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Overview of Tuberculosis and the Infection Control Challenge

URC

Learning Objectives

By the end of the session, participants should be able to:

- Describe how tuberculosis spreads
- Describe the difference between TB infection & TB disease
- Discuss the types of drug-resistant TB
- Name and explain the factors affecting the risk of TB transmission
- Discuss the steps in the prevention of TB transmission in HIV settings



Tuberculosis

- Tuberculosis (TB) is an infectious disease, which spreads through the air.
- It can be spread by breathing in TB germs (bacilli) when in close proximity to a person with TB germs in their lungs
- This may occur when the sick person coughs, sneezes, laughs, sings, or talks
- TB is usually not spread by brief contact with an infected person

Tuberculosis (continued)

- Most people infected with TB bacilli will NOT become sick
- A new person is infected with TB bacilli every second (worldwide)
- Approximately one-third of the world's population is infected with TB bacilli
- Only 10% of those infected will ever become sick, but up to 50% of HIV infected people can become sick with TB

TB Infection vs. TB Disease

People with Latent Tuberculosis Infection:

- Have TB germs in their bodies, but they are not multiplying due to control (protection) by the immune system
- Don't have symptoms
- Cannot transmit TB to others
- Are diagnosed by a positive tuberculin skin test

Symptoms of Active Tuberculosis

TB Disease in the Lungs (most common):

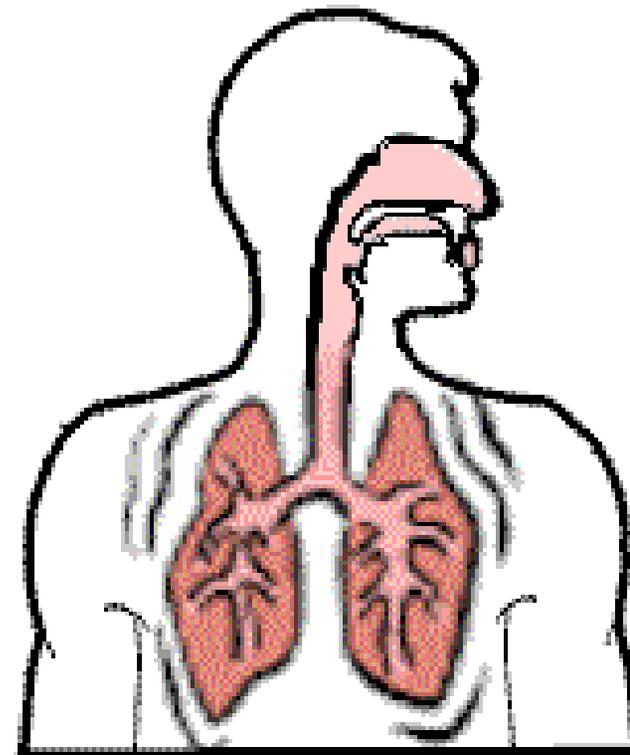
- Coughing
- Chest Pain
- Coughing Up Blood

General TB Disease:

- Feeling of sickness or weakness
- Weight loss
- Fever
- Night sweats

When is TB infectious (1)

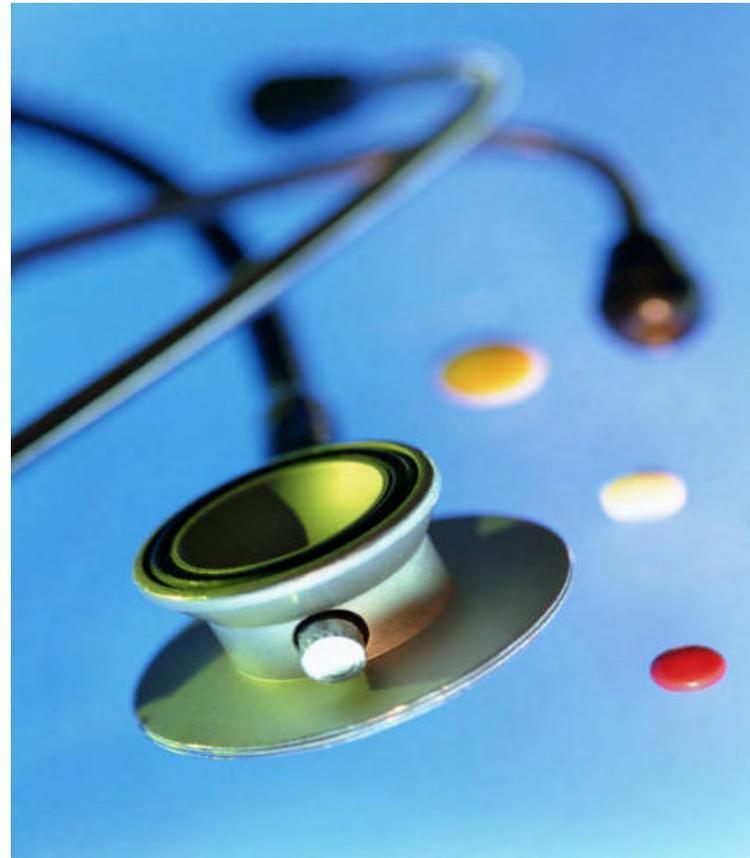
- Patients considered infectious if:
 - Coughing
 - Undergoing cough inducing or aerosol generating procedures
 - Sputum smear positive and
 - Not receiving treatment
 - Just started treatment
 - Responding poorly to treatment



Source: SA NTCP 2008

When is TB infectious (2)

- Patients are no longer infectious if they meet all the following criteria:
 - On adequate therapy
 - Have significant clinical response to treatment
 - Have had 2 consecutive negative smear results



Source: SA NTCP 2008

Avoiding Spread/Development of Drug-Resistant TB

Even though the infected person has seen an improvement in symptoms AND is no longer infectious:

- The patient must continue to take TB medications as prescribed and receive medical care.
- Failure to do this may result in the development of drug-resistant TB

Drug Resistant TB

Definition: Laboratory confirmation of in vitro (“petridish”) resistance to at least one first-line antituberculosis drug:

- Confirmed mono-resistance: Resistance to one first-line anti-TB drug
- Confirmed poly-resistance: Resistance to more than one first-line anti-TB drug other than isoniazid and rifampicin
- Confirmed Multi-Drug Resistant TB (MDR-TB): Resistant to isoniazid AND rifampicin

Multidrug-Resistant TB (MDR TB)

- Resistant to BOTH first-line drugs: Isoniazid (INH) AND Rifampicin (RIF)
- Treatment takes longer
- Treatment requires drugs that are more expensive, toxic, and often harder to find in developing countries

Extensively Drug-Resistant TB (XDR-TB)

- A very serious form of MDR-TB
- Resistance INH and RIF plus an injectable and a fluoroquinolone, which are second-line drugs
- Treatment of XDR-TB requires a complicated combination of rare and expensive drugs

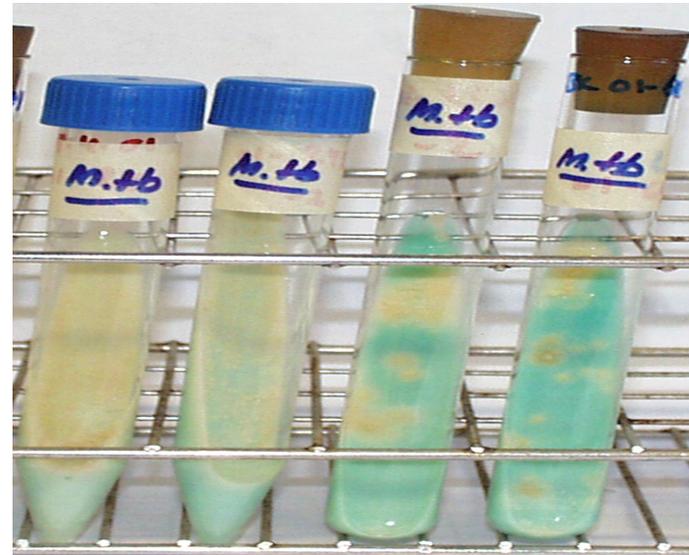
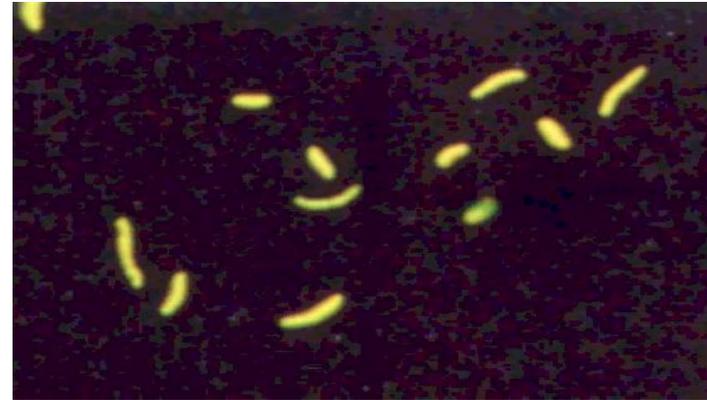
Prevention of MDR-TB (1)

- Fast diagnosis and treatment of TB cases
- Follow recommended treatment guidelines (TB Patients - DON'T MISS YOUR MEDICINE DOSES)
- Monitor patient response to treatment
- Make sure treatment is completed



Prevention of MDR TB (2)

- An effective TB infection control program requires:
 - **Early detection** of people with infectious TB
 - **Isolation** of people diagnosed with infectious TB
 - **Treatment** of all people with infectious TB
- Implement appropriate administrative and environmental controls at facility (to be discussed in more detail later)



Factors Affecting Risk of TB Transmission

- Infectiousness of the person with TB (patient factors)
- Environment in which exposure occurred
- Duration of exposure
- Virulence of the organism (bacterial factors)

TB Transmission: Patient Factors

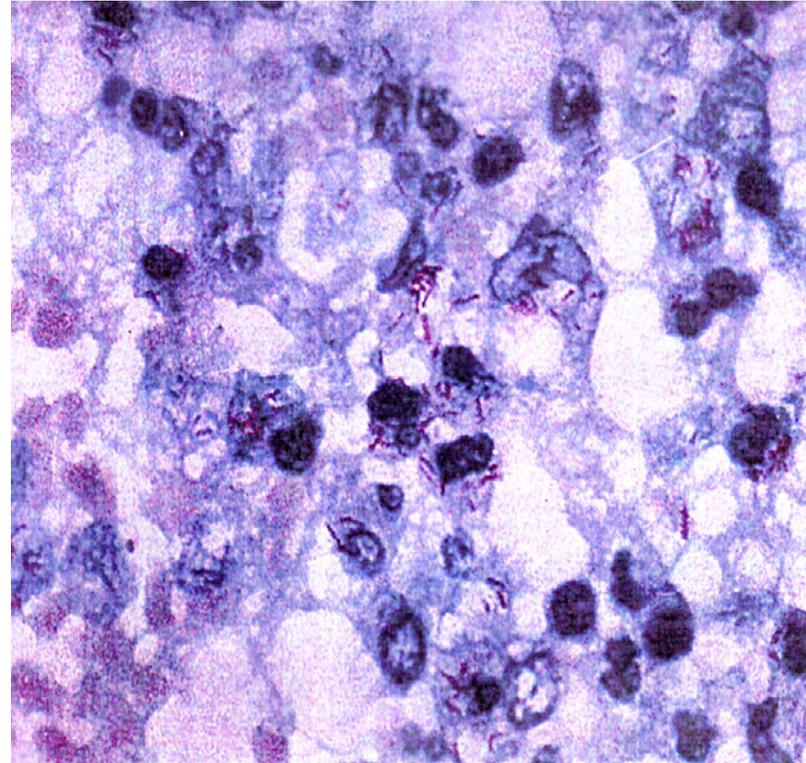
- Severity of TB/level of infectiousness
- Adhering to good cough etiquette & infection control practices
- Treatment (time since start & adherence)
- Risk of TB Infection
- Health status of patient, such as strength of immune system and nutrition

TB Transmission: Recipient Factors

- Level of contact with infected person(s)
 - Proximity
 - Length of contact
 - Frequency
- Compliance with infection control practices
- Vulnerability to infection
(Age, nutritional status, overall health & strength of immune system)

TB Transmission: Bacterial Factors

- Certain strains of TB may be more transmissible
- People with these strains could infect more people due to longer periods of infectiousness



Source: International Training & Research Centre, 2007

TB Transmission: Institutional Factors

- Quality of ventilation
- Level of crowding at facility
- Resources available for training, structural upgrades, and equipment
- Practices for cleaning and disinfection of equipment
- Specimen-handling procedures



Source: International Training & Research Centre, 2007

Current challenges in TB IC

- Structural inadequacies
- Staff attitude towards open window policies
- No staff screening policies-TB/HIV
- Medical surveillance system for staff members

Five Steps for Patient Management to prevent transmission of TB in health care settings

Step	Action	Description
1	Screen	Early recognition of patients with suspected or confirmed TB disease is the first step in the protocol. It can be achieved by assigning a staff member to screen patients for prolonged duration of cough immediately after they arrive at the facility. Patients with cough of more than two weeks duration, or who report being under investigation or treatment for TB*, should not be allowed to wait in the line with other patients to enter, register, or get a card. Instead, they should be managed as outlined below.
2	Educate	Educating the above-mentioned persons identified through screening, in cough hygiene . This includes instructing them to cover their noses and mouths when coughing or sneezing, and when possible providing facemasks or tissues to assist them in covering their mouths.
3	Special waiting areas	Patients who are identified as TB suspects or cases by the screening questions must be moved away from other patients and requested to wait in a separate well-ventilated waiting area, and provided with a surgical mask or tissues to cover their mouths and noses while waiting.
4	Triage	Triaging symptomatic patients to the front of the line for the services they are seeking (e.g. patients for voluntary HIV counselling and testing, and medication refills), to quickly provide care and reduce the amount of time that others are exposed to them, is recommended. In an integrated service delivery setting, if possible, the patient should receive the services they are accessing before the TB investigation.
5	Investigate for TB or Refer	TB diagnostic tests should be done onsite or , if not available onsite, the facility should have an established link with a TB diagnostic and treatment site to which symptomatic patients can be referred .

Key National TB Indicators

- TB Case Detection Rate
- TB Treatment Success Rate
- Prevalence of MDR-TB and XDR-TB
- HIV Seroprevalence Among TB Patients

Source: WHO, 2006

Discussion Questions

- Do you know the incidence of TB cases at your facility, district/region, & country? How have they changed over the past 5-10 years and why?
- Think about your health facility, what institutional factors would affect (increase or decrease) the risk of TB transmission
- What TB indicators does your facility track? What other indicators should it be tracking?

References

Benenson, AS. (1995). *Control of Communicable Disease Manual, 16th Edition*.

Centers for Disease Control. (2005). *Guidelines for Preventing the Transmission of M. tuberculosis in Health Care Settings*. Accessed at <http://www.cdc.gov/mmwr/PDF/rr/rr5417.pdf>

Centers for Disease Control, World Health Organization, & International Union Against Tuberculosis & Lung Disease. (2006) *Tuberculosis Infection Control in The Era of Expanding HIV Care & Treatment: An Addendum to WHO Guidelines for the Prevention of Tuberculosis in Health Care Facilities in Resource-Limited Settings, 1999*.

EngenderHealth. (2001). *Infection Prevention: A Reference Booklet for Health Care Providers*.

EngenderHealth. (2004). *Infection Prevention: Online Course*. Accessed at <http://www.engenderhealth.org/IP/index.html>

Francis J. Curry National Tuberculosis Center. (2007). *Tuberculosis Infection Control: A Practice Manual for Preventing TB*.

International Centre for Research and Training. (2007). *Tuberculosis Infection Control: Preventing Transmission of Tuberculosis*. Presented at ...?

References (continued)

JHPIEGO Corporation. (2003). *Infection Prevention: Guidelines for Healthcare Facilities with Limited Resources*.

Management Sciences of Health (MSH). (2006). *Clinic Supervisor's Manual*.

World Health Organization (WHO). (2003). *Community Contribution to TB Care: Practice and Policy*.

WHO. (2004). *Compendium of Indicators for Monitoring & Evaluating National TB Programs*.

WHO. (2006). *Guidelines for Programmatic Management of Drug-Resistant Tuberculosis*.

WHO. (2003). *Practical Guidelines for Infection Control in Health Care Facilities*.

WHO. (2002). *Prevention of Hospital-Acquired Infections: A Practical Guide (2nd Edition)*.

WHO. (2007). *Tuberculosis Fact Sheet, N^o 104*.