

Government of India
Ministry of Health and Family Welfare

Protocol for Management of Covid - 19 in the Paediatric Age Group

1. Background and Epidemiology:

WHO declared Covid – 19 caused by SARS CoV-2 as a public health emergency of international concern and subsequently declared it to be a pandemic on 11th March 2020.

It is well documented that children are less commonly affected with this infection and majority of them are asymptomatic. A small proportion (<10%- 20%) of symptomatic children may need hospitalization and 1% to 3% of symptomatic children may require illness requiring intensive care admission.

Direct person to person transmission occurs through close contact, mainly through respiratory droplets that are released when a person coughs, sneezes or talks. These droplets may also land on surfaces where the virus remains viable.

Median incubation period is 5.1 days (range 2 to 14 days). As per current evidence, the period of infectiousness begins with symptoms and lasts up-to 8 days.

2. Patho– physiology:

Most patients with Covid-19 predominantly have respiratory tract infection associated with SARS CoV 2 infection that can progress to severe and systematic disease characterized by Acute Respiratory Distress Syndrome (ARDS), sepsis and multi-organ dysfunction including acute kidney injury, acute cardiac injury.

Autopsy findings in adults in China, European countries showed endothelial damage of pulmonary vasculature, alveolar haemorrhage linked to extensive alveolar and interstitial inflammation that ultimately results in pulmonary oedema, hypercoagulability impaired ventilation – perfusion, Acute Respiratory Distress Syndrome. Limited data are available on children.

3. Case definition (As per WHO surveillance guidelines)

Suspect Case:

A. A patient with acute respiratory illness (fever and at least one sign/ symptom of respiratory disease, e.g. cough, shortness of breath) AND history of travel to or residence in a location reporting community transmission of Covid – 19 disease during the 14 days prior to symptom onset.

OR

B. A patient with any acute respiratory illness AND having been in contact with a confirmed or probable Covid-19 case prior to symptom onset;

OR

C. A patient with severe acute respiratory illness (fever and at least one sign/ symptom of respiratory disease AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical picture.

Probable Case:

A. A suspect case for whom RT – PCR testing for Covid – 19 virus is inconclusive.

OR

These children can be managed at home with home isolation and symptomatic treatment.

For home isolation it is important to assess whether home isolation is feasible by following steps:

- i. There is requisite facility for isolation at his/her residence and also for quarantining the family contacts
- ii. Parents or other care taker who can monitor and take care of child
- iii. If available, Arogya Setu App should be downloaded
- iv. The parents/care giver has agreed to monitor health of the child and regularly inform his/her health status
- v. The parents/ care giver has filled an undertaking on self-isolation and shall follow home isolation/quarant

Children with underlying comorbid condition including: congenital heart disease, chronic lung diseases, chronic kidney disease, (BMI > 2SD) may also be managed at home, if they have features of mild disease and there is easy access to health care in case of deterioration. In case there is lack of proper arrangement to manage these children at home/ access to health care may be admitted.

Treatment of mild illness in home isolation is symptomatic.

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 and adolescents

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

Antibiotics: Not indicated

There is No role of Hydroxychloroquine, Favipiravir, Ivermectin, lopinavir/ritonavir, Remdesivir, Umifenovir, Imiglucerase, Tocilizumab, Interferon B 1 a, Convalescent plasma infusion or dexamethasone.

Monitoring at home: Explain parents/ care taker to maintain a monitoring chart including counting of respiratory rate, if child is not crying, looking for chest indrawing, bluish discolouration of body, cold extremities, urine output, oxygen saturation (by pulse oximeter) if feasible, fluid intake, activity level, esp for young children.

There should be regular communication to doctor or health care worker. Parents/ caregiver should be explained when to seek emergency.

Management of children with Moderate Covid – 19 disease:

A child with Covid-19 will be categorized as having moderate disease if he/ she has the following:

Rapid respiration as follows

Age: less than 2 months: respiratory rate ≥ 60 / min, Age: 2 to 12 months: respiratory rate ≥ 50 /min, Age: 1 to 5 years: respiratory rate ≥ 40 /min, Age: more than 5 years: respiratory rate ≥ 30 /min. And oxygen saturations above 90%.

Children with moderate Covid – 19 disease may be suffering from pneumonia which may not be clinically apparent.

Investigations: No lab tests are required routinely unless indicated by associated co-morbid conditions.

Treatment: Children with moderate Covid-19 disease should be admitted in Dedicated Covid Health Centre Facility and monitored for clinical progress. Maintain fluid and electrolyte balance. Encourage oral feeds (breastfeeding if possible). If oral feeds is poor, intravenous fluid therapy should be initiated.

Children with moderate Covid – 19 disease should be administered:

- i. For fever: Paracetamol 10-15 mg/kg/dose. May be repeated every 4-6 hourly. (temperature > 38°C, i.e. 101°F)
- ii. Amoxicillin to be administered, if there is evidence/ strong suspicion of bacterial infection.
- iii. For SpO₂ below 94%, oxygen supplementation is required.
- iv. Corticosteroids may be administered in rapidly progressive disease. It is not required in all children with moderate disease.

iv. Management of Acute Respiratory Distress Syndrome (ARDS): The principles of treatment are similar to those of the underlying illness.

- Mild ARDS: High Flow Nasal Oxygenation, Non-invasive ventilation may be given.
- Severe ARDS: Mechanical ventilation may be given with low tidal volume (≤ 6 mL/kg and High Positive End-Expiratory Pressure).
- If the child does not improve clinically even then, may consider (if available) High Frequency Oscillatory Ventilation or Extracorporeal Membrane Oxygenation (ECMO).
- Awake prone position may be considered in older hypoxemic children if they tolerate.

Management of Shock: 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 present.
- Early inotrope support with monitoring of fluid overload like any other cause of shock.

7. Management of Multisystem inflammatory syndrome in children and adolescents temporally related to COVID-19

A new syndrome with name of multisystem inflammatory syndrome as been described in children. It is characterized by unrelenting fever $> 38^{\circ}$ C, epidemiological linkage with SARS CoV – 2 and clinical features suggest MIS-C Syndrome.

Diagnostic criteria of MIS-C in Children (WHO criteria): a constellation of clinical and laboratory parameters for diagnosis. These include:

- 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 (oral, hands or feet).
- Hypotension or shock.
- Features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities (including ECHO findings such as elevated proBNP),
- Evidence of coagulopathy (by PT, PTT, elevated d-Dimers).
- Acute gastrointestinal problems (diarrhoea, vomiting, or abdominal pain).

AND

- 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 infection.

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.

Treatment of MIS-C

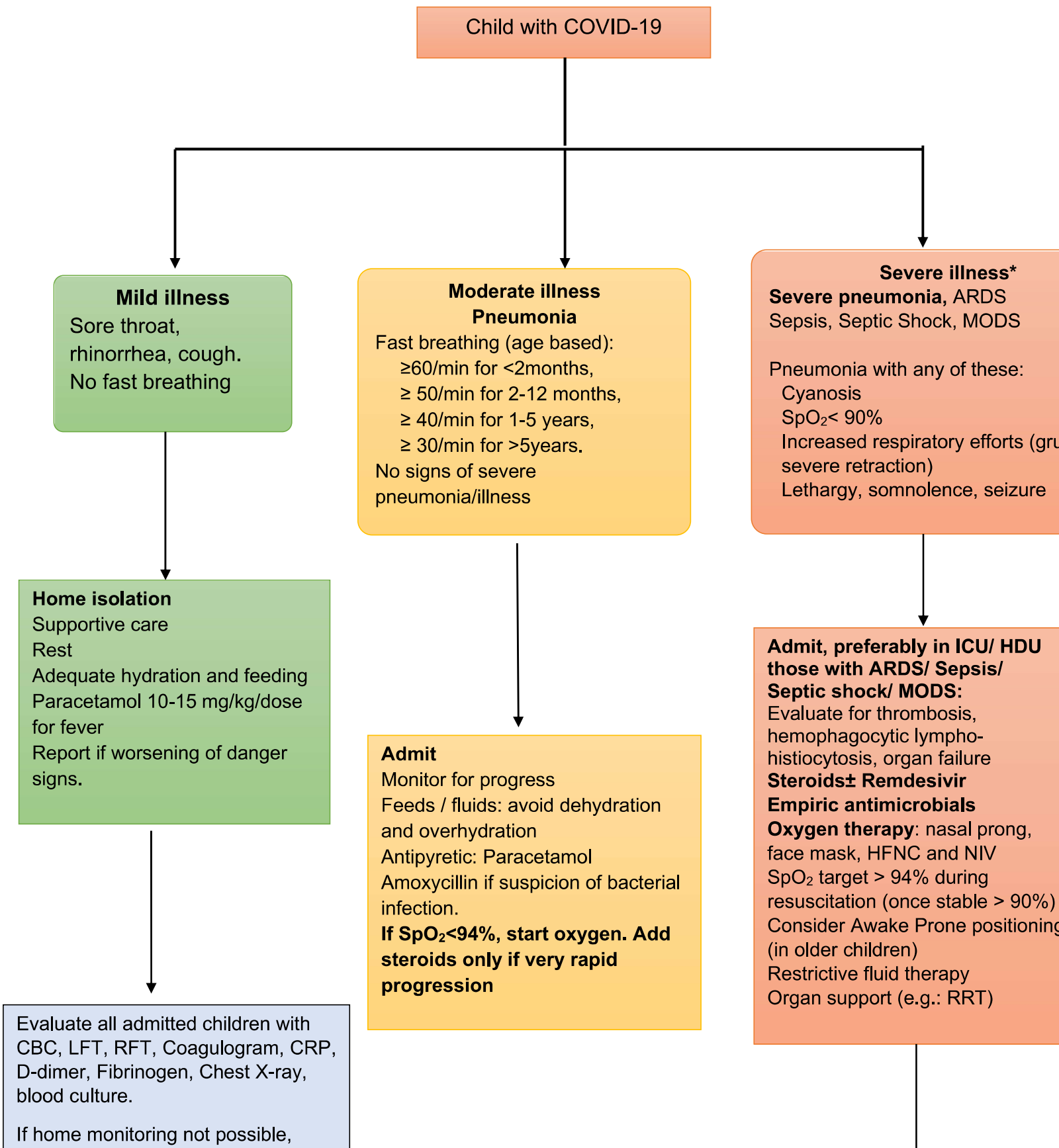
Drugs to be used in case of Multi System Inflammatory Syndrome in Children in case the child has cardiac involvement, multi organs dysfunction (for details, see algorithm):

- i. Steroids: Methylprednisolone 1 to 2 mg/kg per day.
- ii. Intravenous Immunoglobulin 2 g/kg over 24 to 48 hours.
- iii. Antimicrobials

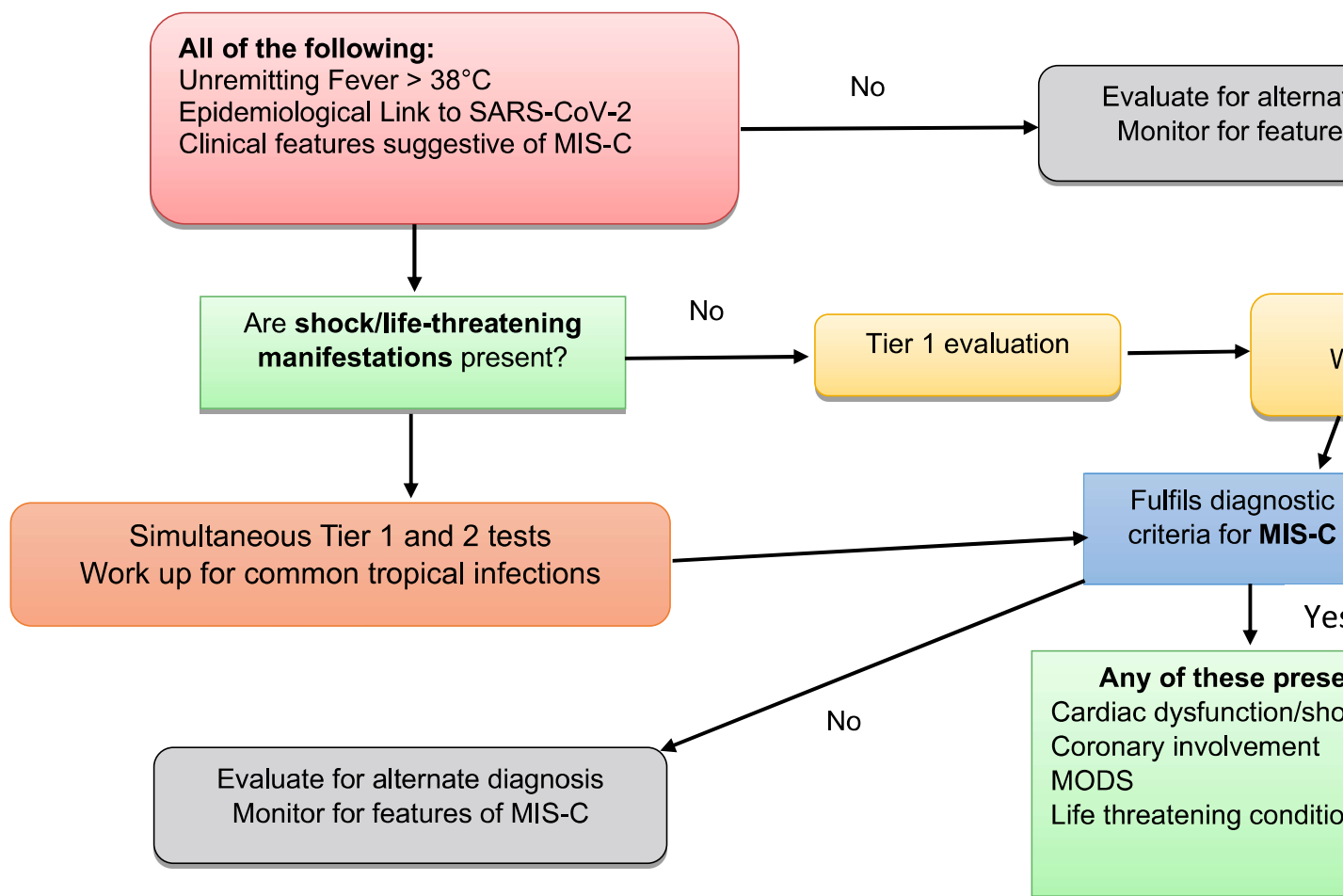
The child needs appropriate supportive care, preferably in ICU. In absence of cardiac dysfunction, shock, or organ dysfunction, one may use steroids or IVIG (for details, see algorithm)

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

Management of COVID-19 in children (from 2 months to 18 years) (Interim Pro



Management of Multisystem inflammatory syndrome in children and adolescents temporally associated with SARS-CoV-2 infection
(Interim Protocol)



Diagnostic Criteria for MIS-C

- Children and adolescents 0–19 years of age with fever \geq 3 days

AND two of these:

- Rash or bilateral non-purulent conjunctivitis or muco-cutaneous inflammation signs (oral, hands or feet).
- Hypotension or shock.
- Features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities (including ECHO findings or elevated Troponin/NT-pro BNP),
- Evidence of coagulopathy (by PT, PTT, elevated d-Dimers).
- Acute gastrointestinal problems (diarrhoea,

Steroid (Methylprednisolone 1-2 mg/kg/d)
+ IVIg (2 g/kg over 24-48 hr)
+ Antimicrobials

May start treatment while completing evaluation for tropical infections (depending on acuity of condition)

If no improvement or worsening of symptoms,

- Repeat IVIg and/ or High dose steroid (1 mg/kg/d for 3-5 days)