



MINISTRY OF HEALTH

MANAGEMENT OF TUBERCULOSIS IN CHILDREN

A HEALTH WORKER GUIDE



2015

Introduction

The Ministry Of Health has introduced new recommendations for the diagnosis, treatment, and prevention of Tuberculosis (TB) in children aged 0 - 14 years.

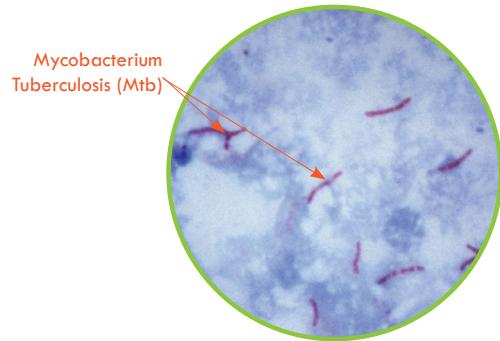
The purpose of this flip chart is to guide front line health workers in providing quality and standardized screening, diagnosis, treatment and prevention of TB in children according to the new recommendations.

This flip chart should be used at all health facility care points to identify and manage children with or at risk for TB.

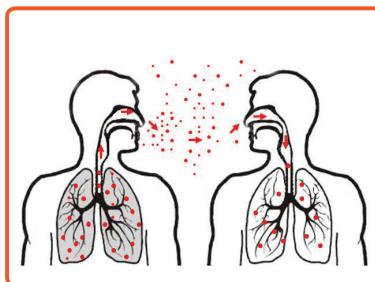
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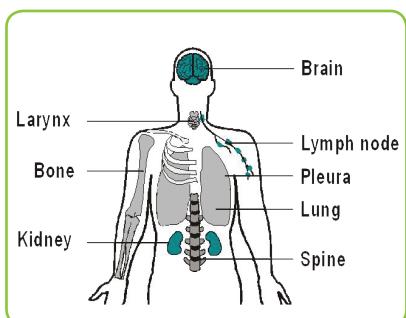
What is Tuberculosis (TB)?



→ TB is a disease caused by bacteria known as Mycobacterium tuberculosis (MtB).



→ TB is mainly airborne and is spread to children by adults, older children and adolescents who have TB of the lungs.

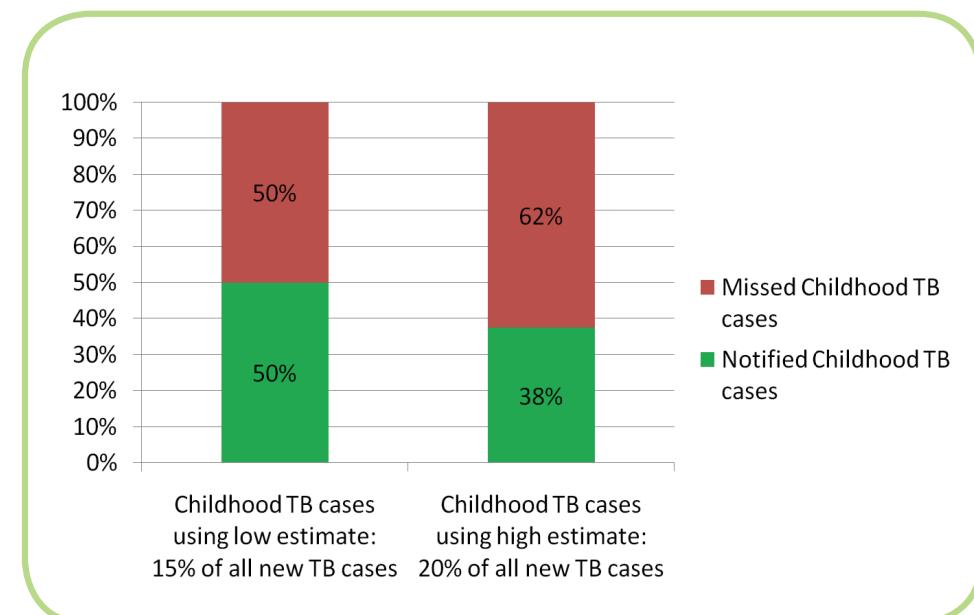


→ TB more commonly affects the lungs (pulmonary tuberculosis) but may affect organs other than the lungs (extra-pulmonary TB) such as lymph nodes, brain, abdomen, bones and spine.

Why should we emphasize Tuberculosis in children?

1. Children have a higher risk of developing TB, severe forms of TB, and deaths due to TB when exposed to someone with pulmonary TB (PTB).
2. More than half of children with TB in Uganda are missed (either not diagnosed or not reported)
E.g. Uganda notified 7.5% of all new cases of TB as children (2014), a figure which is far less than the predicted proportion of 15% - 20%.

Gap in TB case notification in children



Stages of Tuberculosis development in children

EXPOSURE

When a child spends time with someone who has pulmonary TB disease, then he or she is exposed



INFECTION

When the exposed child breathes in the TB bacteria and the bacteria remain dormant or sleeping, and the child remains well with no symptoms/ signs of TB, he or she has TB infection



DISEASE

When a child with TB infection becomes unwell with (develops) symptoms/ signs of TB then he or she has TB disease (Active TB)



Risk factors for Tuberculosis in children

Risk factors for TB infection

- Contact with a person who has active PTB
- Living in countries with a high TB burden such as Uganda
- High HIV rates in the community (HIV is associated with TB disease).

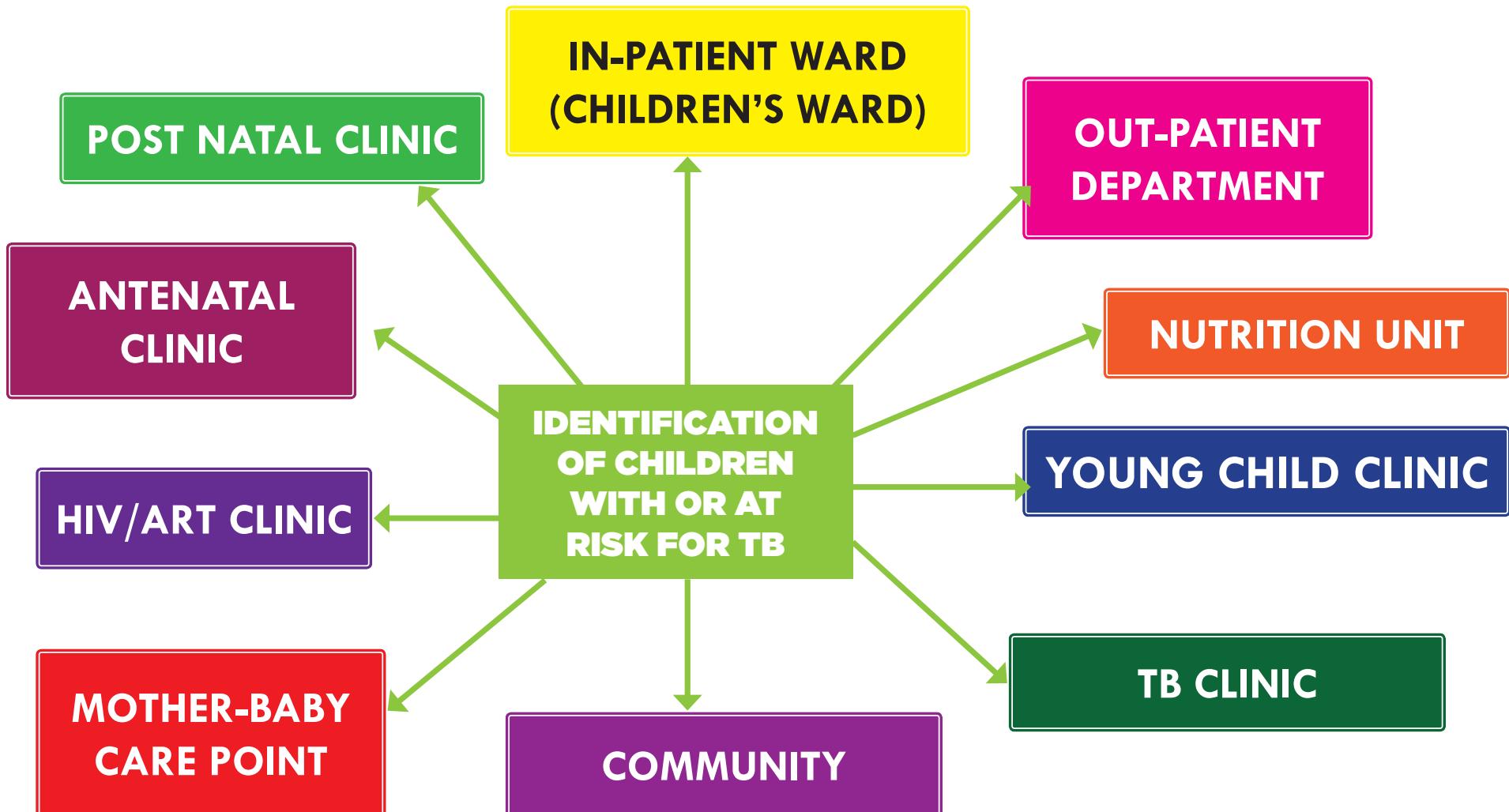
Risk factors for TB Disease

- Young age (especially less than 2 years)
- HIV infection
- Malnutrition
- Other immune suppressive conditions such as post measles disease and diabetes.

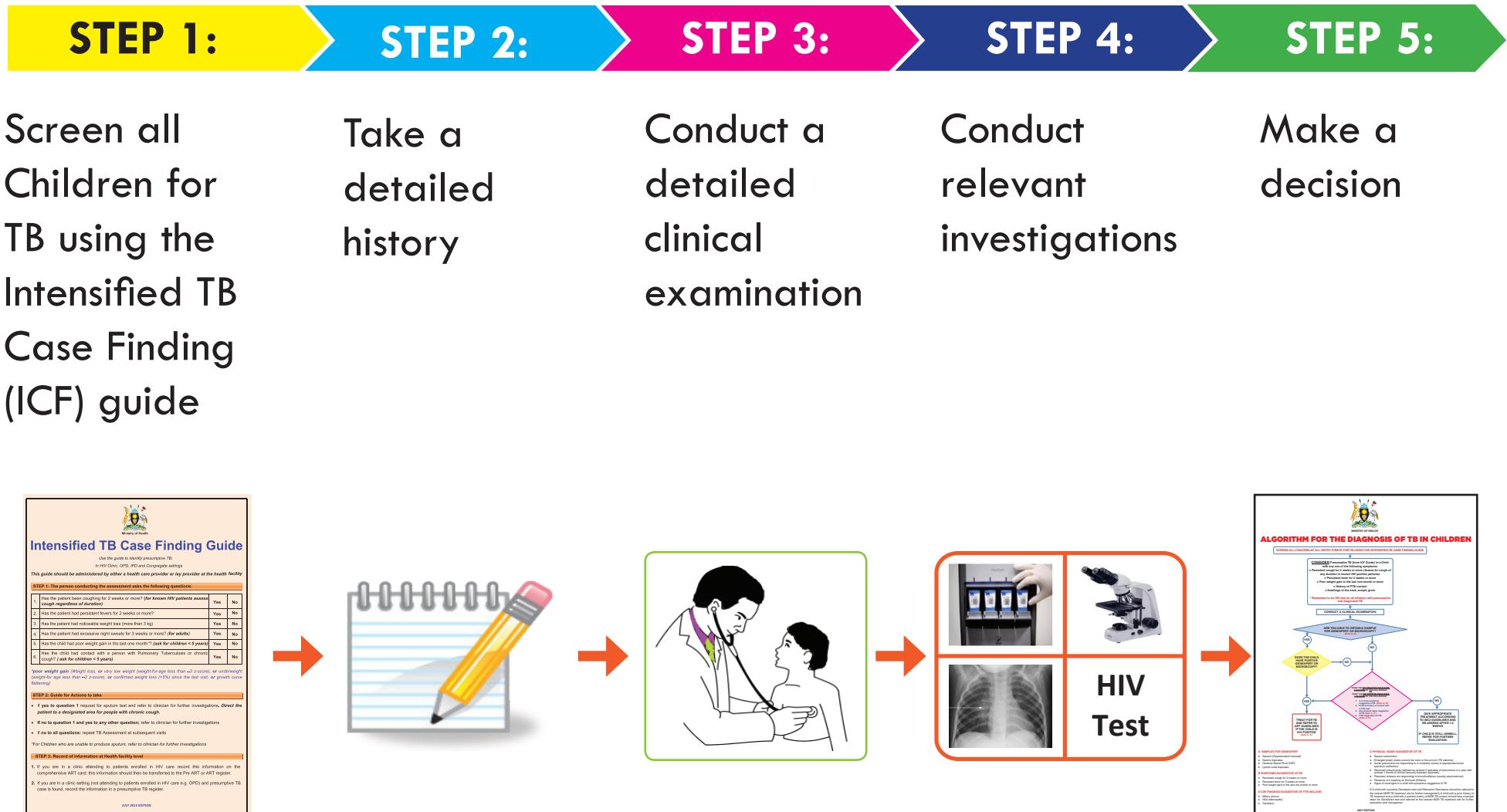
Risk factors for severe TB Disease

- Young age (especially less than 2 years)
- HIV Infection
- Lack of BCG vaccination.

Care points where children with or at risk for Tuberculosis are identified



Steps in assessing children for Tuberculosis



Common symptoms of Tuberculosis in children

Age	Pulmonary TB (PTB)	Extra Pulmonary (EPTB)
Neonate/ Newborn* (0 - 28 days)	<ul style="list-style-type: none"> - Lethargy - Poor feeding - Low birth weight - Non resolving pneumonia - Maternal history may include: TB, HIV, non resolving pneumonia 	<ul style="list-style-type: none"> - Disseminated TB (such as TB meningitis): Irritability, lethargy, reduced level of consciousness, convulsions, neck stiffness, bulging fontanelle
< 5 years*	<ul style="list-style-type: none"> - Persistent cough for 2 weeks or more (<i>Assess cough of any duration for HIV positive children</i>) - Persistent fever for 2 weeks or more - Weight loss or poor weight gain in the last one month or more - Painless large swellings in the neck or armpits (more common in the neck) - History of TB contact 	<ul style="list-style-type: none"> - TB adenitis: Painless swelling in the neck or armpit (<i>with or without discharging sinus</i>) - TB meningitis: Headache, irritability, abnormal behaviour, vomiting (<i>without diarrhoea</i>), lethargy, reduced level of consciousness, convulsions, neck stiffness, bulging fontanelle - Miliary TB: Non specific symptoms such as lethargy, fever, wasting
≥ 5 years*	<ul style="list-style-type: none"> - Persistent cough for 2 weeks or more (<i>Assess cough of any duration for HIV positive children</i>) - Persistent fever for 2 weeks or more - Weight loss or poor weight gain in the last one month or more - Painless swellings in the neck or armpits (more common in the neck) - History of TB contact - Excessive night sweats - Coughing out blood (Haemoptysis) - Chest pain 	<ul style="list-style-type: none"> - Abdominal TB: Abdominal swelling, abdominal masses - TB Spine: Deformity of the spine, lower limb weakness, paralysis, inability to walk - Bone and Joint TB: Swelling of end of long bones (<i>usually painless</i>), difficulty in movement - Pericardial TB: Difficulty in breathing, easy fatigability, palpitations, chest pain

* A child may present with:-

1. Any of the above symptoms
2. PTB or EPTB or both PTB and EPTB. (*Younger children are more at risk of EPTB*)

Step 1: Screen all children for Tuberculosis using the Intensified TB Case Finding Guide



Intensified TB Case Finding Guide

Use the guide to identify presumptive TB:
In HIV Clinic, OPD, IPD and Congregate settings

This guide should be administered by either a health care provider or lay provider at the health facility

STEP 1: The person conducting the assessment asks the following questions:

1. Has the patient been coughing for 2 weeks or more? (for known HIV patients assess cough regardless of duration)	Yes	No
2. Has the patient had persistent fevers for 2 weeks or more?	Yes	No
3. Has the patient had noticeable weight loss (more than 3 kg)	Yes	No
4. Has the patient had excessive night sweats for 3 weeks or more? (for adults)	Yes	No
5. Has the child had poor weight gain in the last one month*? (ask for children < 5 years)	Yes	No
6. Has the child had contact with a person with Pulmonary Tuberculosis or chronic cough? (ask for children < 5 years)	Yes	No

*poor weight gain (Weight loss, or very low weight (weight-for-age less than -3 z-score), or underweight (weight-for age less than -2 z-score), or confirmed weight loss (>5%) since the last visit, or growth curve flattening)

STEP 2: Guide for Actions to take

- If yes to question 1 request for sputum test and refer to clinician for further investigations. *Direct the patient to a designated area for people with chronic cough.*
- If no to question 1 and yes to any other question; refer to clinician for further investigations
- If no to all questions: repeat TB Assessment at subsequent visits

**For Children who are unable to produce sputum, refer to clinician for further investigations*

STEP 3: Record of Information at Health facility level

- If you are in a clinic attending to patients enrolled in HIV care record this information on the comprehensive ART card; this information should then be transferred to the Pre ART or ART register.
- If you are in a clinic setting (not attending to patients enrolled in HIV care e.g. OPD) and presumptive TB case is found, record the information in a presumptive TB register.

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Note: -

- A child with a “yes” to the any of the above questions in step 1 of the ICF guide, is considered to have **Presumptive TB** and should be evaluated.
- Children with large painless swellings in the neck or armpit may have TB and should be evaluated for it.
- Children who have symptoms persisting for >2-3 weeks after appropriate therapies for symptoms may have TB and should be evaluated for it. Examples of appropriate therapies include broad-spectrum antibiotics for cough; anti-malarial treatment for fever; or nutritional rehabilitation for malnutrition.

Step 2: Take a detailed history

A detailed history provides additional information on the presenting symptoms, risk factors, and complications.

ASK the following additional questions for any child who has presumptive TB:-

1. If the child has been coughing for 2 weeks or more:-
 - Does the child have difficulty in breathing?
2. If the child has a persistent fever for 2 weeks or more:-
 - Is the fever associated with convulsions?
3. If the care giver is not sure whether the child has lost weight:-
 - Has the child lost appetite or been eating less than usual?
 - Have the child's clothes become too loose?
4. If the child has a history of TB contact:-
 - Is the person on TB treatment?
5. Does the child have any swellings in the neck or armpits? ***This could be a sign of TB of the lymph nodes***
6. Does the child have any swelling or pain along the back? ***This could a sign of TB spine***
7. Has the child been playing as much as usual? ***Reduced activity in the presence of the above symptoms may be suggestive of TB.***
8. Does the child live with anyone who has a persistent cough? ***Persistent cough may be a sign of undiagnosed TB.***
9. Does the care giver know the child's HIV status?
 - If the child is HIV infected: Is the child on ART?
10. Did the child receive BCG vaccine?

Step 3: Conduct a detailed clinical examination

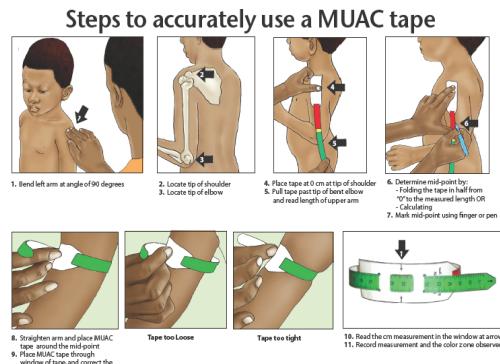
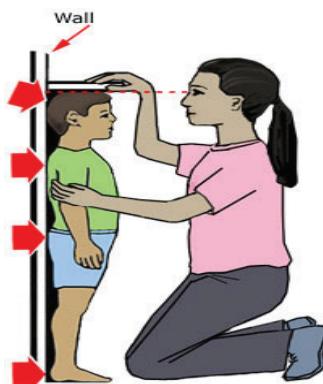
There are no physical signs that confirm TB: However, there are signs that suggest TB or its complications.

- General examination:-

- i) Measure the child's temperature.
- ii) Assess the child for lethargy, lack of interest, reduced level of consciousness.
- iii) Assess the child's developmental milestones (refer to the child health card or mother child passport).
- iv) Check for painless swellings in the neck or armpit.

- Nutritional Assessment:-

- i) Take the child's weight and height.
- ii) Measure the child's Mid Upper Arm Circumference (MUAC).
- iii) Classify the child's nutritional status according to the national guidelines.



Detailed clinical findings

- Systemic examination:-Assess for the following clinical findings.

System	Clinical findings
Respiratory System (Pulmonary TB and Pleural TB) Note: Normal findings on respiratory examination <u>DOES NOT EXCLUDE TB</u>	<ul style="list-style-type: none">- Look and Count the breaths in one minute (refer to IMCI guidelines)- Assess for chest indrawing (refer to IMCI guidelines)- Listen for crepitations in the lungs- Listen for wheezing especially on one side and not responding to treatment with bronchodilators
Lymph Nodes (TB Adenitis)	<ul style="list-style-type: none">- Palpate for swollen lymph nodes in the neck and armpit (Lymph node enlargement due to TB is painless, asymmetrical and grouped together)
Musculoskeletal System (Bone and Joint TB)*	<ul style="list-style-type: none">- Look for swollen joints- Assess for tenderness (pain) in the joints and spine
Musculoskeletal System (TB spine)*	<ul style="list-style-type: none">- Assess for swelling or deformity or tenderness along the back (Gibbus)- Examine for weakness in the legs
Abdomen (Abdominal TB)*	<ul style="list-style-type: none">- Examine for an enlarged abdomen which might be due to fluid or masses, hepatosplenomegaly
Cardio-vascular System (TB Pericarditis)*	<ul style="list-style-type: none">- Look for signs of cardiac failure e.g. (swollen ankles, swollen veins in the neck, breathlessness)- Listen for distant heart sounds- Feel for the apex beat (It will be difficult to palpate)
Central Nervous System (TB Meningitis) *	<ul style="list-style-type: none">- Examine for lethargy, abnormal behaviour, reduced level of consciousness, convulsions, neck stiffness, photophobia

* Refer to Hospital for further management

Step 4: Conduct relevant investigations

A. GeneXpert Test

- It tests for the presence of TB bacteria and rifampicin resistance. It is the preferred initial TB diagnostic test for children with presumptive TB.
 - If the GeneXpert test is available on site, DO GeneXpert.
 - If the GeneXpert test is not available on site, DO smear microscopy and refer another sample for GeneXpert through the available sample transportation system (HUB system).
- A negative GeneXpert test **DOES NOT** exclude TB.
- Samples that can be used for GeneXpert testing include:-
 - a) **Sputum (expectorated or induced)**
 - b) **Aspirates (gastric, nasopharyngeal, lymphnode)**
 - c) **Cerebral spinal fluid**
- Samples should be tested within 48 hours (2 days) if stored at room temperature.
- Refrigerate the sample at 2 – 8°C if it is not going to be tested immediately (for at most of 7 days).

A negative GeneXpert test DOES NOT exclude TB

B. Sputum Microscopy

- Do sputum microscopy as the initial diagnostic test in health facilities that do not have access to onsite GeneXpert test and refer another sample for GeneXpert through the available sample transportation system (HUB system)

A negative microscopy test DOES NOT exclude TB

C. Radiography

- Do an X-ray if the services are available.

Chest X-ray findings suggestive of TB include hilar adenopathy, miliary picture, cavitation, and extensive parenchymal abnormality

D. Abdominal Ultrasound scan

- Do an abdominal ultrasound scan for children with presumptive abdominal TB.

E. HIV Test

- Do **HIV TEST** for all children with presumptive and diagnosed TB as part of routine care.

All children with presumptive and diagnosed TB SHOULD HAVE an HIV test as part of routine care

E: Tuberculin Skin Test (Mantoux Test)

- The Mantoux test can be used as supporting evidence for TB exposure in health facilities that have access to it.
- A TST is considered positive when the reading is:-
 - >= 5 mm in HIV infected children or severely malnourished children
 - >= 10 mm in other children regardless of BCG vaccination status

A negative mantoux test DOES NOT exclude TB

CBC and ESR are non specific tests and ARE NOT required for the diagnosis of TB in children

Specific investigations for the diagnosis of EPTB

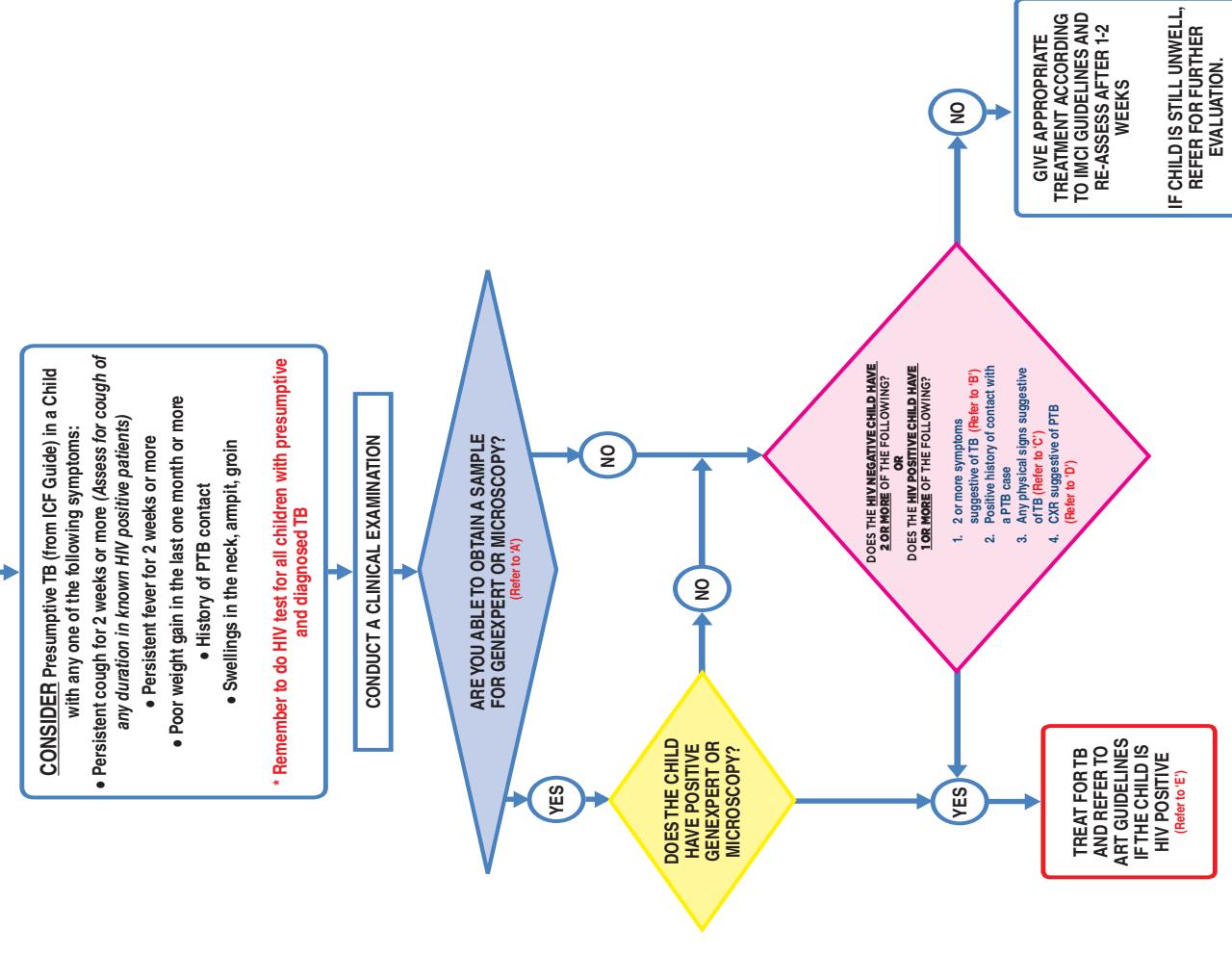
Site of EPTB	Type of Investigation		
	Laboratory Investigations		Radiological Investigations
	Specimen	Tests	
TB adenitis	Lymph node biopsy or fine needle aspirate	ZN or FM Microscopy or GeneXpert on fine needle aspirate Histology on lymph node biopsy	Not Applicable
Miliary TB	Not Applicable		CXR
TB meningitis*	Cerebrospinal fluid (CSF)	CSF analysis GeneXpert on CSF	Cranial ultrasound scan for younger children
Pleural TB	Pleural fluid	Pleural fluid analysis [#]	CXR
Abdominal TB*	Ascitic fluid	Ascitic fluid analysis [#]	Abdominal ultra sound scan
TB spine*	Not Applicable		Spinal X-ray
Bone and Joint TB (excludes TB spine)*	Joint tap	Joint fluid analysis [#]	X-ray of affected bone and/or joint
TB pericarditis *	Pericardial fluid	Pericardial fluid analysis [#]	CXR Cardiac echo

*Refer the child to a hospital for investigations and further management

[#]GeneXpert is not recommended for Pleural fluid, Ascitic fluid, Joint fluid and Pericardial fluid

ALGORITHM FOR THE DIAGNOSIS OF TB IN CHILDREN

SCREEN ALL CHILDREN AT ALL ENTRY POINTS FOR TB USING THE INTENSIFIED TB CASE FINDING GUIDE



A SAMPLES FOR GENEXPERT

- Sputum (Expectorated/ Induced)
- Gastric Aspirates
- Cerebral Spinal Fluid (CSF)
- Lymph node Aspirates

B SYMPTOMS SUGGESTIVE OF TB

- Persistent cough for 2 weeks or more
- Persistent fever for 2 weeks or more
- Poor weight gain in the last one month or more
- Military picture
- Hilar adenopathy
- Cavitation

C PHYSICAL SIGNS SUGGESTIVE OF TB

- Severe malnutrition
- Enlarged lymph nodes around the neck or the arm pit (TB adenitis), Acute pneumonia not responding to a complete course of appropriate broad spectrum antibiotics.
- Recurrent pneumonias (defined as at least 2 episodes of pneumonia in a year with at least 1 month of clinical recovery between episodes)
- Persistent wheeze not responding to bronchodilators (usually asymmetrical).
- Presence of a swelling on the back (Gibbus)
- Signs of meningitis in a child with symptoms suggestive of TB

D CXR FINDINGS SUGGESTIVE OF PTB INCLUDE:

- A child with a positive GeneXpert test and Rifampicin Resistance should be referred to the nearest MDR TB treatment site for further management; A child with a prior history of TB treatment and a child with a positive history of MDR TB contact should have a sample taken for GeneXpert test and referred to the nearest MDR TB treatment site for further evaluation and management

Steps in initiating Tuberculosis treatment for children

- **Step 1:** Determine the type of TB disease
 - (I) Type of patient: Newly diagnosed or previously treated for TB?
 - (II) Site of TB disease: Pulmonary TB or Extra Pulmonary TB?
- **Step 2:** Select the recommended TB treatment regimen.
- **Step 3:** Determine the dosages of the anti-TB medicines.
- **Step 4:** Provide the comprehensive HIV care package to TB/HIV co-infected children
- **Step 5:** Initiate adjunct therapy during TB treatment
- **Step 6:** Initiate treatment under Directly Observed Therapy (DOT)
- **Step 7:** Determine management for children with TB and malnutrition
- **Step 8:** Update the data tools

Treatment regimen for a child who is newly diagnosed with Tuberculosis

Type of TB disease	Regimen	
	Intensive phase	Continuation phase
All forms of TB (excluding TB meningitis and Bone TB)	2RHZE	4RH
TB meningitis Bone (Osteoarticular) TB	2RHZE	10RH

ETHAMBUTOL IS SAFE FOR USE IN CHILDREN PROVIDED THE DOSE IS WITHIN THE RECOMMENDED RANGE

Treatment for a child who was previously treated for Tuberculosis

A child who was previously treated for TB	What to do	Comments
Relapse	<ul style="list-style-type: none">▪ Check adherence to previous treatment	<ul style="list-style-type: none">▪ If the GeneXpert test is positive and rifampicin sensitive, treat the child as a new patient
Treatment Failure	<ul style="list-style-type: none">▪ Assess for history of contact with a person who has MDR TB (Confirmed or Presumptive)	<ul style="list-style-type: none">▪ If the GeneXpert test is positive and rifampicin resistant, refer the child to an MDR TB treatment site for further management
Lost to Follow - Up	<ul style="list-style-type: none">▪ Obtain a sample▪ Do GeneXpert test to screen for rifampicin resistance	<ul style="list-style-type: none">▪ If the GeneXpert test is negative OR the child is unable to provide a sample and the health worker is unable to obtain sample refer to a higher level facility/ Regional Referral Hospital for further evaluation and management

STREPTOMYCIN IS NO LONGER RECOMMENDED FOR USE IN CHILDREN WITH TB

Dosage of anti – TB medicines by weight

Medicine	Dose	Dose Range	Maximum Dose
Isoniazid (H)	10 mg/kg	7–15 mg/kg	300 mg/day
Rifampicin (R)	15 mg/kg	10–20 mg/kg	600 mg/day
Pyrazinamide (Z)	35 mg/kg	30–40 mg/kg	
Ethambutol (E)	20 mg/kg	15–25 mg/kg	

Dosage of anti – TB medicines (60/30/150) by weight band

Weight Bands	Intensive Phase		Continuation Phase
	RHZ	E	RH
	60/ 30/150	100mg	60/ 30
4-6 kg	1	1	1
7-10 kg	2	2	2
11-14 kg	3	3	3
15-19 kg	4	4	4
20-24 kg	5	4	5
25kg and above	Use adult dosages and formulations		

Dosage of anti – TB medicines (75/50/150) by weight band

Weight Bands	Intensive Phase		Continuation Phase
	RHZ	E	RH
	75/ 50/150	100	75/ 50
4-7 kg	1	1	1
8-11 kg	2	2	2
12-15 kg	3	3	3
16-24 kg	4	4	4
25kg and above	Use adult dosages and formulations		

Recommended ART regimen for TB/HIV co-infected children on ART

Start TB treatment immediately and modify ART regimens as below		
Age	Current regimen	Substitution regimen
Younger than 3 years	ABC+3TC+NVP OR AZT+3TC + NVP OR PI based regimen	ABC+3TC+AZT*
3 years or older	ABC+3TC+EFV AZT+3TC+EFV TDF+3TC+EFV	Continue the same regimen
	ABC+3TC+NVP AZT+3TC + NVP TDF+3TC+NVP	Substitute NVP with EFV
	PI based regimen	<ul style="list-style-type: none"> • If the child has a history of failure of NNRTI-based regimen or failure status is unknown: AZT+3TC+ABC* OR • If the child has no history of failure of an NNRTI-based regimen: Substitute with EFV
*For children on ABC/3TC/AZT, switch back to initial / preferred regimen once TB medication is completed		

Recommended ART regimens for TB/HIV co-infected children not on ART

Start TB treatment immediately and initiate ART within 2-8 weeks after starting TB treatment.

Younger than 3 years	Preferred: AZT+3TC+ABC * Alternative: ABC + 3TC+ NVP, ensuring that NVP dose is 200 mg/m²
3 years to 9.9 years 10 years to 14.9 years and < 35kg	Preferred: ABC + 3TC + EFV Alternative: AZT + 3TC + EFV
10 to 14.9 years and ≥ 35 kg Adults & adolescents ≥15 years	Preferred: TDF + 3TC + EFV Alternative: AZT + 3TC + EFV
*For children on ABC/3TC/AZT, switch back to initial / preferred regimen once TB medication is completed	

Adjunct therapy in the management of Tuberculosis in children

THERAPY	INDICATION	DOSE
Pyridoxine	Children on TB treatment	12.5mg/day for children < 5 years 25mg/day for children >= 5 years
Prednisolone	TB meningitis TB with respiratory distress	2 mg/kg/day as a single dose for 4 weeks, and then reduced over a period of 1- 2 weeks

Absence of pyridoxine should not stop the health worker from initiating TB treatment

Monitoring schedule for children on TB treatment

		Week/ Month on Treatment													
		Intensive Phase				Continuation Phase*									
		0	2 Wks	4 Wks	8Wks	3	4	5	6	7	8	9	10	11	12
Clinical Monitoring[†]	Symptoms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Signs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Side effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Adherence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory Monitoring[†]	GeneXpert ^a	✓													
	Smear Microscopy ^b	✓				✓		✓		✓					
	HIV ^c	✓													
Radiology Monitoring	CXR ^d	✓													

* Continuation phase is for:- 4 months for all forms of TB (except bone TB and TB meningitis); and 10 months for Bone TB and TB meningitis

† Refer to the national HIV care monitoring schedule for a child with TB/HIV co-infection.

a GeneXpert is the preferred initial diagnostic test for children aged 0 – 14 years and SHOULD NOT be used as a follow up test.

b Smear microscopy can be used as the initial diagnostic test in health facilities that do not have access to GeneXpert test. Sputum microscopy is the recommended laboratory test for follow up patients on TB treatment. Children who cannot produce sputum will be monitored clinically

c HIV test should be conducted for all children presumed and diagnosed with TB (Refer to the HCT guidelines)

d CXR can be used as a diagnostic tool where it is available. If it is not available, it should not hinder diagnosis of TB in children. A repeat CXR may be conducted for children who do not improve on treatment

Side effects of anti-TB medicines, ARVs and their management

Side effect	Clinical presentation	Main Anti TB medicine involved	Main ARV involved	Management
Peripheral neuropathy (early or late side effect)	Burning sensation; pins and needles (mainly in hands and feet)	Isoniazid		Pyridoxine
Liver Toxicity	Nausea; Vomiting; Yellow coloration of eyes; Right sided abdominal pain; Right hypochondriac tenderness; Hepatomegaly	Pyrazinamide Rifampicin Isoniazid	Nevirapine Protease Inhibitors	Stop all medicines and REFER the child
Gastrointestinal dysfunction	Nausea, Vomiting, Abdominal discomfort	All	All	Manage the symptoms as they come and counsel the patient
Hypersensitivity (usually early side effect)	Skin rash	Rifampicin Isoniazid Pyrazinamide	Nevirapine Efavirenz Abacavir	Mild: give anti-histamine Severe: STOP all medicines and REFER the child
Central nervous system dysfunction	Irritability; Psychosis; Drowsiness; Seizures	Isoniazid	Efavirenz	Pyridoxine given as preventive therapy and treatment for INH toxicity. STOP INH in case of seizures and Refer.
Anaemia	Palor of mucus membranes; Signs of heart failure in severe cases.	Rifampicin	Zidovudine	Change from Zidovudine to ABC (for children < 10 years) or TDF (for children > 10 years and \geq 35kg). Manage the anaemia using IMCI guidelines.
Visual problems	Blurred or impaired vision	Ethambutol		STOP Ethambutol and REFER the child. Continue with RHZ
Athralgia	Joint pains	Pyrazinamide		GIVE analgesics e.g. paracetamol
Red urine	Red urine	Rifampicin		Re-assure the care giver or child

Approaches to prevent Tuberculosis in children

The following are approaches used for preventing TB in children:-

- 1.BCG vaccination
- 2.Contact Screening(Contact Tracing)
- 3.Isoniazid Preventive Therapy
- 4.TB Infection Control
- 5.ART for HIV infected children
- 6.Early diagnosis and treatment of PTB cases

BCG vaccination

All new born babies should receive BCG at birth.

Contact Screening and Management

Contact screening is a systematic process for identifying TB contacts that have TB or at risk of developing TB.

Steps in conducting contact screening and management

Step 1: Identify the index TB cases that should be prioritized for contact screening

- Bacteriologically confirmed PTB
- MDR-TB or XDR-TB (proven or suspected)
- Person living with HIV
- Child <5 years of age

Step 2: Initiate the process of TB Contact screening

- Educate the index TB case by providing information on what TB and TB contact screening is as well as the purposes/ benefits.
- Inquire if the index TB case has any household or close contacts.
- In case of household contacts, seek for permission to schedule and conduct a home visit for contact screening using existent health facility and community structures. Otherwise, invite the index TB case to bring the household or close contacts to the health facility for screening and further management.

Step 3: Contact Identification

- Interview the index TB case to identify the household or close contact information.
- Focus on those in same household but don't neglect out-of-household contacts.
- Determine if there are other persons within the group of contacts who have symptoms associated with TB.
- Determine if there are any asymptomatic children under the age of 5 years in the household.
- Determine if there are any HIV infected persons in the household.

Step 4: Assess contacts and assign priorities

The following are at greatest risk of developing TB infection

- Close contacts of Bacteriologically confirmed index TB cases
- Persons with HIV infection
- Highly exposed persons e.g. a breastfeeding infant

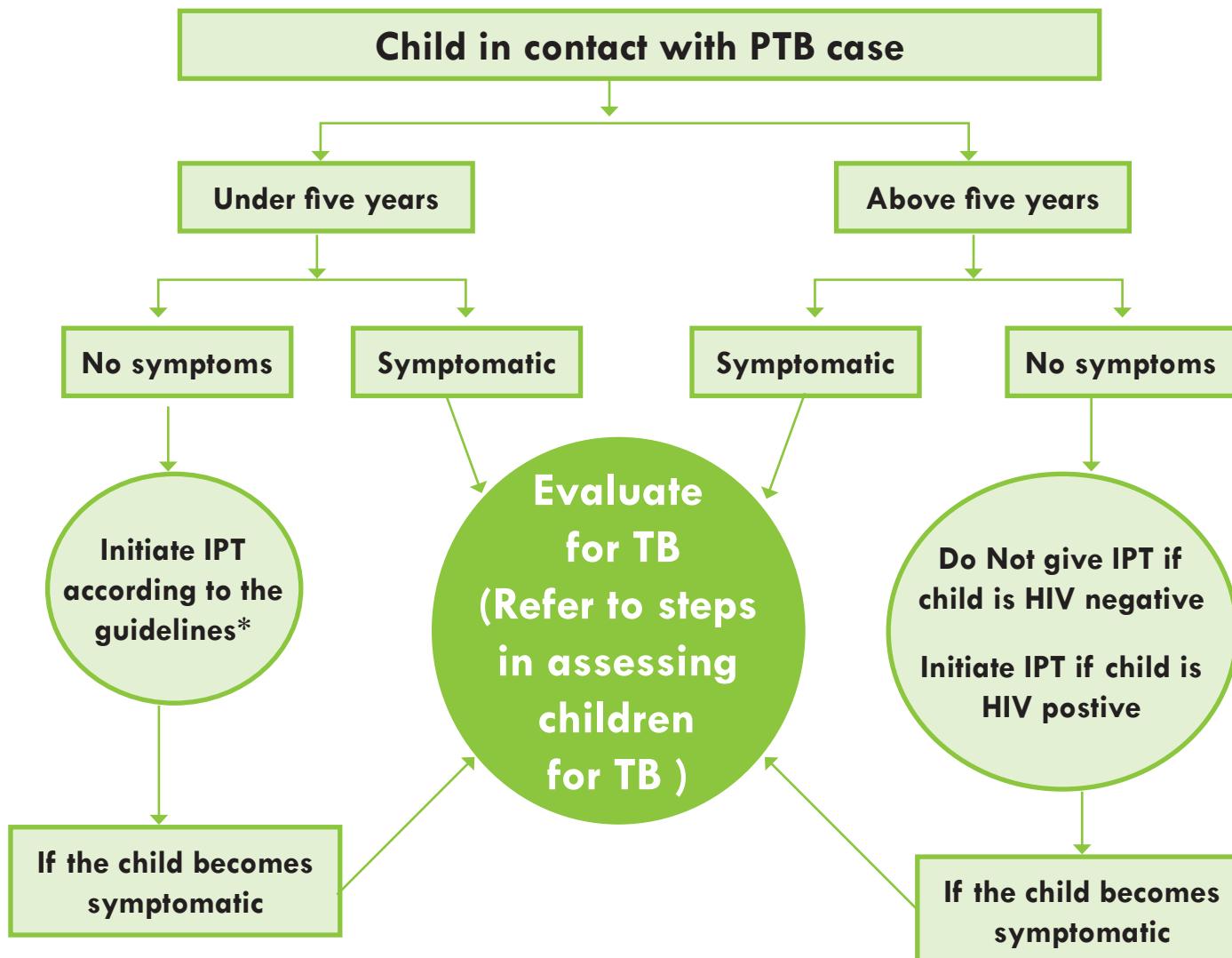
The following are at greatest risk of active TB disease

- Children < 2 years of age
- Persons with HIV infection
- Persons with other immune compromising conditions or therapies

Step 5: Evaluate contacts

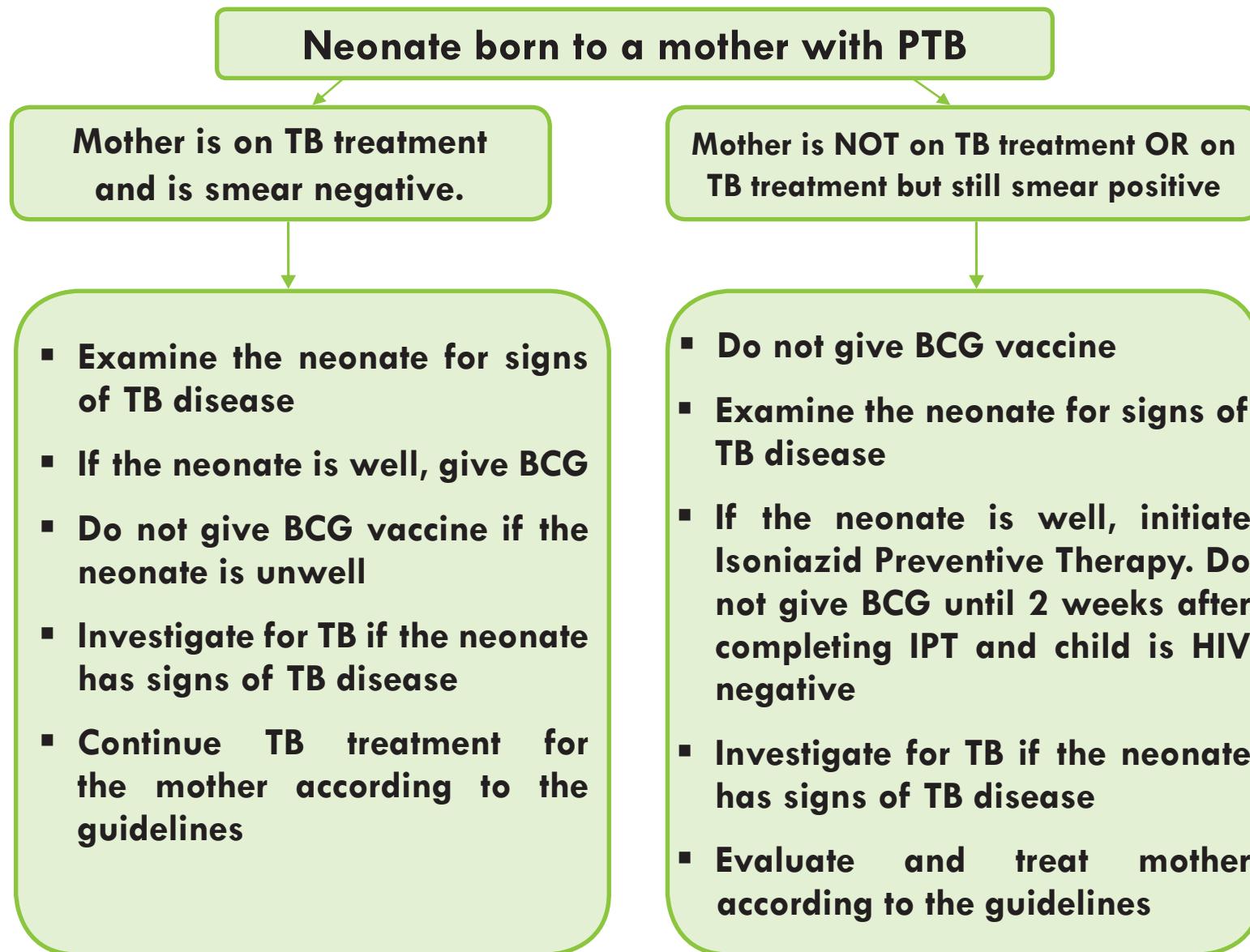
- Use the ICF guide or TB contact screening form to assess for symptoms suggestive of TB (symptom based approach).
- Children with any symptom suggestive of TB should be referred for TB investigation.
- Refer to the diagnostic algorithm for diagnosis of TB in children.
- Children under the age of five years who DO NOT have TB symptoms should be referred for Isoniazid Preventive Therapy
- HIV positive patients who DO NOT have TB symptoms should be referred for IPT according to the national guidelines on IPT

Follow up of a child in contact with a PTB case



* Children who are contacts of MDR TB patients should not receive IPT

Follow up of a neonate (newborn) born to a mother with PTB



Isoniazid Preventive Therapy (IPT)

IPT refers to the use of Isoniazid to prevent the progression from TB infection to TB disease.

Categories of children eligible for IPT

- Children under the age of 5 years with a positive history of contact with an active PTB case. This includes both HIV negative and HIV positive children.
- HIV positive children and adolescents irrespective of TB exposure status and ART status. HIV positive children aged less than 12 months receive IPT ONLY if there is a history of contact with an active PTB case.

Steps in initiating IPT

Step 1: Screen for active TB using the Intensified TB Case Finding guide

Step 2: Assess for contraindications to IPT

- Child with symptoms and signs suggestive of TB
- Child on TB treatment
- Child who is a contact of MDR-TB patient
- Child with known or suspected reaction (hypersensitivity) to Isoniazid
- Child with chronic liver disease or symptoms suggesting active hepatitis (jaundice, right upper quadrant pain, dark urine, pale stool)
- Child with history of afebrile convulsions
- Child with history of mental illness
- Child with moderate to severe burning sensations of the limbs (peripheral neuropathy)
- Child on concomitant medication: phenytoin, carbamazepine, warfarin, theophylline, disulfiram, selective serotonin re-uptake Inhibitors, antidepressants (e.g. citalopram, fluoxetine, paroxetine, sertraline), oral ketoconazole or itraconazole.

Step 3: Prepare the caregiver/ older child and assess their readiness to start IPT

- **Assess:** signs and symptoms of active TB; chronic liver disease; peripheral neuropathy; mental illness; and concomitant medications
- **Advise:** Benefits, Side effects, Regimen, duration
- **Agree:** Ensure caregiver/ older child understands and agrees
- **Assist:** Adherence/ treatment supporter
- **Arrange :** Follow up visits ; record initiation date, appointments, linkages and referrals

Step 4: Complete the IPT Register

Step 5: Update:-

- The Unit TB register (If the child is a TB contact)
- HIV Care/ART Card, Pre ART Register / ART Register (If the child is HIV positive)

Dosage of INH

- The dosing of Isoniazid in children depends on the weight of the child.
- Isoniazid is given at a dose of 10mg/kg/ day in children for 6 months.
- Pyridoxine is given concomitantly at a dose of:-
 - 12.5mg/day in children < 5 years
 - 25mg/day in children \geq 5 years
- Absence of pyridoxine should not stop a health worker from initiating IPT

Tablet Strength	Weight band					
	3–5.9 kg	6–9.9 kg	10–13.9 kg	14–19.9 kg	20–24.9 kg	> 25kg
INH 50 mg	1	2	3	4	5	6
INH 100 mg	½	1	1½	2	2½	nr
INH 300 mg	nr	nr	nr	nr	nr	1

* nr – not recommended

Recommended TB Infection control measures

Managerial measures

- Set up a TB infection control committee.
- Conduct risk assessment of TB transmission at the health facility
- Develop a TB infection control plan.
- Monitor and evaluate the facility TB infection control plan
- Conduct surveillance of TB disease among health workers.

Administrative / Workplace measures

- Screen people with TB symptoms (triage)
- Separate presumptive or diagnosed TB patients
- Educate on cough habits and respiratory hygiene to control the spread of TB germs
- Minimize time spent in health care facilities
- Investigate for TB or Refer
- Reduce the time taken to diagnose TB and initiate treatment

Environmental measures

- More effective when used in combination with administrative measures and include:-
 - (i) *Natural ventilation* (relies on open windows and doors to allow air flow)
 - (ii) *Mechanical ventilation* e.g. fans

Personal Protective Equipment

- These protect health care workers from inhaling the TB germs.
- Include :-
 - (i) *Face masks* are worn by patients and are not re-usable
 - (ii) *Respirators (N95 type or greater)* are worn by health care workers and can be re-used.

Integrating Tuberculosis services into routine and other health care service points

- Infants, Children, Adolescents, Pregnant and lactating mothers with TB often first present in lower level facilities and other entry points rather than specialized TB clinics.
- Integration of TB services into routine and other health care service points improves TB case finding, treatment, and prevention by:-
 - a) Enhancing early identification of infants (including those exposed to HIV), children, adolescents and women with TB (who require TB treatment) and those at risk for TB (who require IPT) thereby improving outcomes.
 - b) Minimizing loss of patients across the continuum of TB care.

TB service integration into routine and other health care service points

