COVID - 19

MANAGEMENT OF COVID-19 IN COMMUNITY AND NON-ICU SETTINGS

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Abstract: *Coronavirus disease 2019 (COVID-19) caused by SARS-COV-2 is rarer in children compared to adults. Most countries have reported an incidence of 1- 2% . Whether this reflects 'lower susceptibility' or 'higher proportion of asymptomatic infection in this age group' is not really known. Nevertheless, severe manifestations and deaths are increasingly reported in children. They can act as a source of infection for adults and health care workers, as they cannot follow cough etiquettes as efficiently as adults. Here, we provide a brief overview of pre-ICU management perspectives of COVID-19 disease in children.*

Keywords: *COVID-19, Children, Management.*

When to suspect COVID-19 in children

The reported incidence of COVID-19 in most countries is 1- 2%.[1] All symptomatic (fever /cough/ shortness of breath) children who have undertaken international travel in the last 14 days, symptomatic contacts of laboratory-confirmed cases, children hospitalized with severe acute respiratory illness (SARI) (fever and cough with onset within last 10 days and requires hospitalisation as defined byWHO) and asymptomatic direct and high-risk contacts of a confirmed case need to be considered as COVID-19 suspect. One needs to remember that indications to clinically suspect COVID-19 was derived predominantly from the adult database. The symptomatology is getting broadened over time as there are multiple documentations of heterogeneous presentation including multisystem inflammatory syndrome, acute heart failure, acute abdomen, etc. These pieces of information need to be interpreted in concurrence with the epidemiological pattern in the specific geographical area.

Clinical features of COVID-19

The incubation period ranges from 2 - 14 days. Asymptomatic infections have been reported in 4% of children. Illness often starts with mild symptoms like fever, dry cough and sore throat. Fever is seen in about 41% of pediatric patients. 10% of patients may present with GI symptoms like diarrhea and vomiting, while rhinorrhea is relatively rare, being seen in around 7.6% of patients.[1] Patients may also complain of myalgia, headache and fatigue. Clinical syndromes associated with COVID-19 infection include mild, uncomplicated illness with fever, sore throat, malaise, cough, diarrhea or vomiting, mild pneumonia, severe pneumonia, ARDS, sepsis and shock with multi-organ involvement currently labelled as inflammatory multisystem syndrome, temporally associated with SARS-CoV-2.

Clinical progression and heterogeneity in clinical presentation

Around 81% of COVID-19 infections in adults are mild; 14% have moderate to severe symptoms, with 5% of patients having critical illness requiring ICU admission.[3] Studies in children have reported fewer severe (5% vs14%) and critical cases (0.6%Vs 5%) (compared to adults.[2] Hospitalization is more common in children under one year of age and in those with comorbidities. The clinical course may be hyper-acute with rapid onset of fever and breathlessness or moderate with slower progression of symptoms and later recovery or biphasic with late progressive worsening and multi-organ involvement including ARDS, sepsis and septic shock.[4]

Multisystem inflammatory syndrome in children (MIS-C) or Pediatric Multisystem Inflammatory Syndrome temporally associated with SARS-CoV-2 infection, (PIMS-TS): This may occur weeks after a patient is infected with COVID-19. Some patients may have been infected asymptomatically also. Patients present with high persistent fever with multi-organ involvement like cardiac, gastrointestinal, renal, hematologic, dermatologic or neurologic with elevated inflammatory markers.[5]

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Management of children with COVID-19

Community management

All children suspected of having COVID-19 exposure or infection with mild symptoms should be advised quarantine in COVID-19 isolation centres, if available or they may be advised home quarantine.

Home quarantine : Patients should preferably stay in well ventilated single rooms with attached bathrooms. If another person other than care taker of a small child needs to share the room, he should maintain a distance of one metre at all times. He/she should stay away from older adults, pregnant ladies, other children and patients with comorbidities. They should practice strict personal hygiene, including hand hygiene and wearing of masks. They should not share utensils or clothes with other members of the family. Masks used by patients /close contacts during home care should be disinfected using ordinary bleach solution (5%) or sodium hypochlorite solution (1%) and then disposed of either by burning or deep burial.[6]

Family members cleaning the room or handling soiled linen should wear disposable gloves and wash hands with soap and water after removing gloves. Clean frequently touched surfaces with 1% sodium hypochlorite solution and toilet seats with household bleach or phenolic disinfectants. Wash linen separately with detergent and dry. Patients should seek medical advice if any COVID-19 infection symptoms appear including fever, cough, diarrhoea, vomiting or breathlessness and all close contacts in such a situation should be home quarantined (for 14 days). This may be followed up for an additional 14 days or till the report of such case turns out negative on lab testing. Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 after contact.

Hospital management

Triage

Hospitals should preferably establish a 3 tier triage system. History of 'international travel' or 'travel to hotspot areas in the last 14 days' or 'contact with suspected or confirmed cases' should be elicited at the point of the first contact (out-patient counter or registration desk) and all those with positive history should be directed to the COVID-19 isolation area. All patients coming to the emergency or OPD should also be similarly triaged at the entry point for respiratory symptoms and triple-layer surgical mask offered to patient and caretaker of all suspected cases and directed to the designated COVID-19 isolation areas. In the COVID-19 isolation areas, the patient should be triaged for the severity of the infection (Box 1).

Box.1 Triage questions

1. Has someone in your close family returned from a foreign country? Yes/No
2. Is the patient under home quarantine as advised by the local health authority? Yes/No
3. Have you or someone in your family come in close contact with a confirmed COVID-19 patient in the last 14 days?Yes/No
4. Do you have fever? Yes/No
5. Do you have cough /sore throat? Yes/No
6. Do you feel shortness of breath? Yes/No

Clinical categorisation for planning therapy

All children with suspected COVID-19 infection should be categorized into three categories.

Category A patients (mildly symptomatic patients)

These patients can be sent home or to COVID-19 care centres with supportive care. Avoid using non-steroidal anti-inflammatory drugs other than paracetamol. Advice regarding prevention and treatment of dehydration with ORS and appropriate use of other home available fluids in case of diarrhea and vomiting. Patients should be clearly instructed about danger signs and the occurrence of any new symptom or worsening of existing symptom warrants review. These patients should be reviewed every 24-48 hours. Telemedicine facilities may be used for reviewing mildly symptomatic patients. Patients may be offered zinc 2mg/kg/day, (maximum 20 mg) especially in the presence of diarrhea. All category A patients with a history of contact with a confirmed case of COVID 19 should be tested for COVID 19 with a nasopharyngeal swab.

Box.2 Clinical categories of COVID-19

Category A

Mild sore throat, fever, cough, rhinorrhea, diarrhea, vomiting.

Category B

Fever, severe sore throat, increasing cough. Category A symptoms in children with chronic heart, kidney, lung, neurological or liver disease and children on long term steroids, congenital or acquired immunosuppression.

Category C

Altered sensorium, respiratory distress, SpO_2 < 94%, breathlessness, cyanosis, inability to feed, seizures, hypotension.

Category B patients (moderate symptoms/ patient with comorbidities)

Admission: These patients may be preferably admitted in isolation wards and nasopharyngeal swabs sent for confirmation of disease. Children with comorbidities also should be admitted in isolation wards. If the health care system is overburdened, those without comorbidities and danger signs can be admitted at COVID-19 care centres or advised to self-quarantine at home with follow up and low threshold for admission in case of worsening of symptoms.

Treatment: They may be started on oseltamivir 3mg/kg/ dose BD if they fulfil the criteria for treatment of Influenza like illness(ILI). WHO clinical case definition "An acute respiratory illness with a measured temperature of ≥ 38°C and cough, with onset within the past 10 days". Antibiotics as per clinician's discretion to cover community-acquired pneumonia including atypical pneumonia may be offered. Once swab report is available and the diagnosis confirmed, oseltamivir might be stopped and the patient started on hydroxychloroquine 6.5mg/kg/dose BD on day one followed by 3.25mg/kg/dose BD for four more days along with zinc 2mg/kg/day.[7]

Category C patients (severe and critical disease)

Category C patients require admission and treatment in high dependency units or ICU's according to severity of illness.

Admission in ward

- Presence of tachypnea (respiratory rate: <2 months ≥60/ minute; 2-11 months ≥50/minute; 1-5 years ≥40/ minute) without lower chest indrawing or danger signs like lethargy, altered sensorium, inability to feed, convulsion, etc.
- Children with high risk for severe disease with mild symptoms: children with congenital or acquired heart disease, chronic lung, liver, kidney or neurological disease, children on immunosuppressive drugs , congenital or acquired immunodeficiency
- SpO_2 90 - 94% without retractions and danger signs.

Admission in high dependency unit (HDU)

- SpO_2 less than 94% with ≤2 site retractions
- Children with comorbidities with a saturation of less than 94% or tachypnea.
- SpO_2 < 90% without increased work of breathing.
- Children with tachypnea with lower chest in drawing/ grunt.
- Presence of danger signs like inability to feed, altered sensorium, seizure etc. without evidence of shock or other organ involvement (these children may need transfer to PICU early for close monitoring if symptoms persist).

Admission in PICU

- Moderate to severe ARDS (PaO_2/FiO_2 (P/F) ratio less than 200 / oxygenation index (OI) < 8 / Oxygen saturation index as measured by FiO_2 x mean airway pressure)/SpO_2 values (OSI) < 7.5 while on CPAP of minimum 5 cm
- SpO_2 < 94% with increased work of breathing (> 2 site retraction/ paradoxical breathing / see saw breathing / head bobbing etc.)
- Suspecting atypical presentation of COVID, i.e., Kawasaki disease (KD) like illness, multisystem inflammatory disorder etc.,
- Shock
- Multi-organ dysfunction
- Need for mechanical ventilation
- Transfer from ward or HDU for close monitoring / mechanical ventilation

Management of admitted patients

General measures

- Symptomatic treatment: Avoid giving NSAIDs other than paracetamol for fever. Provide oral bronchodilators or MDI with spacer and mask for children with wheeze.
- Antibiotics and antivirals may be given as per clinicians discretion to cover community-acquired pneumonia, including atypical infections and influenza.
- Ensure euvolemia and advice adequate fluid and feed intake.

Monitoring

- Vital signs - HR, RR, SpO_2, BP
- Work of breathing (retractions, use of accessory muscles, grunting, head bobbing, air hunger, large tidal volume breaths)
- Oxygen requirement

Laboratory investigations

Routine investigations: CBC with differential count and ESR, RFT, LFT, coagulation profile, urine routine and

send these in all admitted patients. Unlike adult patients with COVID-19, there have been no consistent leukocyte abnormalities reported in pediatric patients. Only 3.5% of pediatric cases showed lymphopenia.[1] Chest X-ray may show patchy infiltrates consistent with viral pneumonia and chest CT scans may show nodular ground-glass opacities.

Biomarkers in sick children : CRP, LDH, D-dimer, CPK, ferritin, troponin I, elevated transaminases , prothrombin time, NT-ProBNP, BUN, creatinine. Send these in patients with severe or critical disease admitted in HDU or PICU and those with worsening respiratory status.

Complications

COVID-19 infection primarily causes upper respiratory infection followed by pneumonitis of varying severity. Some patients progress to develop hyperinflammatory syndrome due to cytokine storm clinically presenting with features of KD, cytokine release syndrome or infection associated HLH often leading to multi-organ failure. Pointers towards hyperinflammatory syndrome include -

1. Persistent high fever or reappearance of fever.
2. Rising CRP especially more than 100- 200 mg/L
3. Doubling of ferritin in 24 hours or very high ferritin levels (> 2000 - 10,000mcg/L)
4. Falling counts
5. Rising or falling ESR
6. Rising CPK, LDH
7. New-onset shock especially with elevated trop I (also rule out Kawasaki disease with shock syndrome)

COVID-19 pneumonitis : Hypoxia in COVID is multifactorial. Two basic types of lung phenotypes have been described: the L type and H type lung. These two phenotypes are not mutually exclusive; they may indicate lung in different stages of evolution of the disease. Increased work of breathing contributes to lung damage by increasing patient self-inflicted lung injury (P- SILI) and is responsible for the transition from L Type to H Type (Table I).[8]

Oxygen therapy in COVID-19 infection

All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, simple face mask, non- rebreathing mask).

- Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxemia, or shock.
- Target $SpO_2 \geq 94\%$ during resuscitation and > 90% for patients on oxygen therapy and those recovering from pneumonia without respiratory distress.[6]
- Nasal prongs or cannula are preferred in children as it may be better tolerated. Offer a surgical mask or hood covered by a surgical mask to decrease the risk of aerosolization and droplet spread.
- If on prongs and SpO_2 less than 90% with minimal respiratory distress, options include

a) Face mask at flow > 5LPM (FiO_2 40 - 60%)

b) Oxygen hood at flow > 5 LPM (FiO_2 30-90%)

c) Venturi mask (28-60% FiO_2)

Table I. L type and H type lung characteristics

L type lung characteristics	H type lung characteristics (typical ARDS lung)
• Good lung compliance	• High elastance
• Low elastance	• Low compliance
• Low ventilation-perfusion ratio due to abolition of hypoxic vasoconstriction or pulmonary thrombophlebitis leading to pulmonary thrombosis	• Wet lung
• Low lung recruitability as the amount of non-aerated lung less	• High right to left shunt
• Relatively dry lung	• Higher lung recruitability as the amount of non-aerated lung is higher due to damage to the alveolar basement membrane and loss of surfactant.

d) Non-rebreathing mask at flow 10-15 LPM (FiO_2 80-90%).

- If the flow of 15 LPM oxygen achieves saturation of > 95%, it indicates the shunt fraction is mild. Failure to accomplish this indicates a moderate-severe shunt fraction. These children should be closely monitored for deterioration and respiratory support should be escalated as per need.
- Heated humidified high flow nasal cannula (HFNC) may be used preferably over CPAD/BIPAP if the target saturation is not achieved with above oxygen delivery devices. It should be used only in patients with hypoxemic respiratory failure. It increases the risk of aerosolization, but the risk is less than that for other NIV.
- Switch on the machine only after fixing the nasal cannula.
- Start at 0.5 - 1litre per kg per minute and increase up to 2 litre/kg/minute if needed.
- Use minimal flow that makes the baby comfortable.
- Target SpO_2 90 - 94%
- Monitor HR, RR, SpO_2 and work of breathing. Monitor closely, if no response in 1- 2 hours will need escalation of support.

NIV CPAP: It may be offered only in selected patients with hypoxemic respiratory failure. The failure rate with NIV is very high, especially in de-novo respiratory failure, so these patients need close monitoring.

- Use of conventional ventilators for NIV with non-vented oronasal masks/helmets preferable.
- Avoid using dedicated NIV with single limb and vented masks as the risk of aerosolization is very high.
- Connect a bacterial/viral filter at exhalation port
- Use the lowest possible PEEP to achieve targets.
- Monitor closely for deterioration and intubate if the patient deteriorates or there is no improvement in 1 hour or delivered tidal volume is more than 9.5ml/kg with increased work of breathing as P- SILI may damage the lung further.
- Placing of the aerosol box with ports covered by the surgical mask may decrease the risk of aerosolization.

Specific therapy

No specific antiviral therapy is proven to be effective as per currently available literature. Drugs being used in clinical trial settings include

- Hydroxychloroquine / Chloroquine
- Lopinavir / Ritonavir
- Remedesivir
- Nitazoxanide
- Ivermectin

Hydroxychloroquine : 6.5mg /kg /dose (Max 400 mg) PO BD day 1 followed by 3.25mg per kg PO BD (max 200mg/ dose) for 4 days. Usual treatment is for 5 days, but in select patients with extended ventilation or profound immunosuppression, duration may be extended to 10 days. Retinopathy, rash, nausea, glucose fluctuations and diarrhoea include adverse events associated with HCQ therapy. GI symptoms can be mitigated by taking HCQ with food. Avoid taking hydroxychloroquine with antacids and separate administration by at least 4 hours.

Contraindications: QT prolongation > 500 ms, porphyria, myasthenia gravis, retinal pathology, epilepsy. If baseline QT prolongation is present, take frequent ECG.

Chloroquine: 10 mg /kg chloroquine sulphate base stat followed by 5 mg per kg 12 hours later and then 5 mg/kg/ dose BD for four more days. Adult dose: Chloroquine sulphate base 600mg stat followed by 300 mg 12 hours later followed by 300mg BD for four days.

Lopinavir / Ritonavir

This may be considered on a case to case basis in severe disease (SpO_2 <94% in room air or requiring supplemental oxygen, mechanical ventilation or ECMO) not responding to chloroquine after written consent and medical board concurrence and dose is given in Box 3.

Box.3 Dose of Lopinavir/Ritonavir

- 14 days to 6 months : 16mg/kg/dose PO BID (based on lopinavir component)
- < 15kg : 12 mg/kg/dose PO BID (based on lopinavir component)
- 15-25 kg: 200 mg/50 mg PO BID
- 26-35 kg: 300 mg/75 mg PO BID
- >35 kg: 400 mg/100 mg PO BID
- Adult dose : 400/100 PO BID

Duration of treatment : 14 days or 7 days after becoming asymptomatic.

Adverse events: Hepatotoxicity, pancreatitis, diabetes, QT prolongation, lipid elevations.

Remedesivir

Not currently freely available in India. EUA (emergency use authorisation) has been granted by FDA for use in children and adults with severe disease.

Dose : 5mg/kg IV (max. 200mg) loading dose over 30 - 120 minutes on day 1 followed by 2.5mg/kg (max.100mg) IV OD on days 2- 4.

Duration of treatment: Usual duration 5 days. If no clinical improvement, duration may be extended to total 10 days.

Infection prevention and control perspectives in COVID-19 scenario

Infection prevention and control (IPC) measures are of paramount importance in managing patients with COVID-19 infection.

Triage area

- Encourage all patients to wear masks. All suspected patients and caretakers should be provided with a triple layer surgical mask and advice patients to keep 1-metre distance between them. Advice patients to perform hand hygiene after coming in contact with respiratory secretions. Health care workers in the triage area should wear N95 masks, face shields, gowns and gloves.
- Apply droplet precautions when working within 1 - 2 metres of the patient using a triple-layer mask and face shield or goggles.
- Use PPE while entering the room with a triple layer mask, gown and goggles and remove when leaving.
- Use dedicated /disposable equipment when possible.
- Aerosol precautions should be taken while doing aerosol-generating procedures by donning complete PPE, including N95 mask.[6]
- Disinfection of equipment, cleaning of patient's surrounding and safe disposal of waste are also part of IPC measures.

Hand hygiene

Perform hand hygiene with alcohol-based hand rub for 20 seconds or wash hands with soap and water for 40 seconds before and after touching patient, using washrooms, taking food, donning and doffing of PPE including mask and also after coughing, sneezing, handling garbage, touching mask or soiled PPE.

Patient placement

- If single rooms are available, admit patients in a single room.
- If single rooms are not available, patients with the same etiological diagnosis can be grouped. If the etiological diagnosis is not confirmed, patients with a similar clinical diagnosis and epidemiological risk factors can be grouped with spatial separation of 1 meter between beds.[6]
- Isolation ward should have separate entry and exit and should not be located with post-surgical wards /dialysis units/SNCU labour rooms.
- There should be a double door entry with a changing room and nursing station.
- All healthcare workers should use PPE (triple layer surgical mask, eye protection, gloves, gown and shoe cover) when entering a patient room and remove PPE when leaving.
- If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). Equipment which is reused should be disinfected appropriately.
- Place an appropriate container with a lid outside the door for equipment that requires disinfection or sterilization.
- Avoid patient movement and transport unless necessary.
- Aerosol-generating procedures (i.e. open suctioning of the respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) whenever possible, should be done in adequately ventilated single rooms, preferably negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/ patient in facilities with natural ventilation. These rooms may have stand alone air-conditioning. These areas should not be a part of the central air-conditioning. If air-conditioning is not available negative pressure could also be created through putting up 3-4 exhaust fans driving the air out of the room. These procedures should be done after donning complete PPE, including gloves, long-sleeved gowns, eye protection, and fit tested particulate N 95 masks.
- Used PPEs should be disposed of as per the bio-medical waste management guidelines. Ensure these bins (dirty) are inside the isolation areas.

Cleaning and disinfection of the environment

1% freshly prepared sodium hypochlorite solution can be used as a disinfectant for cleaning and disinfection. A contact time of at least 10 minutes is recommended. 70% alcohol-based disinfectants may be used for disinfecting surfaces where bleach is not suitable (e.g. metals). Wear heavy-duty/disposable gloves, disposable long-sleeved gowns, eye goggles or a face shield, and triple-layer surgical mask while cleaning the area. Wipe all frequently touched areas (e.g. doorknobs, lift buttons, handrails, armrests, tables, keyboards, switches, etc.) every 3 - 4 hours. Low touch areas like wall and mirror should be wiped daily once. Clean toilet surfaces with 1% sodium hypochlorite solution or chemical disinfectant. Wash linen/fabrics preferably using the hot water cycle. For hot-water laundry cycles, wash with detergent or disinfectant in the water at 70°C for at least 25 minutes. Discard cleaning items made of cloth and absorbent materials, e.g. mop head and wiping cloths, into biohazard bags after cleaning and disinfecting each area. Wear a new pair of gloves and fasten the double-bagged biohazard bag with a cable tie. Buckets can be disinfected by soaking in disinfectant or bleach solution or rinsing in hot water before filling.

Transport of infectious patients[9]

Transport of infectious patients should be limited to movement considered medically essential by the clinician. The patient should be dressed in a mask and gown and covered in a sheet. For quarantine isolation, the patient may be transported in a fully enclosed transport cell or isolator with a filtered air supply and exhaust. The transport personnel should remove existing PPE, clean hands and apply clean PPE before transporting. The destination unit should be notified before transport. It is preferable to transport patient through service or staff corridors than public corridors. The nominated lift and corridor should be isolated from public and staff before transport and should be cleaned following transit of an infectious patient.

Planning inter-facility transfer of COVID-19 patients

Ideally, there should be ambulances specifically identified to transport COVID-19 patients. It may be needed to transport patients from home to hospital or from one hospital to another. Ambulance staff should be trained about common infection prevention and control practices, including the use of personal protective equipment (Box 4).

Box 4. Rational use of PPE for inter hospital transport

- Driving the ambulance (Low risk) - Triple-layer surgical mask gloves
- Transporting patients, not on any assisted ventilation (Moderate risk) - N-95 mask Gloves
- Management of SARI patient while transporting (High risk) - The full complement of PPE
- When aerosol-generating procedures are anticipated

Before transport

Both the emergency medical technician (EMT) and driver of an ambulance should wear PPE while handling, managing and transporting the COVID-19 identified/ suspect patients. Patient and attendant should be provided with a triple layer mask and gloves. Only one caregiver should be allowed to accompany a patient. The identified health facility should be contacted beforehand for facility preparedness and readiness. Treatment summary, vitals at reference and referral indication should be documented

Management on board

Monitor vitals during transport. Give supplementary O_2 at 5 L/min and titrate flow rates to reach target SpO_2 ≥90%. If a patient is on a ventilator, follow ventilator management protocols.

Post transport

At the receiving hospital, hand over the patient and details of medical interventions if any, during transport. PPEs should be taken off as per protocol followed by hand washing. The biomedical waste generated (including PPE) should be disposed of in a biohazard bag (yellow bag). Inside of it should be sprayed with sodium hypochlorite (1%) and after tying the exterior should also be sprayed with the same.

Disinfection of ambulance

All surfaces that may have come in contact with the patient or materials contaminated during patient care (e.g. stretcher, rails, control panels, floors, walls and work surfaces) should be thoroughly cleaned and disinfected using 1% sodium hypochlorite solution. Clean and disinfect reusable patient-care equipment before use on another patient with an alcohol-based rub. Cleaning of all surfaces should be done morning, evening and after every use with soap/detergent and water.

Points to Remember

- ***COVID-19 is rarer in children (1- 2%).***
- ***All suspected of having COVID-19 exposure or infection with mild symptoms should be advised quarantine at home or in isolation centres.***
- ***All children with suspected COVID-19 infection should be categorized into three categories, Category A, B and C.***
- ***Category C is a child with critical symptoms like altered sensorium, shock or respiratory distress or a SpO_2 < 94%.***
- ***Both clinical and laboratory monitoring are essential at periodic interval to decide escalation or deescalation of therapy.***
- ***Non invasive ventilatory support is preferred unless child deteriorates, where intubation and mechanical ventilation is needed.***
- ***Even though there are no proven drugs, those tried in clinical trial settings include hydroxychloroquine / chloroquine, lopinavir / ritonavir, remedesivir, nitazoxanide and ivermectin.***
- ***Safety of the health care workers and others are important at every stage right from triage, admission areas and during transport.***
- ***Hand hygiene, proper donning and doffing of the PPEs and environmental cleaning are extremely important.***

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CLIPPINGS

Tears do not carry corona.

COVID-19: Low risk of coronavirus spreading through tears.

While researchers are certain that coronavirus spreads through mucus and droplets expelled by coughing or sneezing, it is unclear if the virus is spread through other body fluids, such as tears. Today's just-published study offers evidence that it is unlikely that infected patients are shedding virus through their tears, with one important caveat. None of the patients in the study had conjunctivitis, also known as pink eye. However, health officials believe pink eye develops in just 1 percent to 3 percent of people with coronavirus. The study's authors conclude that their findings, coupled with the low incidence of pink eye among infected patients, suggests that the risk of virus transmission through tears is low.

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