

## STANDARD TREATMENT WORKFLOW (STW)

# Paediatric Osteoarticular Tuberculosis

Sushil Kumar Kabra<sup>1</sup>, Varinder Singh<sup>2</sup>, Amber Kumar<sup>3</sup>, Jagdish Prasad Goyal<sup>4</sup>, Joseph L Mathew<sup>5</sup>, Kana Ram Jat<sup>6</sup>, Krishna Mohan Gulla<sup>7</sup>, Manjula Datta<sup>8</sup>, Samriti Gupta<sup>9</sup>, Sangeeta Sharma<sup>10</sup>, Sarika Gupta<sup>11</sup>, Tanu Singhal<sup>12</sup>

<sup>1</sup>Paediatrics, All India Institute of Medical Sciences, New Delhi;<sup>2</sup>Paediatrics, Lady Hardinge Medical College, New Delhi;<sup>3</sup>Paediatrics, All India Institute of Medical Sciences, Bhopal;<sup>4</sup>Paediatrics, All India Institute of Medical Sciences, Jodhpur;<sup>5</sup>Paediatrics Pulmonology, Postgraduate Institute of Medical Education and Research, Chandigarh;<sup>6</sup>Paediatrics, All India Institute of Medical Sciences, New Delhi;<sup>7</sup>Paediatrics, All India Institute of Medical Sciences, Bhubaneswar;<sup>8</sup>ASPIRE Chennai;<sup>9</sup>Paediatrics, All India Institute of Medical Sciences, Bilaspur;<sup>10</sup>Paediatrics, National Institute of Tuberculosis and Respiratory Diseases, New Delhi;<sup>11</sup>Department of Paediatrics, King George's Medical University, Lucknow;<sup>12</sup>Paediatrics Infectious Disease, Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute, Mumbai

### CORRESPONDING AUTHOR

Sushil Kumar Kabra, Paediatrics, All India Institute of Medical Sciences, New Delhi

Email: [skkabra@hotmail.com](mailto:skkabra@hotmail.com)

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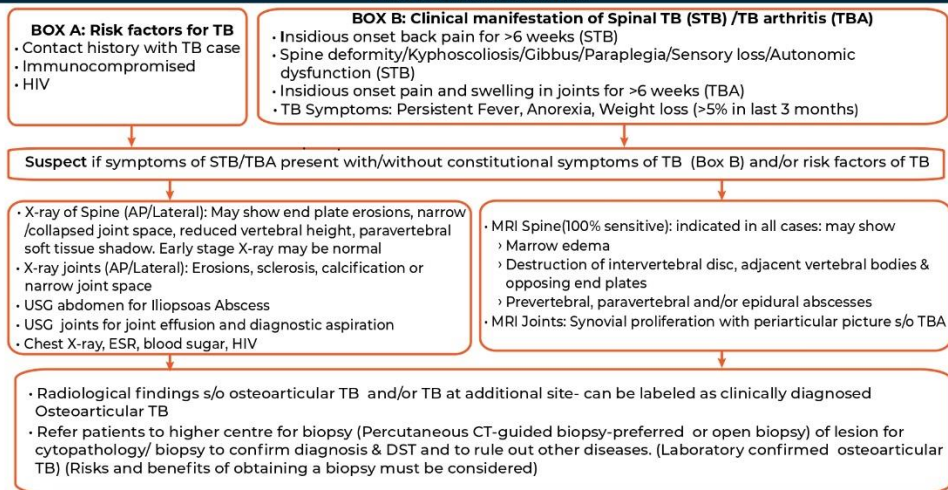
## Standard Treatment Workflow (STW) for the Management of PAEDIATRIC OSTEOARTICULAR TUBERCULOSIS ICD-10-18.0

	<b>POTT'S SPINE</b> (COMMONEST, 50% OF OSTEOARTICULAR TB)	<b>DACTYLITIS</b> (SHORT BONES)	<b>ARTHRITIS</b> (LARGE JOINTS-HIP/KNEE COMMONEST)
<b>WHEN TO SUSPECT</b>	<ul style="list-style-type: none"><li>Insidious onset back pain for &gt;6 weeks (Commonest thoracic &gt; lumbar &gt; cervical)</li><li>Localized/Referred root pain</li><li>TB Symptoms: Fever/anorexia/weight loss</li><li>CNS complications like Paraparesis (20-50%), cauda equina syndrome, paraspinal muscle wasting, severe pain</li><li><b>Examination:</b> Local tenderness/Gibbus-Neurological abnormality like exaggerated DTRs or deficit may be present</li></ul>	<ul style="list-style-type: none"><li>Swelling of short tubular bones of hands &amp; feet (Proximal phalanx or metacarpals of index/middle/ring fingers are commonly affected)</li><li>In children multiple or consecutive bones are involved, compared to a single bone in adults</li><li>May present without pyrexia or signs of inflammation</li></ul>	<ul style="list-style-type: none"><li>Insidious onset joint pain, swelling</li><li>Monoarticular arthritis</li><li>Commonly associated with pulmonary or lymph node TB</li></ul>
<b>ESSENTIAL</b>	<ul style="list-style-type: none"><li><b>X-ray Spine</b><ul style="list-style-type: none"><li>In early stage X-ray may be normal</li><li>May show end plate erosions, joint space</li></ul></li></ul>	<ul style="list-style-type: none"><li><b>ESSENTIAL</b><ul style="list-style-type: none"><li><b>Plain X-ray of involved parts</b><ul style="list-style-type: none"><li>Diaphyseal expansile lesion</li><li>Periosteal reaction is uncommon</li></ul></li></ul></li></ul>	<ul style="list-style-type: none"><li><b>ESSENTIAL</b><ul style="list-style-type: none"><li>X-ray of the involved joint(s): A triad of X-ray abnormalities (Phemister's triad) may be seen</li></ul></li></ul>

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<b>INVESTIGATION</b>	<p><b>ESSENTIAL</b></p> <ul style="list-style-type: none"> <li><b>X-ray Spine</b> <ul style="list-style-type: none"> <li>In early stage X-ray may be normal</li> <li>May show end plate erosions, joint space narrowing/collapse, decreased vertebral height, paravertebral soft tissue shadow</li> </ul> </li> <li><b>MRI Spine preferred, if not feasible do CT</b> <ul style="list-style-type: none"> <li>Marrow edema</li> <li>Destruction of intervertebral disc, adjacent vertebral bodies &amp; opposing end plates</li> <li>Pre/para vertebral or epidural abscess</li> </ul> </li> <li>Sputum/GA for NAAT, MGIT/LJ (if CXR abnormal)</li> <li>FNAC (if peripheral lymphnodes enlarged) for Cytology, NAAT &amp; MGIT/LJ</li> </ul> <p><b>DESIRABLE</b></p> <ul style="list-style-type: none"> <li>Image guided (USG/CT) aspiration of abscess (if feasible) for NAAT &amp; MGIT/LJ.</li> </ul>	<p><b>ESSENTIAL</b></p> <ul style="list-style-type: none"> <li><b>Plain X-ray of involved parts</b> <ul style="list-style-type: none"> <li>Diaphyseal expansile lesion</li> <li>Periosteal reaction is uncommon</li> <li>Healing is by sclerosis (usually gradual)</li> </ul> </li> <li><b>X-ray film of chest</b> <ul style="list-style-type: none"> <li>Sputum/GA for NAAT &amp; MGIT/LJ, if CXR abnormal</li> </ul> </li> <li>FNAC (if peripheral lymphnodes enlarged) for Cytology, NAAT &amp; MGIT/LJ</li> </ul> <p><b>DESIRABLE</b></p> <ul style="list-style-type: none"> <li>Image guided (USG/CT) aspirate from involved bones for NAAT &amp; MGIT/LJ.</li> </ul>	<p><b>ESSENTIAL</b></p> <ul style="list-style-type: none"> <li>X-ray of the involved joint(s): A triad of X-ray abnormalities (Phemister's triad) may be seen                     <ul style="list-style-type: none"> <li>Peri-articular osteoporosis</li> <li>Peripherally located osseous erosion</li> <li>Gradual joint space narrowing</li> </ul> </li> <li>Early stage synovitis &amp; arthritis imaging may show wide joint space due to effusion</li> <li>Bony ankylosis development is rare in TB arthritis in contrast to Pyogenic arthritis</li> <li>USG/ MRI of joint</li> <li><b>X-ray film of chest</b> <ul style="list-style-type: none"> <li>GA/Sputum for CBNAAT, MGIT (if CXR abnormal)</li> </ul> </li> <li>FNAC (if peripheral lymphnodes enlarged) for Cytology, NAAT &amp; MGIT/LJ</li> </ul> <p><b>DESIRABLE</b></p> <ul style="list-style-type: none"> <li>Image guided (USG/CT) aspirate from joint fluid for NAAT &amp; MGIT/LJ.</li> </ul>

**DIAGNOSTIC ALGORITHM**



**MANAGEMENT**

<p><b>TREATMENT &amp; MONITORING</b></p> <ul style="list-style-type: none"> <li>Start treatment for microbiologically /lab confirmed TB and probable TB</li> <li>Regimen : 2HRZE + 10HRE (Standard doses) + Pyridoxine 10 mg/day</li> <li>Follow up every month during treatment &amp; subsequently every 3 months: Pott's spine with X-ray or MRI &amp; Tubercular dactylitis or arthritis with plain X-ray</li> <li>Monitor on each visit:                     <ol style="list-style-type: none"> <li>Symptomatic improvement, weight gain, side effects of medicines</li> <li>Microbiology : sputum/GA if CXR abnormal at end of IP. Site samples like aspiration of pus from lesions including psoas abscess (if worsening of symptoms/poor response)</li> </ol> </li> <li>Imaging: MRI/CT/X ray of affected parts: at end of treatment or early if worsening</li> </ul> <p><b>Surgical Indications in Potts Spine</b></p> <ul style="list-style-type: none"> <li>Progressive neurological deficit</li> <li>Paraplegia of recent onset or severe paraplegia</li> <li>Persistent pain with spinal instability</li> <li>Spinal deformity-severe kyphotic deformity at presentation, or in children (&lt;10 years of age) at high risk of progression of kyphosis with growth after healing of disease</li> </ul>	<p><b>WHEN TO REFER</b></p> <ul style="list-style-type: none"> <li>Suspected osteoarticular disease if essential investigations are not available</li> <li>Diagnosis (microbiological or probable) not established by investigations</li> <li>Surgery needed: imaging suggest compressive myelopathy, motor deficits</li> <li>No improvement with appropriate treatment</li> <li>DR TB: diagnosed or high suspicion</li> </ul> <p><b>Confirm microbiologically in all cases, if possible, before ATT</b></p> <p><b>OTHER INFORMATION</b></p> <ul style="list-style-type: none"> <li>In case of synovial fluid or cold abscess aspiration (against gravity), send samples for confirmation of TB in following 3 ways                     <ul style="list-style-type: none"> <li>Two dry slide for demonstration of AFB (ZN staining)</li> <li>Two samples in formalin for histopathological examination</li> <li>Two samples in saline for culture followed by DST and/or NAAT</li> </ul> </li> <li>Confirmed cases to undergo HIV/blood sugar testing/parent counselling *MGIT/LJ (if MGIT not available)</li> </ul>
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**ABBREVIATIONS**

AFB: Acid fast bacillus	DST: Drug Sensitivity Test	HRZE: Isoniazid; Rifampicin; Pyrazinamide; Ethambutol	NAAT: Nucleic Acid Amplification Test s/o: Suggestive of
AP: Antero-Posterior	ESR: Erythrocyte Sedimentation Rate	IP: Intensive Phase	STB: Spinal TB
CT: Computed Tomography	FNAC: Fine Needle Aspiration Cytology	LJ: Löwenstein Jensen	TBA: TB Arthritis
CXR: Chest X-ray	GA: Gastric Aspirate	MGIT: Mycobacteria Growth Indicator Tube	USG: Ultrasonography
DR: Drug Resistant TB	HIV: Human Immunodeficiency Virus	MRI: Magnetic Resonance Imaging	ZN: Ziehl Neelsen

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This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal ([stw.icmr.org.in](http://stw.icmr.org.in)) for more information.

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