

## STANDARD TREATMENT WORKFLOW (STW)

# Paediatric Abdominal Tuberculosis

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**Standard Treatment Workflow (STW) for the Management of PAEDIATRIC ABDOMINAL TUBERCULOSIS ICD-10-A18.31**

**WHEN TO SUSPECT?**

- One or more of following
  - Recurrent/chronic abdominal pain in presence of red flag signs
  - Abdominal distension/mass
  - Altered bowel habits
- Constitutional symptoms like Presence of Fever >2 weeks, Anorexia, Unexplained weight loss or no weight gain in last 3 months despite adequate nutrition may be present
- History of contact with TB patient may also be present

**CLINICAL FEATURES SPECIFIC TO TYPE OF ABDOMINAL TB**

PERITONEAL TB	VISCERAL TB (LIVER, SPLEEN, PANCREAS)
<ul style="list-style-type: none"><li>Abdominal pain, distension</li><li>Fever</li><li>Weight loss</li></ul>	<ul style="list-style-type: none"><li>Abdominal pain</li><li>Fever</li><li>Jaundice</li><li>Weight loss</li><li>Anorexia</li><li>Hepatosplenomegaly</li><li>Splenomegaly</li><li>Hepatic abscess</li><li>Palpable abdominal lump</li></ul>
NODAL TB	
<ul style="list-style-type: none"><li>Pain abdomen</li><li>Fever</li><li>Palpable abdominal lump</li></ul>	
INTESTINAL TB	
<ul style="list-style-type: none"><li>Recurrent intestinal colic</li><li>Altered bowel habits</li><li>Chronic diarrhoea</li><li>Partial/complete intestinal obstruction</li></ul>	


**EXAMINATION FINDINGS**

- Anthropometry
- General physical & systemic examination
- Look for peripheral LAP, ascites, hepatosplenomegaly, doughy feel of abdomen, palpable abdominal lump, visible peristalsis or a moving mass -'gola' formation due to partially obstructed dilated bowel loop


**RED FLAGS**

- Pain abdomen waking child from sleep
- Chronic, severe, or nocturnal diarrhea

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### CLINICAL FEATURES SPECIFIC TO TYPE OF ABDOMINAL TB

<b>PERITONEAL TB</b> <ul style="list-style-type: none"> <li>Abdominal pain, distension</li> <li>Fever</li> <li>Weight loss</li> </ul>	<b>VISCERAL TB (LIVER, SPLEEN, PANCREAS)</b> <ul style="list-style-type: none"> <li>Abdominal pain</li> <li>Fever</li> <li>Jaundice</li> <li>Weight loss</li> <li>Anorexia</li> <li>Hepatomegaly</li> <li>Splenomegaly</li> <li>Hepatic abscess</li> <li>Palpable abdominal lump</li> <li>Abnormal LFTs</li> </ul>
<b>NODAL TB</b> <ul style="list-style-type: none"> <li>Pain abdomen</li> <li>Fever</li> <li>Palpable abdominal lump</li> </ul>	
<b>INTESTINAL TB</b> <ul style="list-style-type: none"> <li>Recurrent intestinal colic</li> <li>Altered bowel habits</li> <li>Chronic diarrhoea</li> <li>Partial/complete intestinal obstruction</li> <li>Weight loss, anorexia</li> <li>Palpable abdominal lump</li> <li>Lower gastrointestinal bleeding</li> </ul>	

### EXAMINATION FINDINGS

- Anthropometry
- General physical & systemic examination
- Look for peripheral LAP, ascites, hepatosplenomegaly, doughy feel of abdomen, palpable abdominal lump, visible peristalsis or a moving mass -'gola' formation due to partially obstructed dilated bowel loop

**RED FLAGS**

- Pain abdomen waking child from sleep
- Chronic, severe, or nocturnal diarrhea
- Presence of constitutional symptoms like fever, anorexia, weight loss, etc.
- Localized distension or mass

### INVESTIGATIONS

Essential	Ascites	Intestinal involvement
<ul style="list-style-type: none"> <li>Ultrasound abdomen</li> </ul>	<b>Essential</b> <ul style="list-style-type: none"> <li>If exudative ascites, ascitic fluid for NAAT, TB culture</li> <li>No role of ADA</li> </ul>	<b>Desirable</b> <ul style="list-style-type: none"> <li>CECT Abdomen/CT enterography</li> <li>USG guided Abdominal Mass -FNA for cytology, NAAT, culture</li> </ul>
<b>SUGGESTIVE FINDINGS</b> <ul style="list-style-type: none"> <li>Abdominal LN : measuring &gt;15 mm in short axis, conglomerate and/or central necrosis</li> <li>Omental/mesenteric thickening &gt;15 mm with increased echogenicity</li> <li>Ileocaecal wall thickening</li> </ul>	<b>Enlarged Abdominal mass</b>	<b>Optional</b> <ul style="list-style-type: none"> <li>Ileocolonoscopy, tissue biopsy (HPE, NAAT)</li> <li>Laparoscopy, tissue biopsy for HPE, NAAT</li> </ul>
<b>NON SPECIFIC FINDINGS</b> <ul style="list-style-type: none"> <li>Intraabdominal fluid (free or loculated) or Inter-loop ascites</li> <li>Ascitic fluid with multiple septations</li> <li>Abdominal LAP with SAD &lt;15 mm in absence of red flag signs</li> </ul>	<b>Desirable</b> <ul style="list-style-type: none"> <li>USG guided Abdominal mass-FNA for cytology, NAAT, TB culture</li> </ul>	
<ul style="list-style-type: none"> <li>Chest X Ray</li> <li>sputum/GA/IS (If CXR abnormal) for NAAT, TB culture</li> <li>Ascitic fluid (If present) for cytology, protein &amp; albumin</li> <li>Peripheral LN-FNA (If size &gt;2 cm) for cytology, NAAT, TB culture</li> </ul>	<b>Optional</b> <ul style="list-style-type: none"> <li>USG/CT guided core biopsy of LN for histology, NAAT, TB culture</li> </ul>	

### DIAGNOSTIC ALGORITHM

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graph TD
    A[If abdominal TB suspected] --> B[Look for peripheral nodes, get CXR and Abdominal USG]
    B --> C[USG suggestive of TB]
    B --> D[USG normal]
    C --> E[CXR abnormal]
    C --> F[Peripheral nodes +]
    C --> G[No peripheral nodes CXR Normal]
    D --> H[Evaluate for other causes/ Refer to higher centre]
    E --> I[Sputum/GA/IS for NAAT/TB culture]
    I --> J[Positive]
    I --> K[Negative*]
    J --> L[Start treatment]
    K --> M[Start treatment]
    F --> N[FNA for NAAT/TB culture/Cytopathology]
    N --> O[Positive]
    N --> P[Negative*]
    O --> L
    P --> Q[If Exudative with lymphocytic predominance, ascitic fluid for NAAT/TB culture]
    Q --> R[Positive]
    Q --> S[Start treatment]
    G --> T[Ascites]
    G --> U[Lymphadenopathy or abdominal mass]
    G --> V[Ileocaecal TB*]
    T --> W[Ascitic fluid aspiration - Cytology, protein, sugar]
    W --> S
    U --> X[FNA for NAAT/TB culture/Cytopathology where feasible]
    X --> Y[Positive]
    X --> S
    V --> Z[CECT Abdomen/CT enterography²]
    Z --> S
    
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\*Consider USG guided FNA from abdominal nodes/ refer to higher centre if not available or feasible  
 #Consider CECT Abdomen/CT enterography if isolated ileocaecal thickening or LN sampling not feasible/Refer to higher centre if not available

### MANAGEMENT

<b>TREATMENT</b> <ul style="list-style-type: none"> <li>Start treatment &amp; follow-up as per NTEP</li> <li>ATT for 6 months (2HRZE + 4HRE)</li> <li>Pyridoxine supplementation- 10 mg/day</li> <li>Steroids- Routinely not recommended (SAIO)</li> <li>Supportive treatment- Management of SAM/Malnutrition as per national guidelines</li> <li>Surgical treatment:                             <ul style="list-style-type: none"> <li>Acute intestinal obstruction, Bowel perforation</li> <li>Persistence of obstructive symptoms despite conservative management &amp; ATT</li> </ul> </li> </ul>	<b>MONITORING</b> <ul style="list-style-type: none"> <li><b>Assessment of response to treatment:</b> <ul style="list-style-type: none"> <li>Clinical follow up - every month during treatment &amp; after that every 3 months</li> <li>Radiologically by USG - At the end of treatment or if worsening or non response to treatment</li> <li>Microbiological - If worsening or non response to treatment</li> </ul> </li> <li><b>Pointers towards DR TB investigation:</b> <ul style="list-style-type: none"> <li>Non response to treatment or Worsening or deterioration of constitutional symptoms after initial improvement. Rule out Crohn's disease OR Inflammatory Bowel Disease</li> <li>Obstructive symptoms may persist or worsen despite treatment with appropriate ATT</li> <li>Monitor for                                     <ul style="list-style-type: none"> <li>Adherence to treatment (ATT)</li> <li>Adverse drug reactions- ATT induced</li> </ul> </li> </ul> </li> </ul>	<b>WHEN TO REFER?</b> <ul style="list-style-type: none"> <li>Diagnosis is uncertain &amp; additional investigations are required</li> <li>Acute intestinal obstruction or bowel perforation</li> <li>DR TB</li> <li>No response to appropriate treatment</li> <li>Oral drug (ATT) intolerance/cannot be given</li> </ul>
<b>DO NOT start Empirical ATT with isolated:</b> <ul style="list-style-type: none"> <li>Recurrent/Chronic abdominal pain without red flag signs</li> <li>Chronic diarrhoea without proper evaluation</li> <li>Failure to gain weight</li> </ul>		

### ABBREVIATIONS

ATT -Anti-tubercular treatment	E -Ethambutol	IS - Induced Sputum	R - Rifampicin
CECT - Contrast Enhanced Computed Tomography	FNA- Fine Needle Aspiration	LAP- Lymphadenopathy	SAD- Sagittal Abdominal Diameter
CT - Computed Tomography	GA- Gastric Aspiration	LN- Lymph Node	SAIO- Sub Acute Intestinal Obstruction
CXR- Chest X-Ray	H- Isoniazid	MGIT- Mycobacteria Growth Indicator Tube	SAM- Severe Acute Malnutrition
DR-TB- Drug Resistant tuberculosis	HPE- Histopathological Examination	NAAT- Nucleic Acid Amplification Test	USG- Ultrasonography
	IBD-Inflammatory Bowel Disease		Z- Pyrazinamide

### REFERENCES

- National TB Elimination Programme, Central TB Division, Training Modules for Programme Managers & Medical Officers, Ministry of Health & Family Welfare, Government of India. <https://tbcindia.gov.in/index.php?lang=1&level=1&sublinkid=5465&id=3540> Last access on 10 March, 2022.
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