



# **TB Management for Clinicians and Laboratory Technicians**

# Factors Contributing to Increase in TB

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- HIV epidemic – instability, local and international travels, mixture of cultures
- Poverty - instability
- Overcrowding – instability, rural/urban migration
- Malnutrition
- Increased and easy global travels
- Euphoria of new state???

# **The Tuberculosis Disease**

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**There is a difference between TB  
infection and TB disease**

# TB Infection

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- People can be infected with TB germs but not feel sick because their immune system is able to fight the germs.
- TB infection means that someone has TB germs in his or her body.
- People who are infected with TB germs but are not sick cannot spread the disease to other people.
- Some people who have a TB infection are healthy. Most people with a TB infection who have a healthy immune system will never become sick with TB.
- This does not usually require treatment

# TB disease

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- TB is a chronic infectious disease caused by a bacterium known as *Mycobacterium tuberculosis bacillus*.
- TB is airborne disease that spreads from one infected with TB to the uninfected.
- There are 2 types of TB – PTB & EPTB
- EPTB – TB of the Bone/Spine commonly occurs = Bovine TB caused by *M. bovis*.

# TB Infection and TB Disease

<b>Diagnostic Consideration</b>	<b>TB Infection</b>	<b>TB Disease (in the lungs)</b>
<b>Tubercle bacilli in the body</b>	<b>Few</b>	<b>Many</b>
<b>Tuberculin skin test reaction</b>	<b>Usually Positive</b>	<b>Usually Positive</b>
<b>Chest x-ray</b>	<b>Usually Normal and negative sputum smear</b>	<b>Suggestive, or positive sputum smear or culture</b>
<b>Sputum smears and cultures</b>	<b>Negative</b>	<b>Positive</b>
<b>Symptoms of TB</b>	<b>No symptoms</b>	<b>Symptoms</b>
<b>Infectious</b>	<b>Not infectious</b>	<b>Often Infectious before Treatment</b>
<b>Level of sickness</b>	<b>Does not feel sick</b>	<b>Usually feels sick</b>
<b>A case of TB?</b>	<b>No Not a case of TB</b>	<b>Yes A case of TB</b>

# TB affects any part of the body

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- There are two types: Pulmonary and Extra-Pulmonary TB
  - Pulmonary is more common, Lungs – 80%
  - But ALL parts of the body can be affected except:
    - Hair
    - Nails
    - Teeth
- Reason: THESE ARE DEAD CELLS



# **Clinical Tuberculosis and diagnosis**

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# Clinical Forms of TB

## Classification

<b>Pulmonary TB</b>	<b>Extra-pulmonary TB</b> (TB outside the lung) Virtually any body organ can be affected	
<ul style="list-style-type: none"><li>• Smear positive PTB</li><li>• Smear negative PTB</li></ul>	<ul style="list-style-type: none"><li>• Lymph nodes</li><li>• Pleura</li><li>• Pericardium</li><li>• Meninges</li><li>• Bones</li><li>• Spine</li></ul>	<ul style="list-style-type: none"><li>• Kidneys</li><li>• Bladder</li><li>• Skin</li><li>• Eyes</li><li>• Gastro-intestinal system</li></ul>

# **Pulmonary TB**

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# Differential diagnosis of TB: the many causes of cough

- There are many causes of a cough. These may include:
  - TB among others – The leading cause that should not be forgotten.
  - allergies,
  - pneumonia,
  - asthma,
  - Bronchitis and
  - foreign body along the airway among others
- The cough due to TB does not go away with over-the-counter medicine.

# Signs and symptoms of TB disease

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- Coughing for two (2) weeks or more.
- Sputum containing blood.
- Chest pain.
  
- Difficulty in breathing.
- Fever.
- Sweating at night, even when the weather is cold.
  
- Losing weight.
- Loss of appetite.
- Tiredness.

# There are 2 types of PTB

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- Smear positive - SMP
- Smear negative – SMN
- These can only be differentiated by doing sputum check in the laboratory (AFB microscopy)
- **Sputum collection**
  - Strictly use the spot, morning, spot (SMS) process – 3 specimen in 2 days. Pt should obtain results and start treatment on day 2. Currently WHO recommends 2 sputa instead of 3; but 1 must be a morning specimen.

# Why Laboratory services are important in TB care

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- To confirm the diagnosis – **MONTH ZERO (0)**
- To monitor the response of patient's to treatment – **MONTH 2/3 & 4/5**
- To determine treatment outcome(s) and declare if the patient is cured or not – **MONTH 6/8**
- It is inexpensive and takes only two to three days to obtain results compared to other diagnostic processes.

# According to WHO, Smear **Positive** PTB is defined as:

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## **A patient with:**

- At least two or more initial sputum smear examinations positive for acid-fast bacilli (AFB) by microscopy.
- One sputum smear examination positive for AFB plus radiographic abnormalities consistent with active PTB as determined by clinician, or
- One sputum specimen positive for AFB plus sputum culture positive for *M. tuberculosis*.
- 5,000 to 10,000 bacilli are needed in 1ml of sputum to get a positive AFB.



# According to WHO, Smear **Negative** PTB is defined as:

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## A patient with:

- Clinical features of TB,
- A suggestive chest x-ray,
- Sputum smears have remained negative and
- Not responding to antibiotics

# How to get the sputum for examination safely

- Collected 3 samples in 2 days – SMS (where laboratory services are good and EQA assured, 2 samples with any positive recommended).
- Need to be in open place for safety of others.
- If travelling with sample to hospital, avoid contamination.
- The container should be firmly closed.



# **Extra Pulmonary TB (EPTB)**

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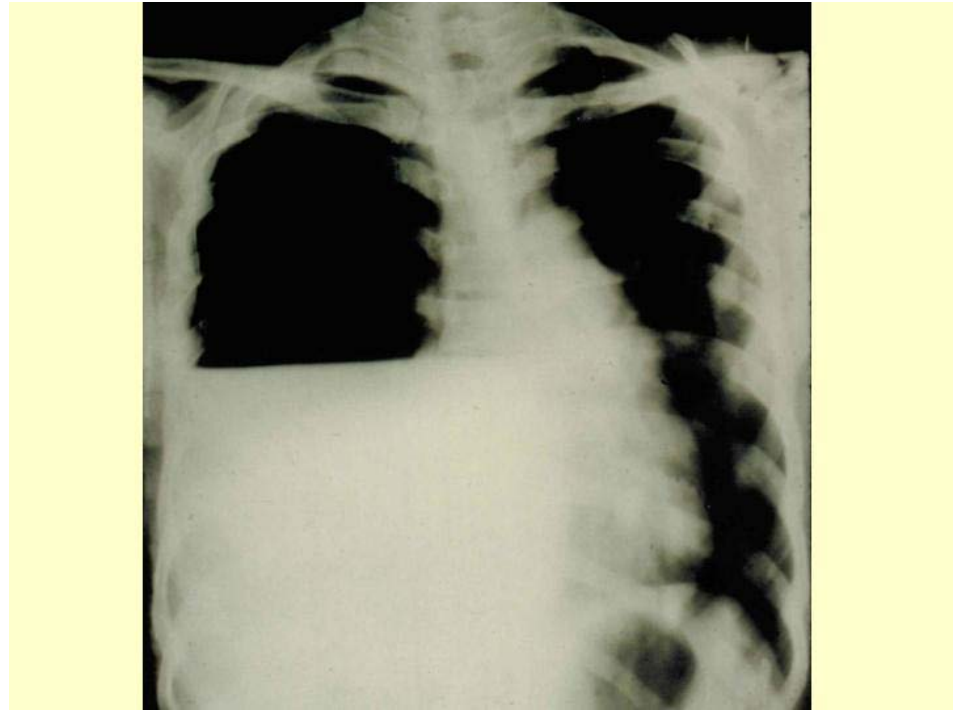
# Tuberculous Adenitis

- Usually unilateral
- Most common site is the cervical area
- Painless swelling - initially discrete then matted
- Fistula and sinus formation
- Node aspirate using fine needle (FNA) and node biopsy for both histology and culture are useful diagnostic procedures



# Tuberculous Pleural Effusion

- This was uncommon in the pre-HIV era but is now very common
- Pleuritic chest pain
- Shortness of breath whose degree depends on amount of effusion
- Cough is almost always present



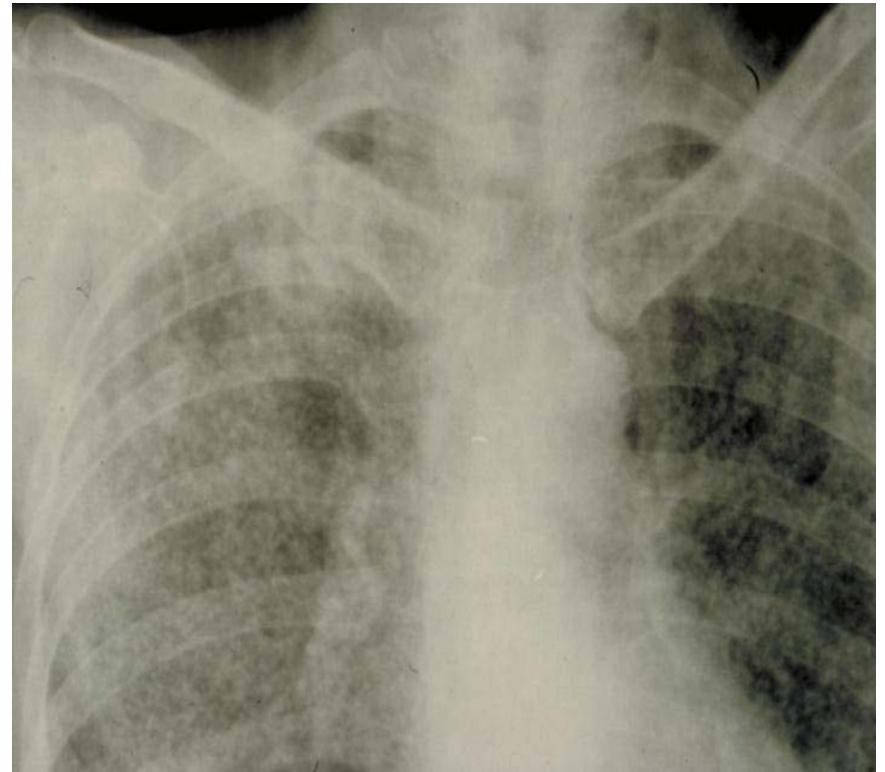
# Tuberculous Pleural Effusion (cont.)

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- Physical examination - require a reasonable degree of clinical skill
- Disturbance of respiratory rate
- Deviation of mediastinal structures depending on size of the effusion – usually there is a shift away from the fluid
- Stony dullness to percussion
- Reduced breath sounds
- A Chest X-ray with fluid level will confirm diagnosis
- Thoracocentesis – amber colour, high protein, high lymphocytes count

# Miliary Tuberculosis

- A result of spread by blood
- Presents classically as pyrexia of uncertain cause
- Large liver and spleen common
- Choroid tubercles on fundoscopic examination
- Miliary lesions on chest x-ray



# Tuberculous Meningitis

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- There is an increasing frequency with HIV
- Chronic headache
- Gradual change in mental status
- When Meningeal signs and craniopathies occur, the prognosis is poor
- Prognosis worsens with increasing delay in diagnosis – perform lumbar puncture with the slightest suspicion.



# Tuberculous Meningitis (cont.)

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- **A lumbar puncture should be done and CSF parameters that are diagnostic include:**
  - High cell count- lymphocytes
  - High protein
  - Low sugars

# How to diagnose TB in children

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- History taking and physical examination is the “gold standard” to diagnosing TB in a child. The following history can guide you:
- Cough of 2 or more weeks
- History of contact or living with active TB case
- Unexplained fever
- Failure to thrive (poor growth)
- Paediatric score chart may be helpful

# Key features suggestive of TB in children

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- The presence of three or more of the following should strongly suggest a diagnosis of TB in a child:
  - chronic symptoms suggestive of TB
  - physical signs highly suggestive of TB
  - a positive tuberculin skin test
  - chest X-ray.

# **Factors that may cause delay in TB diagnosis**

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- **Cost (preliminary tests before TB is suspected)**
- **Distance to the health centre**
- **Stigma**
- **Patient's preference for private health workers, pharmacists, traditional healers and prayers before seeking treatment**
- **Barriers in communication between HCWs and clients**
- **Ignorance of the facts on TB**

# Important notes on cough and TB diagnosis

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- Coughs that are caused by bacteria other than TB respond to antibiotics.
- Other coughs respond to cough suppressants or antihistamines.
- Coughs due to TB persist despite these remedies and need specific treatment.
- The test and treatment for TB is free in government, mission, and many recognised institutions run by NGOs
- Early diagnosis and prompt treatment is very important in cutting the chain of transmission.
- Sputum smear microscopy is the most useful and cost-effective diagnostic tool in Southern Sudan. It is possible to detect most smear positive cases of pulmonary TB using sputum smear microscopic examination in your nearest facility.

# Classification of TB patients for registration

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- **A new case (N)** - A patient who has never had treatment for tuberculosis OR who has taken anti-tuberculosis drugs for less than 1 month only.
- **Relapse (R)** - A patient previously treated for tuberculosis that has been declared cured OR treatment completed, AND is diagnosed with bacteriologically positive (smear or culture) tuberculosis.
- **Treatment after Failure (TAF)** - A patient who is started on a retreatment regimen after having failed previous treatment. Sputum was positive at month 5 or later while on TB treatment.
- **Return (treatment) after default (RAD)** - A patient who returns to treatment, positive bacteriologically, following interruption of treatment for 2 months or more.
- **Transfer – in (TI)** - A patient who has been transferred from another tuberculosis register to continue treatment.
- **Other (O)** - Any tuberculosis patient who does not fit in one of the definitions above.

# Treatment of TB

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# Aims of TB Treatment

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- To cure patient of TB
- To prevent death from TB
- To decrease TB transmission
- To reduce TB relapse/recurrence
- To prevent drug resistance



# Treatment of TB

## Basic Principles

- Never use single drugs
- Always use drugs in combinations – using Fixed Dose Combinations (FDCs)
- Drug dosage is calculated based on weight
- Drug intake should as far as possible be directly observed.
- Patients do not need hospital admission.
- Ensure the entire 6 or 8 months treatment is taken
  - use treatment supporters, village health volunteers, CHWs and family members.

## TB Drugs commonly used

- **H – Isoniazid**
- **R - Rifampicin**
- **Z – Pyrazinamide**
- **E – Ethambutol**
- **S - Streptomycin**

**FDCs – HRZE, HRZ, RH, RHE, EH**

# Response of HIV/TB to Treatment

Response	HIV – TB Patients	HIV + TB Patients
Clinical Response to Treatment	Same	Same
Average Weight Gain		Less
Case Fatality Rate		Higher
Recurrence Rate of TB		Higher
Side Effects of Drugs		Common

# TB treatment/drugs & monitoring

	Phase 1	Phase 2	Sputum follow up
<b>New cases SMP adults</b>  <b>Total of 6 months</b>	RHZE for 2 months	RH for 4 months	End of month 2 Can be done at beginning of month 5 and beginning of month 6 to avoid missing the patients after completing drugs.
<b>Retreatment SMP adults</b>  <b>Total of 8 months</b>	SRHZE for 2 months, continue RHZE for 1 more month	RHE for 5 months	End of month 3. Can be done at beginning of month 5 and beginning of month 8 to avoid missing the patients after completing drugs.
<b>New cases smear negative adults, EPTB adults &amp; all children</b>  <b>Total of 6 months</b>	RHZE for 2 months	RH for 4 months	No follow up sputum. Monitor patient clinically

# Dosage recommendations for the treatment of TB in children and adults.

Drug	Daily dose in mg/kg (Maximum dosage)	
	Children	Adults
<b>Isoniazid (H)</b>	10-20 (300 mg)	5 (300 mg)
<b>Rifampicin (R)</b>	10-20 (600 mg)	10-20 (600 mg)
<b>Pyrazinamide (Z)<sup>2</sup></b>	15-30 (2 g)	15-30 (2 g)
<b>Ethambutol (E)<sup>3</sup></b>	15-25	15-25
<b>Streptomycin (S)</b>	20-40 (1 g)	15 (1 g)

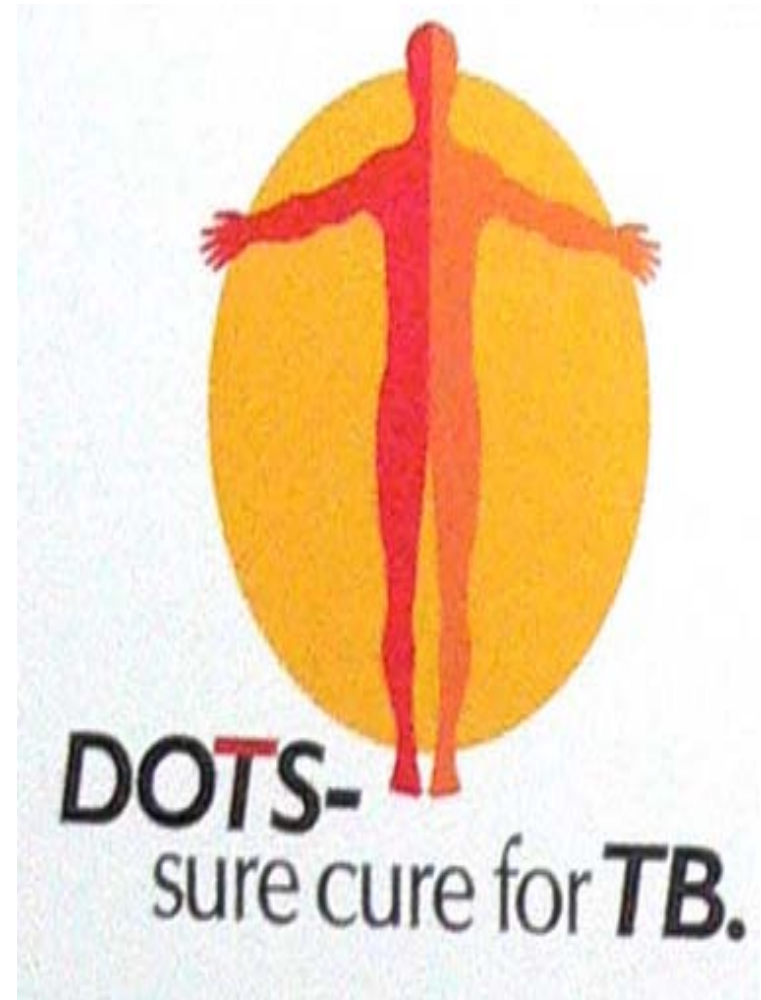
# When using the TB drug kit: the patient packs, ensure that:

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- Entire treatment for the individual patient is provided in a “pack”
- Before allocating a pack to the patient determine where the patient would like to receive treatment
- If patient is likely to move to another facility do not allocate a pack but use drugs from the supply box

# Anti-TB Drug Patient Packs (cont.)

- If the patient is likely to remain in the facility allocate a pack, label the pack with the patient's name. Help patient identify supporter.
- Determine the dose (number of tablets to be taken daily) of the drugs in the intensive phase / continuation phase and take out extra- blisters out of the pack as instructed in the pack insert.
- The strategy of using 6 or 8 month regimen using DOT is called DOTS (Directly observed treatment short course i.e. short period)
- Do not give patients the entire pack to take home nor take to another facility



# Taking precautions with TB treatment

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- **Children**

- Remember to take weight for correct dosages.
- Child's dose is NOT half adult dose!!!

- **Pregnant mothers**

- Drugs may affect the unborn baby.
- Mother should be treated.
- Mother should breastfeed normally, no harm.

- **People with TB and HIV at the same time**

- treat TB and manage HIV

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# **Side effects of anti-TB drugs**



# Major Side Effects

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## **ISONIAZID**

- Hepatitis
- Peripheral neuropathy
- Drug interaction – anti epileptics

## **RIFAMPICIN**

- Hepatitis
- Colors red, body fluids
- Drug Interaction –ARV'S, pills, warfarine, insulin

# Major Side Effects (cont.)

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## **PYRAZIMIDE**

- Liver damage
- Gouty like arthralgia

## **ETHAMBUTOL**

- Optic Toxicity – red/green color blindness

## **STREPTOMYCIN**

- Vestibulo-cochlea damage – deafness

# Managing Drug Toxicities

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## Peripheral Neuropathy

- Usually due to Isoniazid
- May be potentiated by other neurotoxic drugs (DDI,d4t), alcoholism, metabolic disease (diabetes), malnutrition and infections
- Rarely severe enough to require drug withdrawal

# Managing Drug Toxicities (cont.)

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## Peripheral Neuropathy (cont.)

- Preventable with low dose pyridoxine (12.5-25mg daily)
- Treated with high dose pyridoxine (100-150mg daily)
- Relief of symptoms:
  - analgesics
  - Tri-cyclic antidepressants (amitriptyline, nortriptyline)
  - Anticonvulsants (carbamazepine, phenytoin)

# Managing Drug Toxicities (cont.)

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## Anti-TB drug induced hepatitis

- All anti-TB drugs capable of causing this
- Elevation of liver enzymes universal in the first weeks of treatment
- Overt liver disease – temporarily withdraw drugs until overt disease clears
- Reintroduce drugs sequentially or all, once overt disease clears
- Exclude other causes of hepatitis where possible (the hepatitis viruses-A,B,C)

# Managing Drug Toxicities (cont.)

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## Cutaneous hypersensitivity reactions

- This used to be common in the era of thiacetazone toxicity in HIV but may be caused by any of the TB drugs
- Common in HIV infected patients
- Usually occurs within about two or more weeks after initiating therapy
- Antihistamines, steroids will help

# Managing Drug Toxicities (cont.)

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## Other adverse reactions

- Nausea and vomiting
  - Very common
  - Anti-emetics given prior to drug administration
  - Take drugs after meals
- Optic neuritis due to ethambutol
  - Confirm with ophthalmic review where possible.
  - Warn all patients who will receive ethambutol
  - Never give ethambutol again if this adverse effect is suspected or confirmed. Damage is usually irreversible

# Why take TB medicines regularly?

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- Bacteria die very slowly, require about 6 months to die all.
- After a few weeks patient start feeling well
- TB medicines need to be taken till completion even if there are no more disease symptoms or patient is feeling better.
- Failure to do this, resistance may develop that is more difficult to treat, longer time to treat and more serious side effects.



# Adherence to TB treatment

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## Why is adherence important?

- It helps to reduce disease transmission.
- It helps to reduce cases of TB relapses.
- It helps to increase cure rate.
- It helps to reduce defaulter rate.
- It helps to reduce mortality among TB patients.
- It helps to reduce the emergence of drug resistance (multidrug-resistant strains).

# The role of DOT in TB treatment

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## Brain storming session

- What is DOT?
- How can we help patients complete treatment? – List all responses on flip chart
- Revise responses on previous group work on consequences of not completing or irregularly taking TB treatment.

# Benefits of DOT

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- The patient is treated at a convenient time and location acceptable to patient and supporter
- The supporter reminds patient to take treatment minimizing risk of forgetting and encourages persistence to completion
- Supporter observes progress and watches side effects while also answers patient's questions

# Games to help you understand adherence and the role of CHW and treatment supporter

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Three groups to do in turns as others observe.  
1 game per group. Introduce the games from the facilitator's manual

- The random box/card/blindfolding

Use the outcomes to explain DOT and the role of the CHW and village health volunteer as supporters to ensure adherence.

# How to ensure adherence and the consequences of non-adherence

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- It is important for people with active TB to complete the full treatment to avoid developing drug resistance. This might make it difficult for the TB disease to be cured.
- Supervision of drug swallowing by the village health volunteer and the family member should be continued throughout the full duration of treatment.
- People may find it difficult to take anti-TB drugs for a long period of time, but a well-supervised programme can help them adhere to the treatment regimen by encouraging them.
- When drugs are not correctly taken or the full course not completed, the TB germs get used to the inadequate dose of the drugs and therefore become resistant. Drugs to treat resistant type is expensive and not readily found.
- To prevent MDR/XDR TB, it is recommended that all TB patients' treatment be supervised to ensure adherence. Patients should also take charge of their own lives and ensure completion of treatment as prescribed.

# Monitoring treatment

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- All Patients Should be monitored both clinically and bacteriologically to assess their response to therapy.
- Document all adverse drug reaction.
- Record all medication given and bacteriological response.
- For PTB+, Follow up smears should be done at month 2. If still positive repeat at month 3.

# Monitoring and recording cont...

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- If smear still positive at month 5, do Drug Susceptibility Testing (DST) and culture. Start retreatment.
- Routinely, follow up for all PTB+ patients, smear should be done at 2nd , 5th, and 6th month (8th if retreatment).
- For Smear negative evaluation should be done clinically and by observation.

# Defaulter tracing

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## **Group work – 30 minutes. All groups to do the same exercise:**

- Who is a defaulter in normal daily life? Give example
- When should we consider a TB patient to be a defaulter?
- What are the common reasons that make patients default from treatment?
- How can we prevent defaulting? What can you do as a HCW to: 1) prevent default and 2) trace defaulters?
- How can we go about tracing a defaulter?
- Who should trace defaulters?



# Defaulting TB treatment

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- **TB patient defaulter** — Any TB patient who misses scheduled consecutive appointments twice during the intensive treatment phase or misses the second month's scheduled appointment during continuation.
- **Defaulter tracing of TB patient** — The process of identifying and locating patients who have stopped collecting /taking TB medication against medical advice.

# Why TB patients default

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- Long distance to treatment centers.
- Long duration of treatment.
- Large number of tablets required for treatment (pill burden).
- Adverse effects of TB drugs.
- Lack of adequate health education.
- Lack of support from community, family, and friends.
- Negative attitude of clinic staff towards patients.

# Who should trace defaulters

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Tracing of patients not adhering to treatment is the responsibility of everyone, *but specifically,*

- Health workers.
- Community health workers (CHWs).
- Village health volunteers
- Family members/community members.
- Administration e.g. county, *payam*, chiefs.

# How to identify and trace defaulters

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Defaulters can be identified by:

- Proper record keeping of the treatment register – regularly updated
- Maintaining a defaulter register with list of defaulters regularly compiled.
- Checking the appointment card (if not with the patient).
- Compiling details of defaulters from the health facility TB register that should include:
  - Name
  - Age
  - Sex
  - TB patient's number
  - The time when the patient started treatment
  - Physical address
- Trace the patient using the physical address provided.
- Provide health education and counsel the patient on the importance of adherence to TB treatment.
- Referring the traced patient to the health facility.
- Obtain feedback from the health facility on the patient. Compile report

# Games to explain default and defaulter tracing

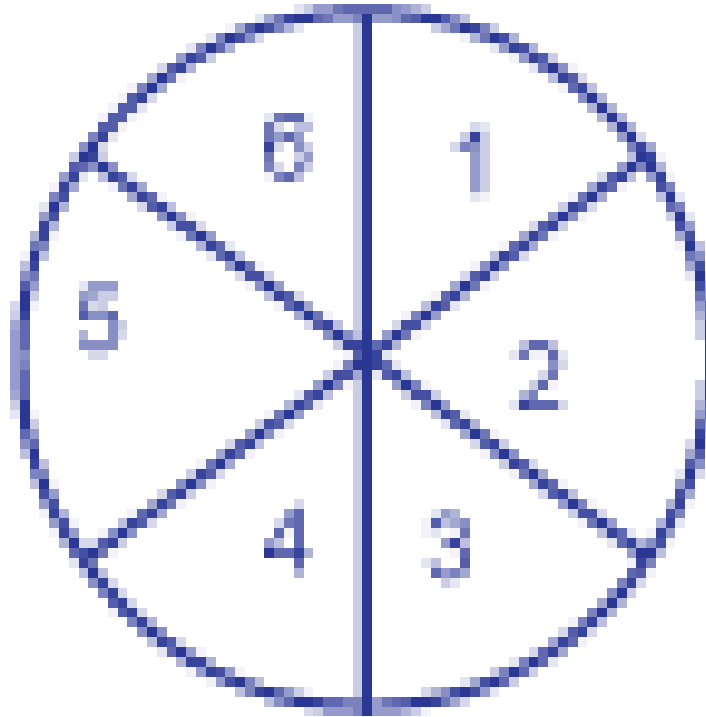
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- The coin game: Explain then draw
- The treatment river: Explain then draw

# Games to explain default and defaulter tracing

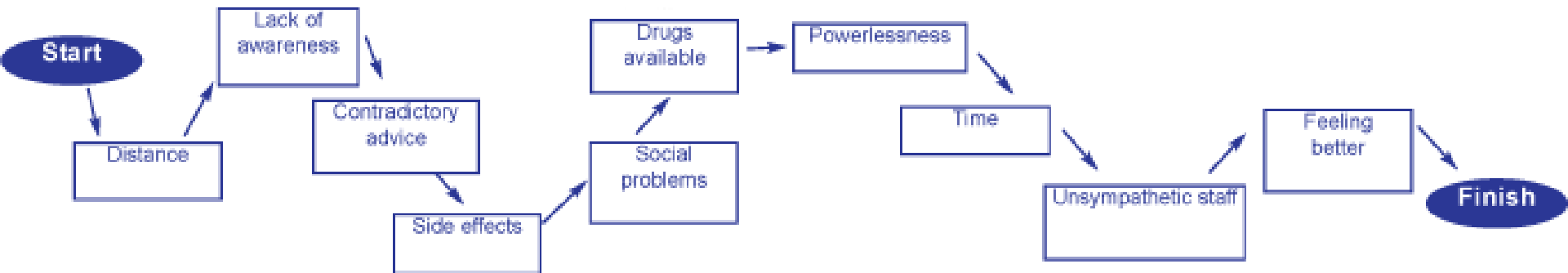
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The coin game:



# Games to explain default and defaulter tracing cont...

The TB treatment river:



# How to manage defaulters who return

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- Phase 1 (intensive ) – Returns within 28 days; health education, continue treatment, compensate missed days. Returns after 28 days; educate and restart treatment
- Phase 2 (continuation) – Returns within 28 days; educate, continue treatment, compensate missed days. Returns after 28 days, re-evaluate (sputum check), if positive give retreatment regime, do culture and DST



# Outcomes of TB treatment

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- **Cure**
- **Treatment completed**
- **Out of control**
- **Died**
- **Transfer out**
- **Treatment failure**

# Recording the outcomes of TB treatment

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- **Cure** - A patient who was smear positive at beginning of treatment and is smear negative at the end of treatment.
- **Treatment completed (TC)** – An initially SMP patient who completes the full course of treatment and has no sputum smear results at the end of the treatment. A smear negative patient who completes treatment does not have to do end of treatment smears. He/she will be considered TC at end. An EPTB who completes full course of treatment is also TC.
- **OOC** – A patient who defaulted from TB treatment and despite tracing efforts, was not returned to treatment. If found later, should be registered as a RAD and given new registration number.
- **Died** – A patient who dies while undergoing TB treatment regardless of the cause of death. If known cause other than TB, indicate in remarks column the actual cause e.g. accident but outcome remains “Died”.
- **Treatment Failure** – A patient who was sputum positive at beginning of treatment and is still smear positive at month 5 or later and is known to be adhering to TB treatment.
- **Transfer out** – A patient who moves from one control area to another to continue treatment there.

# Prevention of TB

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# Prevention classified into 2

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- Patient related actions
- Health worker and administrative related actions

# Measures Patients can use to Reduce TB Transmission

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## Patient education:

- Cover the mouth when coughing using piece of cloth
- Use sputum cups with lids
- Avoid coughing directly at anybody including the health worker
- Avoid spitting anyhow. Always spit into a container or piece of paper that can be disposed into a pit latrine or burnt.

# Measures for Health worker and administrators

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## The Role of BCG

- This is a vaccine for TB given at birth except when there is classical AIDS disease
- Protective of young children against disseminated and severe forms of TB e.g. TB meningitis, miliary TB, etc.
- People vaccinated with BCG may have positive reaction to Tuberculin skin Test (TST)
- BCG does not always protect people from TB infection or TB disease from occurring

# Other measures

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- **Prevention of TB Transmission in Congregate Settings**
  - **Health care settings**
  - **Prisons and remand**
  - **Other settings (cattle camps, army camps, schools)**
- **ACSM**

# How does ACSM contribute to TB control goals?

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- Case detection (we **increase awareness** of symptoms and **demand for services**; we help improve quality of client-provider interaction; we **influence laws and policies** that favour seeking treatment; we help **reduce stigma thus, improve on the cough-to-cure pathway**)
- Case cure (we improve patient knowledge about **adherence**; we help **reduce discrimination and stigma**; we influence laws and policies; we implement incentives; we influence social & family environment-DOT)



# What is the “Cough – to - Cure Pathway”?

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- It is an assessment and planning tool
- Developed by African Education and Development (AED) for Stop TB Partnership
- Developed in response to countries’ needs for ACSM model that analyze how to improve case detection and treatment compliance.

# What is new about this tool?

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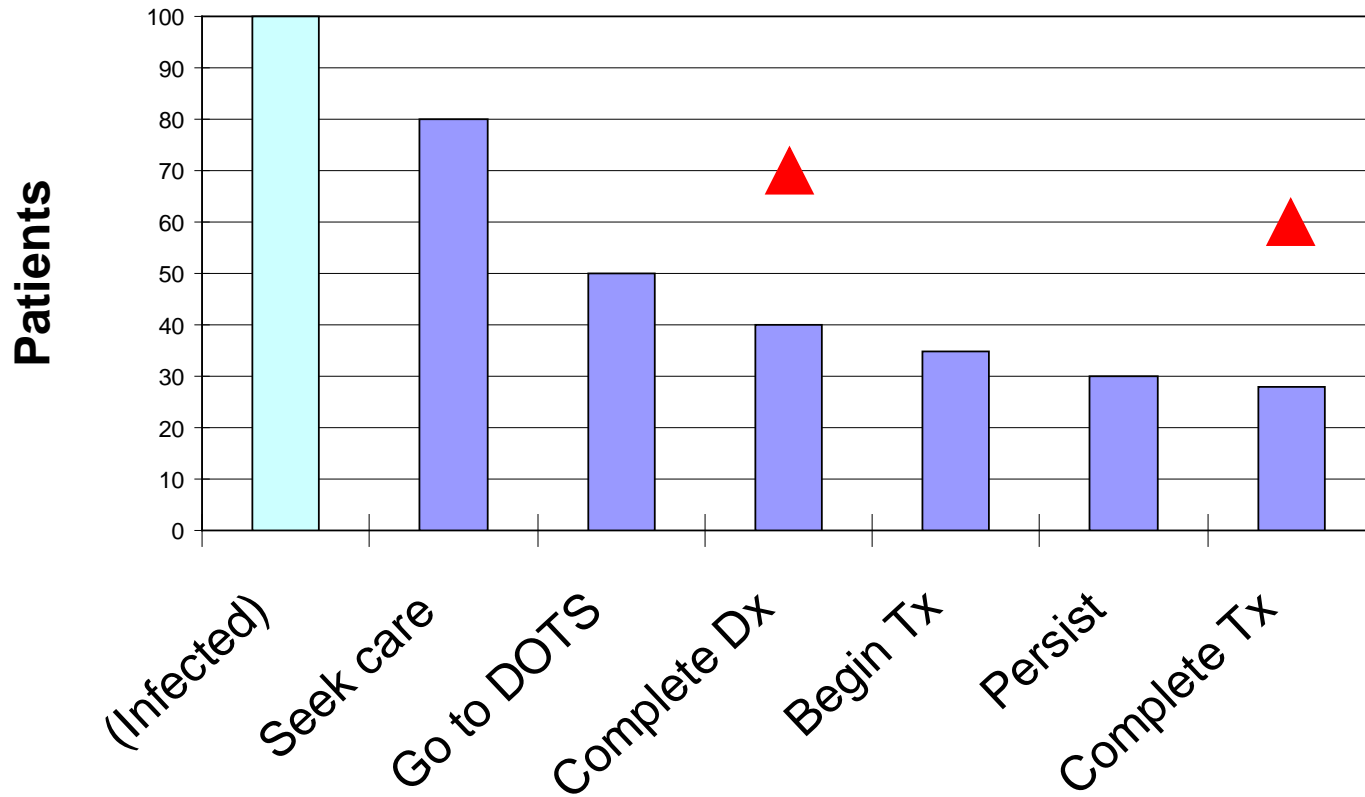
- Frame of reference
  - Think about communication by thinking about behaviors and analyzing behavioral problems
  - Behaviors instead of logistics and structure
- Focus
  - People (patients and providers)
  - Patient's point of view
- View of system
  - Enabling environment

# Ideal versus reality in TB care seeking behaviour

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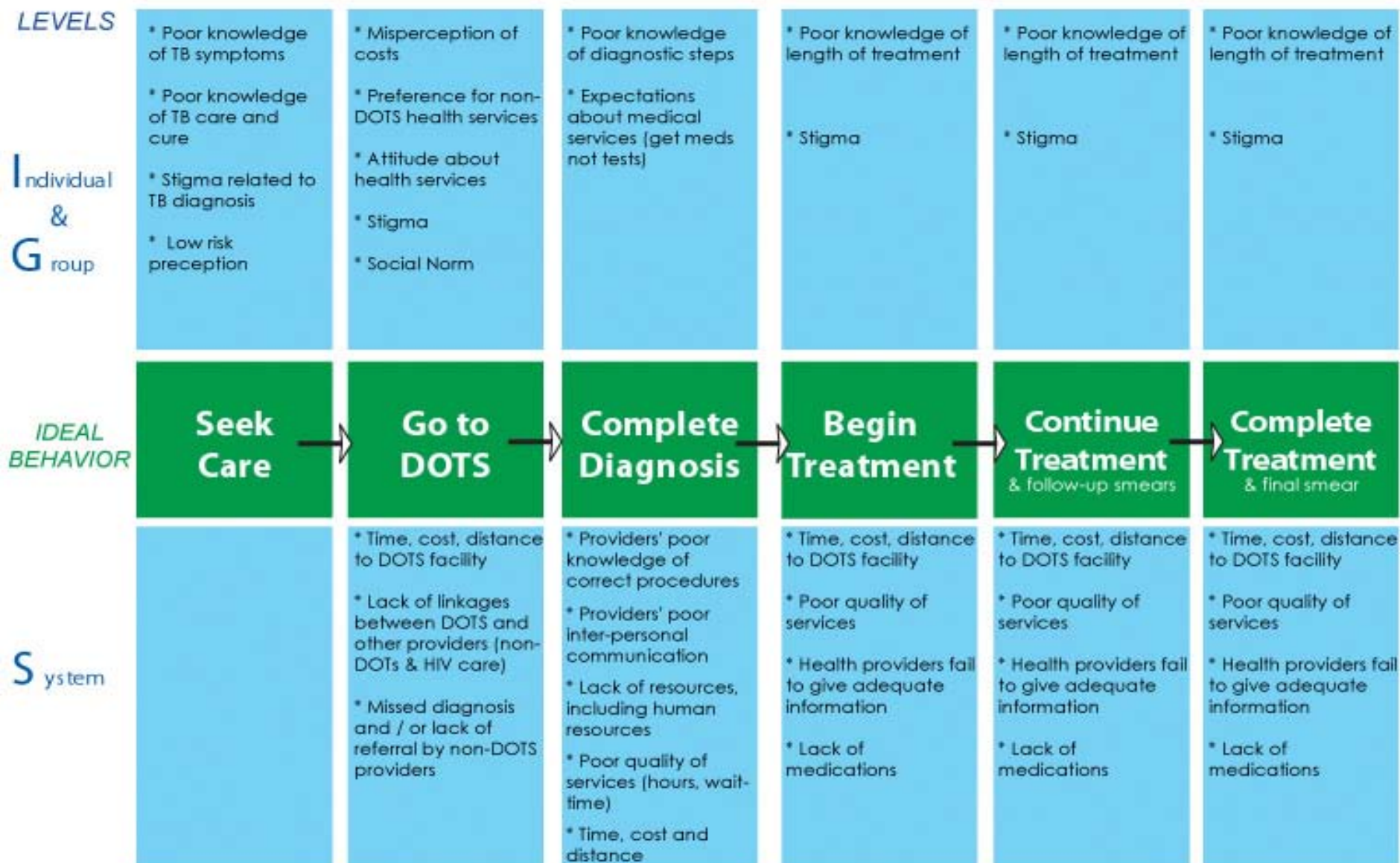
- In an ideal world, for every 100 infected people, all 100 would:
  - Seek timely care
  - Go to a DOTS facility either directly through referral
  - Be correctly diagnosed
  - Begin treatment
  - Persist with treatment until completion of course
  - Complete treatment
- These are the six steps that form the basic structure of the pathway
- As the following slide shows, things are far from ideal

# The reality of cough-to-cure pathway



# From Cough to Cure: A Path of Ideal Behaviors in Tuberculosis Control

## B A R R I E R S



# Applying the Pathway: 4 Steps

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1. Identify the steps that patients are not completing
2. Examine the reasons for non-completion at the individual, group and systems levels
3. Decide which barriers to address. Need to weigh relative importance of factors
4. Choose an intervention based on understanding of motivating factors, and likely effectiveness and impact

# Drug Resistant TB Disease.

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## Objectives.

- By the End of this session participants should be able to.
- Define MDRTB
- Classify MDRTB
- Diagnose
- Acquaint themselves with treatment
- Side effects
- Prevention

# Definitions in drug resistance.

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- Mono Drug Resistance
  - This is resistance to any one of the TB drugs
- Poly Drug Resistance
  - This is resistance to any two or more drugs, but not necessarily against both H and R, e.g. against S and H

**(These are less serious because they can be effectively treated with the cat I and II regimen, using first-line TB drugs)**



# M/XDR TB

- Multi Drug Resistant (MDR) TB refers to strains of the tuberculosis bacillus that are resistant to at least the 2 most efficacious drugs (R&H)
- Extensively Drug Resistant (XDR) TB refers to MDR TB and further resistance to a fluoroquinolone AND against one or more of the injectable drugs: kanamycin, amikacin, capreomycin i.e. refers to resistance to nearly all medicines used to treat TB disease
- Drug resistance is more common in people who:
  - Have spent time with someone with drug resistant TB disease
  - Do not take all their medicines as directed
  - Develop active TB disease again after having taken TB treatment (retreatment cases)
  - Come from areas where drug resistance is common

# Causes of MDR can be classified as:

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- **Providers:** inadequate regimen
  - Wrong dose/combination/duration
  - Guidelines (none, poor, not followed)
  - Training (none, poor, no follow up)
  - Poorly funded/managed NTP
- **Drugs:** inadequate supply or quality
  - Poor quality,
  - Loose instead of FDC – easy choice for patient when side effects occur
  - Stock outs
  - Penetration in the market, single drug therapy possible, money
- **Patients:** inadequate intake
  - No observation/poor DOT
  - Social/economical/cultural barriers
  - Substance dependency

# Diagnosis – Dependent on history

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- History of mono / single drug use /therapy of one month or more is best predictor of MDR
- Use of any second line drug?
- Proper history is key, but takes time – suspect in any reatreatment case or exposure to MDR patient
- **Action** – Do DST

# Treatment of M/XDR TB

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- Special medicines that are not readily available:
  - May cause more side effects
  - They are costly
  - Require closer observation by a specialist
  - Longer treatment than regular TB
  - Prognosis is poor compared to regular TB

# Treatment schedule for MDR TB

## Intensive phase

- Capreomycin IM injectable for 6 months
- Tabs Prothionamide
- Tabs Cycloserine
- Caps Ofloxacin
- +/- Tabs Ethambutol
- +/- Tabs Pyrazinamide
  - Treated as in-patient with strict DOT

## Continuation phase

- Tabs Prothionamide
- Tabs Cycloserine
- Caps Ofloxacin
- +/- Tabs Ethambutol
- +/- Tabs Pyrazinamide
  - 18 months (some countries now 12 months)
  - As out patient
  - Strict DOT by health worker

# Follow up of MDR TB on care.

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- Sputum conversion
  - Smears or cultures
  - Isolation – 2 negative smears / cultures
- Intensive phase
  - 6 months or 2 negative smears/ cultures
- Outcomes
  - Cured
  - Treatment completed
  - Died
  - Failed
- Outcomes analysis
  - Patients on register
  - Treatment outcomes
    - 24 and 36 months
    - 6 monthly

# Prevention of spread of MDR TB

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- Implement high quality DOTS.
- Detailed infection control measures should be put in place.
- Mopping out of MDR cases should be done wherever they occur
- MDR patient to spend much time out door and sleep in separate room
- Wear ordinary mask when receiving visitors. If N95 available it should be worn
- MDR patient should not mix with known HIV infected population.
- Practice cough etiquette
- Use sputum mug and dispose the sputum in pit latrine.

# Monitoring and evaluation for TB and HIV in Southern Sudan

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What do the following mean?

- Recording
- Reporting
- Indicator
- Monitoring
- Evaluation
- Data Quality Assurance (DQA)
- Quality Assurance (QA)/Quality Control (QC)
  - External = EQA = 12 slides
  - Internal = IQC



# Definitions of M&E terms

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**Recording** – *The practice of capturing data on patients management over time and across clinical sites. Information is either written directly on paper forms or entered into a computer*

**Reporting** – *The routine tracking (monitoring) of priority program management information and its intended aggregated patient outcome data (evaluation) at the facility, district, provincial and national level*

**Indicator** – *A variable or measurement used to assess progress towards stated goals*

# Importance of Recording and Reporting

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- Monitoring and evaluation by program managers at different levels
- Monitor patient's response to treatment
- Assess program performance
- Program planning
- Aid staff to provide adequate services to the individual patient
- Ensure patient quality of care, continuum of care, sharing of information with patient and transfer of information between health facilities
- Accountability

# Recording and reporting indicators

## Some key TB/HIV indicators

- HIV sero-prevalence among TB patients – HIV testing
- TB case finding among PLWHA
- Proportion of HIV infected TB patients receiving Cotrimoxazole
- Proportion of HIV infected TB patients receiving ARVs
- Proportion of HIV infected TB patients cured, completing TB treatment, defaulting, dying, out of control

NB: When all records and reports are verifiable and reproducible from all records, and all entries are correct, the data is said to be of good quality. So DQA is the process of verification of these data.