

## Module 4: Managing Supplies for Sputum Smear Microscopy

<b>Purpose</b>	To provide participants with knowledge and skills of ordering and stocking and maintaining materials for the proper functioning of a TB laboratory.
<b>Pre-requisite Modules</b>	None
<b>Module Time</b>	2 hours 35 minutes
<b>Learning Objectives</b>	<p>At the end of this module, participants will be able to</p> <ul style="list-style-type: none"> <li>▪ List supplies required to perform smear microscopy</li> <li>▪ Explain ordering of supplies</li> <li>▪ Maintain proper records</li> <li>▪ Explain use of stock book</li> <li>▪ Calculate supplies required</li> <li>▪ Inspect and verify supplies received</li> <li>• Explain storage of supplies.</li> </ul>

### Module Overview

Step	Time	Activity / Method	Content	Resources Needed
1	15 min	Presentation	Module Introduction	Slides 1–3
2	10 min	Presentation	Managing Supplies	Slides 4–8
	30 min	Presentation	Inventory records	Slides 9–11
3	1 hr 15 min	Group Activity	Calculation of supplies for a microscopy center using a worksheet and calculator	<p>Slides 12–26 (<b>only</b> Laboratories that place their own orders for prepared staining reagents)</p> <p>Slides 27–41 (<b>only</b> for Laboratories that place their own orders for reagent components for making staining reagents)</p> <p>Flipchart, Worksheet Hand outs, Calculator</p>
4	15 min	Presentation	Placing, Receiving and Storing Supplies	Slides 42–44
5	10 min	Presentation and Discussion	Summary	Slides 45

## Material and Equipment Checklists

- Power Point presentation or transparencies
- Overhead projector and/or computer w/LCD projector
- Flips chart or white board for individual calculations
- One calculator for each participant and trainer
- AFB Laboratory Performance and Stocks Form
- Stock Book
- Exercise 1: Calculation of quarterly supply requirements for a microscopy center (for a microscopy center that receives prepared staining reagents)
- Exercise 2: Calculation of quarterly supply requirements for a microscopy center (for a microscopy center that prepares its own staining reagents)

## How to Present this Module

Does your lab receive:	Does your laboratory place its own orders?	
	Yes	No
Prepared Staining Reagents?	Present Core curriculum* and Exercise 1	Present Core curriculum*
Individual Reagents for Preparing Staining Reagents?	Present Core curriculum* and Exercise 2	Present Core curriculum*

\*The Core curriculum consists of the text on supplies, the PowerPoint presentation, the stock book form, and the AFB Laboratory Performance and Stock form for recording workload and inventory. All laboratories should complete the AFB Laboratory Performance and Stock form at the end of each quarter. For laboratories that do not place their own orders, the information recorded on the AFB Laboratory Performance and Stock is reported to the level where order amounts are determined and disbursed. For laboratories that place their own orders, the information recorded on the AFB Laboratory Performance and Stock is used by that laboratory to calculate the quantities of supply items they require, based on their actual workload and inventory. Laboratories that place their own orders for prepared staining reagents perform Exercise 1. Laboratories that place their own orders for reagent components and use them to prepare their own staining reagents perform Exercise 2.

## Teaching Guide

Slide Number	Teaching Points
1	<p><b><u>Module 4: Managing Supplies for Sputum Smear Microscopy</u></b></p> <p>DISPLAY this slide before you begin the module. Make sure participants are aware of the transition into a new module.</p>
2	<p><b><u>Learning Objectives: Supply Management</u></b></p> <p>STATE the objectives on the slide</p>
3	<p><b><u>Content Overview</u></b> (Suggested presentation technique)</p> <p>WRITE the content outline on a flipchart prior to training.</p> <p>REFER to it frequently to orient participants to where they are in the module.</p>
4	<p><b><u>Supply Management Means:</u></b></p> <p>DEFINE Supply Management as indicated on the slide.</p>
5	<p><b><u>NTP Specific Customization</u></b></p> <p>Customize and Explain your countries specific NTP guidelines for the preparation of stains and distribution. Describe the stain concentration, device (loop or stick) used for smearing, use of frosted or unfrosted slides, and method of waste decontamination</p>
6	<p><b><u>Ordering and Distribution of Supplies</u></b></p> <p>EXPLAIN ordering and distributing supplies involves knowing the answers to the questions. By the end of this module, each participant should be able to answer these questions in order to properly maintain supplies needed for AFB Direct Smear Microscopy.</p>
7	<p><b><u>Basic Supplies Required for AFB Smear Microscopy</u></b></p> <p>DISCUSS the list of supplies needed to perform AFB Direct Smear Microscopy.</p> <p>EXPLAIN the purpose of each item on the list.</p> <p>SETUP a workstation with all supplies labeled. ASK participants to visit the table with supplies to become familiar with them before the laboratory practical session.</p>

Slide Number	Teaching Points
8	<p><b><u>Supply Management Involves...</u></b></p> <ul style="list-style-type: none"> <li>• Performing a “stock count”</li> <li>• Maintaining proper inventory records</li> <li>• Determining how much to order</li> <li>• Placing orders properly</li> <li>• Inspecting and verifying supplies received</li> <li>• Ensuring proper storage of stock</li> </ul>
9	<p><b><u>Stock Book</u></b></p> <p>EXPLAIN that the stock book contains a list of all items in the lab</p> <ul style="list-style-type: none"> <li>• Update it when orders are placed and received</li> <li>• Serves as a reference to track orders that have been placed and not received</li> <li>• Information recorded about when orders are placed and arrive may help to adjust the reserve quantities of supplies</li> <li>• Provides information of stock in hand</li> </ul> <p>EXPLAIN that an efficient stock management depends upon accurate record keeping.</p>
10	<p><b><u>Perform a Stock Count</u></b></p> <p>EXPLAIN the meaning of stock count and how it is different from the previous slide.</p> <p>Physically counting the quantity of each item present in the stock</p> <p>Recommended at the end of each quarter or follow country specific guidelines, if present.</p> <p>A person must be designated to perform the stock count. Stock count must be recorded with a proof of signature and date.</p> <p>EMPHASIZE that all items must be accounted for. Everything that is ordered and received must be recorded.</p>
11	<p><b><u>AFB Laboratory Performance and Stock Form</u></b></p> <p>EXPLAIN that this form is used at end of each quarter to report work (# of smear examined) and stock on hand</p> <p>Work performed is captured by reviewing the TB register and counting the number of smears resulted as positive, negative, or scanty (1–9 AFB/100 fields) from both TB suspect patients and follow-up patients</p> <p>Stock on hand is determined by performing a physical inventory</p>

Slide Number	Teaching Points
12	<p><b><u>Methods for Calculating Supplies</u></b></p> <p>Describe the 10% positive case rate method.</p> <ul style="list-style-type: none"> <li>• The factor of 33 smears per positive case detected is based on the assumption that the average positively rate of suspects in the labs is 10% and that 3 smears are examined per suspect and 3 more for follow-up of smear-positive cases</li> <li>• Correct this factor if average positively rate of suspects in the labs deviates considerably from 10%, or if the number of sputa examined per suspect / case has been specified differently in national guidelines.</li> </ul> <p>Read the second method from the slide</p>
	<p><b><u>Show slides 13 – 26 only to laboratorians that place their own orders for prepared staining reagents</u></b></p>
13	<p><b><u>Calculated Quarterly Requirements for Peripheral Microscopy Center</u></b></p> <p>REFER participants to the full-page worksheet in the participant's manual.</p> <p>DESCRIBE the form and mention that each of the columns will be described in detail in the next slides</p>
14	<p><b><u>Total slides examined previous quarter (A)</u></b></p> <p>STATE the message on the slide:</p> <p>The value (A) equals the number of sputum examinations performed during the previous quarter</p> <p>Ask if it is clear.</p>
15	<p><b><u>Examples of Items Required</u></b></p> <p>EXPLAIN that this is the first column on the worksheet</p> <p>GIVE examples of items for AFB smear microscopy</p>
16	<p><b><u>The quantity required for one sputum examination is?</u></b></p> <p>EXPLAIN that this is the second column on the worksheet</p> <p>Ask the participants how much of each item they think is required for one sputum examination</p> <p>You can ask for a show of hands or use a flip chart to record audience responses before moving to next slide</p>

Slide Number	Teaching Points
17	<p><b><u>The quantity required for one sputum examination is</u></b></p> <p>STATE the answers and explain that they represent typical amount and will be used in the following calculations</p>
18	<p><b><u>Calculation for One Quarter of Supply of an Item (C)</u></b></p> <p>EXPLAIN the column (C) and the calculation.</p>
19	<p><b><u>Example to Calculate One Quarter of Supply of Carbol fuchsin (C)</u></b></p> <p>EXPLAIN the example on the slide and clear any doubts arising</p>
20	<p><b><u>Reserve Quantity (D)</u></b></p> <p>EXPLAIN the column (D) and importance of reserve quantity for uninterrupted work.</p>
21	<p><b><u>Stock on Hand (E)</u></b></p> <p>EXPLAIN the column (E) and how the stock on hand is counted</p>
22	<p><b><u>Calculated request (F)</u></b></p> <p>EXPLAIN the column (F) and the calculation</p>
23	<p><b><u>Quantities requested/ issued</u></b></p> <p>EXPLAIN the rounding of the calculated quantity to the next whole number of unit of issue</p> <p>EXPLAIN the two examples</p> <ul style="list-style-type: none"> <li>• Example 1, if the calculated quantity of carbol fuchsin is 1824 ml, round up to 2 liters</li> <li>• Example 2, if the calculated quantity of slides is 700, round up to 720 since the unit of issue is 72 slides per box (i.e. request 10 boxes)</li> </ul>
24	<p><b><u>Exercise #1: Calculate Quarterly Requirements for your Microscopy Center</u></b></p> <p>PROVIDE instructions for completing exercise</p> <ul style="list-style-type: none"> <li>• Refer participants to handout labeled exercise #1</li> <li>• Instruct participants to work individually</li> <li>• Instruct how to use the calculators provided</li> <li>• Instruct participants on amount of time allowed for exercise (30 minutes)</li> </ul>

Slide Number	Teaching Points
 <p>TIPS</p>	<p><i>Beforehand, prepare a flipchart showing the following data but do not display until this slide</i></p> <ul style="list-style-type: none"> <li>○ Total slides examined in previous quarter (A)= 463</li> <li>○ Quantity needed per smear (B) for each item <ul style="list-style-type: none"> <li>▪ Sputum containers 1 piece</li> <li>▪ Slides 1 piece</li> <li>▪ Carbol fuchsin 3 ml</li> <li>▪ Destaining reagent 5 ml</li> <li>▪ Methylene blue 3 ml</li> <li>▪ Immersion oil 0.05 ml</li> <li>▪ Burning spirit 1 ml</li> </ul> </li> </ul>
25	<p><b><u>Exercise #1: Calculate Quarterly Requirements for your Microscopy Center</u></b></p> <p>Show the slide until the end of the exercise</p> <ul style="list-style-type: none"> <li>• Use worksheet labeled exercise #1</li> <li>• Work individually</li> <li>• Use sample data provided on flipchart</li> <li>• Use calculators provided</li> <li>• Time allowed: 30 minutes</li> </ul>
26	<p><b><u>Exercise #1 Answer</u></b></p> <p><b><u>Calculated Quarterly Requirements for Your Microscopy Center</u></b></p> <p>SHOW the completed worksheet</p> <p>REVIEW and discuss the calculation process</p> <p>Use flip chart to record discussion points</p>
	<p><b><u>Show slides 27–41 only to laboratorians that place their own orders for reagent components and use them to prepare their own staining reagents</u></b></p>
27	<p><b><u>Calculated Quarterly Requirements for Peripheral Microscopy Center</u></b></p> <p>REFER participants to the full-page worksheet in the participant's manual.</p> <p>DESCRIBE the form and mention that each of the columns will be described in detail in the next slides</p>
28	<p><b><u>Total slides examined previous quarter (A)</u></b></p> <p>EXPLAIN the term (A) and STATE the message on the slide</p>
29	<p><b><u>Examples of Items Required</u></b></p> <p>EXPLAIN that this is the first column (Items) on the worksheet and the unit of use</p>

Slide Number	Teaching Points
30	<p><b><u>The quantity required for one sputum examination is?</u></b></p> <p>EXPLAIN that this is the second column (B) on the worksheet</p> <p>Ask the participants how much of each item they think is required for one sputum examination</p> <p>Can ask for a show of hands or use a flip chart to record audience responses</p>
31	<p><b><u>The quantity required for one sputum (B) examination is</u></b></p> <p><b><i>DO NOT include this slide in the participants handout</i></b></p> <p>STATE message on slide</p> <p>Explain that liquid quantities are expressed as liters, rather than milliliters for uniformity of units during calculations</p> <p>State the answers and explain that they represent typical amount and will be used in the following calculations</p>
32	<p><b><u>The reagent quantity per liter (C) is</u></b></p> <p>STATE message on slide</p>
33	<p><b><u>Calculation for One Quarter of Supply of an Item (D)</u></b></p> <p>STATE message on slide and EXPLAIN the calculation</p>
34	<p><b><u>Example to Calculate One Quarter of Supply of Basic Fuchsin (D)</u></b></p> <p>EXPLAIN and walk through the calculation with the participants</p>
35	<p><b><u>Reserve Quantity (E)</u></b></p> <p>EXPLAIN the message on slide</p>
36	<p><b><u>Stock on Hand (F)</u></b></p> <p>STATE the message on slide</p>
37	<p><b><u>Calculated request (G)</u></b></p> <p>STATE message on slide</p>
38	<p><b><u>Quantities requested/ issued</u></b></p> <p>STATE message on slide</p> <p>EXPLAIN the two examples</p>

Slide Number	Teaching Points
39	<p><b><u>Exercise #2: Calculate Quarterly Requirements for your Microscopy Center</u></b></p> <p>PROVIDE instructions for completing exercise  REFER participants to handout labeled exercise #2  STATE message on slide</p> <ul style="list-style-type: none"> <li>• Instruct how to use the calculators provided</li> <li>• Instruct participants on amount of time allowed for exercise (30 minutes)</li> </ul>
40	<p><b><u>Exercise #2: Calculate Quarterly Requirements for your Microscopy Center</u></b></p> <p>Show the slide until the end of the exercise</p>
41	<p><b><u>Exercise #2 Answer</u></b>  <b><u>Calculated Quarterly Requirements for Your Microscopy Center</u></b></p> <p>Show the completed worksheet  Review and discuss the calculation process  Use flip chart to record discussion points</p>
42	<p><b><u>Place Orders Properly</u></b></p> <p><i>This slide must be customized with site-specific information obtained beforehand</i>  EXPLAIN from the slide</p> 
43	<p><b><u>Inspect &amp; Verify the Delivery of Orders Upon receipt:</u></b>  EXPLAIN what should you do when you receive the requested supplies</p>
44	<p><b><u>Ensure Proper Storage of Inventory</u></b></p> <p>STATE the points on the slide.</p>
45	<p><b><u>Summary</u></b>  ASK the participants to answer the questions on the slide.  ANSWER any questions the participants may have.</p>

**MODULE 4**  
**ANSWERS: EXERCISE 1**

Quarterly Supply Requirements for a Microscopy Centre							
Region:				Supply quarter:			
District:				Year:			
Centre:							
Total smears examined in previous quarter (A)= 500							
Items	Quantity needed per smear (B)	Calculated requirements for one quarter (C) = AxB	Reserve quantity for one quarter (D) = C	Stock on hand (E)	Calculated request (F) = C+D-E	Actual request (rounded*)	Order unit**
Sputum containers (pieces)	1	500	500	58	942	1	Bag (1000 count)
Slides (pieces)	1	500	500	50	950	14	Box (72 slides)
Carbol fuchsin (mL)	3.0	1500	1500	200	2800	3	Bottle (1 liter)
Destaining reagent (mL)	5.0	2500	2500	150	4850	5	Bottle (1 liter)
Methylene blue (mL)	3.0	1500	1500	3500	-500	0	Bottle (1 liter)
Immersion oil (mL)	0.05	25	25	10	40	2	Bottle (50 mL)
Burning spirit (mL)	1	500	500	100	900	1	Bottle (1 liter)

\*Round up to the next indent unit

\*\* Change to your country specific units

**MODULE 4**  
**ANSWERS: EXERCISE 2**

Quarterly Supply Requirements for a Microscopy Centre								
Region:				Supply quarter:				
District				Year:				
Centre								
Total smears examined in previous quarter (A)= 1200								
Items	Quantity needed per smear (B)	Reagent quantity per liter (C)	Calculated requirements for one quarter (D)= AxBxC	Reserve quantity for one quarter (E)=D	Stock on hand (F)	Calculated request (G) = D+E-F	Actual request (rounded**)	Order unit
Sputum containers		N/A	1200 pcs	1200 pcs	500 pcs	1900 pcs	2	Bag (1000 count)
Slides	1 pc	N/A	1200 pcs	1200 pcs	432 pcs	1968 pcs	2	Case (1728 slides) <sup>±</sup>
Basic fuchsin*	0.003 Lt	3 g	10.8 g	10.8 g	0 g	21.6 g	1	Bottle (25g)
Phenol	0.003 Lt	50 g	180 g	180 g	100 g	260 g	3	Bottle (100 g)
Sulfuric acid	0.005 Lt	0.250 Lt	1.5 Lt	1.5 Lt	1 Lt	2 Lt	2	Bottle (1L)
Methylene blue	0.003 Lt	3 g	10.8 g	10.8 g	25 g	-3.4 g	0	Bottle (25g)
Denatured alcohol	0.003 Lt	0.100 Lt	0.36 Lt	0.36 Lt	0.5 Lt	0.22 Lt	1	Bottle (500 mL)
Burning spirit	0.001 Lt	N/A	1.2 Lt	1.2 Lt	0.5 Lt	1.9 Lt	1	Canister (5 Lt)
Immersion oil	0.00005 Lt	N/A	0.06 Lt	0.06 Lt	.05 Lt	0.07 Lt	2	Bottle (50 mL)

\* Consider carbol fuchsin concentration in use  
 \*\*Round up to the next indent unit  
 \*\*\* Change to your country specific units  
 ± Case = 24 boxes X 72 slides