March 2020-subject to revision as the evidence evolves

COVID-19 in Children

Suspected Case[1]
A patient with acute respiratory tract infection (sudden onset of at least one of cough, fever, shortness of breath)
AND with no other aetiology that fully explains the clinical presentation
AND with a history of travel or residence in a country/area reporting local or community transmission during the 14 days prior to symptom onset
OR *close contact with a confirmed or probable COVID-19 case in the last 14 days prior to onset of symptoms;

Probable Case
A suspected case for whom testing for virus causing COVID-19 is inconclusive (according to the test results reported by the laboratory) or for whom testing was positive on a pan-coronavirus assay.

Confirmed Case
A person with laboratory confirmation of virus causing COVID-19 infection, irrespective of clinical signs and symptoms

***Close Contacts**[2]
A person living in the same household as a COVID-19 case/ direct physical contact with a COVID-19 case/unprotected direct contact with infectious secretions of a COVID-19 case (e.g. being coughed on, touching used paper tissues with a bare hand)/face-to-face contact with a COVID-19 case within 2 metres and > 15 minutes/A person who was in a closed environment (e.g. classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for 15 minutes or more and at a distance of less than 2 metres

A healthcare worker (HCW) or other person providing direct care for a COVID-19 case, or laboratory workers handling specimens from a COVID-19 case without recommended personal protective equipment (PPE) or with a possible breach of PPE

A contact in an aircraft sitting within two seats (in any direction) of the COVID-19 case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated

Warning Signs for admission[3]
Inability to breastfeed or drink
Intractable vomiting
Lethargy or unconsciousness
Convulsions
Difficulty in breathing
Central cyanosis
Chest in-drawing
Fast breathing (60 breaths per minutes or more – up to 2 months, 50 breaths per minutes or more - 2 months up to 12 months, 40 breaths per minutes or more- 12 months up to 5 years)
Respiratory failure (Oxygen saturation/Blood gas)
Signs of heart failure/myocarditis
Septic Shock
Multi-organ dysfunction
Acute Respiratory Distress Syndrome

Suspected COVID-19 & Co-morbidity: Admit
On chemotherapy
Long term respiratory conditions
Immunodeficiency (Primary or Secondary)
Haemodynamically significant and/or cyanotic heart disease/Diabetes/Chronic Kidney Disease stages 4, 5 or on dialysis

Triage
All Pediatric departments must have Forward Triage system consisting of tent or office arrangement with a Health Care Professional & at least with Level II PPE
Child presenting with fever and/or new onset cough or difficulty in breathing

High suspicion of COVID 19 or those fulfilling admission criteria
RED ZONE-Level III PPE for Staff

All other children
YELLOW ZONE
Level II PPE

COVID-19 testing is done only for hospitalized children
There should be no mixing of RED & YELLOW zones
All cross infection control measures be in place as per hospital guidelines

Laboratory Investigations [3,4,5]
(Observe strict isolation precautions while taking samples)
RT-PCR for COVID-19 on a nasopharyngeal specimen
(Bronchoalveolar lavage in ventilated children)
CBC (N:L ratio >3.13)
ESR/CRP
Chest X-ray
(Additional investigations depending on clinical condition and availability)
Electrolytes, BUN, serum creatinine, Liver function tests
LDH, Lactate, Ferritin, Procalcitonin
ECG, Cardiac enzymes
Blood cultures and any other relevant cultures

General Principles of management[4]
Appropriate infection control measures
No drug of choice
Paracetamol for fever (Avoid NSAIDS)
Respiratory support
Conservative fluid management
Give empirical antibiotics for CAP
Management of sepsis & septic shock
Follow disease specific guidelines for co-morbidities
No evidence for antivirals, antimalarial
Avoid systemic corticosteroids unless indicated otherwise

Nursing in a single room preferably or cohorting (1 metre distance between the beds)
A parent/care giver who is admitted with the child must stay in the room at all times until discharge or confirmed negative screening test.
Staff should minimize time in the room as far as possible.
Aerosol generating procedures (HHFNCO, suctioning, nebulization, performing NPAs) should be avoided unless absolutely essential.
Carry out all aerosol generating procedures in isolated cubicle
Waste should be managed appropriately.
Terminal cleaning of room with chlorine

Management[4]
Asymptomatic- Home isolation for 14 days after assessing the residential setting **OR** isolation in dedicated government centers as appropriate.
Mild cases- Level 0-1 (Level 0 is a standard Pediatric unit, while Level 1 refers to level 1 Pediatric critical care)
Observation/feeding support
Adequate hydration/IV fluids
Antipyretic
Monitoring for need of oxygen

Moderate cases- Level 2 (Level 2 critical care eg CPAP)
Vital signs monitoring
Intravenous hydration
Anyipyretic
Supplemental oxygen to maintain saturations over local criteria (90– 92%)
Monitoring for need of additional respiratory support

Severe cases- Level 3 (PICU-Level 3 care includes intubation and ongoing ventilation)
Vital signs Monitoring
Respiratory management
Hydration
Fever control
Empiric antibiotics
Management of complications
**Consider investigational treatment as per local situation and after discussion with parents

**Limited evidence on use of Lopinavir/ritonavir (LPV/r), Remdidivir, Chloroquine phosphate, Hydroxychloroquine, Interferon therapy, Azithromycin and other investigational drug for the treatment of COVID-19.
Chloroquine phosphate is based on antimalarial dosing schedule in severe pneumonia or ARDS
Loading: 10mg base/kg, Maintenance: 5mg base/kg once daily for 7-10 days (Observe its side effects).[5]

Discharge Criteria[3]
For hospital discharge, in a clinically recovered patient two negative tests, at least 24 hours apart, is recommended.

Newborn with suspected COVID-19 [4, 5,6]
Any newborn, born to the mothers with a history of COVID 2019 infection between 14 days before delivery and 28 days after delivery, or the newborns directly exposed to those infected with COVID-19.

Newborn born to Mother with Confirmed or Suspected COVID-19
Newborn asymptomatic-Monitor & follow mother's investigation (Mother Negative-discontinue isolation/Mother positive-Investigate newborn & treat accordingly).

A well-baby born to suspected or proven COVID-19 mother may be kept with the mother in isolation. Breast feeding is encouraged. Mother needs to take all the precautions of wearing mask and hand hygiene.

Breastfeeding[6]
Encourage breastfeeding through supporting mothers to express milk (EBM).
Mothers should have a designated breast pump for exclusive use under strict local infection control policies

Prevention[7]
Clean hands frequently (use soap & water or hand sanitizer with at least 60% alcohol)
Avoid close contact
Cover cough & sneezes
Stay home if you are sick
Make bleach solution by either 5 table spoons bleach per gallon of water or 4 tea spoons bleach per quart of water

Personal Protective Management[8]

Protection Level	Protective Equipment	Scope
Level I	Disposable surgical cap Disposable apron Disposable surgical mask Work uniform Disposable latex gloves or/and disposable isolation clothing if necessary	Pre-examination triage, General OPD
Level II	Disposable surgical cap Medical protective mask (N95) Work uniform Disposable medical protective uniform Disposable latex gloves Goggles	Fever OPD Isolation ward area (including isolated ICU) Non-respiratory specimen examination of suspected/confirmed patients Cleaning of surgical instruments used with suspected/confirmed patients
Level III	Disposable surgical cap Medical protective mask (N95) Work uniform Disposable medical protective uniform Disposable latex gloves Full face respiratory protective devices or powered air-purifying respirator	When the staff performs operations such as tracheal intubation, tracheostomy, bronchofibroscope, endoscope, etc during which the suspected or confirm patient may spray or splash respiratory secretions or body fluids/blood When the staff performs surgery or autopsy for confirmed/suspected patients When staff carries out NAT for COVID-19

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