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දිනය) 24 / 04 / 2020
திகதி)
Date)

Provincial Directors of Health Services
Regional Directors of Health Services
All heads of institutions,

**Interim guidelines on management of newborns suspected or confirmed to have COVID-19
(Date: 24th April 2020)**

This interim guideline for management of a neonate suspected/ confirmed of COVID-19, is prepared based on the all published literature on COVID-19 in neonates and those born to pregnant mothers with COVID-19, the WHO Guideline and the Chinese Expert Consensus on Perinatal Medicine and considering the prevailing situation, to provide optimal care for newborns during the current COVID-19 pandemic. This will be effective until further notice.

1. Background

Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a newly emergent coronavirus, SARS-CoV-2, that was first recognized in Wuhan, China, in December 2019. It is a beta corona virus, which is closely linked to the SARS virus. Coronavirus is an RNA virus in the family Coronaviridae, order Nidovirales, which is found in humans, mammals, and birds and can cause infections of the respiratory tract, gastrointestinal system, and nervous system.

2. Case definitions

Case definitions are taken as per definitions given by the Epidemiology Unit, Sri Lanka.

2.1 Suspected COVID-19

- A newborn with acute respiratory illness AND having been in close-contact with a confirmed or suspected COVID-19 case during the last 14 days prior to onset of symptoms OR currently in quarantine (mother or caregivers with contact history of COVID 19)
OR
- A newborn with acute respiratory illness with a history of fever (at any point of time during this illness) with a history of travel to or residence in a location designated as an area of high transmission of COVID-19 disease as defined by the Epidemiology Unit, MoH during the 14 days prior to onset of symptoms
OR
- A newborn with acute pneumonia or respiratory distress regardless of contact history as decided by the treating Neonatologist/ Paediatrician
OR
- A newborn, irrespective of the presence of symptoms, born to a mother suspected/ confirmed with COVID 19 according to the case definitions issued by the Epidemiology Unit, MoH

2.2 Confirmed COVID-19

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

3. Point of care for COVID-19 suspected/ confirmed neonates

3.1 All newborns should receive the usual standards of care in keeping with the clinical status, in a designated area. Management of these newborns should NOT be delayed under any circumstances pending COVID-19 test result.

3.2 All newborns fitting to the 'suspected' case definition should be admitted and transferred along with the mother to the designated hospital for confirmatory testing and management. This should be done only after stabilization and in prior consultation with the designated hospital, adhering to necessary infection prevention and control (IPC) measures. All confirmed neonates should be transferred to the COVID-19 management centre.

3.3 All hospitals where deliveries occur should have an identified isolation room/ ward/ area to care for the neonate along with the mother until the baby is transferred.

3.4 There should be a separate isolation room/ ward for suspected neonates in the designated hospitals.

3.5 Negative pressure rooms with a minimum of 12 air changes or 160/L/s/patient facilities with natural ventilation should be used where available.

3.6 The isolation room should have facilities to provide respiratory support and intensive care to the neonate until the baby is transferred.

3.7 There should be a proper procedure to enter and exit from the isolation ward and for hand hygiene. The deployment of protective equipment should be strictly followed.

3.8 The presence of unnecessary individuals inside the room should be avoided.

3.9 All neonates confirmed of COVID-19 should be transferred to the COVID-19 treatment centre.

3.10 All babies born to mothers suspected/ confirmed of COVID-19 should be isolated with their mothers

In the event that the mother suspected of COVID-19 delivers the baby prior to transfer

- a) Baby can be isolated with the mother, if the baby is well and does not require intensive care
- b) Baby should be provided intensive care in a separate isolated room and stabilized prior to transfer, if the baby is sick.

3.11 Attending the delivery of a mother suspected/ confirmed to have COVID-19

- a) All hospitals where deliveries occur should have a separate/ isolated delivery room and operation theatre.
- b) The designated neonatal team in the isolation room comprising of the Medical Officer and Nursing Officer attending the delivery need to use standard, droplet, contact and airborne precautions including full PPE and N95.
- c) Delayed cord clamping, skin to skin care and initiating breastfeeding within the first hour is recommended as there is no evidence of the virus in breast milk, neonatal disease is very mild and benefits outweigh the risks (Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected, Interim Guidance, World Health Organization, 13 March 2020).

- d) Mother and baby should be kept together facilitating uninterrupted breastfeeding.

3.12 Breastfeeding the neonate of a mother suspected/ confirmed to have COVID-19

- a) All mothers should be provided with information and counseling on safe infant feeding and appropriate infection protection measures to prevent COVID-19 virus transmission as follows;

According to current evidence,

- I. No vertical transmission is documented.
 - II. COVID 19 virus is not transmitted via breastmilk
 - III. Virus transmission can occur via droplets and contact with surfaces
 - IV. Benefits of breastfeeding including;
 - o Protection against morbidity and death in the post-neonatal period and throughout infancy and childhood.
 - o The strong protective effect against infectious diseases through direct transfer of antibodies and other anti-infective factors as well as long lasting transfer of immunological competence and memory.
 - V. Relatively a few cases of COVID 19 have been reported among newborns, who had only mild illness.
- b) Basic psychosocial support and practical feeding support should be provided to all mothers with suspected or confirmed COVID-19.
- c) Mother should be supported to practice the following:
- I. Respiratory hygiene (wear a mask) when handling the neonate/ breastfeeding / expressing breast milk
 - II. Hand hygiene before and after handling the neonate/ breastfeeding/ expressing breastmilk
 - III. Clean surfaces, where mother has been in contact with
- d) If the mother is too sick to provide direct breastfeeding, mothers should be encouraged and supported to express milk and safely provide breastmilk to the neonate applying appropriate IPC
- e) The European Institute for Breastfeeding and Lactation recommends sterilization of all used vessels in addition to adequate hand hygiene

3.13 Separate doctors and nurses should be allocated to care for these babies including resuscitation at birth, stabilization, neonatal examination, supporting breastfeeding, monitoring and transfer of this baby to the designated hospital

3.14 Full PPE including airborne precautions with a N95 mask if available, needs to be taken when attending any airway procedure such as resuscitation, intubation, applying CPAP, airway suction etc.

3.15 No visitors will be allowed due to risk of transmission to other patients and health care staff.

4. Investigations of symptomatic neonates born to mothers confirmed with COVID 19 or neonates presenting with respiratory symptoms suspected of COVID 19

4.1 Microbiological investigations

- a) Blood cultures to exclude bacterial infection
 - I. Collect blood cultures for bacteria that cause pneumonia and sepsis, before antimicrobial therapy.
 - II. DO NOT delay antimicrobial therapy to collect blood cultures.
- b) Specimens from respiratory tract
 - o Baby should be tested for COVID 19 PCR immediately after birth.
 - I. Upper respiratory tract (URT; nasopharyngeal and oropharyngeal)
 - o All suspected neonates for diagnosis
 - o To demonstrate viral clearance
 - II. Lower respiratory tract (LRT; endotracheal aspirate, or bronchoalveolar lavage in ventilated patient)
 - o When readily available – intubated patient – only LRT specimen can be used for diagnosis
 - o When URT specimen is negative for diagnosis in a symptomatic neonate
 - o In severe illness / pneumonia (single URT negative sample does not exclude the diagnosis)
 - o To demonstrate viral clearance
 - III. Sputum induction should be avoided due to increased risk of aerosol transmission
 - IV. Do not sample from nostrils or tonsils.
 - V. Use viral swabs and viral transport media.
 - VI. Dual infections have been demonstrated – therefore test for other viral and bacterial pathogens as well.
 - VII. Co-infections with Arbovirus infections like Dengue can occur - Positive diagnostic test for dengue does not exclude COVID-19

4.2 Other investigations

- a) Full blood count - Normal or decreased leukocytes / Decreased lymphocytes / Mild thrombocytopenia
- b) Other findings include elevated of Creatinine kinase, Alkaline phosphatase, Alanine aminotransferase, Aspartate aminotransferase, Lactate dehydrogenase
- c) Imaging - Chest X Ray – features suggestive of pneumonia, Abdominal X ray – intestinal ileus.

5. Asymptomatic newborns born to COVID positive mothers or with contact history will need only COVID testing via upper respiratory tract and not the other investigations

The baby should be observed for any symptoms. Any significant concern with the baby should raise the suspicion of COVID 19 and the baby should be **re-tested with PCR test**. It does not need to be typical symptoms of COVID 19 as in adult patients.

6. Management of a baby with confirmed COVID-19 (for the designated hospitals)

The present evidence indicates that all affected neonates have been shown to have mild illness. None have been reported to have severe illness.

6.1 Management of mild illness

a) Clinical features suggestive of a mild illness (Uncomplicated URT infection)

Nasal congestion, fever, cough without difficulty in breathing/ tachypnea, vomiting/ diarrhoea

b) Treatment of a mild illness

- I. No specific treatment is needed
- II. Isolate with mother
- III. Use Paracetamol for fever

6.2 Management of severe illness

a) Clinical features of severe illness

- I. Oxygen saturation via pulse oximetry < 95%
- II. Features of respiratory distress; respiratory rate > 60/min, recessions grunting, nasal flaring
- III. Cyanosis, inability to breastfeed, lethargy, convulsions
- IV. Features of sepsis
 - o Abnormality in temperature > 38°C fever / < 36°C **OR** Low white blood count **AND**
 - o Tachycardia > 180/min **OR** Tachypnoea > 60/min
- V. Features of septic shock
 - o Hypotension (MAP < gestational age) **AND** 2 -3 of the following;
 - Lethargy / irritability
 - Tachycardia (> 180/min) and bradycardia (<100/min)
 - Prolonged capillary refill (CRT> 2s)/ poor pulse volume
 - Respiratory rate > 60/min
 - Mottling / petechial or purpuric skin rash
 - Increased lactate
 - Oliguria (<1ml/kg/hr)
 - Hypo / hyperthermia

b) Treatment of severe illness

- I. Treat inside a closed incubator. Do not use open incubators.
- II. Treat as for sepsis and treat with empirical antibiotics after blood culture within 1 hour of identification according to national treatment guidelines.
 - o Inappropriate use of antibiotics, especially broad-spectrum antibiotics, should be avoided.
- III. **NO features of respiratory distress, in otherwise well baby with saturation < 95%**
 - o Start oxygen via nasal prongs 2L/min and titrate until saturation is ≥95%
 - o A head cover is recommended by the Chinese Expert consensus Group
- IV. **Features of respiratory distress in otherwise well baby**
 - o Provide respiratory support with high flow oxygen therapy/ noninvasive ventilation using continuous positive airway pressure (CPAP) or noninvasive mandatory ventilation (NIMV)
 - o Intubate and ventilate if no improvement/ incomplete resolution of respiratory distress after 1 hour

V. If mechanical ventilation is needed use;

- Low tidal volumes, lower peak inspiratory pressures < 28 cmH₂O with higher PEEP, lower target pH values on blood gas 7.15 – 7.30, prone ventilation for 12-16 hours a day,
- Avoid disconnecting baby from the ventilator for suctioning – due to atelectasis
- Use in-line suctioning and clamp ET tube when disconnecting (transfer to the transport ventilator)
- Discard all disposable parts like ventilator circuits, infusion tubings etc and clean non disposable items using instructions given above

VI. Conservative fluid management strategy without tissue hypo perfusion

VII. Treat septic shock as per national guidelines

VIII. The following have been found to be useful with severe respiratory distress

- Surfactant therapy
- Inhaled nitric oxide (iNO)
- High-frequency oscillatory ventilation (HFOV)
- Continuous renal replacement therapy (CRRT)
- Extracorporeal membrane lung (ECMO) therapy are required.

- **There is no evidence supporting the effectiveness of steroids, gamma globulin, interferon, or hormone therapy.**

7. Newborn care and screening

- 7.1 In addition to what is mentioned above, routine neonatal care should be provided.
- 7.2 Neonatal examination should be done within 24 hours, once the baby is stabilized.
- 7.3 BCG should be given before discharge.
- 7.4 Newborn screening for congenital hypothyroidism, critical congenital heart disease and congenital deafness should be done before discharge.

8. Discharge and follow up

8.1 Discharge criteria for COVID positive newborn

- I. When the newborn is clinically well.
- II. Fever free for more than 72 hours.
- III. Two (2) negative PCR (nasopharyngeal and pharyngeal swabs) more than 24 hours apart.
- IV. Chest X ray/ lung ultrasound should show improvement in previously severe infection
- V. If the newborn is initially asymptomatic, but PCR positive, repeat PCR on day 10 and day 14 and discharge when two (2) negative PCR (nasopharyngeal and pharyngeal swabs) more than 24 hours apart become negative.

8.2 Discharge criteria for COVID negative newborn of a COVID positive mother

When the mother is ready for discharge, PCR (nasopharyngeal and pharyngeal swabs) testing of the newborn for COVID 19 should be conducted along with the second PCR test of the mother. If the PCR becomes negative, the baby can be discharged with the mother.

- 8.3 On discharge the patient should follow strict home isolation for minimum of 21 days (3 weeks).

- 8.4 When planning the discharge of the newborn and mother, contact the Medical Officer of Maternal and Child Health in the district that the mother resides in and plan the mother and newborn to be transferred to their home for self isolation.
- 8.5 If the newborn becomes symptomatic, immediate PCR should be carried out and managed as COVID suspected newborn.
- 8.6 All neonates born to COVID positive mothers and COVID positive newborns should be reviewed at MOH clinic at one month following discharge from the hospital and referred to the nearest Paediatrician if necessary.
9. **In high risk areas**, consider all airway procedures including resuscitation, intubation, suction, non-invasive ventilation as high risk procedures and wear a tight surgical mask with head shield, gown with long sleeves and gloves.
10. **Preserve PPE or N95** for neonates born to COVID suspected mothers or for neonates presenting with clinical features suggestive of COVID-19.

For more details on use of PPE, refer "Guidance on the rational use of personal protective equipment (PPE) in hospitals in the context of COVID-19 disease" issued on 15th March 2020 (Annexure 01) and "Rational use of PPE and Infection Prevention and Control of COVID-19, Health care settings in Sri Lanka" issued on 2nd of April 2020.

(http://www.epid.gov.lk/web/images/pdf/Circulars/Corona_virus/sri_lanka_ppe_covid-19_english.pdf) by Epidemiology Unit, Ministry of Health.

Refer "Environmental Cleaning Guidelines to be used during the COVID-19 outbreak – 15/03/2020" issued by the Epidemiology Unit, Ministry of Health (Annexure 02) for details on environmental cleaning.

The COVID-19 is a highly evolving illness. This guideline will be updated with the availability of new evidence.

You are advised to consider this as a top priority and give urgent attention to implement the above recommendations. This information must be urgently communicated to all relevant health staff in your respective institutions.


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Director/ Health Promotion Bureau
CCP - Province/District - to facilitate and monitor implementation of the guidelines
MOMCH - to facilitate and monitor implementation of the guidelines
President - Sri Lanka College of Paediatricians/ Sri Lanka College of Obstetricians and Gynecologists/ Sri Lanka College of Microbiologists/ Sri Lanka College of Medical Administrators/ Sri Lanka College of Community Physicians/Perinatal Society of Sri Lanka/ Ceylon College of Physicians/ Pulmonologists/ College of General Practitioners of Sri Lanka
Directors/ Private Hospitals

Guidance on the rational use of personal protective equipment (PPE) in hospitals in the context of COVID-19 disease

The rational use of PPE is a key measure to protect healthcare workers and prevent transmission of COVID-19 in healthcare settings.

This document outlines the recommendations for the rational use of PPE in hospitals in the current context.

In addition to using the appropriate PPE, frequent hand hygiene and respiratory hygiene should always be performed. Healthcare workers should discard PPE in an appropriate waste container after use and perform hand hygiene before donning and after doffing of PPE.

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Healthcare facilities			
Triage*	Healthcare workers	Preliminary screening not involving direct contact.	Maintain spatial distance of at least 1 m. Surgical mask
	Patients with respiratory symptoms.	Any activity	Maintain spatial distance of at least 1 m. Provide surgical mask.
	Patients without respiratory symptoms	Any activity	No PPE required
Waiting areas until transfer (in hospitals where inpatient facilities are not available and patients awaiting transfer to designated hospitals)	Suspected cases of COVID 19	Any activity	Provide surgical mask Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure spatial distance of at least 1m from other patients.
Areas of patient transit (e.g., wards, corridors) ¹	All staff, including healthcare workers.	Any activity that does not involve contact with COVID-19 patients.	No PPE required
	All staff, including healthcare workers.	If involved in patient transfer	Surgical mask or and gloves

¹ (Have a designated route for the transport of patients within the hospital. Before transporting the patient, inform the destination unit of the patient's transfer. Make arrangements to clear the route of transport within the hospital (making announcement over the public address system or through staff). Make sure the patient is given a surgical mask.

Patient room ²	Healthcare workers	Providing direct care to COVID-19 suspected or confirmed patients.	NIOSH approved N-95 mask Impermeable isolation gown Two pairs of gloves Eye protection (goggles or face shield) Surgical hood or Cap Covered shoes and fluid resistant shoe cover or boots
		Aerosol-generating procedures performed on COVID-19 patients.	NIOSH approved N95 mask or FFP2 standard, or equivalent. Impermeable isolation gown Two pairs of gloves Eye Protection Apron Surgical Hood Covered shoes and fluid resistant shoe cover or boot
	Cleaners	Entering the room of COVID-19 patients.	NIOSH approved N-95 mask or surgical masks Fluid resistant gown Heavy duty gloves Eye protection Boots or closed work shoes and shoe covers Surgical cap or surgical Hood (Masks and eye protection can be shared between rooms of confirmed cases or between rooms of suspected cases)
	Visitors ³	Entering the room of a COVID-19 patient	Surgical mask Gown Gloves
Laboratory and biosafety cabinet	Lab technician	Manipulation of respiratory samples.	Surgical mask Fluid resistant gown Gloves Eye protection

***Triage of patients in the hospital**

² If cohort isolation of suspected cases of COVID 19 is practiced, the same set of PPEs should be used for all patients.

³ Visitors should not be allowed. If visitors must enter a COVID-19 patient's room, they should be provided with clear instructions about how to put on and remove PPE and about performing hand hygiene before putting on and after removing PPE; this should be supervised by a healthcare worker.

Administrative areas	All staff, including healthcare workers.	Administrative tasks that do not involve contact with COVID-19 patients.	No PPE required
Ambulance or transfer vehicle ⁴	Healthcare workers	Transporting suspected COVID-19 patients in the same compartment of the ambulance to the referral healthcare facility.	Surgical mask or NIOSH approved N95 mask Fluid resistant gowns Gloves Eye protection
	Driver	Involved only in driving the patient with suspected COVID-19 disease and the driver's compartment is separated from the COVID-19 patient	Maintain spatial distance of at least 1 m. No PPE required
		Assisting with loading or unloading patient with suspected COVID-19 disease.	Surgical mask or NIOSH approved N95 mask Fluid resistant gowns Gloves Eye protection
		No direct contact with patient with suspected COVID-19, but no separation between driver's and patient's compartments	Surgical mask
	Patient with suspected COVID-19 disease.	Transport to the referral healthcare facility.	Surgical mask
	Cleaners	Cleaning after and between transports of patients with suspected COVID-19 disease to the referral healthcare facility.	Surgical mask Fluid resistant gown Heavy duty gloves Eye protection Boots or closed work shoes

⁴ Always use ambulances with two compartments (separate driver's area), if available.

1. Display a signage to direct patients with a recent travel history to countries/areas with COVID 19 within 14 days or with a contact history with someone who had travelled to such an area and developed symptoms or a person suspected/diagnosed with COVID 19
2. Display these signage in all the main languages at the entrance to the hospital building
3. Use a checklist to identify suspected cases of COVID 19 during the triage of patients. Inquire the following:
 - a. Travel history
 - b. Respiratory symptoms
 - c. Contact history
4. Refrain from performing a detailed clinical examination of suspected patients in the triage area unless medically indicated
5. Healthcare workers can wear the same PPE for a shift in the triage area

Environmental Cleaning Guidelines to be used during the COVID-19 outbreak – 15/03/2020

- 1. Environment Cleaning/ surface cleaning in isolation units and Triage areas**
 - Hypochlorite at 0.1% (equivalent 1000ppm)
 - Door knobs of isolation rooms- Wipe with 70% Ethyl alcohol after each use
 - Other metal surfaces in the isolation and triage- 70% Ethyl alcohol
- 2. Reusable dedicated equipment (e.g., thermometers, stethoscope, BP cuffs) between uses**
 - 70% Ethyl alcohol
- 3. Metal equipment (Kidney trays etc)**
 - Autoclave
- 4. Environment Cleaning/ surface cleaning in other vulnerable areas (OPD, Medical wards, ICU etc)**
 - Hypochlorite at 0.1% (1000ppm)
- 5. Spill cleaning-**
 - Hypochlorite at 1%(10,000ppm) , contact time at least 10 min
- 6. Soiled bedding, towels and clothes from patients with COVID-19**
 - Washing by machine with warm water (60-90°C) and laundry detergent.
 - If machine washing is not possible soak linen in 0.05% chlorine for approximately 30 minutes. Finally, rinse with clean water and let linen dry fully in the sunlight.
 - (If there is any solid excrement on the linen, such as feces or vomit, scrape it off carefully with a flat, firm object and put it in the commode or designated toilet before putting linen in the designated container. If the latrine is not in the same room as the patient, place soiled excrement in covered bucket to dispose of in the toilet)
- 7. Bedpans**
 - Hypochlorite at 0.5% after disposing of excreta and cleaning with a neutral detergent and water. (Chlorine is ineffective for disinfecting media containing large amounts of solid and dissolved organic matter. Therefore, there is limited benefit to adding chlorine solution to fresh excreta and, possibly, this may introduce risks associated with splashing.)
Contact time at least 10min
 - Use washer disinfectant if available
- 8. Toilets-**
 - Hypochlorite at 0.5%
- 9. Reusable PPE**
 - Boots- Hypochlorite at 0.5%
 - Goggles- Soap and water/Teepol solution and Ethyl 70% alcohol
- 10. Cleaning equipments (mops/dust pan etc)**

- Hypochlorite at 0.5%

11. Infectious waste

- Incineration
- Decontaminate with Hypochlorite at 0.5%, if an incinerator is not available within the premises.

12. Ambulances

- Hypochlorite spray at 0.1%