some socio-protective effects, but ultimately did not reduce catastrophic cost incurrence
  - **ACF reduced pre-treatment costs by -90% and treatment-related costs by -27%. ACF also reduced job loss by -58% and the use of coping strategies by -40%**
  - **Catastrophic cost incurrence did not differ significantly between the survey cohorts (55% vs 57%, p=0.891), mainly because ACF did not reduce indirect cost (e.g. income loss)**
- Comprehensive social protection approaches are needed to further reduce medical costs and to limit income loss.
- **Published in *Tropical Medicine and Infectious Disease* in August 2023**, DOI: 10.3390/tropicalmed8090423

Median costs, USD (IQR)	ACF (N = 105)	PCF (N = 108)	P-value*
Pre-treatment			
Total costs	10 (1-26)	101 (56-198)	0.000
Treatment			
Direct medical costs	7 (0-34)	35 (0-105)	0.025
Direct non-medical costs	188 (66-356)	231 (95-419)	0.294
Indirect costs	468 (0-1328)	925 (75-1,559)	0.067
Total costs	888 (317-1,693)	1,213 (649-2,153)	0.040
Total TB related costs	957 (361-1,862)	1,359 (724-2,482)	0.006
Catastrophic cost, N	**57 (53%)**	**55 (52%)**	**0.891**

TB-COVID-19 INTEGRATION

- We conducted 115 TB-ACF events integrated into COVID-19 vaccination sites
- We screened 48,758 persons (53.5% female) by CXR and sputum was tested from 4.1% (2,055/48,758)
- The events detected 174 persons with TB for a rate of 357/100,000
- 89.7% (156/174) initiated on treatment
- The rate of persons with TB was low due to the broad cross-section of society at COVID-19 vaccination sites
- Nevertheless, this intervention offered the only avenue for individuals with TB to access care during these lockdowns and provides a blueprint for continuity of care in future pandemics
- **Published in *Tropical Medicine and Infectious Disease*** in January 2024, DOI: https://doi.org/10.3390/tropicalmed9010026

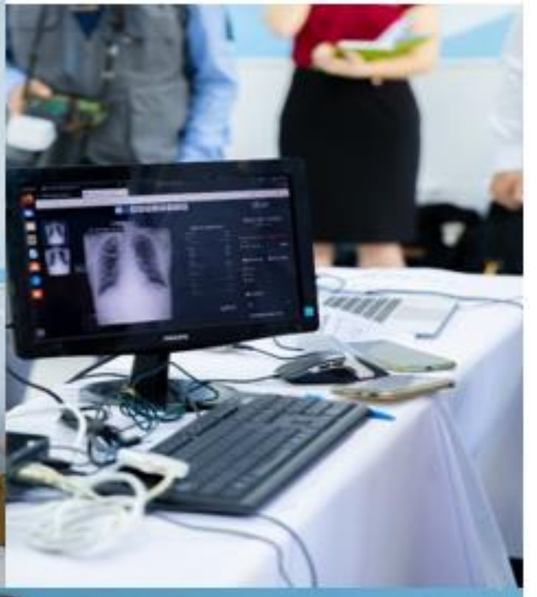


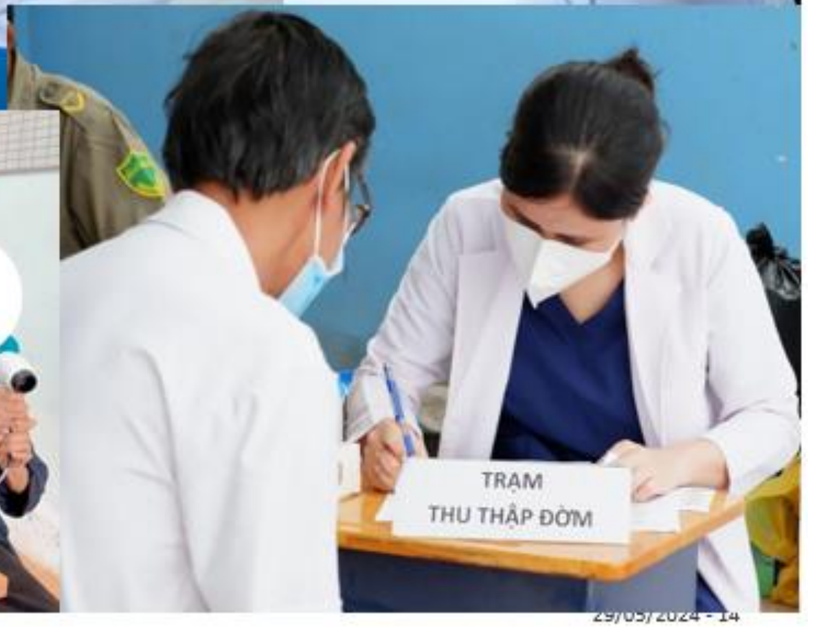


CONCLUSION

ZTVHOPE has a certain contribution to the local TB program:

- 15 capacity building training courses on ACF with attendance of 346 healthcare workers at the district and community levels.
- 55,749 people screened by CXR; 605 people with all Forms TB detected & 95% linked to care; and 1,503 people have been linked to TPT
- Additionality +9% in intervention areas (ACF) vs control areas (PCF) in TB notifications.
- ACF reduced: Pre-treatment costs -90%; Treatment costs -27%; Job lost -58%.

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THANK YOU FOR YOUR ATTENTION!