SHOPS: Tuberculosis
A Prevention and Care Initiative

Oommen George, Project Leader, SHOPS (India), Abt Associates
Training of University of Manitoba Fellowship Students on…
Application of Program Science Approach in a Developing Country Setting
KHPT, Bangalore, September 4-5, 2014
**Acronyms**

- C&S – Care and Support
- CB-NAAT – Cartridge-based Nucleic Acid Amplification test
- CME – Continuing Medical Education
- CS – Chest Symptomatic
- CTD – Central Tuberculosis Division
- CXR – Chest X-ray
- DNA – Deoxyribonucleic Acid
- DOT – Directly Observed Treatment
- DOTS – Directly Observed Treatment Short-course chemotherapy
- DST – Drug Sensitivity Test
- EOP – End of Project
- EPTB – Extra-pulmonary Tuberculosis
- FLW – Frontline Worker
- GoI – Government of India
- GoKA – Government of Karnataka
- HIV – Human Immunodeficiency Virus
- ICT – Information Communication Technology
- IPC – Inter-personal Communication
- IS – In-slum
- ISMH – Indian Systems of Medicine and Homeopathy
- ISTC – International Standards of TB Care
- LTFQ – Less-than-fully-qualified (practitioners)
- KOL – Key Opinion Leaders
- LPA – Line Probe Assay
- M.tb. - *Mycobacterium tuberculosis*
- MARP – Most-at-risk Population
- MBPH – Market-based Partnerships for Health
- MDR (DR) – Multi-drug Resistant (Drug Resistant)
- MIS – Management Information System
- MoH – Ministry of Health
- NRHM – National Rural Health Mission
- NTP – National Tuberculosis Program
- OS – Out-of-slum
- pHCP – Private Health Care Providers
- POMM – Practitioners of Modern Medicine
- PTB – Pulmonary Tuberculosis
- PT TB – Previously Treated Tuberculosis
- QI – Quality Improvement
- RNTCP – Revised National TB Control Program
- SHOPS – Strengthening Health Outcomes through the Private Sector
- SSM – Sputum Smear Microscopy
- STCI – Standards for TB Care in India
- TG – Target Group
- TB – Tuberculosis
- TST – Tuberculin Skin Test
- SAID – United States Agency for International Development
- USD – United States Dollar
- WHO – World Health Organization
Presentation Sections

1. Tuberculosis: the disease
2. Burden of tuberculosis
   - Global
   - National
3. RNTCP: the national TB control program
4. SHOPS tuberculosis project, Karnataka
   - Concept
   - Model
   - Process
   - Results
   - Lessons
5. Project Quality Improvement
Objectives

- The ‘uninitiated’ learn a little about tuberculosis
- Know the burden of TB and its implications
- Learn the concept of SHOPS-TB – Why? How?
- Understand the SHOPS-TB model
- Learn about the intervention
  … and its results
- Know about the key issues which influenced quality improvement (QI) of the SHOPS project
1. **Tuberculosis: the disease**
2. **Burden of tuberculosis**
   - Global
   - National
3. **RNTCP: the national TB control program**
4. **SHOPS tuberculosis project, Karnataka**
   - Concept
   - Model
   - Process
   - Results
   - Lessons
5. **Project Quality Improvement**
What do we know about TB?
What Causes TB?

A bacteria called *Mycobacterium tuberculosis* (**M.tb.**)

*M.tb.* is not new… but is adapting dangerously to its current environment!
How does TB Spread?

- PTB (80%)
- EPTB (20%)

No Transmission

Transmission
Key Facts About TB

• TB usually affects the lungs (~ 80%)

• Spreads through airborne droplets of bacteria-containing sputum or saliva

• In India, a person has a 10% to 15% life-time risk of getting TB (about 10% annual risk, if also HIV+)

• The disease causes cough, fever, loss of weight ➔ ‘consumption’ ➔ death
Common Symptoms of Lung Tuberculosis

- Cough – Persistent, Productive
- Chest Pain
- Shortness of Breath
- Hemoptysis
- Fever
- Night Sweats
- Tiredness
- Loss of appetite
- Loss of weight
- Generalized weakness
Diagnosis of Tuberculosis: Clinical Evaluation

• History: What’s the story?
  o Symptoms:
    ▪ Persistent cough > 2 weeks?
    ▪ Fever?
    ▪ Weight loss?
    ▪ Night sweats?
  o Co-morbidities and associated risks:
    ▪ Diseases – diabetes, malnutrition, HIV, etc.
    ▪ High-risk behavior – smoking, alcoholism…
    ▪ Conditions which contra-indicate use of one or more TB medicine
    ▪ Work environment
  o History indicating likely response to TB medicines
  o Previous exposure? Close contact with person(s) with TB?

• Physical examination
Diagnosis of Tuberculosis: Investigations

- Confirmatory tests:
  - See the germ
  - Multiply the germ
  - Identify bacteria-specific DNA

- Tests to support diagnosis
  - Radiography
  - Skin/blood tests to detect immune response

*Example tests and their advantages:*
- **See the germ:**
  - *Mycobacteria* identified using sputum smear microscopy
- **Multiply the germ:**
  - Sputum culture [advantage: can also test sensitivity to drugs]
- **Identify bacteria-specific DNA:**
  - CB-NAAT, LPA [advantage: can also test sensitivity to 1 or 2 drugs]
- **Radiography:**
  - CXR; highly sensitive, but not specific
- **Skin/blood tests to detect immune response:**
  - Tuberculin skin test (TST): identifies previous exposure to *M. tb.*
Post-diagnosis Management of Tuberculosis

TB patients need to be notified to public health officials

Treatment using a cocktail of antibiotics; ‘short-course’ chemotherapy

Standards governing TB management:
- Diagnosis and notification
- Treatment
- Ensuring treatment compliance
- Prevention of spread
- Tracing infected persons
- Patient and family support, counseling
- Social support
1. Tuberculosis: the disease
2. Burden of tuberculosis
   - Global
   - National
3. RNTCP: the national TB control program
4. SHOPS tuberculosis project, Karnataka
   - Concept
   - Model
   - Process
   - Results
   - Lessons
5. Project Quality Improvement
Burden of Tuberculosis: Global and India

**Global***:
- **Incidence** – 8.6 million
- **Deaths** – 1.3 million; 320,000 among HIV+ (3.7%)
- **HIV co-infection** – 1.1 million (13%)
- **MDR-TB**: 450,000; 3.6% of new, 20% of PT TB
- **‘Missing’ TB Cases**: 2.9 million (34%)

**India***:
- **Incidence** – 2.2 million; 26% of global TB
- **Deaths** – 270,000; 42,000 among HIV+ (1.9%)
- **HIV co-infection** – 130,000 (5.9%)
- **MDR-TB**: ?100,000; 2.2% of new & 15% of PT TB
- **‘Missing’ TB Cases**: 730,000 (33%)

*WHO Global TB Report 2013; $WHO TB Country Profiles, 2012*
Determinants of the TB Burden?

**PREVALENCE**
- A very old germ
- Endemic

**SOCIO-ECONOMIC**
- Over-population
- Over-crowding
- Poverty
- Substance abuse
- Cultural determinants of health seeking
- Shared air
- Low literacy levels

**HEALTHCARE**
- Largely serving the affluent
- No mandatory continued medical education
- Multiple health systems
- Access issues
- Non-conformation to standards
- Rampant illegal practices
- Public-private divide

Additional cultural determinants of health seeking include:
- Over-crowding
- Cultural
- Healthcare
- Substance use
- Low literacy levels
- Non-conformance to standards
… therefore… the Problems

• Disease
  ▪ Emerging drug-resistance
  ▪ Continued morbidity and mortality
  ▪ Continued high costs; financial and societal burden

• Program design
  ▪ RNTCP was program-centric; not patient-centric
  ▪ Multi-sectoral coordination absent
  ▪ Non-acceptance of RNTCP by dominant private sector
Presentation Sections

1. Tuberculosis: the disease
2. Burden of tuberculosis
   - Global
   - National
3. RNTCP: the national TB control program
4. SHOPS tuberculosis project, Karnataka
   - Concept
   - Model
   - Process
   - Results
   - Lessons
5. Project Quality Improvement
Revised National Tuberculosis Control program
GOVERNMENT-LED NATIONAL TB PROGRAM

NTP

Governance – weak
Diagnosis – using chest X-ray
Treatment – drug quality and supply, questionable
Adherence – patient not followed up, monitored
Accountability – Weak documentation, reporting

⇒ 1/3rd TB detection
⇒ 1/3rd Treatment success

RNTCP (DOTS)

Governance – strong
Diagnosis – using sputum smear microscopy
Treatment – assured drug quality, supply
Adherence – directly observed treatment
Accountability – robust documentation, reporting

⇒ 2/3rd TB detection
⇒ 4/5th Treatment success
## Global and National Priority Approaches

<table>
<thead>
<tr>
<th>Global (WHO)</th>
<th>National (Strategic Plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reach the ‘missed’ cases</td>
<td>1. Ensuring early, improved diagnosis of TB patients</td>
</tr>
<tr>
<td>2. Address MDR-TB as a public health crisis</td>
<td>2. Improving access to high-quality treatment</td>
</tr>
<tr>
<td>3. Accelerate response to TB-HIV</td>
<td>3. Optimal alignment with NRHM</td>
</tr>
<tr>
<td>4. Increase financing to close resource gaps</td>
<td>4. Involvement of private sector at scale</td>
</tr>
<tr>
<td>5. Ensure rapid uptake of innovations</td>
<td>5. Continuous QI and accountability</td>
</tr>
</tbody>
</table>
Presentation Sections

1. Tuberculosis: the disease
2. Burden of tuberculosis
   - Global
   - National
3. RNTCP: the national TB control program
4. SHOPS tuberculosis project, Karnataka
   - Concept
   - Model
   - Process
   - Results
   - Lessons
5. Project Quality Improvement
SHOPS-TB Project: Evolution of Concept

**MBPH Project:** National scan of public-private mix activities in TB

- ‘Patient-cycle’ based intervention concept developed
- Discussions with CTD, WHO, USAID; selection of geography
- Approval from USAID; GoI concurrence
- Procurement of ‘Interface Agency’ for Karnataka and Uttar Pradesh
- MBPH Interventions started in 2 states (Karnataka and Uttar Pradesh)

Evaluation of Pilots; lessons impact current national strategic plan

**SHOPS Project:** Advocacy with GoI; discussions with GoKA; model redesign

- Procurement of ‘Interface Agency’ for Karnataka
- Joint planning by Abt Associates, KHPT and GoKA
- SHOPS Intervention started in Karnataka
SHOPS-TB: ‘Patient Cycle’ based Concept

**GAPS AND SOLUTIONS**

- **Patient** [Knowledge, Behaviour, Choice]
- **Treatment (DOT) Provider** [Patient follow-up; adherence counseling]
- **Doctor for Diagnosis** [MBBS doctor trained on RNTCP/ISTC]
- **Testing Facility** [Sputum, Chest X-ray, DST, Biopsy]
- **1st Contact Provider for Identification of TB Suspect** [All type]
- **Result** Early Management Treatment Compliance

**Interface with public sector & TB patients** (to ensure desired treatment outcomes)
- Training of community DOT providers
- Facilitation of drug supply
- Patient follow-up, defaulter tracking, counseling, care & support

**Follow-up**

- Consumer focused Communication
- Capacity building & supportive supervision of all type of private healthcare providers
- RNTCP but are relevant to consumers (e.g. ISMH, LTFQ & chemists)

**Solutions**

- **Training & supportive supervision of private qualified allopathic practitioners**
  
  - Practice DOTS

- **Quality Assured Sputum Collection & Testing**
  
  - Lack accreditation

- **Referral**

- **Plan of action**
  
  - Training of community DOT providers
  
  - Facilitation of drug supply
  
  - Patient follow-up, defaulter tracking, counseling, care & support

- **Public-private collaboration** is fraught with challenges & barriers
  
  - pHCP do not have the means or felt need to follow up patients on treatment
  
  - Patient counseling, especially with regard to treatment compliance, is poor
  
  - Patient-friendly management of complications or side-effects of drugs is missing from NTP protocols

- **Referral systems** are weak

- **Training of community DOT providers**

- **Facilitation of drug supply**

- **Patient follow-up, defaulter tracking, counseling, care & support**

- **Public-private partnerships**

- **Quality Assured Sputum Collection & Testing**

- **Training & supportive supervision of private qualified allopathic practitioners**

- **Practice DOTS**

- **Patient focused Communication**
SHOPS-TB: Purpose

- Increase TB notification
- Early diagnosis and treatment initiation
- Improve treatment outcomes

⇒ Reduce risk/spread of drug-resistant TB
⇒ Reduce morbidity and mortality
⇒ Reduce costs
SHOPS-TB: Model

Public Sector led RNTCP

Private Health Sector

Interface

Patient, Family & Community

National advocacy
Local advocacy
Capacity building
Communication
Care & support

Local advocacy
Capacity building
Patient retention
SHOPS-TB: Process
INTERVENTIONS expected to DELIVER RESULTS

Current Behaviors:
Most TB symptomatics/patients consult private providers, but are not recommended standard investigations, treatment regimens, and/or appropriate follow-up

Influencing Behavior:
- Advocacy – community; public & private health service sectors
- Communication to improve health-seeking behavior in community
- Capacity building of private providers
- Public-private-community interface

Delivering Services:
- Referral of TB symptomatics
- Sputum collection and transportation
- Care and support through patient home visits
- ICT: telephonic follow-up of TB patients; ‘TB Careline’

Desired Behaviors:
All TB symptomatics/patients visiting private providers are recommended evidence-based investigations, standard treatment regimens, and follow-up support, for adherence and prevention of spread of TB
**SHOPS-TB: Process**

THE 4x4 DRIVE expected to SUSTAIN, REPLICATE MODEL

---

**Seek & Engage**
- ‘Ask’ community (TG)
- Map by type, facility
- Orient if relevant
- Engage M/colleges.

**Improve Awareness, Knowledge**
- In-clinic or group training (all type)
- Medical council accredited CME

**Empower; Facilitate Correct Behavior**
- Clinic visit support
- Exchange forums
- ICT-aided support
- Facilitate notification

**Strengthen Commitment**
- Institutionalization
- Advocacy by peers
- Evident value

---

**Private Health Care Providers**
- List slums & MARP
- Slum 'entry'; KOL
- Slum mapping

**Target Community: Consumers**
- Identify affected persons
  - In community
  - At PHCP clinics
- Communication activities: IPC, small & large group meetings, events

**TB Patients & Affected Persons**
- Patients receive correct information and choices from service provider

**RNTCP Managers & Services**
- Sputum collection & transportation
- Peer group support
- Counseling
- Continuous engagement of RNTCP FLW
- Showcase benefits to RNTCP managers

---

**RNTCP Managers**
- List RNTCP & public health facilities
- Map by type, facility

---

- Treatment support (in-person, ICT, medical care)
- Counseling
- Advocacy:
  - State (MoH/NTP)
  - National (CTD)
## SHOPS-TB: Indicators of Success

<table>
<thead>
<tr>
<th>S No</th>
<th>Indicator</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>↑ in number of chest symptomatics (CS) tested</td>
<td>By EoP</td>
</tr>
<tr>
<td>2#</td>
<td>Number of CS benefitting from sputum collection and transportation</td>
<td>Interim</td>
</tr>
<tr>
<td>3*</td>
<td>↑ in number of TB patients notified to RNTCP</td>
<td>By EoP</td>
</tr>
<tr>
<td>4#</td>
<td>↓ In reported delay in TB diagnosis and initiation of treatment</td>
<td>By EoP</td>
</tr>
<tr>
<td>5#</td>
<td>Treatment compliance among TB patients</td>
<td>Interim</td>
</tr>
<tr>
<td>6#</td>
<td>Determination of solution packages for adoption of TB management guidelines by qualified private health care providers</td>
<td>Done</td>
</tr>
<tr>
<td>7#</td>
<td>Factors influencing acceptance of RNTCP protocols by TB patients</td>
<td>By EoP</td>
</tr>
</tbody>
</table>

*Source: RNTCP records; #Source: SHOPS MIS records, surveys*
SHOPS-TB: Interim Results… 1/5

COMMUNICATION [EACH MONTH]

- 400,000 person contacts made till July

- Persons reached through IPC
- Persons reached through Small Group Meeting
- Persons reached through Large Group Meeting
- Persons reached through Events
- No of KOL reached
- Total

Confidential Data
SHOPS-TB: Interim Results… 2/5
PRIVATE HEALTH CARE PROVIDER ENGAGEMENT [CUMULATIVE]

Confidential Data

% of pHCP (POMM, ISMH, LTFQ) referring, among NW pHCP

- No. of pHCP (POMM, ISMH, LTFQ) referring >1 TB symptomatic
- No. of pHCP (POMM, ISMH, LTFQ) networked
- No. of pHCP (POMM, ISMH, LTFQ) trained
- No. of HCP mapped (All type)
SHOPS-TB: Interim Results… 3/5

REFERRAL FOR SPUTUM TEST, TESTS DONE [EACH MONTH]

Confidential Data

- No. of sets of sputum samples tested out of the referred cases [IS]
- Total no. of TB symptomatics referred for investigations [IS]
- No. of sets of sputum samples tested out of the referred cases [OS]
- Total no. of TB symptomatics referred for investigations [OS]
**SHOPS-TB: Interim Results… 4/5**

**TB DIAGNOSIS, NOTIFICATION [CUMULATIVE AND TOTAL]**

Overall Patient Numbers – Apr-13 to July-14

<table>
<thead>
<tr>
<th>Population</th>
<th>Tested (SSM)</th>
<th>Diagnosed</th>
<th>% RNTCP</th>
<th>% Notified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In-slum</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 million</td>
<td>5560</td>
<td>1768</td>
<td>76%</td>
<td>78%</td>
</tr>
<tr>
<td><strong>Non-slum</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 million</td>
<td>1578</td>
<td>3970</td>
<td>23%</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Total (town)</strong></td>
<td><strong>7138</strong></td>
<td><strong>5738</strong></td>
<td><strong>39%</strong></td>
<td><strong>42%</strong></td>
</tr>
</tbody>
</table>
SHOPS-TB: Interim Results… 5/5

TB NOTIFICATION TO SHOPS [EACH MONTH]

Confidential Data

- No. of TB Patients Notified Monthly to SHOPS per 100,000 Slum Pop. (1.093 mill.)
- No. of TB Patients Notified Monthly to SHOPS per 100,000 Town Pop. (6.18 mill.)
- Interface Agency Cost (USD) per TB Patient Diagnosed each Month

Market-based Partnerships for Health
1. Tuberculosis: the disease
2. Burden of tuberculosis
   - Global
   - National
3. RNTCP: the national TB control program
4. SHOPS tuberculosis project, Karnataka
   - Concept
   - Model
   - Process
   - Results
   - Lessons
5. Project Quality Improvement
QI: Based on Information Collected, Analyzed

- **Program MIS; periodic evaluation**
  - Period visits/discussions with:
    - Patients and their family members
    - Key community opinion leaders
    - Private health care providers
    - RNTCP program managers and front line workers
  - Engagement of field-level staff in decision making
  - Adapting to national needs, changes
  - Review of emerging data, results
## Program Quality Improvement

**SOME OF THE PROBLEMS WE FACED UNDER MBPH and SHOPS**

<table>
<thead>
<tr>
<th>Group</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community, person with symptoms</td>
<td>Persons with chest TB symptoms (CS) do not go for sputum smear microscopy (SSM) to certified labs</td>
</tr>
<tr>
<td>Private health care provider</td>
<td>Few CS are referred for SSM by private health care providers (pHCP)</td>
</tr>
<tr>
<td>Private health care provider</td>
<td>Only 50% of networked pHCP known to refer patients for diagnosis, follow up care; adherence to standards</td>
</tr>
<tr>
<td>Patient, family</td>
<td>Multiple care and support issues (DOT, stigma, unaddressed concerns of patients and family)</td>
</tr>
<tr>
<td>Patient</td>
<td>Care and support of patients managed by pHCP outside intervention slums</td>
</tr>
</tbody>
</table>
Program Quality Improvement... 1/5

COMMUNITY, PERSONS WITH PULMONARY TB SYMPTOMS

Self-efficacy
Persons with chest TB symptoms (CS) do not go for sputum smear microscopy (SSM) to certified laboratories

Active screening of persons with TB symptoms, during communication visits

Referral of CS directly to RNTCP designated microscopy centers

CS may be escorted to DMC, if needed
PRIVATE HEALTH CARE PROVIDERS

Program Quality Improvement... 2/5

Access to Diagnosis
Few CS are referred for SSM by private health care providers (pHCP)

- Sputum collection & transportation
- Program-supported sputum collection
- Market-based approach
Quality TB Management by Private Practitioners

Only 50% of networked pHCP known to refer patients for diagnosis, follow up care. Adherence to all standards is low

PRIVATE HEALTH CARE PROVIDERS

Program Quality Improvement... 3/5
PATIENT AND FAMILY

Availability of Care and Support
Multiple care and support issues (DOT, stigma, unaddressed concerns of patients and family)

Revised care and support protocols; focused on cure and prevention

Individualized care and support

Peer-group support meeting
Access to Care and Support
C&S of patients managed by private health care providers and who live outside the reach of program staff (out-of-intervention slums)

Careline
providing telephonic support to patients who (a) prefer not to have, or (b) cannot receive, in-person C & S
The next generation may receive the highest standards of care & support from healthcare providers of their choice.

Disclaimer
This presentation is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States government.

Photo Credit: O George
Were the Objectives Achieved?

- The ‘uninitiated’ learn a little about tuberculosis (TB)
- Know the burden of TB and its implications
- Learn the concept of SHOPS-TB – Why? How?
- Understand the SHOPS-TB model
- Learn about the intervention
  … and its results
- Know about the key issues which influenced quality improvement (QI) of the SHOPS project