

National Case-Finding Strategies for Childhood TB in Malawi

WHO Pediatric TB Subgroup Meeting

Malawi National TB Control Programme, Clinton Health Access Initiative

December 3rd, 2015



Outline

Background

Assessment Findings: Barriers to Case-Finding in Children

NTP Strategy

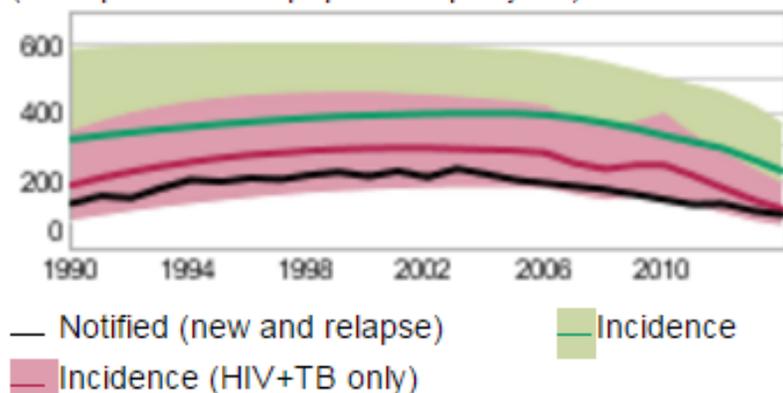
Key Challenges and Opportunities

Based on its recent prevalence study, Malawi's TB incidence estimates have increased from 26,000 to 38,000

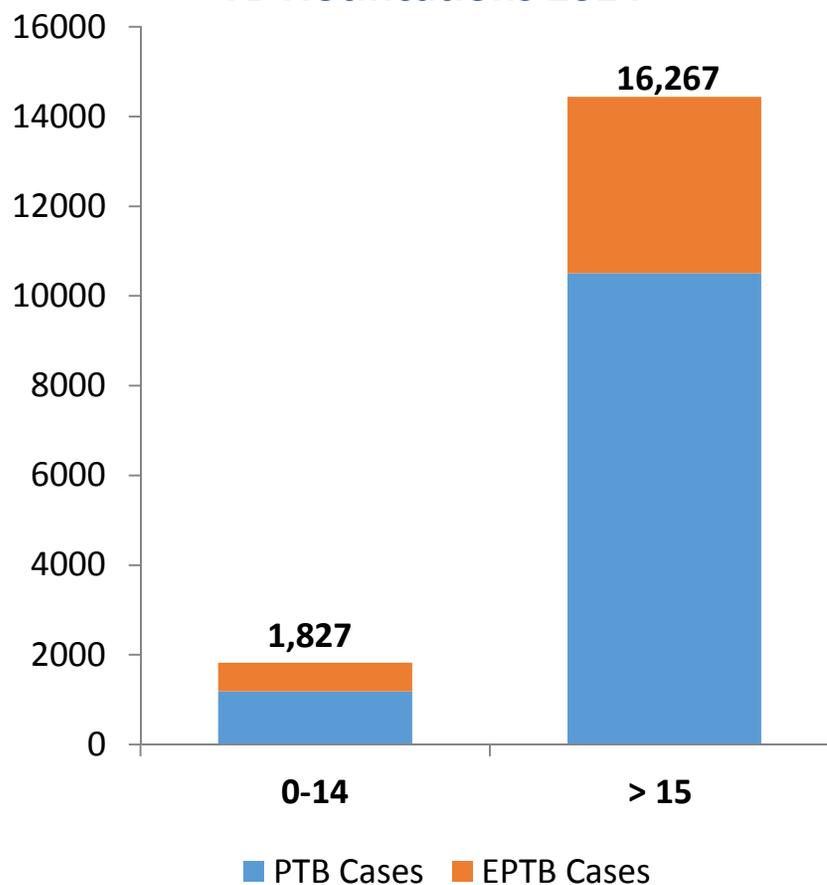
Country Context (2014)

- Incidence rate: **227/100K**
- TB/HIV co-infection rate: **54%**
- Case detection rate: **43%**
- Treatment success rate: **82%**

(Rate per 100 000 population per year)



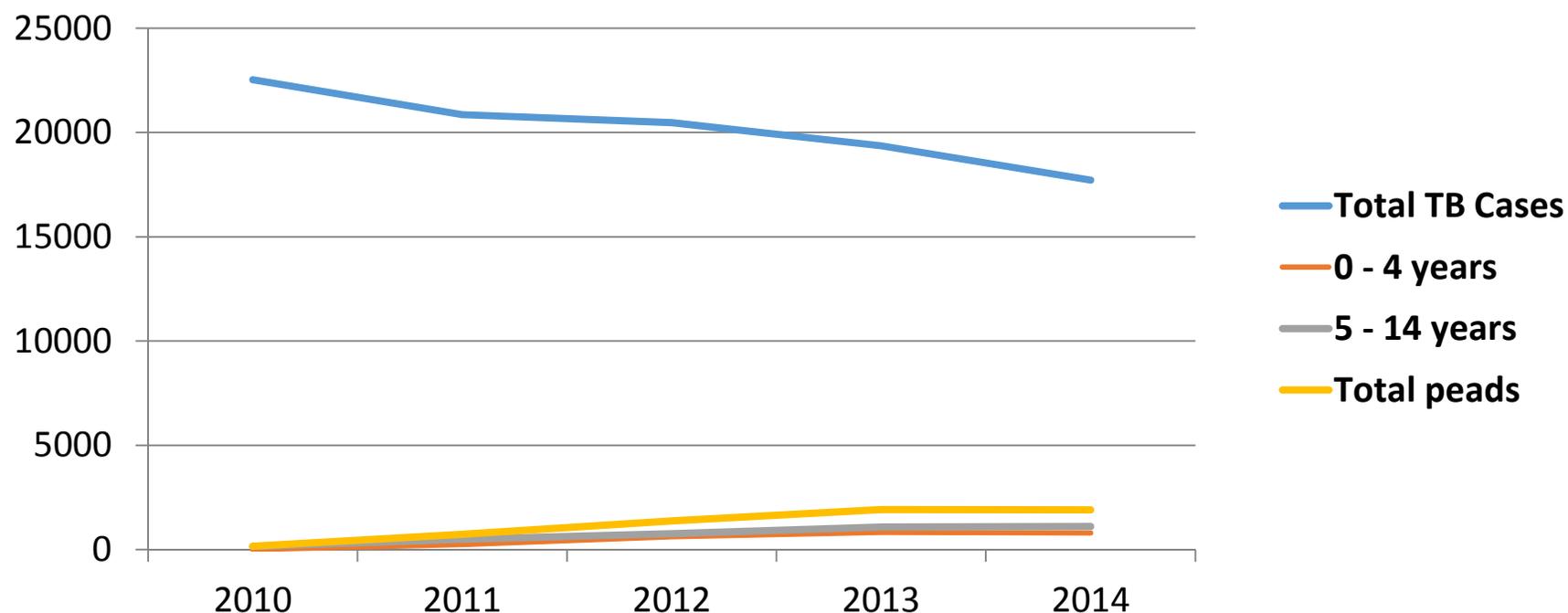
TB Notifications 2014



In 2014, children made up 11% of notifications in Malawi.

While the total TB notifications in Malawi have declined over the past 5 years, peds TB notifications have slightly increased.

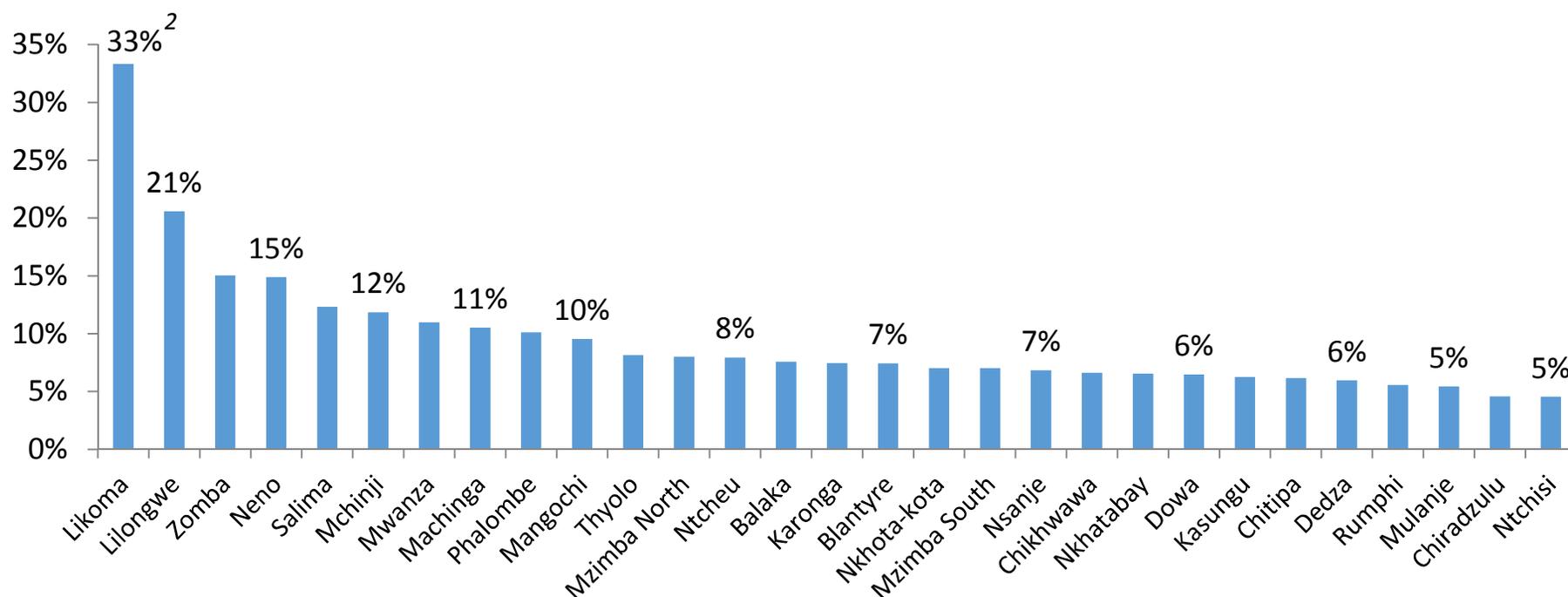
TB Notifications, Malawi, 2010 – 2014



- The increase in ped TB notifications likely indicates improved case-finding and reporting, but there are still considerable gaps in this area.
- Children currently account for ~11% of all TB notifications.

The % of overall TB cases found in children varies widely by district, and is highest in the capital city and surrounds.

Percent of children among notified TB cases by district, 2014¹



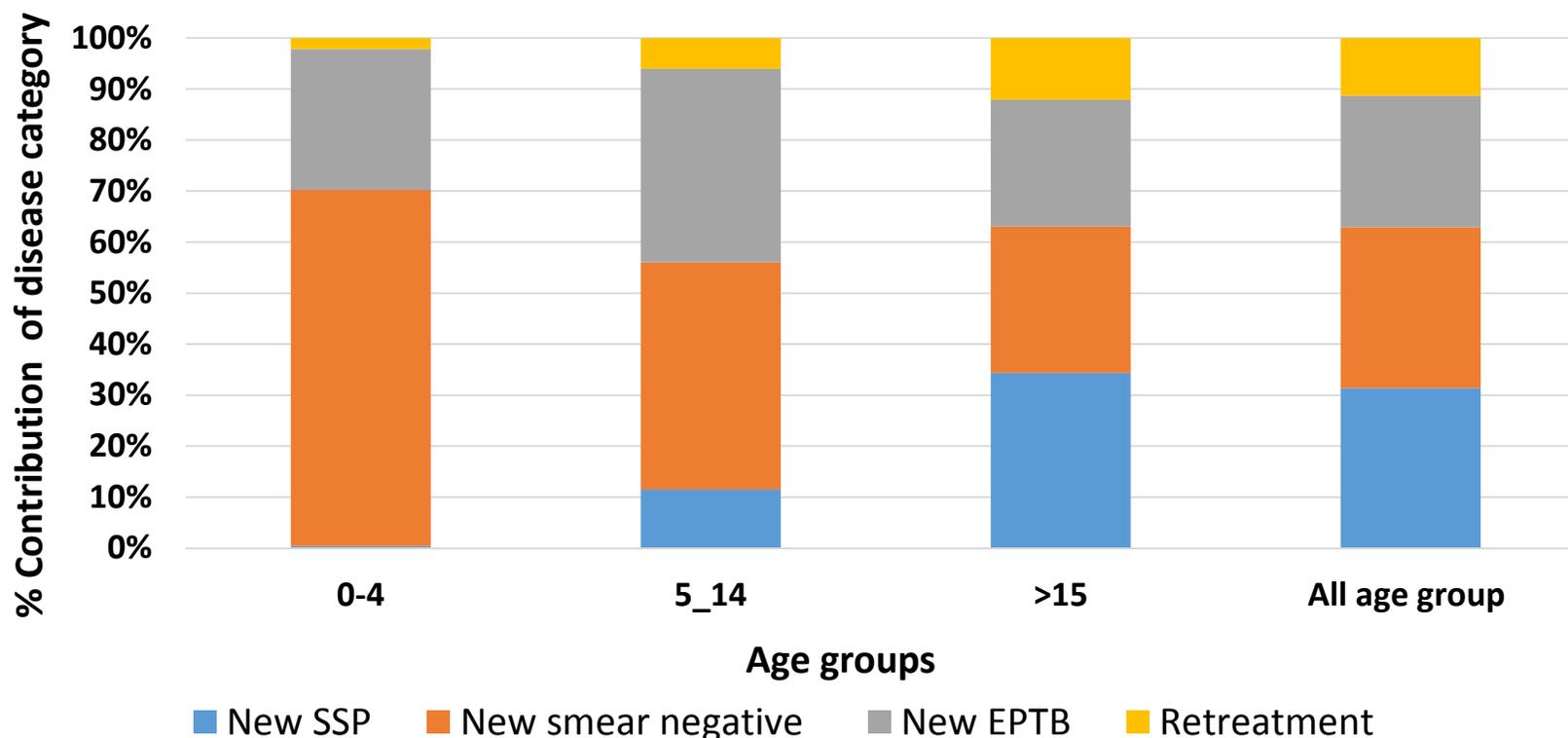
Variations in age distribution and access to quality TB diagnostic services are likely to drive the differences across districts.

Lilongwe and Zomba, both of which are highly urbanized districts, had the highest rate proportion of TB in children.

1. Malawi National TB Program 2014 Data; 2. The district figure is misrepresentative (only 3 notifications in whole district, of which 1 was a child)

Smear-negative and extra-pulmonary TB are the most common forms of disease in children.

Distribution of disease type by age group, 2014



- In children 0-4 years , <1 % of the TB notifications are smear-positive, and diagnosis therefore relies heavily on clinical assessment and x-ray if available.
- Children 5-14 years old have a higher proportion of EP TB than any other age group, which is more difficult to diagnose.

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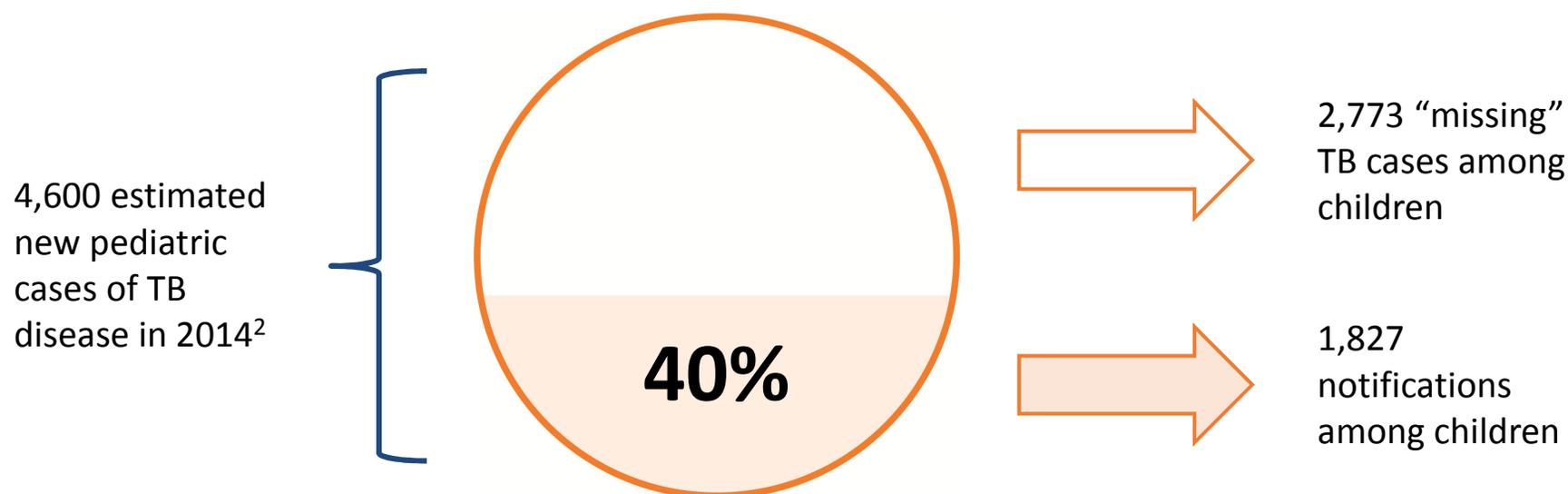
Assessment Findings: Barriers to Case-Finding in Children

NTP Strategy

Key Challenges and Opportunities

The pediatric TB CDR is estimated at 40%,¹ which is slightly lower than the adult CDR of 44%.

Pediatric TB Detection Rate, 2014



A number of different challenges result in missed child TB cases, which we set out to investigate

1. Pediatric TB CDR = (# TB notifications in children)/(pediatric TB incidence); pediatric TB incidence = TB incidence * proportion of TB in children (where the proportion of TB in children was estimated to be 12% (WHO Afr region 2010 estimate)).
2. The TB incidence rate was revised upwards from 156 to 262 per 100K by WHO in 2015 based on a recent prevalence study

The NTP and CHAI conducted an assessment to understand drivers of the gap in case detection, and the broader state of service delivery for pediatric TB.

Assessment Objectives

- 1 To determine the extent to which current **peds TB guidelines** are being implemented in facilities
- 2 To identify challenges that affect the **quality of TB services** being provided at facilities
- 3 To understand the **pediatric TB screening operations** in place at facilities
- 4 To identify the barriers and potential solutions to **increasing pediatric TB screening** among clients

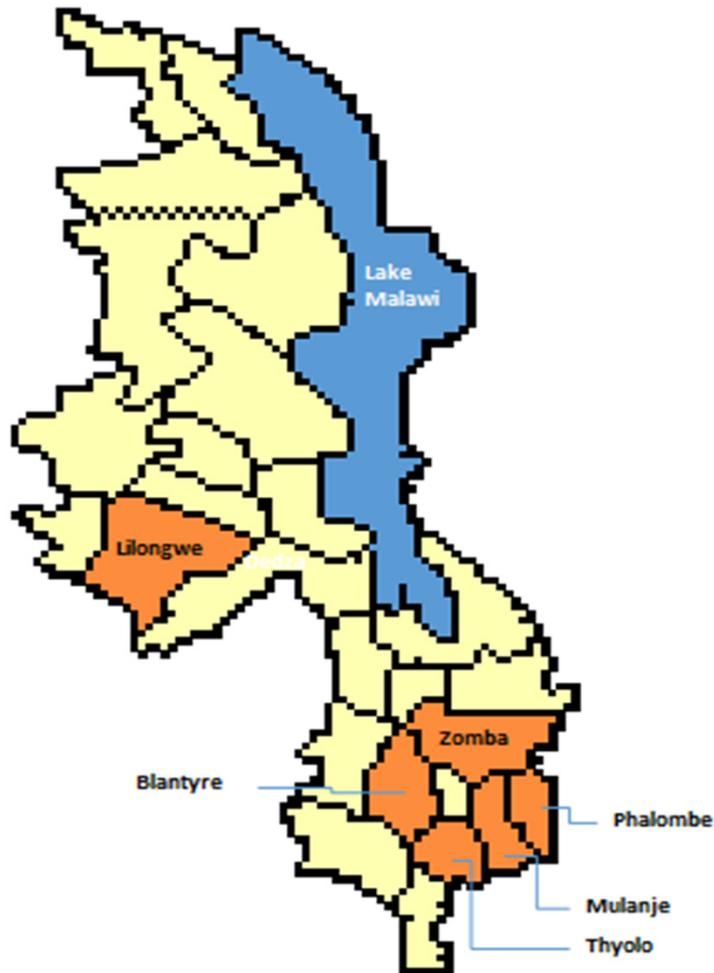
Methods

Qualitative questionnaires: Head of Facility or Clinician in-charge, HTC Supervisor / Counselor, TB, EID and ART focal person.

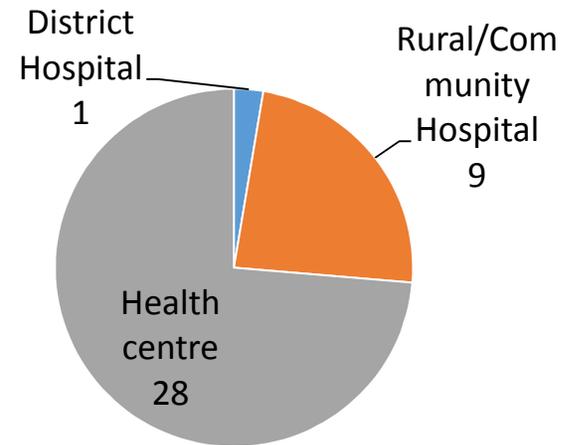
Quantitative Data Collection: Register Review to measure number of children diagnosed with active TB, disaggregated by method of diagnosis.

A CHAI-MoH team visited all the 38 facilities to collect the data.

Site selection: 38 facilities from the 6 districts with the highest pediatric ART treatment gap were selected for the assessment



Facility type¹ (38 facilities)



- The six districts account for approximately 50% of the estimated pediatric ART treatment gap
- DHMTs identified facilities that had the greatest overall peds HIV and TB service delivery challenges

1. 7 of the 38 facilities selected were CHAM facilities

Key assessment findings on Pediatric TB Service Delivery

A. TB Screening

B. TB Diagnosis

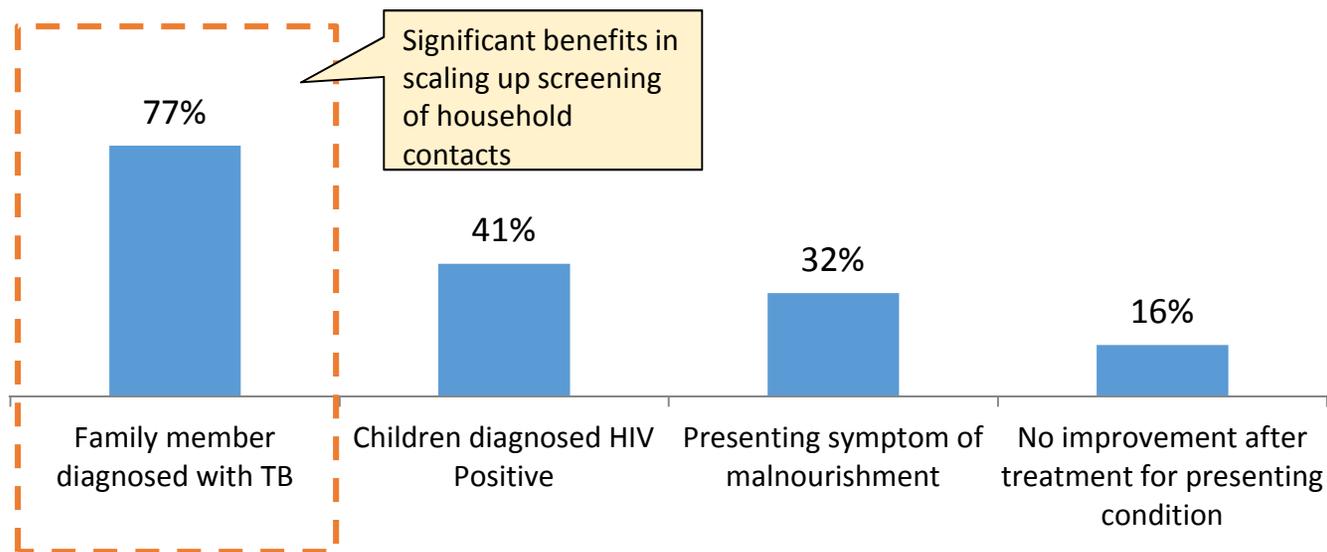
C. IPT Provision

D. Follow-up

E. Health Worker Capacity

Critical opportunities to identify presumptive case of TB are being missed in the facility setting.

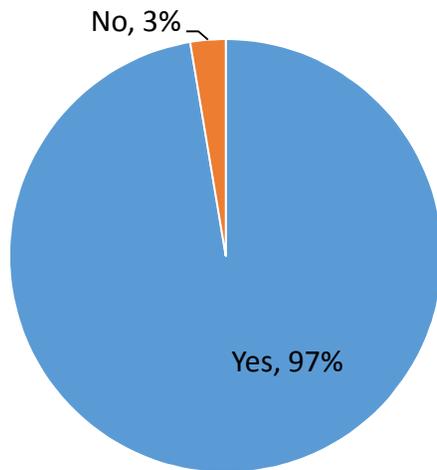
Types of children screened for TB (44 respondents)



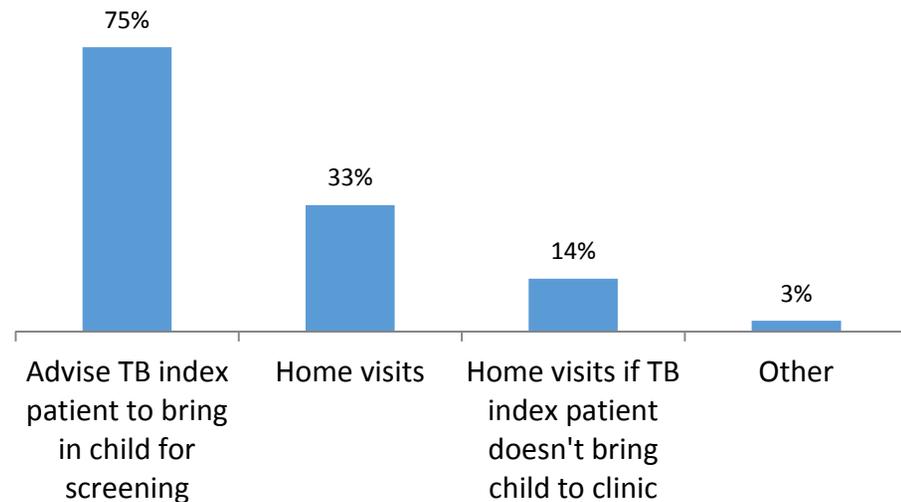
- $\frac{3}{4}$ of respondents report screening children who are family members of those diagnosed with TB, although there are some challenges with how this is implemented (next slide).
- **Less than half of the respondents screen children who have been diagnosed with HIV.**

The reliance on caretakers to bring contact children for screening undercuts the impact of this important intervention.

Percent of facilities that conduct pediatric TB contact tracing (38 respondents)



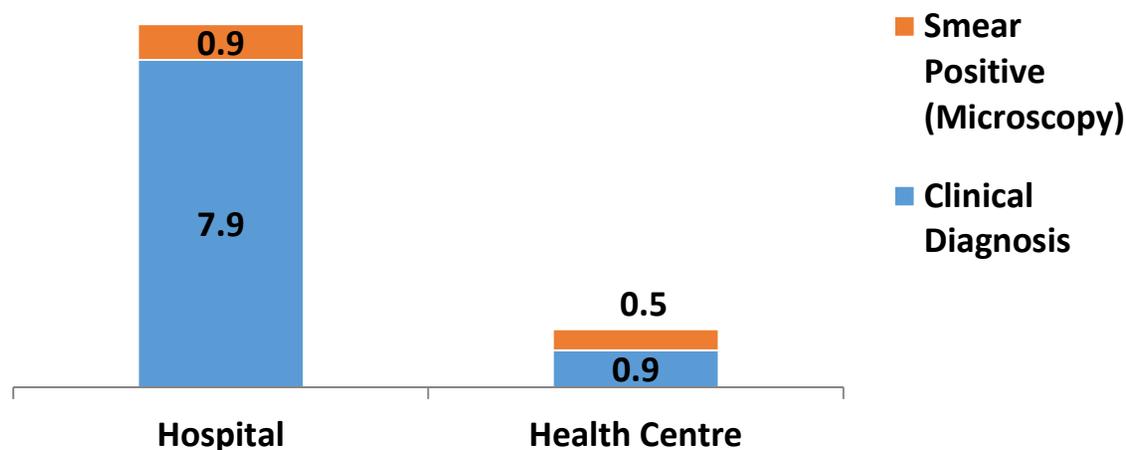
Most commonly mentioned methods of contact tracing (36 respondents)



- While most respondents do contact tracing, the majority rely on the TB index case bringing the child back for screening. However, research from Malawi shows that <10% of caretakers will return (Nyirenda et al).
- Shifting towards more active pediatric contact tracing will lead to higher numbers of identified children.

Clinical diagnosis is the mainstay of case detection in children (89% of all pulmonary cases); lab systems struggle to support bacteriological confirmation

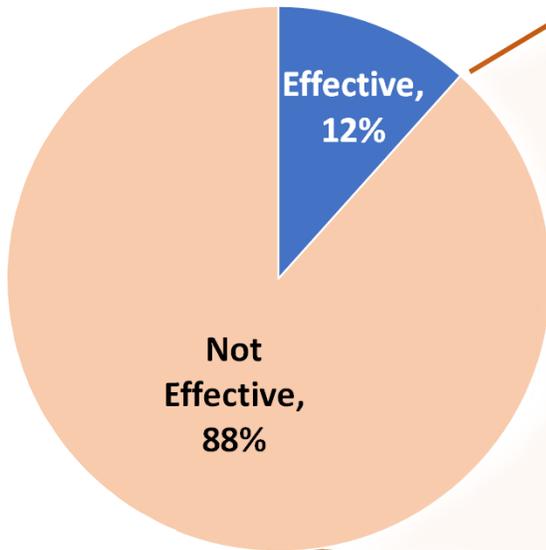
Avg. number of children diagnosed per facility per year by diagnosis type
(18 HC, 9 hospital respondents)



- Most facilities (84%) where sputum collection is not available take longer than 24 hours to return sputum result to patient. Respondents believe this is primarily due to shortage of staff at the lab, and transport issues.
- GX is rarely used as the initial diagnostic for the majority of children. Chest x-ray confirmation is highly encouraged for clinical diagnosis.

Most clinicians (88%) interviewed believe they are not effective at providing pediatric TB services.

TB Effectiveness (43 respondents)

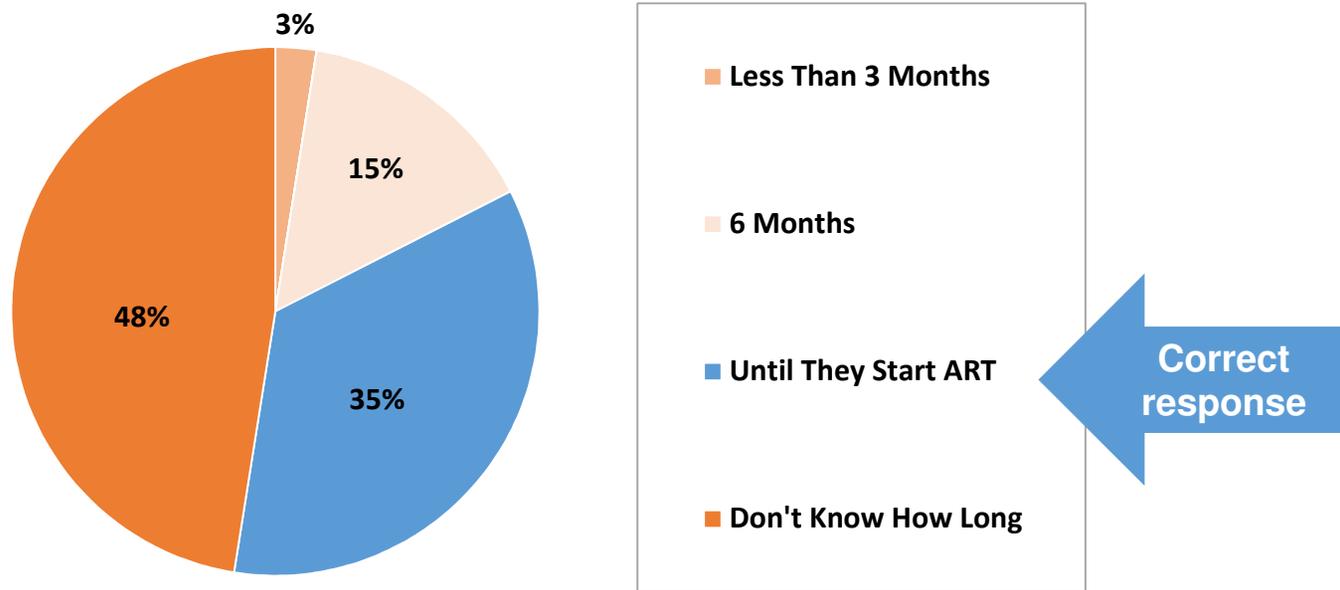


Reasons stated for lack of effectiveness	# Respondents (n=40)	%
Lack of training on pediatric TB (screening, diagnosis, treatment)	24	78%
Lack of support and materials	4	10%
Lack of diagnostic tools	4	10%
High workload/patient Congestion	4	10%
Not enough focus on pediatric TB (relative to HIV)	2	8%

Inadequate training is most frequently cited as the cause for ineffectiveness.

The need for training materials for HCW was also evident in other areas – for example, the lack of clarity on IPT guidelines

Length of time IPT is provided for HIV+ children NOT on ART



A complete report of the assessment findings is available on request – contact louansafi@clintonhealthaccess.org.

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Assessment Findings: Barriers to Case-Finding in Children

NTP Strategy

1. Integrate TB into MCH settings
2. Strengthen Contact Tracing
3. Improve HCW knowledge on pediatric TB

Key Challenges and Opportunities

Existing structures and policies for Childhood TB

- Care and Treatment Officer responsible for Childhood TB in NTP
- Childhood TB is addressed extensively in national TB guidelines
- Improving performance on childhood TB is one focus of the national strategic plan(2015-2020), with emphasis on:
 - Improving detection and diagnosis through integration with other child-focused departments (community through tertiary levels)
 - Prevention: improving coverage of IPT
 - Improving capacity of health worker in management of childhood TB

1: Integrate TB into MCH settings: the NTP will pursue integration of TB into MCH settings to increase reach. Immediate priorities include:

Introduce TB screening and referral of both mother and child...

- 1. At community level** – in collaboration with iCCM, EPI outreach clinics, Community Based Maternal and New Born Care
- 2. At the primary health care level**– in collaboration with IMCI, EPI Clinics, Antenatal Clinics, Postnatal clinics, U5/Child wellness Clinic, Community Management of Acute Malnutrition.
- 3. At the tertiary and secondary levels** – in collaboration with Emergency Triage Assessment and Treatment (ETAT)/ Paediatric Hospital Improvement (PHI)

1: Integrate TB into MCH settings: the initial focus will be on strengthening community-based TB screening of children

- **How:** through iCCM, EPI outreach Clinics and Community Based Maternal and Newborn Care
 - Ensure all attendees are asked about contact with a TB patient
 - Ensure all attendees are screened and referred where necessary
- **Who:** Community Health Workers e.g. HSA, Community Health Nurses Community volunteers.
- **When:** 2016 - 17
- **Funding:** Challenge TB, UNICEF, Global Fund, Malawi Government

Baylor is also conducting systematic screening of TB in children's clinics.

2. Strengthen Contact Tracing: the NTP will also strengthen case finding through the introduction of a contact tracing SOP.

- Guidelines encourage active contact tracing for **all household contacts of pulmonary TB (sm+ and sm-) and MDR-TB cases**
- Contacts under 5 years of age and HIV-positive contacts (not on ART) are **eligible for IPT**
- **An estimated 1,970 peds TB cases** could have been identified through household contact tracing in 2014 (~43% of incident cases)
- **SOPs have been developed** along with a new contact tracing register, training materials and forms (home visit, appointment).
- **A pilot** of these materials is running for 2 months through the end of January.
- **Nation-wide rollout** is expected to start in March 2016

Tuberculosis Contact Tracing Standard Operating Procedures (SOPs)



MINISTRY OF HEALTH

National Tuberculosis Control Programme

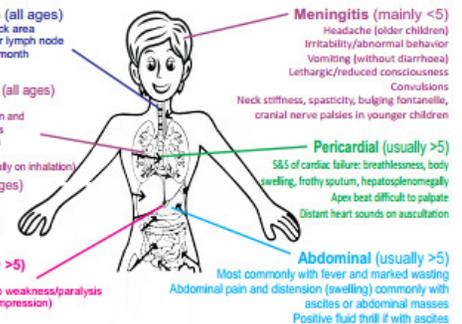
November 2015

Pilot Version

3. Improve HCW Knowledge on Peds TB: job aides and training materials will be rolled out to facilities to strengthen HCW capacity

Pulmonary and Extra-Pulmonary TB in Children (0-14 yrs)

Disease/Body Area	Typical Signs/Symptoms	Other Signs/Symptoms	Further Investigation
General (all children)	<ul style="list-style-type: none"> Weight loss or failure to gain weight Fatigue, reduced playfulness Fever and/or night sweats <p>*Always check for: malnutrition, HIV status, contact history</p>	<ul style="list-style-type: none"> Irritability, respiratory distress, poor feeding and marked hepatosplenomegaly 	<ul style="list-style-type: none"> Collect sputum for all suspected types of TB → if HIV+, send for GeneXpert, else AFB HIV rapid test for all cases Conduct further investigation based on suspected TB form
Pulmonary (all children)	<ul style="list-style-type: none"> Cough (> 2 wks) Chest pain +/- Coughing up blood (haemoptysis) 	<ul style="list-style-type: none"> As Above 	<ul style="list-style-type: none"> If sputum smear negative or no sample, do chest x-ray (CXR)
TB Lymphadenitis (all children)	<ul style="list-style-type: none"> Most commonly in neck area Painless, non-tender lymph node enlargement for more than one month 	<ul style="list-style-type: none"> Neck stiffness Lymph nodes may be painful +/- discharging sinus 	<ul style="list-style-type: none"> Fine needle aspiration (FNA): Aspirate for AFB Lymph node excisional biopsy
Pleural Effusion (all children)	<ul style="list-style-type: none"> Shortness of breath Dullness on percussion and reduced breath sounds Reduced chest motion Unilateral +/- chest pain (especially on inhalation) 	<p>Lymphadenitis (all ages) Most common in neck area Painless, non-tender lymph node enlargement for >1 month</p> <p>Pleural Effusion (all ages) Shortness of breath Dullness on percussion and reduced breath sounds Reduced chest motion Unilateral +/- chest pain (especially on inhalation)</p> <p>Pulmonary (all ages) Cough (>2 wks) Chest pain</p>	<p>Meningitis (mainly <5) Headache (older children) Irritability/abnormal behavior Vomiting (without diarrhoea) Lethargic/reduced consciousness Convulsions</p> <p>Neck stiffness, spasticity, bulging fontanelle, cranial nerve palsies in younger children</p> <p>Pericardial (usually >5) S&S of cardiac failure: breathlessness, body swelling, frothy sputum, hepatosplenomegaly Apex beat difficult to palpate Distant heart sounds on auscultation</p> <p>Abdominal (usually >5) Most commonly with fever and marked wasting Abdominal pain and distension (swelling) commonly with ascites or abdominal masses Positive fluid thrill if with ascites</p> <p>General Symptoms Weight loss Fatigue, reduced playfulness Fever and/or night sweats</p> <p>Always check for: malnutrition, HIV status, contact history</p>
Spinal TB (usually 5 and older)	<ul style="list-style-type: none"> Deformity of spine (e.g. a Gibbus) May have lower limb weakness/paralysis (features of cord compression) 	<p>ly >5) pne or limb weakness/paralysis rd compression)</p> <p>ily >5) sion of knee or hip (commonly affects a single joint) of long bones with limited movement iteric symptoms</p> <p>eminated (mainly <5)</p> <p>ited</p>	



Desk-guide for diagnosis and management of TB in children



- National guidelines will be revised and disseminated in 2016, including a pediatric section
- Pediatric TB trainings will be conducted nation-wide starting in the first half of 2016. Existing resources (Union, WHO) will be adapted for this training. Job aides will be disseminated.
- Integrated HIV/TB training packages will be developed in 2016.
- Childhood cluster documents and training materials will be revised and shared to other MoH departments/programs to integrate within their training programs in 2016.

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KEY CHALLENGES

- Pediatric TB is still mainly considered to be under the domain of specialists and not for front-line health workers
- TB diagnosis remains a major challenge given the lack of training on alternative sample collection methods (gastric lavage, induced sputum, etc) and the limited availability of x-ray machines
- Training in pediatric TB is very limited, from the clinician to CHW level

KEY OPPORTUNITIES

- The focus on increased TB screening through contact tracing and screening in MCH settings should lead to greater identification of presumptive TB cases
- Baylor is planning district-level gastric lavage training, which should lead to increased bacteriological confirmation of peds TB cases
- Resources such as the GeneXpert Ultra cartridges and new peds FDCs will also improve the management of peds TB

Questions/Comments/Suggestions?