The 3rd National TB Prevalence Survey in Cambodia, 2023 - 2024

Preliminary Results

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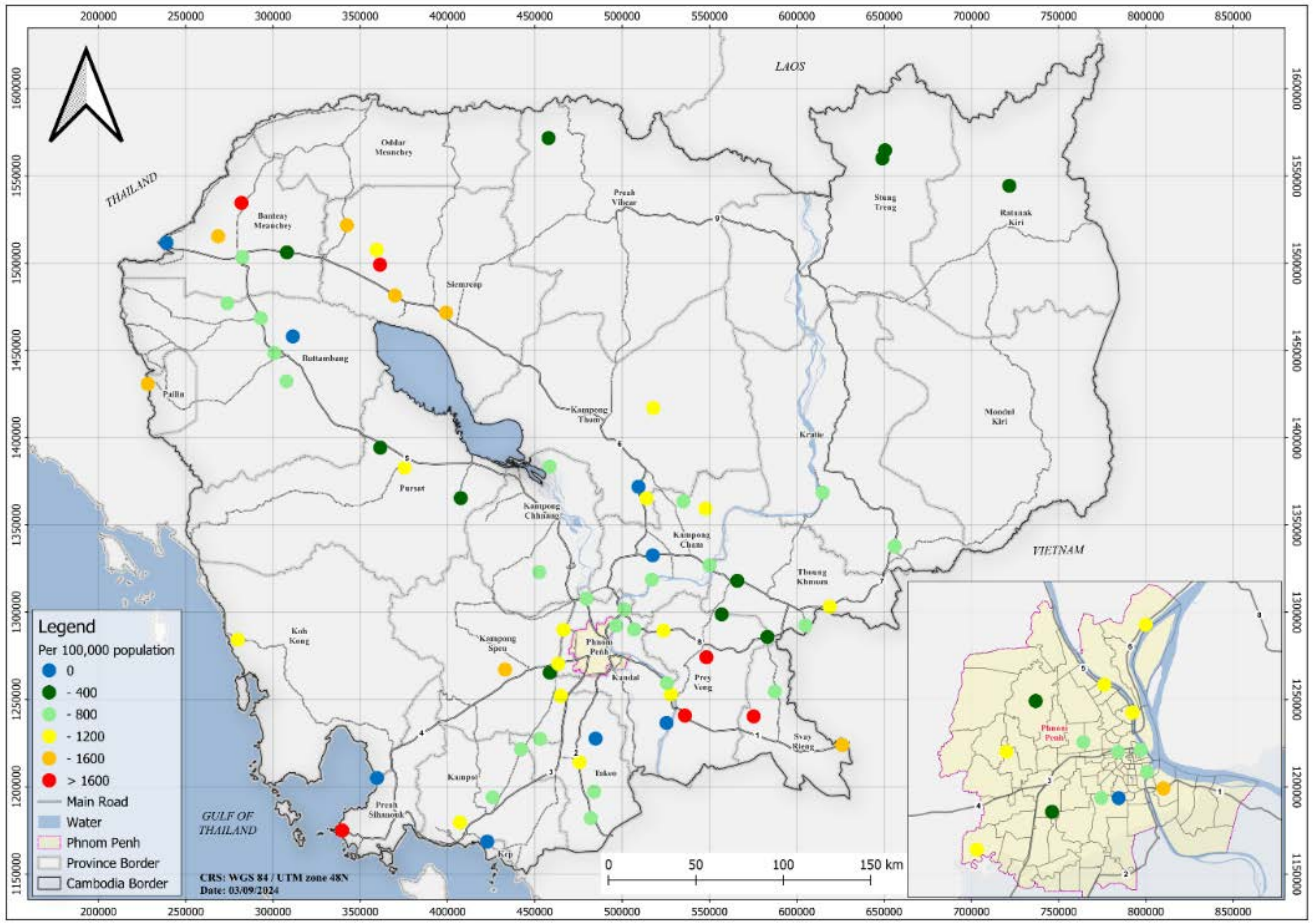
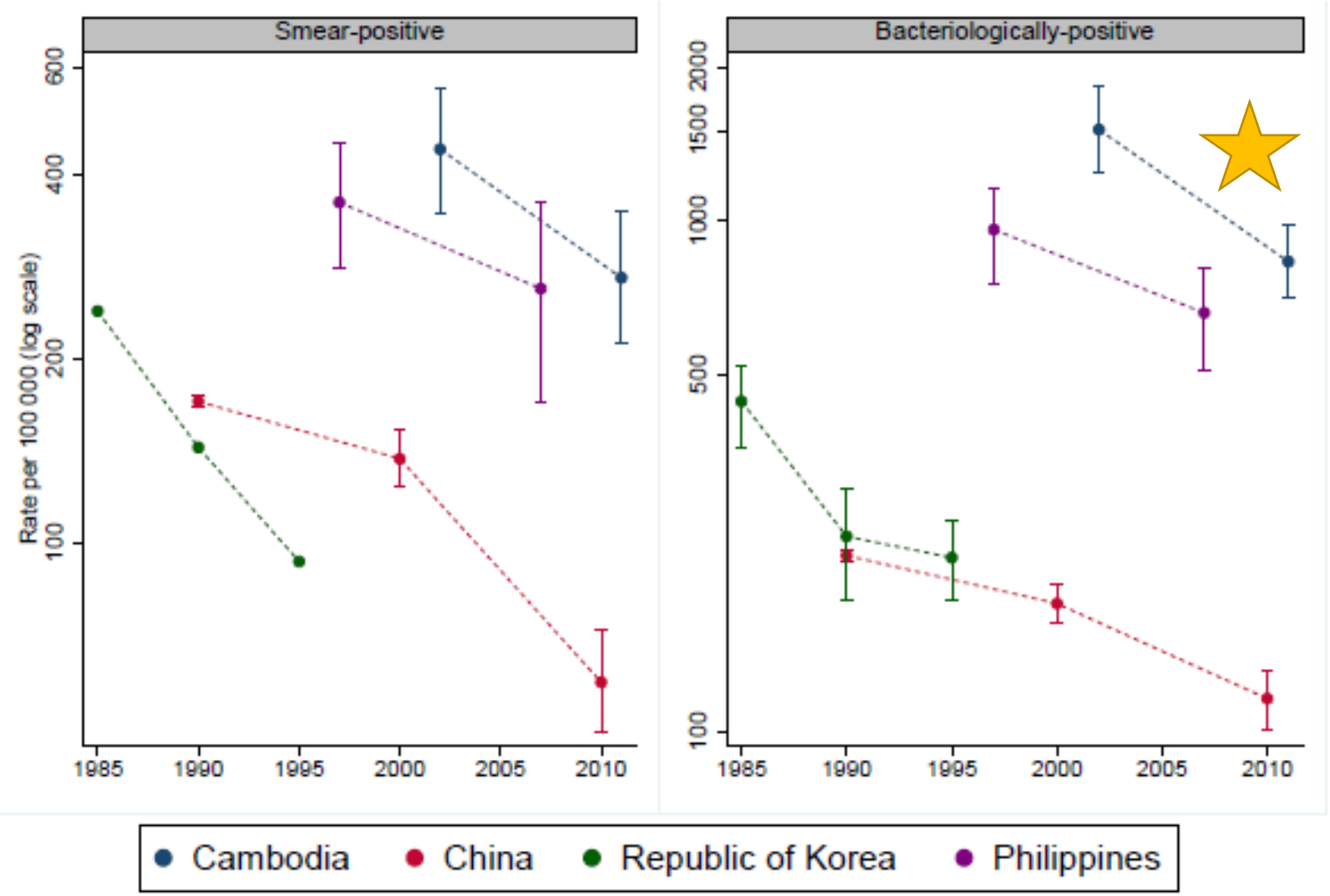
Successful operation in 35 weeks between 11 June 2023 and 30 May 2024 with 84 data collection points, clusters, with 34,836 participants



Sampling points (clusters) & Observed prevalence of GXP-U+ TB

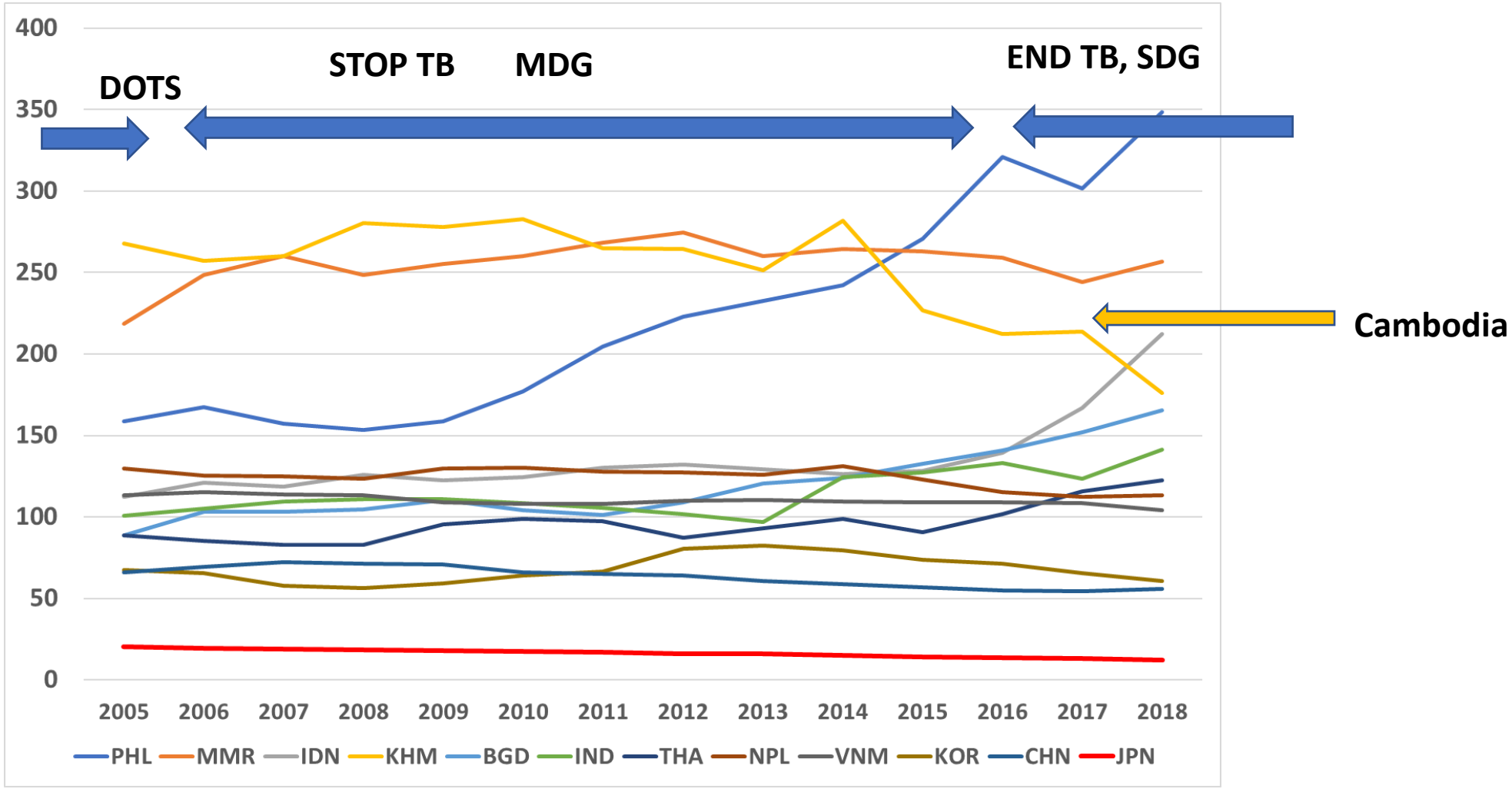
- Following the first two successful national surveys in **2002** and **2011**
- Initially planned for 2021, but **delayed by COVID-19**
- **New** screening and diagnostic tools
- Digitalized survey
- The first **repeat survey** after COVID-19
- Conducted with **Partners**
- Split into two phases (52+32 clusters) due to the **funding challenges** and the suspension due to the **general election**

Background: Statistically significant changes both in S+ and B+ prevalence in 9 years were shown by the last two surveys (2002, 2011)



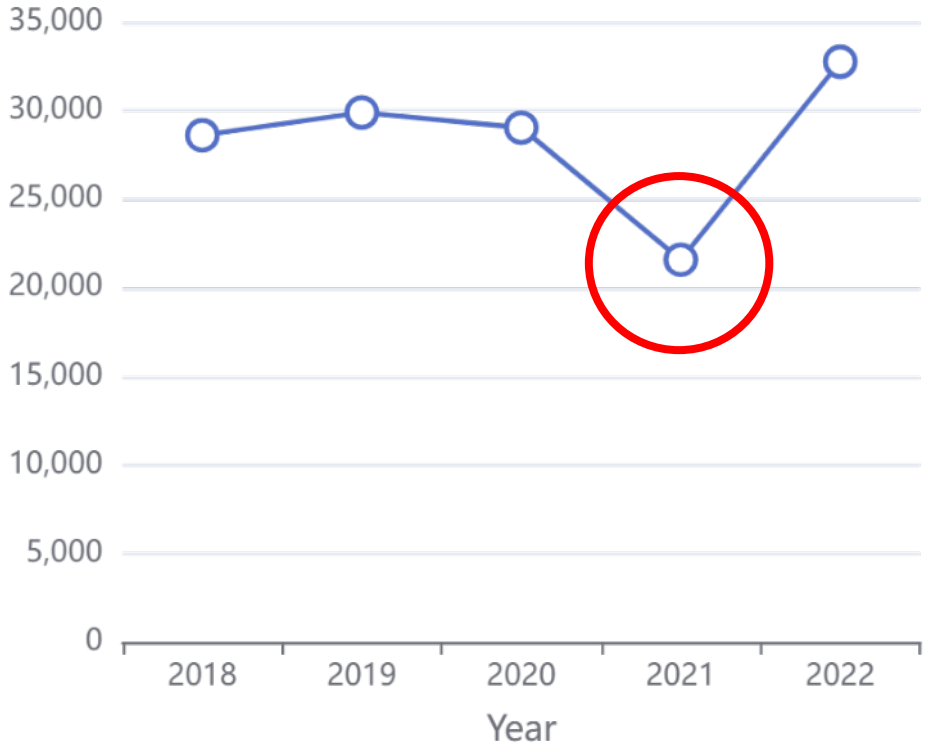
TB Case Notification Rate (per 100,000) in selected South-East and East Asian Countries:

Is the unique but expected Decline of the Case Notification in Cambodia in 2010s a reflection of the decline of TB burden in communities?



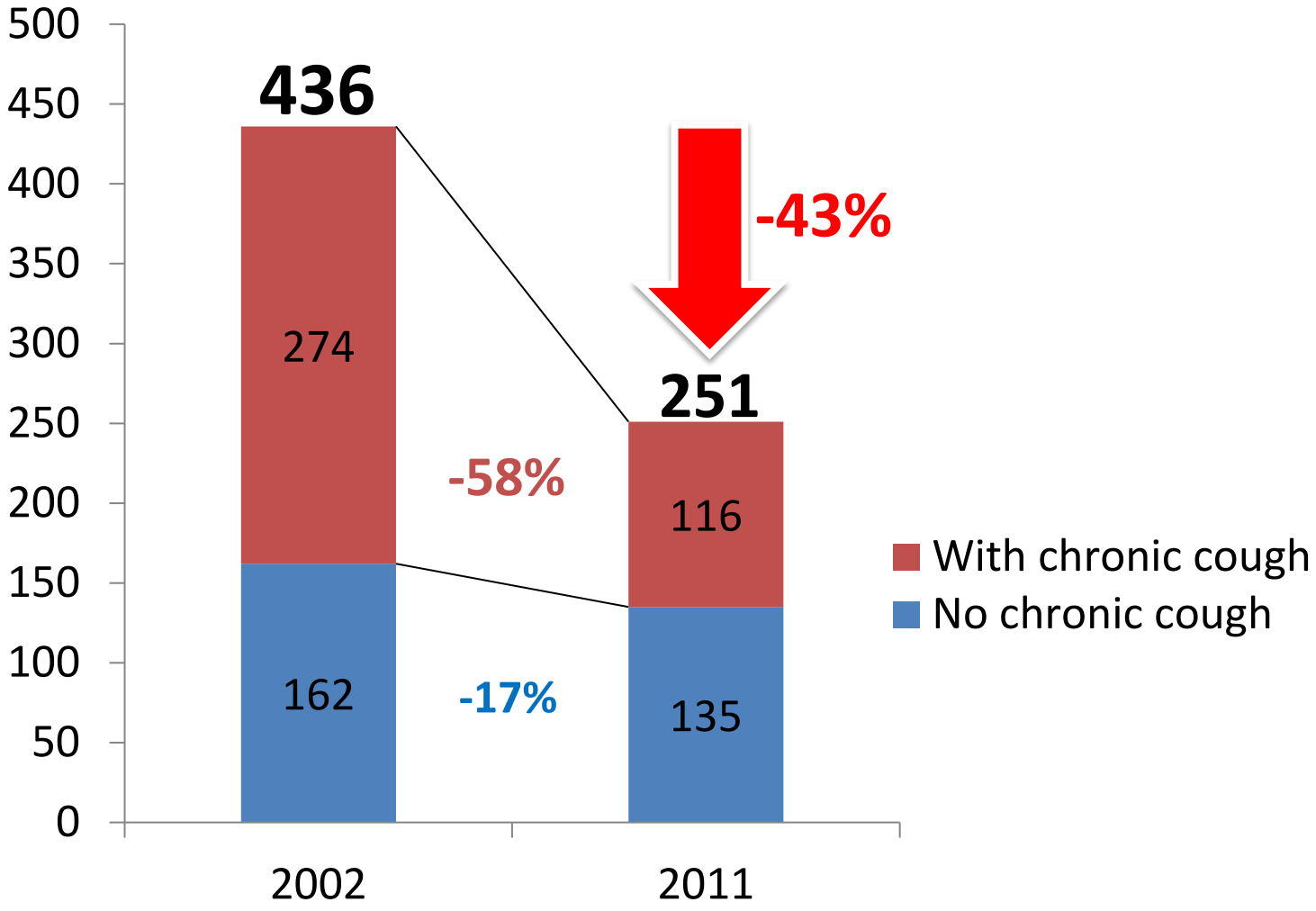
Challenges: COVID-19 & Funding

- Delayed start to wait for the stabilization of Case Notification from post COVID-19 resurgence
- Procurement and Funding agreement
- Global Fund funding cycle
- Survey with partners (great opportunity vs human resources cost)
- General Election in July 2023



Notified TB patients
2021: 21,589
2022: 32,865
2023: 32,270

Significant change of prevalence of Smear-positive pulmonary TB in Cambodia from “100% DOTS but in hospital” to “Decentralized DOTS”



- The 2011 survey made us recognize the challenge of “subclinical TB” that was not detectable using the NTP’s routine case finding screening algorithm

Primary objectives

1. To determine the prevalence of **bacteriologically positive pulmonary TB** (PTB) among the population in Cambodia aged **15 years or older** in 2023 specifically:

- **Bacteriologically positive PTB**
  - **Official Survey Result along the WHO's newly proposed definition (MGIT base)**
- Culture confirmed PTB – Solid (**LJ**) media
  - *To allows for comparisons with the last two surveys*
- Xpert Ultra positive PTB
  - Programmatic implications

2. To **assess the trend** in prevalence with bacteriologically positive PTB, comparing with the results of the previous surveys in 2002 and 2011 by solid LJ culture; and

3. To contribute to re-estimation of country TB incidence and mortality for all ages related to the SDGs and END TB Strategy milestones and targets

Survey design: basically consistent with latest guidance by WHO

Cross-secional population-based survey with stratified multistage cluster sampling technique with probability proportional to size (PPS).

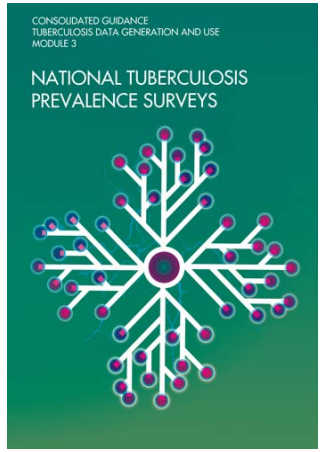
Target area – the whole geographical area of Cambodia

Stratification

1) Rural
2) Urban other than Phnom Pehn and
3) Phnom Penh

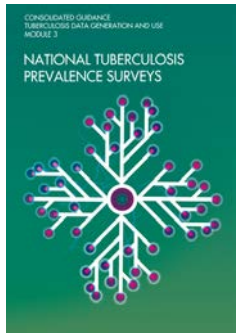
Study Population

- Inclusion - all persons who are aged 15 years or older at time of survey who have resided at the selected survey sites for 2 weeks prior to the survey
- Exclusion - persons living at military and diplomatic compounds, hospitals and hotels

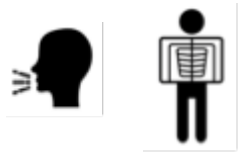


Sampling strategy: Multistage sampling method with Probability proportionate to size (PPS)

	2011 – 2nd Survey Observed	2023 – 3rd Survey Assumptions
Participants	37,417	37,417
Culture Positive MTB	305	208
p	0.0080 (796 per 100,000)	≤0.0056 (557 per 100,000)
α		0.05
d (relative precision)	0.173 with α=0.05	0.20 (0.195)
κ-coefficient of between-cluster variation	0.506	0.60
Design Effect (DEFF)	2.24	2.07
Cluster Size (Participant/Invited)	603/652	450/530
Number of Clusters	62	84
Participation Rate	92.7%	85%
Total Sample Size (invited)	40,373	44,520

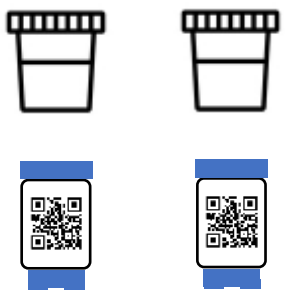


New diagnostic algorithm



Collect 2 sputum specimens if screen-positive

"**Cough for two weeks or longer**"
AND/OR
CXR CAD4TB score≥30
AND/OR
any abnormality by **on site screening** by a **survey team physician**

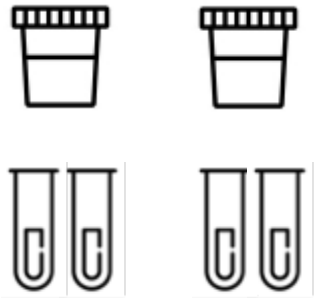


Test 2 specimens using Xpert Ultra

By the survey team technician with Xpert units at the district laboratory

If no positive results: then no additional sputum specimens required

If either are positive (including trace):
collect 2 more sputum specimens



Test 2 specimens using liquid culture (MGIT)

Each specimen inoculated onto MGIT and LJ

In the Institute Pasteur Cambodia

Optional in Cambodia:
When clinically active TB is diagnosed <u>on site</u>: additional sputum specimens required for MGIT culture

Survey TB case definitions

Study Case Category	Definitions	Remarks
1. Study TB Case (Bacteriologically positive cases by WHO's survey case definition)	According to the WHO's proposal: GXP-Ultra: At least one MTB positive AND 1. MGIT MTB positive in at least one sample OR 2. Not having TB treatment for the past 5 years (since 2018) AND Two GXP-Ultra MTB Positive with very low or higher grade in both samples	WHO Task Force's new definition as an official result of the survey as a material to estimate TB burden
2. Xpert® MTB/RIF Ultra Positive TB case	MGIT MTB Positive in at least one sample Or No TB treatment history: At least one T, RR, or TI TT with Active TB suggestive by Panel Review consensus TB Treatment History At least one T, RR or TI with Active TB suggestive by Panel Review	Cambodia specific definition for programmatic use (254) Those on current TB treatment are excluded from the analysis
3. Solid Culture Positive TB	At least one LJ MTB positive regardless of GXP-U and MGIT results	This is for the comparison with last two surveys (136)

Summary of the field & laboratory results

Results are currently embargoed until the Union conference and official public dissemination by the MOH of Cambodia.

Most probably..

- **Observed steadily decline of TB notification** in 2010s was the balance of the reflection of real decline of TB prevalence in community and efforts on strengthening case detection;
- NTP has been **detecting reachable and detectable patients** by NTP's case detection algorithm efficiently;
- **New technologies could detect "undetectable" people with TB** that burden in the communities is bigger than NTP's perspective;
- Though situation in **rural/remote areas has improved a lot**, there are still unreachable populations as hot spots;
- Superiority in urban areas looks to have **disappeared**;
- **Impact on COVID-19** on TB prevalence and incidence seems limited both in time and size;
- The survey results may lead policy and strategic changes toward SDGs

Finance

Contributions (USD): **2.6M+**

- **DFAT/WHO**: **1.01 M** (Training, Phase 1 operation)
- **USAID/STB-P/KHANA**: **500K** (Phase 2 operation)
- **USAID**: **200K** (4 units of Delft Light and CAD4TB for two years including license and maintenance)
- **Global Fund**: **660K** (Activities and Xpert related procurement)
- **RIT/JATA**: **250K** (Pre & post survey activities, TA, M/E, HR)
- **WHO other than DFAT**: **?**: TA (Protocol Review, mid Term Review and Analysis)
- **Institute Pasteur Cambodia**: HR cost of staff members before DFAT and after USAID/KHANA

Note

- 4 units of Delft Light for referral hospitals were **converted** to the survey use
- Pasteur and RIT covered HR and/or travel cost of pre and post-survey expenses

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Institut Pasteur du Cambodge

USAID FROM THE AMERICAN PEOPLE

The Global Fund To Fight AIDS, Tuberculosis and Malaria

Acknowledgement

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