

STANDARD TREATMENT WORKFLOW (STW)

Fever in Children

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Department of Health Research
Ministry of Health and Family Welfare, Government of India

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Standard Treatment Workflow (STW) for the Management of FEVER IN CHILDREN ICD-10-R50

FEVER IS Core (rectal) temperature $\geq 38.0^{\circ}\text{C}$ (100.4°F) or axillary temperature $> 37.5^{\circ}\text{C}$ (100.4°F)

WHAT TO ASK?	EXAMINATION	CLUES TO A SPECIFIC DIAGNOSIS
Fever duration	Vital signs: Temp, HR, RR, BP, CFT	Fever + respiratory symptoms: <ul style="list-style-type: none">Cough, runny nose: URTIMembrane over tonsils/pharynx: DiphtheriaParoxysmal cough: Pertussis like illnessBarking cough: Laryngotracheobronchitis/ croup
Localizing symptoms of: RTI, UTI, GI tract infection, CNS infection	Appearance: Sick, toxic, lethargic, irritable, inconsolable, dehydrated	Fever + rash <ul style="list-style-type: none">Red maculopapular rash: Measles, Rubella, Dengue.Fine generalized maculopapular rash with systemic dysfunction/shock: Meningococemia.Itchy erythematous macules evolving to clear vesicles: Varicella
Rash, joint symptoms, skin/ soft tissue swelling or redness	General Examination: <ul style="list-style-type: none">Ear, nose, throatRash (petechiae, macules, papules, vesicles, nodules, polymorphic)LymphadenopathySkin (pustules, pyoderma, impetigo, cellulitis)JointsGenitalia (for erythema, tenderness, edema)	
Vaccination within 24 hours, drug/toxin exposure		

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FEVER IS Core (rectal) temperature $\geq 38.0^{\circ}\text{C}$ (100.4°F) or axillary temperature $> 37.5^{\circ}\text{C}$ (100.4°F)

WHAT TO ASK?

- Fever duration
- Localizing symptoms of RTI, UTI, GI tract infection, CNS infection
- Rash, joint symptoms, skin/soft tissue swelling or redness
- Vaccination within 24 hours, drug/toxin exposure
- Family/ neighbourhood history of similar illness

EXAMINATION

Vital signs: Temp, HR, RR, BP, CFT

Appearance: Sick, toxic, lethargic, irritable, inconsolable, dehydrated

General Examination:

- Ear, nose, throat
- Rash (petechiae, macules, papules, vesicles, nodules, polymorphic)
- Lymphadenopathy
- Skin (pustules, pyoderma, impetigo, cellulitis)
- Joints
- Genitalia (for erythema, tenderness, edema)
- Bones

Systemic Examination

- Chest auscultation, abdominal palpation, CNS, CVS

CLUES TO A SPECIFIC DIAGNOSIS

Fever + respiratory symptoms:

- Cough, runny nose: URTI
- Membrane over tonsils/pharynx: Diphtheria
- Paroxysmal cough: Pertussis like illness
- Barking cough: Laryngotracheobronchitis/croup

Fever + rash

- Red maculopapular rash: Measles, Rubella, Dengue
- Fine generalized maculopapular rash with systemic dysfunction/shock: Meningococemia
- Itchy erythematous macules evolving to clear vesicles: Varicella

Fever + other symptoms:

- Parotid gland swelling: Mumps
- Arthritis: Consider Chikungunya, acute rheumatic fever, JIA
- Strawberry red tongue, skin peeling, lymphadenopathy, conjunctival injection: Kawasaki disease

INVESTIGATION OF THE FEBRILE CHILD

(Consider if one or more of the following are warranted. Perform investigations only where result impacts management)

<7 DAYS FEVER ALONE	<7 DAYS AND LOCALIZING SYMPTOMS PRESENT	<7 DAYS AND NON SPECIFIC SYMPTOMS	>7 DAYS AND FEVER ALONE OR WITHOUT LOCALIZING SYMPTOMS	>7 DAYS AND LOCALIZING SYMPTOMS PRESENT
<p>ESSENTIAL: If fever <72 hours and child not looking sick: No investigations</p> <p>If fever >72 hours, consider: TLC, DLC, P.S for leukocyte morphology, malarial parasite & platelet count</p> <p>DESIRABLE: Rapid antigen test for malaria, NSI antigen and dengue IgM antibody, blood culture</p> <p>OPTIONAL: C reactive protein, procalcitonin</p>	<p>ESSENTIAL: As given in the first box</p> <p>DESIRABLE: As given in the first box + consider: (Clean-catch) urine microscopy & culture, chest Xray, CSF analysis</p> <p>OPTIONAL: As given in the first box + consider: ultrasonography, throat/ pharyngeal swab, pus aspiration.</p>	<p>ESSENTIAL: As given before</p> <p>DESIRABLE: As given before. Additionally consider: serology for specific viral infection, rapid antigen test for malaria, NSI antigen and dengue IgM antibody, blood culture, serology for scrub typhus</p> <p>OPTIONAL: As given before</p>	<p>ESSENTIAL: All mentioned in Essential & Desirable list in the prior boxes. Additionally consider Widal test.</p> <p>DESIRABLE: Consider Mantoux test, ultrasonography</p> <p>OPTIONAL: As given before. Additionally consider: Ultrasonography of abdomen, chest, pericardium, joint(s), abscess, lymph node clusters, parotid gland etc. for microscopy, Xpert MTB RIF assay, Mycobacterial culture. Consider: bone marrow, ANA-profile, HIV serology, echocardiography, CT PET scan.</p>	<p>ESSENTIAL: All investigations mentioned in the prior boxes</p> <p>DESIRABLE: All investigations mentioned in the prior boxes. Additionally consider: serology for Brucella, CMV, Herpes, Japanese encephalitis, CT scan in deep seated abscess or lung abscess, Bone marrow examination, ANA profile, HIV serology, PET scan.</p> <p>OPTIONAL: All investigations mentioned in the prior boxes</p>

MANAGEMENT

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
INITIAL ASSESSMENT AND STABILIZATION	CONSIDER HOSPITALIZATION FOR OBSERVATION/ MANAGEMENT IN	CONSIDER REFERRAL TO TERTIARY CARE CENTRE	EMPIRIC MANAGEMENT	CONSIDER DISCHARGE WHEN
<p>Manage urgent issues</p> <ul style="list-style-type: none"> • Decrease body temperature with Paracetamol (15mg/kg by any route) and/or hydrotherapy. • Manage any life-threatening issue. • Consider first dose antibiotic in suspected meningitis, severe pneumonia, or severe malnutrition. • Consider anti-malarial in suspected malaria 	<ul style="list-style-type: none"> • All neonates • Young infants with toxic appearance. • Severe malnutrition, toxic appearance, inability to feed, lethargy, irritability, dehydration, etc. • >14 days illness without diagnosis. • Any reason deemed by the treating physician. 	<p>(after appropriate stabilization and/or initial management):</p> <ul style="list-style-type: none"> • Need for intensive care • Complex multi-system disease. • Confirmed complications of the primary illness 	<ul style="list-style-type: none"> • Consider based on likely diagnosis, sickness status, and availability of investigation facilities. • Empiric treatment should be tailored based on subsequently available investigation reports & local antimicrobial sensitivity. • Anti tuberculosis treatment (ATT) should not be started on empiric basis except in suspected TBM 	<ul style="list-style-type: none"> • Afebrile > 48 hours or fever is showing defervescence • Feeding well • Presenting symptoms (in addition to fever) resolved/resolving • Physician is satisfied that further care can be continued on ambulatory basis • Duration of i.v antibiotic therapy is completed

ABBREVIATIONS

ANA: Anti-nuclear antibody	CSF: Cerebro-spinal fluid	HR: Heart rate	RTI: Respiratory tract infection
BP: Blood pressure	CT: Computed tomography	JIA: Juvenile idiopathic arthritis	TLC: Total leukocyte count
CFT: Capillary filling time	DLC: Differential leukocyte count	PET: Positron emission tomography	URTI: Upper respiratory tract infection
CMV: Cytomegalovirus	CVS: Cardiovascular system	PS: Peripheral smear	UTI: Urinary tract infection
CNS: Central nervous system	GI: Gastro-intestinal	RR: Respiratory rate	

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

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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) for more information.

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