HIV and TB: Public health and community interventions

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Global Health and Disasters Course
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Objectives

At the end of this session, participants should be able to:

1. Discuss evidence-based community and public health interventions related to TB and HIV
Outline

• Epidemiology
• TB control strategies
• HIV
  – Prevention
  – Treatment
  – Community
  – Behavior change
TB and HIV Globally

• The dual pandemics of TB and HIV are synergistic in the following ways
  – The risk of developing TB in people living with HIV is between 20-30 times higher than those without HIV infection
  – Active TB infection accelerates HIV progression
  – TB is a leading cause of death among people living with HIV
  – HIV is the main reason for failure to meet TB control targets in high HIV settings
TB/HIV

• In 2011, there were 8.7 million new infections and 1.4 million deaths from TB

• There were an estimated 1.1 million HIV positive new TB cases globally in 2010
  – Around 82% of patients live in sub-Saharan Africa

• At least one-third of the 34 million people living with HIV worldwide is infected with TB
Control Framework for TB/HIV

• Global and country-level coordination of TB and HIV programmes
• HIV testing for all people with TB in high prevalence regions
• 3 I’s
  – Intensive case finding
  – Isoniazid Preventive Therapy (IPT)
  – Infection control
  – Integration of TB/HIV services
  – Early Initiation of HAART
Intensive Case Finding

• Adults and adolescents living with HIV should be screened for TB with a clinical algorithm at every visit
• Based on a comprehensive systematic meta-analysis, including 12 observational studies involving over 8000 people living with HIV
• Determines who is unlikely to have active TB
• Sensitivity of 79% and a specificity of 50%
• Negative predictive value was 97.7%

Symptoms screen:
current cough, fever, weight loss or night sweats
A better algorithm?

• Adding chest x-ray to the screening algorithm
  – Sensitivity 79% to 91%
  – Specificity from 50% to 39%
  – NPV up only 1% at HIV prevalence of 5%
  – NPV by 4% at HIV prevalence of 20%
  – *Cost, logistics, technical expertise...*
ICF in children

• Contact with an adult case of TB
• Children living with HIV who do not have poor weight gain, fever or current cough are unlikely to have active TB
• Poor quality of evidence
Isoniazid Preventive Therapy

• What is it?
• How efficacious is it?
• Reduces the overall risk of developing TB by 33% (relative effect 0.67; CI 0.51–0.87)
  – TST positive, reduced by 64%
  – TST negative*, 14%
  – unknown TST status, 14%

* Not statistically significant
Latest WHO guidelines IPT

Adults and adolescents living with HIV who have an unknown or positive TST status and are unlikely to have active TB should receive at least six months of IPT

• TST is not a requirement for initiating IPT in people living with HIV
• People living with HIV who have a positive TST benefit more from IPT
IPT In children

- IPT for 6 months recommended for
  - ALL infants and children with known household contact and no evidence of active TB  
    *(Strong recommendation, very low quality of evidence)*

- ALL HIV-infected children without evidence of active TB (including with h/o of TB treatment)  
  *(Strong recommendation, moderate quality of evidence)*

- Infants should not receive IPT  
  *(Conditional recommendation, very low quality of evidence)*
How many are getting IPT

• In 2009, 85,000 people living with HIV received IPT
• Out of 34 million PLHA
• =0.3%!!!
Infection Control

- For those living with TB
  - Cough hygiene
  - IPT for under 5’s
- Health care facilities
  - Administrative
  - Environmental
  - Personal Protective Equipment
Integration of HIV/TB services

Goals and objectives of the collaborative TB/HIV activities:

1. Establish and strengthen the mechanisms for delivering integrated TB and HIV services.
2. Reduce the burden of TB in people living with HIV and initiate early antiretroviral therapy.
3. Reduce the burden of HIV in patients with presumptive and diagnosed TB.

One person
Two diseases
One approach
Early Initiation of HAART for PLHA with TB

• TB is a WHO Stage 3 disease
• All co-infected people should be treated for TB immediately and HIV as soon as possible
• When to start ART....
  – CD4<50 start within 2 weeks
  – CD4>50 defer 8 weeks to reduce IRIS

Globally, 48% of the TB patients known to be living with HIV in 2011 were started on antiretroviral therapy (ART)
PUBLIC HEALTH AND COMMUNITY STRATEGIES FOR HIV
Prevention vs Treatment

• Prevention
  – HIV testing
  – Voluntary Male Medical Medical Circumcision
  – Prevention of mother to child transmission
  – PreP, PEP

• Treatment
  – Treatment as Prevention (TaP)
  – Option B Plus

• Community strategy
Alphabet soup of HIV testing

- VCT- Voluntary Counseling and Testing
- HTC- HIV testing and counseling
- HB HTC- Home-based HTC
- PITC- Provider initiated testing and counseling
- Universal HTC in ANC and MCH
Circumcision and HIV
VMMC

- Three randomized controlled trials undertaken in Kisumu, Kenya, Rakai District, Uganda, and Orange Farm, South Africa
- Reduces the risk of female-to-male sexual transmission of HIV by approximately 60%
- TARGET: 80% coverage among men 15 - 49 years old in the priority countries – approximately 20 million circumcisions –
- COST: US$1.5 billion
- SAVINGS: US$16.5 billion by 2025
- INFECTIONS AVERTED 3.4 million*
- SO FAR: By the end of 2011, more than 1.3 million cuts

*80% coverage through 2025
CIRCUM(de)CISION

WE PROTECT OUR GIRLS

WE MUTILATE OUR BOYS!

www.StopinfantCircumcision.org

KNOW YOUR FACTS!

CIRCUMCISION can help protect you against HIV.

For more information, call 0800 600 700 / 3632237 / 711600 or visit your nearest health facility.

You Wanna Cut off WHAT?
eMTCT

- Elimination of mother to child transmission
- In 2009, there were an estimated 1.4 million HIV-positive, pregnant women
- 370,000 new HIV-infected children every year
- Current ART interventions can reduce transmission rates to <2%

Primary prevention of HIV in women
Prevention of unintended pregnancies
Prevention of mother to child transmission
Care for HIV infected women and children
<table>
<thead>
<tr>
<th><strong>Option A: Maternal AZT and Infant daily NVP</strong></th>
<th><strong>Option B: Maternal Triple ARV Prophylaxis</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mother:</strong></td>
<td><strong>Mother:</strong></td>
</tr>
<tr>
<td>Antepartum AZT (from as early as 14 weeks gestation)</td>
<td>Triple ARV from 14 weeks until one week after all exposure to breast milk has ended</td>
</tr>
<tr>
<td>• sd-NVP at onset of labour*</td>
<td>• AZT + 3TC + LPV/r</td>
</tr>
<tr>
<td>• AZT+3TC during labour and delivery*</td>
<td>• AZT + 3TC + ABC</td>
</tr>
<tr>
<td>• AZT+3TC for 7 days postpartum*</td>
<td>• AZT + 3TC + EFV</td>
</tr>
<tr>
<td><em>sd-NVP and AZT+3TC can be omitted if mother receives &gt;4 weeks of AZT antepartum</em></td>
<td>• AZT + 3TC (or FTC) + EFV</td>
</tr>
<tr>
<td><strong>Infant:</strong></td>
<td><strong>Infant:</strong></td>
</tr>
<tr>
<td>Breastfeeding infant</td>
<td>Breastfeeding infant</td>
</tr>
<tr>
<td>Daily NVP from birth until one week after all exposure to breast milk has ended</td>
<td>Daily NVP from birth to 6 weeks</td>
</tr>
<tr>
<td>Non-breastfeeding infant</td>
<td>Non-breastfeeding infant</td>
</tr>
<tr>
<td>AZT or NVP for 6 weeks</td>
<td>AZT or NVP for 6 weeks</td>
</tr>
</tbody>
</table>
Option B+

- Use of Antiretroviral Drugs for Treating Pregnant Women and Preventing HIV Infection in Infants
- Advantages of Option B+
  - Simplification of regimen and service delivery
  - Harmonization with ART programmes
  - Protection against MTCT in current AND future pregnancies
  - Avoids stopping and starting of ARVs
  - Prevention of transmission in discordant couples
  - Improved clinical outcomes for women
Pre-exposure Prophylaxis

• Use of anti-retrovirals to prevent acquisition of HIV in targeted populations
  – MSM, sex workers, IDU, discordant couples
  – MARPs- fisherfolk, truck drivers
• Most success using oral PrEP with Truvada (TDF+FTC)
• Can PrEP be scaled to public health level for high prevalence regions?
Post-exposure Prophylaxis

- Use of anti-retroviral therapy after an exposure to HIV
- Health care workers
- Rape victims
- Sexual contact
Treatment as Prevention
HPTN 052

- Sero-discordant couples from 18 sites in eight countries in three continents
- HIV-positive partner had to have a CD4 count between 350 and 550 cells/mm³ at baseline
- Randomised immediate ARV versus delayed ARV (until their CD4 count below 250 cells/mm³)
HPTN 052 Summary Results

1763 discordant couples

893 early treatment
- 1 linked HIV transmission

882 delayed treatment
- 27 linked HIV transmissions

Early therapy reduced linked transmissions of HIV by 96%
Community Strategy

• Utilizing community health workers to support HIV care and TB
• Volunteers versus remuneration
• Stigma, privacy
Other community interventions

- Psychosocial support
  - Mentor mothers, counseling, partner involvement, support groups
- Home visits
- Education
- Mobilization
- Income generating activities (IGA)
- Incentives
- Focus group discussions
- Community leader influence
Behavior Change

• Uganda
  – ABC’s of HIV prevention
• Thailand
  – 100 percent condom-usage program promoted condom use in brothels
• Australia
  – broad public-awareness campaigns, focused behavioral interventions for gay men, public-sector support for needle and syringe exchange, and voluntary HIV counseling and testing
• Targeted interventions
  – Sex workers: increased condom use with clients
  – MSM: reduced the odds of reported unprotected anal intercourse by 27 to 43%
  – IDU-nonparticipants in harm-reduction programs were 3.5 times more likely to become HIV-infected
  – Youth
Summary

• Public health and community strategies for TB and HIV are diverse and complex
• The best approach depends on local epidemic, resources, and political will
• Comparative cost-effectiveness is key in an era of reduced funding