Module 3:
Collection and Transportation of Tuberculosis Specimens

Learning Objectives

- Describe specifications of suitable containers for sputum collection
- Explain the collection strategy: spot/morning/spot
- Describe and demonstrate safe and correct collection of sputum
- Describe options for specimen collection, handling and transport
- Assess quality of collected sputum specimen
- Outline requirements for a properly labeled specimen

Content Overview

- Suitable specimen containers
- The number and timing of specimen collection
- How to collect a specimen
- Specimen handling and referral
- Assessing specimen quality

Specimen Collection Container: Specifications

- 50 ml capacity
- Translucent or clear material
- Single-use combustible material
- Screw-capped with a water-tight seal
- Easily-labeled walls

Specimen Collection

- Three (3) specimens optimal for identifying infectious cases of tuberculosis
- Make collection convenient and efficient for both patient and laboratory worker

Timing of Specimen Collection

Spot–Morning–Spot

WHO/IUATLD Recommendation

- Spot — initial visit to the clinic
- Early morning — first sputum in the morning
- Spot — second visit to the clinic

Spot-Morning-Spot

Advantages

- Requires only two visits (convenience to the patient)
- A spot specimen is available in case the patient does not return with the morning specimen

Disadvantages

- Two out of three specimens may be of poor quality
- High risk of missing a case if only the first specimen is properly examined

Collection Considerations

- Yield decreases rapidly after three specimens
- Morning specimens on average better
  - Collect three morning specimens from hospitalised patients
- Two good examinations may be most efficient with high workload
- Follow NTP guidelines for exact specimen collection strategy

Follow-up Specimens for Monitoring Treatment

- Collected during and at end of treatment
- Early morning specimen
- Consult NTP guidelines for exact collection frequency

Country NTP

- Discuss the country related NTP guidelines for specimen collection

Specimen Collection: Safety

- The patient is a greater danger to staff than the specimen!
- Instruct patient to cover the mouth when coughing
- Never collect sputum in the laboratory!
  - Collect OUTSIDE
  - Collect away from other people
- Do not stand near patient during specimen collection

Advantages of Open Air Collection

- Rapidly dilutes aerosols
- UV light rapidly inactivates the bacilli

Specimen Collection Guidelines

- Explain clearly to patient
- Why sputum is needed
- Three samples required
  - Spot–morning –spot
- What is a good sample and how to obtain it
- Opening and tight closing of containers
- Not to soil the exterior of the container
- Transport of sputum containers
- The need to return to the clinic

Patient Education: Collection

- Best specimen comes from the lung
- Saliva or nasal secretions are unsatisfactory
- Remove dentures and rinse mouth with water
- Need for three sputum samples for optimal diagnosis

Patient Instructions: Collection

- Inhale deeply 2–3 times, breathe out hard each time
- Cough deeply from the chest
- Place the open container close to the mouth to collect the specimen

Optimum Collection Location: Microscopy Centre

- Specimen is fresh
- Collection supervised
- Immediate recollection, if necessary

Microscopy Not Performed at Health Centre: Referral Options

- Patient Referral
- Specimen Referral
- Smear Referral

Patient Referral: Disadvantages

- Expense of travel to diagnostic centre
- Family and work commitments
- Reluctant to seek help
- Diagnosis may be delayed

Specimen Referral

- Peripheral health centre staff supervises patient collection of specimen.
- Specimen then forwarded to a microscopy centre.

Consider:

- Frequency of transportation and packaging
- Potential for leakage and breakage

Specimen Referral: Disadvantages

- The microscopy centre has no direct control over the specimen collection process
- Higher risk with transporting specimens
- Requires a safe, fast and regular transport system for specimens and results
- Follow-up and quality assurance of the process may be needed

Slide Referral

- Smears require less safety precautions for packaging
- Peripheral centres must be trained in collection and smear preparation

Disadvantages

- Risk of poor specimen and poor smear
- Slides are more fragile

Request for Sputum Examination Form Should Include:

- Patient's name, sex, age, and address
- Date of collection
- Name of Health Institution
- Reason for examination

Request for Sputum Examination Form

LABORATORY REQUEST FORM

Name of Health Centre _____ Date _____

Name of patient _____ Age _____ Sex M ❒ F ❒

Complete address:_____

_____

Patient's register number* _____

Source of specimen ❒ Pulmonary
❒ Extra-pulmonary Site _____

Reason for examination ❒ Diagnosis
❒ Follow-up of chemotherapy

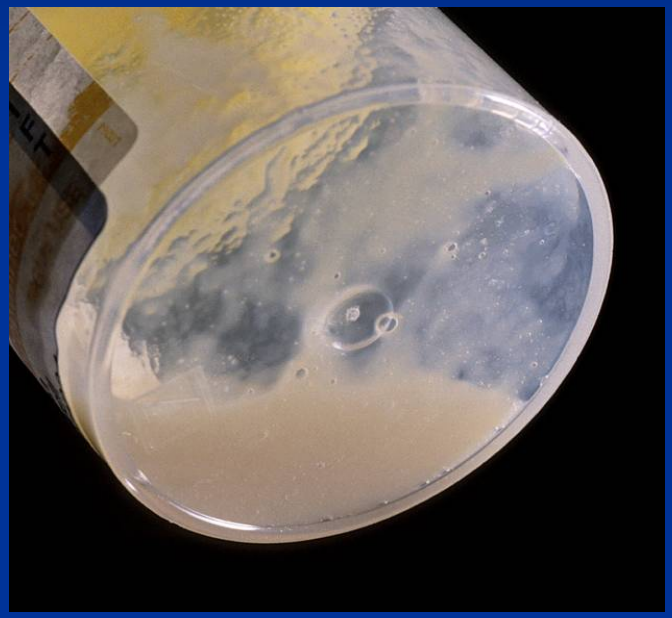
Specimen identification number _____ Date _____
Signature of person requesting examination _____

Labeling Specimen Container

Specimen Receipt at Laboratory

- Check specimens for quality:
  - Volume (at least 3–5 ml)
  - Describe sputum consistency (mucoid, purulent, bloody, or watery)
- Register the specimen and allocate a laboratory serial number

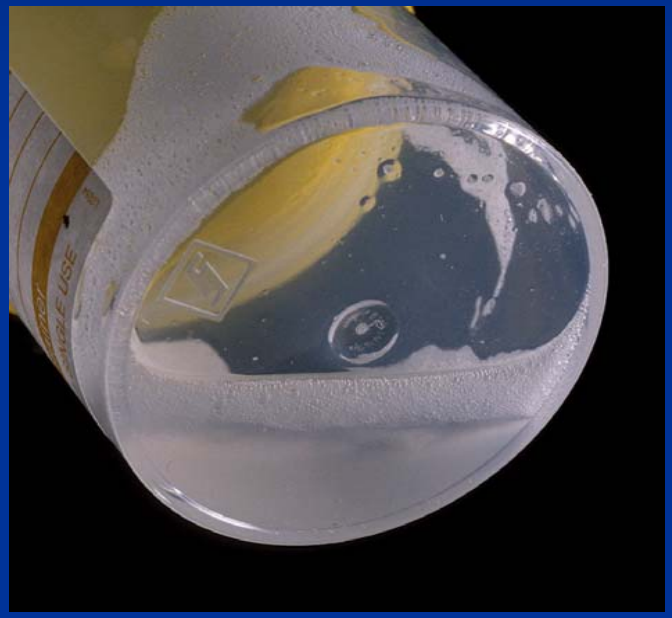
Specimen Quality



Purulent

Mucoid

Specimen Quality



Saliva or Induced sputum (?)

Blood stained

Obtaining adequate good quality specimens is critical to ensure accurate and reliable AFB microscopy results

Role Play: Sputum Collection

Purpose

- To practice educating TB suspect patients on the importance of a properly collected sputum specimen
- To practice providing instructions on how to collect a sputum specimen to a TB suspect patient.

Total Time

- 30 Minutes

Process

- Work in groups of 3
- Decide roles: (1) health worker, (2) TB suspect patient, (3) observer
- The health worker instructs the TB suspect patient while the observer provides feedback.
- Switch roles and repeat the process until everyone has taken on each role once.

Role Play Debrief

- Did the healthcare worker follow procedure:
  - COMPLETE a *Request for Sputum Examination* form.
  - LABEL sputum containers.
  - EXPLAIN to the TB suspect how to collect sputum and the importance of a properly collected specimen.
  - ASK the TB suspect to produce a sputum sample.
  - ASK the TB suspect to collect another sample in the morning and then bring it to the diagnostic centre.
- Did the TB suspect understand instructions?
- What suggestions for improvements did the observer note?

Summary

- What is the significance of spot–morning–spot collection?
- Why is sputum never collected in the laboratory?
- What are the three options for handling sputum specimens at peripheral health centres not performing microscopy?
- What are the features of a good quality specimen?
- How should you label a sputum container?