



## Module 3

### Collection and Transport of Tuberculosis Specimens

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<b>Purpose</b>	To provide participants with the knowledge and skills for proper collection and transport of sputum samples for AFB microscopy
<b>Prerequisite Modules</b>	None
<b>Learning Objectives</b>	<p>At the end of this module, you will be able to</p> <ul style="list-style-type: none"><li>▪ Describe specifications of suitable containers for sputum collection</li><li>▪ Explain the collection strategy: spot–morning–spot</li><li>▪ Describe and demonstrate safe and correct collection of sputum</li><li>▪ Describe options for specimen collection, handling, and transport</li><li>▪ List features of a good sputum specimen</li><li>▪ Describe the requirements for a properly labeled specimen.</li></ul>
<b>Content Outline</b>	<ul style="list-style-type: none"><li>▪ Suitable specimen containers</li><li>▪ The number and timing of specimen collection</li><li>▪ How to collect a specimen</li><li>▪ Specimen handling and referral</li><li>▪ Assessing specimen quality</li></ul>
<b>Handout and Exercises</b>	Exercise: Practical collection of sputum specimens—role play
<b>Appendix</b>	None

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## **Module 3: Collection and Transport of Tuberculosis Specimens**

### **SUITABLE SPECIMEN CONTAINERS**

Use clean, wide mouthed, and leakproof specimen containers. Single use disposable plastic containers (50 ml capacity) are preferred.

### **THE NUMBER AND TIMING OF SPECIMEN COLLECTION**

To ensure optimal recovery of TB bacilli from sputum, collect and process three specimens. Consult your country's NTP for specific guidelines. At least one should be an "early morning" specimen that can be collected by the patient upon rising. Early morning specimens have the highest yield of AFB.

When TB is suspected in a patient, collect three sputum specimens as recommended for diagnosis. If the first two are positive then the third sample can be omitted. For outpatients, collect one sample at the time of presentation. This is known as the spot specimen. Give the suspect a second sputum container for collection the following morning and instruct the patient to deliver the morning specimen to the laboratory. When the patient returns the morning specimen, give him or her the third container and collect another spot specimen.

Give the patient clear instructions on the proper collection of a specimen for TB. For hospitalized patients, collect early morning specimens on three successive days, since such samples often contain more bacilli and thus are more likely to be positive by microscopy.

#### **Sputum collection for follow-up of treatment:**

For patients on treatment, collect follow-up specimens at intervals specified by the NTP. Early morning sputum is the preferred specimen.

### **HOW TO COLLECT A SPECIMEN**

Sputum collection is the most dangerous procedure in the AFB smear microscopy laboratory and must be done in the open air and at a distance from other people.

#### ***Never collect sputum in the laboratory!***

Give a new sputum container to each patient from whom sputum examination for TB is requested. Demonstrate how to use it to collect a good specimen.

Clearly instruct the patient on

- the importance of sputum examination for diagnosis or follow-up of TB;
- how to open and close the containers;
- the need for collecting real sputum, not saliva;
- how to produce good sputum (i.e., by repeated deep inhalation and exhalation of breath followed by cough from as deep inside the chest as possible);

- how to avoid contamination of the exterior of the container (i.e., by carefully spitting and closing the container);
- how to collect and safely deliver the morning sputum to the laboratory; and
- the need for three sputa to facilitate diagnosis.

A good specimen should be approximately 3–5 ml. It is usually thick and mucoid. It may be fluid and contain pieces of purulent material. Color varies from opaque white to green. Bloody specimens will appear reddish or brown. Clear saliva or nasal discharge is not suitable as a TB specimen.

## **SPECIMEN HANDLING AND REFERRAL**

### **Specimen handling**

For optimum patient management, process the specimen as soon as possible (i.e., < 24 hours). For microscopic examination the interval between collection and staining matters little. Acceptable results can be obtained even on delayed specimens.

If the peripheral health centre does not perform microscopy, there are several options. Each has advantages and disadvantages. Depending on local circumstances, one or more options may apply:

- Refer the patient to a health centre where microscopy is performed
- Collect a sputum specimen and refer it to the microscopy centre.

### **Patient referral**

Ideally, you can refer a patient to the microscopy centre so that a specimen can be collected under monitored conditions. If an unsatisfactory specimen is submitted, then a repeat sample can be obtained immediately. The disadvantage of this option is that the patient may find it expensive or impractical to travel to the microscopy center. Patients may be reluctant to seek help and diagnosis may be delayed.

### **Specimen referral**

Alternatively, the peripheral health center can supervise the patient in collecting an appropriate specimen, which is then forwarded to a microscopy center. Transport specimens once or twice each week, although in some remote settings this may not always be possible. Package specimens carefully to prevent leaks and breaks. Clearly label each specimen with the patient identification and include a completed request for sputum examination.

### **Slide referral**

Time delays for slide referrals may occur. There are, however, several advantages. Fixed sputum smears are less infectious than sputum specimens and require less packaging for transport.

## **ASSESSING SPECIMEN QUALITY**

Upon arrival in the laboratory, assess the quality of samples. TB sputum can have various colors and aspects. If the sample is liquid and as clear as water, without particles or streaks of mucous material, process the sample but ensure that the poor quality of the sample is reported on the result form. When possible,

encourage the patient to try again. Even saliva can yield positive results. All specimens should be processed, except for broken or leaking containers which should be discarded and another specimen requested.

Accept very small quantities if the patient has difficulty producing sputum and if the aspect is right. Blood-streaked sputum is suitable, but pure blood should not be examined. Refer patients producing pure blood specimens to a medical officer or doctor.

### Key message



- Good quality sputum samples are important for the diagnosis of pulmonary TB.
- Early morning specimens provide the biggest yield of AFB.
- For patients on treatment, collect follow-up specimens at intervals specified by the NTP.
- Never collect sputum specimens in the laboratory.
- Provide patients with clear instructions on the collection of good quality samples.
- Patient referral, specimen referral, and slide referral are options for peripheral health centers not performing microscopy.
- Assess the quality of all specimens submitted to the laboratory for microscopy.



## Module Review: Module 3

Find out how much you have learned by answering these questions.

**What is the benefit of an early morning specimen?**

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**Why should sputum never be collected in the laboratory?**

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**What are the important instructions that should be given to patients for the collection of good quality sputum specimens?**

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**How should salivary specimens be handled in the laboratory?**

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