The Role of RePORT International in the WHO Global End TB Strategy

Christian Lienhardt, MD, PhD
WHO Global TB Programme

Carol Dukes Hamilton, MD, MHS
Director, RICC, FHI 360
Professor of Medicine, Duke University

RePORT International Meeting
September 12-13, 2017 | Rio, Brazil
Outline

• The global burden of TB

• The WHO End TB Strategy

• The 3rd Pillar of the End TB Strategy and the spectrum of research

• How research is indispensable for reaching the targets of the End TB Strategy

• What role can RePORT International play?

• Conclusion
The Global Burden of TB, 2015

Estimated number of cases

**All forms of TB**
- **10.4 million**
  - 142 per 100,000
  - 1 million children
  - 3.5 million women
  - 5.9 million men

**HIV-associated TB**
- **1.2 million (11%)**

**Multidrug-resistant TB (MDR/RR)**
- **480,000**
- **580,000**

Estimated number of deaths

**All forms of TB**
- **1.8 million***
  - 210,000 in children
  - 500,000 in women
  - 1,100,000 in men

**HIV-associated TB**
- **390,000**

**Multidrug-resistant TB (MDR/RR)**
- **250,000 MDR/RR-TB deaths**

*Including deaths attributed to HIV/TB

TB incidence: countries and regions

- SE Asia: 46%
- Africa: 26%
- W Pacific: 15%
- Europe: 3%
- E Med: 7%
- Americas: 3%

- 27% in India
- 9-10% each: Indonesia & China
- 5-6% each: Nigeria & Pakistan
Reaching the "missed" cases early means cutting transmission *(nearly 4 million not diagnosed or reported)*

10 countries account for 74% (2.4 million) of the estimated “missed” cases globally
Addressing MDR-TB as a crisis

Highest % in Eastern Europe and Asia

India, China, Russia, Pakistan and Ukraine have 62% of all MDR-TB cases
Accelerating response to TB/HIV

74% of TB/HIV cases in Africa

Other co-morbidities emerging in other regions
Research is critical to break the trajectory of the TB epidemic

- Better diagnostics, including new point-of-care tests;
- Safer, easier and shorter treatment regimens;
- Safer and more effective treatment for latent TB infection;
- Effective pre- and post-exposure vaccines.
## Vision, goal, targets, milestones

**Vision:** A world free of TB  
*Zero TB deaths, Zero TB disease, and Zero TB suffering*

**Goal:** End the Global TB Epidemic (<10 cases per 100,000 population)

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MILESTONES</th>
<th>TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2025</td>
</tr>
<tr>
<td>Reduction in number of TB deaths compared with 2015 (%)</td>
<td>35%</td>
<td>75%</td>
</tr>
<tr>
<td>Reduction in TB incidence rate compared with 2015 (%)</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(&lt;85/100 000)</td>
<td>(&lt;55/100 000)</td>
</tr>
<tr>
<td>TB-affected families facing catastrophic expenditures due to TB (%)</td>
<td>Zero</td>
<td>Zero</td>
</tr>
</tbody>
</table>
The End TB Strategy: 3 pillars and 4 Principles

**PILLAR 1**
Integrated, patient-centered TB care and prevention

**PILLAR 2**
Bold policies and supportive systems

**PILLAR 3**
Intensified research and innovation

- Government stewardship and accountability, with monitoring and evaluation
- Building a strong coalition with civil society and communities
- Protecting and promoting human rights, ethics and equity
- Adaptation of the strategy and targets at country level, with global collaboration
PILLAR 3: INTENSIFIED RESEARCH AND INNOVATION

A. Discovery, development and rapid uptake of new tools, interventions and strategies

B. Research to optimize implementation and impact; and promote innovations
What research is required to end TB?

A radical intensification of efforts is needed along the full spectrum of research:

- **Basic science** (immunology, pathogenesis) to prompt discovery of new tools
- **R&D pipeline** for testing and validating new tools
- **Innovative strategic approaches** adapted to specific country needs.
- **Factors influencing health-related practices** of patients and health care workers.
- **Social determinants of health** and financial protection
Driving the Way to Tuberculosis Elimination: The Essential Role of Fundamental Research

Christian Lienhardt,1 Alison M. Kraigsley,2,3 and Christine F. Sizemore3

1Global Tuberculosis Programme, World Health Organization, Geneva, Switzerland; 2American Association for the Advancement of Science, Washington D.C.; and 3National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Maryland

Tuberculosis has impacted human health for millennia. The World Health Organization estimated that, in 2014, 9.6 million people developed tuberculosis and 1.5 million people died from the disease. In May 2014, the World Health Assembly endorsed the new “End TB Strategy” that presents a pathway to tuberculosis elimination. The strategy outlines 3 areas of emphasis, one of which is intensified research and innovation. In this article we highlight the essential role for fundamental tuberculosis research in the future of tuberculosis diagnostics, treatment, and prevention. To maximize the impact of fundamental research, we must foster collaboration among all stakeholders engaged in tuberculosis research and control to facilitate open dialogue to assure that critical gaps in outcome-oriented science are identified and addressed. We present here a framework for future discussions among scientists, physicians, research and development specialists, and public health managers for the reinforcement of national and international strategies toward tuberculosis elimination.

Keywords. tuberculosis; elimination; biomedical; research; global health.
What is in the pipelines for new diagnostics, drugs and vaccines in 2017?

**Diagnostics:**
- 8 new diagnostics or diagnostic methods endorsed by WHO since 2007, including Xpert MTB/Rif and new first- and second-line LPAs;
- Several in development.

**Drugs and regimens:**
- 2 new drugs for MDR-TB approved in 2012-2013;
- short MDR-TB regimen approved in 2016;
- short 3-m regimen for LTBI;
- several combination regimens under trials.

**Vaccines:**
- 1 vaccine with no detectable efficacy in 2013;
- 15 vaccines in various phases of clinical trials, but unlikely available before 2020.
Roll out of Pillar 3: Global Action Framework on TB research

Two fundamental objectives:

① To promote, enhance and intensify TB research and innovation at country level,

② To promote, enhance and catalyze TB research at global level

Three parts:

Part I: Strengthening TB research in low and middle-income countries
Part II: Supporting and facilitating research at global level
Part III: The role of WHO

SPECTRUM OF TB RESEARCH
Why support research in endemic countries?

- Build on existing technical and clinical capacity for improved diagnosis, treatment and cure of TB
- Leverage political will and local incentives for technology development adapted to country context
- Enhance academic training and local excellence in TB research
- Facilitate access to patients and patient samples for clinical trials and experimental medicine studies (without a need to export the samples)
- Understand the nature of the local epidemic to inform TB control programs and policies
Relevance of focusing on country level research:

• needed to identify and address **country specific** TB research priorities that may be missed or not prioritized by the global research agenda;

• national research mobilization is a **sustainable** way of addressing domestic gaps in TB control.
Research Sites
Research Areas

- Pesquisa Básica e Patogenia
- Epidemiologia
- Mobilização Social
- Tuberculose e HIV
- Transferência de Tecnologia
- Recursos Humanos
- Diagnóstico
- Clínico Operacional
- Estudos Clínicos
- Medicamentos
- Vacinas
Global Action Framework for TB Research
Strengthening TB research in high to medium TB burden countries most affected by TB

Over the next 10 years
Promoting research at country level

- National TB research agenda developed
- National TB research agenda being developed
Building on NIAID and DAIDS experience with clinical research networks (ACTG, HPTN, etc)

- Scientific productivity
  - Proven efficacious new diagnostic, treatment & prevention approaches
  - Studies in highly affected populations critical for both biology and uptake and effective implementation

- Training a cadre of scientists
  - Competition and collaboration
  - Steadily increasing expertise, leadership, novel ideas
Vision of RePORT International

RePORT International comprises a number of consortia in high TB-burden settings, that want to build capacity...and agree to adhere to a standardized platform for data and specimen collection, forming the basis for collaborative biomarker and other scientific research of the future, including potential treatment and vaccine trials.
RePORT and 30 High TB burden countries

TB
- Cambodia
- Sierra Leone
- Brazil
- Central African Republic
- Congo
- Lesotho
- Liberia
- Namibia
- UR Tanzania
- Zambia

MDR-TB
- Bangladesh
- DPR Korea
- Pakistan
- Philippines
- Russian Federation
- Viet Nam
- Azerbaijan
- Belarus
- Kazakhstan
- Kyrgyzstan
- Peru
- Republic of Moldova
- Somalia
- Tajikistan
- Ukraine
- Uzbekistan

TB/HIV
- Angola
- China
- DR Congo
- Ethiopia
- India
- Indonesia
- Kenya
- Mozambique
- Myanmar
- Nigeria
- Papua New Guinea
- South Africa
- Thailand
- Zimbabwe

Botswana
- Cameroon
- Chad
- Ghana
- Guinea-Bissau
- Malawi
- Swaziland
- Uganda
US NIH RePORT consortia: focused building capacity in the highest TB burden countries in the world

- India
- Brazil
- South Africa
- Indonesia
- China
- Possibly Philippines
2. Supporting and facilitating research at global level

- Mobilize increased resources
- TB research donors forum
- Innovative funding mechanisms
- Advocacy to increase funding
- International networks & hubs
- Collaborative research projects
What can RePORT bring to the End TB Strategy?

- Fulfill the need for TB research collaboration and coordination, as prioritized in the *International Roadmap for TB Research*.
- Standardized platform for coordinated multi-disciplinary TB research.
- Study designs developed by RePORT International may eventually serve as templates for global collaborative TB clinical research.
- Possibility for participating countries to develop projects to address questions of local, regional and international importance.
- Such an approach can enable *large clinical research projects and trials* (as the need arises) that cannot be undertaken by a single group.
- RePORT offers a multi-faceted, collaboratively funded and flexible global TB research network that can address important questions of local and global relevance.
Let us UNITE TO END TB
Thank you for your attention!