Module 1: Overview: Tuberculosis, the Global Emergency

Purpose

To provide participants with the basic terms and concepts related to tuberculosis infection and its diagnosis and control.

Pre-requisite Modules

None

Module Time

1 hour 20 minutes

Learning Objectives

At the end of this module, participants will be able to

- Explain the TB epidemic and global TB burden
- Describe the forms of TB and how it is transmitted
- Define and compare various methods of TB diagnosis noting where each is most effective
- Explain the term NTP
- Describe the DOTS component of STOP TB strategy
- Explain the importance of AFB microscopy in the DOTS Program
- Describe levels of TB laboratory services.

Module Overview

Step	Time	Activity/ Method	Content	Resources Needed
1	15 min	Presentation	Introduction & TB Overview	Slides 1–9
2	15 min	Presentation and Demonstration	TB Transmission and Risks	Slides 10–12
3	10 min	Presentation	TB Diagnosis	Slides 13–16
4	10 min	Presentation and Discussion	National TB Program & DOTS	Slides 17–21
5	10 min	Presentation	Role of AFB Microscopy	Slides 22–24
6	10 min	Presentation	Lab Network: TB Control Program	Slides 25–29
7	10 min	Q&A	Summary	Slide 30

Material/Equipment Checklists

- PowerPoint slides or transparencies
- Overhead projector or computer w/LCD projector
- Flipchart
    - [OPTIONAL for Slide 10] Spray bottle containing water and scented oil (e.g., Lavender)

Teaching Guide

Slide Number	Teaching Points
1	**Module 1: Overview: TB, The Global Emergency** DISPLAY this slide before you begin the module. Make sure participants are aware of the transition into a new module.
2	**Learning Objectives** STATE the objectives on the slide
3 **Flipchart** 	**Content Overview** (Suggested technique for presentation) WRITE the content outline before beginning this session. REFER to flipchart frequently to orient participants to where they are in the module. EXPLAIN that these are the topics that will be covered in this module.
4	**Global Emergency** STATE the message on the slide.
5	**Disturbing Statistics** STATE the message on the slide EMPHASIZE that TB is the major killer among young people.
6 	**Country specific TB burden** CUSTOMIZE Link to HIV/AIDS where appropriate
7	**What is TB?** STATE the message on the slide
8	**The Cause of TB** EXPLAIN that TB is predominantly caused by *Mycobacterium tuberculosis* and occasionally *Mycobacterium bovis* • These bacteria are also known as tubercule bacilli because they produce characteristic lesions called tubercules in the lungs.

Slide Number	Teaching Points
9	**<u>Staining Characteristics</u>** STATE the message on the slide • HIGHLIGHT the features of the sputum smear stained by the Ziehl-Neelsen stain. The organisms appear red on a blue background. The blue color is from the counterstain called methylene blue. • There is good contrast between the TB bacilli and background POINT OUT the organisms can be found single, in clumps, or in clusters. The organisms can be small, coco-bacilli, beaded, or long in morphology
10 	**<u>TB Transmission</u>** EXPLAIN the transmission of TB STATE that transmission of bacilli (infection) from person-person occurs ALMOST exclusively by airborne transmission ▪ The primary source of transmission is the patient with PTB who coughs ▪ Coughing produces micro-aerosols known as droplet nuclei that can remain suspended in the air for least 30 minutes ▪ Transmission of TB occurs in poorly ventilated and enclosed areas [OPTIONAL DEMONSTRATION: using a spray bottle containing water and scented oil (e.g., Lavender)] GENERATE a gentle mist into the classroom. ASK participants if they can smell the scent of the oil. Smelling the scent means that participants have inhaled droplet nuclei.

Slide Number	Teaching Points
11	**Risk Factors for Infection** STATE the risk factors on the slide. EXPLAIN that a susceptible person has a higher risk of infection where there is continuous and prolonged exposure to an AFB smear positive PTB case in a confined space. EXPLAIN that the higher the number of infectious sources spreading bacilli within a community, the greater the transmission EXPLAIN that the risk of the infection from a smear negative PTB case is lower
12	**Risk Factors for Disease** EMPHASIZE that few people infected with tubercle bacilli become sick with TB. Many more become sick when co-infected with HIV.
13	**Diagnosis of TB** DESCRIBE the four most common methods of TB diagnosis MENTION the skin test and chest x-ray as non specific diagnostic tools REITERATE that this training will be focused on AFB smear microscopy
14	**Advantages of AFB Smear Microscopy** EXPLAIN that sputum smear microscopy has a number of advantages over other techniques: ▪ For universal application in resource-limited countries it is the best choice among diagnostic methods
15	**Limitation of Microscopy** STATE the limitations detailed on the slide DEFINE DST as Drug susceptibility testing and limitation of AFB smear microscopy in performing DST **EMPHASIZE that these limitations can be overcome by performing culture of AFB**

Slide Number	Teaching Points
16	**Limitations of Culture** EXPLAIN that *M. tuberculosis* is a slow growing organism that takes weeks to grow on culture ▪ Culture techniques are demanding and require a high level of technical skill ▪ Increased resources are needed in comparison to microscopy ▪ Increased safety including the use of Biological Safety Cabinets are essential For these reasons, culture is difficult to make widely available
17	**National Tuberculosis Control Program (NTP)** STATE the objectives of the NTP from the slide EXPLAIN that the NTP accomplishes its objectives by means of: ▪ early detection of infectious cases, and ▪ appropriate treatment until cure
18	**Goals of the NTP** STATE the message on the slide
19	**What is STOP TB Strategy** STATE from the slide EXPLAIN each term
20	**DOTS Component of STOP TB Strategy** DOTS is an internationally recommended strategy for TB control in response to the global emergency STATE the message from the slide
21	**Benefits of DOTS** STATE the message on the slide

Slide Number	Teaching Points
22	**Role of Laboratory** EMPHASIZE that smear positive cases are the greatest sources of transmission in the community ▪ AFB microscopy is the only reliable tool to detect these cases and to stop ongoing transmission EXPLAIN that the individual patient must be monitored by AFB microscopy to ensure that the treatment is working and that cure is achieved at the end of treatment
23	**Detection and treatment of infectious cases reduces the spread of Tuberculosis!** STATE the message from the slide
24	**Pulmonary Positive Patients** STATE the message from the slide
25	**Laboratory Network** EXPLAIN that theTB laboratory services should be organized according to the three levels of health services ▪ Peripheral (often district laboratory) ▪ Intermediate (often regional laboratory) ▪ Central (often national laboratory) In terms of complexity, the level of service performed at each level is different
26	**Peripheral Laboratory** STATE the message from the slide
27	**Intermediate Laboratory** STATE the message from the slide
28	**Central Laboratory** STATE the message from the slide

Slide Number	Teaching Points
29	**<u>Laboratory is the key Component in TB Control</u>** STATE the message from slide EMPHSIZE the role of laboratory in TB control
30	**<u>Summary</u>** ASK the participants to answer the questions ANSWER any questions the participants may have