B: Detect Cases of TB
Management of Tuberculosis
Training for Health Facility Staff

B

DETECT CASES OF TB

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Acknowledgements

Management of Tuberculosis
Training for Health Facility Staff

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Detect Cases of TB

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Detect Cases of TB

Introduction

People who are infected with *Mycobacterium tuberculosis* and who develop symptoms of the disease are said to have TB, or active TB. If the tubercle bacilli affect the lungs, the disease is called pulmonary TB. If the bacilli affect other organs, such as lymph nodes, bones and joints, genitourinary tract, meninges, pleura or intestines, the patient has extrapulmonary TB. Pulmonary TB is the most common form of the disease worldwide.

Patients with pulmonary TB excrete tubercle bacilli that can be detected by examining their sputum under a microscope (that is, by microscopy). If TB is diagnosed, these people are called sputum smear-positive cases. They are the most infectious cases because they discharge tubercle bacilli into the air by coughing and sneezing. Contacts of sputum smear-positive cases can become infected when they breathe in tubercle bacilli. The longer sputum smear-positive cases are present in the home and community before beginning treatment, the greater the likelihood that they will infect others. As discussed in module A: *Introduction*, not all people who are infected will develop TB. However, those who do progress from infection to disease should be detected and treated.

Early detection of the most infectious patients with sputum smear-positive pulmonary TB should be a priority for every health facility, so that those patients can be treated before spreading the infection to others. Early detection and treatment of these cases also speeds recovery and limits the destruction of the lungs by the bacilli.

In many countries, people with TB are not detected despite repeated attendance at health facilities. Health workers fail to consider TB or the examination of sputum is delayed or not performed at all.

To detect cases early, health facilities should check for TB in all persons who present with symptoms suggestive of pulmonary TB, primarily cough. All persons presenting at a first-level health facility who are found to have cough that has lasted for 2 weeks\(^1\) or more should have a sputum examination. People who present with other symptoms suggestive of TB should also be examined by a clinician.

Some patients have pulmonary TB that is sputum smear-negative; that is, bacilli are few and do not show up in microscopy of sputum samples. Sputum smear-negative patients are much less likely to infect others. However, they must also be treated. People who have extrapulmonary TB can be diagnosed by a clinician; they are usually not infectious but, as in all cases of TB, they also must be treated.

---

\(^1\) This training course uses cough of 2 weeks’ duration as the threshold for sputum examination. Some countries use 3 or 4 weeks.
Objectives of this module

Participants will learn:

- The procedures for detecting TB suspects
- How to use a Register of TB Suspects
- How to collect sputum samples
- How to use laboratory sputum results to identify TB cases
- Steps to inform TB suspects of the results and begin additional care as needed
- How to check household contacts of TB cases

Refer to section:

1
2, 4.1
3
4.2
6
7

If you need to look up an unfamiliar word, refer to the glossary at the end of module A: Introduction.

1. Identify TB suspects

A TB suspect is any person who presents with symptoms or signs suggestive of tuberculosis, in particular cough of long duration. Other symptoms of TB include haemoptysis; general symptoms such as weight loss, sweating, and tiredness; chest pain; and fever. The most appropriate way to detect pulmonary tuberculosis in a TB suspect is by sputum smear microscopy.

At a health facility, health workers must identify TB suspects from among all patients who attend. One method of identifying TB suspects is for health workers to ask all patients whether they have coughed for 2 weeks or more and, if so, request sputum smear examination. A positive sputum result means that bacilli were found in the sputum, and the patient has smear-positive pulmonary TB.

Another method of identifying TB suspects and finding cases of TB is for a clinician to diagnose the disease in patients. A clinician can use sputum smear microscopy, culture, X-ray examination, clinical assessment and other methods to diagnose cases of smear-positive or smear-negative pulmonary TB and cases of extrapulmonary TB.

Both methods of case detection are required in order to identify all persons with infectious TB who pass through the health facility.

Cough is the most common symptom of pulmonary TB and is present in 95% of all sputum smear-positive TB cases. However, the large majority of persons with cough do not have TB. Many conditions affecting the lower respiratory tract cause cough. Therefore, examining the sputum of all persons who cough is not recommended, because this would be expensive and time-consuming. The finding of sputum smear-positive pulmonary TB is very low in children and very low in adults who have coughed for less than 2 weeks. Therefore, these individuals do not need sputum examination unless a clinician suspects TB.
To identify TB suspects, health workers should ask every adult (aged 15 years or more\(^1\)) who comes to the health facility:

- Do you have a cough?\(^2\)
- For how long have you been coughing?

An adult who has coughed for 2 weeks or more is a “TB suspect” for pulmonary tuberculosis and should have a sputum examination.

Someone should be assigned the responsibility for asking every person entering the facility, including patients and family members accompanying them, about cough. This task could be assigned to a nurse who sees patients or to the staff member who registers patients. Note that about 50% of TB suspects may be missed if the health facility considers TB only in persons who come to the clinician because they are sick with cough.

2. **List the TB suspect in the Register of TB Suspects**

The Register of TB Suspects is a record of:

- all patients identified as TB suspects at the health facility, and
- all sputum samples sent to the laboratory.

The register focuses on suspects for pulmonary TB. It is particularly useful for monitoring whether results are returned for all sputum samples sent to the laboratory. It is also helpful for monitoring case detection activities of the health facility.

Whenever you identify a TB suspect, list the TB suspect in the register. *An example page from a Register of TB Suspects is shown on the next page.*

Be sure to write down a complete name and address so that the TB suspect can be located if the result is positive and the TB suspect does not return.

---

\(^1\) Some countries use 12 years. This will depend on the country-specific decision on the age range of children and adults.

\(^2\) Some countries may ask about productive cough.
The health centre assigns a number to each TB suspect. The health worker is waiting for Sheena Arday to return with the second sample. When her second and third samples are collected, all three samples will be sent to the laboratory.

Mary Abatu says she has been coughing for more than 3 weeks, so she is a TB suspect. The health worker entered her name and address in the register and will now collect sputum to send for examination.

This patient's three samples were sent to the laboratory on 10/10.

Example

The health centre assigns a number to each TB suspect.

<table>
<thead>
<tr>
<th>Date</th>
<th>TB Suspect Number</th>
<th>Name of TB Suspect</th>
<th>Age</th>
<th>Complete Address</th>
<th>Date Sputum Sent to Lab</th>
<th>Results of Sputum Examinations</th>
<th>TB Treatment Card opened? (record date)</th>
<th>Observations/Clinician's diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/10</td>
<td>332</td>
<td>Evaristo Sarda</td>
<td>48</td>
<td>Rambar Village, Bardu</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/10</td>
<td>333</td>
<td>Jai S bretha</td>
<td>24</td>
<td>980 Center Street, Patangeta</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/10</td>
<td>334</td>
<td>Ahmed Masud</td>
<td>44</td>
<td>House 4/1E, Street 12, Bel Village</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/10</td>
<td>335</td>
<td>Sheena Arday</td>
<td>34</td>
<td>1A Hope Road, Patangeta</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/10</td>
<td>336</td>
<td>Phyllis Kotei</td>
<td>40</td>
<td>71 Long Street, Patangeta</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/10</td>
<td>337</td>
<td>Emil Avornyo</td>
<td>38</td>
<td>Bulo House, Market St, Patangeta</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/10</td>
<td>338</td>
<td>Mary Abatu</td>
<td>19</td>
<td>33 Primos Road, Patangeta</td>
<td>10/10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. **Collect sputum for smear examination**

Every TB suspect should have a sputum smear examination to determine whether tubercle bacilli are present. A diagnostic sputum examination is most accurate with three sputum samples.

Collect sputum samples (also called specimens) from each TB suspect as described below and send them to the laboratory for examination. If the laboratory is easily accessible, you may send the TB suspect directly to the laboratory instead. If a patient is very ill, refer the patient without delay to a clinician for assessment and care.

When the staff member who registers people attending the health facility identifies a TB suspect (that is, an adult who has coughed for 2 weeks or more), the first sputum sample can be collected while the TB suspect is waiting for other services.

3.1 **Enlist the TB suspect’s cooperation**

Explain the reason for sputum examination and enlist the TB suspect’s cooperation. Explain that examining sputum under a microscope is the best way to determine whether there are tubercle bacilli in the lungs.

3.2 **Collect sputum samples from the TB suspect**

Follow your country’s guidelines on sputum collection. General guidelines and a schedule are on the next page. Three sputum samples should be collected during a two-day period.

- Sample one is collected “on the spot.” Give instructions. Explain why the sputum is needed and show the TB suspect how to cough up sputum and handle the container. The TB suspect goes outdoors or to a well-ventilated place to collect the sample. If possible, observe and guide the TB suspect during sample collection. The TB suspect gives the sample to you. Give the TB suspect another labelled container to take home and use the next morning.
- Sample two is collected by the TB suspect upon awaking the next morning. The TB suspect brings this second sample to you at the health facility.
- Collect sample three at the facility when the TB suspect brings sample two.

**Remember:**

- ✓ Label the containers (not the lids) before collecting the sputum samples.
- ✓ Collect sputum in a well-ventilated area, preferably outdoors.
- ✓ Check whether the sample contains sufficient sputum, not just saliva. If not, ask the TB suspect to add more.
- ✓ After collecting the sputum, be sure that the lid is closed tightly.
- ✓ Wash your hands thoroughly with soap and water.

Tell the TB suspect when to return for the results. If the TB suspect has TB, start treatment as soon as possible, to help the patient feel better and to prevent the spread of the disease to others in the household.
Collect sputum for examination

- **Explain** that the TB suspect needs a sputum examination to determine whether there are TB bacilli in the lungs.

- **List** the TB suspect’s name and address in the *Register of TB Suspects*.

- **Label** sputum containers (not the lids).
  - 3 samples are needed for diagnosis of TB.
  - 2 samples are needed for follow-up examination.

- **Fill out** *Request for Sputum Examination form*.

- **Explain and demonstrate,** fully and slowly, the steps to collect sputum.
  - Show the TB suspect how to open and close the container.
  - Breathe deeply and demonstrate a deep cough.
  - The TB suspect must produce sputum, not only saliva.
  - Explain that the TB suspect should cough deeply to produce sputum and spit it carefully into the container.

- **Collect**
  - Give the TB suspect the container and lid.
  - Send the TB suspect outside to collect the sample in the open air if possible, or to a well-ventilated place, with sufficient privacy.
  - When the TB suspect returns with the sputum sample, look at it. Is there a sufficient quantity of sputum (not just saliva)? If not, ask the TB suspect to add some more.
  - Explain when the TB suspect should collect the next sample, if needed. (See schedule below.)

**Schedule for collecting three sputum samples**

**Day 1:**
- Collect "on-the-spot" sample as instructed above (Sample 1).
- Instruct the TB suspect how to collect an early morning sample tomorrow (first sputum after waking). Give the TB suspect a labelled container to take home. Ask the TB suspect to bring the sample to the health facility tomorrow.

**Day 2:**
- Receive early morning sample from the TB suspect (Sample 2).
- Collect another "on-the-spot" sample (Sample 3).

- **When you collect the third sample,** tell the TB suspect when to return for the results.

- **Store**
  - Check that the lid is tight.
  - Isolate each sputum container in its own plastic bag, if possible, or wrap in newspaper.
  - Store in a cool place.
  - Wash your hands.

- **Send**
  - Send the samples from health facility to the laboratory.
  - Total time from collection until reaching laboratory should be no more than 5 days.
3.3 Fill out Request for Sputum Examination

Fill out the Request for Sputum Examination as shown below, in an example for a new TB suspect. Write the patient’s complete name and address. Send this form with the patient’s sputum samples to the microscopy laboratory. The laboratory will complete the results section after the sputum examination, and then return the form to the health facility. (Note that this same form is used when requesting sputum examination for diagnosis and also when sending sputum for follow-up of treatment.)

**Example**

**TB LABORATORY FORM**
**REQUEST FOR SPUTUM EXAMINATION**

Name of health facility:  
Patangeta Health Centre  
Date: 10/10/02  

Name of patient:  
Mary Abatu  
Age: 19  
Sex: M ☐  F ☐  

Complete address:  
33 Primos Road, Patangeta  

Reason for examination:  
Diagnosis ☐  TB Suspect No.: 338 ☐  Follow-up ☐  Patient’s District TB No.:  

Disease site:  
Pulmonary ☐  Extrapulmonary ☐  (specify) ☐  

Number of sputum samples sent with this form: 3 ☐  
Date of collection of first sample: 10/10/02  
Signature of specimen collector:  

* Be sure to enter the patient’s District TB No. for follow-up of patients on TB treatment.  

**RESULTS (to be completed by Laboratory)**

(a) Visual appearance of sputum:  
Mucopurulent ☐  Blood-stained ☐  Saliva ☐  

(b) Microscopy:  

<table>
<thead>
<tr>
<th>DATE</th>
<th>SPECIMEN</th>
<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+</td>
<td>scanty (1–9)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date:  
Examined by (Signature):  

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
3.4 Pack the sputum samples and send to the laboratory

Keep the samples in a refrigerator or in as cool a place as possible until transport.

When you have all three samples, pack the sputum containers in a transport box and enclose the Request for Sputum Examination. If there are samples for more than one patient, enclose a Request for Sputum Examination for each patient’s samples.

If a patient does not return to the health facility with the second sample within 48 hours, send the first sample to the laboratory anyway.

Send the samples to the laboratory as soon as possible. Do not hold for longer than 3–4 days. The total time from collection until samples reach the laboratory should be no more than 5 days. Sputum samples should be examined by microscopy no later than 1 week after they have been collected.

Prepare a dispatch list to accompany each transport box. The dispatch list should identify the sputum samples in the box. Before sending the box to the laboratory:

- Check that the dispatch list states:
  - the correct total number of sputum containers in the box,
  - the identification numbers on the containers, and
  - the name of each patient.
- Check that a Request for Sputum Examination is enclosed for each patient.
- Close the box carefully.
- Write the date on the dispatch list.
- Put the dispatch list in an envelope and attach the envelope to the outside of the transport box.

**Example**

<table>
<thead>
<tr>
<th>TB sputum samples dispatch list</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health facility: Patangeta Health Centre</td>
</tr>
<tr>
<td>Contents: Total number of sputum containers: 9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TB suspect name</th>
<th>Specimen ID numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheena Arday</td>
<td>335-1, 335-2, 335-3</td>
</tr>
<tr>
<td>Emil Avornyo</td>
<td>337-1, 337-2, 337-3</td>
</tr>
<tr>
<td>Mary Abatu</td>
<td>338-1, 338-2, 338-3</td>
</tr>
</tbody>
</table>

Packed by (signature): ____________________________ Date: 12/10/02

In this example, the specimen ID number is the TB suspect number followed by -1, -2, or -3.
When the samples reach the laboratory, the laboratory technician performs the following steps to complete a sputum examination:

- Spread each sample on a glass slide, fix and stain it.
- Examine each sample through the microscope. Systematically examine 100 fields for acid-fast bacilli (AFB). If AFB are present, count them and grade the quantity according to the scale below. If any AFB are present, the result is positive.
- Write the results in the laboratory register.
- Write the results on the bottom of the *Request for Sputum Examination* form and return it to the health facility.

<table>
<thead>
<tr>
<th>Number of AFB in 100 fields</th>
<th>Result recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>No AFB observed</td>
<td>Negative</td>
</tr>
<tr>
<td>1–9 AFB</td>
<td>Scanty (record exact number observed)</td>
</tr>
<tr>
<td>10–99 AFB</td>
<td>+</td>
</tr>
<tr>
<td>100–999 AFB (or 1–10 per field)</td>
<td>++</td>
</tr>
<tr>
<td>1000 or more (or more than 10 AFB per field)</td>
<td>+++</td>
</tr>
</tbody>
</table>

**STOP**

Now do Exercise A – Role Play

When you have reached this point in the module, you are ready to do Exercise A, a role play of collecting sputum from a TB suspect. Tell your facilitator when you have reached this point. While you are waiting, read the instructions for Exercise A beginning on page 25 of this module.
4. When the laboratory results are received, record results in the Register of TB Suspects and decide on appropriate action

The laboratory technician records the findings on the bottom of the Request for Sputum Examination. See the example below.

**Example**

<table>
<thead>
<tr>
<th>Name of health facility</th>
<th>Patangeta Health Centre</th>
<th>Date</th>
<th>10/10/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of patient</td>
<td>Mary Abatu</td>
<td>Age</td>
<td>19</td>
</tr>
<tr>
<td>Complete address</td>
<td>33 Primos Road, Patangeta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for examination:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>TB Suspect No. 338</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Follow-up</td>
<td>Patient's District TB No.*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease site</td>
<td>Pulmonary</td>
<td>Extrapulmonary</td>
<td>(specify)</td>
</tr>
<tr>
<td>Number of sputum samples sent with this form</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of collection of first sample</td>
<td>10/10/02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature of specimen collector</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RESULTS (to be completed by Laboratory)**

<table>
<thead>
<tr>
<th>LAB. SERIAL NO.</th>
<th>667-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Visual appearance of sputum:</td>
<td>Mucopurulent</td>
</tr>
<tr>
<td>(b) Microscopy:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATE</th>
<th>SPECIMEN</th>
<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/10/02</td>
<td>1</td>
<td>POS</td>
<td>+++</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>++</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>scanty (1–9)</td>
</tr>
<tr>
<td>16/10/02</td>
<td>2</td>
<td>POS</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16/10/02</td>
<td>3</td>
<td>POS</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date 16/10/02 Examed by (Signature) 

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
4.1 Record the results in the *Register of TB Suspects*

Read the results from Section (b) Microscopy on the *Request for Sputum Examination* form. The results column tells whether each sample (or specimen) was found positive or negative for AFB.

Find the suspect’s line in the *Register of TB Suspects* (see example on page 16). Record the results for each of the three samples in the “Results of Sputum Examinations” column. For each sample,

- if negative, record “neg” or,
- if positive, record the grading (+, ++, or +++) or, if the result was “Scanty,” record the number written by the laboratory technician.

<table>
<thead>
<tr>
<th>Results of Sputum Examinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>neg</td>
</tr>
<tr>
<td>neg</td>
</tr>
<tr>
<td>neg</td>
</tr>
<tr>
<td>++</td>
</tr>
<tr>
<td>neg</td>
</tr>
<tr>
<td>neg</td>
</tr>
<tr>
<td>++</td>
</tr>
</tbody>
</table>

Mary Abatu’s results (shown on page 10) are recorded in this way.

This is a column in the *Register of TB Suspects*. See the complete form on page 16.
4.2 Decide on appropriate action in response to the laboratory results

Read the Results column in the Register of TB Suspects to determine whether the TB suspect will be considered sputum smear-positive or sputum smear-negative for pulmonary TB.

Three sputum samples should have been collected and examined.\(^1\)

- **If two (or three) specimens are positive**, the patient is sputum smear-positive. These results mean that the patient has infectious pulmonary TB and needs treatment for TB. How to administer this treatment is described in module C: Treat TB Patients. Sputum smear-positive patients **must** begin treatment. If the patient does not return to the health facility for the results, someone from the health facility must visit the patient’s home.

- **If only one specimen is positive**, the health worker cannot determine whether the patient has TB or not, because of a small chance of laboratory error. Refer the patient to a clinician, so that the clinician can make a clinical assessment of whether the patient has TB.\(^2\) (The patient will be considered sputum smear-positive if one sputum is positive and **X-ray shows signs of active TB**.)

- **If all specimens are negative**, the TB suspect is sputum smear-negative for infectious pulmonary TB. However, to decide on appropriate action, you must consider whether the patient is still sick with respiratory symptoms.
  
  - **If the TB suspect is no longer coughing**, inform the suspect that the sputum examination found no pulmonary TB and that no treatment is needed.
  
  - **If the TB suspect is still coughing**, refer to a clinician if available, or treat with a non-specific antibiotic (for example, co-trimoxazole or ampicillin). If the cough persists, repeat examination of three sputum smears. If two or more smears are positive, treat for TB. If one or none is positive, refer the patient to the district hospital. The patient may have another pulmonary disease or smear-negative pulmonary TB.
  
  - **If the TB suspect does not return to find out the results**, it is not necessary to locate the TB suspect.

---

1 If only one sample was sent and it was positive, the TB suspect probably has TB. You will need to find the TB suspect for confirmation testing. If the only sample was negative, no action is required unless a clinician requests more samples for diagnosis.

2 When referring a patient, use a *Tuberculosis Referral/Transfer Form*. How to complete this form is described in module G: Ensure Continuation of TB Treatment. If no clinician is available in the area, repeat sputum examination (three samples). If one or more are positive, consider the patient to be sputum smear-positive.
5. Receive a patient in whom TB was diagnosed by a clinician

Sections 1–4 have described how health workers identify TB suspects, collect sputum, and use sputum microscopy results to detect cases of smear-positive pulmonary TB.

Another method for detecting a case of TB is for a clinician to perform the diagnosis. A clinician who suspects a patient has TB should request sputum smear examination even if the patient has been coughing for less than 2 weeks, or not coughing. The clinician can also use standard chest radiography (X-ray), a clinical assessment and other methods to document smear-negative pulmonary TB. A clinician may use a clinical assessment and complementary tests (culture, other methods) to detect cases of extrapulmonary TB.¹

<table>
<thead>
<tr>
<th>Case classification</th>
<th>Diagnosed by</th>
<th>Definition used for diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary TB, sputum smear-positive (PTB+)</td>
<td>Health worker or clinician</td>
<td>Two or more initial sputum smear examinations positive for acid-fast bacilli (AFB)</td>
</tr>
<tr>
<td></td>
<td>Clinician</td>
<td>• One sputum smear examination positive for AFB plus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Radiographic abnormalities consistent with active pulmonary TB as determined by a clinician</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>One sputum smear-positive for AFB plus sputum culture positive for M. tuberculosis</td>
</tr>
<tr>
<td>Pulmonary TB, sputum smear-negative (PTB-)</td>
<td>Clinician</td>
<td>Case of pulmonary TB that does not meet the above definition for smear-positive TB</td>
</tr>
<tr>
<td>Extrapulmonary TB</td>
<td>Clinician</td>
<td>A patient with TB of organs other than the lungs.</td>
</tr>
</tbody>
</table>

Any patient in whom both pulmonary and extrapulmonary TB are diagnosed should be classified as having pulmonary TB.

When you refer a TB suspect to a clinician for assessment, that TB suspect may return with a diagnosis of TB. If so, record the clinician’s diagnosis in the far right column of the Register of TB Suspects. See the example register on page 16.

Sometimes a clinician may diagnose a patient as having sputum smear-negative or extrapulmonary TB and then send the patient to you for treatment. Although this patient may not appear in the Register of TB Suspects, you will open a TB Treatment Card. The next module, C: Treat TB Patients, describes how to treat all these different types of TB patients.

¹ Diagnostic culture can detect TB. However, it is an expensive and slow diagnostic technique, not accessible to most clinicians and takes at least 6 weeks to provide a definitive result. It is not recommended for case detection but may be used by a clinician for diagnosis if available.
6. **Inform TB suspects of results of sputum examination**

**6.1 Inform TB suspects who are sputum smear-positive that they have pulmonary TB**

If the TB suspect has sputum smear-positive pulmonary TB, inform the TB suspect clearly and in a sensitive way. It is important to inform the TB suspect about TB and to start treatment as soon as possible. If a TB suspect does not return to the health facility to find out the results on the scheduled day, and the results of the sputum examination are positive, every effort should be made to locate the suspect. This may require the health worker to visit the TB suspect’s address recorded in the *Register of TB Suspects*.

When you inform the patient that the sputum examination showed TB, explain in simple terms what TB is and what type of TB the patient has. Reassure the patient that TB can be cured and that treatment is given free of charge.

This is a very important meeting with the TB patient. At this initial discussion, you will begin treatment and provide important information and support. This is the beginning of a long relationship with the patient, one that is essential for the successful treatment of the disease. All communication must be kind, supportive and medically correct. Some steps of this meeting are described in detail in other modules:

- Determine the appropriate treatment regimen for the patient and open the patient’s *TB Treatment Card*. Identify where the patient will be treated. (See module C: *Treat TB Patients*.)
- Identify a community treatment supporter if needed. (See module E: *Identify and Supervise Community TB Treatment Supporters*.)
- Inform the patient about TB, directly observed treatment, the treatment regimen, TB transmission; discuss main worries or doubts and answer any questions. (See module D: *Inform Patients about TB*.)

Explain that other people in the household may also be infected with TB. Ask about other persons living in the household. Ask the patient to bring to the health facility the following household contacts\(^1\) to be checked for TB:

- all children aged less than 5 years
- others in the household who have cough.

**6.2 Inform TB suspects who are sputum smear-negative that they do not have infectious TB**

If the sputum results are negative, inform the TB suspect that the sputum examination did not find infectious TB. If the TB suspect is no longer coughing, explain that no treatment is needed. However, if the patient is still coughing, refer or provide the appropriate treatment (see section 4.2).

---

\(^1\) A household contact is someone who lives in the same dwelling as the TB patient (sleeps and eats at least one meal there per day).
See the example *Register of TB Suspects* on the next page. This example shows how the register is used to track when sputum samples are sent and results received. The register shows each patient’s examination results (for three samples). It also shows the date that a *TB Treatment Card* was opened. Other information can be recorded in the final column, such as referral to clinician and a clinician’s diagnosis.
### REGISTER OF TB SUSPECTS

**Year:** 2002

<table>
<thead>
<tr>
<th>Date</th>
<th>TB Suspect Number</th>
<th>Name of TB Suspect</th>
<th>Age</th>
<th>Complete Address</th>
<th>Date</th>
<th>Date Sputum Sent to</th>
<th>Results of Sputum Examinations</th>
<th>Results of Sputum Examinations</th>
<th>Results of Sputum Examinations</th>
<th>Ref'd for Assessment</th>
<th>Observations/Clinician's Diagnosis</th>
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7. **Ask adult contacts about cough; check children from the household for TB symptoms**

7.1 **Detect TB cases among adult household contacts**

A household contact is a person who lives in the home of a TB patient and who is therefore at greater risk of becoming infected. When adult household contacts (aged 15 years or more) come to the health facility, follow the usual procedures to detect TB.

- Ask whether the individual has a cough and, if yes, ask about the duration of cough.
- If the cough has persisted for 2 weeks or more, the individual is a suspect for pulmonary TB.
- Collect three sputum samples from the TB suspect for sputum examination.
- Use results of sputum examination to determine whether the TB suspect has smear-positive pulmonary TB.

7.2 **Check children from the household for TB symptoms**

Check all children aged less than 5 years from the household for TB symptoms and check whether older children (aged 5 to 15 years) from the household have cough.

Diagnosing TB in children (aged less than 15 years) is very difficult. Sputum is rarely obtainable from children and is usually negative. Therefore a clinician may make a diagnosis based on clinical findings, family history of contact with a sputum smear-positive case, X-ray examination, tuberculin test, culture (if available), or non-response to broad-spectrum antibiotic treatment (not rifampicin).

When a child who lives in a household with a sputum smear-positive patient comes to the health facility, check the child for TB symptoms, especially failure to thrive or grow, weight loss, cough and fever. Refer a child with any of these symptoms to a clinician for diagnosis or exclusion of TB. If the child has cough and can produce sputum, collect three samples for examination.

**STOP**

**Now do Exercise B – Written Exercise**

When you have reached this point in the module, you are ready to do Exercise B. Turn to page 29 and follow the instructions for Exercise B. Do this exercise by yourself. Then discuss your answers with a facilitator.
Household contacts, primarily young children, may be given preventive therapy and immunization if needed. Preventive therapy and immunization can be given only to persons who do not have TB. See module C: *Treat TB Patients*, section 2, for guidelines on preventive therapy and immunization.
Summary of important points

- To identify TB suspects, health workers should ask every adult (aged 15 years and over) who attends the health facility
  - Do you have a cough?
  - For how long have you been coughing?

- An adult who has coughed for 2 weeks or more is a suspect for pulmonary TB. All TB suspects should have sputum smear examination to determine whether they have infectious smear-positive pulmonary TB.

- List the name and complete address of every TB suspect in the Register of TB Suspects.

- Collect three sputum samples from every TB suspect for diagnosis. When the results are received from the laboratory, record the results for the three samples in the Register of TB Suspects.
  - If two (or three) specimens are positive, the patient has smear-positive pulmonary TB.
  - If only one specimen is positive, refer the patient to a clinician for a clinical assessment of whether the patient has TB.
  - If all specimens are negative, the patient is sputum smear-negative for infectious pulmonary TB. However, if the patient is still coughing, refer to a clinician if available, or treat with a non-specific antibiotic (for example, co-trimoxazole or ampicillin).

- A patient who has smear-positive pulmonary TB is infectious. Locate and inform this patient about TB as soon as possible. Start treatment immediately to prevent the spread of the disease to others in the household and community and to improve the condition of the patient.

- Ask sputum smear-positive TB patients to bring to the health facility the following people from the household to be checked for TB:
  - All children aged less than 5 years
  - Any others in the household who have cough.
Self-assessment questions

Answer the self-assessment questions below to check what you have learned. Then compare your answers to those on page 22.

1. How does a health worker identify TB suspects from among all the persons attending health services?

2. How many sputum samples are needed for examination for diagnosis?
   When and where are these samples collected?

3. List three safety precautions to observe when collecting sputum.

4. What information is recorded in the Register of TB Suspects before sputum examination?

5. What information is recorded in the Register of TB Suspects after sputum examination?

6. If a TB suspect’s results are as follows, what is the diagnosis?

<table>
<thead>
<tr>
<th>DATE</th>
<th>SPECIMEN</th>
<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21/7/02</td>
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<td>POS</td>
<td>+++</td>
</tr>
<tr>
<td>21/7/02</td>
<td>2</td>
<td>POS</td>
<td></td>
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<tr>
<td>21/7/02</td>
<td>3</td>
<td>NEG</td>
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Date 21/7/02 Examinined by (Signature) _______________________________
What should the health worker do for the patient?

7. If a TB suspect’s results are as follows, what is the diagnosis?

<table>
<thead>
<tr>
<th>DATE</th>
<th>SPECIMEN</th>
<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
</tr>
</thead>
<tbody>
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<td>+++</td>
</tr>
<tr>
<td>17/7/02</td>
<td>2</td>
<td>POS</td>
<td>++</td>
</tr>
<tr>
<td>17/7/02</td>
<td>3</td>
<td>NEG</td>
<td>+</td>
</tr>
</tbody>
</table>

Date: **17/7/02**
Examine by (Signature) [Signature]

What should the health worker do for the patient?

8. If sputum smear examination results show that a TB suspect has sputum smear-positive TB, but the TB suspect does not return to the health facility, what should the health worker do?

Why is it important for the health worker to take this action?

9. A TB suspect who is found to have smear-positive pulmonary TB may have infected other people with TB. Who should the TB suspect ask to come to the health facility to be checked for TB?

Now compare your answers with those on the next page.
Answers to self-assessment questions

If you had difficulty answering any question, turn back and study the section indicated (in parentheses). If you do not understand something, discuss it with a facilitator.

1. The health worker asks all adults aged 15 years and over whether they have a cough. If yes, the health worker asks for how long. An adult who has coughed for 2 weeks or more is a TB suspect. (See section 1)

2. Three samples are needed. They are collected as follows:
   - First sample: on Day 1 at the health facility.
   - Second sample: on Day 2 at the TB suspect’s home, first thing after waking.
   - Third sample: on Day 2 at the health facility when the TB suspect brings back the second sample. (See section 3)

3. You should have listed three of the following:
   - Collect sputum in the open air or a well-ventilated place.
   - Be sure that the lid is closed tightly.
   - Isolate sputum container in plastic bag or wrap in newspaper.
   - Wash your hands. (See 3.2)

4. Date, TB suspect number, name and complete address of TB suspect, age, sex, date sputum sent to laboratory. (See section 2)

5. Date sputum results received at the health facility, results of sputum examination (for each of three specimens), whether TB Card opened and if yes, date, observations or clinician’s diagnosis. (See sections 4 and 5)

6. Smear-positive pulmonary TB; health worker should inform the TB suspect that the sputum examination found TB, open a TB Treatment Card, and then begin treating the patient for TB. (See 4.2 and 6.1)

7. Because there is only one positive result and two negative results, the health worker cannot decide on the diagnosis. The health worker should refer the patient to a clinician for assessment. (See 4.2)

8. The health worker should make every effort to locate the TB suspect, including going to the TB suspect’s home. It is important to find the TB suspect quickly and begin treatment to prevent infection of others in the household and community. Treatment will also improve the patient’s condition. (See 6.1)

9. All children aged less than 5 years living in the household should come. Also any others who live in the household and have cough should come to be checked for TB. (See sections 6.1 and 7)

The End

Congratulations on finishing this module!
Exercises for Module B:

Detect Cases of TB
Exercise A
Role Play – Collecting sputum for smear examination

For this exercise, your facilitator will divide the participants into groups of three. In each group, one person will act as the health worker, one as the TB suspect, and one as an observer. The role play will be done three times so that each participant practises the role of the health worker.

Your group will need copies of the Register of TB Suspects and the Request for Sputum Examination (provided on the next pages in this module), sputum containers and a pen. Your facilitator will give you some sputum containers.

In the module or the Reference Booklet, turn to the page titled “Collect Sputum for Examination.” Keep this handy for reference during the role play.

Instructions for the health worker

Use the Register of TB Suspects and the Request for Sputum Examination provided for this exercise on pages 27–28 in this module.

You have just found out that this TB suspect has coughed for more than a month. Your task now is collecting sputum for examination, which should include the steps listed below. You will talk with the TB suspect to enlist the TB suspect’s cooperation and to get the information that you need.

- Explain that the TB suspect needs a sputum examination and enlist the TB suspect’s cooperation.
- In the Register of TB Suspects, list the date, a TB suspect number, the TB suspect’s name, age, sex, and address.
- Label sputum containers.
- Fill out a Request for Sputum Examination form.
- Explain to the TB suspect how to collect sputum.
- Collect a sputum sample.
- Ask the TB suspect to collect another sample in the morning and then bring it to you.

Instructions for the TB suspect

Your task is to act the role of a typical TB suspect. You have coughed for over a month. When the health worker asks, you may make up a name and address. You do not know much about TB or sputum examination and may be surprised when the health worker asks for a sputum sample. When the health worker explains to you what to do, ask questions if the instructions are not clear. When you are asked to cough up sputum, cough and pretend to spit into the container.
**Instructions for the observer**

Your task is to watch carefully during the role play so that you can comment on what was done well and what could be improved. Use the page “Collect Sputum for Examination” as a checklist and tick each item as the health worker does it. Make other notes in the margin of things done well or poorly.

At the end of the role play, tell the health worker whether any steps were omitted. Comment on steps done well and possible improvements. Your comments should be brief.

After the observer has commented, change roles and repeat the role play described above. Repeating the role play will help you to become more familiar and comfortable with the steps. When all the participants have practised the role of the health worker, the facilitator will lead a brief discussion.

Tell a facilitator when you are ready for the group discussion.
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<tr>
<th>Date</th>
<th>TB Suspect Number</th>
<th>Name of TB Suspect</th>
<th>Age</th>
<th>Complete Address</th>
<th>Date Sputum Sent to Lab</th>
<th>Date Results Received</th>
<th>Results of Sputum Examinations</th>
<th>TB Treatment Card Opened? (record date)</th>
<th>Observations/ Clinician's Diagnosis</th>
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TB LABORATORY FORM
REQUEST FOR SPUTUM EXAMINATION

Name of health facility __________________________  Date _________________
Name of patient ______________________________  Age _____ Sex: M ☐  F ☐
Complete address _____________________________________________________
____________________________________________________________________
District _________________

Reason for examination:
  Diagnosis ☐  TB Suspect No. ______________
  OR Follow-up ☐  Patient’s District TB No.* ______________
Disease site: Pulmonary ☐  Extrapulmonary ☐  (specify) ________________
Number of sputum samples sent with this form _____
Date of collection of first sample ____________  Signature of specimen collector ________

* Be sure to enter the patient’s District TB No. for follow-up of patients on TB treatment.

RESULTS (to be completed by Laboratory)

Lab. Serial No. ____________________________

(a) Visual appearance of sputum:

   Mucopurulent ☐  Blood-stained ☐  Saliva ☐

(b) Microscopy:

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<th>DATE</th>
<th>SPECIMEN</th>
<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
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Date _______  Examined by (Signature) __________________________________

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
Exercise B

Written Exercise – Recording in the
Register of TB Suspects

Work individually on this exercise. Ask your facilitator for help if you do not understand what to do.

1. Fold out page 35, a blank Register of TB Suspects. Fill in the year (2002) and facility name (Veld Health Centre).

2. The persons below were identified during a two-day period at Veld Health Centre as having cough for more than 2 weeks.

   - List each suspect in the Register of TB Suspects.
   - Assign each, in sequence, a TB suspect number. The first will be TB suspect number 489.
   - Fill in the rest of the information about each suspect and when the sputum was sent to the laboratory.

   **Anna Abouya:** Identified on 13 November. She is female, aged 27 years. Her address is 192 Market Road, Apartment 3, Veld. Her sputum was sent to the laboratory on 15 November.

   **Nyore Lori:** Identified on 13 November. He is male, aged 40 years. His address is Bader House, 200 Airport Road, Veld. His sputum samples were sent to the laboratory on 15 November.

   **Kumante Waweru:** Identified on 14 November. He is male, aged 31 years. His address is 21 Middle Street, Raman. His sputum samples were sent to the laboratory on 19 November.

   **Pooran Singh:** Identified on 14 November. He is male, aged 65 years. His address is 5 President Street, Veld. His sputum samples were sent to the laboratory on 16 November.

   **Esna Josephus:** Identified on 14 November. She is female, aged 21 years. She lives at 77 Kingsway Park, Veld. Her sputum was sent to the laboratory on 16 November.

3. On the next pages are four Request for Sputum Examination forms that were returned to the health centre on 22 November with sputum examination results for the above TB suspects. The form for TB suspect # 491, Kumante Waweru, was not returned.

   For each TB suspect, record in the Register of TB Suspects the date results were received (that is, 22 November). Then record the results of the sputum examination.
TB LABORATORY FORM
REQUEST FOR SPUTUM EXAMINATION

Name of health facility  Veld Health Centre  Date  13 Nov 2002
Name of patient  Anna Abouya  Age 27  Sex: M ☐  F ☐  ☑
Complete address  192 Market Road, Apt 3  District  Marduk

Reason for examination:
Diagnosis ☑  Tuberculosis Suspect No. 489
OR  Follow-up ☐  Patient’s District Tuberculosis Unit.*

Disease site: Pulmonary ☐  Extrapulmonary ☐ (specify) ☐

Number of sputum samples sent with this form 3
Date of collection of first sample  13 Nov 2002
Signature of specimen collector

* Be sure to enter the patient’s District Tuberculosis Unit No. for follow-up of patients on TB treatment.

RESULTS (to be completed by Laboratory)

Lab. Serial No. 1793

(a) Visual appearance of sputum:
Mucopurulent ☑  Blood-stained ☐  Saliva ☐

(b) Microscopy:

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<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
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Date  18-11-02  Examinied by (Signature) ________________________________

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
TB LABORATORY FORM
REQUEST FOR SPUTUM EXAMINATION

Name of health facility: Veld Health Centre

Name of patient: Nyore Lori
Age: 40
Sex: M ☐ F ☐ ☒

Complete address: Bader House, 200 Airport Rd

Date: 13 Nov 2002

Reason for examination:
- Diagnosis ☒
- TB Suspect No. 490
- OR Follow-up ☐ Patient’s District TB No.* __________

Disease site: Pulmonary ☐
- Extrapulmonary ☐ (Specify) __________

Number of sputum samples sent with this form: 3

Date of collection of first sample: 13 Nov
Signature of specimen collector: ________________________

* Be sure to enter the patient’s District TB No. for follow-up of patients on TB treatment.

RESULTS (to be completed by Laboratory)

Lab. Serial No.: 1794

(a) Visual appearance of sputum:

- Mucopurulent ☒
- Blood-stained ☐
- Saliva ☐

(b) Microscopy:

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<th>SPECIMEN</th>
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<th>POSITIVE (GRADING)</th>
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Date: 18-11-02
Examine by (Signature): ____________________________

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
TB LABORATORY FORM
REQUEST FOR SPUTUM EXAMINATION

Name of health facility ___ Veld Health Centre ___ Date ___ 14 Nov 2002 ___
Name of patient ___ Pooran Singh ___ Age ___ 65 ___ Sex: M [ ] F [ ] [ ]
Complete address ___ 5 P president Street ___ District ___ Marduk ___

Reason for examination:
  Diagnosis [ ] TB Suspect No. ___ 492 ___
  OR Follow-up [ ] Patient’s District TB No.* [ ]
Disease site: Pulmonary [ ] Extrapulmonary [ ] (specify) [ ]
Number of sputum samples sent with this form ___ 1 ___
Date of collection of first sample ___ 14 Nov ___ Signature of specimen collector ___

* Be sure to enter the patient’s District TB No. for follow-up of patients on TB treatment.

RESULTS (to be completed by Laboratory)

Lab. Serial No. ___ 1807 ___
(a) Visual appearance of sputum:
  Mucopurulent [ ] Blood-stained [ ] Saliva [ ]
(b) Microscopy:

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Date ___ 20-11-02 ___ Examined by (Signature) ___

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
Name of health facility: Veld Health Centre
Date: 14 Nov 2002

Name of patient: Esna Josephus
Age: 21 Sex: M □ F □ √

Complete address: 77 Kingsway Park
District: Marduk

Reason for examination:
Diagnosis: TB Suspect No. 493
OR Follow-up □ Patient's District TB No.*

Disease site: Pulmonary □ Extrapulmonary □ (specify)

Number of sputum samples sent with this form: 3
Date of collection of first sample: 14 Nov
Signature of specimen collector:

* Be sure to enter the patient's District TB No. for follow-up of patients on TB treatment.

---

RESULTS (to be completed by Laboratory)

Lab. Serial No.: 1808

(a) Visual appearance of sputum:
Mucopurulent: X
Blood-stained: □
Saliva: □

(b) Microscopy:

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Date: 20-11-02 Examined by (Signature)

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
4. Beside each TB suspect’s name listed below, write the next action that you should take for the TB suspect (for example, inform the patient and open a *TB Treatment Card*, or refer the patient to a clinician for assessment). Base your answer on laboratory results and other information given.

- For Anna Abouya: (She is no longer coughing and feels quite well.)

- For Nyore Lori:

- For Kumante Waweru:

- For Pooran Singh: (He is still coughing and does not look well.)

- For Esna Josephus:

When you have finished this exercise, please discuss your answers with a facilitator.

Then **GO BACK** to page 17. Read section 7 and work to the end of the module (page 22).
# REGISTER OF TB SUSPECTS

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<th>Date</th>
<th>TB Suspect Number</th>
<th>Name of TB Suspect</th>
<th>Age</th>
<th>Complete Address</th>
<th>Date Sputum Sent to Lab</th>
<th>Date Results Received</th>
<th>Results of Sputum Examinations</th>
<th>TB Treatment Card Opened? (record date)</th>
<th>Observations/ Clinician's Diagnosis</th>
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Year ___________________

Facility ____________________
Annexes

A. Register of TB Suspects ................................................................. 38

B. Request for Sputum Examination .................................................. 39
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<th>Observations/ Clinician’s Diagnosis</th>
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TB LABORATORY FORM
REQUEST FOR SPUTUM EXAMINATION

Name of health facility ____________________________     Date _________________

Name of patient ________________________________      Age _____  Sex: M ☐ F ☐

Complete address __________________________________________________________

__________________________________________ District _______________

Reason for examination:

  Diagnosis ☐       TB Suspect No. ______________
  OR  Follow-up ☐   Patient’s District TB No.* ______________

Disease site: Pulmonary ☐   Extrapulmonary ☐ (specify) ______________

Number of sputum samples sent with this form _____

Date of collection of first sample ___________ Signature of specimen collector ________

* Be sure to enter the patient’s District TB No. for follow-up of patients on TB treatment.

RESULTS (to be completed by Laboratory)

Lab. Serial No. ____________________________

(a) Visual appearance of sputum:

  Mucopurulent ☐   Blood-stained ☐   Saliva ☐

(b) Microscopy:

<table>
<thead>
<tr>
<th>DATE</th>
<th>SPECIMEN</th>
<th>RESULTS</th>
<th>POSITIVE (GRADING)</th>
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Date _______ Examined by (Signature) __________________________________

The completed form (with results) should be sent to the health facility and to the District Tuberculosis Unit.
Management of Tuberculosis
Training for Health Facility Staff

B: Detect Cases of TB