Programmatic Management of MDR-TB in China: Progress, Plan and Challenge

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China Profile

- Population: 1,344,130,000 (2011)
- Area: 9,600,000 km²
- Administrative divisions: 31 Provinces and Xinjiang construction corps, 2 SAR (Special Administrative Region) (Hong Kong and Macao)
- GDP in 2011: 7.3 trillion USD (2011, World Bank)
- GDP per capita: 5,444.79 USD (2011, World Bank)
Achievements Against Regular TB Control and Prevention In China

- DOTS coverage rate by county: 100%;
- Case Detection Rate of new TB cases: 80%;
- Cure rate for new TB cases: above 90%.
- China achieved its MDG (Millennium Development Goal) for TB control 5 years ahead.
- 4.5 million SS+ TB patients has been from 2001 to 2010.
# Epidemiology of General TB
- Result of The 5th Nationwide TB Prevalence Survey in China (2010)

<table>
<thead>
<tr>
<th>Category</th>
<th>Prevalence (1/100,000)</th>
<th>Decreasing rate from 2000 to 2010 (%)</th>
<th>Annual decreasing rate from 2000 to 2010 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>All types of TB</td>
<td>466</td>
<td>459</td>
<td>1.5</td>
</tr>
<tr>
<td>Smear positive TB</td>
<td>169</td>
<td>66</td>
<td>60.9</td>
</tr>
<tr>
<td>Bacteriologically confirmed TB</td>
<td>216</td>
<td>119</td>
<td>44.9</td>
</tr>
</tbody>
</table>
Millennium Development Goal Achieved

50% reduction target
Epidemiology of MDR-TB
- Result of National drug resistance surveillance in 2007-2008

- MDR-TB among all TB: 8.32%,
  - MDR-TB among new SS+ patients is 5.71%,
  - MDR-TB among retreatment patients is 25.64%.
- XDR-TB among all TB: 0.68%
- MDR-TB cases among notified pulmonary TB is 61,000*.

China has the second largest MDR-TB burden among 27 MDR-TB High Burden Countries.

* Global tuberculosis report 2012. WHO/HTM/TB/2012.6
MDR-TB vs. non-resistant TB

- More sophisticated diagnostic technology
- Longer treatment period (6-8 months compare to 18-24 months)
- More adverse drug reaction
- Harder to management
- More expenditure (about 100 times, or even more)
To solve the problem of MDR-TB in China, 
What WE SHOULD DO IN THE FUTURE? 

To do a good preparation to CONFRONT the situation? Or nothing to do? 

Certainly, We select the former. To do a good preparation.
One hand: “Turning off the tap"
- Prevention of MDR-TB and XDR-TB

To enhance the QUALITY of basic DOTS by:
● To consolidate a strong government commitment;
● To improve the TB laboratory services network;
● To find the TB patients in vulnerable group, and give them more care.
One hand: “Turning off the tap"
- Prevention of MDR-TB and XDR-TB

- To improve the recording & reporting system for TB
- To improve the quality of drugs (including first line and second line) and to implement SOP in drug supply and management system;
- To intensify the cooperation between Public Health institutes (CDCs) and Hospitals.
On the other hand
- Launching pilot projects “programmatic treatment and management for M/XDR-TB patients” (PMDRT)

- To formulate National Framework and working plan for PMDRT, to do pilot for PMDRT, and to increase the number of pilot sites gradually, to implement drug resistance surveillance.
- To improve lab services of each level so that they can meet the standard for MDR-TB diagnostic test, such as TB culture and DST.
## Future TB Laboratory Network in China?

<table>
<thead>
<tr>
<th></th>
<th>LED Microscopy</th>
<th>Solid Culture &amp; DST</th>
<th>Solid DST</th>
<th>Molecular test</th>
<th>Liquid Culture &amp; DST</th>
<th>Biosafety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supranational Level/ National Level</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>P3 &amp; P2</td>
</tr>
<tr>
<td>Provincial Level</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Maybe</td>
<td>At least P2</td>
</tr>
<tr>
<td>Prefecture level</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Maybe</td>
<td>P2</td>
</tr>
<tr>
<td>County level</td>
<td>Yes</td>
<td>Maybe</td>
<td>No</td>
<td>Maybe</td>
<td>Maybe</td>
<td>P2</td>
</tr>
</tbody>
</table>
Treatment and management for M/XDR-TB patients

- Technical support

Preparation for Technical support
  ● A National Guideline for programme management of DR-TB issued in 2012 By China CDC;
  ● Manual for SLD management;
  ● Guideline for Infection Control of tuberculosis;
  ● Guideline for ADR of chemotherapy of DR-TB;
  ● SOP of Culture & DST
Treatment and management for M/XDR-TB patients
-Research

Survey of policies against M/XDR had been launched by MOH:

• To know stakeholders’ attitude to those policies, we conducted a field survey in Wuhan and Shenzhen city.

• Using mathematic models to predict the cost-effectiveness of PMDRT schemes for future 10 more years.

• To provide strong evidence of PMDRT for policy makers.
Treatment and management for M/XDR-TB patients - National Drug Resistance Surveillance

- 70 counties selected as survey sites.
- Enrollment began at Apr-1-2007, 4617 ss+ enrolled, including 3518 new patients and 1099 retreatment patients.
- Epidemiology of M/XDR-TB has been updated as mentioned before.
Treatment and management for M/XDR-TB patients

- Provincial Drug Resistance Surveillance

- 13 provinces conducted DRS supported by WHO,
- 6 provinces launched DRS supported by GFATM Round 5,
- 1 province conducted DRS financed by local government.

Up till now 20(31) provinces conducted DRS
Treatment and management for M/XDR-TB patients

- Diagnosis

- To assess rapid diagnosis method for MDR-TB by implementing Important National Science & Technology Specific Projects and MOH-BMGF project phase I.
- To accelerate implementation of rapid diagnosis method.
Treatment and management for M/XDR-TB patients
- Hospital-CDC Cooperation

To set up model of cooperation between hospitals and TB dispensaries

1. **Responsibility of Hospital:** Diagnosis, Treatment, Support Treatment for Side-effect for MDR-TB patients.

2. **Responsibility of CDC:** Management, Supervision, Follow up, Detective, Drug management etc.

3. **Both part have responsibility to report relative information in TBMIS.**
Global Fund Project SSF

- Number of Covered Provinces: 25
- Number of Covered Prefecture Level: 67
- Number of Treated MDR-TB patients: 4332 cases
- Phase I Period: 1 July 2010-30 June 2013
Provinces to be covered by SSF-GF

China Global Fund project
Bill & Melinda Gates Foundation Project Phase I

- BMGF mainly focus on new models, new tools and new techniques to prevent and control M/XDR-TB.
- China-BMGF project has launched on April 1, 2009.
- Sub-project 1d set it target to development of MDR/XDR-TB prevention and control models involving hospitals and public health system.
- The sub-project have covered 4 prefecture in 4 provinces in phase I.
Sub-project 1d activities covered:

- Determine the model and mechanism for collaboration between hospital and CDC systems
- To develop the technical policies, guidelines, and operational procedures of this collaborative program
- Determination of the financing and incentives needed to implement this collaborative program
- Provision of an uninterrupted supply of quality 2nd-line TB drugs
- Implementation of collaborative model
- Evaluation of model program
- Development of human resource capacity to implement and scale-up collaborative model
• New diagnosis technologies evaluated by sub-project 1a:
  – LED microscopy
  – LAMP
  – MTBDR HAIN test
  – Genechip from Boao tech, China
  – GenXpert
Lessons Learned
-from BMGF project phase I

- A good model for MDR-TB control and prevention;
- A standardized regimen for MDR-TB treatment;
- Management of Second line drugs for TB;
- Laboratory methods for detective MDR-TB;
- Training human resources for MDR-TB treatment and management;
- Strong Government committee to ensure the MDR-TB programme.
Flow Chart of Medical Services for TB Patients in China-Gates Foundation TB Project
By working in fields above, both successful and unsuccessful experiences were recorded as the basis of formulating a appropriate action plan, those experiences are:

- To establish policies to regulate MDR-TB management and the use of SLDs.

- Combining MDR-TB control with medical reform, so that we could use the resources of Township Health Insurance, New Rural Cooperative Medicare Scheme, Central government financing, International cooperation project to build a new financing mechanism.
Setup of MDR-TB treatment and management sites by prefecture
Gradual and capacity-based expansion
TB dispensary and other health services should cooperate more tightly
According to resource, to design appropriate strategy of case finding. High risk population has the priority, then all SS+ patient will receive screening test for MDR-TB
To reduce transmission of MDR-TB and shorten diagnostic delay by using molecular test to screen MDR-TB immediately
To increase the number of TB staff for all levels and to enhance human resource construction by training.
What’s Next?
NTP for the 12th 5-year plan

- NTP for the 12th 5-year plan published by State Council in Nov. 2011
  - Lab network building
    - By 2015, more than 80% of county TB labs can conduct sputum culture testing, 100% prefecture labs can carry out DST, and 100% provincial labs can carry out strain identification
  - Verification and promotion of proper rapid test methods are made
- Expansion of MDR-TB management
  - By 2015, prefecture-based MDR-TB management reaches 50%; screening rate of MDR-TB suspects reaches 60%
NTP for the 12th 5-year plan

- Since 2011, FDC has been promoted in PTB patients step by step. By now, the coverage of FDC has reached 50% counties nationwide.

- Cycloserine has been registered by SFDA of China in Aug 2012.
NTP for the 12th 5-year plan

- Organizing monitoring missions to supervise the implementation of NTP with quarterly notification of target accomplishment status

- Providing instructions for the development of local programme for TB Control that TB control budget need to be integrated into local government budget

- Applying for sustainable funding for post-GF era.
NTP for the 12th 5-year plan

- In July 2011, MOH issued the policy to integrate MDR-TB treatment into medical insurance of rural residents with 70% reimbursement, 20% medical aid and 10% self-payment.

- MOH organized a workshop in Changsha, Hunan province on July 31, 2012, in which 30 provinces shared experiences on support policy for TB control under NRMCS.

- By the end of June, MDR-TB has been integrated into the local NRMCS pilot among 25 provinces that assured more than 70% compensation.
NTP for the 12th 5-year plan

- Training covered 31 provinces, 78 prefectures during 2008-2012
  - 12 training courses for PMDT were delivered by NCTB, WHO China Office, the Union. 600 PMDT related staff were trained, including clinical doctors and prefectural TB dispensary staff
  - 6 MDR-TB clinical management training courses have covered 180 trainees, which was supported by DFB
  - Implementation protocol training have covered 67 GF project areas in 2012, more than 500 trainees have been trained
Enhancing PTB standard treatment and management

- Continue enhancing PTB standard treatment and management to ensure the quality of each step on case detection, tracing, treatment, management, etc.

- Fully promoting the implementation of TB clinic pathway to control cost and regulate treatment activities of TB hospitals.

- Enhancing the monitor and supervision to health facilities, especially TB designated hospitals.
Scaling up quality PMDRT

- The scale-up plan of PMDRT for 2012-2015 has been developed prefecture-wise based on the country situation to ensure the achievement of 50% coverage of prefecture by 2015.

- Enhancing training for TB dispensary staffs, and supervision for MDRTB work.
Enhancing capacity building of MDRTB control

- Increase the input for TB lab equipments at all levels
  - By 2015, 100% prefecture TB labs can make DST and 80% counties can make sputum culture test.
  - Try to integrate the funding for strain transportation, EQA, PMDRT subsidy into central transfer fund for TB control for 2013-2015 in order to cover the funding gap in the post-GF era.

- Integrate some evaluated new diagnostic technique into the new edition of *Catalog of Clinical Test in Medical Facilities* for national promotion.

- Launch routine surveillance in the 72 sites of 2007 national MDRTB baseline survey.
Regulating Drug Management

- Accelerate the registration of imitated drugs by coordinating SFDA and DRC; pilot tender or designated production of anti-TB drugs compulsory but in small amount to ensure supply
- Coordinate SFDA to organize inspection
- Coordinated within MOH to integrate FDC and second-line drugs into *National Essential Drugs Category 2012*
Improving supportive policy and working mechanism

- To keep promoting pilot of medical cost of MDR-TB treatment and management covered by New Rural Medical Collaboration Scheme, NRMCS.

- Exploring the subsidy amount and mechanism of TB hospital designated which took charge of public health task.
## Future budget source for TB & MDR-TB control of China

<table>
<thead>
<tr>
<th>Need</th>
<th>Category</th>
<th>Content</th>
<th>Source</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding for demander</td>
<td><strong>TB &amp; drug resistance Screening</strong></td>
<td>Sputum transportation, Molecular Test, CXR</td>
<td>Central government</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Diagnosis &amp; Treatment</td>
<td>Culture &amp; DST, FLD&amp;SLD anti-TB drugs, other test &amp; treatment, ADR, Follow-up exams</td>
<td>Health insurance</td>
<td>70%</td>
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<tr>
<td></td>
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<td>Medical Aid</td>
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<td>Patient Out-of-pocket</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>DOT</td>
<td>Basic public health service package fund</td>
<td>100%</td>
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<tr>
<td>Funding for provider</td>
<td>Working budget</td>
<td>Tracing, training, supervision, TB infection control</td>
<td>Local government</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health Promotion</td>
<td>Central government</td>
<td>100%</td>
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TB Legislation

• Isolating treatment and Travel restrictions of MDR-TB patients have been writing in Implementation measures on the law of infectious disease control, and we will do effort to legislation plan of tuberculosis prevention and control

• Carrying out evaluation on China tuberculosis control and prevention during 2001-2010 with WHO, WB, GATES foundation
Conclusion

- China has second largest MDR-TB burden of the world.
- Through GFATM and BMGF pilot projects, China has cumulated experience and human resources for MDR-TB control.
- New Model, New diagnosis measures, New Funding Mechanism for future China MDR-TB control.
Thanks for your attention!