**CLINICAL MANAGEMENT PROTOCOL FOR CONFIRMED PEDIATRIC COVID-19 CASES**

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# BACKGROUND

This document is intended for clinicians involved in the care of children less than 12 years with confirmed COVID-19 cases at the Jigme Dorji Wangchuck National Referral Hospital. Bhutan had its first confirmed case of COVID-19 on 05 March 2020. As of 6th May 2020, Bhutan has recorded seven confirmed cases, all of which were managed at the isolation and treatment facility at the Jigme Dorji Wangchuck National Referral Hospital, Thimphu.

# CONFIRMED CASE

A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.

# CLINICAL SYNDROMES ASSOCIATED WITH COVID-19 INFECTIONS

## Mild illness

Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, fatigue, cough (with or without sputum production), poor feeding, malaise, muscle pain, sore throat, nasal congestion, anosmia, ageusia, headache, diarrhoea, nausea and vomiting.

Atypical symptoms like skin rash, conjunctivitis ,axial hypotonia with or without drowsiness and moaning have also been reported.

## Pneumonia

* Cough or difficulty in breathing **PLUS** fast breathing
* Fast breathing:
  + Age <2 months:≥60 breaths/min
  + Age 2 – 11 months:≥50 breaths/min
  + Age 1 – 5 years:≥40 breaths/min
* No signs of severe pneumonia
* SpO2>90% in room air

## Severe pneumonia

* Cough or difficulty in breathing or Fast breathing

**PLUS AT LEAST ONE OF THE FOLLOWING (signs of severe pneumonia)**

* Central cyanosis or SpO2<90%
* Severe respiratory distress (grunting, very severe chest in-drawing)
* Signs of pneumonia with a general danger sign
  + Inability to breastfeed or drink
  + Lethargy or unconsciousness or convulsions

## Pediatric acute respiratory distress syndrome (PARDS)

1. **Onset:** within 1 week of a known clinical insult or new or worsening respiratory symptoms.
2. **Chest imaging** (Chest X-ray/CT scan/ lung ultrasound): bilateral opacities, not fully explained by effusions, lobar or lung collapse or nodules
3. **Origin of pulmonary infiltrates**: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/oedema if no risk factor present.
4. **At risk of developing PARDS :**Children requiring FiO2 ≥40% to attain SpO2 88%–92% with nasal mask CPAP/BiPAP or those requiring age-based oxygen flow rate via mask or nasal cannula to maintain SpO2 88%–97%( <1 Year: 2 L/min, 1–5 Years: 4 L/min, 5–10 Years: 6 L/min and >10 Years: 8 L/min).
5. **Oxygenation** :Use PaO2-based metric when available. If PaO2 not available, wean FiO2 to maintain SpO2 ≤97% to calculate OSI or SpO2/FiO2 ratio. Cyanotic congenital heart has no OI or OSI based cut off for definition of PARDS

* Bilevel NIV or CPAP ≥ 5cmH2O via full face mask: PaO2/FiO2 ≤ 300mmHg or SPO2/FiO2 ≤ 264
* Mild ARDS (invasively ventilated): OI 4≤ 8 OR OSI 5 ≤ 7.5
* Moderate ARDS (invasively ventilated): OI 8 ≤16 OR OSI 7.5 ≤12.3
* Severe ARDS (invasively ventilated): OI ≥16 or OSI ≥ 12.3

\* OI( oxygenation index) =(FiO2 x Mean airway pressure x100) / PaO2

\* OSI ( Oxygenation saturation index) = (FiO2 x Mean airway pressure x100) / SpO2

## Sepsis

**Children:Systemic inflammatory response syndrome (SIRS)**is present when a child has:

* an abnormality of temperature (fever or hypothermia) **OR**
* age-specific abnormality of the white blood cell count **AND**
* one of the following: tachycardia, bradycardia, respiratory distress, or pulmonary condition requiring mechanical ventilation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Paediatric systemic inflammatory response syndrome vital signs and laboratory values by age** | | | | | |
| **Age group** | **Heart rate (beats/minute)** | | **Respiratory rate (breaths/**  **minute)** | **Leukocyte count (leukocytes x 103/mm3)** | **Systolic blood pressure (mmHg)** |
| **Tachycardia** | **Bradycardia** |
| Newborn (0 days to 1 week) | >180 | <100 | >50 | >34 | <59 |
| Neonate (1 week to 1 month) | >180 | <100 | >40 | >19.5 or <5 | <79 |
| Infant (1 month to 1 year) | >180 | <90 | >34 | >17.5 or <5 | <75 |
| Toddler and preschool (>1 to 5 years) | >140 | NA | >22 | >15.5 or <6 | <74 |
| School age (>5 to 12 years) | >130 | NA | >18 | >13.5 or <4.5 | <83 |
| Adolescent (>12 to <18 years) | >110 | NA | >14 | >11 or <4.5 | <90 |

**Sepsis**: SIRS in the presence of suspected or proven infection constitutes sepsis.

## Septic shock

**Children**: Septic shock refers to sepsis with cardiovascular dysfunction\* that persists despite the administration of ≥40 mL/kg of isotonic fluid in one hour

\*Cardiovascular dysfunction - Hypotension (SBP <5th centile), or reliance on a vasoactive drug to maintain blood pressure, or two of the following: metabolic acidosis, elevated arterial lactate, oliguria, or prolonged capillary refill more than 3 seconds.

# CASE MANAGEMENT

1. **Mild illness**
   * Counsel patients / attendant
   * Admit in the designated isolation ward
   * Investigations
     1. CBC, CRP, RFT/serum electrolytes, Calcium, Magnesium,LFT, serum albumin, RBS,Ferritin, RBS, LDH,CPK, PT,INR
     2. HIV, HbsAg, HCV
     3. Blood and urine cultures if indicated
     4. ECG
     5. CXR if cough
   * Treatment
2. Symptomatic treatment paracetamol, Vitamin C, Zinc
3. Tab Oseltamivir if flu A positive ( doses as shown in Annexure1)
   * Monitor patient for signs and symptoms of complicated disease

* If patients develop complicated disease, urgent referral to designated referral centre

1. **Pneumoniaor Mild illness with abnormal CXR**

* Counsel patients / attendants
  + Admit in the designated isolation ward
  + Investigations
    1. CBC, CRP, RFT/serum electrolytes, Calcium, Magnesium,LFT, serum albumin, RBS, Ferritin, RBS, LDH,CPK, PT,INR
    2. HIV, HbsAg and HCV
    3. Blood and urine cultures if indicated
    4. ECG
    5. **CXR**
  + Treatment

1. Symptomatic treatment paracetamol, Vitamin C, Zinc
2. Tab Oseltamivir if flu A positive ( doses as shown in Annexure1 )
3. **Start on Tab/ Syr Amoxycillin**
4. **Add Hydroxychloroquine for all pneumonia with risk factors# or pneumonia with abnormal CXR**
5. Avoid IV fluids
   * Monitor patient for signs and symptoms of complicated disease

* If patients develop complicated disease, urgent referral to designated referral centre
  + **# Risk factors:**-Chronic lung disease,Heart disease,Diabetes, Asthma, CKD,Immunocompromised

1. **Severe Pneumonia/Sepsis / Kawasaki disease like illness**

* Counsel patients / attendants
  + Admit in the designated isolation ward
  + Investigations
    1. CBC, CRP, RFT/serum electrolytes, Calcium, Magnesium,LFT, serum albumin, RBS, Ferritin, RBS, LDH,CPK, PT,INR
    2. HIV, HbSAg, HCV
    3. Blood and urine cultures if indicated
    4. ECG
    5. CXR
    6. **Consider CT chest**
    7. **Echo for Kawasaki disease like illness**
  + Treatment

1. **Start Oxygen target SpO2 >90%**
2. Tab Oseltamivir if flu A positive ( doses as shown in Annexure1 )
3. Hydroxychloroquine
4. **Tab Ritonavir boosted Lopinavir**
5. **Inj Ceftriaxone**
6. **Add Azithromycin if atypical organism suspected. Monitor QTc**
7. IV fluids - two third maintenance if required
   * **Urgent referral to designated referral centre**
8. **Septic shock**

* Counsel patients / attendants
  + Admit in the designated isolation ward
  + Investigations
    1. CBC, CRP, RFT/serum electrolytes, Calcium, Magnesium,LFT, serum albumin, RBS, Ferritin, RBS, LDH,CPK, PT,INR
    2. HIV, HbSAg, HCV
    3. Blood and urine cultures if indicated
    4. ECG
    5. CXR
    6. Consider CT chest
* Treatment

1. Start Oxygenation and target SpO2 >90%
2. Tab Oseltamivir if flu A positive ( doses as in Annexure1 )
3. Hydroxychloroquine
4. Tab Ritonavir boosted Lopinavir
5. **IV piperacillin/tazobactam / Meropenem or as per the culture report**
6. **IV fluid resuscitation - use NS or RL for initial boluses with 20 -40 ml/kg**
7. **Initiate vasopressor treatment if not responding to fluids or in fluid overload and shock:start after initial bolus**
   1. **Warm shock: Noradrenaline**
   2. **Cold shock : Epinephrine**
8. If features of fluid overload appear (e.g. jugular venous distension, crackles on lung auscultation, pulmonary oedema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration
9. Consider Central Venous Access if starting vasopressors

* **Urgent referral to designated referral centre**

1. **Acute respiratory distress syndrome**

* Counsel patients / attendants
  + Admit in the designated isolation ward
  + Investigations
    1. CBC, CRP, RFT/serum electrolytes, Calcium, Magnesium,LFT, serum albumin, RBS, Ferritin, RBS, LDH,CPK, PT,INR
    2. HIV, HbSAg, HCV
    3. Blood and urine cultures if indicated
    4. ECG
    5. CXR
    6. **CT chest**
  + Treatment

1. Start Oxygenation and target SpO2 >90%
2. Tab Oseltamivir if flu A positive ( doses as in Annexure1 )
3. Hydroxychloroquine
4. Tab Ritonavir boosted Lopinavir
5. **IV piperacillin/tazobactam / Meropenem or as per the culture report**
   * Oxygenation

* Start with nasal cannula under a surgical mask
* If requiring >5L via nasal cannula,change to face mask with reservoir bag at 8-10 L/min.Keep a surgical mask over the face mask if possible
* Use HFN oxygen for children if available. Put a surgical mask over the face of possible
* If no improvement within 1-2 hours intubate and put on mechanical ventilator
* A lower level of plateau pressure (<28 cmH2O) is targeted, and lower target of pH is permitted (7.15–7.30).
* Tidal volumes should be adapted to disease severity: 3–6 mL/kg PBW in the case of poor respiratory system compliance, and 5–8 mL/kg PBW with better preserved compliance
* Prone ventilation may be considered in severe ARDS in children
* In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested
* PEEP of 10-15 cmH2O which can be increased to >15 in case of severe ARDS
* Permissive hypercapnia is acceptable for moderate to severe paediatric ARDS
* Should receive effective targeted sedation
* Neuromuscular blockade may be considered if sedation alone is inadequate to achieve effective mechanical ventilation
* **Urgent referral to designated referral centre**

# Care of baby born to COVID19 positive or suspect mother

1. No delayed cord cutting and wipe and dry the baby and hand over the baby to neonatal nurse / pediatrician.
2. Avoid skin to skin contact with the mother.
3. Baby will be separated from the mother and nursed in an incubator in a separate room
4. Start on formula feeds. Ask mother to express and discard breastmilk
5. Bath to baby after initial stabilization
6. After baby bath– give Vitamin K, Hep B, OPV and BCG if baby is stable
7. Baby to be taken care of by nurse and pediatrician in full PPE. No attendents will be allowed until status of baby is known
8. Investigations: CBC, CRP, RFT/SE, LFT, RBS, ferritin, LDH, rapid test for COVID 19, blood cultures. Do a CXR if respiratory distress. Send other relevant investigations as per patient symptomatology
9. Nasopharyngeal and Throat swab for COVID 19 at 24 hours, 48 and 72 hours
   * + If three tests negative and baby stable – discharge home
     + If three tests negative but baby is sick – shift to hospital NICU , separate room if available or nurse in a corner bed
     + If baby positive – shift to COVID ward, manage as a case. Stop formula feeds and start giving breast milk

# Advanced life support for children and neonates

1. **General principles for resuscitation**

* Protect themselves and their colleagues from unnecessary exposure
* Close the door, when possible, to prevent airborne contamination of adjacent indoorspace
* Attach a bacterial / viral filter securely to any manual or mechanical ventilationdevice in the path of exhaled gas before administering any breaths
* Patients should be intubated with a cuffed tube, at theearliest feasible opportunity.
* Minimize the likelihood of failed intubation attempts by assigning the provider and approach with the best chance of first-pass success tointubate
* Pausing chest compressions to intubate
* Video laryngoscopy may reduce intubator exposure to aerosolized particles andshould be considered, if available.
* Before intubation, use a bag-mask device (or T-piece in neonates) with a HEPA filter and a tight seal, or, for older children, consider passive oxygenation with non-rebreathing facemask (NRFM), covered by a surgical mask.
* If intubation is delayed, consider manual ventilation with laryngeal mask airway orbag-mask device with a HEPA filter.
* Minimize disconnections to reduce aerosolization.
* Use closed suctioning device

1. **Cardiac arrest on the ventilator**

* Leave the patient on a mechanical ventilator with HEPA filter tomaintain a closed circuit and reduce aerosolization.
* Adjust the ventilator settings to allow for asynchronous ventilation (time chestcompressions with ventilation in newborns).
* Increase the FIO2 to 1.0.
* Change mode to Pressure Control Ventilation (Assist Control) and limit

pressure as needed to generate adequate chest rise (6 mL/kg ideal bodyweight is often targeted, 4-6 mL/kg for neonates).

* Adjust the trigger to Off to prevent the ventilator from auto-triggeringwith chest compressions and possibly prevent hyperventilation and airtrapping.
* Adjust respiratory rate to 10/min forpediatrics and 30/min foneonates.
* Assess the need to adjust positive end-expiratory pressure level to balancelung volumes and venous return.
* Adjust alarms to prevent alarm fatigue.
* Ensure endotracheal tube/tracheostomy and ventilator circuit security toprevent unplanned extubation.
* If return of spontaneous circulation is achieved, set ventilator settings asappropriate to patients’ clinical condition.
* Proned patients at the time of arrest
* For suspected or confirmed COVID-19 patients who are in a prone position **without** an advanced airway, attempt to place in the supine position for continued resuscitation.
* While the effectiveness of CPR in the prone position is not completely known, forthose patients who are in the prone position **with** an advanced airway, avoidturning the patient to the supine position unless able to do so without risk ofequipment disconnections and aerosolization. Instead, consider placingdefibrillator pads in the anterior-posterior position and provide CPR with thepatient remaining prone with hands in the standard position over the T7/10 vertebral bodies.

1. Neonatal resuscitation

* Routine neonatal care and the initial steps of neonatal resuscitation areunlikely to be aerosol-generating; they include drying, tactile stimulation, assessment of heart rate, placement of pulse oximetry and electrocardiograph leads.
* Place baby in plastic bag / wrap
* Suctioning is an aerosol-generating procedure and is**NOT**indicated for uncomplicated deliveries.
* Avoid endotracheal medications: Endotracheal instillation of medications, such as surfactant orepinephrine, are aerosol-generating procedures, especially via an uncuffed tube.
* Intravenous delivery of epinephrine via a low-lying umbilical venous catheter is thepreferred route of administration during neonatal resuscitation.
* Closed incubators: Closed incubator transfer and care

# Drug induced long QT syndrome

* The goal of QTc screening in this setting is not to identifypatients whom are not candidates for therapy, but to identify those who are at increased risk for torsadesdepointes so aggressive countermeasures may be implemented
* Use Bazett formula for QTc = QT interval ÷ √RR interval (in sec)
* In general, the 99th percentile QTc values are 460 milliseconds (prepuberty)
* Many of the treatments used for COVID-19 patients have QTc-prolonging potential – eghydroxychloroquine,chloroquine, azithromycin , and lopinavir/ritonavir.
* Whenused in combination, or with any other known QTc prolonging agents e.g. amiodarone these agents can have additive QTc-prolonging effects and therefore, increased associated risk of arrhythmic death.
* A risk score for drug-associated QTc prolongation has been derived and validated by Tisdale and colleagues forprediction of drug-associated QT prolongation among cardiac care unit-hospitalized patients
* A Tisdalescore of ≤ 6 predicts low risk, 7-10 medium risk, and ≥ 11 high risk of drug-associated QT prolongation

|  |  |
| --- | --- |
| **Risk factor** | **Points** |
| Age ≥68 years | 1 |
| Female | 1 |
| Loop diuretic | 1 |
| Serum potassium ≤3.5 mmol/L | 2 |
| Presenting QTc interval ≥450 ms | 2 |
| Acute myocardial infarction\* | 2 |
| Heart failure with reduced ejection fraction | 3 |
| 1 QTc interval-prolonging drug\*\* | 3 |
| ≥2 QTc interval-prolonging drugs | 3 |
| Sepsis | 3 |
| \*During acute event/disease; QTc interval generally returns to normal following resolution.  \*\*Three points for taking 01 QTc interval-prolonging drug; 3 additional points for taking ≥2 QTc interval-prolonging drugs (for a total of 6 points) | |

* + BEFORE Initiating COVID-19 Treatments (e.g. HCQ /chloroquine, azithromycin, LPV/r ):
* Discontinue and avoid all other non-critical QT-prolonging agents (a complete list of QT prolonging agents .List is available at: https://www.crediblemeds.org/)
* Assess baseline ECG, renal function, hepatic function, serum sodium, potassium calcium,and magnesium levels.
* Assess baseline risk of QT prolongation using the Tisdale Risk Score
  + Relative Contraindications ( consult Cardiologist):
* History of long QT syndrome
* Baseline QTc> 500 msec (or > 550 msec in patient with QRS > 120 msec)
* Tisdale score ≥ 11 points
  + If Tisdale risk score ≥11
    - Stop Azithromycin
    - Continue monitoringand optimize serum electrolytes daily
    - ECG 2-3 hours after the second dose of hydroxychloroquine,
    - and daily thereafter.
    - If QTc increases by>60 msec (or)absolute QTc>500msec - Stop HCQ of that day and Repeat ECG prior to next dose
    - If QTc remains increased >60 msec(or)absolute QTc>500 msec then re-evaluate the risk/benefit of ongoing therapy, consider consultation with cardiologist and consider discontinuation of hydroxychloroquine.

# WHEN TO DISCHARGE

* Resolution of clinical symptoms for 3 consecutive days **AND**
* Documented virological clearance of 2 samples 24 hours apart.
* Facility de-isolation for two weeks followed by RT-PCR:
  + If RT-PCR is negative, discharge to home.
  + If RT-PCR positive, extend facility de-isolation for one more week if asymptomatic; re-assess if symptomatic.

# REFERENCES

1. World Health Organization. (‎2020)‎. Clinical management of severe acute respiratory infection when novel coronavirus (‎‎‎‎‎‎2019-nCoV)‎‎‎‎‎‎ infection is suspected: interim guidance, 28 January 2020& update from 13 March 2020. World Health Organization. <https://apps.who.int/iris/handle/10665/330893>
2. <http://www.ardsnet.org/files/ventilator_protocol_2008-07.pdf>
3. <https://emcrit.org/ibcc/covid19/>
4. Pediatric Acute Lung Injury Consensus Conference Group. Pediatric acute respiratory distress syndrome: consensus recommendations from the Pediatric Acute Lung Injury Consensus Conference. *PediatrCrit Care Med*. 2015;16(5):428–439. doi:10.1097/PCC.0000000000000350
5. Edelson D, Sasson C, Chan P, Atkins D, Aziz K, Becker L, et al. Interim Guidance for Basic and Advanced Life Support in Adults, Children, and Neonates With Suspected or Confirmed COVID-19: From the Emergency Cardiovascular Care Committee and Get With the Guidelines®-Resuscitation Adult and Pediatric Task Forces of the American Heart Association in Collaboration with the American Academy of Pediatrics, American Association for Respiratory Care, American College of Emergency Physicians, The Society of Critical Care Anesthesiologists, and American Society of Anesthesiologists: Supporting Organizations: American Association of Critical Care Nurses and National EMS Physicians. Circulation 2020. Epub ahead of print <https://doi.org/10.1161/CIRCULATIONAHA.120.047463>
6. Kneyber M, Medina A, Modesto V, et al. Practice recommendations for the management of children with suspected or proven COVID-19 infections from the Paediatric Mechanical Ventilation Consensus Conference (PEMVECC) and the section Respiratory Failure from the European Society for Paediatric and Neonatal Intensive Care. ESPNIC [Internet]. 2020. <https://espniconline.org/Media/Files/2020-ESPNIC-PEMVECCCOVID-19-practice-recommendations>.
7. https://www.sigo.it/comunicati-covid-19/initial-guidance-management-of-infants-born-to-mothers-with-covid-19/

# Annexures

**Annexure 1: Drug doses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Medicine** | **Age** | **Dose** | **Frequency** |
| 1. Oseltamivir | > 2weeks - < 1 year | 3mg/kg | BD |
| 1 - 12 years (10 - 15Kg) | 30mg |
| 1 - 12 years (15 -23 kg) | 45mg |
| 1 - 12 years (23-40 kg) | 60 mg |
| 1-12 years (> 40 kg) | 75 mg |
| Adults | 75mg |
| 1 month – 18 years | 15 – 30mg/kg | TDS for 7 days |
| 1. Ceftriaxone | 1 month -11 years (body weight upto 50 kg) | 50 -80 mg/kg | Once daily for 7 days |
| 9 -17 years (body weight 50kg and above) | 1 - 2 g |  |
| 1. Azithromycin | Body weight > 15kg | 10mg/kg | Once a day for 3 days |
| Body weight 15 – 25kg | 200mg |
| Body weight 26 – 35kg | 300mg |
| Body weight 36 – 45kg | 400mg |
| Body weight > 46kg | 500mg |
| 1. Hydroxychloroquine | < 6 years – 6.5 mg/kg/day divided 12 hrly ( max 400)  > 6 years – 10 mg/kg/day divided 12 hrly ( max 400 |  | 5 days ( max 14days) |
| 1. Lopinavir 200mg/ ritonavir 50mg | 7-15 kg – 12/ 3 mg / kg / 12 hours  15 - 40kg – 10/2.5mg/kg/12 hourly  >40 kg – Adult dose 400/100 mg 12 hrly |  |  |

**Annexure 2 : Paediatric Treatment Algorithm Based on Clinical syndrome**

|  |  |  |
| --- | --- | --- |
| **Clinical syndrome** | **Recommendations** | **Notes** |
| 1. Asymptomatic or mild illness (URTI) | * Counsel patients * Admit in the designated isolation ward * Symptomatic treatment   + - Oseltamivir for 5 days | * + - CBC, CRP, RFT/SE, LFT, RBS, viral markers, ferritin, LDH,CPK-MB,PT,INR     - Flu test     - Blood cultures     - Repeat PCR on day 7 after initiation of treatment |
| 1. Pneumonia& no risk factors# 2. Pneumonia withnormal Chest X Ray | * Oseltamivir \* * Start amoxicillin for 7 days | * + - CBC, CRP, RFT/SE, LFT, RBS, viral markers, ferritin, LDH,CPK-MB, PT, INR     - Flu test     - Blood cultures     - CXR |
| 1. Pneumonia with risk factors# 2. Pneumonia with abnormal Chest X Ray | * Oseltamivir\* * Start amoxicillin for 7 days * Add HCQ | * CBC, CRP, RFT/SE, LFT, RBS, viral markers, ferritin, LDH,CPK-MB, PT, INR * Flu test * Blood cultures * CXR |
| 1. Severe Pneumonia 2. Pneumonia with risk factors#**AND** abnormal CXR 3. Kawasaki disease like illness | * Start Ceftriaxone +/-Azithromycin * Oseltamivir \* * Add HCQ **AND** LPVr | * + - CBC, CRP, RFT/SE, LFT, RBS, viral markers, ferritin, LDH,CPK-MB, PT,INR     - Flu test     - Blood cultures     - CXR     - Consider CT chest     - Echo for KD like illness |
| 1. ARDS, 2. Septic shock | * Start PiperacillinTazobactam / Meropenem * Oseltamivir \* * HCQ AND LPVr | * + - CBC, CRP, RFT/SE, LFT, RBS, viral markers, ferritin, LDH,CPK-MB,PT/INR     - Flu test     - Blood cultures     - CXR     - Consider CT chest |
| 1. Neonate born to COVID19 Confirmed mother | * No skin to skin contact, * Cut cord immediately * Nurse separate room in incubator * After initial stabilization give Vit K and Vaccines given at birth * Formula feed. Mother to express and discard breastmilk * Bath when stable * Care by health worker in full PPE * Medical management as required * Test at 24, 48 &72 hours after birth * If 3 tests negative and baby healthy - discharge home * If 3 tests negative but baby is sick – shift to hospital NICU. Keep in a separate room or corner bed * Baby positive shift to COVID ward and manage accordingly. Stop formula feeds and start giving breast milk. Discharge and follow up as per symptoms | * + - CBC, CRP, RFT/SE, LFT, RBS, viral markers, ferritin, LDH,CPK-MB,PT/INR     - Blood cultures     - Np and Throat swab for COVID 19     - CXR if respiratory distress     - Rapid tests for COVID 19 |

- \* - Stop oseltamivir if flu test isnegative

- # Risk factors:-Chronic lung disease,Heartdisease,Diabetes, Asthma, CKD,Immunocompromised

Annexure 3 :BLS Healthcare Provider: Pediatric Cardiac Arrest Algorithm for 2 or More Rescuers for Suspected or Confirmed COVID-19 Patients

Annexure 4 :BLS Healthcare Provider: Pediatric Cardiac Arrest Algorithm for the Single Rescuer for Suspected or Confirmed COVID-19 Patients

Annexure 5 :Pediatric Cardiac Arrest Algorithmfor Suspected or Confirmed COVID-19 Patients