



The Basics of TB

WRHI

For TB counselors and GXP counselors

You first...

- What do you know about TB?
- What has your experience with TB been?
- What are some of the questions you have about TB?

What is TB?

- *Mycobacterium Tuberculosis*
- A bacteria
- A significant problem in SA
 - 940 cases/100 000 population
 - Worsened by HIV epidemic
 - TB makes HIV worse
 - HIV makes TB worse



Which part of the body does TB infect?

- The lungs
- But can affect any part of the body – extrapulmonary TB
 - Meningitis
 - Pleural effusion
 - Skin
 - Lymph nodes
 - Heart – pericarditis

How is TB spread?

By infectious TB particles



- Coughing generates droplets of different sizes



The 'Natural History' of TB

- Uninfected



- Latent TB



- TB disease



→
Infectious TB particles
See Fact Sheet p18

→
Weakening
immune system

The enemy !!

- Tuberculin skin test positive
- No symptoms

- Sick, loss of weight, night sweats, cough

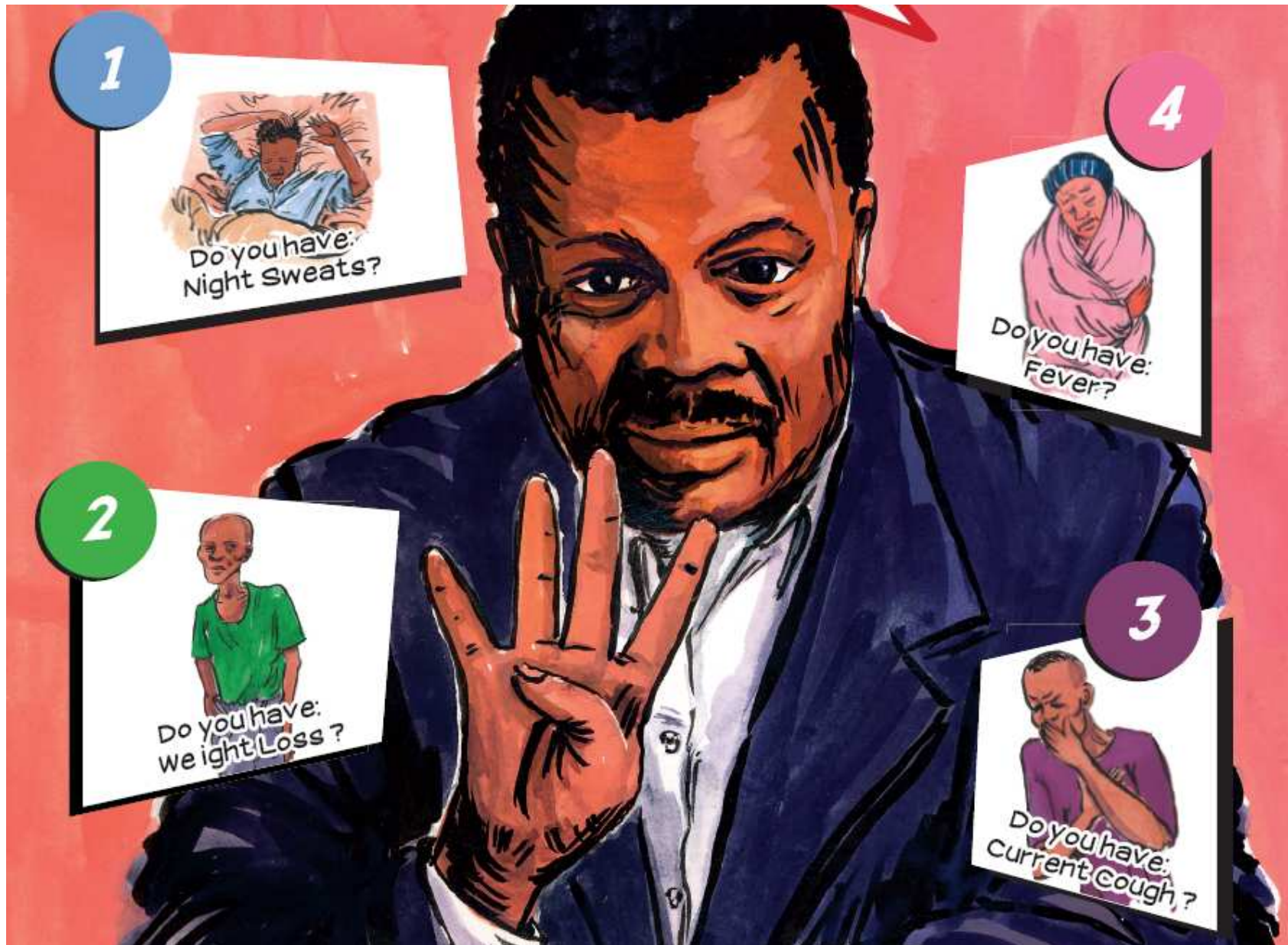
Determinants of infection

- Not everyone who is exposed develops infection
 - Genetic vulnerability
 - Strength of innate immunity against MTB bacilli
 - Cilia, NK cells,
- Factors determining infection
 - Length of exposure
 - Degree of ventilation
 - Intensity of exposure
- Almost ALL spread of TB is caused by smear positive cases
 - $>10^4$ bacilli/ml are required to be smear-positive

Risk of TB

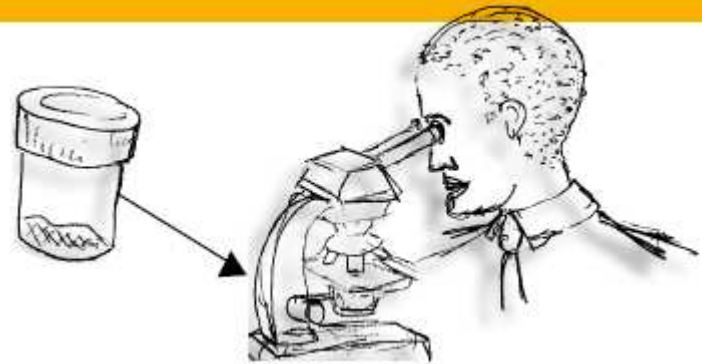
- *HIV negative persons*
 - 1 in 10 **lifetime** risk of developing TB
- *HIV positive*
 - 1 in 10 **annual** risk of developing TB
 - 20-37 times higher risk than HIV negative persons
 - Higher risk if skin test positive (ie latent TB infection)
- *HIV + on ART*
 - Risk much lower but still higher than that of general population

How does a person with TB present?



How do you test for TB?

- Smear microscopy
- Culture
- PCR
- GeneXpert



GeneXpert

Pour Sample Reagent Into sample tube.

Incubate for 15 minutes at room temperature.
(Acceptable sample types: unprocessed sputum or sediment from concentrated specimen.)



1

Pipette diluted sample into cartridge.



2

Insert cartridge and start assay.



3

Smear negative TB

- People with HIV can have negative smears but still have TB
- A negative result means that the patient must get antibiotics, have a chest x-ray and have a 3rd sputum sample sent for culture
- Hopefully GeneXpert will find more smear negative cases
- If a patient has a negative GeneXpert result, they need to have an HIV test done, get antibiotics and be followed up



The Best PREVENTION of TB

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FIND CASES OF TB and TREAT the TB

- National TB Control Programme Strategy of case finding, case holding, DOTS and outcome should find all cases of TB in the community, provide treatment.
- Done effectively, this should reduce TB transmission, and prevent subsequent cases
- Because of the HIV epidemic, the burden of TB is too great for effective case finding.
- Hence, NTBCP activities are NOT enough – we need to actively prevent TB

Intensified case finding

- Find cases of TB early!!
- Screen all persons (including pregnant moms!) for symptoms of TB disease including
 - Cough,
 - Loss of weight (or failure to gain weight in pregnancy)
 - Night sweats (drenching)
- The ideal time to screen is amongst persons undergoing HIV testing
 - HIV positive persons are more at risk for TB.

Intensified case finding

- Screening for TB disease
 - If symptoms are present – refer to TB services for further investigation
 - TB smear microscopy
 - Not such a good test – requires 10,000 acid fast bacilli/ml of sputum to be positive
 - Often smears are negative, but cultures are positive.
 - If TB smears are negative, and patient still symptomatic
 - DON'T give up – TB smears are a terrible test
 - Send sputum for TB culture, send patient for CXR and clinical evaluation
 - Offer HIV testing (if not done already).
 - Remember – pregnant moms have especially high mortality from TB AFTER delivery – don't wait til then.

The Second Best PREVENTION of TB

=

FIND CASES OF HIV infection and TREAT the HIV

- TB is very common amongst HIV+ persons with low CD4 count
- Just managing HIV infection will prevent TB
 - ART reduces the risk of TB disease by 10x – evidence from RSA studies.

TB Treatment

- NEW TB CASES – Regimen 1

2 months of Rifafour, 4 months of Rifinah



- RETREATMENT – Regimen 2

2 months of Rifafour + Streptomycin (injection)

1 month of Rifafour

5 months of Rifinah + Ethambutol



TB/HIV

- High coinfection rate
- All HIV positive people must be screened for TB
 - ASK if
 - Cough
 - Fever
 - Loss of weight
 - Night sweats
- All TB patients must know their HIV status

Integrated TB/HIV services

- HIV entry point
 - Ensure that all persons undergoing HIV testing receive either TB diagnosis, or evaluation for TB prevention by INH or ART
- TB entry point
 - Ensure that all persons who have TB are tested for HIV infection and started on ART if $CD4 < 350 \text{ cells/mm}^3$



TB/HIV

- Both conditions must be treated
- If already on ART and develops TB, start TB treatment immediately
- If found to have TB and not yet on ART, TB treatment started first
- Then ART 2 weeks-2 months later (if CD4 < 350)
- Refer if
 - Side effects
 - For adherence counseling
 - Problems with management
 - Not yet on ART

WRHI TB/HIV Strategy

- **RHI TB/HIV Vision**
- To reduce TB transmission in communities by strengthening case finding, diagnosis, treatment and cure within existing health systems
- To see a decline in number of TB cases treated by 2012 in each sub-district where Wits Institute is active (after an initial increase secondary to activities below)
- **RHI TB/HIV Goals**
- To increase TB case finding by:
 - performing contact tracing on all newly diagnosed TB cases
 - by screening all HIV+ persons for TB symptoms
 - by diagnosing TB in smear-negative persons through appropriate means
- To test all new TB cases for HIV infection, and to initiate all eligible TB patients on ART within 3 months of initiation on TB treatment
- To implement regular TB infection control audits in all facilities where TB patients are seen
- To implement INH prevention in asymptomatic HIV+ patients- to aim for 100% initiation of eligible patients

How can we achieve this?

- Find TB
- Treat TB (and HIV)
- Prevent TB



IPT=Isoniazid Preventative therapy

- Well HIV positive patients
- i.e. no symptoms of TB
 - Cough > 24 hours, LOW, night sweats, fever
- TB contacts esp < 5 years
- Irrespective of CD4
- No skin test needed
- *Who is not eligible for IPT?*
 - Active TB
 - Alcoholic liver disease
 - Hepatic disease



??? QUESTIONS ???