# COVID-19 – Newborn Infants Born to Women with Suspected or Confirmed COVID-19

*This Local Operating Procedure is developed to guide safe clinical practice in Newborn Care Centre (NCC) at The Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this Local Operating Procedure. It is **interim advice, and subject to change**.*
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**NOTE: This Local Operating Procedure is based on a guideline provided by the Neonatal COVID-19 Advisory group for New South Wales (NSW) and Australian Capital Territory (ACT), in consultation with the Sepsis Prevention in Neonates Group (SPRING), Neonatal Intensive Care Units (NICUS) and Neonatal Intensive Care Unit Managers (NICUM) groups.**

**The Neonatal COVID-19 Advisory group has provided advice for NSW Neonatal Services based on a combination of available evidence, good practice and recent clinical guidelines.[1-7] The priorities are the provision of safe care to newborn infants, born to mothers with suspected/confirmed COVID-19 and the reduction of onward transmission to clinical staff and the broader community. The approach is intentionally cautious because of the limited evidence available on the true extent of transmission and impact of the infection on pregnant women and their newborn infants.**

**The Neonatal COVID-19 group guideline was prepared with input from NSW and ACT clinicians and the NSW/ACT NICUS SPRING group. It focuses on management in the health care setting. Dynamic information for health care professionals that is continually being updated is available at:**

https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert
https://www.health.nsw.gov.au/Infectious/diseases/Pages/coronavirus-professionals.aspx
https://www.cdc.gov/coronavirus/2019-nCoV/hcp/index.html
https://www.who.int/emergencies/diseases/novel-coronavirus-2019
https://ranzcog.edu.au/statements-guidelines/covid-19-statement.
https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/
https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/03/novel-coronavirus-2019
https://www.nejm.org/coronavirus
https://www.thelancet.com/coronavirus
https://www.cebm.net/covid-19/

## DEFINITIONS

**COVID-19:** coronavirus disease 2019, the name of the disease caused by the virus SARS-CoV-2.

**SARS-CoV-2:** severe acute respiratory syndrome coronavirus 2. The formal name of the coronavirus that causes COVID-19.

**RT-PCR Test:** Reverse Transcriptase Polymerase Chain Reaction Test.

**Contact plus Droplet Precautions:**

- Gloves
- Impermeable long-sleeved gown
- Surgical face mask
- Eye protection (goggles or face shield)
- NB: personal eyeglasses or contact lenses are not adequate

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## COVID-19 – Newborn Infants Born to Women with Suspected or Confirmed COVID-19 cont'd

**Contact plus Airborne Precautions:**

- Gloves
- Impermeable long-sleeved gown
- Eye protection (goggles or face shield)
- P2/ N95 respirator which must be fit-checked
- Negative pressure room if available

**TESTING RECOMMENDATIONS FOR NEWBORN INFANTS**

**Routine nose/throat swab testing of asymptomatic infants is not recommended:**

- Newborn infants born to mothers with suspected/confirmed COVID-19 are considered close contacts.
- As in any other **asymptomatic** contact of suspected/confirmed COVID-19, well and asymptomatic newborn infants do not require testing. A negative test should not be used to de-isolate the baby, or to determine the appropriate location and infection control precautions used.
- Because newborn infants of mothers with COVID-19 are considered close contacts (even when separated from the mother from birth), 14-day self-isolation and appropriate infection control precautions apply to infant (being a close contact). Isolation can be done by co-location with the mother if the mother is deemed well enough to take care of the infant.
- Cord blood collection: At the Royal Hospital for Women, cord blood is sent to the laboratory for testing for the purposes of investigating for evidence of vertical transmission. Specimens should be sent with forms requesting "Cord blood for serology for SARS-CoV-2". This should be written by hand on blank forms and marked as attention to Zin Naing and Prof Rawlinson. The ideal tube for the specimen is a "gold-top" SST tube but a "purple top" EDTA tube is acceptable. No special precautions are required in collecting the swabs in addition to the standard precautions.

**Indications for testing for SARS-CoV-2 in the neonatal period may include:**

- **Symptomatic** newborn born to suspected/confirmed COVID-19 mother raising the suspicion of congenital infection/vertical transmission (e.g. to rule out congenital pneumonia in an infant born to a mother with suspected/proven COVID-19). In this scenario, combined nose/throat swab testing is to be performed at around 24 hours of age, to avoid detection of transient viral colonization and to facilitate detection of viral replication.
- Suspected horizontal transmission leading to symptomatic infection (e.g. fever, acute respiratory illness not otherwise explained) from a COVID-19 positive parent/ caregiver/household contact, healthcare worker, or where transmission is suspected in a particular setting such as a ward cluster.

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**NOTE:**
**What is known about risk to the mother and her newborn infant?**

- It does not appear that pregnant women are at increased risk of becoming severely unwell from COVID-19 infection[2].
- A recent systematic review and meta-analysis published in AJOG[8] has demonstrated higher rates of preterm birth < 37 weeks 41.1% (14/32 – 95% CI 25.6-57.6) and < 34 weeks 15% (4/32 - 95% CI 3.9-31.7) to women with COVID-19. There was also a higher rate of perinatal death 7% (2/41 – 95% CI 1.4-16.3). It must be noted that this review may overestimate these outcomes as it has reviewed outcomes for *hospitalised* pregnant women. Whether the preterm births were spontaneous or iatrogenic is not stated in the review.
- It remains unclear if SARS-CoV-2 is vertically transmitted from mother to fetus antenatally via maternal viraemia and transplacental transfer[9-11].
- Recent case reports include a newborn infant testing positive for SARS-CoV-2 at 36 hours of life despite swift separation and strict isolation, and another newborn with elevated antibody and cytokine levels at 2 hours of age suggesting that vertical transmission cannot be ruled out[12,13].
- To date there is no evidence that SARS-CoV-2 causes congenital abnormalities if the mother is infected during pregnancy[9,11].
- There is no evidence so far that the virus is found in breast milk[2], however, very few women have been tested.
- Perinatal exposure may be possible via maternal stool based on the previous experience with SARS-CoV-1 and Middle Eastern Respiratory Syndrome coronavirus (MERS-CoV)[14-16].
- Newborn infants are at risk of infection from a symptomatic mother's respiratory secretions after birth, regardless of delivery mode[17-19].
- Most reported cases of neonatal COVID-19 to date have been mild[20], with no neonatal deaths confirmed to be secondary to COVID-19 to date.

### 1. AIM

- To provide safe care to women with suspected/confirmed COVID-19 and to reduce the onward transmission to their babies.

### 2. PATIENT

- Newborns

### 3. STAFF

- Medical and nursing staff

### 4. CLINICAL PRACTICE

**General Principals**

- Healthcare facilities should ensure recommended appropriate infection control practices for hospitalized pregnant patients who have suspected or confirmed COVID-19 using the current NSW health case definition. https://www.health.nsw.gov.au/Infectious/diseases/Pages/2019-ncov-case-definition.aspx
- Healthcare facilities should ensure recommended appropriate infection control practices for hospitalized pregnant patients who are at risk of COVID-19 secondary to either close contact with a confirmed case or recent overseas travel in last 14 days.
- All Maternity Units (Service Capability Level 1-6) must ensure that staff are correctly trained and capable of implementing recommended infection control interventions[21].

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- Obstetric team to notify paediatric team at least 30 minutes prior to anticipated delivery where possible.
- All health care personnel who enter the room of a patient with known or suspected COVID-19 should use contact and droplet precautions.
- If the patient is critically unwell and/or there will be aerosol generating procedures then health care personnel should use contact and airborne precautions[22].
- See latest national recommendations for transmission based precautions here.
- Maternity Services should follow the above infection control guidance on managing visitor access, including only one support persons for women in labour (e.g., spouse, partner).
- Maternity health care practitioners should obtain a detailed travel and contact history for pregnant patients presenting with fever and acute respiratory illness[23].
- Health care practitioners should immediately notify infection control personnel at their health care facility in the event of a suspected case.
- Women with mild to moderate illness can be cared for in a single room with appropriate contact and droplet precautions.
- Women who have severe or critical illness should be cared for in a negative pressure room if available **(Algorithm 1)**. Transfer should be considered for those who are critically unwell to a facility where a negative pressure room is available.
- The benefits of colocation for maternal-infant bonding and establishment of breastfeeding should be balanced against the potential risks of horizontal transmission of SARS-CoV-2 to the newborn infant with largely unknown sequelae, and should be discussed with each family prior to delivery where possible.
- Following birth, in most circumstances, when mother and the newborn are both well and nursery admission is not required, routine postnatal care will occur, including supporting breastfeeding and keeping the mother and her newborn together.
- In some circumstances, if either the mother or the newborn are unwell, admission to the neonatal nursery for temporary separation will be recommended after appropriate counselling[2] (See **Algorithm 1 and parent information sheet**).
- Maternity and Newborn Care Units should, where possible, identify 3 separate areas for care of newborn infants. If not possible 1 and 2 could be combined, with a separate area for 3.
  1. Proven neonatal COVID-19
  2. Suspected neonatal COVID-19 (i.e. tests pending in mother and/or neonate)
  3. No risk or suspicion of COVID-19

**Universal Screening (Screening Algorithm)**

- Universal screening questions to be asked before or upon arrival to all mothers by triage staff:
  - Ask about symptoms of acute respiratory illness: fever, cough, shortness of breath or sore throat
  - Ask about overseas travel in the 14 days before onset of illness
  - Ask about close contact with a confirmed or case (including household contacts)

  https://www.health.nsw.gov.au/Infectious/diseases/Pages/2019-ncov-case-definition.aspx
- If yes to any questions give the mother a mask and move to a separate area and follow appropriate algorithm.

**Newborn born to symptomatic mother with suspected/confirmed COVID-19 (Algorithm 1)**

**NOTE:**
**It is unknown whether newborn infants with COVID-19 are at increased risk for severe complications. In-utero/vertical transmission is currently unclear[6]. Transmission after birth via contact with infectious respiratory secretions has been documented[11,19,24,25]. To date, there have been no reported neonatal deaths confirmed as due to COVID-19.**

## COVID-19 – Newborn Infants Born to Women with Suspected or Confirmed COVID-19

Term, newborn to mother with suspected/confirmed COVID-19

- **At birth**
  NICU team to be present at delivery and wear appropriate PPE including P2/N95 mask due to the potential for aerosol-generating procedures during resuscitation.
  - If no resuscitation is anticipated, NICU team may wait outside the delivery room.
  - Place newborn on resuscitation bed for assessment by Neonatal Paediatric staff.
  - No delayed cord clamping.
  - Do not place the baby on mother's abdomen.
  - If facilities are available, consider having the resuscitaire and neonatal team in a separate adjoining room to protect Neonatal Paediatric staff.
  - Minimise the equipment on a resuscitaire to essential items as the stock on the resuscitaire will be considered contaminated. Extra equipment anticipated to be required may be placed in sealed plastic bags.
- **Transport**
  Transport of newborn infant born to mothers with suspected/confirmed infection from delivery room to post-natal ward or Newborn Care unit.
  - Transport all neonates in an infant incubator.
  - Plan for a dedicated transport route and elevator.
  - Consider having a runner to open doors and clear transport route of obstacles.
  - If rooming in with mother in single room transfer baby to a cot.
  - Conduct terminal disinfection of resuscitaire and incubator after transfer.

- **Admission**
  - Wash/clean infant as soon as is reasonable within the incubator ensuring maintenance of body temperature.
  - **Routine testing of asymptomatic newborn infants is not recommended.**
  - Indications for testing for SARS-CoV-2 in the neonatal period may include:
    - Suspected horizontal transmission leading to symptomatic infection (e.g. fever, acute respiratory illness not otherwise explained) from a COVID-19 positive parent/ caregiver/household contact, healthcare worker, or where transmission is suspected in a particular setting such as a ward cluster
    - Suspected congenital infection / vertical transmission (e.g. congenital pneumonia in an infant born to a mother with suspected / proven COVID-19)
  - If there is an indication for testing, the minimum sampling should be a combined nose and throat swab for SARS-CoV-2 PCR. Do not perform a naso-pharyngeal aspirate.
  - Cord blood or neonatal blood should be sent to the laboratory for future testing.
  - It is unknown whether newborns with COVID-19 are at increased risk for severe complications. Transmission after birth via contact with infectious respiratory secretions has been documented.
  - Benefits and risks of keeping mother and babies together with suspected/proven COVID-19 should be discussed with the mother by the healthcare team ideally prior to delivery using the **parent information sheet.**
  - Well newborn infants who do not require admission to a neonatal nursery and whose mothers are well can remain together in a single room on the postnatal ward with appropriate precautions when breastfeeding.
  - In some circumstances, to reduce the risk of transmission of the virus that causes COVID-19 from the mother to the newborn, facilities may recommend temporarily separating the mother from her baby until the mother's transmission-based precautions are discontinued (**Algorithm 1**).
  - Temporary separation needs to be carefully considered in light of the known benefits of keeping of the newborn infant with their mother and breastfeeding.

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- The separation should be in a designated area/room under the care of the neonatal paediatric team, with the baby cared for in an incubator and staff using correct PPE (**Algorithm 3**).
- These discussions should be documented in the mothers and infants medical record.
- Involve Aboriginal Liaison Officers where available for Aboriginal and Torres Strait Islander families and interpreters for culturally and linguistically diverse families as appropriate**.**
- Involve social work as appropriate.

- **If mother and baby room-in on postnatal ward**
  - Co-locate and isolate the mother and newborn infant in a single room.
  - Breastfeeding should be encouraged. The mother should take all possible precautions to avoid spreading the virus to her baby, including washing her hands before touching the baby and wearing a face mask, if possible, while breastfeeding or touching the baby. https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/pregnancy-guidance-breastfeeding.html.
  - Consider using physical barriers (e.g., a curtain between the mother and newborn infant) and keeping the newborn infant 1.5 - 2 metres away from the mother.

Preterm (<37 weeks) infants and/or unwell newborn infants requiring nursery admission

**NOTE: It is unclear preterm infants have increased susceptibility to infection including more complications. Therefore, guidance is intentionally cautious.**

- **At birth**
  Neonatal Paediatric team to be present at delivery and wear appropriate PPE including P2/N95 mask due to the potential for aerosol-generating procedures during resuscitation.
  - Place baby on resuscitation bed and assess the infant.
  - *Delayed cord clamping is allowed* for preterm infants.
  - No placement of the baby on mother's abdomen.
  - If facilities are available consider having the resuscitaire and neonatal team in a separate adjoining room to protect neonatal/paediatric staff.
  - Consider minimising the equipment on a resuscitaire to essential items. The stock on the resuscitaire will be considered contaminated. Extra equipment anticipated to be required may be placed in sealed plastic bags.
- **Transport**
  - Transport all neonates in an incubator.
  - Plan for a dedicated transport route and elevator.
  - Consider having a runner to open doors and clear transport route of obstacles.
  - Conduct terminal disinfection of resuscitaire and incubator after transfer.

- **Admission**
  - Admit to neonatal unit after birth (**Algorithm 3 for placement**).
  - Wash/clean infant as soon as is reasonable ensuring maintenance of body temperature.
  - **Indications for testing for SARS-CoV-2 in the neonatal period may include:**
    - Suspected horizontal transmission leading to symptomatic infection (e.g. fever, acute respiratory illness not otherwise explained) from a COVID-19 positive parent/ caregiver/household contact, healthcare worker, or where transmission is suspected in a particular setting such as a ward cluster
    - Suspected congenital infection / vertical transmission (e.g. congenital pneumonia in an infant born to a mother with suspected / proven COVID-19)
  - If there is an indication for testing, the minimum sampling should be a combined nose and throat swab for SARS-CoV-2 PCR. Do not perform a naso-pharyngeal aspirate.

## COVID-19 – Newborn Infants Born to Women with Suspected or Confirmed COVID-19 cont'd

- If intubated, send endotracheal aspirate for SARS-CoV-2 testing.
- Cord blood or neonatal blood should be sent to the laboratory for future testing.
- For infants who are preterm/unwell, to reduce the risk of transmission of the virus that causes COVID-19 from the mother to the newborn, facilities may recommend temporarily separating the mother from her baby until the mother's transmission-based precautions are discontinued (**Algorithm 1**).
- Separation from mother should continue until the mother's transmission-based precautions are discontinued.
- There is no specific drug treatment proven to be effective for SARS-CoV-2. Lopinavir-ritonavir is specifically contra-indicated in neonates. Seek expert advice if considering a role for antiviral therapy.
- Symptomatic and supportive treatment are the mainstay of therapy.

- **If mother is expressing breast milk**
  - Mothers should be encouraged and supported to express breast milk.
  - The mother should wash her hands before touching any pump or bottle parts and follow recommendations for proper pump cleaning before and after each use.
  - She should wear a surgical mask while expressing and while handling the equipment as there is an unknown risk of transmission associated with the use of expressed breast milk.
  - The bottle of expressed milk should be wiped on the outside with a disinfectant wipe and placed into a specimen bag for transfer to the Neonatal Unit's isolation area.
  - On arrival the bag should be discarded, the bottle exterior should be disinfected again, and the milk decanted into a clean bottle, clearly labelled, prior to storage or giving to the newborn infant.
  - Consider testing the breast milk for the presence of SARS-CoV-2, in consultation with Clinical Microbiologist. A single test will only detect early post-natal viral excretion in the milk. It is not feasible to test every batch of milk to assess contamination of the milk by respiratory secretions.

**Visitors to the baby in the neonatal unit**

- Permit only essential personnel depending on care requirements for mother and/or baby.
- Visitors should ideally not be allowed.
- In extenuating circumstances a single visitor may be allowed if they fulfil ALL of the following criteria and they must wear PPE:
  - No acute respiratory symptoms or fever AND
  - No overseas travel in past 14 days AND
  - No close contact with a confirmed case (including the mother)

  https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm

**Newborn infant born to a mother who is asymptomatic but at high risk of COVID-19 as close contact or recent traveller (Algorithm 2)**

- Women should be identified by the universal screening questions if they are ASYMPTOMATIC but are at high-risk by virtue of being a **close contact** of a confirmed case of COVID-19 or have **travelled overseas** in the past 14 days.
- Testing asymptomatic women for SARS-CoV-2 is **not** recommended.

## COVID-19 – Newborn Infants Born to Women with Suspected or Confirmed COVID-19 cont'd

- Definition of close contact: https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm:
  - >15 minutes face-to-face OR
  - sharing of a closed space for a prolonged period (e.g. > 2 hours) OR
  - from 24 hours before onset of symptoms in the confirmed case OR
  - household contact
- **At birth:** Midwifery team to be present at delivery and wear appropriate PPE (contact and droplet precautions). If it is anticipated that the newborn infant will require support at birth by the neonatal team (e.g. fetal distress, prematurity etc), the neonatal team should wear appropriate PPE for resuscitation.
- Testing infants born to asymptomatic mothers for SARS-CoV-2 is **not** recommended in most circumstances.
- If the baby is **term and well** and doesn't require neonatal unit admission for medical reasons, then co-location of mother and infant to facilitate bonding and breastfeeding is *preferred.*
- Mother and infant to remain together in single room isolation until discharge, with contact and droplet precautions.
- If baby is **preterm or unwell** then admit the baby and monitor mother for symptoms (**Algorithm 3**).
- If maternal symptoms develop then refer to **Algorithm 1.**

**Discharge from hospital for mothers and newborn infants**

- **Mothers**
  - Discharge for postpartum women is dependent on local discharge clinical criteria.
  - Release from isolation in terms of ceasing self-isolation at home and visiting the nursery should follow the latest release from isolation criteria specified by Communicable Disease Network Australia[23]. https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm
    - At least 10 days have passed since hospital discharge **AND**
    - Resolution of all symptoms of the acute illness for the previous 72 hours
  - Women should be advised to continue to be diligent to hand hygiene and cough etiquette and practise social distancing, as is indicated for the rest of the community, as this will assist in reducing transmission.
- **Newborn infants**
  - For well newborns born to asymptomatic mothers, not requiring admission (**Algorithm 2**), caretakers should take steps to reduce the risk of transmission to the newborn infant.
  - Well newborns can be optimally discharged home when otherwise medically appropriate, to a designated healthy caregiver who is not a returned traveler, suspected case of COVID-19 or close contact of someone with COVID-19. If such a caregiver is not available, manage on a case-by-case basis (**Algorithm 3**).
  - For newborns requiring admission for medical reasons or temporary separation from an unwell mother, discharge should be considered **on a case by case basis** and include individual consideration of the woman's and infant's wellbeing, disease severity, illness signs and symptoms, laboratory testing results for SARS-CoV-2 and local capacity requirements[26].
  - A negative test should not be used to de-isolate the baby, or to determine the appropriate location and infection control precautions used, because newborn infants of mothers with COVID-19 are considered close contacts (even if separated from the mother from birth), and appropriate infection control precautions should be used for the whole 14 day incubation period.

## COVID-19 – Newborn Infants Born to Women with Suspected or Confirmed COVID-19 cont'd

- Newborns discharged prior to 14 days should have close clinical monitoring for the full 14 days. This could be inpatient or outpatient depending on local facilities. If telemedicine facilities exist these could be considered. Local consideration needs to be given to common neonatal problems such as breastfeeding and jaundice and how/where these will be managed.

**Appropriate caregiver for discharge of newborn infants**

- The mother, if well enough for discharge, and temporary separation period has either been completed or is not occurring ***OR***
- Alternative caregiver. This should be determined on a case by case basis, but they would ideally meet the following criteria: i) no acute respiratory illness or fever; ii) no overseas travel in the last 14 days; iii) not a close contact of a confirmed case. A risk assessment can be conducted in discussion with local public health unit, infection control and/ or infectious diseases if required.

## 5. RISK RATING

- High (to be reviewed weekly)

## 6. NATIONAL STANDARD

- Standard 1 Clinical Governance
- Standard 2 Partnering with Consumers
- Standard 3 Preventing and Controlling Healthcare Associated Infections
- Standard 5 Comprehensive Care
- Standard 6 Communicating for Safety
- Standard 8 Recognising and Responding to Acute Deterioration

## 7. ABBREVIATIONS

| | | | |
|---|---|---|---|
| COVID-19 | Coronavirus Disease 2019 | SARS-CoV-2 | Severe Acute Respiratory Syndrome Coronavirus 2 |
| NCC | Newborn Care Centre | 2019-nCoV | Novel Coronavirus 2019 |
| NSW | New South Wales | PPE | Personal Protective Equipment |
| ID | Infectious Diseases | NICU | Neonatal Intensive Care Unit |
| SPRING | Sepsis Prevention in Neonates | OT | Operating Theatre |
| NICUS | Neonatal Intensive Care Units | PCR | Polymerase Chain Reaction |
| NICUM | Neonatal Intensive Care Unit Managers | CDC | Centers for Disease Control and Prevention |

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**9. AUTHORS**

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| Primary | 7.4.2020 | Interim guideline drafted based on advice provided by the Neonatal COVID-19 Advisory group for NSW and ACT |

**REVISION & APPROVAL HISTORY**
Endorsed Neonatal Services Division LOPs group April 2020

**FOR REVIEW : WEEKLY APRIL 2020**

…../Algorithms and Appendices

# Algorithm - 1

Management at birth of a SYMPTOMATIC Peripartum woman identified as a suspected case of COVID-19 and her newborn infant

NSW Health case definition https://www.health.nsw.gov.au/Infectious/diseases/Pages/2019-ncov-case-definition.aspx

MILD to MODERATE ILLNESS

Isolate in a **single room** with **contact & droplet precautions** (Impermeable long-sleeved gown, gloves, surgical mask & eye protection)

Maternal care / delivery location as determined by hospital policy. Permit entry to essential staff only. Minimise visitors.

**NB**. Airborne precautions **must** be used for any aerosol generating procedures (e.g. Tracheal suctioning, CPAP, HiFlo oxygen etc.)

**SEVERE *or* CRITICAL ILLNESS**

Isolate in a **negative pressure room** *(where available)* with **contact + airborne precautions** (Impermeable long-sleeved gown, gloves, **P2/N95 respirator**, & eye protection)

Maternal care / delivery location as determined by hospital policy. Permit entry to essential staff only. Minimise visitors.

**Before delivery if possible**, most senior available clinician (obstetrics, neonatal and/or ID) to counsel woman regarding benefits and risks of rooming in together. Care should be individualised. **

Discussion and agreed plan must be documented in patient medical notes or eMR.

Mode of delivery & obstetric care as deemed safe/ appropriate by obstetric/midwifery team.

Mother (and other parent if present) advised to wear surgical mask during final stages of labour (as head is delivered) and once baby is delivered.

**Neonatal attendant** (eg. neonatal nurse practitioner / medical staff) in **appropriate PPE**

(**Impermeable long-sleeved gown, gloves, P2/N95 respirator (if need to use respiratory support for infant), & eye protection**)
Assess / resuscitate infant

Move infant (in a closed incubator / isolette) to either postnatal ward if well or to neonatal nursery using pre-planned route.

If non-invasive ventilatory support (high flow nasal prongs, CPAP, BiPAP) is used, this must occur in an incubator / isolette with the doors closed.

**Routine testing of asymptomatic infants is not recommended (page 2).**

**Consider testing newborn infant for SARS-CoV-2 if:**
1. Suspected horizontal transmission leading to symptomatic infection

2. Suspected congenital infection / vertical transmission

**Specimens to be taken if testing indicated:**
Minimum sampling should be a combined nose and throat swab for SARS-CoV-2 PCR

**See algorithm 3 for placement of babies at risk of COVID-19**

****Temporary separation of the mother from the infant after delivery could be considered** for the duration of maternal viral shedding, **to protect the infant from viral transmission from maternal respiratory secretions.**

Discussion / considerations should use the **parent information sheet** and include:

i) emerging clinical evidence (note the lack of evidence so far regarding clinical impact of horizontal transmission to neonates from symptomatic mothers because, in China, the country with the greatest experience so far, mothers and infants were separated from birth for the duration of maternal viral shedding); ii) potential implications of infection for higher risk infants (eg premature, respiratory illness) who may need NICU care; **iii) known benefits of breastfeeding and maternal-infant bonding;** iv) maternal clinical condition; vii) parental preferences; vi) bed capacity and logistics.

# Algorithm - 2

Management at birth of **ASYMPTOMATIC** pregnant woman at **high-risk*** of COVID-19 and her newborn infant

*Pregnant woman identified as a **close contact of a confirmed case of COVID-19** OR has **travelled overseas in the past 14 days**

Definition of close contact: > 15 minutes face-to-face, OR sharing of a closed space for a prolonged period (e.g. > 2 hours), from 24 hours before onset of symptoms in the confirmed case

For updates on the close contact definition, see current guideline here:
https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm

Isolate in a **single room for birth** with **contact & droplet precautions**
(Impermeable long-sleeved gown, gloves, **surgical mask** & eye protection).

Maternal care / delivery location as determined by hospital policy.
Mode of delivery and obstetric care as per obstetrics / midwifery.
Permit entry to essential staff only. Minimise visitors.

**Testing for SARS-CoV-19 is currently NOT recommended in asymptomatic people.**

Infant TERM AND WELL
(**Not requiring admission** for medical reasons)

Co-location of mother and infant to facilitate bonding and breast feeding is preferred.

Mother and infant to remain together in single room isolation until discharge, with contact and droplet precautions as above.

If in the 14 days after return from travel or close contact, the mother becomes symptomatic, the mother-baby pair enters **algorithm 1.**

Infant PRETERM ***Or*** UNWELL
(**Requiring admission** for medical reasons)

**Neonatal attendant** in **appropriate PPE** (**impermeable long-sleeved gown, gloves, surgical mask & eye protection**) to attend infant at or after delivery.

Assess / resuscitate infant as required.
Transfer infant (in a closed incubator / isolette) to a dedicated Transition Area.

(**See algorithm 3 for further management**)

Testing infants born to asymptomatic mothers for SARS-CoV-2 is currently not recommended but may be considered on a case by case basis.

Mother (or any parent / caregiver meeting isolation criteria*) is **NOT** to visit infant in Newborn Care until released from isolation/ transmission based precautions.

Infant may be discharged into maternal care in single room isolation on postnatal ward ***or*** home once medically cleared

## Algorithm 3.

### Transmission based precautions and location of newborn infants born to mothers with suspected or confirmed COVID-19

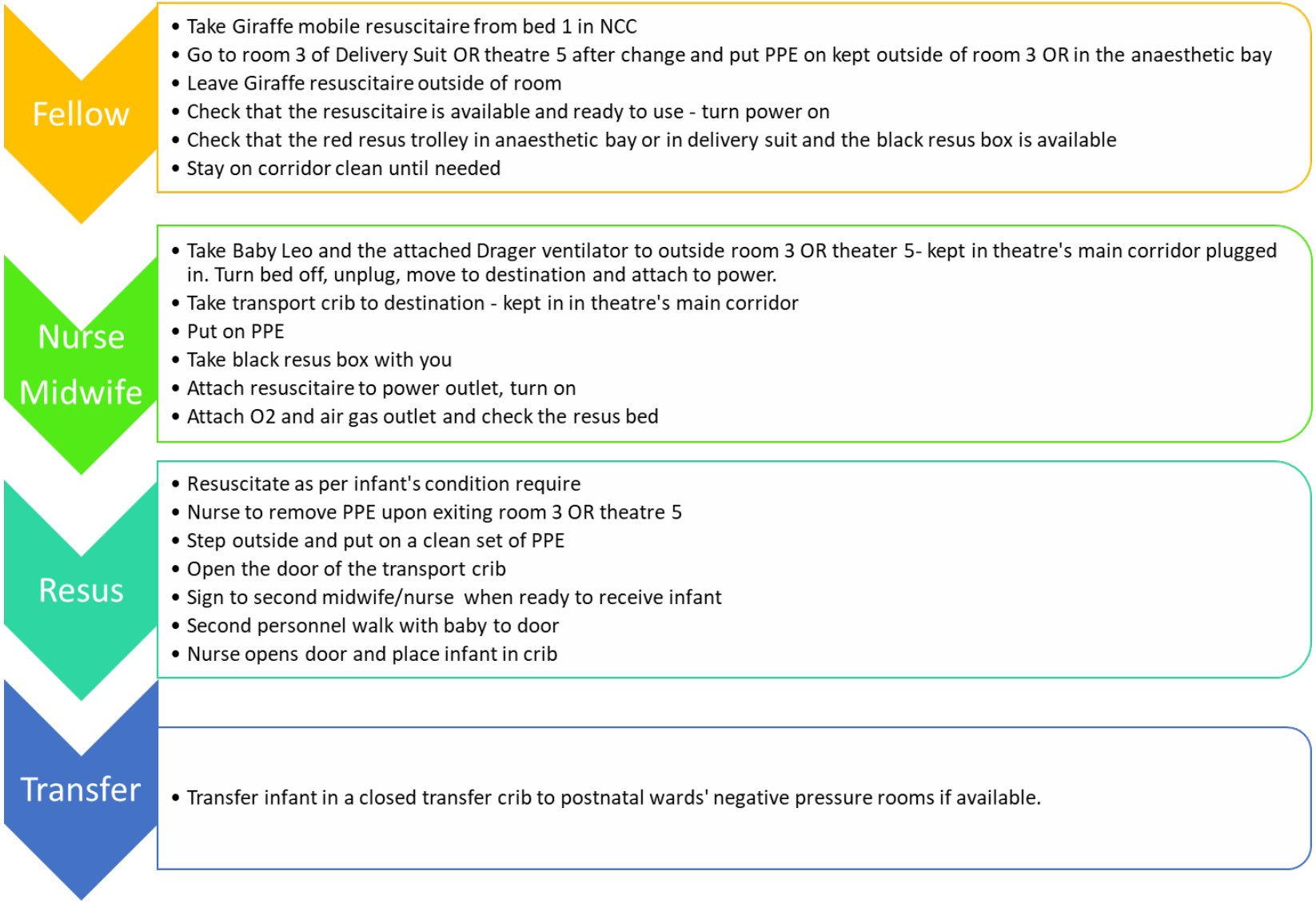
**(Follow on from algorithm 1)**

| CLINICAL SITUATION | **Well Neonate** Does NOT meet medical criteria for admission | | **Neonate requiring admission to NICU/SCN, e.g. preterm, unwell term neonate** | |
|---|---|---|---|---|
| | Does not require admission for reasons of separation | **Requires admission** for reasons of agreed temporary separation (e.g. mother in ICU) | **NOT REQUIRING** RESPIRATORY SUPPORT | **REQUIRING** RESPIRATORY SUPPORT |
| ISOLATION **Minimum 14 days# or until discharge (whichever is earlier)** | Co-locate with mother in single room (Mother NOT in ICU)<br><br>Contact + Droplet precautions<br>***OR***<br>DISCHARGE HOME with appropriate caregiver* | Contact + droplet precautions<br><br>**Single room** if available<br><br>Discuss alternatives (such as closed cot / isolette) with local Infection Control Team | Contact + droplet precautions<br><br>**Single room** if available<br><br>Discuss alternatives (such as closed cot / isolette) with local Infection Control Team | Contact + **airborne precautions**<br><br>**Negative pressure room** if available<br>+ Isolette with doors closed<br><br>Discuss alternatives with local Infection Control Team |
| DISCHARGE CRITERIA | Medically cleared for discharge AND *appropriate caregiver identified | | | |
| Neonatal Testing | 1. Negative tests DO NOT clear infant from isolation / transmission-based precautions, as they are considered a close contact, if maternal COVID-19 is confirmed. Transmission based precautions should continue even if testing (if performed) is negative.<br>2. If testing is performed in a unit where babies are cohorted, it is preferable to separate infants with **positive tests** from babies with **pending tests**, if possible. If cohorting is unavoidable, consider use of temporary barriers and separate clinical staff where practicable. | | | |

# The minimum isolation period of 14 days refers to the incubation period for COVID-19 in potentially exposed infants who do not themselves develop COVID-19. Isolation of infants who develop symptomatic & confirmed COVID-19 may be longer than 14 days. See CDNA criteria for release from isolation – as at 27/03/2020, for confirmed COVID-19 infection, at least 10 days must have passed since the onset of symptoms, and there has been resolution of the acute illness for the previous 72 hours.

*Appropriate caregiver for discharge: See page 9

**Appendix. COVID-19 delivery for well term newborn infants**



**Appendix. COVID-19 delivery in Delivery Suite Room 3**

**Appendix. COVID-19 delivery in Theatre Room 5**

**Appendix. COVID Nurse suggested workflow**