Overview of the TB epidemic globally and in India

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UN Sustainable Development Goals

WHO End TB Strategy

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

Goal: End the global TB epidemic

WHO’s 5 year strategic plan also has a flagship program on Eliminating and Controlling Communicable Diseases

Common aim: end the global TB epidemic
Two overarching messages

1. Burden of TB disease still high, affecting all countries, all ages, men, women and children

2. There is progress, but it is slow - not fast enough to reach targets or make major headway in closing persistent gaps
TB is one of top 10 causes of death worldwide ranks 9th, top infectious disease killer

- Ischaemic heart disease
- Stroke
- Lower resp. infections
- COPD
- Cancer: tracheal, bronchus, lung
- Diabetes
- Alzheimers, other dementias
- Diarrheal diseases
- TB
- Road injuries

TB deaths among HIV-positive people

Millions in 2015
**The Global Burden of TB, 2016**

<table>
<thead>
<tr>
<th>Estimated number of cases</th>
<th>Estimated number of deaths</th>
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<tbody>
<tr>
<td><strong>All forms of TB</strong></td>
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<tr>
<td>10.4 million</td>
<td>1.7 million*</td>
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<td>142 per 100,000</td>
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<td><strong>HIV-associated TB</strong></td>
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<td>1.04 million (10%)</td>
<td>400,000</td>
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<tr>
<td><strong>Multidrug-resistant TB</strong></td>
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<tr>
<td>490,000</td>
<td>190,000</td>
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<tr>
<td>MDR/RR</td>
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<td>600,000</td>
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* Including deaths attributed to HIV/TB
TB is in every country
Highest incidence rates in Africa and parts of Asia

45% South-East Asia, 25% Africa, 17% Western Pacific, 7% Eastern Mediterranean, 3% Americas, 3% Europe
5 countries = 56% of cases in 2016

7 countries account for 64%

circles shown for countries with at least 100,000 incident cases in 2016
Case notifications increasing but large incidence: notification gap

- Number of cases globally (millions)
  - 4.1 million cases

- Incidence
  - 10.4

- Case notifications
  - 6.3 (61% of incidence in 2016)

- Treatment success 83% globally in 2015, as in 2014

4.1 million cases
Underreporting, under-diagnosis
Millions of people with TB successfully treated each year

56 million, 2000–2015
MDR/RR-TB: 3 countries, 47% cases

circles shown for countries with at least 1000 incident cases in 2016

Number of incident cases
- 1000
- 10,000
- 100,000
- 150,000

India
China
Russian Federation
MDR-TB remains a public health crisis

490,000

Cases of MDR-TB estimated in 2014

123,000

Patients reported with MDR-TB
(136,000 out of 300,000) were detected in 2013

111,000

People with TB were started on second-line treatment

50%

Of MDR-TB patients globally had a successful treatment outcome

Three out of the 27 high MDR-TB countries achieved a treatment success rate of ≥ 75%

World Health Organization

Global TB Programme

END TB
India: high TB, high MDR-TB, high TB-HIV burden country

56% of TB incidence occurs in five countries: India, Indonesia, China, the Philippines and Pakistan.

Global TB Report 2017
Estimated incidence of MDR/RR-TB in 2016, for countries with at least 1000 incident cases

The countries with the largest numbers of MDR/RR-TB cases (47% of the global total) were China, India and the Russian Federation.
Tuberculosis in India: Progress

Declining mortality rate from TB (excluding HIV), big achievement in light of large population

Decline in the Incidence of TB and increase in notification

However, still 25% of the “missing 4 million” people with TB in 2016 were in India.

Global TB Report 2017
Tuberculosis in India: Challenges

Poor treatment success rate for MDR/XDR-TB

India relying on international financing for 25% of TB budget

Only 22% of the estimated 600,000 cases of rifampicin-resistant TB and DR-TB globally started treatment; India and China accounted for 39% of the global gap.

Other challenges: socio-economic determinants, weak health system, sub-optimal public private engagement

Global TB Report 2017
Political Commitment to End TB in India

- Public-private engagement to increase notification, as well as to improve and mainstream the diagnosis and treatment pathway

- Increasing treatment access and coverage
  - Multisectoral approach
  - Addressing economic barriers, psycho-social support, delivery, etc.
  - Making patient-centred care front and centre

- Research and development
  - Develop more effective, affordable biomedical tools adaptable to country context – including diagnostics, drugs and vaccines (collaboration and investment)
  - Innovative health systems and social science interventions that improve service delivery (patient-centred care)

Global TB Report 2017
RePORT India Consortium – A model for international partnerships

- Bilateral, multi-organizational collaborative initiative sponsored by the US and Indian Governments under the auspices of INDO-US Vaccine Action Program (VAP) to address the threat of TB in India and across the globe
  - **US**: The National Institute of Allergy and Infectious Diseases (NIAID/NIH)
  - **India**: The Government of India’s Department of Biotechnology (DBT) and the Indian Council of Medical Research (ICMR)

**MISSION:**
- **Advance regional TB science** in India
- **Strengthen TB research capacity and infrastructure** in India
- **Foster research collaboration** within India and internationally, with the aim of carrying out a range of basic and clinical research that can lead to **clinically important biomarkers, vaccines, drugs, and diagnostics**
What is RePORT India Consortium?

- 6 unique observational TB cohorts in India conducting “Parent Protocols” since 2014
- 5 sites conducting the “Common Protocol” since 2017
- Evaluate TB disease (Cohort A) and TB infection (Cohort B)
- Coordinated by leadership group
  - Composed of PIs, funders, representatives from Westat/PPD, CRDF, SAS-CHRD
- Each cohort linked by “Common Protocol”, Central SDMC and Central repository

**GOAL:** To create a resource for the TB research community of a collection of well characterized and standardized samples with accompanying data to investigate critical TB research questions
RePORT India Sites

- Hinduja-Mumbai
- BJMC-Pune
- BMMRC - Hyderabad
- CMC-Vellore
- NIRT-Chennai
- MVDRC - Chennai
- JIPMER - Pondichery
Age-specific prevalence of TB infection among Indian household contacts of adult PTB cases

CTRIUMPh RePORT India cohort, n=1047

Submitted for publication
RePORT International Consortia

- RePORT India - 2012
- RePORT Brazil - 2013
- RePORT Indonesia - 2014
- RePORT South Africa - 2016
- RePORT China - 2017
- RePORT Philippines - 2018

RePORT International Coordinating Center (RICC) 2016
India TB Research Consortium

• Formed to address gaps in R&D funding for TB
• Focused on translational research to develop and validate new tools
• Completed 100 site field testing of Truenat, a new POC molecular diagnostic for TB and RRTB
• 4 multi-centric clinical trials for DSTB and M/XDRTB treatment planned
• Vaccine trial with MIP and VPM1002 to prevent TB among household contacts
• Linking with international networks eg BRICS would be welcome
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www.who.int/tb/publications/global_report