Controlling TB in the era of HIV

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TB Incidence rates highest in Africa

Estimated new TB cases (all forms) per 100,000 population

- No estimate
- 0-24
- 25-49
- 50-99
- 100-299
- 300 or more

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HIV prevalence in new TB cases (estimated)

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For each country or region, the number of incident TB cases arising in people with HIV is shown as a percentage of the global total of such cases. AFR* is all countries in the WHO African Region except those shown separately; AMR* excludes Brazil; EUR* excludes the Russian Federation; SEAR* excludes India.
Back to TB Basics
Classic Features of TB

- TB can affect any organ system: bone, kidney, CNS; 80% of cases are pulmonary
- Only pulmonary cases are infectious! Spread through droplets infecting 10-15 individuals each year infectious
- **Typical** presentation of **Active** disease:
  - persistent cough > 3 weeks duration
  - +/-bloody sputum, decreased appetite, weight loss, general weakness, night sweats
- **Atypical** presentation of **Active** disease: decreased/few clinical signs, very common in **HIV-infected**
TB Infection vs TB Disease

- **TB infection** – organism is present, but dormant, cannot infect others
- **TB disease (active TB)** – person is sick and can transmit disease to others if in lungs
- **Lifetime** risk of developing (active) TB disease if TB but not HIV infected: 10%
- **Annual** risk of developing TB disease if co-infected with HIV: 10%
When Does TB Infection Become Disease?

- Most likely in first two years after infection (if not HIV-infected)
- If person becomes immunocompromised
  - HIV
  - Cancer
  - Chemotherapy
  - Poorly controlled diabetes
  - Malnutrition
Priorities of TB Control

• Completion of treatment is paramount!
• Treating non-pulmonary cases and those with infection but without active disease less important
• A poor TB program worse than no TB program—bad programs breed resistance!
• These priorities hold regardless of HIV status!
Impact of HIV-TB Coinfection

- HIV-pos with latent TB
- HIV-neg with latent TB
- HIV-pos with active TB
- HIV-neg with active TB

- Transmit TB to others

- Progression of ~10% per year
- Progression of ~10% per lifetime

- Impact of HIV-TB Coinfection
TB incidence vs HIV prevalence

Estimated TB incidence (per K)

HIV prevalence, adults - years

Source: Dye C et al, JAMA
What can we do??
Addressing the Challenge of HIV/TB

- HIV prevention
- AIDS prevention and treatment (ART)
- TB prevention
  - Socio-economic development
  - Intensified case finding (ICF)/early case detection
  - TB-Infection Control (IC)
  - INH preventive treatment (IPT)
- TB Treatment (also a preventive measure)
TB/HIV policy guidance

Interim policy     M&E     Surveillance     ART

ProTEST lessons
TB/HIV Clinical Manual
Training manuals for Management of TB/HIV Activities
TB Care with TB/HIV Co-management
(1) Decrease burden of TB in PLWHA

• Intensified case-finding
  – Screening for TB disease in HIV/AIDS care settings is relatively easy add-on

• Isoniazide preventive therapy (IPT)
  – 6-9 months daily INH
  – Reduces risk of TB in HIV+ people
    • by 62% in PPD+
    • By 36% overall
  – Evidence of survival in children and adults
  – Benefit of IPT *may* wane after 1-2 years in high prevalence settings
(2) Decrease burden of TB in PLWHA

• TB infection control
  – Neglected concept
  – Renewed attention since recent outbreaks MDR/XDR
  – TB IC-Scale up activities
    • Create national partnerships
    • Mainstream into general IC
    • TB IC policy/guidelines
    • Capacity building and OR required
(3) Decrease burden of HIV/AIDS in TB patients

- HIV testing and counseling
  - PICT, rapid HIV testing in the TB clinic
- HIV prevention
  - IEC to patients and PICT to partners
- Cotrimoxazol prophylaxis (CPT)
  - All HIV+ TB patients, lifelong
  - Those with CD4 counts <350
- HIV/AIDS care and support
  - Referral to support systems
- ART
  - All HIV+ TB patients eligible for ART
  - All HIV+ TB patients with CD4 counts <350
(4) Decrease burden of HIV/AIDS in TB patients

- **Cotrimoxazol prophylaxis (CPT)**
  - Scaling-up with PICT
  - High uptake while on TB treatment
  - Drug supply often a problem

- **ART in TB pts**
  - Low uptake reported
  - HIV scale-up determines scale-up of TB/ART activities; HIV testing, ART availability
  - TB treatment decentralized vs. ART centralized
  - Lack of integrated care clinics
HIV testing for TB patients all countries

Thousands

<table>
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<tr>
<th>Year</th>
<th>HIV Test Percentage</th>
<th>HIV Test Thousands</th>
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<td>9</td>
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<tr>
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<td>90%</td>
<td>112</td>
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</table>
Clinical Aspects of HIV-TB Infection
Key Concepts

• TB is still curable and treated with the same regimen regardless of HIV status
• HIV programs ideal locations for TB screening; TB programs opportunity to identify those at high HIV risk and appropriate for care/rx
• Addressing co-infection requires integration of care and treatment at the service delivery level
• Screening/treating active TB among HIV-infected takes priority over preventive treatment
• Finding and treating TB cases essential to prevent MDR/XDR, especially in HIV+ individuals
• Many opportunities for collaborative efforts to decrease mortality, and extend and improve lives
Similarities to diagnosis and treatment in HIV-UNinfected people

- First diagnostic tool is AFB smear
- Drug regimens, the same
- Treatment cures TB
- DOTS strategy essential for success
- DOT effective method
- Reporting to National TB program key
Differences in diagnosis for HIV-infected people

- Atypical clinical presentations (?<infectious)
- Sputum smear sensitivity reduced (20-30% lower), further studies often necessary
- Radiologic presentation—location and type of pulmonary lesions unusual
- Extrapulmonary TB more common (30-50%)
- Increased need for culture and biopsy
Differences in treatment for HIV-infected people on ART

- Initiation, timing, choice of TB and HIV drugs dependent on co-treatment with HIV meds
- Monitor for drug interactions
- Monitor for immune reconstitution syndrome
- Presumptive treatment more common due to difficult definitive diagnosis
- Frequent concurrent opportunistic infections
Impact of ARVs on TB

• Significantly reduces risk of developing active TB (Brazil)
• Reduces AIDS-related illnesses
• May result in significant # of TB patients requiring HIV or TB regimen modification
• Current ART initiation guidelines start therapy at levels > thresholds for development of TB
• Focus on ART may diminish attention to TB programs especially if health system fragile
Infection Control (IC)

- Mainstreamed HIV and TB programs bring individuals into close proximity.
- Undiagnosed TB patients (and those with active TB disease) present the greatest risk of transmission to HIV+/-TB uninfected.
- HIV-infected HCWs are especially vulnerable population for acquiring nosocomial TB.
- Hierarchy of IC activities (admin, managerial, personal, architectural) outlined; urgent implementation of simple, low-cost measures
Clear Rationale for Joint TB/HIV Activities

- HIV drives TB incidence and mortality in high HIV prevalence areas (mortality 3.5x higher if HIV +)
- TB significant cause of mortality among HIV/AIDS patients (single most common cause of death)
- Where HIV is high and on the increase, DOTS alone is insufficient to control TB
- TB control system can be a major partner in the delivery of ARV/reaching USG and int’l targets
HIV – MDR/XDR TB
The Perfect Storm?
Multidrug resistant (MDR) TB
- TB patient’s *M. tuberculosis* isolate resistant to ≥ isoniazid and rifampicin

Extensively drug resistant (XDR) TB
- MDR + resistance to a fluoroquinolone and ≥ 1 second-line injectable drug (amikacin, kanamycin, capreomycin)
How does HIV impact DRTB?

- Treatment interruption and default are risk factors for development of DRTB
- Increasing HIV-associated TB burden → overwhelmed public health systems
- Poor infection control practices leads to infection in the health care setting
- Poor absorption of anti-TB drugs
- Drug/drug interactions
- Increased likelihood/rapid course to death
Key Activities Proposed by the WHO Global Task Force on XDRTB

- Strengthen basic TB and HIV/AIDS control to prevent the development of MDR and XDR
- Scale-up MDRTB and XDRTB programs
- Expand and improve laboratory services to ensure appropriate and timely diagnosis
- Expand MDRTB and XDRTB surveillance
- Prevent transmission via infection control, especially in high HIV prevalence settings
- Increase awareness and information through strengthened advocacy, communication, and social mobilization
- Promote R & D of new diagnostics, drugs, and vaccines; OR to determine best management practices
Best Practices in TB HIV Care

- Strengthened provider-initiated C&T of TB patients
- Integrated basic TB symptom screening into HIV programs (C&T, care, treatment)
- Routine integration of TB/HIV data into TB and into HIV patient forms
- Close ties among community based HIV care programs, TB Clinics, and CB-DOTS programs, e.g., DOT training for HIV caregivers