MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

CLINICAL FEATURES

Majority of children with covid infection may be asymptomatic or mildly symptomatic

- Common symptoms include- fever, cough, breathlessness/ shortness of breath, fatigue, myalgia, rhinorrhea, sore throat, diarrhea, loss of smell, loss of taste etc

Few children may present with gastrointestinal symptoms and atypical symptoms

A new syndrome named multi system inflammatory syndrome has been described in children. Such cases are characterized by:

- Unremitting fever > 38°C
- Epidemiological linkage with SARS CoV – 2
- Clinical features suggestive of Multi System Inflammatory Syndrome

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

ASYMPTOMATIC AND MILD CASES

Asymptomatic children are usually identified while screening, if family members are identified

- Require monitoring for development of symptoms & subsequent treatment according to assessed severity

Children with mild disease may present with sore throat, rhinorrhea, cough with no breathing difficulty. Few children may have gastrointestinal symptoms

- They do not need any investigations

These children can be managed at home with home isolation & symptomatic treatment

Children with underlying comorbid conditions including congenital heart disease, chronic lung diseases, chronic organ dysfunction, obesity may also be managed at home

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

MILD CASES TREATMENT: HOME ISOLATION

(1/2)

For Fever: Paracetamol 10-15 mg/kg/dose; may repeat every 4-6 hours

For Cough: Throat soothing agents like warm saline gargles in older children & adolescents

Fluids & feeds: Ensure oral fluids to maintain hydration, and nutritious diet

Antibiotics: Not indicated

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

MILD CASES TREATMENT: HOME ISOLATION

(2/2)

There is no role of Hydroxychloroquine, Favipiravir, Ivermectin, lopinavir/ritonavir, Remdesivir, Umifenovir, Immunomodulators including Tocilizumab, Interferon B1a, Convalescent plasma infusion or dexamethasone

Maintain monitoring chart including counting of respiratory rates 2-3 times a day, look for chest indrawing, bluish discolouration of body, cold extremities, urine output, oxygen saturation, fluid intake, activity level, especially for young children

Parent/ caregivers to contact the doctor in case of emergency

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

MODERATE COVID-19 CASES

(1/3)

A child to be categorized as moderate Covid-19 Case if he/she has the following:

- Rapid Respiration (Age based) as follows:
  - Respiratory rate >60/ min for less than 2 months
  - Respiratory rate >50/min for less 2 to 12 months
  - Respiratory rate >40/min for 1 to 5 years
  - Respiratory rate >30/min for more than 5 years
- And oxygen saturations in all these age groups to be above 90%

Child may be suffering from pneumonia which may not be clinically apparent

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

MODERATE COVID-19 CASES

(2/3)

Investigations: No lab tests required routinely unless indicated by associated comorbid conditions

Treatment: To be admitted in Dedicated Covid Health Centre or Secondary level Healthcare Facility & monitored for clinical progress

- Maintain fluid & electrolyte balance
- Encourage oral feeds (breast feeds in infants)
- If oral intake is poor, intravenous fluid therapy should be initiated

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

MODERATE COVID-19 CASES

(3/3)

Child to be administered:

- For fever: Paracetamol 10-15 mg/kg/dose. May be repeated every 4-6 hourly. (temperature > 38°C, i.e. 100.4°F)

- Amoxycillin to be administered, if there is evidence/strong suspicion of bacterial infection

- For SpO2 below 94%, oxygen supplementation is required

- Corticosteroids may be administered in rapidly progressive disease. Not required in all children with moderate illness, specifically during the first few days of illness

- Supportive care for comorbid conditions, if any

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

SEVERE COVID-19 CASES (1/4)

Children with SpO2 level less than 90% are categorized as having severe Covid-19 infection

- They may have severe pneumonia, Acute Respiratory Distress Syndrome, Septic Shock, Multi-organ dysfunction syndrome, or pneumonia with cyanosis

- Clinically, such children may present with grunting, severe retraction of chest, lethargy, somnolence, seizure

- Such children should be admitted in Dedicated Covid Hospital/ Secondary/ Tertiary level healthcare facility

- Few children may require HDU/ICU care & should be assessed for;

  - thrombosis, hemophagocytic lymphohistiocytosis (HLH) & organ failure

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

SEVERE COVID-19 CASES (2/4)

Investigations: Complete blood counts, liver and renal function tests, Chest X-ray

Treatment: Intravenous fluid therapy

- Corticosteroids: Dexamethasone 0.15 mg/kg per dose (max 6 mg) twice a day. Equivalent dose of methylprednisolone may be used for 5-14 days depending on clinical assessment
- Antiviral agents: Remdesivir granted for EUA*, to be used in a restricted manner within three days of onset of symptoms after ascertaining that child's renal & liver functions are normal & to be monitored for side effects
- Suggested doses (body weight based):
  - >40 kg: 200 mg on 1st day then 100 mg once daily for 4 days
  - 3.5 to 4 kgs: 5mg/kg on the 1st day, 2.5 mg/kg once daily for 4 days
  - No role of Hydroxychloroquine, Favipiravir, Ivermectin, lopinavir/ritonavir, Umifenovir

**Emergency Use Authorization*

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

SEVERE COVID-19 CASES (3/4)

Children may need organ support in case of organ dysfunction; e.g. Renal Replacement Therapy

Management & Treatment of Acute Respiratory Distress Syndrome (ARDS):

- Mild ARDS: High Flow Nasal Oxygenation, Non-invasive ventilation may be given
- Severe ARDS: Mechanical ventilation may be given with low tidal volume
- If the child does not improve clinically even then, may consider (if available) High Frequency Oscillatory Ventilation, Extracorporeal Membrane Oxygenation
- Awake prone position may be considered in older hypoxemic children if they tolerate.

MANAGEMENT OF COVID-19 IN

CHILDREN

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

SEVERE COVID-19 CASES (4/4)

If the child develops septic shock or myocardial dysfunction then he/she may require:

- Crystalloid bolus administration: 10 to 20 ml/kg over 30 to 60 minutes; be cautious if cardiac dysfunction is there

- Early inotrope support with monitoring of fluid overload like any other cause of shock

MANAGEMENT OF MIS*
IN CHILDREN & ADOLESCENTS TEMPORALLY RELATED TO COVID-19

*Multisystem Inflammatory Syndrome

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

DIAGNOSTIC CRITERIA (1/2)

Children and adolescents, 0–19 years of age with fever ≥ 3 days AND two of these:

- Rash or bilateral non-purulent conjunctivitis or muco-cutaneous inflammation signs
- Hypotension or shock
- Rash or bilateral non-purulent conjunctivitis or muco-cutaneous inflammation signs
- Evidence of coagulopathy (by PT, PTT, elevated d-Dimers)
- Acute gastrointestinal problems (diarrhoea, vomiting, or abdominal pain)

AND

MANAGEMENT OF MIS*
IN CHILDREN & ADOLESCENTS TEMPORALLY RELATED TO COVID-19

*Multisystem Inflammatory Syndrome

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

DIAGNOSTIC CRITERIA (2/2)

Elevated markers of inflammation such as ESR, C-reactive protein, or procalcitonin

AND

No other obvious microbial cause of inflammation, including bacterial sepsis, staphylococcal or streptococcal shock syndromes

AND

Evidence of COVID-19 (RT-PCR, antigen test or serology positive), or likely contact with patients with COVID-19

Investigations: as listed above in criteria and investigations to rule out common differential diagnoses

MANAGEMENT OF MIS*
IN CHILDREN & ADOLESCENTS TEMPORALLY RELATED TO COVID-19

*Multisystem Inflammatory Syndrome

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

TREATMENT
(1/3)

Drugs to be used in case the child has cardiac dysfunction, shock, coronary involvement, multi organs dysfunction

- Steroids: Methylprednisolone
  1 to 2 mg/kg per day

- Intravenous Immunoglobulin
  2 g/kg over 24 to 48 hours

- Antimicrobials

The child needs appropriate supportive care, preferably in ICU. In absence of cardiac dysfunction, shock, coronary involvement, multi organs dysfunction, one may use steroids or IVIG

MANAGEMENT OF MIS*
IN CHILDREN & ADOLESCENTS TEMPORALLY RELATED TO COVID-19

*Multisystem Inflammatory Syndrome

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

TREATMENT

(2/3)

If the child does not improve with the above treatment or deteriorates, options include:

- Repeat IVIg
- High dose corticosteroid (Methylprednisolone 10 to 30 mg/kg/day for 3 to 5 days)
- Aspirin: 3 mg/kg/day to 5 mg/kg/day max 81 mg/day (if thrombosis or Coronary Aneurysm Score is >2.5)
- Low Molecular Weight Heparin (Enoxaparin):
  - 1 mg/kg twice daily subcutaneously
  - Clotting Factor Xa should be between 0.5 to 1 (if patient has thrombosis/Coronary aneurysm score > 10 or LVEF < 30%)

MANAGEMENT OF MIS*
IN CHILDREN & ADOLESCENTS TEMPORALLY RELATED TO COVID-19

*Multisystem Inflammatory Syndrome

Ministry of Health and Family Welfare, Government of India

mygov मेरी सरकार

TREATMENT
(3/3)

Steroids have to be tapered over 2 to 3 weeks while monitoring inflammatory markers

For children with cardiac involvement,

- Repeat ECG 48 hourly & repeat ECHO at 7 to 14 days and between 4 to 6 weeks
  (and after 1 year if initial ECHO was abnormal)