MINISTRY OF HEALTH
NATIONAL LEPROSY/TB CONTROL PROGRAMME

MANAGEMENT OF TUBERCULOSIS IN CHILDREN AND ADOLESCENTS

A HEALTH WORKER GUIDE

DECEMBER 2023

INTRODUCTION

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

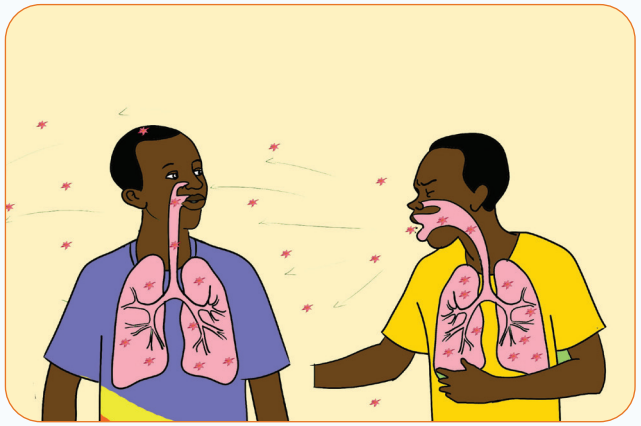
The purpose of this flip chart is to guide front line health workers in providing quality and standardized screening, diagnosis, treatment and prevention of TB in children according to the new recommendations.

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

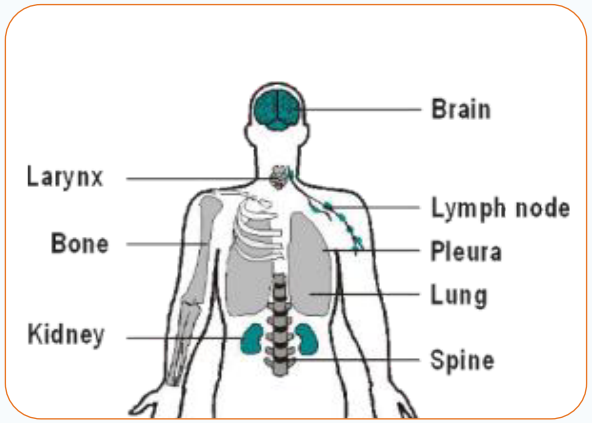
CONTENTS

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.



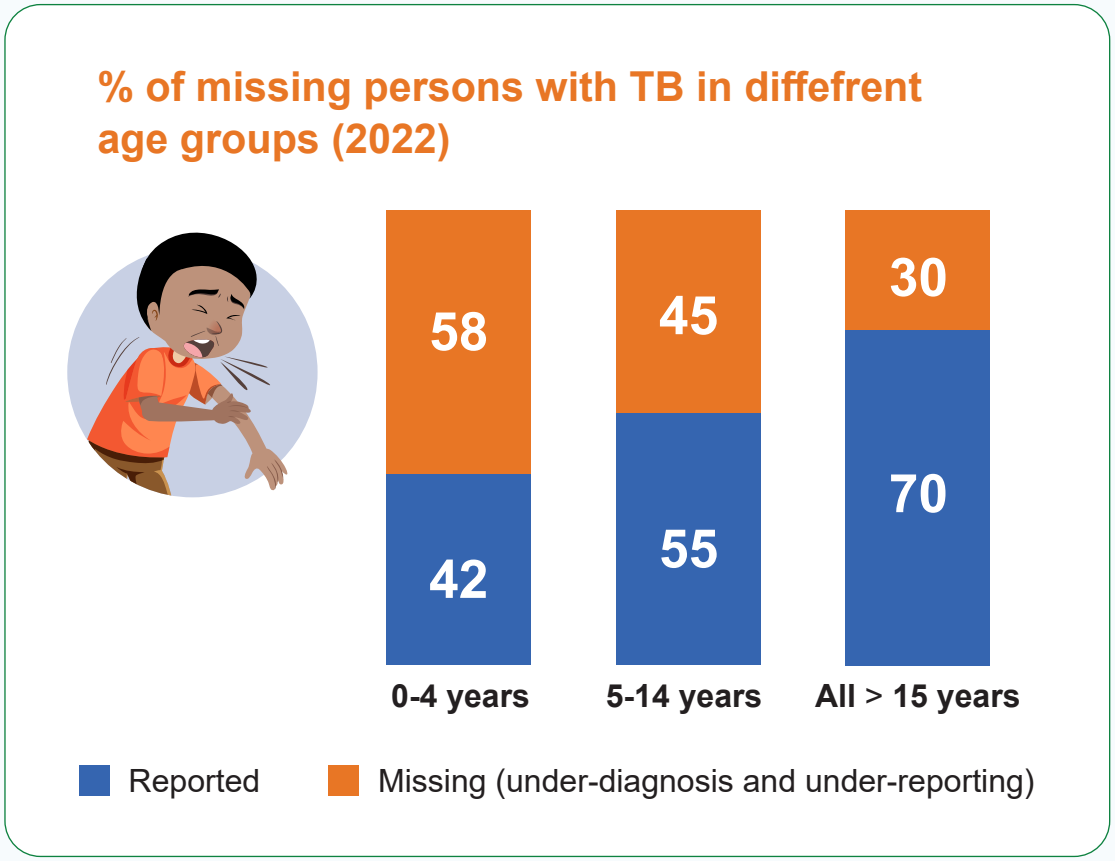
TB more commonly affects the lungs (pulmonary tuberculosis) but may affect organs other than the lungs (extra-pulmonary TB) such as lymph nodes, brain, abdomen, bones and spine.

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 globally are missed** (either not diagnosed or not reported). The treatment coverage gap remains highest among the youngest children e.g. The Gambia notified **8%** of all new cases of TB as children (2022), a figure which is far less than the predicted proportion of **15% - 20%**.

Gap in TB case notification in children globally



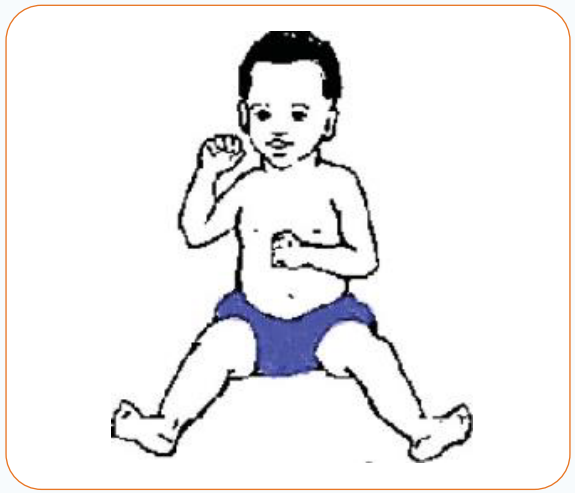
Stages of Tuberculosis Development in Children

1 EXPOSURE

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

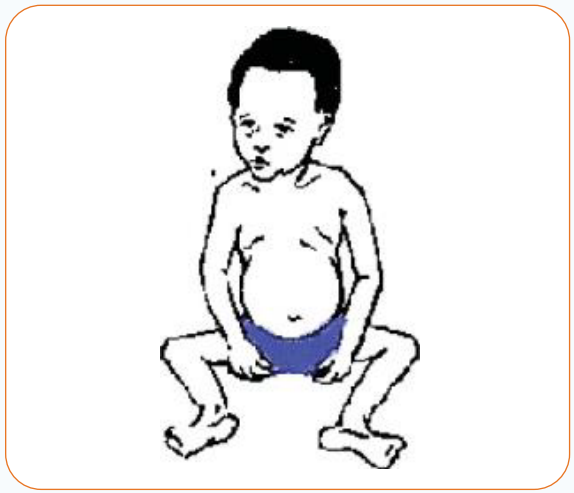
2 INFECTION

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.



3 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).

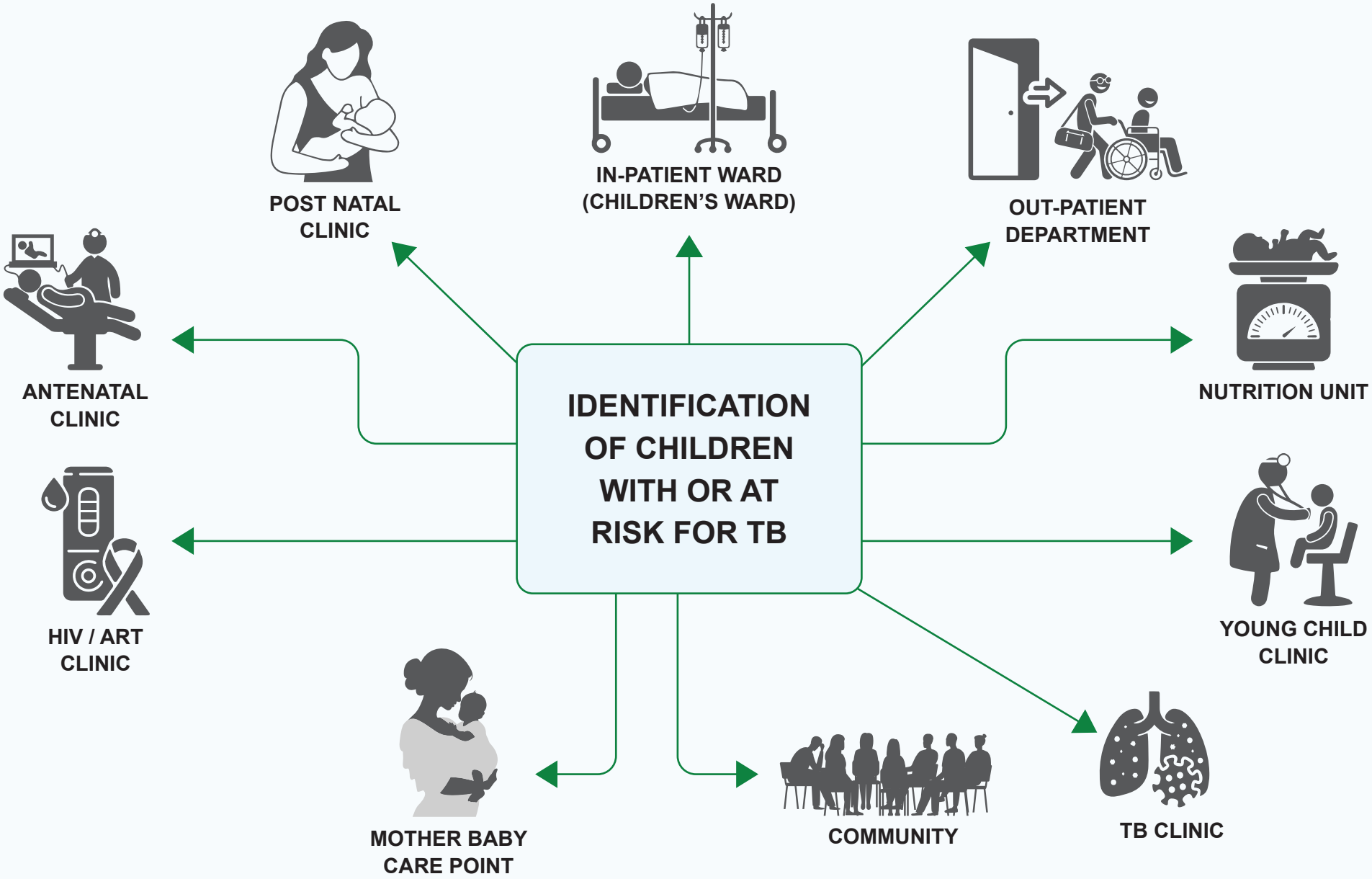
Risk factors for TB Disease

- 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

Entry Care Points where Children with or at Risk for Tuberculosis are Identified



Steps in Assessing Children for Tuberculosis

STEP 1

Screen all children for TB using the intensified TB Case Finding (ICF) guide

STEP 2

Take a detailed history

STEP 3

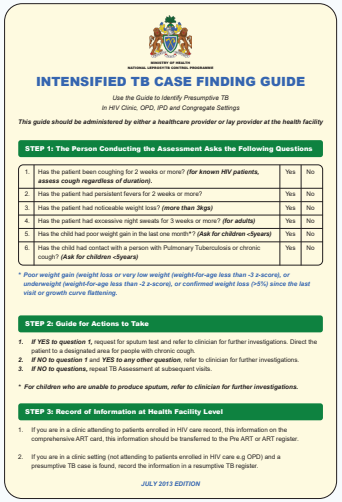
Conduct a detailed clinical examination

STEP 4

Conduct relevant investigations

STEP 5

Make a decission



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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 healthcare 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 3kgs)***	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 <5years)***	Yes	No
6.	Has the child had contact with a person with Pulmonary Tuberculosis or chronic cough? ***(Ask for children <5years)***	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

1. ***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.
2. ***If NO to question 1*** and ***YES to any other question***, refer to clinician for further investigations.
3. ***If NO to 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

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

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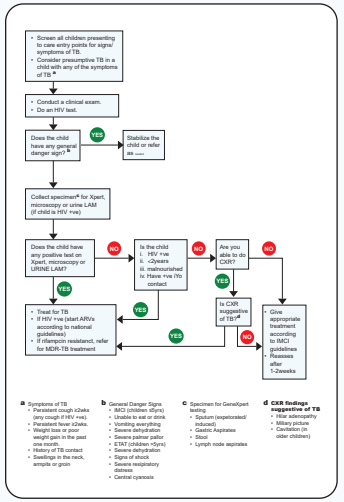

- Screen all children presenting to care entry points for signs/ symptoms of TB.
- Consider presumptive TB in a child with any of the symptoms of TB.[a]

- Conduct a clinical exam.
- Do an HIV test.

Does the child have any general danger sign?[b] — YES → Stabilize the child or refer ⇒ ……

Collect specimen[c] for Xpert, microscopy or urine LAM (If child is HIV +ve)

Does the child have any positive test on: Xpert, microscopy or URINE LAM? — NO → Is the child i. HIV +ve ii. <2years iii. malnourished iv. Have +ve (Ve contact — NO → Are you able to do CXR? — NO → Give appropriate treatment according to IMCI guidelines • Reassess after 1-2weeks

YES → Treat for TB
- If HIV +ve (start ARVs according to national guidelines)
- If rifampcin resistanct, refer for MDR-TB treatment

YES → Is CXR suggestive of TB?[d] — NO → Give appropriate treatment according to IMCI guidelines • Reassess after 1-2weeks

YES → Treat for TB
- If HIV +ve (start ARVs according to national guidelines)
- If rifampcin resistanct, refer for MDR-TB treatment

a Symptoms of TB
- Persistent cough >2wks (any cough if HIV +ve).
- Persistent fever >2wks.
- Weight loss or poor weight gain in the past one month.
- History of TB contact.
- Swellings in the neck, armpits or groin

b General Danger Signs
- IMCI (children ≥5yrs).
- Unable to eat or drink
- Vomiting everything
- Severe dehydration
- Severe palmar pallor
- ETAT (children >5yrs)
- Severe dehydration
- Signs of shock
- Severe respiratory distress
- Central cyanosis

c Specimen for GeneXpert testing
- Sputum (expectorated/ induced)
- Gastric Aspirates
- Stool
- Lymph node aspirates

d CXR findings suggestive of TB
- Hilar adenopathy
- Miliary picture
- Cavitation (in older children)

Common Symptoms of Tuberculosis in Children

Age	Pulmonary TB (PTB)	Extra Pulmonary (EPTB)
Neonate/Newborn* **(0 - 28 days)** 	• Lethargy • Poor feeding • Low birth weight • Non resolving pneumonia • Maternal history may include: TB, HIV, non resolving pneumonia.	Disseminated TB (such as TB meningitis): Irritability, lethargy, reduced level of consciousness, convulsions, neck stiffness, bulging fontanelle.
< 5 years* 	• Persistent cough for 2 weeks or more (Assess cough of any duration for HIV positive children). • 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.	• **TB adenitis:** Painless swelling in the neck or armpit (with or without discharging sinus). • **TB meningitis:** Headache, irritability, abnormal behaviour, vomiting (without diarrhoea), lethargy, reduced level of consciousness, convulsions, neck stiffness, bulging fontanelle. • **Miliary TB:** Non specific symptoms such as lethargy, fever, wasting. • **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 (usually painless), difficulty in movement. • **Pericardial TB:** Difficulty in breathing, easy fatigability, palpitations, chest pain.
≥ 5 years* 	• Persistent cough for 2 weeks or more (Assess cough of any duration for HIV positive children). • 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	

* 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

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NOTE

- **A child with a "yes" to the any of the above** questions in step 1of 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

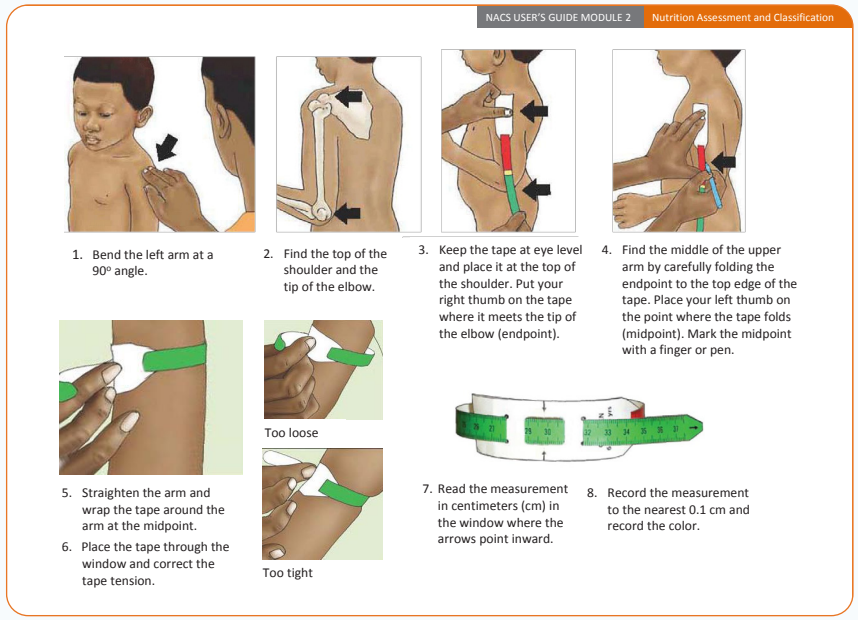
There are no physical signs that confirm TB:
However, there are signs that suggest TB or its complications

1 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.

2 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. DOES NOT EXCLUDE TB	• 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)	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)*	• Look for swollen joints. • Assess for tenderness (pain) in the joints and spine.
Musculoskeletal System (TB spine)*	• Assess for swelling or deformity or tenderness along the back (Gibbus). • Examine for weakness in the legs.
Abdomen (Abdominal TB)*	Examine for an enlarged abdomen which might be due to fluid or masses, hepatosplenomegaly.
Cardio-vascular System (TB Pericarditis)*	• 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)*	• Examine for lethargy, abnormal behaviour, reduced level of consciousness, convulsions, neck stiffness, photophobia.

* *Refer to hospital for further management*

A GeneXpert Test

i. It tests for the presence of TB bacteria and rifampicin resistance. It is the preferred initial TB diagnostic test for children with presumptive TB.
   a) If the GeneXpert test is available on site, DO GeneXpert.
   b) 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).
ii. A negative GeneXpert test DOES NOT exclude TB.
iii. Samples that can be used for GeneXpert testing include:
   a) Sputum (expectorated or induced)
   b) Aspirates (gastric, nasopharyngeal, lymphnode)
   c) Cerebral spinal fluid
   d) Stool
iv. Samples should be tested within 48 hours (2 days) if stored at room temperature.
v. Refrigerate the sample at 2 – 8ºC 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.

F Tuberculin Skin Tests (TB Specific Skin Test)

i. The TB Specific Skin test can be used as supporting evidence for TB exposure in health facilities that have access to it.

ii. A TBST is considered positive when the reading is:
   a) ≥5 mm in HIV infected children or severely malnourished children.
   b) ≥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 recommended for Pleural fluid, Ascitic fluid, Joint fluid and Pericardial fluid.*

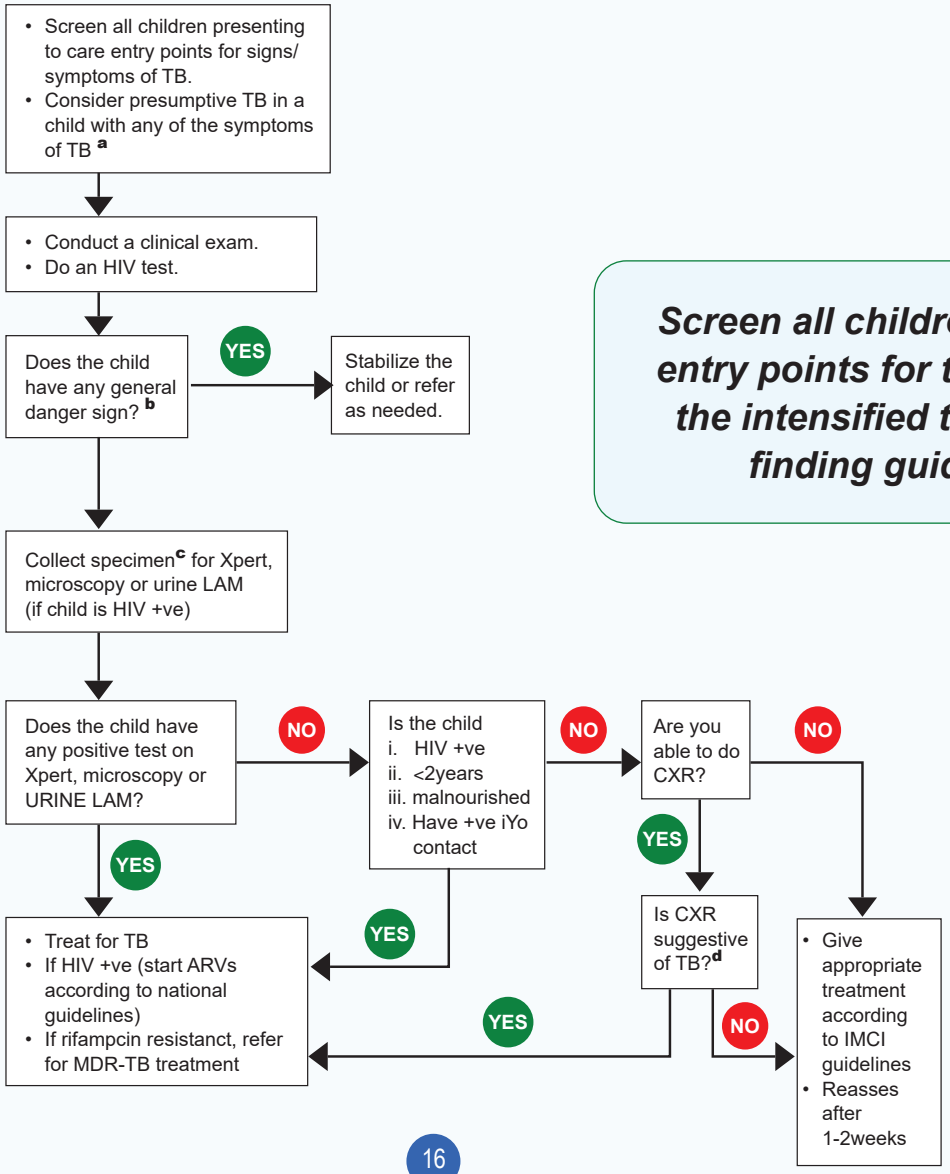
Algorithm for the Diagnosis of TB in Children

a Symptoms of TB
- Persistent cough ≥2wks (any cough if HIV +ve).
- Persistent fever ≥2wks.
- Weight loss or poor weight gain in the past one month.
- History of TB contact
- Swellings in the neck, armpits or groin

b General Danger Signs
- IMCI (children ≤5yrs)
- Unable to eat or drink
- Vomiting everything
- Severe dehydration
- Severe palmar pallor
- ETAT (children >5yrs)
- Severe dehydration
- Signs of shock
- Severe resipiratory distress
- Central cyanosis

c Specimen for GeneXpert testing
- Sputum (expetorated/ induced)
- Gastric Aspirates
- Stool
- Lymph node aspirates

d **CXR findings suggestive of TB**
- Hilar adenopathy
- Miliary picture
- Cavitation (in older children)



Screen all children at all entry points for tb using the intensified tb case finding guide.

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

Age and Type of EPTB	Treatment Regimen	
	Intensive Phase	Continuation Phase
Infants aged <3 months or weighing <3kg		
Peripheral lymph node TB	2HRZE[a]	4HR
Children and adolescents aged 3 months to <16 years		
Peripheral lymph node TB	2HRZE[a]	2HR
Adolescents aged >16 years		
Peripheral lymph node TB	2HRZE[a]	4HR
Children and adolescents aged 0 – 19 years		
EPTB[b]	2HRZE	4HR
TBM (strong recommendation)	2HRZE	10HR
Osteoarticular TB[c]	2HRZE	10HR

a *Ethambutol has been included in the first two months of treatment, because the prevalence of HIV among patients diagnosed with TB in The Gambia is >5%*

b *This involves all other forms of EPTB except per lymph node TB e.g. pleural TB, pericardial TB, abdominal TB.*

c *This involves all forms of bone and joint TB including spinal TB.*

Treatment for a Child who was Previously Treated for Tuberculosis

A child or adolescent who was previously treated for TB	What to do	Comments
(Relapse, Treatment Failure, Lost to Follow-up)	• Check adherence to previous treatment. • Assess for history of contact with a person who has MDR - TB. • Obtain a sample • Do GeneXpert test to screen for rifampicin resistance.	• If the GeneXpert test is positive and rifampicin sensitive, treat the child with a six month course regimen. • If the GeneXpert test is positive and rifampicin resistant, refer the child to an MDR treatment site for further management. • 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 for further evaluation and management.

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 (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

Age Group	Regimen when Diagnosed with TB	Recommended Action/Substitution
Children and adolescents older than 12 years.	If on EFV-based regimen	Continue with the same regimen and dose.
	If on DTG-based regimen	Continue the same regimen but increase but increase the dose of DTG 50mg twice daily instead of one daily).
	If on NFV-based regimen	Substitute NVP with EFV. If EFV is contradicted, give a triple NRTI regimen (ABC+3TC+AZT)
	If on LVP/r or ATV/r-based regimen	Continue the same regimen and substitute rifampicin with rifabutin for TB treatment.
Children aged 3 to ≤12 years	If on EFV-based regimen	Continue the same regimen.
	If on NVP or LVP/r-based regimen	Substitute NVP or LVP/r with EFV. If EFV is contrandicated, give a triple NRTI regimen (ABC+3TC+AZT).
Children aged 0 to ≤3 years	If on LVP/r or NVP-based regimen	Give triple NRTI regimen (ABC+3TC+AZT).

NOTE: *Patients who have been substituted should revert to their to their original regimen once TB treatment is completed.*

Recommended ART Regimens for TB/HIV co-Infected Children not on ART

First Line ART Regimens for TBHIV Co-infected Children and Adolescents Initiating ART

Age Group	Recommended Regimen
Adults, pregnant and breastfeeding women and adolescents	TDF + 3TC + EFV
Children aged 3 to ≤12 years	ABC + 3TC + EFV
Children aged 0 to ≤3 years	ABC + 3TC + AZT

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 4weeks, and then reduced over a period of 1 - 2weeks.

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

Monitoring Schedule for Children on TB Treatment

Monitoring	What to monitor	Week/Month on Treatment													
		Intensive Phase					Continuation Phase*								
		0	2 Wks	4 Wks	8 Wks	3 Months	4 Months	5 Months	6 Months	7 Months	8 Months	9 Months	10 Months	11 Months	12 Months
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 (excluding TB Meningitis and bone TB); 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 may be used as the initial diagnostic test in health facilities that do not have access to GeneXpert test. Smear microscopy is the recommended test for sputum follow up.*

c *HIV test should be conducted for all children presumptive and diagnosed TB*

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 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 effects	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 ≥ 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

1 BCG Vaccination:

All new born babies should receive BCG at birth.

2 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.

Steps in Conducting Contact Screening and 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

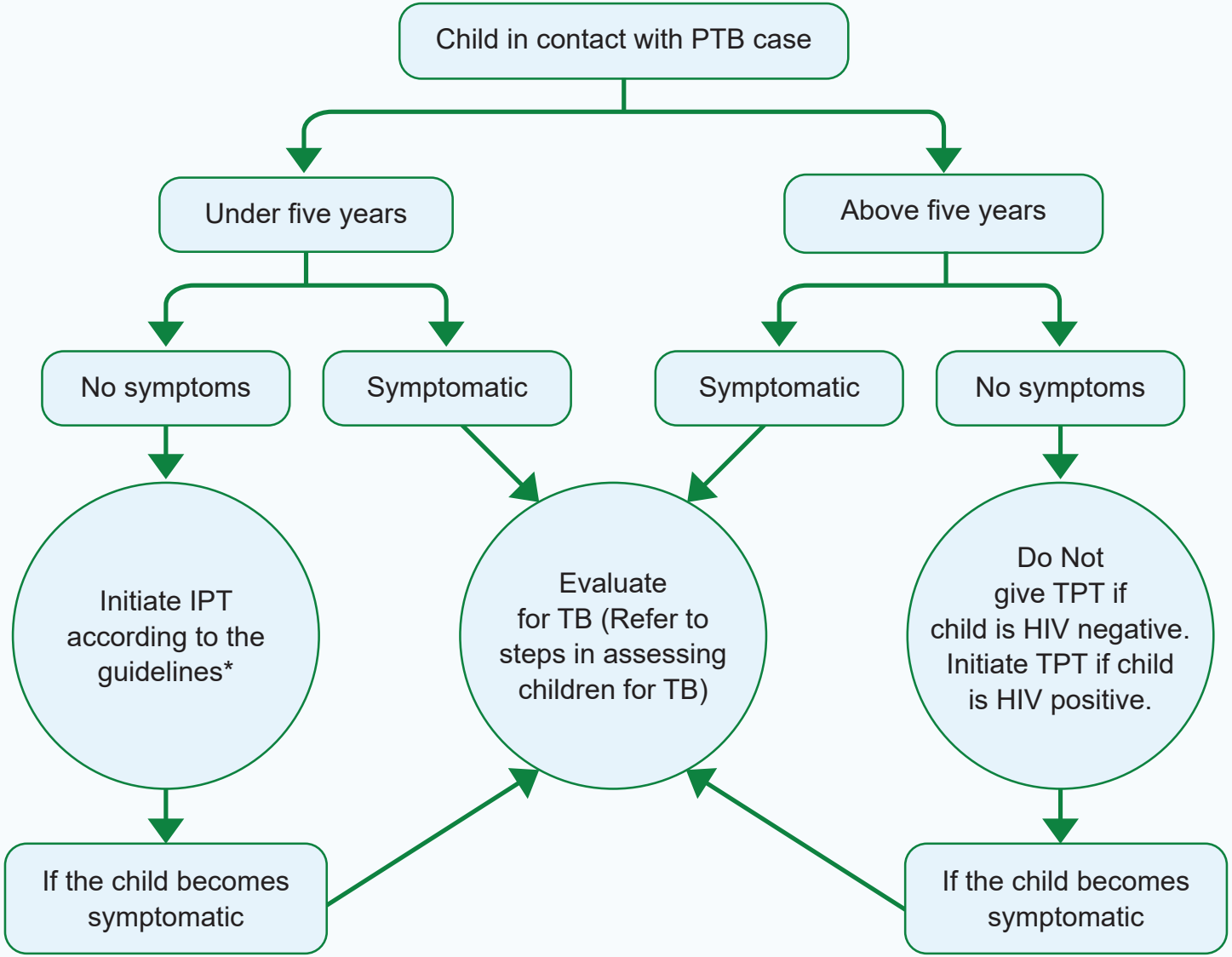
- Children < 2 years of age.
- Persons with HIV infection.
- Persons with other immune compromising conditions or therapies.

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

Neonate born of a mother with PTB

Mother is on TB treatment and is smear negative

- Examine the neonate for signs of disease
- If the neonate is well, give BCG.
- Do not give BCG vaccine if the neonate is unwell.
- Investigate for TB if neonate has symptoms for TB.

Mother is NOT on TB treatment OR on TB treatment but still smear positive

- Do not give BCG vaccine.
- Examine the neonate for signs of disease.
- If the neonate is well, initiate Isoniazid Preventive Therapy. Do not give BCG until 2 weeks after completing IPT and child is HIV negative.
- Investigate for TB if neonate has symptoms for TB.
- Evaluate and treat mother according to the guideline.

TB Preventive Therapy (TPT)

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.

Steps in Initiating IPT

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 TPT:

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 postive).

Dosage of TPT

- The dosing of Isoniazid in children depends on the weight of the child.
- Isoniazid is given at a dose of 10m g/kg/ day in children for 6 months.

Medicine frequency & duration	Formulation	Dose of TPT medicine (mgs)	Dose/ weight	Recommended number of tablets per body weight in kilograms								
3HP (once weekly rifapentine plus isoniazid for 3 months)	Fixed Doze Combination (FDC) Tablet	Rifapentine 300mg/ Isoniazid 300mg		**3–5.9 kgs**	**6–9.9 Kgs**	**10–15 kgs**	**16–23 kgs**	**24–30 kgs**	**31-34 kgs**	**35-45 kgs**	**>45 kgs**	
	Single medicine tablet	Pyridoxine 25mg/day				1	1.5	2	2.5	3	3	
						1	1	1	1	1	1	
6H (daily isoniazid for 6 months)	Single medicine tablet			**3–5.9 kgs**	**6–9.9 Kgs**	**10–13.9 kgs**	**14–19.9 kgs**	**20–24.9 kgs**	**25-34.5 kgs**	**35-44.5 kgs**	**45-49.9 kgs**	**≥50 kgs**
		Isoniazid 100 mg	<10 years 10mg/kg	0.5	1	1.5	2	2.5				
			> 10 years 5mg/kg						1.5	2	2.5	
		Isoniazid 300 mg	≥ 10 years 5mg/kg									1
	Single medicine tablet	Pyridoxine 25 mg		0.5	0.5	1	1	1	1	1	1	1
3RH (daily Rifampicin Isoniazid for 3 months)	Fixed Doze Combination (FDC) Tablet			**< 4 kgs**	**4-7 Kgs**	**8-11 kgs**	**12-15 kgs**	**16–24 kgs**	**25-32 kgs**	**33-39 kgs**	**40-54 kgs**	
		RH 75mg/50mg	< 10 years R - 15mg/kg H - 10mg/kg	0.5	1	2	3	4	4			
		RH 150mg/75mg	≥ 10 years R - 10mg/kg H - 5 mg/kg							2	3	
	Single medicine tablet	Pyridoxine 25mg/day		0.5	1	1	1	1	1	1	1	
1HP (once daily rifapentine plus isoniazid for 1 month - 28 days) for adolescents >13 years & adults			Regardless of weight band	**3–5.9 kgs**	**6–9.9 Kgs**	**10–15 kgs**	**16–23 kgs**	**24–30 kgs**	**31-34 kgs**	**35-45 kgs**	**>45 kgs**	
	Single medicine tablets	One Isoniazid (H) 300mg tablet 4 Rifapentine (P) 150mg tablets / day				1	1.5	2	2.5	1	1	
						1	1	1	1	4	4	
		Pyridoxine 25mg/day				1	1	1	1	1	1	

Medicine frequency & duration	Formulation	Dose of TPT medicine (mgs)	Dose/ weight	Recommended number of tablets per body weight in kilograms								
1HP (once daily rifapentine plus isoniazid for 1 month - 28 days) for adolescents >13 years & adults										**35-45 kgs**	**>45 kgs**	
	Single medicine tablets	One Isoniazid (H) 300mg tablet	Regardless of weight band							1	1	
		4 Rifapentine (P) 150mg tablets / day								4	4	
		Pyridoxine 25mg/day								1	1	

Dosage of TPT

- Pyridoxine is given concomitantly at a dose of:
  - 12.5mg/day in children < 5years.
  - 25mg/day in children ≥ 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

1 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.

2 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 healthcare facilities.
- Investigate for TB or Refer.
- Reduce the time taken to diagnose TB and initiate treatment.

Recommended TB Infection Control Measures

3 Environmental Measures:

More effective when used in combination with administrative measures and include:

- Natural ventilation (relies on open windows and doors to allow air flow).
- Mechanical ventilation e.g. fans among health workers.

4 Personal Protective Equipment:

These protect health care workers from inhaling the TB germs Include:

- Face masks are worn by patients and are not re-usable.
- Respirators (N95 type or greater) are worn by health care workers and can be re-used.

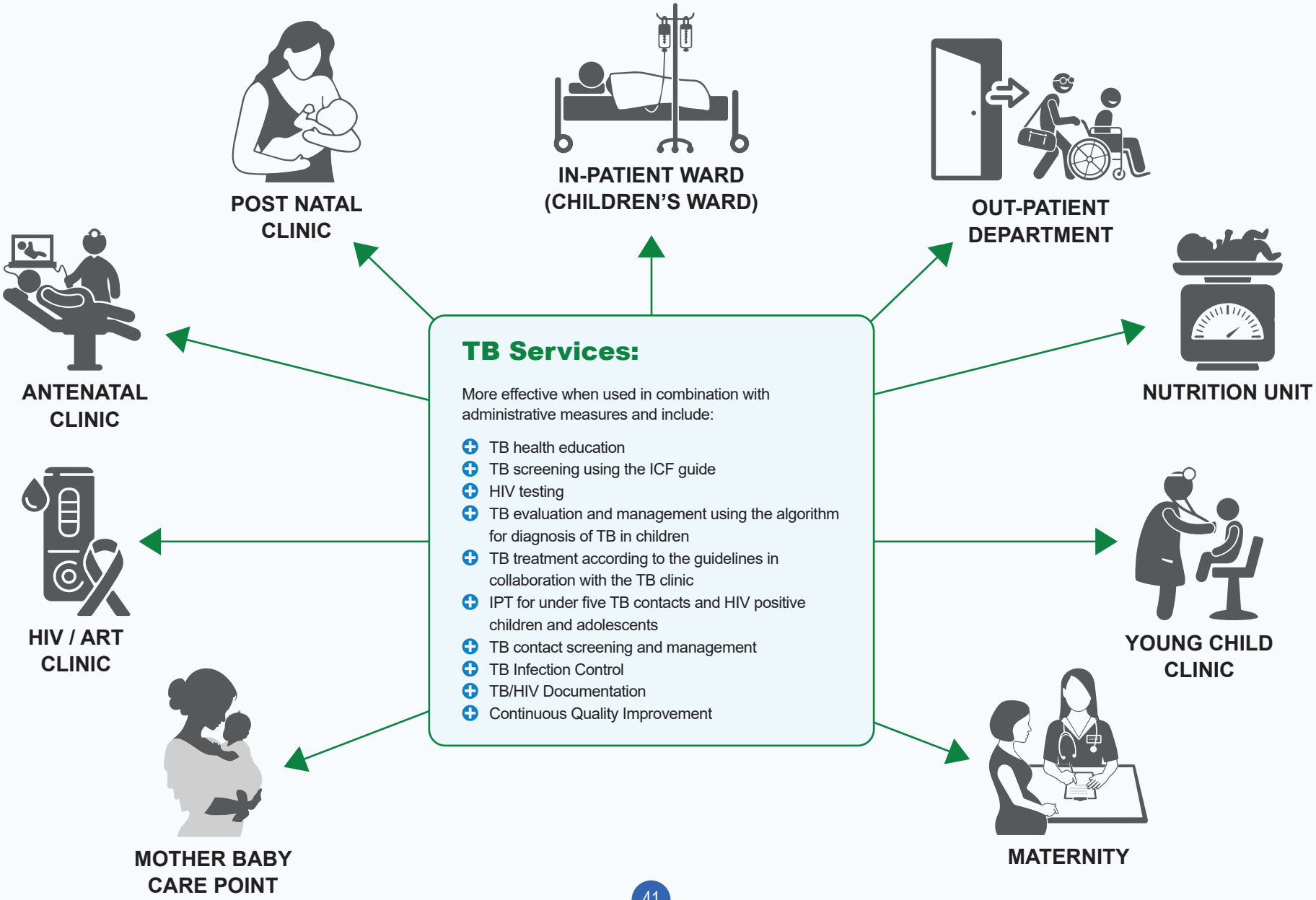
Integrating Tuberculosis Services into Routine and Other Healthcare Service Points

1. 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.

2. Integration of TB services into routine and other health care service points improves TB case finding, treatment and prevention by:

   - 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.
   - Minimizing loss of patients across the continuum of TB care.

TB Service Integration into Routine and other Healthcare Service Points



MINISTRY OF HEALTH
NATIONAL LEPROSY/TB CONTROL PROGRAMME

MANAGEMENT OF TUBERCULOSIS IN CHILDREN AND ADOLESCENTS

A HEALTH WORKER GUIDE

DECEMBER 2023