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TUBERCULOSIS
PROJECT
SOUTH AFRICA

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

Case Detection and Diagnosis of PTB and EPTB

URC


TB case detection and diagnosis

Learning Outcomes

- How to identify TB suspects among clients attending Health Facility
- Discuss the role of the laboratory in the diagnosis of TB
- Explain the requirements, the successful collection and submission of specimens
- Discuss other tests used in TB diagnosis
- Complete the necessary documentation to monitor TB suspects activities in the facility

Who can spread TB

- Patients with ***cough for more than two weeks(undiagnosed)***
- Patients with ***sputum positive for AFB***
- Patients not on treatment
- Patients just started on treatment
- Patients with a poor response/ adherence to treatment
- Close contact of DR TB cases

How to organise TB case detection activities

- Sensitise all health care workers on the importance of early TB case detection
- Sensitise communities on the importance of TB case detection (information leaflets, social mobilisation)
- Train health care workers in the correct operational procedures for TB case detection
- Organise activities for TB case detection – flowcharts (algorithms), posters, triage
- Implement the monitoring and evaluation system for TB case detection (Suspect Register, lab forms, reporting forms)

Key questions for all patients attending PHC/OPD

The goal is to adequately identify and examine 100% of all adults and children >5 years of age who present with a cough and cold symptoms for more than 2 weeks

- *Do you have a cough?*
- *For how long have been coughing?*
- *Do you expectorate/have a phlegm?*

Medical history of the patient

Important questions to ask

- Is there a history of previous TB treatment. When and for how long
- Are there family members, co-workers, friends with TB or TB symptoms
- What do you know about TB

History of other medical conditions

- e.g. diabetes, steroid dependent medication

Physical examination:
Signs & symptoms of PTB

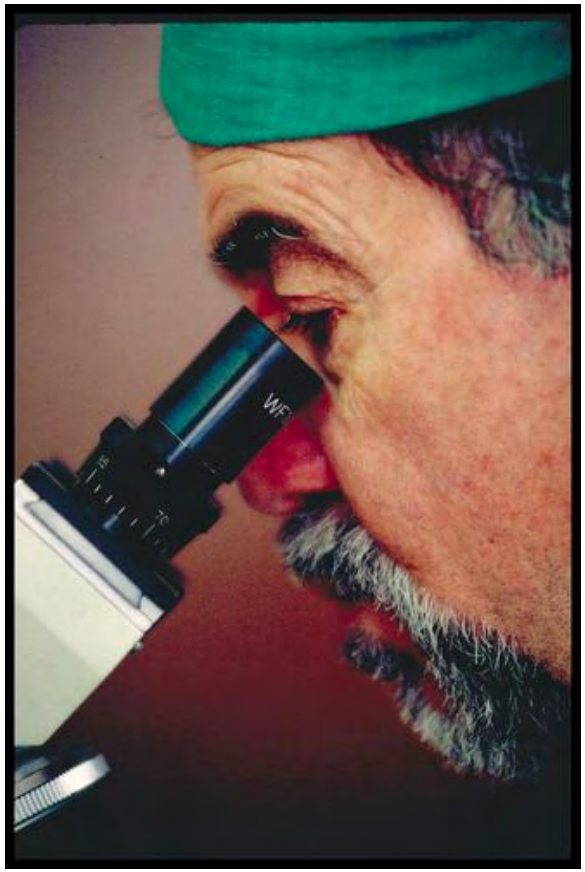
- Cough – Chronic or more than 2 weeks
- Weight loss and anorexia
- Chills and night sweats
- Pyrexia of unknown origin
- Chest pain
- Dyspnea
- Haemoptysis
- Malaise and unusual tiredness

Sputum collection

- All TB suspects collect sputum for smear microscopy to confirm diagnosis of Pulmonary TB
- It is important to carry out smear microscopy because it correctly and efficiently identifies the cases that are infectious and therefore have the highest priority for care.

Why sputum smear microscopy

- Cornerstone of the **TB Control Program**
- Most specific and cost-effective proof of PTB
- Identifies those patients that are smear positive, therefore most infective
- Relatively easy to obtain a specimen
- Test results reliable and mostly back within 24 - 48 hours



Sputum smear microscopy

- **Spot-morning**
  - Why spot?
    - The patient is registered and if positive can be traced
    - Specimen collection can be ‘observed’
    - Quality of specimen collected – not saliva

- Two smears
  - If the services can truly not handle two consecutive specimens per patient then it may be better to compromise and take two smears on the same day rather than risking non-compliance with a non-feasible strategy

Sputum collection: When and why

Pretreatment

- to confirm diagnosis

After 7 weeks of the intensive treatment phase of

New PTB cases

- to monitor clinical progress; and
- to monitor smear conversion

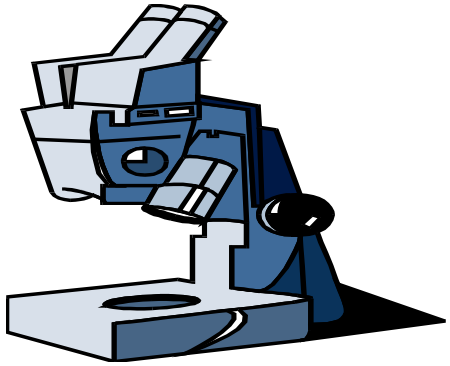
After 11 weeks of the intensive treatment of

Re treatment TB cases

- to monitor clinical progress; and
- to monitor smear conversion

At end of treatment

- to prove cure
- identify treatment failure



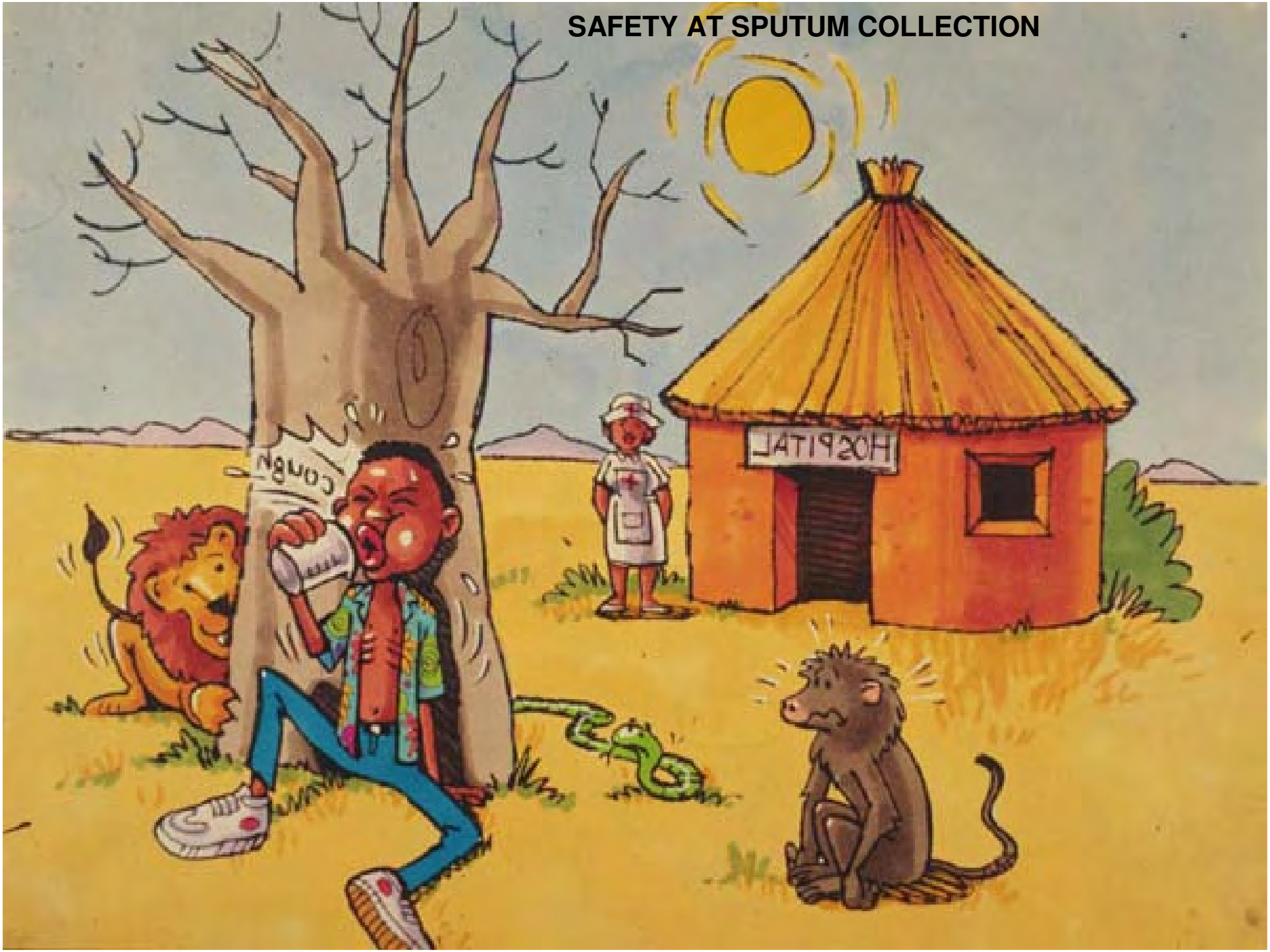
How to collect the sputum

- This procedure should occur in a well ventilated area or outside, but in private.
- Supervise the collection , stand behind the patient.
- The patient must rinse out the mouth with water.
- Demonstrate a deep cough from the bottom of the chest, beginning with deep breathing.
- Give the patient the container labeled, but without a lid.

Sputum collection: Instructions to the patient (2)

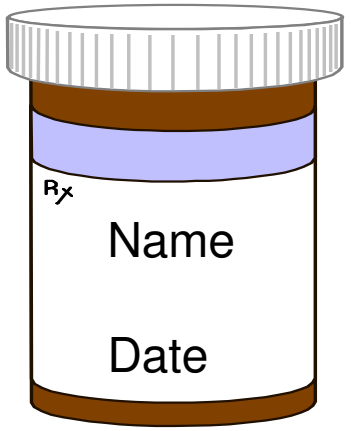
- Take in a lot of air (inhale deeply)
- Retain the air in the lungs
- Make an effort to cough in order to loosen the phlegm
- Repeat the action at least three times for each sample – to ensure adequate amount
- Close the sputum container
- Give sputum container to the nurse

SAFETY AT SPUTUM COLLECTION



Safety at sputum collection

- All HCW's must protect themselves when supervising sputum collection
- Outdoors or in a well ventilated area is best
- Use surgically clean rigid containers, properly closed, apply standard precautions
- Accurate labeling and prompt transportation necessary
- Don't forget to wear gloves!!



Sputum sample labeling

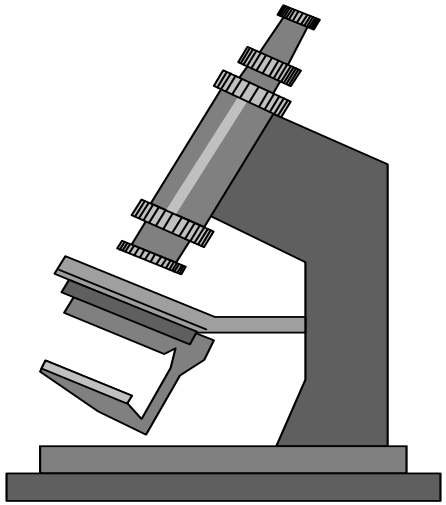
- All patient personal information: the file number, the name, age and sex of the patient
- Clear instruction on investigations requested (smear micro, pre or phase specimen)
- Name and address of the clinic
- Store in a fridge (bottom) for not 24 hrs

Always label the container as the lids may get mixed up!!!

Laboratory errors can occur

Causes of False Positive

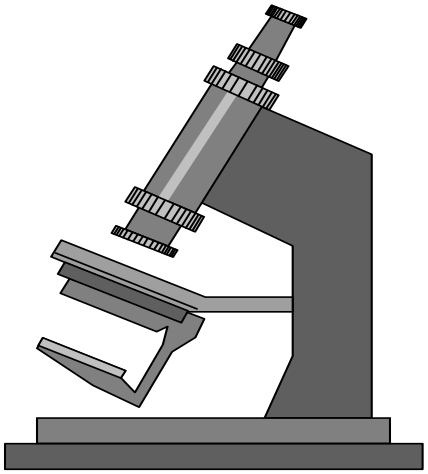
- Scratches
- Food particles
- Administrative errors
- Mix up of specimens
- Accidental transfer of bacilli from one slide to the next



Laboratory errors can occur cont…

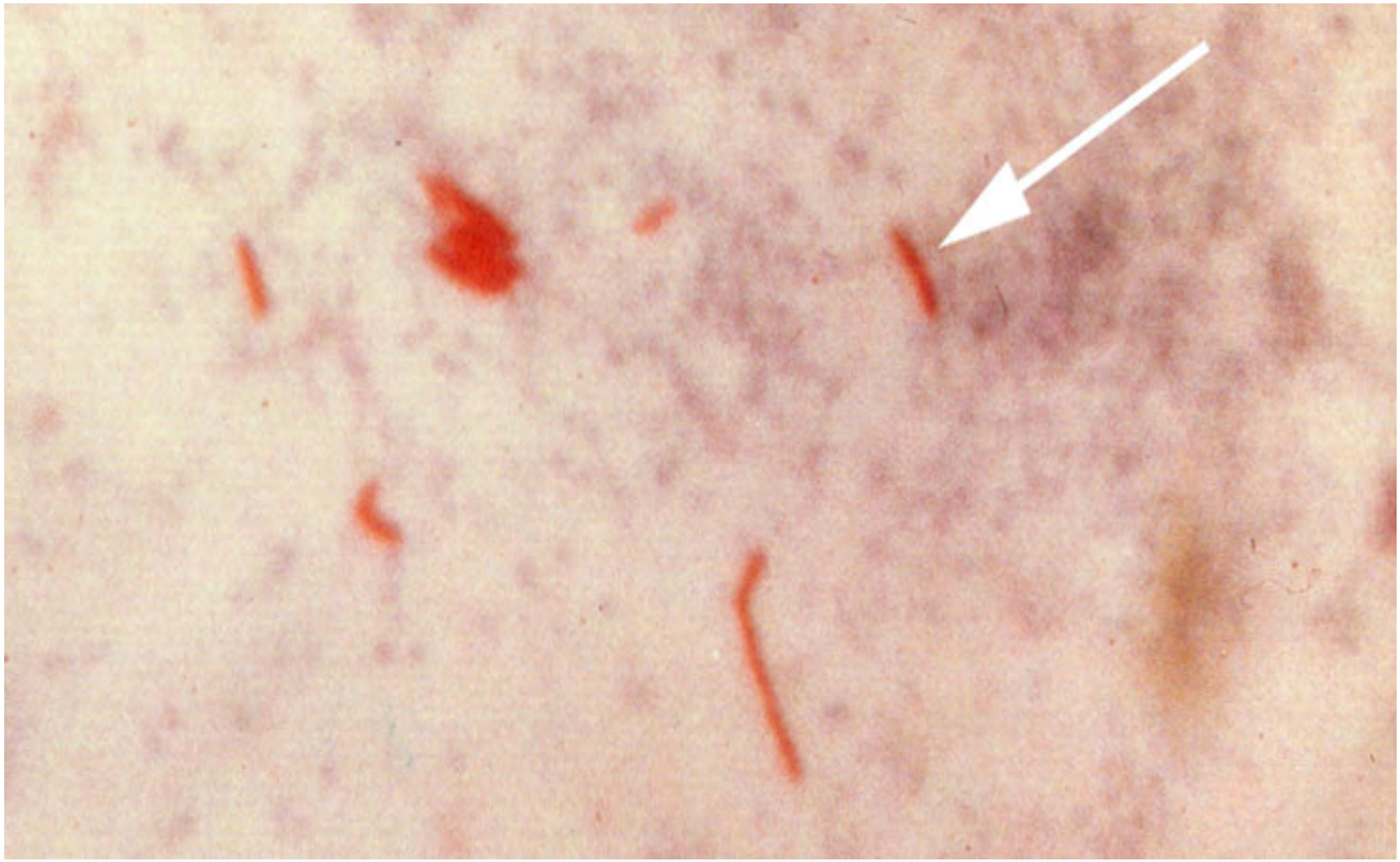
False Negative

- Poor sample
- Laboratory error
- Inadequate time spent on slide
- Poor quality control
- Administrative error



When is TB diagnosis confirmed

AFB seen



Laboratory results: what do they mean?

Number of bacilli seen on a smear		Results Reported
No. of AFB	Per 100 oil immersion field	Negative/ no AFB seen
1-9 AFB	Per 100 oil immersion field	Scanty pos (1 – 9)
10-99 AFB	Per 100 oil immersion field	1+
1-10 AFB	Per 1 oil immersion field	2++
>10 AFB	Per 1 oil immersion field	3+++

M Tuberculosis Characteristics

- Microscopic thin and *rod like (G + bacilli)*
- Occur singly or in clusters
- Complex thick waxy cell wall (Mycolic acids)
  - ✓ need special antibiotics
  - ✓ special staining methods needed [ZN] or Auramine stain (acid and alcohol fast)
  - ✓ Can survive for long periods in the dark, cool places
- Destroyed by heat, UV light, pasteurisation

Bacilli growth & invasive properties

Various populations of bacilli in a TB lesion:

- Active,
- Intermediately active,
- Semi-dormant, slow growing
- Dormant, may become active at any time

They grow both Intra- and Extra-cellularly

TB Culture and Drug Susceptibility Testing (DST)

- The growth of live TB bacilli on culture media
  - -Lowenstein Jensen - takes 6 weeks
  - -Bactec - expensive, takes 2-3 weeks
- Not done routinely
- More sensitive than sputum smear microscopy,
- Much more expensive &

done on selected cases only

Culture and drug susceptibility testing

- Drug susceptibility tests are used to determine the susceptibility or resistance of a patient anti-tuberculosis drugs
- Culture results should not delay the initiation of therapy, the decision to treat can be based on the history, clinical findings and chest x-ray, where smear is negative or one negative one positive

When to request culture and sensitivity

- All re-treatment cases
- All symptomatic contacts of DR TB cases
- For diagnosis when only one smear is positive
- For diagnosis if two smears are negative in a TB suspect case e.g. HIV +
- Cases who remain positive at end of initial phase OR end of treatment
- If drug susceptibility is required

Criteria for starting TB treatment

- Two positive smears
- One positive smear and abnormal CXR
- One positive smear and positive culture
- One positive culture and abnormal CXR
- Very ill patient with one positive smear *or* one positive culture
- Smear negative with suggestive clinical picture and an abnormal CXR

Complete the case identification register using 10 scenarios

- Exercise

Extra Pulmonary TB

Extra-pulmonary TB

- Symptoms depend on the site affected
- Difficult to diagnose – symptoms are
- Vague or non-specific until advanced
- May cause permanent damage (TBM)
- Now, more common in HIV +

Extra-pulmonary TB cont…

- Lymphadenopathy
- Miliary TB
- Pleural and pericardial effusion
- Ascites
- TB Meningitis
- TB spine/bone
- Hepatic/Renal/Adrenal
- Male/female genital tract
- Upper respiratory ie larynx

How to diagnose Extra-pulmonary TB

- Clinical symptoms
- Depend on the site affected
- Taps, biopsies, x-rays
- Always check sputum for AFBs as well

Principles of treatment for Extra-Pulmonary TB

- Treatment same as PTB
- Regimen 1 for new cases and Regimen 2 for re-treatment but excluding Streptomycin
- Severe forms may be treated for a longer period, depending on the site e.g. TBM
- Decision to extend treatment should only be done by a specialist after individual clinical assessment
- Close monitoring of patients important – may also get resistant strains of TB

We can stop TB