Revised Pediatric Care Guideline for COVID-19

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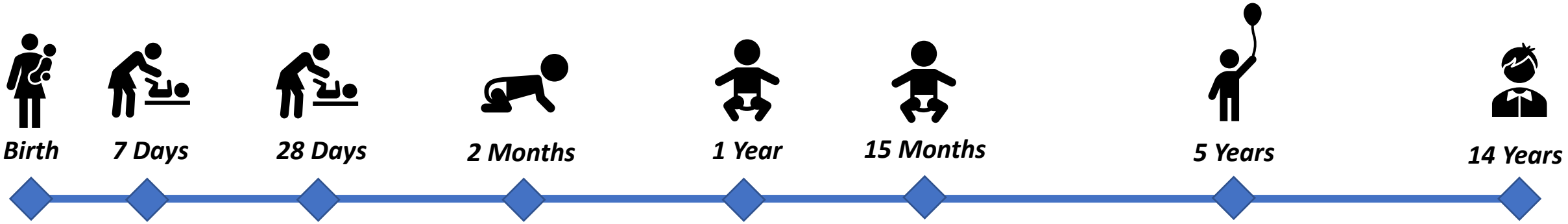
Definition of Paediatric Age



Early newborn

Newborn / Neonate

Young Infant

Infant

Young Child

Child

Pediatric

Neonatal Protocols

When to suspect Newborn for COVID-19?

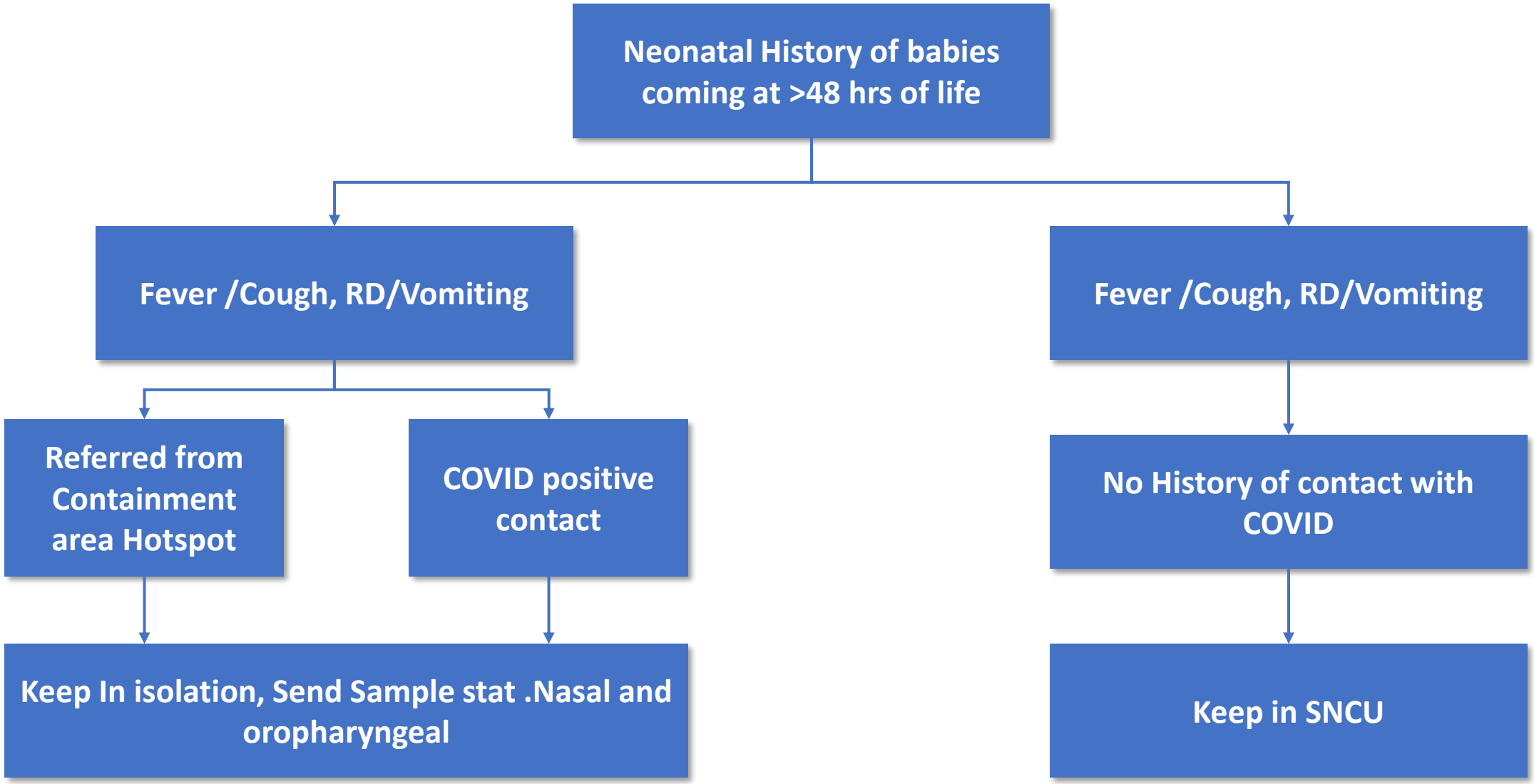
- Mother COVID-19 positive within two weeks prior to delivery
- Neonates born to a mother suspected infection or to a mother from containment area
- Postnatal exposure to infected mother or another person including health a care worker
- Presenting with respiratory distress with or without fever and cough, onset beyond 48-72 hours of age and no other alternative explanation for the illness

Suspected Case

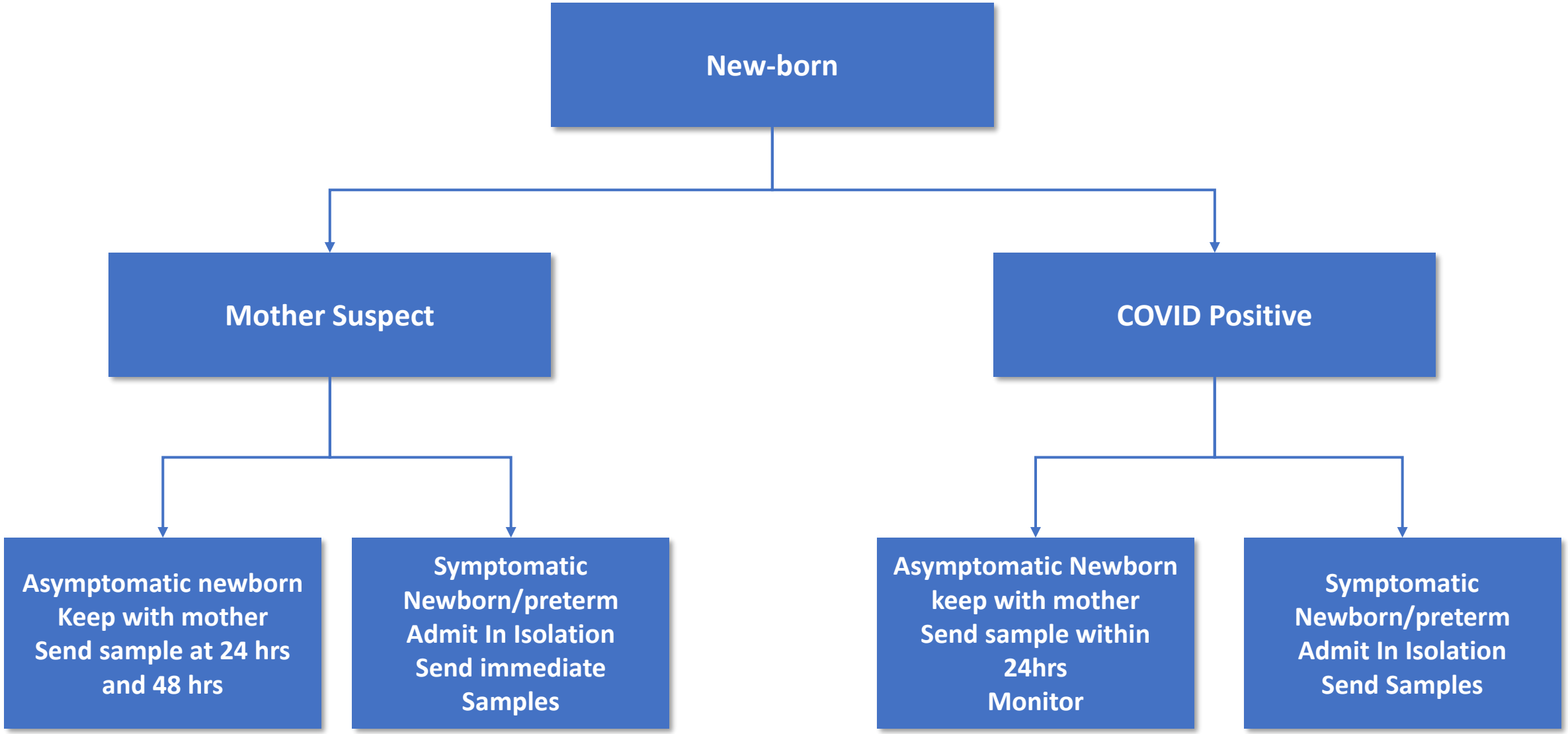
- A Newborn/Child with laboratory confirmation of COVID-19 infection

Confirmed Case

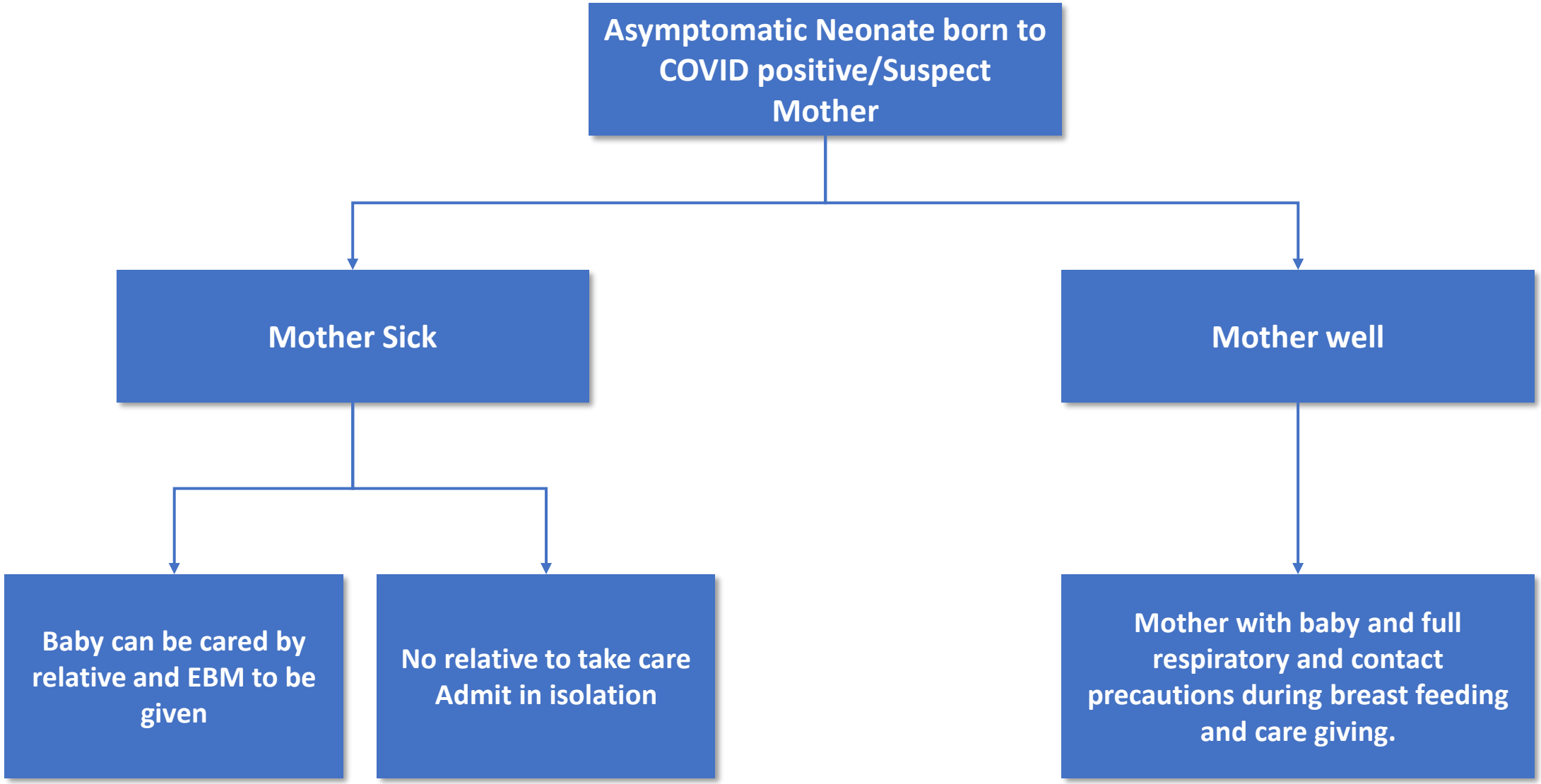
Neonatal COVID-19 Protocol



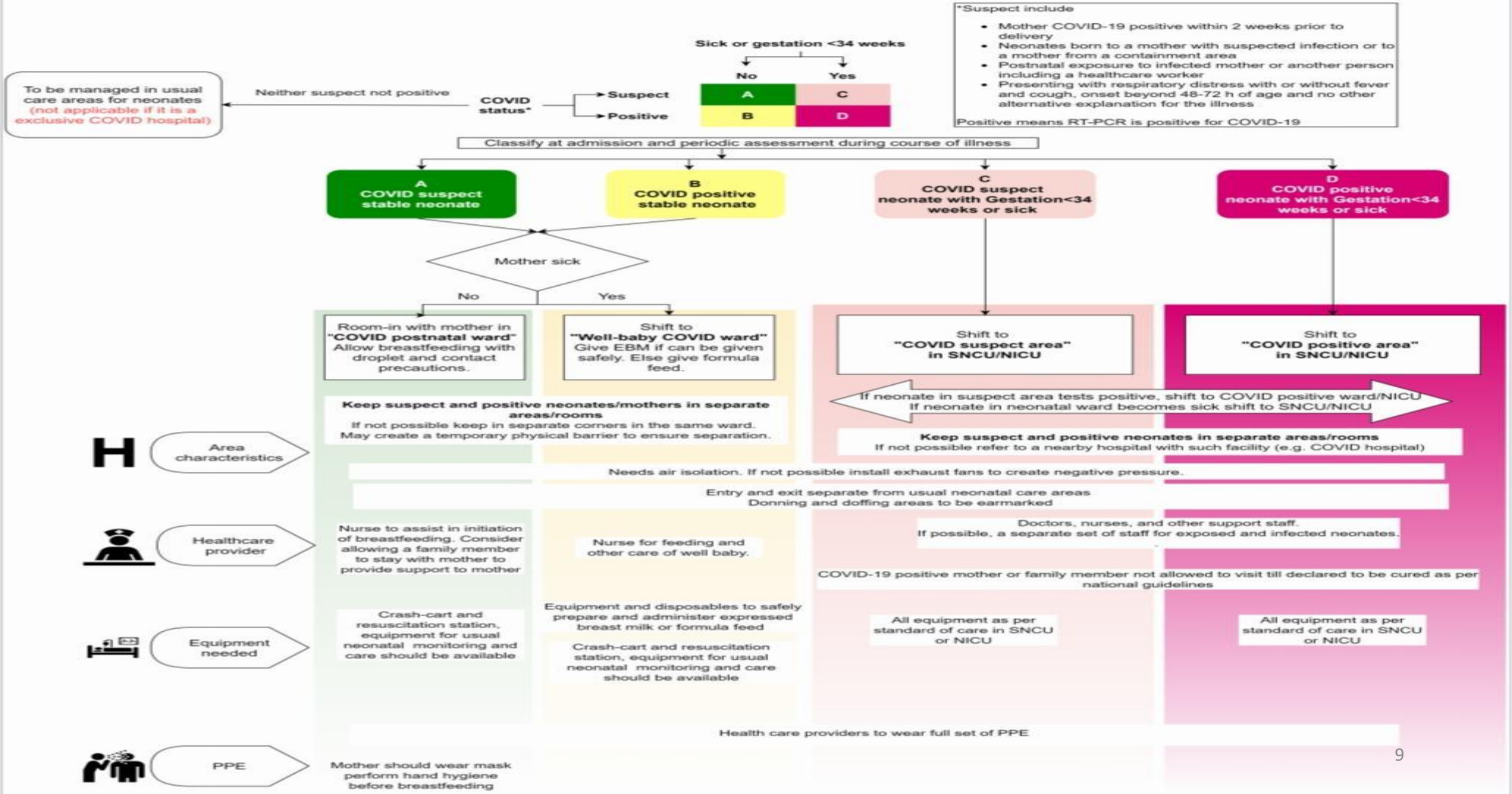
Neonatal COVID-19 Protocol



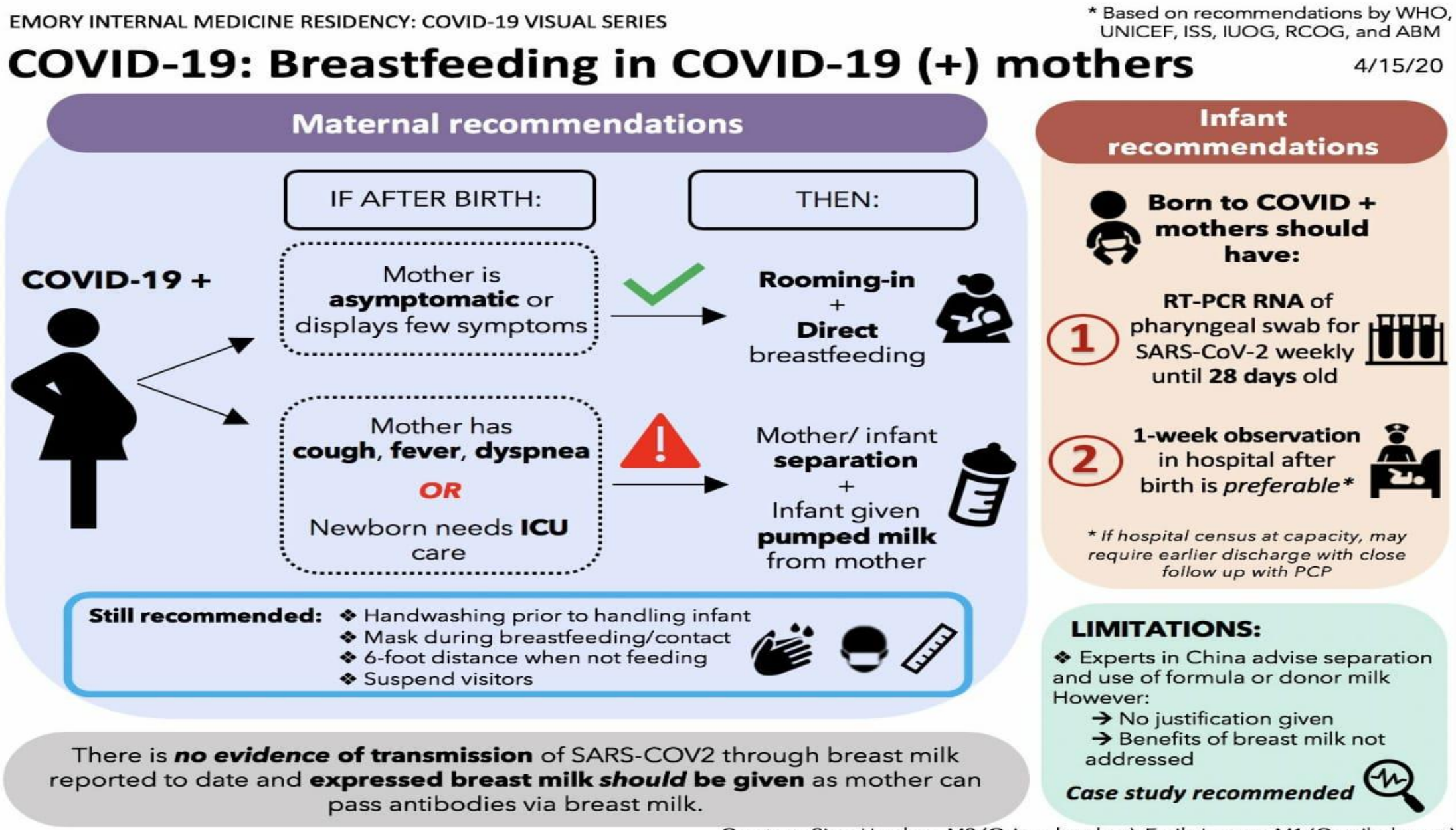
Asymptomatic Neonate born to COVID-19 positive/Suspect Mother



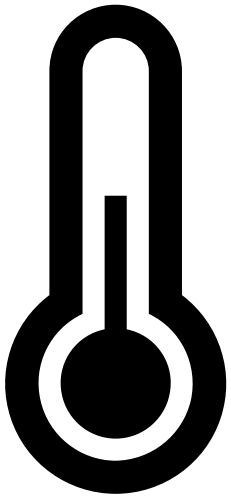
FOGSI guidelines- Newborn Care-SNCU/NICU



Breastfeeding in COVID-19 Mothers



Symptoms in Confirmed COVID-19 Positive Newborn



- Fever
- Respiratory distress
- Cough
- Lose motions
- Vomiting

- ***Neonatal management will be same as per FBNC management protocols for preterm babies, hypoglycemia, seizures, shock, bleeding.***
- ***After baby stabilizes expressed breast milk can be given***

Child Health Services During COVID-19

The early initiation of breastfeeding/ KMC services are promoted irrespective of COVID-19 status. If mother is COVID-19 positive, she can also breastfeed the newborn by using mask and hand hygiene.

Immunization services should be continued at facility and community level as per guideline issued by state

ASHAs should inform telephonically to households with children as per immunization schedule and facilitate access to immunization services at the nearest SHC/PHC.

Child Health Services During COVID-19

Admission to SNCU and NBSU to be continued as per existing guidelines however sick neonates born to a mother with suspected or proven COVID-19 infection to be managed in separate isolation facility with all necessary services and equipment.

In case of suspected COVID-19 infection in mother/sick child, ASHA/ ANM should refer to nearest COVID-19 management facility.

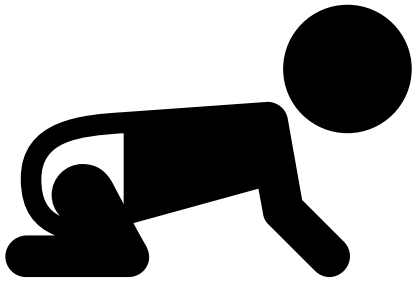
All health care providers must follow infection control measures and identify early suspected cases of COVID-19 based on Standard Case definition.

Recommendations for neonatal resuscitation

- If possible, resuscitation of neonate can be done in a physically **separate adjacent room** earmarked for this purpose. If not feasible, the resuscitation warmer should be **physically separated from the mother's delivery area** by a distance of at least 2 meters.
- **Minimum number of personnel** should attend (one in low-risk cases and two in high-risk cases where extensive resuscitation may be anticipated) and wear a full set of **personal protective equipment** including N95 mask.
- Mother should perform **hand hygiene** and wear **triple layer mask**
- Delayed cord clamping and skin-to-skin contact can be initiated
- Delivery team member should bring over the neonate to the resuscitation area for assessment by the neonatal team.
- Follow **standard NRP guidelines**. If positive-pressure ventilation is needed, self-inflating bag and mask may be preferred over T-piece resuscitator

Post-discharge Follow-up

- **SNCU Facility Follow up** – Only for Critical Cases- Routine Follow up 1st ,7th, 28th day, and 3, 6, 9 and 12 months at facility – To be done at nearest PHC/CHC
- Only critical and danger signs to be – brought back to facility SNCU for Follow up , rest to be followed by telephonic counseling by DEO and Staff nurse to reduce exposure- Milestones and routine checklist for danger signs up at PHC/CHC nearby
- **Community Follow up**- Continue Home Based care by ASHA , weight, critical signs, nose, eyes, umbilical cord after proper hand washing, use of mask and respiratory hygiene and social distancing
- Continue breast feeding for all
- For COVID-19 exposed mothers **use mask, hand hygiene and respiratory hygiene** continue Breast feeding, KMC at home



Paediatric Protocols

Case Definition

- All **symptomatic Children** who Came from Containment area.
- All **symptomatic contacts** of laboratory confirmed cases
- All **symptomatic Contact** of healthcare personnel (HCP)
- All h**ospitalized children with severe acute respiratory illness** (SARI) (fever AND cough and/or shortness of breath)
- **Asymptomatic direct and high-risk contacts** of a confirmed case (should be tested once between day 5 and day 14 after contact)

Suspected Case

In **hotspots/cluster** (as per MoHFW) and in large migration gatherings/ evacuee centers **all symptomatic ILI** (fever, cough, sore throat, runny nose)

Within 7 days of illness → ***rRT-PCR***

After 7 days of illness → ***Antibody Test*** → ***If negative, confirm by rRT-PCR***

- A Child with laboratory confirmation of COVID-19 infection

Confirmed Case

Symptomatic refers to fever/cough/shortness of breath

Direct and high-risk contacts include those who live in the same household with a confirmed case and HCP who examined a confirmed case

Clinical Features in Pediatric Age Group

Uncomplicated illness[1]	Mild Pneumonia[2]	Severe Pneumonia[3]	ARDS	Sepsis	Septic Shock
• *Child with Cough and Cold with no danger signs**	• *Fast breathing with no signs of severe pneumonia:* • *<2 months - ≥60;* • *2–12 months - ≥50* • *1– 5 years - ≥40*	• Child with cough or difficulty in breathing, plus at least one of the danger signs*			

***Danger Signs**

1. Not able to feed or continuous vomiting
2. Severe Chest In drawing
3. Fast Breathing
4. High Temperature – More than 97.6 F 5 o
5. Hypothermia
6. Central cyanosis or SpO2<90%,)
7. Lethargic or unconscious

If cases are negative, they should be treated in pediatric ward/ PICU
Suspect or confirm cases should be treated in [1]COVID care center (CCC) [2]District COVID Health Center (DCHC) [3]Dedicated COVID Hospital (DCH)

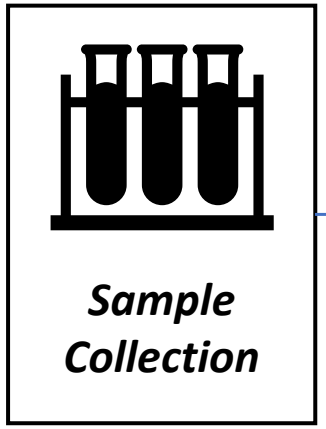
Clinical Features in Pediatric Age Group

Acute Respiratory Distress Syndrome - ARDS (Fast breathing, chest in drawing, grunting)	• Onset: new or worsening respiratory symptoms within one week of known clinical insult. • Chest imaging (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules. • Origin of oedema: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present • Oxygenation need
Sepsis	• Children: suspected or proven infection and ≥2 SIRS (Systemic inflammatory response syndrome) criteria, of which one must be abnormal temperature or white blood cell count
Septic Shock	• Any hypotension (SBP <5th centile or >2 SD below normal for age) or 2- 3 of the following: • altered mental state; bradycardia or tachycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); • Prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea • Mottled skin or petechial or purpuric rash; increased lactate; • Oliguria • Hyperthermia or hypothermia

Immediate implementation of IPC

At triage	• Give suspect patient a triple layer surgical mask and send to separate area, an isolation room if available. • Keep at least 1-meter distance between suspected patients and other patients. • Instruct all patients to cover nose and mouth during coughing or sneezing. • Perform hand hygiene after contact with respiratory secretions
Droplet precautions	• Mask and distance • Place patients in single rooms, or group together those with the same etiological diagnosis. • Use eye protection (face-mask or goggles), because sprays of secretions may occur. • Limit patient movement and patients wear triple layer surgical masks when outside their rooms
Contact precautions	• Prevent direct or indirect transmission from contact with contaminated surfaces or equipment • Use PPE (triple layer surgical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving • If equipment needs to be shared among patients, clean and disinfect between each patient use. • HCP refrain from touching their eyes, nose, and mouth • Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles) • Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene
Airborne precautions - performing an aerosol generating procedure	• Use PPE while performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) • Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures • Avoid the presence of unnecessary individuals in the room. • Care for the patient in the same type of room after mechanical ventilation commences

Lab Diagnosis



Preferred: Throat and nasal swab in viral transport media (VTM) and transported on ice

Alternate: Nasopharyngeal swab, BAL or endotracheal aspirate which has to be mixed with the viral transport medium and transported on ice

Lab Diagnosis

General Guidelines

- Trained health care professionals to wear appropriate PPE with latex free purple nitrile gloves while collecting the sample from the patient
- Maintain proper infection control when collecting specimens
- Restricted entry to visitors or attendants during sample collection
- Complete the requisition form for each specimen submitted
- Proper disposal of all waste generated

Combined nasal & throat swab

- Tilt patient's head back 70 degrees.
- While gently rotating the swab, insert swab less than one inch into nostril (until resistance is met at turbinates).
- Rotate the swab several times against nasal wall and repeat in other nostril using the same swab.
- Place tip of the swab into sterile viral transport media tube and cut off the applicator stick.
- For throat swab, take a second dry polyester swab, insert into mouth, and swab the posterior pharynx and tonsillar areas (avoid the tongue).
- Place tip of swab into the same tube and cut off the applicator tip.

Lab Diagnosis

Oropharyngeal swab (e.g. throat swab)

- Tilt patient's head back 70 degrees.
- Rub swab over both tonsillar pillars and posterior oropharynx and avoid touching the tongue, teeth, and gums.
- Use only synthetic fiber swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden shafts.
- Place swabs immediately into sterile tubes containing 2-3 ml of viral transport media

Nasopharyngeal swab

- Tilt patient's head back 70 degrees.
- Insert flexible swab through the nares parallel to the palate (not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient.
- Gently, rub and roll the swab.
- Leave the swab in place for several seconds to absorb secretions before removing.

Early supportive therapy and monitoring

Supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxemia, or shock

Children with emergency signs

- *Obstructed or absent breathing*
- *Severe respiratory distress*
- *Central cyanosis*
- *Shock*
- *Coma*
- *Convulsions*

→ *Oxygen therapy during resuscitation* → Target SpO_2 ≥94%

All areas where patients with SARI are cared for should be equipped with →

- Pulse oximeters
- Functioning oxygen systems
- Disposable, single- use, oxygen-delivering interfaces
  - Nasal cannula
  - Simple face mask
  - Mask with reservoir bag

⚠ *Use contact precautions when handling contaminated oxygen interfaces of patients with COVID – 19*

Early supportive therapy and monitoring

Use **conservative fluid management** in patients with SARI if no evidence of shock

Empirical **antimicrobials** to treat all likely pathogens causing SARI **within ONE hour** of identification of sepsis.

DO NOT routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS unless they are indicated for another reason

Conduct appropriate **investigations**

Closely **monitor patients with SARI for signs of clinical deterioration**, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately (Temp, GC, Pulse oximetry, BP, RR, I/O chart, chest auscultation)

Understand the **patient's co-morbid condition**(s) to tailor the management of critical illness and appreciate the prognosis

Communicate early with patient and family

Management of hypoxemic respiratory failure and ARDS

Severe hypoxemic respiratory failure - patient with respiratory distress is failing standard oxygen therapy

↓

Increased work of breathing or hypoxemia even when oxygen is delivered via a face mask with reservoir bag (flow rates of 10-15 L/min).

↓

Results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation

↓

Try High – Flow Nasal catheter Oxygenation (HFNO) or non – invasive mechanical ventilation (NIV)

Patients with hypercapnia (exacerbation of obstructive lung disease, cardiogenic pulmonary oedema), hemodynamic instability, multi-organ failure, or abnormal mental status should generally NOT receive HFNO

↓

If doesn't improve in 1-2 hours or deteriorates – endotracheal intubation and mechanical ventilation (detailed guidelines available)

Management of septic shock

Any hypotension (SBP <5th centile or >2 SD below normal for age) OR 2-3 of the following:

- Altered mental state
- Tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children)
- Prolonged capillary refill (>2 sec) or Warm vasodilation with bounding pulses
- Tachypnoea
- mottled skin or petechial or purpuric rash
- Increased lactate
- Oliguria
- Hyperthermia or hypothermia

Early Recognition

Treatment within **1 hour:**

- Antimicrobial therapy
- Fluid loading
- Vasopressors for hypotension

In the absence of a lactate measurement, use MAP and clinical signs of perfusion to define shock
Mean Arterial Pressure (MAP)= 1/3rd of Pulse Pressure (SBP-DBP)+DBP

Management of septic shock

Give 20 ml/kg as a rapid bolus and up to 40-60 ml/kg in the **first 1 hr**

DO NOT use hypotonic crystalloids, starches, or gelatins for resuscitation

Beware of signs of volume overload

Determine need for additional fluid boluses (250-1000 ml in adults or 10-20 ml/kg in children) based on clinical response and improvement of perfusion targets

Perfusion targets include - MAP (>65 mmHg or age-appropriate targets in children), Urine output (>0.5 ml/kg/hr in adults, 1 ml/kg/hr in children), Improvement of skin mottling, capillary refill, level of consciousness, and lactate

Administer vasopressors when shock persists during or after fluid resuscitation

If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis

Prevention of complications

Reduce days of invasive mechanical ventilation	• Use weaning protocols that include daily assessment for readiness to breathe spontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions
Reduce incidence of ventilator associated pneumonia	• Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45º) • Use a closed suctioning system; periodically drain and discard condensate in tubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days
Reduce incidence of venous thromboembolism	• Use pharmacological prophylaxis (low molecular-weight heparin[preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).

Prevention of complications

Reduce incidence of catheter related bloodstream infection	• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure	• Turn patient every two hours

Reduce incidence of stress ulcers and gastrointestinal bleeding	• Give early enteral nutrition (within 24–48 hours of admission) • Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal replacement therapy, liver disease, multiple co-morbidities, and higher organ failure score
Reduce incidence of ICU-related weakness	• Actively mobilize the patient early in the course of illness when safe to do so