

## SIMPLIFIED ALGORITHM FOR THE DIAGNOSIS OF EXTRA PULMONARY TUBERCULOSIS IN CHILDREN (AGED BELOW 15 YEARS)

**Presence of TWO OR MORE of the following symptoms lasting > 2 weeks**

- SYMPTOM ARISING FROM AFFECTED ORGAN (see table)
- Weight loss or poor weight gain
- Persistent fever and/or night sweats
- Fatigue, reduced playfulness, less active

**PLUS**

**Presence of ONE OR MORE of the following:**

- Positive contact history
- Abnormal sign arising from the AFFECTED ORGAN (see table)
- Investigation relevant to AFFECTED ORGAN is positive (where available)
- Positive mantoux or IGRA test (where available)



**MAKE A CLINICAL DIAGNOSIS OF EXTRA PULMONARY TB  
START TB TREATMENT**

### EXTRA PULMONARY TUBERCULOSIS IN CHILDREN – SYMPTOMS, SIGNS & INVESTIGATIONS

(In addition to the clinical features due to EPTB listed below, the child may have one or more of the classic non-specific signs: persistent fever, poor weight gain/weight loss and lethargy/ reduced activity, lasting >2 weeks)

| Site of EPTB  | Symptoms and Signs for EPTB specific to the affected site   | Investigation  |
|---|---|--|
| <b>TB lymphadenitis (cervical, axillary or inguinal LN)</b> | <ul style="list-style-type: none"> <li>• Lymph node enlargement for more than one month.</li> <li>• Painless, non-tender</li> <li>• Often asymmetrical</li> <li>• +/- caseous (cheese like) discharge</li> <li>• Most commonly in neck area</li> </ul>  | <p><b>Fine needle aspiration (FNA) for:</b></p> <ul style="list-style-type: none"> <li>• Xpert. culture</li> <li>• Microscopy – predominance of lymphocytes, AFB</li> </ul> <p><b>Lymph node biopsy - Histology</b></p>              |
| <b>Pleural TB</b>   | <ul style="list-style-type: none"> <li>• +/- Chest pain often one-sided.</li> <li>• +/- Cough</li> <li>• Large effusion - fast breathing, breathlessness</li> <li>• Dullness on percussion, reduced breath sounds on affected side</li> </ul>   | <ul style="list-style-type: none"> <li>• CXR</li> <li>• Chest ultrasound</li> <li>• Pleural tap<sup>1</sup></li> </ul>   |
| <b>TB meningitis</b>  | <p><b>Persistent CNS symptoms:</b></p> <ul style="list-style-type: none"> <li>• Early signs – Persistent headache, irritability/abnormal behaviour, one sided weakness, changing gait, blurred vision, squint (signs progressively worsening over weeks)</li> <li>• Late (severe) signs - reduced level of consciousness, convulsions, neck stiffness bulging fontanelle, cranial nerve palsies.</li> </ul> | <ul style="list-style-type: none"> <li>• Lumbar puncture – CSF<sup>1</sup></li> <li>• CT scan brain with contrast</li> <li>• Cranial ultrasound in infants &lt;6 months with open anterior fontanelle</li> </ul>                     |
| <b>Miliary TB</b>   | <ul style="list-style-type: none"> <li>• Non-specific signs: persisting fever, weight loss/poor weight gain, lethargy.</li> <li>• Often have respiratory symptoms &amp; signs (fast breathing, +/- cough, wheeze, respiratory distress)</li> </ul>  | <ul style="list-style-type: none"> <li>• CXR – diffuse miliary opacities (micronodules)</li> <li>• Fundoscopy – see micro-nodules on retina</li> <li>• High risk for other extra pulmonary sites. Look for other lesions.</li> </ul> |
| <b>Abdominal TB</b>   | <ul style="list-style-type: none"> <li>• Abdominal pain &gt;2 weeks</li> <li>• Progressive swelling of abdomen over several weeks.</li> <li>• Exam: Abdominal swelling, ascites (shifting dullness, fluid thrill)</li> </ul>  | <ul style="list-style-type: none"> <li>• Ascitic tap<sup>1</sup></li> <li>• Abdominal ultra-sound<sup>2</sup></li> </ul>   |
| <b>Spinal TB</b>  | <ul style="list-style-type: none"> <li>• Persisting pain in focal point in the back.</li> <li>• Early sign: Tender / pain when apply pressure at part of spine, loss of lordosis / reduced curvature in lower back if located in lumbar vertebrae.</li> <li>• Advanced disease: Deformity of spine</li> <li>• Progressive lower limb weakness</li> </ul>  | <ul style="list-style-type: none"> <li>• X-ray of affected spine – lateral and antero-posterior views.</li> </ul>  |
| <b>Pericardial TB</b>                                       | <ul style="list-style-type: none"> <li>• Breathless with minimal exertion, palpitations (feeling of rapid heart beat), cough may be present</li> <li>• Cardiac failure (tachycardia, pedal oedema, infants – periorbital puffiness)</li> <li>• Distant heart sounds</li> <li>• Apex beat difficult to palpate</li> </ul>  | <ul style="list-style-type: none"> <li>• CXR – global enlargement of heart.</li> <li>• Echocardiogram (Cardiac ultrasound). Pericardial tap</li> </ul>   |

1. Cerebrospinal fluid (CSF), pleural fluid, ascitic fluid specimens, joint fluid - the following findings are suggestive of TB: Colour – clear or light yellow colour. Biochemistry – high protein and low glucose Microscopy – increased white cell counts, predominantly lymphocytes. (note that bacteriologic tests rarely detect MTB from these body fluids).

2. Abdominal ultra-sound shows ascites +/- septation, enlarged abdominal lymph nodes

All specimens (FNA, CSF, aspirates etc) may be sent for bacteriologic tests such as GeneXpert, AFB microscopy or TB culture as appropriate, however detection rate is lower than sputum

#### Drug Sensitive Tuberculosis (DSTB) Treatment Regimens for Kenya for Children 10 Years and Below

| Age                  | Eligibility for 4 month regimen  | Eligibility for 6 month regimen  | Eligibility for 12 months         |
|----------------------|--|--|-----------------------------------|
| >1 year to 10 years  |  | <ul style="list-style-type: none"> <li>• All infants (&lt;12 months)</li> <li>• Above 10 years (11 to &lt;15 years)</li> </ul>   |                                   |
| Type of TB           | Non-severe Pulmonary TB<br>Stable enough to be managed as an outpatient at the point of diagnosis<br>No danger signs<br>TB cervical lymph nodes      | <ul style="list-style-type: none"> <li>• Severe Pulmonary TB</li> <li>• All hospitalised patients at point of diagnosis</li> <li>• Severely ill at diagnosis with any danger sign such as: Difficulty in breathing with associated central cyanosis, Grunting, Oxygen saturation &lt;90%, ; Increased respiratory rate (age 0-2months &gt;60/min; 2-12months &gt;50/min; 1-5yr &gt;40/min; 6-10yr &gt;30/min) ; unable to drink/breastfeed. Weak or absent pulse; Coma/convulsing/ confusion; Not responding to pain or unresponsive.</li> <li>• Extra Pulmonary TB</li> </ul> | TB Meningitis & Osteoarticular TB |
| Immune status        | <ul style="list-style-type: none"> <li>• HIV negative. No severe acute malnutrition (SAM)</li> <li>• No other immunosuppressive condition</li> </ul> | <ul style="list-style-type: none"> <li>• HIV positive.</li> <li>• Severe Acute malnutrition (SAM)</li> <li>• Any immunosuppressed child</li> </ul>   |                                   |
| Bacteriologic status | <ul style="list-style-type: none"> <li>• Bacteriologically negative</li> <li>• Clinically diagnosed</li> </ul>                                       | Bacteriologically confirmed  |                                   |
| Treatment regimen    | <b>4 months - 2RHZE / 2RH</b>  | <b>6 months - 2RHZE / 4RH</b>  | <b>12 months - 2RHZE / 10RH</b>   |

\* If the child has known contact with a person with drug-resistant TB, this table does not apply, start the child on treatment as per the drug-resistant TB guidelines

#### Childhood Drug Resistant TB (DRTB) Treatment Regimen

| Resistance pattern                          | Target group            | Regimen (Child friendly formulations)               |
|---|-------------------------|---|
| 1. Isoniazid Mono-resistant TB              | Children <25 kgs        | 6RHZE/LFX   |
| 2. Poly-drug resistance (PDR) TB            | Children <25 kgs        | 9RHZE/LFX   |
| 3. MDR/RR TB                                | <15 years Non severe dx | 6Bdq/Lzd/Lfx/Cs/Cfz<br>3Lfx/Cs/Cfz                  |
|   | <15 years Severe dx     | 6Bdq/Lzd/Lfx/Cs/Cfz<br>6Lfx/Cs/Cfz                  |
| 4. Pre-XDR (FQ Res) TB                      | <15 years (Children)    | 6Bdq/Dlm/Cfz/Cs/Lzd<br>3Dlm/Cfz/Cs                  |
| 5. XDR TB                                   |                         | Consult national clinical review team               |
| Any Difficult to manage child (DS or DR TB) |                         | Consult sub county and county clinical review teams |

\*Children (15 years) weighing above 25 Kgs with INH mono resistance or poly drug resistance should be put on the adult dose