Challenges associated with implementation of TB prevention at large megacities

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Outline

- Background
- Pakistan
  - Process
  - Results
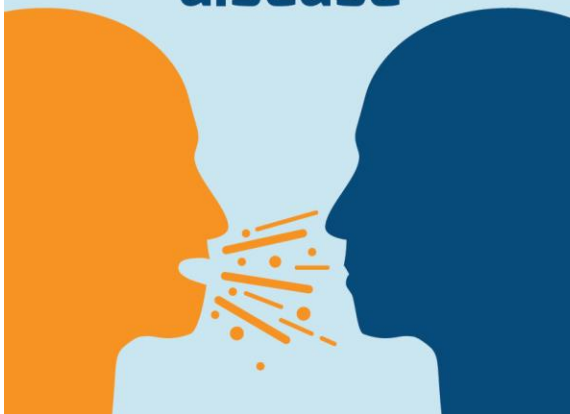 - Challenges
- Bangladesh Program
- Questions for Modeling

Need to make TB prevention strategies a priority and focus
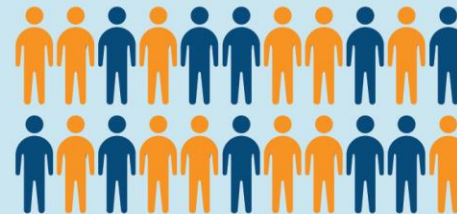

KEY TB STATISTICS

TB is an airborne disease

TOP 10 causes for death worldwide

More than 1.7 MILLION people died in 2016

ONLY 1.5% of decline of new TB patients per year

At this rate it will take 200 YEARS TO ELIMINATE TB

Pakistan

Population 2016		**193 million**

| Estimates of TB burden*, 2016	Number (thousands)	Rate (per 100 000 population)
Mortality (excludes HIV+TB)	44 (34–55)	23 (18–29)
Mortality (HIV+TB only)	2.1 (0.98–3.6)	1.1 (0.51–1.9)
Incidence (includes HIV+TB)	518 (335–741)	268 (174–383)
Incidence (HIV+TB only)	6.9 (3.2–12)	3.5 (1.6–6.2)
Incidence (MDR/RR-TB)**	27 (17–37)	14 (8.8–19)

IRD is amongst global leaders in TB elimination strategy

ZERO TB
Initiative

Zero TB CITIES is a global initiative targeted at creating "islands of elimination" with strong local ownership in high burden settings

Zero TB implements evidence-based **Search, Treat & Prevent** approaches from around the world shown to be successful in controlling TB

Odessa

Bangladesh

Vietnam
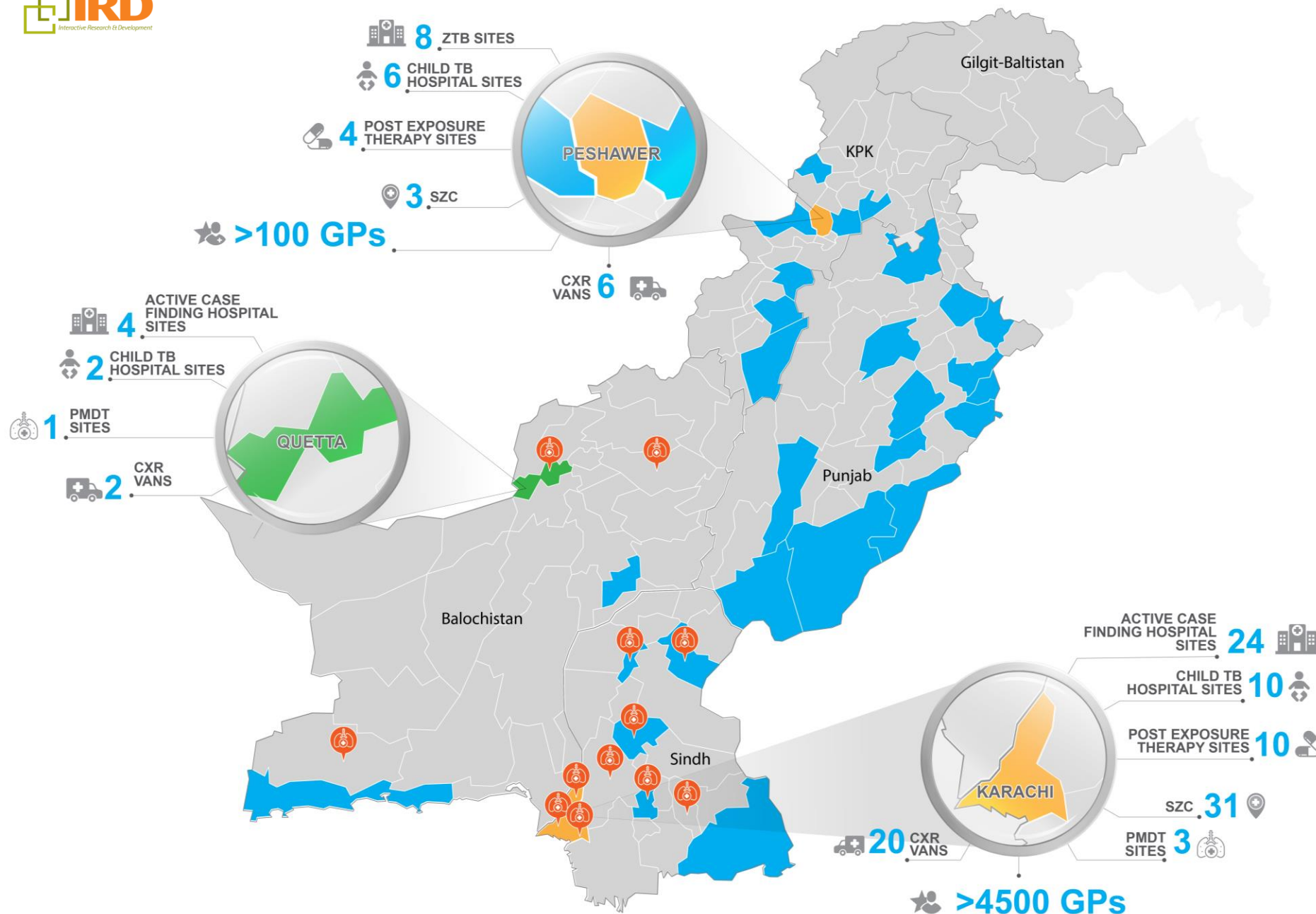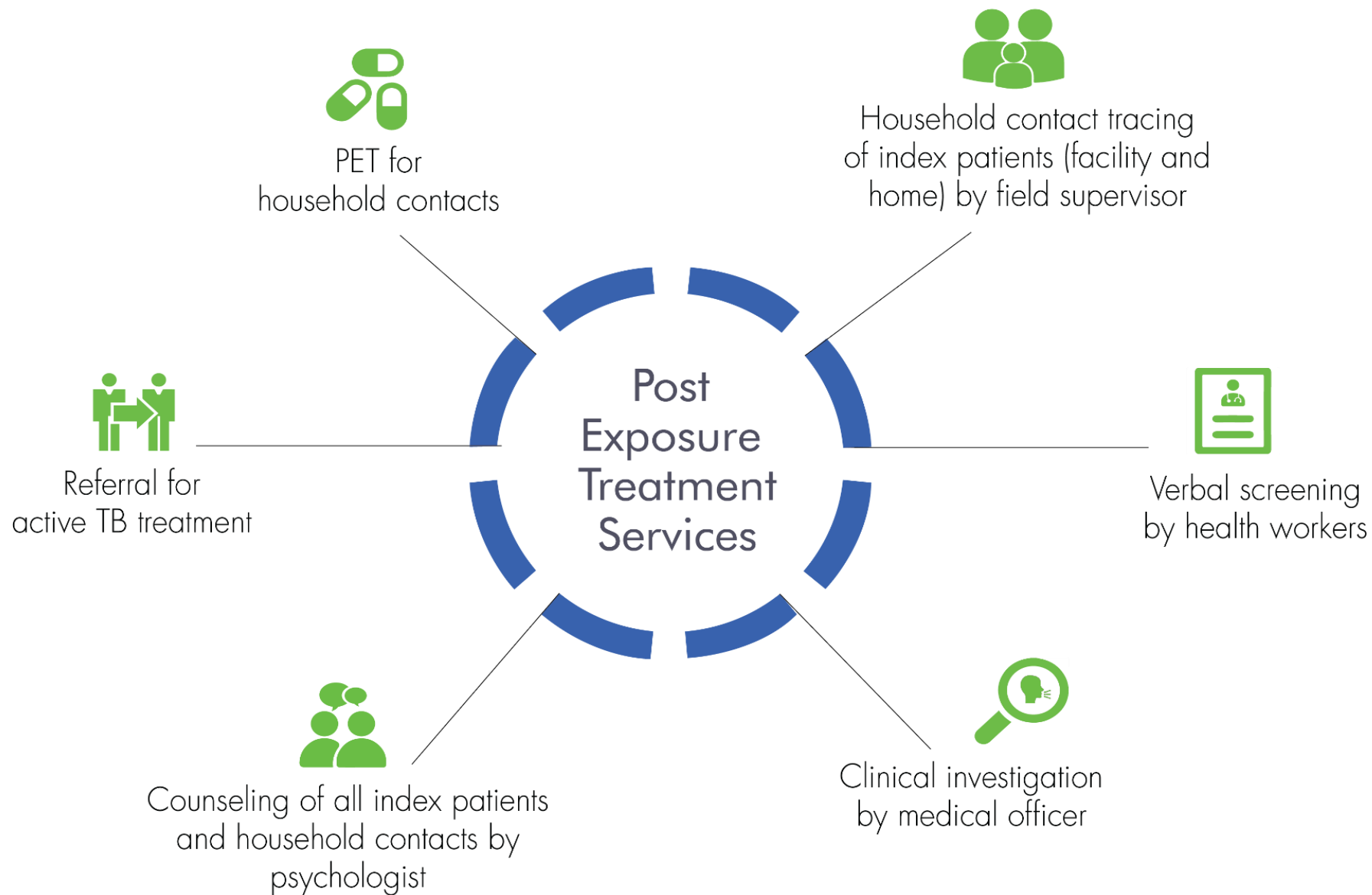
Caralbayllo

Lima

Karachi

Chennai
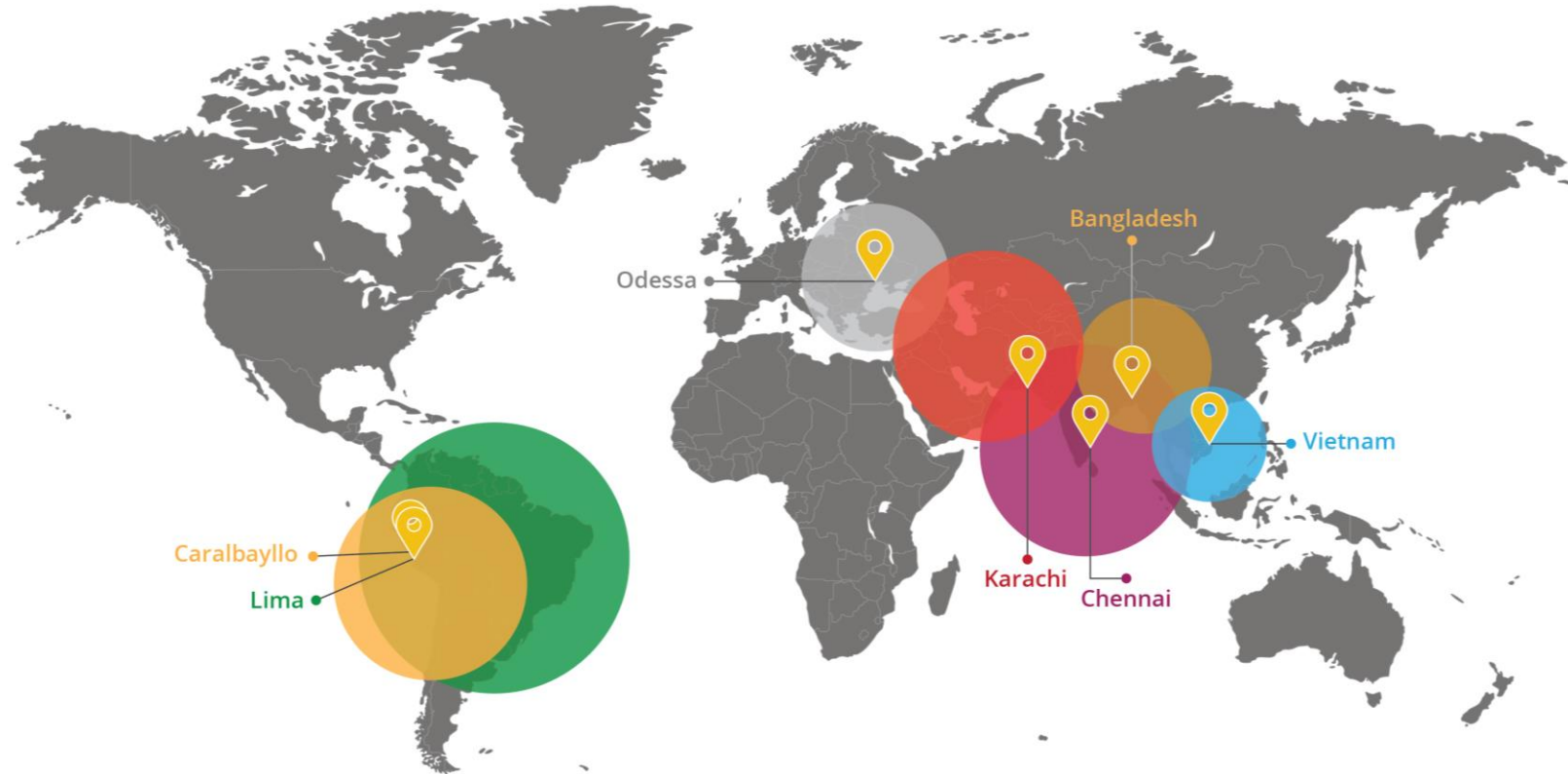
Pakistan's Zero TB Initiative

Global Fund Support
2016-2017 **USD 40m** – Zero TB Karachi +32 districts

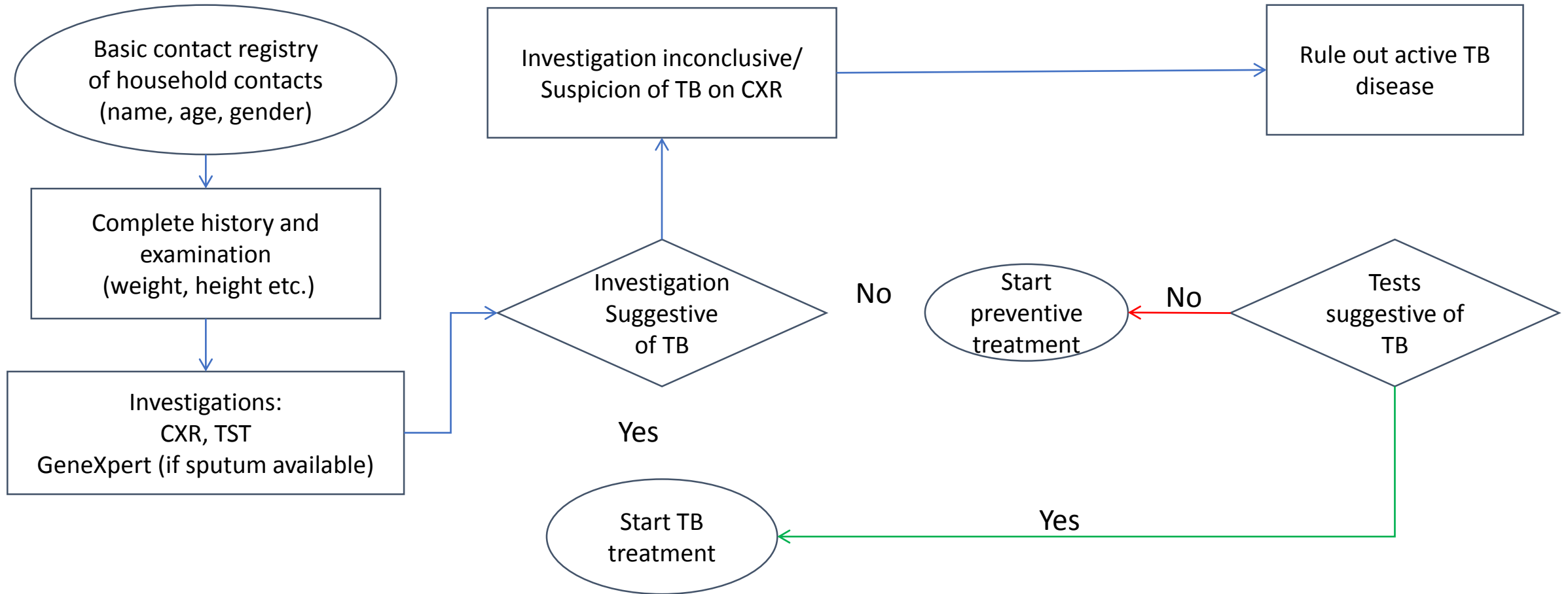2018-2020 **USD 40m** – Zero TB Karachi, Peshawar, Quetta + 32 districts

PESHAWER

- **8** ZTB SITES
- **6** CHILD TB HOSPITAL SITES
- **4** POST EXPOSURE THERAPY SITES
- **3** SZC
- **>100 GPs**
- CXR VANS **6**

QUETTA

- **4** ACTIVE CASE FINDING HOSPITAL SITES
- **2** CHILD TB HOSPITAL SITES
- **1** PMDT SITES
- **2** CXR VANS

KARACHI

- ACTIVE CASE FINDING HOSPITAL SITES **24**
- CHILD TB HOSPITAL SITES **10**
- POST EXPOSURE THERAPY SITES **10**
- SZC **31**
- **20** CXR VANS
- PMDT SITES **3**
- **>4500 GPs**

Legend:
- ACTIVE CASE FINDING
- PRIVATE SECTOR ENGAGEMENT
- ZERO TB CITY
- PMDT SITES

Map labels: Gilgit-Baltistan, KPK, Punjab, Balochistan, Sindh

Post Exposure Treatment Services

- PET for household contacts
- Household contact tracing of index patients (facility and home) by field supervisor
- Referral for active TB treatment
- Verbal screening by health workers
- Counseling of all index patients and household contacts by psychologist
- Clinical investigation by medical officer

Algorithm for Household Screening

```
Is Index patient DS-TB or          ──────▶      DS-TB
RIF+?                                              │
    │                                              ▼
    ▼                              Each contact asked to come to    ──YES──▶   Contacts are evaluated for
   RIF +                                    clinic                              disease and infection Tx
    │                                          │
    │                                          ▼
    │                              Reminder phone calls for coming  ──YES──▶   Contacts are evaluated for
    │                                     at clinic                             disease and infection Tx
    │                                          │
    │                                          ▼
    │         ──────────▶         HH visit by field worker for
    │                                    evaluation
    │                                          │
    │                                          ▼
    │                              Contacts evaluated and eligible  ──YES──▶   Contacts are evaluated for
    │                              contacts asked to come to clinic            disease and infection Tx
    │                                          │
    │                                          ▼
    └────────NO──────────         Reminder phone calls for coming  ──YES──▶   Contacts are evaluated for
                                          at clinic                            disease and infection Tx
```

Algorithm to rule of TB disease

Counseling

- **Index patient and Contacts**
  - Mode of transmission
  - Risk to close contacts
  - Importance of screening contacts for disease
  - Importance of starting contacts on preventive treatment
  - Importance of adherence and completing therapy

Patient Enabler

 PKR 600 (USD 6) at baseline investigation visit

 PKR 600 (USD 6) at baseline investigation visit

 PKR 600 (USD 6) at baseline investigation visit

 PKR 600 (USD 6) at baseline investigation visit

Electronic Data Capture

Treatment Adherence - Reasons for Refusal

Type of Refusals	Reasons for Refusal			
Refusal at disease evaluation	Work and academics schedule		Family or Relatives are unaware that the Index Patient has TB disease	Waiting time at the hospital
Refused at treatment initiation	Lack of interest due to being non-symptomatic	Index patient is non-adherent	Adverse events to other household members	Death of Index Patient
Refused during treatment	Adverse events		Discouragement from other household members and private providers	Duration of PET

Qualitative Study on Preventive Treatment in Bangladesh

Perception on Preventive Treatment (TB patients and Contacts)

Lack of knowledge on **preventive treatment** for TB

Welcomed the idea as a **measure of self-protection**

High reliance on **doctor's suggestion** for preventive treatment

Preventive Treatment Regimen (Contacts and Providers)
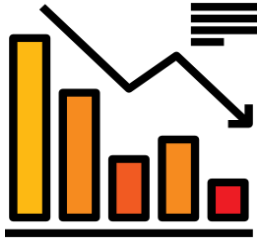
Strong preference for **weekly doses** than **daily**

Acceptability of treatment for **'shorter period'** was high

Monitoring **treatment adherence** is critical

Qualitative Study on Preventive Treatment in Bangladesh

Preventive Treatment Implementation (Key Informants' views)

"Preventive treatment is the **most important way forward**"

"Should start preventive treatment as **pilot intervention** in urban settings"

"**Urban poor** demands special attention"

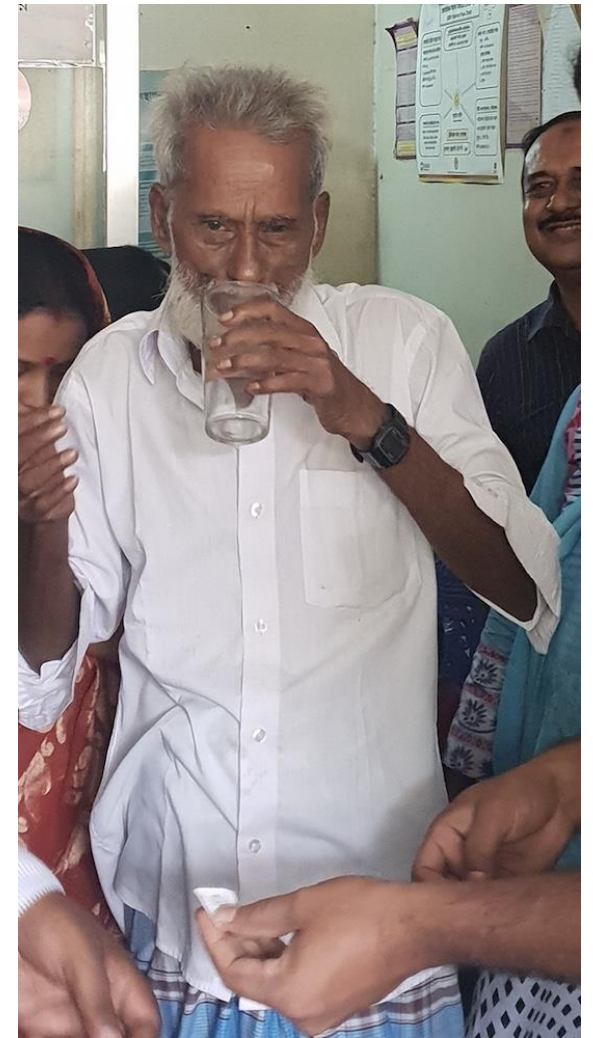## Expected Challenges and Barriers

Cost of treatment

Creating a balance between **additional task** to care delivery and **shortage of skilled providers**
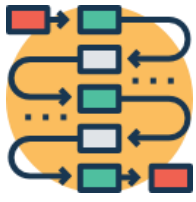
Sustained Funding

Bangladesh Preventive Treatment

Generate evidence to support best practices for TB prevention.
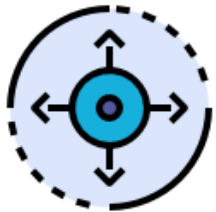# Pave a pathway for increased country demand for preventative therapy

Conduct gap analysis for key insights

Create Country Implementation Programs

Modeling & cost analysis

Transition & scale up planning

Transition of programs to local NTPs & partners

1) Can we identify a cut off point (magic number) for infection rates where the cost of preventive treatment out ways the risk of disease or vice versa

2) Under what epidemiological circumstances infection testing should be a requirement for preventive therapy among contacts
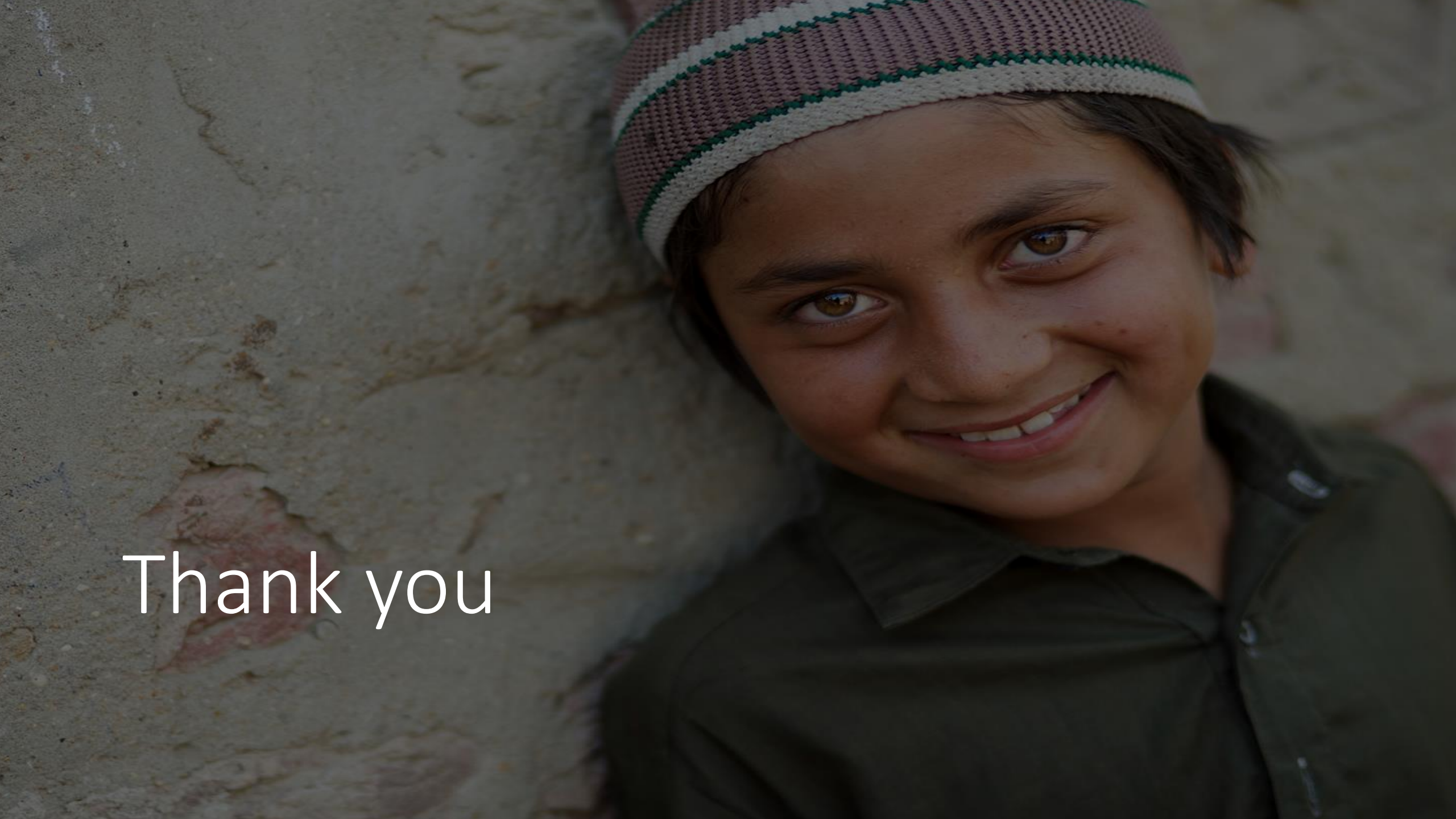
3) Protection levels with 3HP

4) Transmission models to identify prioritized areas for preventive treatment

Acknowledgement

- National and Sindh Provincial TB Control Program
- National TB Control Bangladesh
- Project Teams in Pakistan & Bangladesh

Thank you