Tuberculosis in 2017: Searching for new solutions in the face of new challenges

6th TB Symposium – Ministry of Health of the Republic of Belarus, Republican Scientific and Practical Center for Pulmonology and Tuberculosis, and Médecins Sans Frontières

1-2 March, 2017, MINSK, BELARUS

WHO End TB Strategy and its meaning for the EECA Region

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Global TB Programme
WHO End TB Strategy
and its meaning for the EECA Region

Glob al Tb Programme

Dr Mario Raviglione
Director

World Health Organization

Tuberculosis in 2017 – Searching for new solutions in the face of new challenges
Minsk, Belarus, 1 March 2017
Overview

1. TB burden
2. End TB Strategy in the era of the Sustainable Development Goals
3. Moscow Ministerial Conference
The Global Burden of TB, 2015

<table>
<thead>
<tr>
<th>Estimated number of cases</th>
<th>Estimated number of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All forms of TB</strong></td>
<td></td>
</tr>
<tr>
<td>10.4 million (142 per 100,000)</td>
<td>1.8 million*</td>
</tr>
<tr>
<td>- 1 million children</td>
<td>- 210,000 in children</td>
</tr>
<tr>
<td>- 3.5 million women</td>
<td>- 500,000 in women</td>
</tr>
<tr>
<td>- 5.9 million men</td>
<td>- 1,100,000 in men</td>
</tr>
<tr>
<td><strong>HIV-associated TB</strong></td>
<td>390,000</td>
</tr>
<tr>
<td>1.2 million (11%)</td>
<td></td>
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<tr>
<td><strong>Multidrug-resistant TB</strong></td>
<td>190,000</td>
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<tr>
<td>MDR/RR</td>
<td></td>
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<tr>
<td>480,000</td>
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<td>580,000</td>
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</table>

* Including deaths attributed to HIV/TB

TB incidence: countries and regions

- 27% in India
- 9-10% each: Indonesia & China
- 5-6% each: Nigeria & Pakistan

Map showing distribution of TB incidence globally:
- SE Asia: 46%
- Africa: 26%
- W Pacific: 15%
- Europe: 3%
- Americas: 3%
- E Med: 7%

Estimates indicate that the majority of TB cases are concentrated in a few regions, with India accounting for a significant portion.
\( \frac{2}{3} \) of cases in the region occurred in FIVE COUNTRIES.

Estimated TB incidence per 100,000 population, WHO European Region, 2015
N: 323,000 cases and 32,000 deaths

Source: draft of the Tuberculosis surveillance and monitoring in Europe 2017. European Centre for Disease Prevention and Control/WHO Regional Office for Europe.
MDG6 TB target achieved

TB EPIDEMIC REVERSED

47% DROP IN TB MORTALITY

Incidence rate
Falling 1.4% per year (2000-2015).
18% drop since 2000

Mortality
47% decline since 1990

Rate per 100,000 per year


Rate per 100,000 per year


49 million lives saved between 2000 and 2015
But huge burden of deaths and suffering remains.
From MDGs to SDGs: a new era

From 8 UN Millennium Development Goals, 2000-2015 to 17 UN Sustainable Development Goals, 2016-2030
Challenges: Priorities for action in 2017

PRIORITY ACTIONS TO END TB

✓ DETECT AND TREAT PROPERLY ALL CASES putting people at the centre
✓ ADDRESS URGENTLY THE MDR-TB CRISIS
✓ ACCELERATE RESPONSE TO TB/HIV
✓ ELIMINATE CATASTROPHIC COSTS TO PEOPLE
✓ INTENSIFY TB RESEARCH AND UPTAKE
✓ CLOSE FINANCING GAPS
MDR-TB remains a crisis that is poorly addressed

Globally: 480,000 new cases of MDR-TB in 2015
Plus: 100,000 new cases of rifampicin-resistant TB eligible for MDR-TB treatment
MDR-TB and RR-TB treatment enrolments increasing but large gaps persist

And treatment success rate only 52% globally

Number of cases globally

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence</th>
<th>MDR/RR-TB cases among notified TB patients</th>
<th>Detected 132,000</th>
<th>Enrolled on treatment 125,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
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<td>0</td>
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<tr>
<td>2013</td>
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<td></td>
<td>0</td>
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<tr>
<td>2015</td>
<td></td>
<td></td>
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<td>0</td>
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</tbody>
</table>
Estimated number of MDR TB cases among all notified TB, Europe, 2014 (n=74,000)

¾ of MDR-TB from the Region emerge in 4 countries
The highest % of MDR/RR-TB in new TB cases in the world

- Belarus (2015)
- Kyrgyzstan (2011)
- Republic of Moldova (2015)
- Arkhangelsk Oblast, RF (2012)
- Ukraine (2014)
- Kazakhstan (2015)
- Uzbekistan (2011)
- Russian Federation (2013)
- Mary-El Republic, RF (2012)
- Estonia (2015)
- Turkmenistan (2013)
- Tajikistan (2014)
- Azerbaijan (2013)
- Orel Oblast, RF (2012)
- Lithuania (2015)
- Georgia (2015)
- Armenia (2007)

% MDR/RR-TB in new TB cases
A new era with new ambitions and a paradigm shift

UN Sustainable Development Goals: 2016 – 2030
17 goals and 169 targets
3.3 End the epidemics of AIDS, tuberculosis, malaria & neglected tropical diseases and combat hepatitis, water-borne and other communicable diseases.
Global commitment to **End TB**

Moving from halting TB to ending TB by 2030

SDG TARGET 3.3 – BY 2030

**END THE TB EPIDEMIC**
The End TB Strategy: Vision, Targets and Pillars

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

Goal:
End the Global TB epidemic

**Targets**

<table>
<thead>
<tr>
<th>MILESTONES</th>
<th>SDG*</th>
<th>END TB</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td></td>
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</tbody>
</table>

**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**

**Reduction in number of TB deaths**
Compared with 2015 (%)
- 2020: 35%
- 2025: 75%
- SDG*: 90%
- END TB: 95%

**Reduction in TB incidence rate**
Compared with 2015 (%)
- 2020: 20%
- 2025: 50%
- SDG*: 80%
- END TB: 90%

**TB-affected families facing catastrophic costs due to TB (%)**
- 2020: 0%
- 2025: 0%
- SDG*: 0%
- END TB: 0%
**PILLAR 1: INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION**

A. Early diagnosis of TB including universal drug-susceptibility testing, and systematic screening of contacts and high-risk groups

B. Treatment of all people with TB including drug-resistant TB, and patient support

C. Collaborative TB/HIV activities; and management of co-morbidities

D. Preventive treatment of persons at high risk; and vaccination against TB
PILLAR 2: BOLD POLICIES AND SUPPORTIVE SYSTEMS

A. Political commitment with adequate resources for TB care and prevention

B. Engagement of communities, civil society organizations, and all public and private care providers

C. Universal health coverage policy, and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control

D. Social protection, poverty alleviation and actions on other determinants of TB
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
Innovations and Research are critical to break the trajectory of the TB epidemic

- Better diagnostics, including new point-of-care tests;
- Safer, easier and shorter treatment regimens for disease and latent TB infection;
- Effective pre- and post-exposure vaccines;
- All technological and system innovations possible
RESEARCH AND DEVELOPMENT

Which new tools in the horizon in 2017?

Diagnostics:
• 9 new diagnostics endorsed by WHO since 2007;
• Several in development including whole genome sequencing on sputum;
• By 2020: rapid & sensitive PoC test, triage test, predictive LTBI test, rapid DST

Drugs and regimens:
• 2 new drugs and a 9-month regimen for MDR-TB endorsed since 2012;
• A shorter 12-w regimen for LTBI;
• By 2020: 4-m regimens for DS-TB, 6/9-m regimens for MDR-TB, and other new drugs

Vaccines:
• 1 vaccine with no detectable efficacy in 2013
• 15 vaccines in various phases of clinical trials, but unlikely available before 2020
The TB Action Plan for Europe, 2016-2020 and key strategic directions

**Vision:** An end to the TB epidemic with zero affected families facing catastrophic costs due to TB

**Goal:** To stop the spread of drug-susceptible and drug-resistant TB by achieving universal access to prevention, diagnosis and treatment in all Member States of the WHO European Region

**Targets:**
- 35% reduction in TB deaths
- 25% reduction in TB incidence rate
- 75% treatment success rate among the MDR-TB patient cohort

1. Full scale-up of rapid molecular diagnostics
2. Rapid uptake of new medicines and shorter regimens
3. Expanding people-centred models of integrated care
4. Emphasize out-patient treatment rather than hospitalization
5. Research for new tools
6. Intersectoral approach to address inequities
In 2017, the best rapid diagnostic we have is Xpert MTB/RIF – and now also SLD LPAs…
Rational introduction of new drugs against MDR-TB
Precision in TB diagnosis and treatment

TREATMENT FOR DRUG SUSCEPTIBLE TB:
6HRZE or NEW Rx (?BNiMZ)

FIRST-LINE RAPID DIAGNOSTIC
XPERT MTB/RIF

NEGATIVE
R-RESISTANT TB

SECOND-LINE LINE PROBE ASSAY

POSITIVE

RESISTANCE TO FLUOROQUINOLONES A/O INJECTABLES

STANDARDIZED SHORTER MDR-TB REGIMEN
4-6 Km-M-Pto-Cfz-Z-Hhd-E / 5 M-Cfz-Z-E
or NEW Rx (?BNiMZ)

TAILORED MDR-TB REGIMENS OR NEW REGIMENS (?BPaL)

POSITIVE (pre. or KDR-TB)
NEGATIVE (MDR-TB)
## Population attributable fraction: Selected Risk Factors & Determinants

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Relative risk for active TB disease</th>
<th>Weighted prevalence (22 HBCs)</th>
<th>Population Attributable Fraction in Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV infection</td>
<td>20.6/26.7*</td>
<td>1.1%</td>
<td>19%</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>3.2**</td>
<td>16.5%</td>
<td>27%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.1</td>
<td>3.4%</td>
<td>6%</td>
</tr>
<tr>
<td>Alcohol use (&gt;40g / d)</td>
<td>2.9</td>
<td>7.9%</td>
<td>13%</td>
</tr>
<tr>
<td>Active smoking</td>
<td>2.6</td>
<td>18.2%</td>
<td>23%</td>
</tr>
<tr>
<td>Indoor Air Pollution</td>
<td>1.5</td>
<td>71.1%</td>
<td>26%</td>
</tr>
</tbody>
</table>


\[
PAF = \frac{P \times (RR - 1)}{P \times (RR - 1) + 1}
\]
FIRST WHO GLOBAL MINISTERIAL CONFERENCE
ENDING TUBERCULOSIS IN THE SUSTAINABLE DEVELOPMENT ERA: A MULTISECTORAL RESPONSE

16 - 17 NOVEMBER 2017,
MOSCOW, RUSSIAN FEDERATION

Tuberculosis is the leading infectious diseases killer worldwide today. It carries profound economic and social consequences. The public health crisis on multi-drug resistant TB (MDR-TB) continues. Although 49 million lives have been saved through global efforts since 2000, actions and investments fall far short of those needed to end TB epidemic. High-level multisectoral action is needed.

KEY TB FACTS

- TB was one of the top ten causes of death worldwide
- TB was responsible for more deaths than HIV and malaria
- MDR-TB crisis with gaps in detection and treatment
- Only 1 in 5 needing MDR-TB treatment were enrolled on it
- Funding shortfall for TB implementation

MEMBER STATES INVITED:

MINISTERIAL DELEGATIONS FROM ALL 194 WHO MEMBER STATES ARE INVITED
40 HIGH-TB AND MDR-TB BURDEN COUNTRIES WILL BE SUPPORTED BY WHO WITH
FINANCING PROVIDED BY THE RUSSIAN FEDERATION:

Ministers of Health and Ministers from other sectors (e.g. finance, social development, justice, labour)

AFR
Angola
Central African Republic
Congo
DR Congo
Ethiopia
Kenya
Lesotho
Liberia
Mozambique
Namibia
Nigeria
Sierra Leone
South Africa
UR Tanzania
Zambia
Zimbabwe

EUR
Azerbaijan
Belarus
Kazakhstan
Kyrgyzstan
Republic of Moldova
Russian Federation
Tajikistan
Ukraine
Uzbekistan

SEAR
Bangladesh
DPR Korea
India
Indonesia
Myanmar
Thailand

WPR
Cambodia
China
Philippines
Viet Nam
Papua New Guinea

AMR
Brazil
Peru

EMR
Pakistan
Somalia

* WHO regional offices will support participants of other countries based on their priorities and resources. Countries that will be supported by regions include: Bolivia, Colombia, Maldives, Mexico, Mongolia, Lao PDR, Sri Lanka and Timor Leste.
# Expected Outcomes with Multisectoral Accountability

Leading up to the United Nations General Assembly High-Level Meeting on TB in 2018, Ministerial commitment to:

1. **Universal Coverage of TB Care and Prevention**
   - Systems reforms, and full uptake of innovative tools, to optimize quality of integrated people-centred care and prevention, and ensure access so that no one is left behind.

2. **Sustainable Financing for UHC, Social Protection and Development**
   - Sustainable financing, especially from domestic sources, to enable access to care and prevention embedded in comprehensive health and social systems that alleviate the risk factors and consequences of disease.

3. **Respect for Equity, Ethics and Human Rights**
   - An equitable and human right-based response that prioritizes people affected by poverty, disease, stigma and marginalization, including global action on the plight of migrants, and on the special risks faced by other vulnerable groups such as prisoners.

4. **Scientific Research and Innovation**
   - Increased and targeted financing and intensified capacity-building to foster rapid achievements in scientific research and innovation.

5. **Monitoring and Evaluation of Progress**
   - Tracking progress towards SDG Target 3.3 and other SDG targets that impact the TB epidemic, and establishment or strengthening of digital systems to collect, store and analyse large volumes of disaggregated data.

6. **Action on AMR, Health Security and MDR-TB**
   - Addressing MDR-TB as an emergency and threat to health security, including within the global antimicrobial resistance (AMR) agenda.

7. **Stepped-Up TB/HIV Response**
   - Integrated care for all people affected by TB and HIV, with a special focus on eliminating TB deaths among people living with HIV.

8. **Synergies across the Responses to TB and Noncommunicable Diseases**
   - Synergistic and joint actions against TB and noncommunicable diseases and their risk factors.
Global health and foreign policy: Health Employment and Economic Growth

The General Assembly, (...)

21. Takes note of the initiative to hold, in Moscow in November 2017, a global ministerial conference on the fight against tuberculosis in the context of public health and the Sustainable Development Goals;

22. Decides to hold a high-level meeting in 2018 on the fight against tuberculosis, and requests the Secretary-General, in close collaboration with the Director-General of the World Health Organization and in consultation with Member States, as appropriate, to propose options and modalities for the conduct of such a meeting, including potential deliverables, building on existing efforts in this regard;

(...)

UNITED NATIONS GENERAL ASSEMBLY
RESOLUTION A/RES/71/159 - 15 DECEMBER 2016
My thanks to all my GTB colleagues
Transitioning from MDGs to SDGs

**MDG era**

- Developing country focus: poverty reduction, education, health, economics
- 8 goals, 21 targets
- Aid-related financing
- Focused, categorical
- Current development expenditures: 200 billion US$/year

**SDG era**

- Universal: economic, social and environmental pillars of sustainable development
- 17 goals, 169 targets
- Globally applicable, domestic and aid financing
- "Integrated, indivisible", multidisciplinary, equity as focus
- Expected future investments 2-3 trillion US$/year

People, Planet, Prosperity, Peace, Partnership
67th World Health Assembly, Geneva, May 2014

THE END TB STRATEGY
Reality check: Projected incidence based on current trends in 30 HBCs
TB digital health applications

TB Digital health applications

Patient care
Surveillance

Programme management
eLearning