ALL INDIA INSTITUTE OF MEDICAL SCIENCES PATNA

Standard Operating Procedure & Hand Book

For

COVID-19

MANAGEMENT

COVID 19 Management protocol - Update
(Version 4: 21st April 2021)

	Policy / Procedure:--	**SOP Of COVID-19 Management (AIIMS Patna)**	
	Version No/ Issue Date:-	**4.0 / 21/04/2021**	

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This document is an interim draft on update of "AIIMS Patna COVID-19 management protocol version 3.0 dated 8th July 2020". Management protocol is updated based on current evidence, local context and resources.

COVID – 19: Mild Disease

- **Upper respiratory tract symptoms and/or fever without shortness of breathing or hypoxia.** ***Same criteria for children and young adults.***

Admission category: **Home isolation** (advice on OPD, day-care and / or tele-consultations)

Management plan

Advice:

1. Ensure adequate hydration and meal/nutrition intake.
2. Continue to follow all personal protective measures. Children above 2 years of age can use face mask.
3. Temperature monitoring 6 hourly in all (more frequent if having fever). Tepid sponging (tap water, not cold water) SOS.
4. Baseline saturation (SPO2) followed by repeat record after 6 minute walking . Consult if baseline saturation below 94% or fall in saturation of more than 5 % after 6 min walk. Monitor and record 6 hourly (or more frequent if having lower respiratory tract symptoms like fast breathing/indrawing of chest)
5. Gargles with chlorhexidine mouth wash 6 hourly and steam inhalation as tolerates twice daily (under supervision of parents).

Medications:

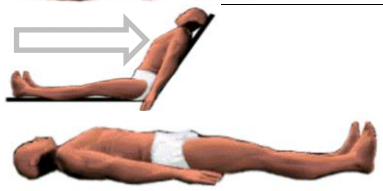
1. Tab paracetamol 500 mg SOS if temperature >100F (can take every 4-6 hourly, maximum 4 doses in 24 hours). *10-15 mg/kg/dose for children*
2. Tab Vitamin C 500 mg once daily x 2 weeks
3. Tab Zinc 50 mg once daily x 2 weeks (*20 mg once a day for children*)
4. Tab levocetirizine 5 mg + montelukast 8 mg 1 tab once daily at night before sleep for 5 days if throat congestion (*levocetirizine 2.5 mg + montelukast 4 mg or weight and age appropriate for children*)
5. Additional advise deemed appropriate for other associated symptoms such as
    a. Tab pantoprazole (40mg) 1 tab once daily empty stomach for gastritis. (*20 mg for children*)
    b. Probiotic sachet (1 twice a day for diarrhoeal manifestation) (*age appropriate for children*)
    c. Throat soothing lozenges or syrup SOS
    d. Oral steroid (dexamethasone 6 mg per day or equivalent dose of methylprednisolone) in cases with mild symptoms but laboratory markers suggestive of inflammatory changes. *Prednisolone 1 mg/kg/day or equivalent doses of methyl prednisolone or dexamethasone in children.*

Investigations:

Lab tests on day 3-5 of illness (Repeat if done earlier):

1. CBC with peripheral smear
2. CRP, Serum ferritin, Serum LDH
3. PT, aPTT, INR, D-Dimer, Fibrinogen
4. LFT, RFT
5. Chest X Ray PA view if lower respiratory tract symptoms.

Awake-proning: Following positions may be adapted in series, each for 30 minute to 2 hours as tolerated

S No	Time duration	Position	
1	30 min to 2 hours	Lying on belly (Prone)	
2	30 min to 2 hours	Lying on right side (right lateral)	
3	30 min to 2 hours	Sitting up 60-90 degree (Fowler position) or Supine	
4	30 min to 2 hours	Lying on left side (left lateral)	
5	30 min to 2 hours	Back to position 1 (prone)	

Duration of home isolation: 10 days from symptom onset and no fever for 3 days (20 days in diagnosed immunocompromised states). RTPCR negative report is not needed either to finish home isolation or for discharge from hospital

COVID – 19: Moderate disease

Any of following

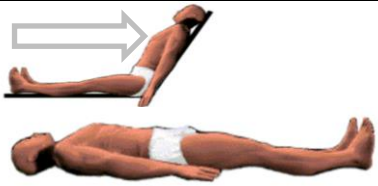
- **Respiratory rate more than 24 in adults; (*In pediatric age group: Pneumonia defined by respiratory rate >60/min in infants <2 months; >50/min in infants 2-12 months; >40/min in 1-5 year age; >30 in older than 5 years)***
- **SpO2< 94% in room air**

Admission category: **COVID Ward; *Dedicated pediatric COVID ward for children***

Management plan

- Oxygen support to target SpO2 > 92%
- Anti-inflammatory agent: Steroid (oral or IV dexamethasone 6 mg od or equivalent dose of methylprednisolone). *Prednisolone 1 mg/kg/day or equivalent doses of methyl prednisolone or dexamethasone in children.*
- Anticoagulation: Low molecular weight heparin 1 mg/kg per day subcutaneous in two divided doses. *In children use LMWH only if established thrombosis*.
- Serial laboratory and radiological investigations (HRCT may be considered if worsening, subject to feasibility)
- Investigations as suggested for mild disease plus additional specific tests such as blood gas, electrolytes (serial monitoring if persisting or worsening)
- Additional antibiotics in cases of suspected secondary bacterial infection
- Restrictive fluid therapy.

Awake-proning: Following positions may be adapted in series, each for 30 minute to 2 hours as tolerated

S No	Time duration	Position	
1	30 min to 2 hours	Lying on belly (Prone)	
2	30 min to 2 hours	Lying on right side (right lateral)	
3	30 min to 2 hours	Sitting up 60-90 degree (Fowler position) or Supine	
4	30 min to 2 hours	Lying on left side (left lateral)	
5	30 min to 2 hours	Back to position 1 (prone)	

COVID – 19: Severe disease

Any of following

- **Respiratory rate more than 30 in adults (In children: pneumonia as defined under moderate cases plus cyanosis, grunting, severe retractions, lethargy, somnolence or seizures)**
- **Critical disease such as ARDS, sepsis, septic shock, MODS, acute thrombosis or MIS-C in children**
- **SpO2< 90% in room air**

Admission category: **COVID ICU**

- Respiratory support:
  Consider mechanical ventilation/ HFNC/ BiPAP. Prioritize invasive ventilation if high work of breathing or respiratory failure

- Prone ventilation as feasible and indicated
- Anti-inflammatory agent: Steroid (IV dexamethasone 6 mg od or equivalent dose of methylprednisolone), consider methylprednisolone pulse therapy in high cytokine storm.
- Additional antibiotics in cases of suspected secondary bacterial infection
- Immunomodulator: Have not been found effective in most of the trials. Tocilizumab may be considered on case to case basis.
- Anticoagulation: Low molecular weight heparin 1 mg/kg per day subcutaneous in two divided doses.
- Restrictive fluid therapy.
- Supportive measures: treat septic shock as per surviving sepsis or similar protocol, maintain euvolemia, take care of pain and optimize sedation.
- Serial laboratory and radiological investigations (HRCT may be considered subject to feasibility and expected additional information)
- Consider HFOV / ECMO in refractory cases.

Late complication of COVID-19 in Children

COVID-19 associated Multisystem Inflammatory Syndrome in Children (MIS-C) or Pediatric Multisystem Inflammatory Syndrome

WHO Case definition of Pediatric Multisystem Inflammatory Syndrome
Children and adolescents 0–19 years of age with fever ≥3 days and two of the following: 1. Rash or bilateral non-purulent conjunctivitis or muco-cutaneous inflammation signs (oral, hands or feet). 2. Hypotension or shock. 3. Features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities (including ECHO findings or elevated Troponin/NT-pro BNP), 4. Evidence of coagulopathy (by PT, PTT, elevated d-Dimers). 5. 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 shock syndromes. **And** Evidence of COVID-19 (RT-PCR, antigen test or serology positive), or likely contact with patients with COVID-19.

Tier 1 investigations

Child is considered to have positive screen for MIS-C if both of these are present

1. CRP>5 mg/dL and/or ESR >40 mm/hr
2. At least one of the following:
    - Lymphopenia (absolute lymphocyte count <1000/micro L)
    - Thrombocytopenia (Platelets <150,000/ micro L)
    - Hyponatremia (S. Sodium <135 mEq/L)
    - Neutrophilia
    - Hypoalbuminemia

If screen is positive, child should further be evaluated with tier 2 investigations (do tier 1 and tier 2 investigation simultaneously if child presents with life threatening manifestations such as shock, respiratory failure, brain dysfunction, renal failure etc)

Tier 2 investigations

- Electrocardiogram (ECG)
- Echocardiogram: quantification of LV size and systolic function using end-diastolic volume (and z-score) and ejection fraction (EF), detailed evaluation of all coronary artery segments for coronary artery aneurism (CAA) and normalization of coronary artery measurements to body surface area using z-scores.
- BNP/NT-proBNP levels, Trop T
- Inflammatory markers: CRP, Serum ferritin, Serum LDH, PT, aPTT, INR, D-Dimer, Fibrinogen, Procalcitonin, triglyceride and cytokins such as IL-6, IL-10 and TNF if available
- SARS-CoV-2 Serology

Treatment

If Life-threatening disease

- Methyl prednisolone 1-2 mg/kg/day AND
- IVIG 2 gm/kg over 24-48 hours
- Anti-microbials and evaluate for tropical infections
- Consider anakinra/ tocilizumab

If not life-threatening disease

- Evaluate for tropical infections and consider anti-microbials
- Methyl prednisolone 1-2 mg/kg/day OR
- IVIG 1-2 gm/kg over 24-48 hours

Antiplatelet therapy is indicated if there is thrombocytosis or CAA (Z score>2.5)

- Aspirin 3-5 mg/kg/day (max 81 mg/day

Anticoagulation is indicated if there is CAA (Z score>10), thrombosis or LVEF <35%

- Enoxaparin: 1-2 mg/kg/day subcutaneous, target factor Xa level 0.5-1

Serial monitoring with ECG (repeat 48 hrly), ECHO (7-14 days and 4-6 weeks.
Cardiac MRI or CT scan should also be considered.

Pediatric COVID-19 related frequently asked questions (FAQs) by parents and caregivers during coronavirus pandemic

Q1. What measures can I take to prevent my child from having COVID-19 infection?

It can be a confusing time and it is okay to be worried for your children. Continue to take all personal protective measures like frequent hand washing or hand sanitization, wear a face mask covering your nose, avoid crowded places, cover your mouth and nose while coughing and sneezing, and eat healthy. Children above 2 years of age can also wear a mask.

Q2. What should I do if a family member has come COVID-19 positive?

Do not panic. If a family member has tested coronavirus positive, then rest of the family members should also get themselves tested for COVID-19 and continue to take all personal protective measures for the next 14 days.

If the family member has been advised home isolation, then they can stay in a separate room (if possible) and wear a face mask at all times along with following other protective measures.

- Keep your children away from the COVID-19 positive patient. If your child is more than 2 years old and is cooperating, then they can also wear a mask.
- Make sure to wash their hands frequently, make them eat and drink well (home cooked food).
- Check their temperature frequently, watch for development of any symptoms, and visit a nearby doctor if required.

Q3. Do all children need to be tested for COVID-19?

If your child is not having any flu-like symptoms after coming in close direct contact with a COVID-19 positive patient, then you should remain watchful for symptoms till 14 days from contact.

At any point within 14 days of contact, if the child develops symptoms like fever, cough, runny nose, vomiting, loose stools, etc. (described in detail below), then you should get them tested for coronavirus.

Q4. What should I do if my child has symptoms of COVID-19?

Do not panic if your child is having flu-like symptoms (fever, cough, runny nose). It can be due to any other viral illness.

- If you have not already got your child tested for COVID-19, then get it done now.
- Continue to follow personal protective measures for yourself and your child. Give them home cooked food and keep them well hydrated.
- Measure their temperature frequently. If it is more than 100 degree F, then you can do tepid sponging with tap water and give them syrup or tablet paracetamol.

WEIGHT OF CHILD	PARACETAMOL DOSE FOR FEVER (per oral, can be repeated after every 4 hours)	
4-5 kg	Syrup Paracetamol (125 mg/5 mL)	2.5 mL
6-8 kg	Syrup Paracetamol (125 mg/5 mL)	3.5-5 mL
9-12 kg	Syrup Paracetamol (250 mg/5 mL)	3-4 mL
13-15 kg	Syrup Paracetamol (250 mg/5 mL)	4-5 mL
16-20 kg	Tablet Paracetamol (500 mg).	½ tablet
20-30 kg	Tablet Paracetamol (650 mg)	½ tablet
>30 kg	Tablet Paracetamol (500 mg)	1 tablet

- You can also give nutritional supplements to your child.

AGE OF CHILD	SYRUP ZINC (20 mg/5 mL)
<6 months	2.5 mL(10 mg) once daily for 14 days
>6 months	5 mL (20 mg) once daily for 14 days

- Other nutritional supplements like syrup multivitamin, drop vitamin D, calcium can be given as per their doctor's advice.
- Be watchful for danger signs (explained below). If present, seek urgent medical advice at your nearest hospital.

Q5. Do all children develop severe COVID-19 infection requiring admission in ICU?

Though we are still learning about coronavirus disease, most children are asymptomatic or develop mild flu-like symptoms which can be treated at home. But children who have been sick for a long time due to other illnesses (like lung diseases, cancer, heart disease, kidney disease etc.) have weak immunity and are at increased risk of developing severe COVID-19 infection that may require ICU care.

Q6. When should I admit my child to a hospital if he/she becomes COVID-19 positive?

SIGNS AND SYMPTOMS	ACTIONS	
If your child has: • Fever • Cough, runny nose • Vomiting, loose stools, stomach pain • Muscle or body pain • Redness of eyes, rash over body, neck swelling	**CONTINUE PROVIDING HOME BASED CARE TO YOUR CHILD** • Do temperature charting • Continue taking personal protective measures • In case of fever, you can do tepid sponging and give syrup/tablet paracetamol • Be watchful for danger signs	**GREEN** 
If your child has: • Babies up to 1 year of age with temp >102-degree F • Fever >100-degree F for more than 3 days • Fast breathing	**VISIT YOUR NEARBY DOCTOR AS SOON AS POSSIBLE** • Continue to follow other suggestions as advised above.	**ORANGE** 
If your child has ANY of the following signs/symptoms: • Indrawing of chest • Looks pale or blue • Peripheries feel cold • Sunken eyeballs and dry mouth • Not passed urine for more than 3-4 hours (for children less than 5 years of age) • Refusing to feed • Looks drowsy or lethargic • Abnormal body movement	**YOUR CHILD NEEDS URGENT HELP, RUSH TO THE NEAREST HOSPITAL** • Keep the child warm. • If the child is drowsy or is having abnormal body movements, keep them turned to their left side.	**RED** 

**adapted from Royal College of Paediatrics and Child Health (RCPCH) advice for parents/carers during coronavirus*

Fight Covid: Contribute for your country!!