

# CDC's Integral Role in Ending the Global TB Epidemic

| Speaker |



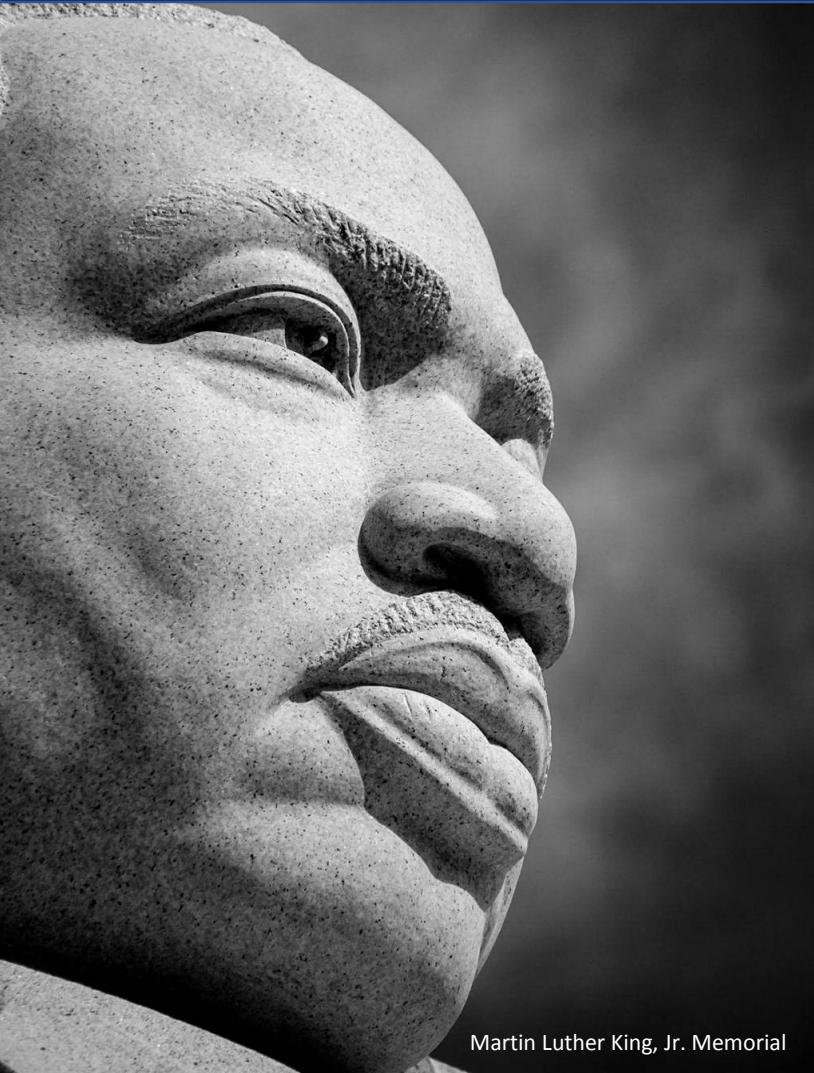
**Hank Tomlinson, PhD**  
*Director of the Division of Global HIV  
& TB (DGHT)*  
U.S. Centers for Disease Control and  
Prevention (CDC)

| Moderator |



**Keith Martin, MD**  
*Executive Director*  
Consortium of Universities  
For Global Health (CUGH)

# Global Health in a Time of Worldwide Political Change



Martin Luther King, Jr. Memorial

## CONFERENCE

APRIL 18 – 20, 2020

## SATELLITE SESSIONS

APRIL 17, 2020

Washington Hilton Hotel | Washington, DC

Go to [www.cugh2020.org](http://www.cugh2020.org) to learn how to:

- Register
- Submit abstracts, nominations, panel proposals & organize your own satellite sessions

Co-Hosts:



THE GEORGE  
WASHINGTON  
UNIVERSITY  
WASHINGTON, DC



 **JOHNS HOPKINS**  
UNIVERSITY

 **UNIVERSITY OF MARYLAND**  
STRATEGIC PARTNERSHIP  
**MPowering THE STATE**

# CDC's Integral Role in Ending the Global TB Epidemic

Hank Tomlinson, Ph.D.  
Director, Division of Global HIV & TB  
Center for Global Health  
U.S. Centers for Disease Control and Prevention







## SUSTAINABLE DEVELOPMENT GOAL 3

Ensure healthy lives and promote well-being for all at all ages

### GOAL 3, Target 3.3:

By 2030, end the epidemics of AIDS, ***tuberculosis***, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.



### Vision:

**A world free of TB**

*Zero TB deaths*

*Zero TB disease*

*Zero TB suffering*

### Goal:

**End the global TB epidemic**

Tuberculosis is the world's top infectious disease killer,

**CLAIMING**

**1.5 MILLION**

**LIVES EACH YEAR**



**1.7 BILLION**

people are infected with latent TB  
(23% of the world's population)

**10 MILLION**

people become ill with the disease each year  
**1,100,00 million** are children

**251,000** deaths

from TB among HIV-positive people;  
leading cause of death for PLHIV

**484,000** new cases

of MDR/RR-TB in 2018; accounts for  
nearly **30%** of projected AMR disease  
and death

## WHAT IS DRIVING THE CONTINUED SPREAD OF TB?



**Missed  
TB**

More than 30%  
of all TB cases go  
undetected,  
unreported, or  
not linked to care



**Weak Health Care  
Systems**

Patients are not being  
diagnosed and treated  
effectively, leading to  
continued transmission  
and growing threat of  
drug resistance



**TB/HIV  
Co-Infection**

TB is a top killer of  
people living with HIV,  
whose weakened  
immune systems make  
them more susceptible  
to becoming ill with TB



**Drug Resistant TB**

TB has grown resistant  
to available drugs.  
DR-TB is deadlier,  
costlier, and harder to  
treat. It's now found in  
every country.

# Investment in TB is a “No Brainer”

## No-brainers

Benefit per dollar spent for various development targets, \$



Source: Copenhagen Consensus Centre

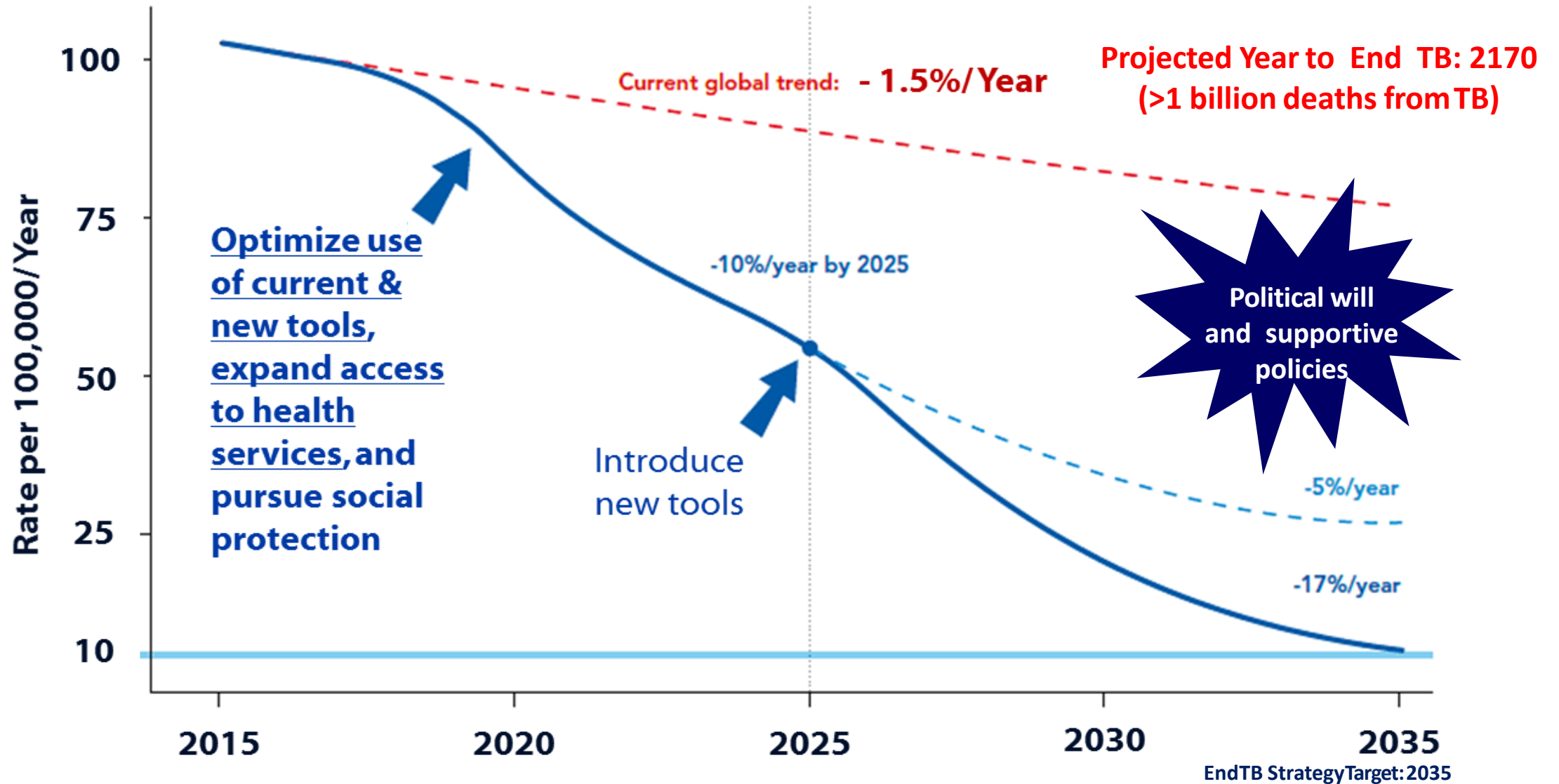
Expert panel including Nobel Laureates identified 19 Sustainable Development Goal (SDG) targets with **the best value for money for 2016-2030**

- Focus on these would **quadruple impact of aid budget** without extra spending
- Reducing TB deaths by 95% would result in a **\$43 gain in environmental, economic & social benefits per \$1 spent**
- 84% of TB funding already comes from governments of affected countries, but there remains a \$2B shortfall to reach global targets

# WHO End TB Strategy

## Accelerate Impact to EndTB & MDRTB by 2035

Scale-up What Works & Invest in Innovations





# Reason to Hope: Progress & Momentum

2% TB incidence decrease per year

Xpert Rollout:  
>10 million cartridges delivered

2018 First ever UN HLM on TB

WHO endorses shortened 9-12 mo. And all oral MDR regimen

5M PLHIV will be reached with TPT



**60 M+ lives saved**

Through TB and TB/HIV treatment, since 2000

**6.5M PLHIV screened for TB**

CDC-supported, as of September 2018

**Doubling MDR-TB Case Notifications since 2010**

**Promising new vaccine candidates**

**3 new anti-TB drugs**

Approved by FDA for treatment of MDR-TB Bedaquiline, Linezolid and Pretomanid





UNITED NATIONS  
HIGH-LEVEL MEETING ON THE  
FIGHT TO END TUBERCULOSIS  
26 SEPTEMBER 2018, UNHQ, NEW YORK

**Political leadership, collaboration and multi-sectoral accountability key requirements**

**Reaffirmed the 2030 agenda for Sustainable Development**

- Goal 3: Ensure healthy lives & promote well being

**People on treatment (2018-2022)**

- TB: 40 million
- Children with TB: 3.5 million
- MDR-TB: 1.5 million
- Children with MDR-TB: 115,000
- TB Preventive treatment: > 30 M: 6 million PLHIV, 4 million children, 20 million household contacts

**Resources (2018-2022)**

- 13 billion USD avg. per year for implementation
- 2 billion USD per year for research

# 2018 UNGA TB UNHLM Bold Targets for 2022



The screenshot shows the Stop TB Partnership website. The main heading is "MULTISECTORAL ACCOUNTABILITY FRAMEWORK TO ACCELERATE PROGRESS TO END TUBERCULOSIS BY 2030". Below this, it says "UNHLM on TB Key Targets & Commitments". There is a section for "COUNTRY TARGETS" and a footer with the World Health Organization logo and text in multiple languages.

## CDC PROVIDES



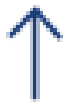
**Unmatched scientific and technical knowledge**



**Technical know-how to build large sustainable public health programs, such as PEPFAR, polio and small pox**



**Strong peer to peer relationships with Ministries of Health**



**Strategic use of data to increase impact and cost effectiveness**



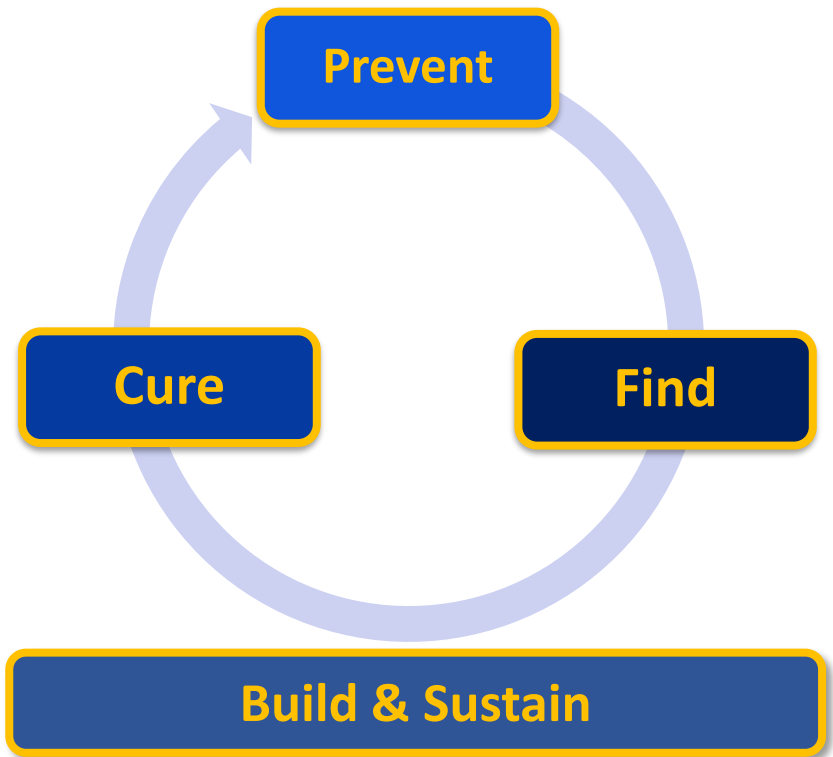
**Global and domestic expertise to inform dual efforts**



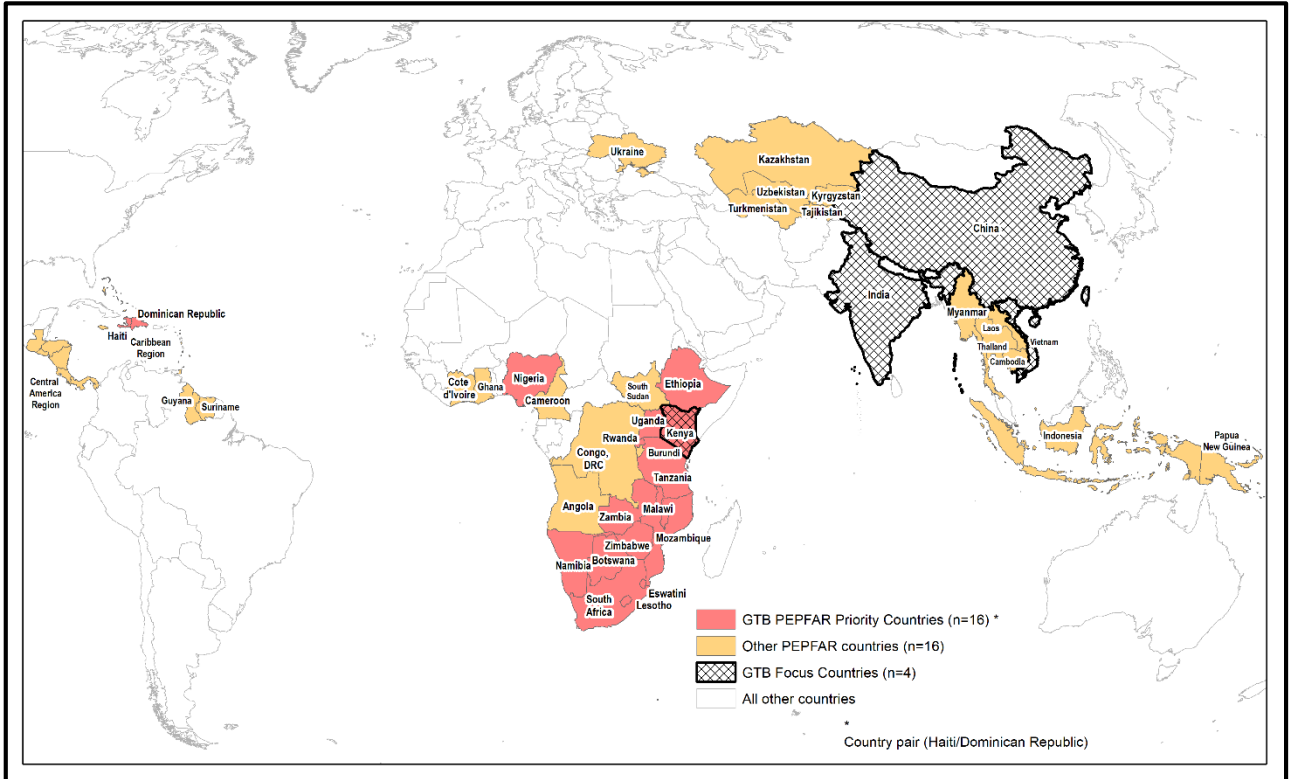
# CDC's Mission in Global TB

## Provide scientific leadership and expertise for developing, evaluating, and implementing evidence-based and innovative approaches to find, cure, and prevent TB

### Strategic Priorities



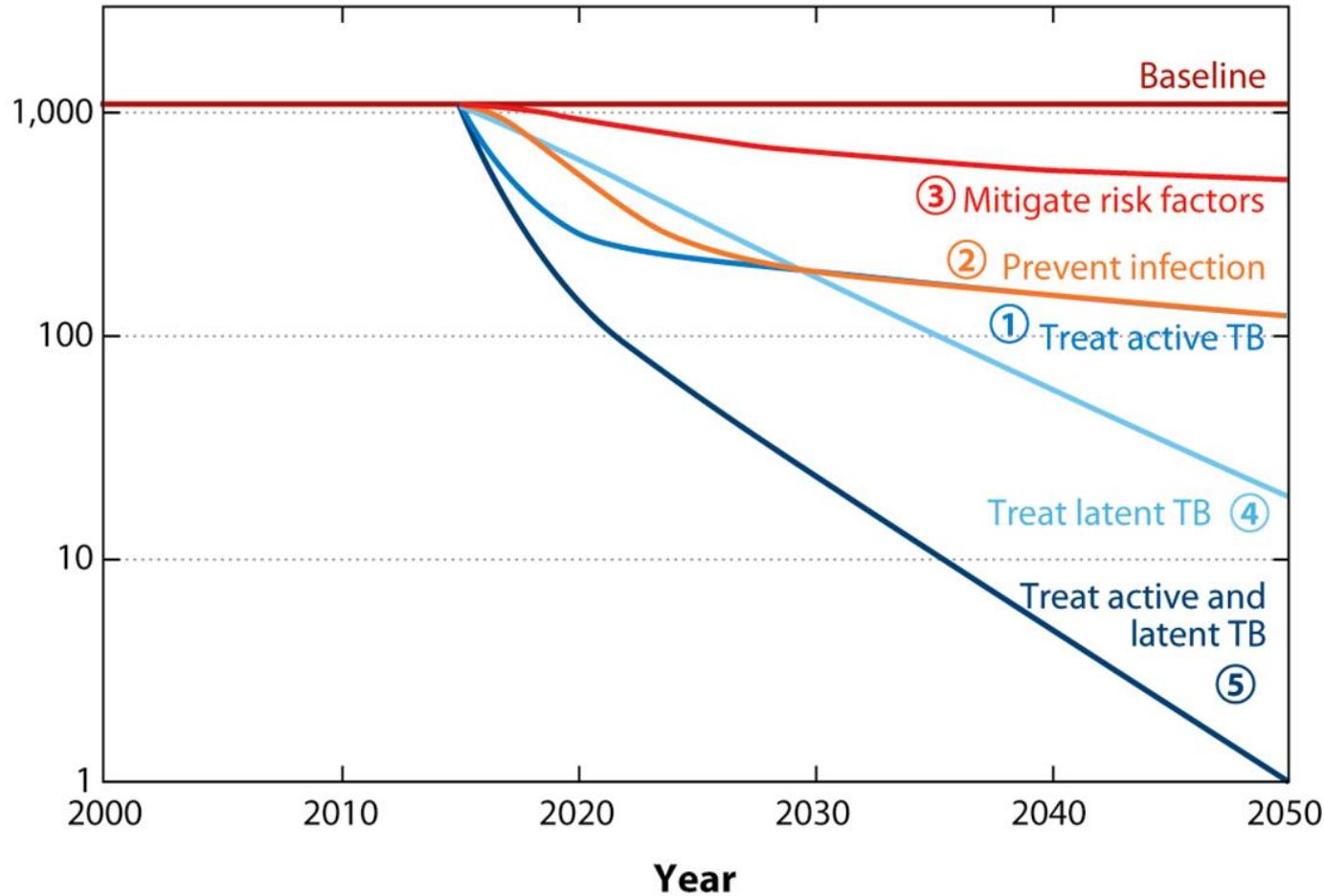
### Geographic Priorities





# Tackling TB on Every Front

## Implementing a Comprehensive Epidemic Response



### Prevent Infection:

- Breaking the cycle of transmission is essential to protect our health workforce and reduce new infections and cases

### Find and Cure Active TB:

- 40% of adult and 60% of childhood TB cases are missed each year

### Prevent Disease:

- Prevention must be linked to treatment efforts. PLHIV and children are 30x and 10x more likely to develop disease and die from TB than others, and benefit most from TB Preventive Treatment (TPT), which can reduce risk of death by up to 80%



CDC/Union collaboration: The Child and Adolescent TB Centre of Excellence

The Union

# TB in Children



Photography by Brittany Moore

As part of the Gates-funded PERCH study, we demonstrated TB is one of top 10 causes of pneumonia in children.



Photography by Brittany Moore 2019

In Mozambique and Uganda, we're implementing and evaluating approaches to household-based contact investigations to identify and treat children at risk for TB

Our work in South Africa has also led to WHO guideline changes for treatment of drug-resistant TB among children

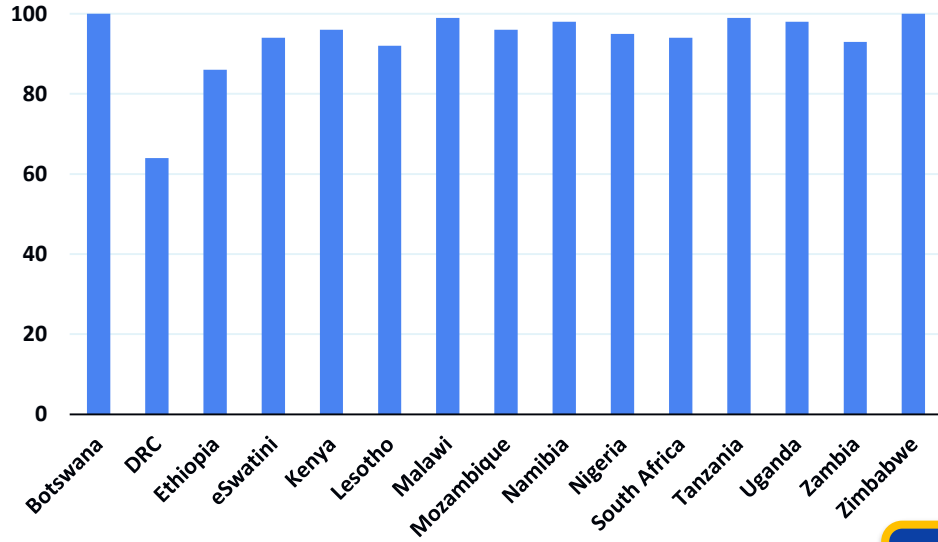


In Kenya, we are identifying the fastest, most effective way to diagnose TB in children: assessing innovative specimens & tests

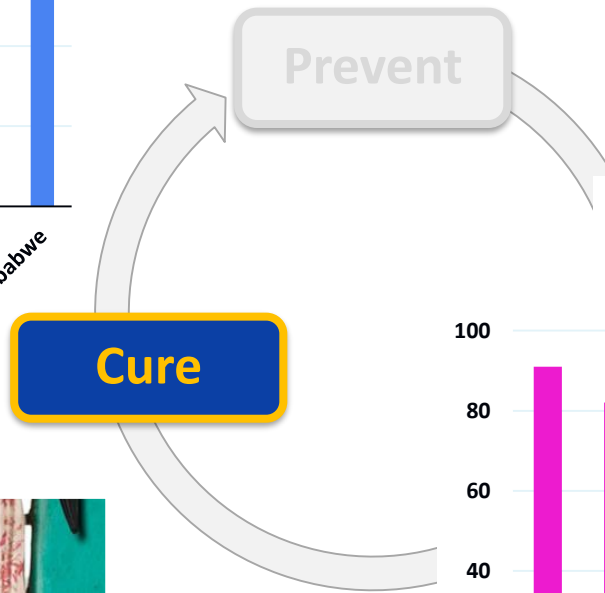
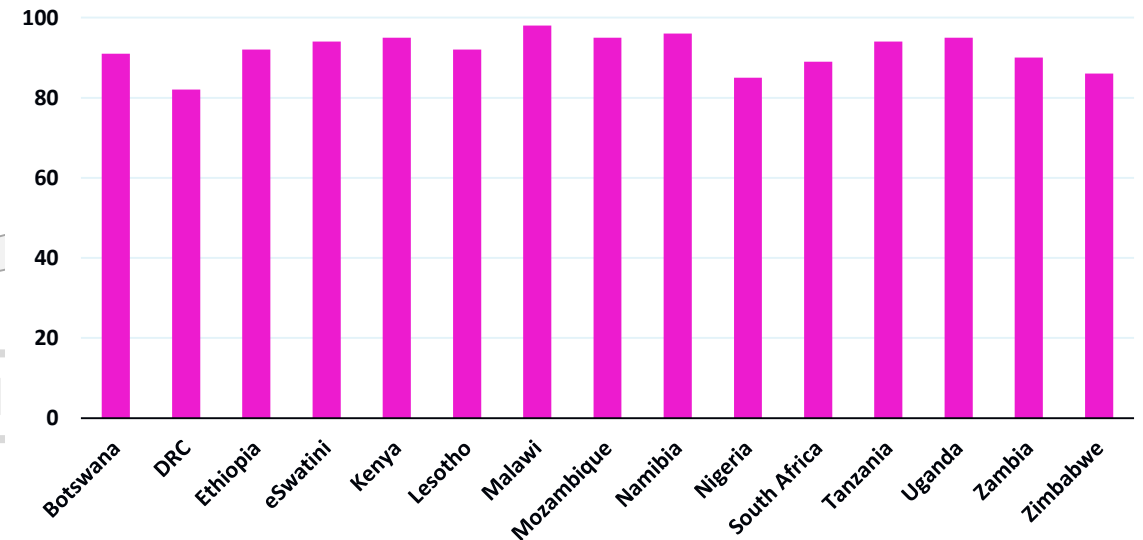


# TB/HIV Care Integration

Proportion of TB Patients with Known HIV Status\*, 2017



Proportion of HIV-Positive TB Patients on ART\*, 2017

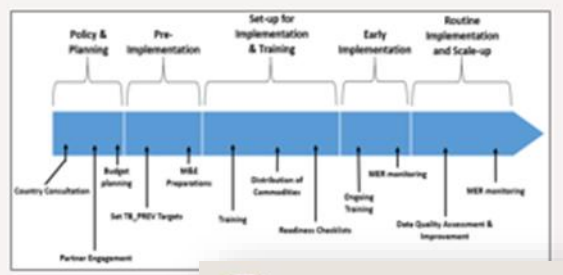


Photography by Thom Pierce

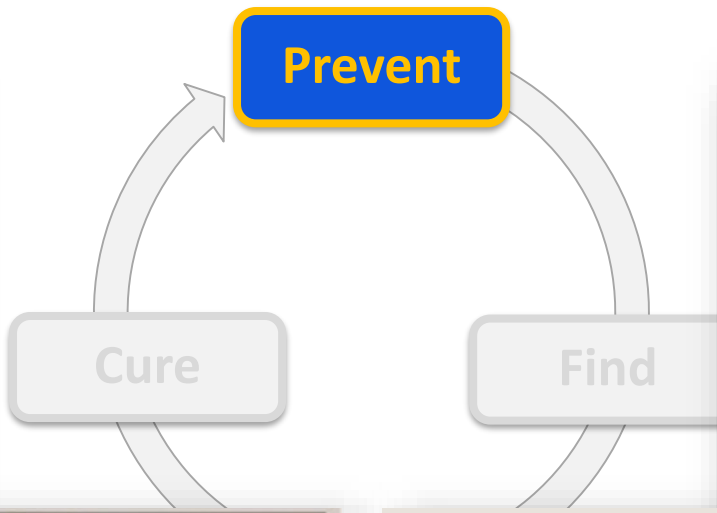




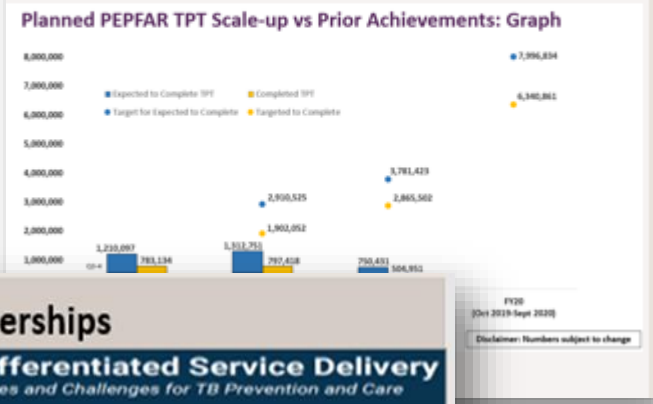
# 1 Baseline Country Assessment



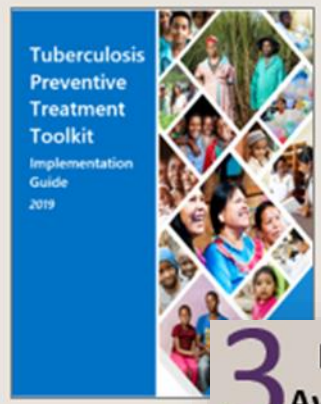
# TB Preventive Treatment (TPT)



# 6 Planned Scale-up & Achievements



# 2 TPT Implementation Toolkit and Operational Guide



# 5 Partnerships

## HIV Differentiated Service Delivery

Opportunities and Challenges for TB Prevention and Care

### MEETING REPORT

March 26-29, 2019  
Lusaka, Zambia

Hosted by the HIV Coverage, Quality, and Impact Network (COQIN) and the World Health Organization

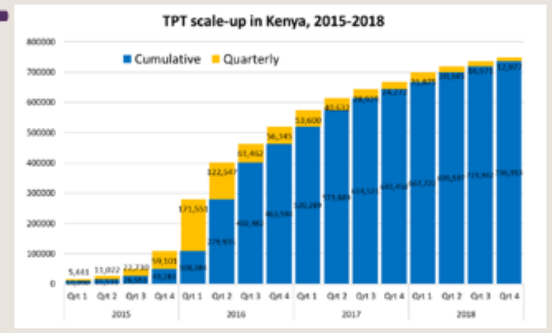
JUNE 20, 2019 | COQIN

## Uganda and Zambia Receive Funding to Adapt TB Preventive Treatment for Models

# 3 Raising Awareness



# 4 Technical Assistance



**SOUTH-TO-SOUTH TPT MENTORSHIP VISIT**  
**KENYA — MAY 20-23, 2019**  
**(UGANDA, ZAMBIA, ZIMBABWE)**



# TB BASICS

## Building and Strengthening Infection Control Strategies

Prevent

Cure

Find

- \* Innovative mentorship and training program to strengthen TB infection control
- \* Designs tailored interventions to address gaps
- \* Implements M&E and ongoing program improvement
- \* Emphasizes sustainable, local capacity development
- \* Scaling-up in > 15 countries in Africa and Asia

Morbidity and Mortality Weekly Report

### Building and Strengthening Infection Control Strategies to Prevent Tuberculosis — Nigeria, 2015

E. Kaineke Dohado, MD<sup>1</sup>, Benhrand Odame, MBBS<sup>2</sup>, Virginia Lipton<sup>3</sup>, Constance Mutiangwa, PhD<sup>3</sup>, Eugene Omu, MBBS<sup>4</sup>, Ayedman Okarodu, MBBS<sup>5</sup>, Lucy Ushachukwu<sup>6</sup>, Patricia Igwele<sup>6</sup>, Nneka Chikwura, PhD<sup>6</sup>, Emponor Ubochioma, MBBS<sup>7</sup>, Everamina Aniaku, MBBS<sup>7</sup>, Chinyere Ezenwa, MBBS<sup>7</sup>, Joseph Agboeze, MBBS<sup>8</sup>, Gabriel Imoh, MBBS<sup>8</sup>, Elovina Oji, MBBS<sup>8</sup>, Okeme Godwin, MBBS<sup>8</sup>, Hayisa Bello Rap<sup>9</sup>, S.A. Aboje, MBBS<sup>9</sup>, Chijioke Okawo, MBBS<sup>9</sup>, Henry Dehem, MSc<sup>9</sup>, Muzupha Bello, MBBS<sup>9</sup>, Dennis Ononu, MBBS<sup>9</sup>, Susan Maloney, MD<sup>10</sup>

Tuberculosis (TB) is the leading cause of infectious disease mortality worldwide, accounting for more than 1.5 million deaths in 2014, and is the leading cause of death among persons living with human immunodeficiency virus (HIV) infection (1). Nigeria has the fourth highest annual number of TB cases among countries, with an estimated incidence of 322 per 100,000 population (1), and the second highest prevalence of HIV infection, with 3.4 million infected persons (2). In 2014, 100,000 incident TB cases and 78,000 TB deaths occurred among persons living with HIV infection in Nigeria (1). Nosocomial transmission is a significant source of TB infection in resource-limited settings (3), and persons with HIV infection and health care workers are at increased risk for TB infection because of their routine exposure to patients with TB in health care facilities (3–5). A lack of TB infection control in health care settings has resulted in outbreaks of TB and drug-resistant TB among patients and health care workers, leading to excess morbidity and mortality. In March 2015, in collaboration with the Nigeria Ministry of Health (MoH), CDC implemented a pilot initiative, aimed at increasing health care worker knowledge about TB infection control, assessing infection control measures in health facilities, and developing plans to address identified gaps. The approach resulted in substantial improvements in TB infection control practices at seven selected facilities, and scale-up of these measures across other facilities might lead to a reduction in TB transmission in Nigeria and globally.

(6). Preventing nosocomial TB transmission, aimed at reducing the impact of TB on persons living with HIV, is also a priority for the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) (7). However, infection control measures to prevent TB transmission in health care facilities have not been adequately implemented, especially in settings with high incidence of TB and limited resources (8,9).

A four-phase TB infection control initiative, *Building and Strengthening Infection Control*, developed by CDC to assess and improve TB infection control practices in health care facilities in Nigeria. The initiative includes 1) TB health care workers, 2) baseline development of intervention plans, 3) monitoring and evaluation of health officials and health care workers, leading to excess morbidity and mortality. The pilot health care facilities in Ebonyi, Nigeria. These facilities provide and, during the past year, treatment of TB infection control in health facilities, and households (6) and was conducted for 50 health care workers, residents from the health facilities, and TB program coordinators, and TB program coordinators, and TB program coordinators, and TB program coordinators.

To address the risk for TB transmission to uninfected persons, the World Health Organization (WHO) recommends implementation and scale-up of TB infection control measures, including managerial (leadership and commitment for establishing and implementing infection control policies at the health facility), administrative (prompt identification and separation of persons with presumptive TB, with timely diagnosis and treatment of TB patients), and environmental (optimization of building design and patient flow to reduce the concentration of TB droplet nuclei in the air and control directional flow of potentially infectious aerosols) measures and personal protective equipment (PPE) use, implemented in conjunction with other infection control measures, to reduce the risk for TB transmission in health care facilities

<sup>1</sup> The seven sites included state, regional, and national TB program coordinators, PEPFAR implementing staff members and were led by health care workers.



### TB Infection Control in HIV Clinics and Out-Patient Settings: a Team Approach\*



#### Every Person Counts

- Clinic Administrator**
  - Endorse and fund a written TB infection control plan
  - Appoint an Infection Control Focal Person
  - Ensure supplies and equipment are available and maintained
  - Arrange facility space to reduce TB transmission
- Infection Control Focal Person**
  - Develop a TB infection control plan
  - Ensure exam and waiting rooms are well-ventilated
  - Conduct on-site staff training
  - Keep a record of health care workers who develop TB
  - Monitor infection control practices daily
- Admissions Clerk**
  - Give coughing patients tissues, cloths, or surgical masks
  - Send coughing patients to a separate waiting area
  - Prioritize TB suspects to see a clinician quickly
- Clinicians and Nurses**
  - Screen patients for TB symptoms
  - Evaluate and treat patients as soon as possible
  - Wear respirators (N-95/FFP2) when caring for patients with suspected or proven TB (especially MDR-TB or XDR-TB)<sup>1</sup>
  - Collect sputum in a well-ventilated area
- Patients**
  - Cover mouth and nose when coughing
  - Put used tissue in the wastebasket
  - Wear a face mask if asked by clinic staff
  - Take TB medications as prescribed
- Laboratory Staff**
  - Implement laboratory infection control procedures
  - Ensure that results are returned to clinicians quickly
- Entire Team**
  - Seek care promptly if you think you may be infected
  - Discuss ways to improve TB infection control procedures in your clinic
  - Think TB Infection Control!

\*Based on the 2009 WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings, and Households. <sup>1</sup>Abbreviating resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB).

# Laboratory and Surveillance System Strengthening

## Data Use to Improve Program

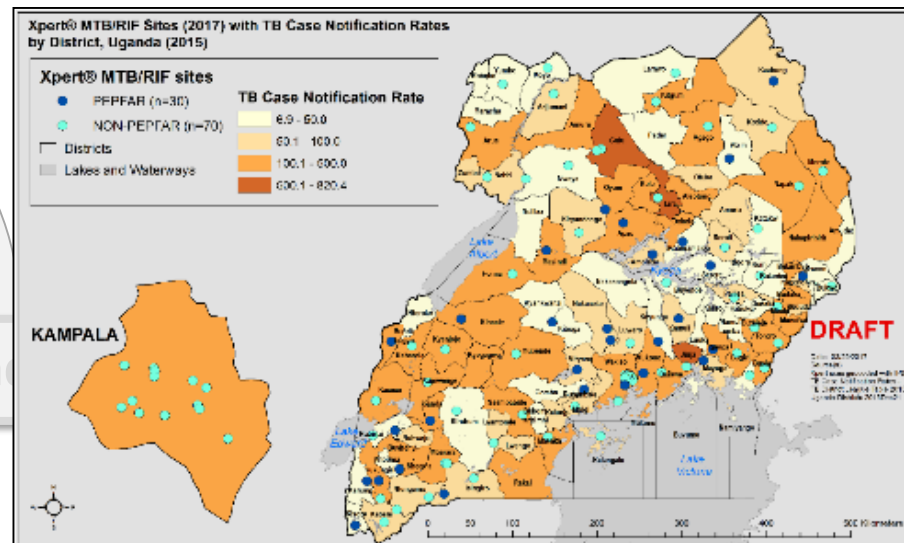
Engaging Local Experts to Validate and Analyze TB data to END TB



Prevent

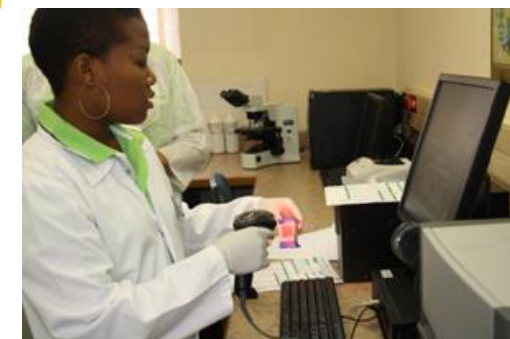
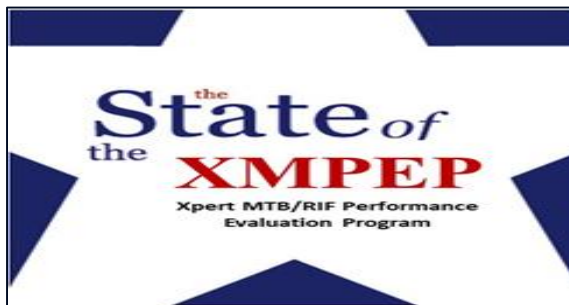
Find

## Xpert MTB/RIF Optimization



## Build and Sustain

### TB SLMTA & SLIPTA

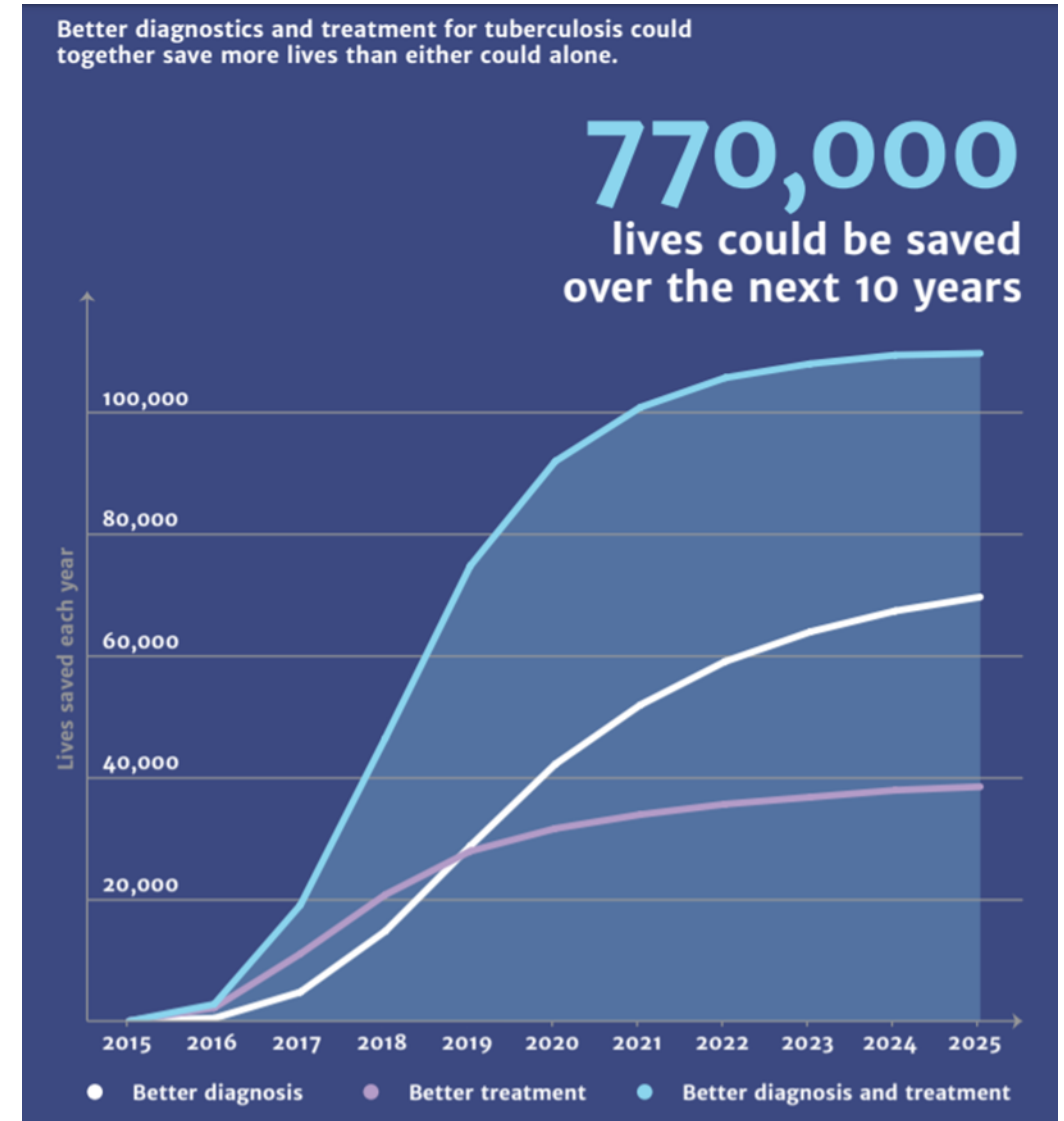




# What's Next

## Investing in Game-Changers to End TB

- Rapid, mobile, point-of-care diagnostics
  - Urine, blood, breath, sweat
- New treatments
  - New therapies and drugs for all forms of TB
  - Shorter, less toxic treatment regimens for adults and children
  - Alternative treatment delivery (e.g. depo, inhaled, transdermal)
- Effective vaccine to prevent TB infection and disease



For more information, please contact:  
**Hank Tomlinson**  
Director  
Division of Global HIV & TB  
E-mail: [hjg7@cdc.gov](mailto:hjg7@cdc.gov)

or

**Termika Smith**  
Associate Chief of Policy  
Division of Global HIV & TB  
E-mail: [kvl7@cdc.gov](mailto:kvl7@cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



## Questions?

# CDC's Integral Role in Ending the Global TB Epidemic

| Speaker |



**Hank Tomlinson, PhD**  
*Director of the Division of Global HIV  
& TB (DGHT)*  
U.S. Centers for Disease Control and  
Prevention (CDC)

| Moderator |



**Keith Martin, MD**  
*Executive Director*  
Consortium of Universities  
For Global Health (CUGH)