Role of medical colleges in RNTCP

Professor Nandini Sharma
Director Professor, Department of Community Medicine
and
Chairman State Task Force RNTCP Delhi
TB Burden in India

- Incidence: 2.2 (2-2.4) million new TB cases annually (2012)
  - 185 (167-205) cases per 100,000 population
- Prevalence: 2.8 (1.9-3.9) million cases (2012)
  - 256 (161-373) cases per 100,000 population
- Deaths: About 0.27 (0.17-0.39) million deaths each year (2012)
  - 26 (17-39) deaths per 100,000 population
  - 900 people die of TB every day (~2 deaths every 3 minutes) (2011)
- MDR-TB (Multidrug resistant-TB) in India
  - MDR TB among new cases <3% and in Retreatment cases is 13-17%
- HIV among estimated incident TB patients- ~2.5 million people with HIV & ~ 1 million co-infected with TB- HIV (~5% coinfectivity)
- Affects predominantly economically productive age group leading to huge socio-economic impact
Magnitude of the problem

- India shares 1/5th of the global burden of TB and highest load of Drug resistant TB.
- In the National Strategic Plan for TB Control (2012-2017), RNTCP has the mandate of universal access of quality services to all TB patients.
- In order to address the issue of quality diagnosis and treatment for all TB patients and control TB, it is extremely crucial to reach out to all stakeholders- the most important of which are the Medical Colleges/Teaching Institutes.
- Further, Medical Colleges are the platform for the next gen of treating physicians who need to be sensitive towards the growing public health concern
- With emergence of Drug resistance TB along with comorbid conditions like HIV, Diabetes, tobacco; it is becoming extremely complex to curb the TB epidemic worldwide.
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Before intervention</th>
<th>After intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case detection rate</td>
<td>30%</td>
<td>Above 90%</td>
</tr>
<tr>
<td>Treatment success rate</td>
<td>35%</td>
<td>Above 85%</td>
</tr>
<tr>
<td>Death rate</td>
<td>25%</td>
<td>Below 2%</td>
</tr>
<tr>
<td>Default rate</td>
<td>40%</td>
<td>Below 5%</td>
</tr>
<tr>
<td>Accuracy of diagnosis</td>
<td>25%</td>
<td>More than 75%</td>
</tr>
<tr>
<td>Availability of services</td>
<td>14 Chest Clinics (Districts)</td>
<td>25 Chest Clinics (Districts)</td>
</tr>
</tbody>
</table>
Evolution of TB Control in India

- **1950s-60s**
  - Important TB research at TRC and NTI

- **1962**
  - National TB Programme (NTP)

- **1992**
  - Programme Review
    - Only 30% of patients diagnosed;
    - Of these, only 30% treated successfully

- **1993**
  - RNTCP pilot began

- **1998**
  - RNTCP scale-up

- **2006**
  - Entire country covered by RNTCP

- **2010**
  - DOTS Plus Implementation in 11 States
National Tuberculosis Program (NTP)

1962
- National TB Program (NTP) launched

- Functional Unit: DTC
- Diagnosis: X ray Based
- Treatment: Conventional (1-2 years)
  - Domiciliary
  - Daily unsupervised
- Default action: By post-card

1992
- Program Review
- Only 30% of patients diagnosed;
- Of these, only 30% treated successfully
# Revised National TB Programme (RNCTP)

- **1993-1997**: RNTCP pilot began
- **1997**: DOTS Strategy launched
- **March 2006**: Full nationwide coverage with DOTS

<table>
<thead>
<tr>
<th>Functional Unit</th>
<th>DOT Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>By microscopy</td>
</tr>
<tr>
<td>Treatment</td>
<td>Short course Supervised Intermittent</td>
</tr>
<tr>
<td>Default action</td>
<td>Prompt by DOT Provider visit</td>
</tr>
</tbody>
</table>
Objectives

- To achieve 90% notification rate for all types of TB Cases
- To achieve 90% success rate for all new and 85% for re-treatment cases
- To significantly improve the successful outcomes of treatment of Drug Resistant TB
- To achieve decreased morbidity and mortality of HIV associated TB
- To improve outcomes of TB care in the private sector
Vision: “TB-free India”

Goal: ‘Universal Access to quality TB diagnosis & treatment for all pulmonary & extra pulmonary TB patients including drug resistant and HIV associated TB’.
<table>
<thead>
<tr>
<th><strong>DELHI RNTCP UPDATE</strong></th>
<th><strong>DOTS DELHI TB Fact File (1998 - 2013)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Estimated Incidence of all forms of TB per 100,000 population</strong></td>
<td><strong>257 TB cases</strong></td>
</tr>
<tr>
<td><strong>DOTS coverage in the City</strong></td>
<td><strong>100% since the year 2000</strong></td>
</tr>
<tr>
<td><strong>No. of TB patients put on DOTS treatment (cumulative)</strong></td>
<td><strong>5,87,470</strong></td>
</tr>
<tr>
<td><strong>New TB cases per year on DOTS treatment</strong></td>
<td><strong>45360</strong></td>
</tr>
<tr>
<td><strong>Case Detection Rates of New infectious cases</strong></td>
<td><strong>~90%</strong></td>
</tr>
<tr>
<td><strong>Treatment Success rates</strong></td>
<td><strong>~86%</strong></td>
</tr>
<tr>
<td><strong>Increase in Treatment Success rates</strong></td>
<td><strong>3 folds</strong></td>
</tr>
<tr>
<td><strong>TB-HIV co infection rates</strong></td>
<td><strong>0.90%</strong></td>
</tr>
<tr>
<td><strong>MDRTB patients on treatment (Since Oct 2008)</strong></td>
<td><strong>More than 5000</strong></td>
</tr>
<tr>
<td><strong>Reduction in TB incidence over 10 years</strong></td>
<td><strong>7%</strong></td>
</tr>
<tr>
<td><strong>Reduction in TB deaths</strong></td>
<td><strong>11 folds</strong></td>
</tr>
<tr>
<td><strong>No. of lives saved</strong></td>
<td><strong>More than 1 lac</strong></td>
</tr>
<tr>
<td><strong>DOT Centre increased</strong></td>
<td><strong>51 to 732</strong></td>
</tr>
<tr>
<td><strong>Microscopy Centre increased</strong></td>
<td><strong>51 to 201</strong></td>
</tr>
<tr>
<td><strong>Culture &amp; DST Centres for MDR</strong></td>
<td><strong>Six</strong></td>
</tr>
<tr>
<td><strong>Drug Resistant TB Centre with Indoor facility</strong></td>
<td><strong>Four</strong></td>
</tr>
</tbody>
</table>
**Directly Observed Treatment Short course (DOTS)**

**Five key components:**

- Political commitment with increased and sustained financing
- Case detection through quality-assured bacteriology
- Standardized treatment with supervision and patient support
- An effective drug supply and management system
- Monitoring and evaluation system, and impact measurement
Not all physicians in medical colleges are coherent with RNTCP guidelines:

“RNTCP is for the masses who cannot afford quality diagnostic work up and treatment”

“A patient needs to be treated as an individual and not as a category”

Academicians express reservations on daily treatment regimens vs intermittent regimens (deployed under DOTS)

Physicians continue to rely on X-ray instead of sputum smear microscopy

Prescriptions continue to be unsupervised with varied drug combinations
Political commitment – Possible role of medical colleges

- Documentation of health, social, and economic burden due to tuberculosis
- Advocacy for effective tuberculosis control
- Documentation of cost-effectiveness of tuberculosis control under RNTCP
- Leadership by example in implementation of DOTS/RNTCP
Case detection through quality-assured bacteriology – Role of medical colleges

- Start microscopy centre as per RNTCP policies
- Supervise – or at least participate in – quality control network
- Teach graduates and undergraduates about primacy of smears and limitations of x-rays
- Leadership by example – no patient to start treatment for PTB without AFB smear results
- Developing quality sputum microscopy services with Quality Assurance protocol
- Lab capacity development for Culture & DST
- Endorse rapid diagnostic as per RNTCP guidelines
- Follow standard guidelines for the diagnosis of extrapulmonary TB/childhood TB/HIV-TB
- Promote TB Notification
Standardized treatment with supervision and patient support- Role of medical colleges

- Teach graduates and undergraduates: Directly observed short-course
- Leadership by example in use of standard regimens for vast majority of patients
- Conduct systematic research to evaluate effectiveness in different clinical settings and categories
- Teach about need for treatment observation – no regimen is effective unless it is taken!
- Leadership by example in terms of use of treatment observation under RNTCP
- Evaluate strengths and weaknesses of different types of treatment observers in different settings
- Develop guidelines and strategies for Programmatic Management of Drug Resistant TB
Monitoring and evaluation system and impact measurement – Role of medical colleges

- Standardized RNTCP recording and reporting formats
- Ensure that there is 100% accountability for every patient diagnosed at your facility, especially smear-positive patients
- Teach about accountability and recording system
- Leadership by example in use of standard records (registers, treatment cards etc)
Layout of Medical College Involvement in the program

- National Task Force
  - NTF Chair, NTF Advisor
- Zonal Task Force
  - ZTF Chair, ZTF Advisor
- State Task Force
  - STF Chair, STF Advisor
- Medical Colleges
  - Core Committee Members, Nodal Officer, Medical Officer*
  - 1 Lab Technician*, 1 TB Health Visitor*
  - Designated Microscopy and DOT centre Referral Unit
  - Designated Microscopy and DOT centres
  - 1 Lab Technician*, 1 TB Health Visitor*
RNTCP Zonal Division across India
Six Zones:
North, West, East, Central, South-I and South-II
Role of Medical Colleges in RNTCP

• **Constitute and Strengthen Core Committee**
  – At least four members with representative from Department of Medicine, Chest Medicine, Microbiology, Community Medicine
  – Monthly /Quarterly meetings to review RNTCP implementation
  – Airborne Infection Control Practices

• **Training and Teaching about RNTCP**
  – UG, PG teachings
  – Training of Master Trainers
  – Posting of Interns, UGS and PGs at DOT centres
  – Include questions on RNTCP in UG and PG examination

• **Sensitization / Advocacy**
  – Interdepartmental Sensitization-Interns, Residents, Faculty
  – Sensitization/training of PPs, NGOs, IMA and other sectors
  – Adopt an area of public health importance for RNTCP implementation

• **Undertake Operational Research**
  – Conducting thesis on RNTCP
  – Conducting OR on RNTCP
  – Publish articles, newsletters, deliver radio talks

• **Mainstreaming Management of Drug Resistant TB**
  – Development of required Infrastructure
  – Formation of DOTS PLUS Committees
OPD patients screened for TB symptoms by Medical Officer

- **Pulmonary Symptoms**
  - **Sputum for AFB at DMC**
    - Diagnosed for TB
    - Not diagnosed for TB

- **Extra- Pulmonary Symptoms**
  - Evaluation by Nodal Officer
    - Diagnosed EP TB

Medical Officer Referral Unit/ Nodal Officer

- **Refer to Referral unit DOT centre for outside DMC area patients**
- **Send to RNTCP DOT centre for Treatment for local area patients**
- **Indoor DOTS if admitted**

Integrated Counselling and Testing Centre

Referral to medical college RNTCP DMC and DOT Centres
## Medical College Contribution India

<table>
<thead>
<tr>
<th></th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Number of Medical Colleges involved</strong></td>
<td>282/307</td>
<td>291/321</td>
<td>315/343</td>
<td>187/259</td>
</tr>
<tr>
<td><strong>TB suspects examined for diagnosis</strong></td>
<td>61168</td>
<td>689342</td>
<td>667090</td>
<td></td>
</tr>
<tr>
<td><strong>Smear positive TB cases were diagnosed</strong></td>
<td>92071</td>
<td>95272</td>
<td>90524</td>
<td>95,450</td>
</tr>
<tr>
<td><strong>Sputum Smear+ ve TB cases (put on Rx, referred)</strong></td>
<td>84015</td>
<td>87271</td>
<td>84697</td>
<td></td>
</tr>
<tr>
<td><strong>Initial Defaulters</strong></td>
<td>8056 (9%)</td>
<td>8001 (8%)</td>
<td>6691 (7%)</td>
<td></td>
</tr>
<tr>
<td><strong>Sputum Smear -ve TB cases (put on Rx or refereed)</strong></td>
<td>49788</td>
<td>49031</td>
<td>45548</td>
<td>40,680</td>
</tr>
<tr>
<td><strong>Extra-pulmonary (put on Rx or refereed)</strong></td>
<td>81615</td>
<td>83824</td>
<td>82067</td>
<td>78,200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,23,474</td>
<td>2,25,127</td>
<td>2,18,139</td>
<td>2,14,330</td>
</tr>
</tbody>
</table>
Case detection by Medical Colleges: 2012-13, India

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Medical Colleges</th>
<th>Sputum Positive</th>
<th>Sputum Negative</th>
<th>EP</th>
<th>Total Diagnosed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 2013</td>
<td>253</td>
<td>26041</td>
<td>10619</td>
<td>20617</td>
<td>57277</td>
</tr>
<tr>
<td>Q2 2013</td>
<td>256</td>
<td>27081</td>
<td>11156</td>
<td>22759</td>
<td>60996</td>
</tr>
<tr>
<td>Q3 2013</td>
<td>259</td>
<td>25153</td>
<td>10805</td>
<td>20310</td>
<td>56268</td>
</tr>
<tr>
<td>Q4 2013</td>
<td>187</td>
<td>17175</td>
<td>8100</td>
<td>14514</td>
<td>39789</td>
</tr>
</tbody>
</table>

19% of all new cases reported under RNTCP
Annual contribution of medical colleges (2005-2010) to referral of TB suspects and detection of new smear-positive patients under the Revised National Tuberculosis Control Program, India
Contribution of medical colleges to various diagnostic and therapeutic achievements of the RNTCP as documented in 14 districts in the Intensified PPM Project India.

Contribution of medical colleges to tuberculosis control in India under the Revised National Tuberculosis Control Program (RNTCP): Lessons learnt & challenges ahead; Sharma et al, IJMR 2013
Country status: Culture DST Labs 2013-2014

<table>
<thead>
<tr>
<th>Technology</th>
<th>Solid Culture</th>
<th>Liquid culture</th>
<th>LPA</th>
<th>CBNAAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>38</td>
<td>14</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>In Medical Colleges</td>
<td>6</td>
<td>1</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>% contribution</td>
<td>16%</td>
<td>7%</td>
<td>23%</td>
<td>28%</td>
</tr>
</tbody>
</table>
RNTCP Culture & DST Labs Network (March, 2014)

C-DST Labs - 54
SLDST – 6 (3 NRLs, 2-IRLs and 1-NGO)

By Technology:
- Solid Culture: 38
- LPA: 44
- Liquid Culture: 14
- CB-NAAT: 30
Drug Resistant TB Centre: Medical College Contribution in India 2013-2014

<table>
<thead>
<tr>
<th>General Hospital</th>
<th>Medical College</th>
<th>NGO</th>
<th>TB Hospital</th>
<th>TB Hospital + Medical</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

66% of all Drug Resistant TB Centres under RNTCP
## Medical College Involvement – Delhi (12)

<table>
<thead>
<tr>
<th>Name of the Medical College</th>
<th>Type of Health Facility</th>
<th>Core Committee in Place</th>
<th>Referral Unit in Place</th>
<th>Indoor DOTS</th>
<th>RNTCP DMC cum DOT centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maulana Azad Medical College</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>All India Institute of Medical College</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University College of Medical Sciences</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lady Harding Medical College</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Vardhmann Mahavir Medical College</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Vallabh Bhai Patel Chest Institute</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>National Institute of TB and Respiratory Diseases, Mehrauli</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ram Manohar Lohia Hospital and PG Research Institute</td>
<td>Govt.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Army College of Medical Sciences</td>
<td>Govt.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Hindu Rao Hospital</td>
<td>Govt.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>ESIC Basai Darapur</td>
<td>Govt.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Hamdard Jamia</td>
<td>Pvt.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Delhi Medical colleges contribution to suspects referral, smear +ve, smear negative and EP diagnosis per year (2009 to 2012)
Delhi Medical Colleges Participation in 2007-2012

No of TB patients diagnosed

- SM +ve TB
- Sm -ve TB
- EP-TB

Years: 2007-2012

Diagnosed patients:
- 2007: 1220
- 2008: 1540
- 2009: 1676
- 2010: 1844
- 2011: 1735
- 2012: 1893

Values:
- 980
- 4420
- 3952
- 914
- 4008
- 7323

Graph shows the trend of TB patients diagnosed over the years.
Medical Colleges Participation in Delhi 2007-2012

No of TB patients referred from medical colleges whose feedback was received
Publications contributed through Medical College Task Force

- Contribution of medical colleges to tuberculosis control in India under the Revised National Tuberculosis Control Program (RNTCP): Lessons learnt & challenges ahead; Sharma et al, IJMR 2013
- Intensified scale-up of public-private mix: a systems approach to tuberculosis care and control in India; Lal SS et al, IJTLD 2011
- Improving tuberculosis control through public-private collaboration in India: literature review; Dewan P.K. et al, BMJ 2006
- Role of Medical Colleges in Tuberculosis Control; Dubey, V. K. et al, NTI Bulletin 2001

RNTCP, Revised National Tuberculosis Control Programme; NTF, National Task Force; TB, tuberculosis; OR, operational research; HIV, human immunodeficiency virus; MDR-TB, multidrug-resistant tuberculosis; XDR-TB, extensively drug-resistant tuberculosis

Source: References 7-15
Technical Panel discussions

• In the wake of the commitment of the GoI to Universal Access to Quality Diagnosis and Care to all TB patients what changes in the Diagnostic Algorithm need to be done to ensure enhanced and early case detection.

• With the Task Force raising questions time and again regarding the issue of Mono resistance and poly resistance MTB, what is the take of the NTF on the matter and what the NTF can suggest to the RNTCP for diagnosis and regimens for the same.
Technical Panel discussions

• How to use the current Program capacity to diagnose and manage NTMs and how to enhance the current capacity.

• When enough evidences point towards a change in drug regimen and also almost all other countries in the world have changed to daily regimen and India continues to remain the only country to continue with alternate day regimen and probably the current drug shortages are in a way due to this situation; what is the take of the National Task Force and what are its suggestion to the Program.
Challenges ahead

• Universal access to TB care
• Promote Standards of TB Care in India
• Notification of TB
• Promotion of Rationale use of anti-TB drugs
• Mainstreaming Programmatic Management of Drug Resistant TB
• Are Medical Colleges effectively addressing the Operational Research questions that will help control TB in India
Way forward for RNTCP

• Creation of Centers of Excellence
• TB Notification
• Coordination of TB Research workers and Institutions
• Development of C&DST Laboratories
• Research including OR & Drug/Vaccine Trials
• Public Health Responsibility
The ‘missed’ Three million

- Every year 9 million people get sick of TB globally.
- 3 million don’t get the care they need.
- Out of these, 1 million are in India alone.

WTD Theme - Role of Medical College

• Notify TB
• Advocate for the cause
• Sensitize, Teach, Train
• Operational Research
• Public Health Responsibility
Thank You