TB Infection Control: full speed ahead

Workshop to Scale Up the Implementation of Collaborative TB/HIV Activities in Africa
10-11 April, 2013
Maputo, Mozambique

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Division of Global HIV/AIDS
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Outline

• The problem
• The policy
• TB infection control in ART clinics - a training package
• The time is right
Estimated HIV Prevalence in New TB Cases, 2010
## Excess Occupational Risk

<table>
<thead>
<tr>
<th>Work location</th>
<th>TB incidence rate ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(relative to general population TB incidence rate)</td>
</tr>
<tr>
<td>Outpatient facilities</td>
<td>4.2 – 11.6</td>
</tr>
<tr>
<td>General medical wards</td>
<td>3.9 – 36.6</td>
</tr>
<tr>
<td>Inpatient facilities</td>
<td>14.6 – 99.0</td>
</tr>
<tr>
<td>Emergency rooms</td>
<td>26.6 – 31.9</td>
</tr>
<tr>
<td>Laboratories</td>
<td>42.5 to 135.3</td>
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</tbody>
</table>


Poor diagnostic tools

• Most settings are still using smear microscopy and chest x-ray
• For PLHIV, these tests have low sensitivity
• This leads to misdiagnosis or delayed diagnosis
• This promotes transmission
2009 WHO TB Infection Control Policy

- Adds a managerial component at the national and facility level
- Addresses administrative, environmental, and personal respiratory protection controls
- Promotes the role of the civil society and communities in designing, implementing and evaluating TB IC and reducing stigma
- Promotes linkages between TB infection control and general infection control
- Encourages shorter in-patient hospitalization
Country-Specific TB Infection Control Guidelines
But what was missing?

- No standard operating procedures
- No simple tools to assess risk, make changes, and monitor quality
- No “Champions” for TBIC from clinical administrators
- No portable teaching methods
We started in ART clinics.

- PEPFAR was scaling up ART services rapidly and is currently working in > 13,000 facilities.
- In 2003, 2004, 2005 +, our TB/HIV Team in the Division of Global AIDS, CDC provided TA in these ART clinics in Africa and... no TB infection control.
- Cohort studies of PLHIV presenting for ART were reporting rates of TB in these patients of 20, 30, 40%.
TB Infection Control Implementation Package
Implementation Package Approach

- Practical, action-oriented approach
- Focuses on behavior change

Components:
- Set of presentations
- Facility risk assessment and risk analysis planning tools
- Facility infection control plan template
- Job aids
- 15-minute training video
TB Infection Control Training Video
TB Infection Control in HIV Clinics and Out-Patient Settings: a Team Approach*

Every Person Counts

Clinic Administrator
- Endorse and fund a written TB infection control plan
- Appoint an Infection Control Focal Person
- Ensure supplies and equipment are available and maintained
- Arrange facility space to reduce TB transmission

Infection Control Focal Person
- Develop a TB infection control plan
- Ensure exam and waiting rooms are well-ventilated
- Conduct on-site staff training
- Keep a record of health care workers who develop TB
- Monitor infection control practices daily

Admissions Clerk
- Give coughing patients tissues, cloths, or surgical masks
- Send coughing patients to a separate waiting area
- Prioritize TB suspects to see a clinician quickly

Clinicians and Nurses
- Screen patients for TB symptoms
- Evaluate and treat patients as soon as possible
- Wear respirators (N-95/FFP2) when caring for patients with suspected or proven TB (especially MDR-TB or XDR-TB**)
- Collect sputum in a well-ventilated area

Patients
- Cover mouth and nose when coughing
- Put used tissue in the wastebasket
- Wear a face mask if asked by clinic staff
- Take TB medications as prescribed

Laboratory Staff
- Implement laboratory infection control procedures
- Ensure that results are returned to clinicians quickly

Entire Team
- Seek care promptly if you think you may be infected
- Discuss ways to improve TB infection control procedures in your clinic
- Think TB Infection Control!

* Based on the DOD/WHO Policy on TB Infection Control in Health Care Facilities, Congregate Settings, and Households.
** Multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB)
Protect Others. Protect Yourself.

Cover your cough or sneeze.

Cough or sneeze into your arm.

or

Use a tissue and then throw away...

...then wash your hands.

Stop the spread of TB, colds, and influenza.
Providing patient education
Pilot Training in Zambia in September 2011

- Conducted in partnership with MoH
- 8 ART clinics from 4 provinces
- 32 attendees including nurses, ART clinicians, district and provincial staff, and implementing partners (TB CARE, Jhpiego, CIDRZ, ZPCT)
Training Approach

- Facility risk assessment and priority setting exercise
- TB infection control plan writing
- Monitoring and evaluation plan development
## Baseline TB Infection Control Dashboard

<table>
<thead>
<tr>
<th></th>
<th>Clinic 1</th>
<th>Clinic 2</th>
<th>Clinic 3</th>
<th>Clinic 4</th>
<th>Clinic 5</th>
<th>Clinic 6</th>
<th>Clinic 7</th>
<th>Clinic 8</th>
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</thead>
<tbody>
<tr>
<td>National IC Policy available</td>
<td>✔️</td>
<td>✖️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>IC Practitioner assigned</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>IC Committee formed</td>
<td>✔️</td>
<td>✖️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Written IC plan available</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>TB IC practices monitored daily</td>
<td>✖️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>TB IC training for all staff done</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Facility has an Occupational Health program</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Sputum samples collected away from others</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Staff receive evaluation for TB at least annually</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>HIV-infected staff are reassigned if they request</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Staff monitors natural and/or mechanical airflow daily</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Patient waiting areas outdoors or with cross-ventilation</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Surgical masks available and worn by coughing patients</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

**Legend:**
- **✔️:** Done, available or desired outcome
- **✖️:** Not done or available, or not right

**Note:**
- GREEN: Clinic is compliant.
- RED: Clinic is non-compliant.
- Yellow: Clinic is partially compliant.
Select TBIC Measures at Baseline and Follow-up Sept. 2011 and Sept. 2012

- IC Practitioner assigned
- IC Committee formed
- Written IC plan available
- TB IC practices monitored daily
- TB IC training for all staff done
- Patients asked about cough when entering facility
- Coughing patients separated and "fast tracked"
- Staff receive evaluation for TB at least annually
- Staff monitors natural and/or mechanical airflow daily
- Patient waiting areas outdoors or with cross-ventilation

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
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<tbody>
<tr>
<td>IC Practitioner assigned</td>
<td>87.50%</td>
<td>100.00%</td>
</tr>
<tr>
<td>IC Committee formed</td>
<td>62.50%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Written IC plan available</td>
<td>50.00%</td>
<td>62.50%</td>
</tr>
<tr>
<td>TB IC practices monitored daily</td>
<td>25.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>TB IC training for all staff done</td>
<td>0.00%</td>
<td>37.50%</td>
</tr>
<tr>
<td>Patients asked about cough when entering facility</td>
<td>37.50%</td>
<td>87.50%</td>
</tr>
<tr>
<td>Coughing patients separated and &quot;fast tracked&quot;</td>
<td>0.00%</td>
<td>75.00%</td>
</tr>
<tr>
<td>Staff receive evaluation for TB at least annually</td>
<td>0.00%</td>
<td>12.50%</td>
</tr>
<tr>
<td>Staff monitors natural and/or mechanical airflow daily</td>
<td>25.00%</td>
<td>75.00%</td>
</tr>
<tr>
<td>Patient waiting areas outdoors or with cross-ventilation</td>
<td>37.50%</td>
<td>75.00%</td>
</tr>
</tbody>
</table>
In February 2012, piloted new model (through partner support)
- In 11 selected facilities from 5 districts

The NEW Model
- Mobilizing district Teams as Champions of TBIC
  - District & Facility Managers
  - TB Coordinators
  - Facility TB & IC Focal persons
- Week long TBIC training with;
  - Practical sessions on;
    - Facility TB IC assessments
    - Development of facility specific IC plans

Source: Dr. Yuma Moshe
TBIC practice monitored daily
TBIC training for all staff done
TBIC IEC material available
Facility has a wellness program
Patients asked about cough when entering HF
Coughing patients separated and fast tracking
Cough monitor guide cough etiquette guidance

Summary evaluation of TBIC measures

February 2012
September 2012
What did we learn?

- Implementing basic TB infection control best practices is feasible in resource-constrained outpatient settings.

- Critical elements to success include:
  - an in-country “champion”
  - a simple approach and start with small steps
  - a monitoring and evaluation tool
  - continuous quality improvement approach
The time is right.
Introducing high tech in low tech settings

Major advantages in workflow
- fully automated with 1-step external sample preparation
- time-to-result 1 1/2 h (walk away test)
- throughput: up to 16 tests/module/run
- no bio-safety cabinet
- closed system (no contamination risk)

Performance
- specific for MTB
- sensitivity close to culture
- detection of rif-resistance via rpoB gene

Automated Sample Prep, Amplification and Detection
<120 minutes

A technology platform:
- TB & Rif Resistance
- Potential for HIV viral load
- Potential for HPV STD

Xpert MTB/RIF
FAST

Find cases Actively though cough surveillance
Separate until effective treatment starts
Treat based on molecular DST

Refocusing TB IC on the key administrative components of TB IC:

Goals: Eliminate undiagnosed TB cases
       Eliminate undiagnosed MDR-TB

FAST is an implementation strategy at the health care facility level requiring:
- administrative buy-in and investment
- hiring and training cough monitors
- laboratory capacity: Xpert TB (rapid turn around time)
- Impact: process indicator: monitor time for each step:

Entrance point cough surveillance -> sputum collection ->
laboratory -> Xpert result -> clinician -> effective treatment

Source: Dr. Ed Nardell
What else?

- TB screening of health care workers - A case of TB in a health care worker may indicate transmission of TB in the facility. Guides to measure incidence and prevalence developed.
  
  - *TB Care I*  - *Dr. Max Meis*

- Consulting, mentoring on TB infection control in hospitals including MDR and XDR TB hospitals.
  
  - *Dr. Paul Jensen*

- Building Design and Engineering Approaches to Airborne Infection Control Harvard Course - 6th course  200 trainees to date
  
  - *Drs. Ed Nardell and Paul Jensen*
What else?

- TB courses and TB infection control courses in South Africa  
  Annatjie Peters

- Linking TB infection control efforts with other infection control efforts, ie. SARS, influenza, universal precautions, hand-washing  
  ICAN

- Including TB infection control best practices as requirements for licensure or accreditation of facilities
www.ghdonline.org
For more information please contact:

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